



State of Michigan

**Department of Technology, Management and Budget
State Facilities Administration
Design and Construction Division**

DCSPEC

**Bidding and Contract Document
Minor Projects**

751/23030.MNB

Department of Natural Resources

**Outdoor Adventure Center – Emergency Back Up
Power
Detroit Michigan**

November 14, 2025

Bids

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TITLE	SHEETS THRU
GENERAL	G000
ARCHITECTURAL	A-001, A101, A201
STRUCTURAL	S-010
ELECTRICAL	E001, ES001, E101, E601, E801

BID SUMMARY

**DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
3111 W. St. Joseph Street
Lansing, Michigan 48917**

Bids must be submitted electronically at: <https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService>

FILE NUMBER 751/23030.MNB	DEPARTMENT/AGENCY DTMB / Natural Resources		
CONTRACT TIME(S) 430 days – Substantial Completion 460 days – Final Completion	PROJECT NAME Outdoor Adventure Center – Emergency Back Up Power		LOCATION 1801 Atwater Street Detroit, Michigan
BID OPENING DATE 1/14/2026		FOR AN EXAMINATION OF THE SITE CONTACT: at 2:00 pm ET Attend the Prebid Walk-thru, 4 December 2025 at 10AM ET	
SEE SECTION 00100 INSTRUCTIONS TO BIDDERS AND SECTION 00700 GENERAL CONDITIONS PROVIDED WITH THE BIDDING DOCUMENTS. BID: WE PROPOSE TO FURNISH, PERFORM AND COMPLETE THE ENTIRE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS IN CONSIDERATION OF THE BID PRICE (\$S) STATED BELOW.			
FIRM NAME AND COMPLETE ADDRESS		TELEPHONE NUMBER and E-MAIL ADDRESS	
<input type="checkbox"/> Qualified Disabled Veteran		<u>SIGMA VENDOR NUMBER</u>	
		(protected information required for processing payments)	
BIDDER'S SIGNATURE AND TITLE		DATE	WITNESS' SIGNATURE
			DATE

By signing this bid above, bidder certifies their enclosed Qualified Disabled Veteran and Michigan-Based Business Certifications.

BASE BID FROM BID SCHEDULE (Include specified Allowances):

<div style="display: flex; justify-content: space-between; align-items: center;"> (use words) Dollars \$ </div>	<div style="display: flex; justify-content: flex-end; align-items: center;"> (in figures) </div>
Alternate 1: (Add/Subtract)	Dollars \$
(use words)	(in figures)
Alternate 2: (Add/Subtract)	Dollars \$
(use words)	(in figures)
Alternate 3: (Add/Subtract)	Dollars \$
(use words)	(in figures)

A PERFORMANCE BOND AND A PAYMENT BOND ARE REQUIRED FOR ALL BIDS OVER \$50,000.00. EACH BID MUST BE ACCOMPANIED BY A FIVE (5) PERCENT BID GUARANTEE. BUILDERS RISK INSURANCE IS REQUIRED TO BE PROVIDED BY THE CONTRACTOR UNLESS OTHERWISE INDICATED IN THE BID DOCUMENTS.

BIDDERS ARE ALSO CAUTIONED TO FAMILIARIZE THEMSELVES WITH ALL OF THE OTHER CONDITIONS OF THE CONTRACT.

Project Scope of Work:

The main event is to provide a gas powered generator. The project involves construction of a new equipment pad and screen enclosure to support and conceal a backup generator serving the Outdoor Adventure System. Work includes all associated electrical, natural gas, structural, and site components required for a complete and operational installation.

Scope of Work includes, but is not limited to:

- **Earthwork:** Excavation and grading for the new concrete pad and enclosure foundations, and soil compaction.
- **Concrete:** Reinforced concrete equipment pad, exterior slabs, foundations, and concrete testing.
- **Structural Steel:** Framing and supports for the screen enclosure and generator installation.
- **Electrical:** Power connections, conduit, and wiring for the generator and system integration.
- **Natural Gas:** Gas service extension and connection to the generator.
- **Screen Enclosure:** Coordination with the specialty vendor for furnished and installed screen enclosure, including anchorage and supports.

All work shall comply with applicable codes and be coordinated among all trades.

Substitution Review Period: Substitution requests must be submitted **no later than 14 days prior to the bid walk through.**

Trades Involved: Electrical, Gas, Earthwork including soil compaction, Structural Steel, Concrete including concrete testing, and Specialty Enclosure Vendor.

The testing cost for soil compaction and concrete will be taken out of the Allowance.

The Bidder must figure its Base Bid on the specified, or Addendum-approved, materials and equipment **only**. No “or equal” or substitution proposals will be permitted after Bid opening, except as provided in the General Conditions.

Addenda: Bidder acknowledges receipt of Addenda: No. ____ dated: _____, No. ____ dated: _____ No. ____ dated: _____

BID SCHEDULE

Base Bid Schedule - The Bidder will complete the Work and accept as full payment, for the Work items listed, the following Unit Prices and/or Item Bid Prices, as applicable:

Base Bid Item No.	Bid Quantity	Description	Unit Price	Item Bid Price
1		Lump Sum		
		ALLOWANCE AMOUNT		\$35,000.00
TOTAL (This amount should equal the Base Bid amount on the Bid Summary Form)				\$

Base Bid (Sum of Item Bid Prices for all Base Bid Items): The cost for soil compaction and concrete testing will be taken out of the Allowance.

Dollars \$ _____

(use words) _____ (in figures)

[illegible]

DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
State Facilities Administration
Design & Construction Division

Qualified Disabled Veteran (QDV)
Business Representation

'Qualified Disabled Veteran,' means a business entity that is 51% or more owned by one or more veterans with a service-connected disability.

'Qualified Disabled,' means a business entity that is 51% or more owned by one or more with a service-connected disability.

The vendor represents that it IS _____, a qualified disabled veteran.

The contractor represents and warrants that the company meets the above (when checked) and has attached supporting documentation per the following:

Each bid requesting the Qualified Disabled Veterans (QDV) preference, in accordance with Public Act 22 of 2010, MCL 18.1241.3 shall include a DD214 Proof of Service and Discharge, a Veterans Administration rating decision letter, proof of disability (if the disability is not indicated on the DD214), and appropriate legal documents setting forth the 51% natural persons QDV ownership.

Fraudulent Certification as a Qualified Disabled Veteran may result in debarment under MCL 18.264.

Certification of a Michigan Based Business

(Information Required Prior to Contract Award for Application of State Reciprocity Provisions)

To qualify as a Michigan Based Business:

Vendor must have, during the 12 months immediately preceding this bid deadline:

or

If the business is newly established, for the period the business has been in existence, it has:

(Check all that apply):

- ☐ Filed a Michigan single business tax return showing a portion, or all the income tax base allocated or apportioned to the State of Michigan pursuant to the Michigan Single Business Tax Act, 1975 PA 228, MCL 208.1 – 208.145: or
- ☐ Filed a Michigan income tax return showing income generated in or attributed to the State of Michigan; or
- ☐ Withheld Michigan income tax from compensation paid to the bidder's owners and remitted the tax to the Department of Treasury; or

I certify that **I have personal knowledge** of such filing or withholding, that it was more than a nominal filing for the purpose of gaining the status of a Michigan business, and that it indicates a significant business presence in the state, considering the size of the business and the nature of its activities.

I authorize the Michigan Department of Treasury to verify that the business has or has not met the criteria for a Michigan business indicated above and to disclose the verifying information to the procuring agency.

Bidder shall also indicate one of the following:

- ☐ Bidder qualifies as a Michigan business (provide zip code: _____)
- ☐ Bidder does not qualify as a Michigan business (provide name of State: _____).
- ☐ Principal place of business is outside the State of Michigan, however service/commodity provided by a location within the State of Michigan (provide zip code: (_____)).

Fraudulent Certification as a Michigan business is prohibited by MCL 18.1268 § 268. A BUSINESS THAT PURPOSELY OR WILLFULLY SUBMITS A FALSE CERTIFICATION THAT IT IS A MICHIGAN BUSINESS OR FALSELY INDICATES THE STATE IN WHICH IT HAS ITS PRINCIPAL PLACE OF BUSINESS IS GUILTY OF A FELONY, PUNISHABLE BY A FINE OF NOT LESS THAN \$25,000 and subject to debarment under MCL 18.264.

ASBESTOS ABATEMENT ATTESTATION**SUBMISSION REQUIRED WITH ALL BIDS**

Pursuant to the Public Entity Asbestos Removal Verification Act, PA 59 of 2024, MCL 338.3371 et seq. ("the Act"), the Owner will conduct the background investigation as required of any asbestos abatement contractor, or a general contractor that contracts with an asbestos abatement contractor, for the abatement of asbestos. Under the Act, an "Asbestos abatement contractor" means a business entity that is licensed under the asbestos abatement contractors licensing act, 1986 PA 135, MCL 338.3101 to 338.3319, and that carries on the business of asbestos abatement on the premises of another business entity and not on the asbestos abatement contractor's premises. Asbestos abatement contractor includes an individual or person with an ownership interest in a business entity described in MCL 338.3373(b).

(INSTRUCTIONS: Professional to select one of these two statements, then *delete* the not selected statement and instructions.)

☐ **THE SCOPE OF WORK TO BE COVERED UNDER THIS CONTRACT CONTAINS ASBESTOS ABATEMENT AND THIS ATTESTATION MUST BE COMPLETED.**

☒ **THE SCOPE OF WORK TO BE COVERED UNDER THIS CONTRACT DOES NOT CONTAINS ASBESTOS ABATEMENT AND THIS ATTESTATION IS TO BE LEFT BANK.**

Contractor attests that: (check one:)

BID BOND

BID SUBMITTED ON the _____ day of _____, 20____.

Bid Security is in the form of a Bid Bond _____ Bid Bond form has been duly executed _____; or

A Bank Certified or Cashier's check ____ or Money Order ____ is attached to this page ____ **(If Bid Security is by Check or Money Order, the original check or money order must be delivered to the issuing office before Bid Due Time. ALL other SIGMA bid submittals are also still to be made).**

If the Bidder is an Individual:

Name of Individual: _____

Name & Title of Person Authorized to sign: _____

Signature: _____
(If not the Individual, Attach Power of Attorney) Date _____

Doing Business as: _____

Business Address: _____

County of registration _____

Telephone: _____ FAX: _____

If the Bidder is a Partnership:

By: _____
(True Name of the Partnership)

Partner Authorized to Sign _____ Date _____

Signature: _____
(Attach evidence of Authority to sign) Date _____

Business Address: _____

County of registration _____

Telephone: _____ FAX _____

If the Bidder is a Corporation:

By: _____
(Legal Corporation Name)

Name & Title of Authorized Officer: _____

Signature: _____
(Attach evidence of Authority to sign) Date _____

Name & Title of Officer Attesting: _____

Signature: _____
Date _____

Business Address: _____

Telephone: _____ FAX _____

(State of Incorporation): _____

If The Bidder is A Joint Venture: JOINT VENTURE SIGNATURES MUST BE AS PROVIDED IN INSTRUCTIONS TO BIDDERS. EACH JOINT VENTURER SIGNING THE BID MUST SIGN IN THE MANNER INDICATED FOR AN INDIVIDUAL, A PARTNERSHIP OR A CORPORATION. IF MORE THAN TWO JOINT VENTURERS OF THE SAME TYPE ARE INCLUDED, USE ADDITIONAL PAGES. JOINT VENTURE STATE OF INCORPORATION _____ OR COUNTY OF REGISTRATION _____

POST-BID SUBMITTALS

The PSC will request this submittal after bid opening. Complete and submit these items within two business days after the request.

BIDDER'S EXPERIENCE MODIFICATION RATING (EMR) _____

Attach letter of explanation if the Bidder does not have an EMR.

PROPOSED PROJECT SUPERINTENDENT _____

Attach brief resume or list of similar successful projects.

LIST OF SIMILAR PROJECTS COMPLETED BY THE BIDDER

Please list at least three completed projects of similar size and complexity to the project being bid, with reference contact information

REFERENCE # _____

Owner: _____

Project/Contract Name: _____

Location of Project/Contract: _____

Contract Price: _____ Project/Contract Started: _____ Completed: _____

Owner's Representative (Name and Telephone): _____

Scope of Project/Contract: _____

REFERENCE # _____

Owner: _____

Project/Contract Name: _____

Location of Project/Contract: _____

Contract Price: _____ Project/Contract Started: _____ Completed: _____

Owner's Representative (Name and Telephone): _____

Scope of Project/Contract: _____

REFERENCE # _____

Owner: _____

Project/Contract Name: _____

Location of Project/Contract: _____

Contract Price: _____ Project/Contract Started: _____ Completed: _____

Owner's Representative (Name and Telephone): _____

Scope of Project/Contract: _____

POST BID SUBMITTALS: LIST OF SUBCONTRACTORS

The Apparent Low Bidder shall nominate for each Division of Specification and/or trade category, the Subcontractor to be awarded Sub-agreements, including the apparent Low Bidder if work is to be self-performed. The Apparent Low Bidder will ensure that all Subcontractors have a current State Project Registration in compliance with PA10 of 2023, as amended in PA110 of 2024. Nominated subcontractors shall not be removed, replaced, or added to except by written request for good reason, subject to Owner acceptance. Notwithstanding anything to the contrary, the Owner has the right to object, regardless of cause, to any asbestos abatement Subcontractor nominated by the Contractor to be awarded a Sub-agreement that has 5 or more notices of violation of environmental regulations, or has been subject to an administrative consent order or a consent judgment involving environmental regulations, within the immediately preceding 5 years.

Division, Specification Section and/or Trade	Nominated Subcontractor(s)	Amount of Subcontract
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____
11. _____	_____	_____
12. _____	_____	_____
13. _____	_____	_____
14. _____	_____	_____

The undersigned Apparent Low Bidder _____ certifies that all the information and data furnished in this List of Subcontractors are current, accurate and complete as of the date stated below.

Signed by: _____ Name _____ Title _____

on this _____ day of _____, 20_____.

PERFORMANCE BOND

SURETY COMPANY REFERENCE No. _____

That "the **Contractor**," _____, a corporation _____, individual _____, partnership _____, joint venture _____ of the State of _____, qualified to do business in the State of Michigan, as Principal, and "the Surety," _____, of the State of _____, as surety, are held and bound unto the State of Michigan, "the **Owner**," as Obligee, in the amount of _____ Dollars (\$ _____), for the payment of which the **Contractor** and Surety bind themselves, their respective heirs, successors, legal representatives and assigns, jointly and severally, in compliance with 1963 PA 213, as amended, MCL 129.201 et seq.

The **Contractor** has entered into "the Contract" with the **Owner** for _____, "the Work," covered by the Contract Documents, which are incorporated into this Performance Bond by this reference.

If the **Contractor** faithfully performs and fulfills all the undertakings, covenants, terms, conditions, warranties, indemnifications and agreements of the Contract Documents within the Contract Time (including any authorized changes, with or without notice to the Surety) and during the Correction Period, and if the **Contractor** also performs and fulfills all the undertakings, covenants, terms, conditions, warranties, indemnifications and agreements of any and all duly authorized modifications of the Contract Documents, then THIS OBLIGATION IS VOID, OTHERWISE TO REMAIN IN FULL FORCE AND EFFECT.

A. No change in Contract Price or Contract Time, "or equal" or substitution or modification of the Contract Documents (including addition, deletion, or other revision) releases the Surety of its obligations under this Section 00610 Performance Bond. The Surety expressly waives notice of any such change in Contract Price or Contract Time, "or equal" or substitution or

modification of the Contract Documents (including addition, deletion, or other revision).

B. This Performance Bond must be solely for the protection of the **Owner** and its successors, legal representatives or assigns.

C. It is the intention of the **Contractor** and Surety that they must be bound by all terms and conditions of the Contract Documents (including, but not limited to General Conditions and this Performance Bond). However, this Performance Bond is executed pursuant to 1963 PA 213, as amended, MCL 129.201 et seq., and if any provision(s) of this Performance Bond is/are illegal, invalid, or unenforceable, all other provisions of this Performance Bond must nevertheless remain in full force and effect, and the **Owner** must be protected to the full extent provided by 1963 PA 213, as amended, MCL 129.201 et seq.

IMPORTANT: The Surety must be authorized to do business in the State of Michigan by the Department of Licensing and Regulatory Affairs, must be listed on the current U.S. Department of the Treasury Circular 570, and, unless otherwise authorized by the **Owner** in writing, must have at least an A– Best's rating and a Class VII or better financial size category per current A. M. Best Company ratings.

Name, Address and Telephone of the Surety:

Address and Telephone of Agent, who is either a resident of, or whose principal office is maintained in, the State of Michigan

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

THE **CONTRACTOR**: (Print Full Name and Sign) By: _____

WITNESS _____ Name & Title: _____
Telephone No. _____

THE SURETY: (Print Full Name and Sign) Agent: _____

WITNESS _____ Attorney-in-Fact: _____
Telephone No. _____
Email: _____

PAYMENT BOND

SURETY COMPANY REFERENCE No. _____

"the **Contractor**," _____, a corporation ____, individual ____, partnership ____, joint venture ____ of the State of _____, qualified to do business in the State of Michigan, as Principal, and "the **Surety**," _____, of the State of _____, as surety, are held and bound unto the State of Michigan, "the **Owner**," as Obligee, in the amount of _____ Dollars (\$ _____), for the payment of which the **Contractor** and Surety bind themselves, their respective heirs, successors, legal representatives and assigns, jointly and severally, in compliance with 1963 PA 213, as amended, MCL 129.201 et seq.

The **Contractor** has entered into "the Contract" with the **Owner** for _____, "the Work," covered by the Contract Documents, which are incorporated into this Payment Bond by this reference.

If the **Contractor** promptly pays all claimants supplying labor or materials to the **Contractor** or to the **Contractor's** Subcontractors in the prosecution of the Work, then THIS OBLIGATION IS VOID, OTHERWISE TO REMAIN IN FULL FORCE AND EFFECT.

A. All rights and remedies on this Payment Bond are solely for the protection of all claimants supplying labor and materials to the **Contractor** or the **Contractor's** Subcontractors in the prosecution of the Work and must be determined in accordance with Michigan Law.

B. No change in Contract Price or Contract Time, "or equal" or substitution or modification of the Contract Documents (including addition, deletion, or other revision) must release the Surety of its obligations under this Payment Bond. The Surety

hereby expressly waives notice of any such change in Contract Price or Contract Time, "or equal" or substitution or modification of the Contract Documents (including addition, deletion, or other revision).

C. It is the intention of the **Contractor** and Surety that they must be bound by all terms and conditions of the Contract Documents (including, but not limited to this Payment Bond). However, this Payment Bond is executed pursuant to 1963 PA 213, as amended, MCL 129.201 et seq., and if any provision(s) of this Payment Bond is/are illegal, invalid, or unenforceable, all other provisions of this Payment Bond must nevertheless remain in full force and effect, and the **Owner** must be protected to the full extent provided by 1963 PA 213, as amended, MCL 129.201 et seq.

IMPORTANT: The Surety must be authorized to do business in the State of Michigan by the Department of Licensing and Regulatory Affairs, must be listed on the current U.S. Department of the Treasury Circular 570, and, unless otherwise authorized by the **Owner** in writing, must have at least an A- Best's rating and a Class VII or better financial size category per current A. M. Best Company ratings.

Name, Address and Telephone of the Surety:

Address and Telephone of Agent, who is either a resident of, or whose principal office is maintained in, the State of Michigan

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

THE **CONTRACTOR**: (Print Full Name and Sign)

By: _____

WITNESS _____

Name & Title: _____

Telephone No. _____

THE **SURETY**: (Print Full Name and Sign)

Agent: _____

WITNESS _____

Attorney-in-Fact: _____

Telephone No. _____

Email: _____

DIVISION 00

BIDDING REQUIREMENTS AND CONTRACT CONDITIONS

SECTION 00010 PRE-BID INFORMATION

1. **Invitation to Bid (ITB)** – Your firm is invited to submit a Bid. The State of Michigan as the Owner will receive **bids electronically through the SIGMA VSS website at <https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService>**, for **Outdoor Adventure Center – emergency Back Up Power Project** until **2:00 p.m., ET, on 14 January 2026**. The State reserves the right to cancel this Invitation to Bid (ITB) or change the date and time for submitting Bids by announcing same at any time before the established date and time for Bid opening. Bids must remain open for acceptance by the Owner for no less than the Bid hold period. Contractor may agree to extend the Bid hold period. However, any such extension must be based upon no increase in the Bid Price and/or Contract Time.
2. **Work Description** – The Work, – Outdoor Adventure Center Emergency Backup Power, **DTMB File No. 751 / 23030.NMB** includes, but is not necessarily limited to:

The main event is to provide a gas-powered generator. Renovation and addition of an exterior emergency backup generator and exterior screen enclosure to provide backup power to the Outdoor Adventure Center. In addition, the work includes the rework of the existing building electrical service to integrate the emergency backup generator. The new generator will be located on a new concrete service pad within a new screened enclosure.

The site is located at **1801 Atwater Street, Detroit, Michigan**, as shown on the Drawings.

3. **Bidding Documents** – Sets of Bidding Documents may be obtained at <https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService>.
4. **Bid Security** – Each Bid must enclose a duly executed Bid Security, in the amount of five percent (5%) of the Bidder's Base Bid, paid to the "State of Michigan" in the form of a certified or cashier's check or money order drawn upon a bank insured by an agency of the Federal Government, or a bid bond signed by both the Contractor and authorized surety company. *If Bid Security is by check or money order, such certified or cashier's check or money order must be delivered in original copy before the Bid Due Time to:*

State Facilities Administration
Design & Construction Division
3111 W. St. Joseph Street
Lansing, Michigan 48917

All other Bid information must be submitted via SIGMA as per standard bidding procedure

5. **Pre-Bid Conference** – A **mandatory** pre-bid conference will be held at 1801 Atwater St., Detroit, MI on **4 December 2025 at 10 am ET**. A tour of the project site **will** be held on the same day, starting at **10 am ET**. All prospective Bidders are **required** to attend the tour, if held. Other parties interested in the Work are encouraged to attend the tour. Addenda may be issued, in response to issues raised at the pre-bid conference and tour, or as the Owner and/or Professional may otherwise consider necessary. An individual is only permitted to represent one bidder at a mandatory Pre-Bid Conference.

The purpose of the pre-bid conference and inspection is to answer questions and provide an inspection tour of the Project site at the scheduled time on the day of the meeting. A representative will be available to assist the Contractors. Other inspection visits may be allowed if needed. Individuals needing special services to fully participate in the meeting due to a disability may contact **Melissa Sharp at SharpM7@michigan.gov, 844-622-6367**.

FOR CORRECTIONAL FACILITIES ONLY: All contractor/vendor representatives attending a Pre-Bid Walk Through Meeting must submit a Vendor/Contractor LEIN Request five business days prior to the meeting date, (LEIN Request For CAJ-1037 attached to Bid posting). Send the LEIN Request form, filled out and signed, by email to SmithD76@michigan.gov & FrostS1@michigan.gov. The email "Subject" must include (Facility Name, Project Name, Date & Time of Pre-Bid Walk Through Meeting).

6. **SIGMA VENDOR NUMBER:** If you are bidding a State job for the first time, visit the State of Michigan SIGMA website, <https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService>, and follow the "SOM VSS User Guide for New Vendors" instructions, located under Forms and Reference Documents. Registration is required for bid submission. **Do not wait until the last minute to submit a proposal**, as the SIGMA system requires the creation of an account and entry of certain information, in addition to uploading and submitting the materials. The SIGMA system **will not** allow a proposal to be submitted after the proposal deadline, even if a portion of the proposal has been updated.

Questions on how to submit information or how to navigate in the SIGMA VSS system can be answered by calling **(517) 373-4111 or (888) 734-9749**.

7. **Equal Employment Opportunity** – Covenants to not discriminate in employment by Contractors, Subcontractors and Suppliers required by Law are contained in Instructions to Bidders and General Conditions and are applicable to the Work and any Sub-agreement under the Contract.

8. **Contract Times** – The Contract Times and the associated liquidated damages are specified in the Contract.

- 9. Contact Person** – All requests or inquiries concerning the Bidding Documents, or the Work must be addressed to: Brian Rais – Colliers Engineering and Design, brian.rais@collierseng.com. Questions will be accepted until **17 December 2025 at 10:00am ET**.
- 10. Award** – Subject to any agreed extension of the period for holding Bids, Bids must remain valid for acceptance by the Owner for 60 Calendar Days after the date of Bid opening. In addition, the Owner expressly reserves the right, within the Owner's sole discretion, to reject any or all Bids, to waive any irregularities, to issue post-Bid Addenda and re-bid the Work without re-advertising, to re-advertise for Bids, to withhold the award for any reason the Owner determines and/or to take any other appropriate action.
- 11. Performance and Payment Bonds** – A performance bond and a payment bond are required for all contracts over \$50,000.00 for the contract award amount.

END OF SECTION 00010

SECTION 00100 INSTRUCTIONS TO BIDDERS

1. **PREPARATION OF BID:** Execute Bid fully and properly. Bid Summary Form (DTMB -0401D) and Bid Form Attachments must be used and completely filled out for the Bid to be considered responsive and meeting the requirements of the contract solicitation. All Bid prices must be printed or typed in both words and figures.
2. **BID CHECKLIST:** Submit Bid Summary Form with original signatures plus Bid Form Attachments in accordance with the electronic bidding procedures on the SIGMA VSS website.

A complete Bid will consist of the following forms, which are included immediately following the Bid Summary Form:

Bids SUBMIT THESE Bid Forms and Bid Form Attachments

- All Bids ☐ **Signed** and completed Bid Summary Form (DTMB-0401D).
- ☐ Bid Schedule.
- ☐ Qualified Disabled Veteran (QDV) Business Representation.
- ☐ Bid Security in the amount of 5% of Base Bid Price.
- If Bid Security is by check or money order, such certified or cashier's check or money order must be delivered in original copy before the Bid Due Time to:*

State Facilities Administration
Design & Construction Division
3111 W. St. Joseph Street
Lansing, Michigan 48917

All other Bid information must be submitted via SIGMA as per standard bidding procedure

- ☐ Signature Authorization or copy of the partnership agreement if signed by all partners.
- ☐ Byrd Anti-Lobbying Certification (Only when Federal Provisions Addendum is included)
- ☐ Asbestos Abatement Attestation
- ☐ State Project Registration (SPR) for the Contractor and subcontractors
(if applicable pursuant to 2023 PA 10, as amended, MCL 408.1101 et seq.)
- ☐ Other Forms;
- Over \$50K ☐ Forms listed under All Bids.
- ☐ Payment and Performance Bond (upon issuing the Notice of Award).
- Over \$100K ☐ Forms listed under All Bids.
- ☐ Certification of a Michigan Based Business.
- ☐ Payment and Performance Bond (upon issuing the Notice of Award).
- Over \$250K ☐ Forms listed under All Bids.
- ☐ Certification of a Michigan Based Business.
- ☐ Payment and Performance Bond (upon issuing the Notice of Award).

Apparent Low Bidders ONLY (upon request from the Professional)

- ☐ Experience Modification Rating (EMR), or a letter stating why the Bidder does not have one.
- ☐ Identification of the proposed project superintendent, with a resume or list of similar projects handled by that individual.
- ☐ A list of at least three (3) projects completed by the Bidder, within the last three (3) years of similar size and complexity, with contact information for references for each.
- ☐ A list of nominated sub-contractors, including proposed self-performed categories, for each Division/Trade/etc.

3. **BID SUBMISSION:** Bids must be submitted electronically through the SIGMA VSS website at <https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService>.

4. **BID GUARANTEE:** Each proposal must be accompanied by either a bank certified or cashier's check on an open, solvent bank or a bid bond with an authorized surety company (the surety must be listed on the current U.S. Department of the Treasury Circular 570) in the amount of five percent of the base bid payable to the State of Michigan, as a guarantee of good faith. If the successful Bidder fails to furnish satisfactory bonds and insurance within fifteen Calendar Days after Notice of Award, such guarantee must be forfeited to the State as liquidated damages. If Bid Security is by check or money order, such certified or cashier's check or money order must be delivered in original copy before the Bid Due Time to the Issuing Office. The bid security, exclusive of bid bonds, of all unsuccessful Bidders will be returned when an award is made or upon substitution of a bid bond. The bid security of the successful Bidder will be returned when the performance bond and labor and material bond are approved.
5. **Left Blank Intentionally.**
6. **MICHIGAN BASED BUSINESS CERTIFICATION:** All Bidders submitting Bids in excess of \$100,000.00 must complete the Certification of Michigan Based Business. This information will determine if a Bidder qualifies as a "Michigan" business for purposes of application of reciprocity where applicable.
7. **POST-BID SUBMITTAL:** For all projects, the Professional may request a Post-Bid Submittal from the Apparent Low Bidders. The Apparent Low Bidders must submit to the Professional, within **two** Business Days after receipt of the Professional's request,
- Experience Modification Rating (EMR), or a letter stating why the Bidder does not have one.
 - Identification of the proposed project superintendent with a resume or list of similar projects managed by that individual.
 - A list of at least three (3) projects completed by the Bidder, within the last three (3) years of similar size and complexity, with contact information for references for each.
- Failure to provide the submittals may disqualify the Bid.**
8. **SIGNATURES:** All Bids, notifications, claims, and statements must be signed as follows:
- (a) **Corporations:** Signature of official must be accompanied by a certified copy of the Resolution of the Board of Directors authorizing the individual signing to bind the corporation.
 - (b) **Partnerships:** Signature of one partner must be accompanied by a signed copy of the legal document (e.g., Power of Attorney or partnering agreement) authorizing the individual signing to bind all partners. If Bid is signed by all partners, no authorization is required.
 - (c) **Individual:** No authorization is needed. Each signature must be witnessed.
9. **BID PRICES:** The Bidder's Base Bid and Alternate Bid prices must include, and payment for completed Work will compensate in full for: all services, obligations, responsibilities, management, supervision, labor, materials, devices, equipment, construction equipment, general conditions, permits, patent fees and royalties, testing, inspection and approval responsibilities, warranties, temporary facilities, small tools, supplies, Bonds, insurance, taxes, mobilization, close-out, overhead and profit and all connections, appurtenances and any other incidental items of any kind or nature, as are necessary to complete the Work, in a neat, first quality, workmanlike and satisfactory manner in accordance with the Drawings and Specifications and as otherwise required to fulfill the requirements of the Bidding Documents. For each Cash Allowance item, the Bidder must include, within the Bid, all labor costs, construction equipment costs, insurance and Bond premiums and other general conditions costs and Fees (Bidder's and Subcontractors') to complete Work associated with the material, equipment, or other designated item to be furnished under the Cash Allowance. For each Provisionary Allowance, the Bidder must include, within the Bid, insurance, premiums (not recoverable as labor burden) and Bond premiums required to complete Work that may be ordered under a Provisionary Allowance.
10. **INSPECTION OF BIDDING DOCUMENTS AND SITE CONDITIONS:** The Bidder must carefully review and inspect all documents referenced and made part of this ITB, site conditions, all applicable statutes, regulations, ordinances, and resolutions addressing or relating to the goods and services under this contract. Failure to do so or failure to acquire clarifications and answers to any discovered conflicts, ambiguities, errors, or omissions in the Bidding Documents will be at the Bidder's sole risk.
11. **SAFETY REQUIREMENTS AND LAWS:** The Bidder awarded the Contract must comply with all applicable federal, state, and local Laws including health and safety regulations, environmental protection, permits and licensing.
12. **INTERPRETATIONS AND ALTERATIONS TO THE BID AND BIDDING DOCUMENTS:** All requests for clarification or interpretation of the Bidding Documents, all proposals for any modifications to the Bidding Documents, all requests for information and all other questions or inquiries about the Bidding Documents and/or the Work shall be submitted in writing to the Contact Person identified in the Bid Documents. Requests or inquiries received less than seven Calendar Days before the date of Bid opening will be answered only if (a) the response can be given through an Addendum made available at least seventy-two hours before Bid opening (counting Business Days only), (b) the Bid opening is postponed by Addendum, or (c) the Work is rebid without readvertising following the issuance of post-Bid Addenda.

Bidders must not rely upon any oral statements or conversations regarding interpretations, clarifications, corrections, additions, deletions or other revisions or information to the Bidding Documents. Any addition, limitation or provision made with or attached to the Bid may render it non-responsive and/or irregular and be a cause for rejection. The Owner reserves the right to issue a post-Bid Addendum after opening the Bids and set a new date for the receipt and opening of sealed Bids. The Bidder acknowledges that any quantities of Unit Price Work given in this ITB are approximate only and payments will be made only for actual quantities of Unit Price Work completed in accordance with the Contract Documents.

13. MODIFICATION OF BID: The entire bid must be resubmitted on the SIGMA VSS website.

14. BID WITHDRAWAL: Except for timely filed claims of mathematical or clerical errors granted by the State, no Bid may be withdrawn within sixty Calendar Days after the Bid Opening time and date or before the Bid expiration date without forfeiting Bid security. The request to withdraw a Bid due to error must be submitted in writing along with the supporting documents within two Business Days after the date of Bid Opening. The claim must describe in detail the error(s), include a signed affidavit stating the facts of the alleged error(s) and request that the Bidder be released from its Bid. The review of the claim and its supporting documents by the State is only for the purpose of evaluating the Bidder's request and must not create duty or liability on the State to discover any other Bid error or mistake. The sole liability of any Bid error or mistake rests with Bidder.

15. OBJECTION TO THE AWARD: A Bidder may file a written protest with the Director-DCD to object to the Apparent Low Bidder. This objection must be filed within seven Calendar Days after the date of Bid opening and must describe in detail the basis for the protest and request a determination. The Director-DCD will either dismiss or uphold the protest and notify the protestor within ten Calendar Days after receipt of the written protest.

16. BID IRREGULARITIES: The following irregularities on any Bid Form or Bid Form Attachment must be resolved as follows:

- (a) between SIGMA entry and signed Bid Summary attachment, the signed Bid Summary attachment will be used.
- (b) between words and figures, the words must be used.
- (c) between any sum, computed by the Bidder, and the correct sum, the sum computed by the Bidder must be used.
- (d) between the product, computed by the Bidder, of any quantity and Bid Unit Price and the correct product of the Unit Price and the quantity of Unit Price Work, the product extended by the Bidder must be used.
- (e) between a stipulated Allowance and the amount entered, the Allowance must be used.
- (f) any mobilization pay item exceeding the maximum specified must be ignored and the Bid must remain unchanged.
- (g) if any Bidder fails or neglects to bid a Unit Price for an item of Unit Price Work but shows a "Bid Price" for that item, the missing unit price must be computed from the respective quantity and the Item Bid Price shown.
- (h) if any Bidder fails or neglects to show a "Bid Price" for an item of Unit Price Work but bids a unit price, the missing Bid Price must remain as "zero"; and
- (i) if any Bidder fails or neglects to enter a Bid Price in both words and figures, the Bid Price printed or typed, whether in words or figures, must be used.

17. CERTIFICATION: The bidder certifies to the best of its knowledge and belief that, within the past three (3) years, the bidder, an officer of the bidder, or an owner of a 25% or greater interest in the bidder:

- (a) Has not been convicted of a criminal offense incident to the application for or performance of a contract or subcontract with the State of Michigan or any of its agencies, authorities, boards, commissions, or departments.
- (b) Has not had a felony conviction in any state (including the State of Michigan).
- (c) Has not been convicted of a criminal offense which negatively reflects on the bidder's business integrity, including but not limited to, embezzlement, theft, forgery, bribery, falsification, or destruction of records, receiving stolen property, negligent misrepresentation, price-fixing, bid rigging, or a violation of state or federal anti-trust statutes.
- (d) Has not had a loss or suspension of a license or the right to do business or practice a profession, the loss or suspension of which indicates dishonesty, a lack of integrity, or a failure or refusal to perform in accordance with the ethical standards of the business or profession in question.
- (e) Has not been terminated for cause by the Owner.
- (f) Has not failed to pay any federal, state, or local taxes.
- (g) Has not failed to comply with all requirements for foreign corporations.
- (h) Has not been debarred from participation in the bid process pursuant to Section 264 of 1984 PA 431, as amended, MCL 18.1264, or debarred or suspended from consideration for award of contracts by any other State or any federal Agency.
- (i) Has not been convicted of a criminal offense or other violation of other state or federal law, as determined by a court of competent jurisdiction or an administrative proceeding, that in the opinion of DTMB indicates that the bidder is unable to perform responsibly or which reflects a lack of integrity that could negatively impact or reflect upon the State of Michigan, including but not limited to, any of the following offenses under or violations of:
 1. The Natural Resources and Environmental Protection Act, 1994 PA 451, MCL 324.101 to 324.90106.
 2. A persistent and knowing violation of the Michigan Consumer Protection Act, 1976 PA 331, MCL 445.901 to 445.922.
 3. A finding that the bidder failed to pay the wages and/or fringe benefits as required by applicable law.
 4. Repeated or flagrant violations of 1978 PA 390 MCL 408.471 to 408.490 (law relating to payment of wages and fringe benefits).
 5. A willful or persistent violation of the Michigan Occupational Health and Safety Act, 1974, PA 154, MCL 408.10001 to 408.1094, including: a criminal conviction, repeated willful violations that are final orders, repeated violations that are final orders, and failure to abate notices that are final orders.
 6. A violation of federal or state civil rights, equal rights, or non-discrimination laws, rules, or regulations.

7. Been found in contempt of court by a Federal Court of Appeals for failure to correct an unfair labor practice as prohibited by Section 8 of Chapter 372 of the National Labor Relations Act, 29 U. s. C. 158 (1980 PA 278, as amended, MCL 423.321 et seq).
- (j) Is not an Iran-Linked Business as defined in MCL 129.312.

A false statement, misrepresentation, or concealment of material facts on this certification may be grounds for rejection of this proposal or termination of the award and may be grounds for debarment.

18. REJECTION OF BID: The Bidder acknowledges the right of the Owner to reject any Bids and to waive any informality, defects or irregularity in any Bid received. In addition, the Bidder recognizes the right of the Owner to reject a Bid if:

- (a) the Bid is in any way incomplete or irregular.
- (b) the Bidder, Subcontractor or Supplier is not responsible as determined by the Owner.
- (c) the Bidder's performance as a Contractor was unsatisfactory under a prior Contract with the Owner for the construction, repair, modification, or demolition of a facility with the Owner, or under any other Contract, which was funded, directly or indirectly, by the Owner.
- (d) there are reasonable grounds for believing that collusion or unlawful agreements exists between any Bidders, that a Bidder is interested in more than one Bid, or that the Bid is not genuine.
- (e) the Bid exceeds the funds available.

19. MATERIALS AND EQUIPMENT SUBSTITUTION: Any Bidder wishing to use manufacturers or materials other than those specified must submit a written request to the Professional not later than **fourteen (14)** days before due date for Bids. Request must be accompanied by product data to permit evaluation and comparison with specified products or materials. The Person submitting the request will be responsible for its prompt delivery. The Professional and the Owner will examine and evaluate the product data and if found acceptable, an Addendum will be issued and mailed or delivered to each Person who has received a set of Drawings and Specifications. All Addenda issued must be made a part of the Contract requirements. Contractor will be responsible for any extra work and expense incurred to satisfactorily and completely incorporating each substitute product into the Project.

20. MICHIGAN PRODUCTS AND RECYCLED PRODUCTS: All Contractors and Suppliers are encouraged to provide Michigan-made products and/or recycled products and/or green products and/or environmentally friendly products whenever possible where price, quality, and performance are equal to, or superior to, non-Michigan products and the requirements of the Contract Documents. The Contractor will be required to use alternatives to landfills for waste disposal such as reuse or recycle of asphalt, bricks, concrete, masonry, plastics, paint, glass, carpet, metals, wood, drywall, insulation, and any other waste materials to the extent practical.

21. PRE-AWARD PRODUCT SUBMITTALS: If requested, the Apparent Low Bidders must submit a summary of preliminary technical data on each product listed in the Project Documents. The Apparent Low Bidders will furnish this summary data to the Professional within forty-eight hours of the Bid Opening. These submittals will be used to evaluate the Bid before the award. Failure to provide the submittals may disqualify the Bid.

22. CONTRACT AND CONTRACT AWARD: The Owner intends to award a Contract to the responsive and responsible best value bidder, except as provided below relative to veteran's preference.

- 22.1 Determination of the lowest three Bidders shall be based on the sum of the Base Bid and any additive and deductive Alternates the Owner accepts, in the order in which they are listed only. The Owner will accept an Alternate only if all other previously listed Alternates are also accepted unless acceptance by the Owner of Alternates in a different order does not affect determination of the lowest three bidders in any way.
- 22.2 The bids will be evaluated for best value based on price and qualitative components by comparing the qualitative components of the three lowest responsive and responsible Bidders. The comparison may also include other Bidders whose bids are within 10% of the lowest responsive and responsible Bidder.
- 22.3 If a Qualified Disabled Veteran meets the requirements of the contract solicitation, provides acceptable responses to both Part One and Part Two of the Best Value Construction Bidder Evaluation to achieve a Best Value recommendation and with the veteran's preference is the lowest responsive, responsible, best value Bidder, the Owner will award the contract to the Qualified Disabled Veteran bidder. A determination as to whether the requirements of the bid solicitation have been met will be based solely on the Owner's and Professional's evaluation of the Bid Summary, Bid Attachments, Bidder-provided documents, and interview.
- 22.4 For the purpose of evaluating and determining the low responsive bid, 10% of the lowest responsive bid (the bid that would otherwise receive the contract award if the preference were not being considered) will be deducted from all QDV bids. If the low responsive QDV bid, less the 10% preference, is less than the lowest responsive bid, then the QDV bid will be declared the official low responsive bid. The original QDV bid amount will be the basis of the contract award.

Example:

Lowest Responsive Bid	\$100,000
Lowest Responsive QDV Bid	\$109,000
Preference (10% of the Lowest Responsive Bid)	\$ 10,000
Lowest Responsive QDV Bid Less Preference	\$ 99,000 (\$109,000 - \$10,000)
Official Low Responsive Bid	\$109,000

22.5 The Apparent Low Bidders will be evaluated for responsiveness and responsibility based on the following:

- Compliance with the bid specifications and requirements.
- The Bidder's financial resources.
- The Bidder's technical capabilities.
- The Bidder's technical experience.
- The Bidder's past performance.
- The Bidder's insurance and bonding capacity.
- The Bidder's business integrity.

Some qualitative components that may be evaluated are:

- Technical approach.
- Quality of proposed personnel.
- Management plans.

22.6 For contracts under \$250,000, best value will primarily be based on the lowest responsive and responsible bid.

23. CONTRACT TIME; LIQUIDATED DAMAGES: Work of all trades as specified in the Contract Documents must be completed in **460** calendar days from the date of Notice-to-Proceed except for minor replacement, correction, or adjustment items which do not interfere with the complete operation and utilization of all parts of the Contract Work. This Contract Time is of the essence and liquidated damages for each Calendar Day that expires after this Substantial Completion of the entire Work must be in the amount of **\$500.00 per day**. Liquidated damages are not a penalty, are cumulative and represent a reasonable estimate of the Owner's extra costs and damages, which are difficult to estimate with accuracy in advance.

24. MOBILIZATION: If used in the Specifications/Bid schedule, all the up-front costs incurred by the Contractor must be covered by the mobilization. The costs to establish temporary site offices, to obtain required permits for commencing the Work and for bonds and insurance premiums are examples of costs to the Contractor that are covered by mobilization pay item. This cost must not exceed four percent (4%) of the Base Bid, unless otherwise expressly provided in the Bidding Documents.

25. SOIL EROSION AND SEDIMENTATION CONTROL: All Work under this Contract must meet the storm water management requirements of the Project and comply with the applicable Soil Erosion and Sedimentation Control (SESC) rules and regulations and specific provisions for same within the Contract Documents. SESC measures will be monitored and enforced by the State Facilities Administration, or another authorized enforcing agency if so delegated, through the review of the Contractor's implementation plans and site inspections. State Facilities Administration or the Professional will notify the Contractor in writing of any violation(s) of the applicable SESC statutes and/or the corrective action(s) undertaken by the Owner and may issue stop work orders. State Facilities Administration has the right to assess a fine to the Contractor for noncompliance with the provisions of the Contract Documents and/or SESC regulations applicable to this Work and fines must be in addition to any other remediation costs or liquidated damages applicable to the Project and may exceed the value of the Contract.

26. PREVAILING WAGE: The Bidding Documents include either the attached Appendix V of prevailing rates of wages and fringe benefits for all classes of Construction Mechanics called for in the Bid and resulting Contract, if any, or the attached current prevailing wage determination issued by the U.S. Department of Labor, as applicable depending on the funding source(s).

To the extent 2023 PA 10, as amended, MCL 408.1101 et seq. is applicable, the bid response for a state project must include a copy of the state project registration for the Contractor and for each Subcontractor of the Contractor that has been selected at the time the Contractor submits the Bid.

END OF SECTION 00100

SECTION 00120 SUPPLEMENTARY INSTRUCTIONS

The provisions of this Section amend or supplement Section 00100 Instructions to Bidders and those other provisions of the Bidding Requirements that are indicated below. All other Bidding Requirements that are not so amended or supplemented remain in full force and effect.

END OF SECTION 00120

SECTION 00200 INFORMATION FOR BIDDERS

1. UNDERGROUND UTILITIES

Information or data about physical conditions of existing Underground Utilities, which have been used by the Professional in preparing the Bidding Documents, is shown, or indicated in the Drawings and technical Specifications and those Underground Utility drawings itemized immediately below. **Contractor to contact Miss Dig 811 for verification of existing underground utilities.**

2. PERMITS, APPROVALS, LICENSES AND FEES

- 2.1 If the Owner has secured or will secure any permits, approvals and licenses and has paid or will pay any associated charges and fees, any such permits, approvals and licenses are itemized in this paragraph: **Contractor to secure all permits including but not limited to: building permit, electrical, plumbing/mechanical.**
- 2.2 If any permits, approvals, and licenses itemized above have been obtained by the Owner and the fees have been paid, copies of those permits, approvals, licenses, and corresponding fee receipts, are attached to this Section 00200 Information for Bidders.

Except for any permits, approvals, licenses, and fees identified above, the Contractor shall be responsible for all permits, approvals, licenses, and fees applicable to Work.

3. SEQUENCING REQUIREMENTS

Refer to the technical Specifications, including, but not limited to the General Requirements, for information, data, and criteria on sequences of Work restraints, construction, and maintenance of service to existing facilities, which, if provided, must govern the selection of Work sequences. Each Bidder must be responsible for any conclusions or interpretations the Bidder makes related to the selection of sequences and Means and Methods, based on the technical data made available, and/or those additional investigations or studies made or obtained by that Bidder.

Reference the project Soil Management Plan included in the Project Manual under Appendix VI.

4. SUBSURFACE CONDITIONS

In preparing the bidding documents, the PSC used the reports of explorations and tests of subsurface conditions itemized immediately below.

A GEOTECHNICAL REPORT WAS NOT PROVIDED FOR THE PROJECT SITE. THE CONTRACTOR, THROUGH THE CLIENT, IS RESPONSIBLE FOR OBTAINING A GEOTECHNICAL REPORT OR SOILS TESTING TO CONFIRM THE PRESUMPTIVE LOAD VALUES (IBC TABLE 1806.2).

- 4.1 Information or data contained in those reports that may be properly considered Authorized Technical Data concerning subsurface conditions include (NOTE: All other information or data excluded from the list below represent Non-Technical Information or Data, interpretations, or opinions): ***
- 4.2 In preparing the bidding documents, the PSC has not used the following reports of explorations and tests of subsurface conditions itemized immediately below.

5. OTHER PHYSICAL CONDITIONS

- 5.1 The Drawings and technical Specifications and those drawings itemized immediately below contain information or data that have been used in the preparation of the Bidding Documents, and that may be properly considered Authorized Technical Data concerning physical conditions of existing surface and subsurface facilities.
- 5.2 The reference documents itemized immediately below have not been used in the preparation of the Bidding Documents and are available for review or purchase. Information and data contained in those reference documents, including, but not limited to dimensions, locations and conditions of existing surface and subsurface structures, roadways, piping, raceways, equipment, etc.

may not accurately or reliably reflect actual conditions. Neither the Owner nor Professional warrants that this list identifies all existing relevant documents.

END OF SECTION 00200

SECTION 00700 GENERAL CONDITIONS

1. **Interpretations:** Any requests for clarifications or interpretations of the Contract Documents must be in writing to the Professional, who will issue written clarifications or interpretations as appropriate. If the Contractor believes that such clarification or interpretation justifies an adjustment to the Contract Price/Time, the Contractor must promptly notify the Professional in writing before proceeding with the Work Involved.
- 1.1 **Standards:** The Contract Documents describe the entire Work. The provisions of the Contract Documents must govern over any standard specifications, manual or code of any technical society, organization, or association but, if lower than the standards set by any Law applicable to the Work or the Project, the higher standards must govern. The Contractor's responsibilities extend to cover Subcontractors and Suppliers if liable as a result of their actions or obligations.
- 1.2 **Contract Time Computation:** The time to complete the Work must be made in Calendar Days and must include both the first and last day. The first day is established by the Notice-to-Proceed.
- 1.3 **Technical Specifications and Priority:** The following applies whenever priority is called for in Contract Documents: specifications must govern Drawings; figured dimensions must govern scaled dimensions; detail drawings must govern general drawings; Drawings must govern Submittals.
- 1.4 **Indemnification:** The Contractor is required to defend, indemnify and hold harmless the Owner and the Professional, their employees, agents, servants, and representatives from and against all claims, suits, demands, actions of whatever type and nature and all judgments, costs, losses and damages, whether direct, indirect or consequential including, but not limited to, charges of architects, engineers, attorneys and others and all court, hearing and any other dispute resolution costs arising from:
 - (a) any patent or copyright infringement by the Contractor.
 - (b) any damage to the premises or adjacent lands, areas, properties, facilities, rights-of-way, and easements, including loss of use to the business and property of others as a result of Contractor's operations.
 - (c) any bodily injury, sickness, disease or death, or injury to or destruction of property, including loss of use due to or related to the Work and caused in whole or in part by the Contractor or Subcontractor or Supplier's negligence, omissions, or failure to maintain the required insurance and coverage and,
 - (d) a failure by the Contractor to appropriately handle Hazardous Materials for the Work or the Contractor's operations in compliance with the Owner requirements and/or applicable Laws and regulations.

The indemnification obligations are not affected by the limitation on the amount and types of damages, compensation or benefits payable by or for the Contractor or Subcontractor or Supplier under worker's or workman's compensation acts, disability benefit acts or other employee benefit acts.

- 1.5 **Contract Documents Ownership:** The State is the owner of the Contract Documents. The Contractor, Subcontractor or Supplier must not reuse any of the documents on any other Project without prior consent of the State and Professional. The Professional will furnish on behalf of the Owner at no cost to the Contractor, one (1) electronic copy of the Drawings and Project Manual. If the **Contractor**, or the Contractor's Subcontractors or Suppliers request hard copy sets, reproduction of these documents will be the responsibility of the **Contractor**.

2. GENERAL PROVISIONS

- 2.1 **Owner:** The Project Director and/or Owner Field Representative will represent the Owner. Neither the Project Director nor the Owner Field Representative has the authority to interpret the requirements of the Contract Documents or to authorize any changes in the Work or any adjustment in Contract Price/Time. The State will provide the necessary easements for permanent structure and permanent changes in existing lands, areas, properties, and facilities. However, the Contractor must obtain, at no increase in Contract Price/Time, permits for any other lands, areas, properties, facilities, rights-of-way, and easements required by the Contractor for temporary facilities, storage, disposal of soil or waste material or any other purpose. The Contractor must submit copies of the permits and written agreements to the Owner. The Contractor must engage a registered land surveyor to establish the necessary reference points and/or base lines for construction and must be responsible for protecting them including benchmarks and Project elevations.
- 2.2 **Professional:** Acting as the Owner's representative during the Contract Time period, the Professional will endeavor to guard the Owner from Defective work and to keep the Owner informed of the progress of the Work. Unless delegated by specific written notice from the Owner, the Professional and the Professional's representatives do not have the authority to authorize any changes in the Work or any adjustment in Contract Price/Time. The On-site Inspections by the Owner Field Representative and/or the Professional do not relieve the Contractor from its obligation to provide the Work in accordance with the Contract Documents or represent acceptance of Defective Work.

2.3 **Contractor:** The Contractor must manage, supervise, and direct the Work competently, applying the management, supervision, skills, expertise, scheduling, coordination, and attention necessary to provide the Work in accordance with the Contract Documents with a minimum disturbance to or interference to the business operations on site or adjacent properties. The Contractor must assign and maintain a competent full-time **superintendent** on the Work, as its representative, at all times while Work is being done on site and must not be replaced without the Owner's consent. The DTMB Superintendent Designation [form](#) must be completed by the Contractor and submitted before beginning any work. The Contractor shall enforce good order among its employees and shall not employ on the work any disorderly, intemperate, or unfit persons, or not skilled in the work assigned to them. The Contractor is solely responsible for his Means and Methods, safety precautions and programs related to safety, the Contractor's failure to execute the Work in accordance with the Contract Documents and any act of omissions by the Contractor, Subcontractor or Supplier. The Contractor must **compare Contract Documents for conflicts**, unworkable or unsafe specified Means and Methods and verify against manufacturer's recommendations for installations and handling and must notify the Professional in writing of the discovery of any such conflicts or errors. The Contractor is required to furnish certifications that lines and grades for all concrete work were checked before and after placing concrete, and that final grades are as required by the Contractor Documents. Wherever required, the Contractor must be responsible for all cutting, fitting, drilling, fixing-up, and patching of concrete, masonry, gypsum board, piping and other materials that may be necessary to make in-place Work and dependent Work fit together properly. The Contractor must restore to pre-existing conditions all walks, roadways, paved or landscaped areas and other real and personal property not designated for alteration by the Contract Documents. The Contractor must maintain at the site one copy of safety data sheets (SDS) and one copy of all **as built/Record Documents** in good order and annotated in a neat and legible manner to show:

- (a) all revisions made,
- (b) dimensions noted during the furnishing and performance of the Work, and
- (c) all deviations between the as-built installation and the Contract Documents, all approved Submittals and all clarifications and interpretations.

The Contractor must maintain and furnish promptly to the Owner and the Professional upon their request **daily field reports and photos** recording the on-site labor force and equipment (Contractor and Subcontractors); materials/equipment received; visits by Suppliers; significant in-progress and completed trade Work within major areas; and other pertinent information. The Contractor is obligated to act to prevent threatened damage, death, injury, or loss without any special instruction in **emergencies** and must give the Owner prompt written notice of any changes in Work resulting from the action taken for review and approval.

2.4 **Subcontractors and Suppliers:** The Owner assumes no contractual obligations to anyone other than the Contractor. All trade construction Drawings must be field coordinated before fabrication and/or installation. The Owner reserves the right to reject or revoke, for its convenience, any approved Subcontractor/Supplier. For any projects with asbestos abatement, Contractor must comply with MCL 338.3375(4) and complete the Asbestos Abatement Attestation. Work performed by any Subcontractor or Supplier must be through an appropriate written agreement that:

- (a) expressly binds the Subcontractor/Supplier to the requirements of the Contract Documents,
- (b) requires such Subcontractor or Supplier to assume toward the Contractor all the obligations that the Contractor assumes toward the Owner and the Professional, and
- (c) contains the waiver of rights and dispute resolution provisions.

2.5 **Prevailing Wages, Access to Payroll Records and Asbestos Abatement Project requirements:**

2.5.1 **Prevailing Wages:**

To the extent applicable, Contractor will comply with federal and state prevailing wage requirements. The wage and classification schedules applicable for this project/location are included in Appendix V.

Federal Prevailing Wages - If a project is funded in whole or in part by federal dollars, the Contractor and all Subcontractors must comply with the most recent version of Federal Provisions Addendum and all Laws pertaining to occupational classifications and wage requirements as follows:

1. FEDERAL PROVISIONS ADDENDUM

- a. The most current version of Federal Provisions Addendum shall apply to this contract and is included at the end of this section and/or Appendix V.

2. DAVIS BACON ACT WAGE AND CLASSIFICATIONS

- a. If applicable, the Contractor (and its Subcontractors) for prime construction contracts in excess of \$2,000 must comply with the Davis-Bacon Act ([40 USC 3141-3148](#)) as supplemented by Department of Labor regulations ([29 CFR Part 5](#), "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction").

- b. The Contractor (and its Subcontractors) shall pay all mechanics and laborers employed directly on the site of the work, unconditionally and at least once a week, and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the advertised specifications, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and the laborers and mechanics.
- c. The Contractor will post the scale of wages to be paid in a prominent and easily accessible place at the site of the work.
- d. There may be withheld from the Contractor so much of accrued payments as the contracting officer considers necessary to pay to laborers and mechanics employed by the Contractor or any Subcontractor on the work the difference between the rates of wages required by the Contract to be paid laborers and mechanics on the work and the rates of wages received by the laborers and mechanics and not refunded to the Contractor or Subcontractors or their agents.
- e. The Contractor shall maintain payrolls and basic records relating thereto for a period of three (3) years after the project; contractor shall submit Certified Payroll Reports using US Department of Labor Wage and Hour Division Form WH-347 for each weekly payroll to support and document compliance with the Davis Bacon Wage rates.
- f. Davis Bacon wage and classification schedules applicable for this project/location are included at the end of this section and/or Appendix V.

State Prevailing Wages -The following provisions apply when 2023 PA 10, as amended, MCL 408.1101 et seq. applies.

Prevailing Wage and Fringe Benefits--The rates of wages and fringe benefits to be paid to each class of Construction Mechanic by DB Entity and Subcontractors must not be less than the wage and fringe benefit rates prevailing in the locality in which the work is performed.

Nondiscrimination, Nonretaliation- Contractor or a Subcontractor shall not discharge, discipline, retaliate against, or otherwise discriminate against a Construction Mechanic, or threaten to do any of these things, because the Construction Mechanic reported or was about to report a violation or suspected violation of the act.

Construction Mechanics under this Contract are intended beneficiaries of the contractual prevailing wage, fringe benefit, and nondiscrimination nonretaliation requirements of the Contract. Any such Construction Mechanic aggrieved by failure of a contractor or subcontractor to pay prevailing wages or benefits as specified in the Contract, or by violation of section 7 of 2023 PA 10, in addition to any other remedies provided by law, may bring an action in a court of competent jurisdiction against such contractor or subcontractor for damages or injunctive relief and may be awarded reinstatement or other appropriate relief, and all damages sustained, together with actual costs and attorney fees at trial and on appeal.

Contractor and Subcontractors shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in this Contract and shall keep an accurate record showing the name and occupation of and the actual wages and benefits paid to each Construction Mechanic employed by it in connection with the Contract. This record shall be available for reasonable inspection by the State.

Contractor must immediately notify the Owner if Contractor's state project registration or a Subcontractor's state project registration is no longer valid (i.e. suspended, revoked or not renewed) at any time during the term of the Contract.

Contractor is to submit certified payrolls, including contractor and subcontractor, not later than 10-days after the end of a pay period to the Department of Labor and Economic Opportunity database via the internet through the Online Certified Payroll Submission process the Contractor signed up for to receive their State Project Registration, 2023 PA 10 as amended, MCL 408.1122. State certified payroll is not to be submitted to DTMB at any time.

2.5.2 Access to Payroll Records: The Contractor and its Subcontractors must maintain and keep, in accordance with generally accepted accounting principles, records pertaining to the bidding, award and performance of the Work, including, but not limited to certified payroll, employment records and all data used in estimating the Contractor's prices for the Bid, Change Order, proposal or claim. The Owner or its representative must have access to those records, must have the right to interview the Contractor's employees and must be provided with appropriate facilities for the purpose of inspection, audit/review and copying for five years after final payment, termination, or date of final resolution of any dispute, litigation, audit exception or appeal. The certified payroll and other employment records of workers assigned to the site must contain the name and address of each worker, correct wage classification, rate of pay, daily and weekly number of hours worked, deduction made, and actual wages paid. The Contractor must maintain records that show: (a) the anticipated costs or actual costs incurred in providing such benefits, (b) that commitment to provide such benefits is enforceable, and (c) that the plan or program is financially responsible and has been communicated in writing to the workers affected.

2.6 Asbestos Abatement Projects: For projects with Asbestos Abatement, the Contractor must comply with PA 59 of 2024, MCL 338.3371 et seq. as applicable and with APPENDIX III – ASBESTOS ABATEMENT PROJECT PROCEDURES as part of and in conjunction with all other contract requirements.

3. Bonds and Insurance:

- 3.1 Both the Performance Bond and Payment Bond must remain in effect from the date of Contract Award until final completion of the Work or the end of Correction Period, whichever comes later. The surety bonds required for a Construction Contract will not be accepted by SFA unless the surety bonding company is listed in the current United States Government, Department of Treasury's, Listing of approved sureties (bonding/insurance companies), Department Circular 570. Copies of the current Circular listing may be obtained through the internet web site <https://www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570.htm>.

Insurers must have an "A-" A.M. Best Company Rating and a Class VII or better financial size category as shown in the most current A.M. Best Company ratings. Insurance must be provided by insurers authorized by the Department of Insurance and Financial Services (DIFS) to do business as an insurer in Michigan. The insurance company and must attach evidence of the authorization. These certificates must specify the Project File No., Project Title, and a description of the Project. The Contractor agrees that insurance coverage afforded under the policies as such coverage relate to the State under this Contract as determined by the Contractor will not be modified or canceled without at least thirty calendar days prior written notice to the State. The latest A.M. Best's Key Ratings Guide and the A.M. Best's Company Reports (which include the A.M. Best's Ratings) are found at: <http://www.ambest.com>. The Contractor must not perform any part of the Work unless the Contractor has all the required insurance in full force and effect.

- 3.2 The Contractor is required to provide proof of the minimum levels of insurance coverage as indicated below. The purpose of this coverage must be to protect the State from claims which may arise out of or result from the Contractor's performance of services under the terms of this Contract, whether such services are performed by the Contractor, or by any subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

The Contractor waives all rights against the State for recovery of damages to the extent these damages are covered by the insurance policies the Contractor is required to maintain pursuant to this Contract. The Contractor also agrees to provide evidence that all applicable insurance policies contain a waiver of subrogation by the insurance company.

All insurance coverages provided relative to this Contract is PRIMARY and NON-CONTRIBUTING to any comparable liability insurance (including self-insurances) carried by the State.

The Insurance must be written for not less than any minimum coverage herein specified or required by law, whichever is greater. All deductible amounts for any of the required policies are subject to approval by the State.

The State reserves the right to reject insurance written by an insurer the State deems unacceptable.

BEFORE THE CONTRACT IS SIGNED BY BOTH PARTIES, THE CONTRACTOR MUST FURNISH TO THE DIRECTOR-DCD CERTIFICATE(S) OF INSURANCE VERIFYING INSURANCE COVERAGE. THE CERTIFICATE MUST BE ON THE STANDARD "ACCORD" FORM. THE CONTRACT NUMBER MUST BE SHOWN ON THE CERTIFICATE OF INSURANCE TO ASSURE CORRECT FILING. All such Certificate(s) are to be prepared by the Insurance Provider and not by the Contractor. All such Certificate(s) must contain a provision indicating that coverages afforded under the policies WILL NOT BE CANCELLED, MATERIALLY CHANGED, OR NOT RENEWED without THIRTY days prior written notice, except for 10 days for non-payment of premium, having been given to the Director-DCD. Such NOTICE must include the CONTRACT NUMBER affected and be mailed to the Project Director.

The Contractor is required to provide the type and amount of insurance below:

- (a) Commercial General Liability Insurance with a limit of not less than \$1,000,000 each occurrence. If such CGL insurance contains a general aggregate limit, it must apply separately to this project.

The Contractor must list the State, its departments, divisions, agencies, offices, commissions, officers, employees, and agents as ADDITIONAL INSUREDS on the Commercial General Liability policy.

- (b) Vehicle Liability Insurance for bodily injury and property damage as required by law on any auto including owned, hired, and non-owned vehicles used in the Contractor's business.

The Contractor must list the State, its departments, divisions, agencies, offices, commissions, officers, employers, and agents as ADDITIONAL INSUREDS on the vehicle liability policy.

- (c) Worker's disability compensation, disability benefit or other similar employee benefit act with minimum statutory limits.

NOTE:

- (i) If coverage is provided by a State fund or if Contractor has qualified as a self-insurer, separate certification must be furnished that coverage is in the state fund or that Contractor has approval to be a self-insurer.
- (ii) Any citing of a policy of insurance must include a listing of the States where that policy's coverage is applicable; and
- (iii) This provision must not be applicable where prohibited or limited by Michigan law.

- (d) Employer's Liability Insurance with the following minimum limits:

\$1,000,000 each accident

\$1,000,000 each employee by disease

\$1,000,000 aggregate disease

- (e) Pollution Liability Insurance in the amounts of not less than \$1,000,000 per occurrence is required.

3.3 Liability Insurance: Liability insurance must be endorsed to list as additional insureds the Professional's consultants and agents. Worker's Compensation, Employer's Liability Insurance and all other liability insurance policies must be endorsed to include a waiver of rights to recover from the Owner, Professional and the other additional insureds. The Contractor's liability insurance must remain in effect through the Correction Period and through any special correction periods. For any employee of the Contractor who is resident of and hired in Michigan, the Contractor must have insurance for benefits payable under Michigan's Worker's Compensation Law. For any other employee protected by Worker's Compensation Laws of any other state, the Contractor must have insurance or participate in a mandatory state fund, where applicable, to cover the benefits payable to any such employee. These requirements must not be construed to limit the liability of the Contractor or its insurers. The Owner does not represent that the specified coverage or limits of insurance are sufficient to protect the Contractor's interests or liabilities.

3.4 Builder's Risk Insurance: Unless indicated otherwise in the bid document, the Contractor will purchase and maintain property insurance for 100% of actual cash replacement value of the insurable Work (minimum amount to be the contract award amount) while in the course of construction, including foundations, additions, attachments, and all fixtures, machinery and equipment belonging to and constituting a permanent part of the building structures. The property insurance also will cover temporary structures, materials and supplies to be used in completing the Work, only while on the building site premises or within five hundred feet of the site. The property insurance insures the interests of the Owner, Contractor and all Subcontractors and Suppliers at any tier as their interest may appear. The property insurance insures against "all risk" of physical loss or damage to the extent usually provided in policy forms of insurers authorized to transact this insurance in Michigan. A copy of the master insurance policy will be available for review by the State, upon request. Any deductible shall be both the option and responsibility of the **Contractor**.

3.5 The Owner and Contractor intend that the required policies of property insurance must protect all the parties insured and provide primary coverage for all losses and damages caused by the perils covered. Accordingly, to the extent that the insurance company pays claims, the Owner and the Contractor and its Subcontractors/Suppliers waive all rights against each other for any such losses and damages and waive all such rights against the Professional and all other persons named as insureds or additional insureds.

4. Prosecutions; Substantial Completion:

4.1 The Contractor must not start the Work at the site before the first day established by the Notice to Proceed and/or before all insurance is in effect. A pre-construction conference will be held with the Contractor to review its Progress Schedule, qualifications of its key personnel, its proposed access to the site, traffic and parking, procedures for submittal, change orders, etc., and to exchange emergency contact information. The Contractor must use its accepted Progress Schedule when making proposals or claims for adjustment in Contract Time/Price.

- 4.2 Except in an Emergency, all Work at the site must take place during normal working hours; 6:00 AM to 6:00 PM, during Business Days and in accordance with the special working conditions for the Agency. If the Contract Documents allow work outside the normal hours, the Contractor must provide a written notice to the Owner twenty-four hours before performing such Work and must reimburse the Owner any related increase in the costs incurred by the Owner such as overtime charges of the Professional and payments for custodial and security personnel.
- 4.3 If, upon inspection and completion of all pre-requisite testing of the Work, the Contractor considers that a portion of the work or all the Work is substantially completed, it must provide a list of items to be corrected or completed to the Owner and the Professional for joint inspection. Within ten Calendar Days of this joint inspection, the Professional will deliver to the Owner and Contractor a list of incomplete/Defective work or a Certificate of Substantial Completion with a Punch List. The certificate must:
- (a) fix a reasonable date of Substantial Completion,
 - (b) fix a date for completion of the Punch List, and
 - (c) recommend the division of responsibilities between the Owner and Contractor for utilities, security, safety, insurance, maintenance, etc.

Upon issuing the Certificate of Substantial Completion, the Owner will pay for the completed Work subject to (a) withholding of two hundred percent of the value of any uncompleted Work, as determined by the Professional, and (b) any other deductions as the Professional may recommend or may withhold to cover Defective work, liquidated damages and the fair value of any other items entitling the Owner to a withholding. Prerequisites for Substantial Completion, over and above the extent of Work completion required, include (a) receipt by the **Owner** of operating and maintenance documentation, (b) all systems have been successfully tested and demonstrated by the **Contractor** for their intended use, and (c) the **Owner** having received all required certifications and/or occupancy approvals from the State and those Political Subdivisions having jurisdiction over the Work. Receipt of all certifications and/or occupancy approvals from those Political Subdivisions with jurisdiction in and of itself does not necessarily connote Substantial Completion. The Contractor must provide all related operating and maintenance (O&M) documentation to the Owner before training if training is required and not later than Substantial Completion otherwise. The Contractor must give the Owner the final O&M documentation (with revisions made after Substantial Completion) before the request for final payment.

- 4.4 The Owner may decide to use, at its sole option, any functioning portion of the Work and will inform the Contractor in writing of the decision. The portion of Work to be used must be jointly inspected to determine the extent of completion if it has not undergone the inspection for Substantial Completion. The Professional must prepare a list of items to be corrected/completed and the Owner will allow the Contractor reasonable access to correct/complete the listed items and finish other work.

5. Warranty; Tests, Inspections and Approvals; Corrections of Work:

- 5.1 **Warranty:** The Contractor must furnish the State with a written guarantee to remedy any defects due to faulty materials or labor which appear in the Work within one year from the date of final acceptance by the State. This warranty excludes defect or damage caused by (a) abuse, modification by others, insufficient or improper operation or maintenance, or (b) normal wear and tear under normal usage. Manufacturer warranties for materials and equipment received by the Contractor must be assigned and promptly delivered to the Owner at Substantial Completion. The warranties period starts from the date of the substantial completion and must be in full force and effect for the entire duration of the Correction Period.

Roof Warranty: For roofing systems, the following warranties are required as minimum:

- (a) A two-year contractor's warranty against any defects due to faulty materials or labor.
- (b) A fifteen-year manufacturer's total system warranty; and
- (c) A twenty-year membrane/shingles/tiles warranty.

- 5.2 **Tests, Inspections and Approvals:** The Owner will perform or retain a professional/agency to perform inspections, tests or approvals for those materials required to meet quality control standards specified in the Contract Documents except for those inspections, tests or approvals specifically designated to the Contractor in the Contract Documents. However, the Contractor must assume full responsibility for any testing, inspection, or approval.

- (a) required to meet code requirements, as promulgated by code inspecting authorities.
- (b) required by Law.
- (c) indicated or required by the Contract Documents as designated to the Contractor.
- (d) required for the Professional's acceptance of a Supplier, materials or equipment or mix designs submitted for prior approval by the Contractor; or
- (e) Defective work, including an appropriate portion of the Delay and costs occasioned by discovery of Defective work. The Contractor must (a) pay all related costs; (b) schedule related activities; and (c) secure and furnish to the Professional the required certificates of inspection, testing or approval. The Contractor must provide proper and safe access to the site for inspection, testing or approval. The Contractor must provide the Professional a timely notice whenever any Work is ready for inspection, testing or approval. If the Contractor covers any Work without proper approval by the Professional as required by the Contract Documents, the Contractor must, at its own expense, uncover, expose, or otherwise make available, when requested by the Professional or Owner, for testing, inspection, or approval of the covered Work.

- 5.3 Correction of Work:** If any testing, inspection, or approval reveals Defective Work and the Work is rejected by the Professional, the Contractor, at its sole expense, must promptly, as directed, correct, or remove the Defective Work from the site and replace it with non-Defective Work within the Correction Period. The Contractor must bear responsibility for its proportionate share of the Delay and costs resulting from the correction and/or removal and replacement of Defective Work. If the Contractor, within reasonable and agreed upon time after receipt of written notice, (a) fails to correct Defective Work or remove and replace rejected Work, or (b) fails to correct or complete items on any Punch List, or (c) fails to perform Work in accordance with the Contract Documents, or (d) fails to comply with any other provision of the Contract Documents, the Owner, directly or through others, after seven Calendar Days from the date of the written notice to the Contractor, may correct and remedy the Defective Work. To the extent necessary to correct and remedy such Defective Work, the Owner must be allowed to exclude the Contractor from all or part of the site; take possession of all or part of the Work and stop related operations of the Contractor; take possession of the Contractor's tools, plant and office and construction equipment at the site; and incorporate into the Work materials and equipment for which the Owner has paid the Contractor. The Contractor must allow the Owner and the Professional easy access to the site to correct such Defective Work. The Owner must be entitled to an appropriate decrease in Contract Price for all claims, costs, losses, damages, and Delay incurred or sustained by the Owner which are attributable to the Contractor. Such costs may include, but not limited to, costs of correction or removal and replacement of Defective Work, costs of repair and replacement of other work destroyed or damaged by the action and related charges of the Professional. If the discovery of the Defective Work takes place after final payment and the Contractor fails to correct and pay the Owner any of these costs, the Owner must demand due performance under the Performance Bond. Until the period of limitation provided by Michigan Law, the Contractor must promptly, and upon receipt of written notice from the Owner, correct Defective Work. In the event of an Emergency or unacceptable risk of loss or damage or if appropriate under the circumstances, the Owner, directly or through others under contract with the Owner, may correct or remove and replace the Defective Work. The specified correction of Work requirements has no limitation on the rights of the Owner to have Defective Work corrected or removed and replaced, if rejected, except as otherwise provided by the Michigan Law.
- 5.4 Special Correction Period Requirements:** Whenever the Owner undertakes any portion of the Work because the Contractor's act or omission Delays completion of the Work or it is eligible for Partial Use, the warranties for all materials and equipment incorporated into that portion of the Work must remain in full force and effect between the start of such Partial Use and the date when the Correction Period starts. The Correction Period for any Defective Work that is corrected or rejected and replaced within the last three months of the Correction Period must be extended by an additional six months, starting on the date such Work was made non-Defective.
- 5.5 Special Maintenance Requirements:** If the Contract Documents specify that the entire Work, or a portion of the Work, upon reaching Substantial Completion, must not be placed in use by the Owner, the Contractor must maintain the Work, or specified part of the Work, in good order and proper working condition and must take all other actions necessary for its protection between the certified date of Substantial Completion and the date when the Work, or designated part of the Work, is placed in use. If no separate price for such special maintenance period was requested and made part of the Contract Documents, the Owner will amend the Contract Documents to appropriately increase the Contract Price.
- 6. Changes:**
- 6.1 Changes in the Work:** The Owner may, at any time, without notice to sureties, make any changes bilaterally or unilaterally, by a written Change Order, in the Work within the general scope of the Contract, including but not limited to changes in the Specifications, materials, or Contract Time. In a bilateral change order, the Owner may direct the Professional to prepare a Bulletin describing the change being considered. Upon receiving the Bulletin, the Contractor establishes the cost and returns it to the Professional for review within 15 calendar days. The Contractor's proposal must be irrevocable for 60 Calendar Days after it is submitted to the Professional. If the Professional recommends acceptance of the Bulletin and the Owner agrees with the changes, the Owner issues a written bilateral Contract Change Order to amend the Contract Documents. However, the Owner may issue a unilateral Change Order if the Owner and Contractor are unable to agree on the adjustment in Contract Price or Time. If the Contractor disagrees with such unilateral Contract Change Order, the Contractor must complete the Work and may deliver notice of a claim in accordance with the claim submittal process.
- 6.2 Differing Site Condition:** The Owner does not warrant that any technical data, including the Project reference points, provided by the Owner is necessarily sufficient and complete for the purpose of selecting Means and Methods, initiating, maintaining, and supervising safety precautions and programs or discharging any other obligation assumed by the Contractor under the Contract Documents. If different or unknown site conditions are discovered, the Contractor must notify the Owner in writing before the conditions are disturbed or before proceeding with the affected Work. Upon review, if the Owner decides to agree with the differing site conditions, with the Professional's advice, the Owner may issue a written Contract Change Order to amend the Contract Price or Time through the Bulletin authorization process. If the Owner decides to disagree with the Contractor and the Contractor disagrees with the Owner's decision, the Contractor must complete the Work and may deliver notice of a claim in accordance with the claim submittal process. No proposal or claim by the Contractor due to differing site conditions will be allowed (a) if the Contractor knew of their existence before submitting its Bid or if those conditions could have been discovered by any reasonable examinations for which the Contractor, as Bidder, was made responsible under the Bidding Requirements and/or (b) unless the Contractor's written notice is provided within not more than 21 days after the contractor first recognizes the condition giving rise to the proposal or claim and gives the Owner adequate opportunity to investigate the asserted differing site conditions. A full and detailed breakdown of cost and time requested, with supporting documentation, if not provided with the initial notice shall be delivered to the Professional and Owner within 15 days of the notice, unless otherwise agreed in writing, by the Owner prior to expiration of such time.

6.3 Responsibilities for Underground Utilities: The Contractor must comply with the 2013 PA 174, as amended, MCL 460.721 et seq., and all other Laws concerning Underground Utilities. Before performing site Work, all Underground Utilities, lines, and cables (public and private) must be located and marked. The Contractor must notify MISS DIG to locate and mark utilities on properties that are not State properties. In addition, the Contractor must be responsible for immediately notifying the Owner of any contact with or damage to Underground Utilities, and for the safety, protection of and repairing any damage done to any Work, surface, and subsurface facilities. If the Contractor encounters Underground Utilities that inaccurately located by the Contract Documents or not previously located/located, which could not be reasonably have been seen, the Owner may issue a written Contract Change Order to amend the Contract Price or Time through the Bulletin authorization process.

6.4 Hazardous Material Conditions: If the Contractor encounters material reasonably believed to be Hazardous Material, which was not described in the Drawings and/or Specifications and was not generated or brought to the site by the Contractor, the Contractor shall immediately stop all affected work, give written notice to the Owner of the conditions encountered, and take appropriate health and safety precautions in accordance with all federal, state, and local laws. Upon receipt of the notice, the Owner will investigate the conditions and (a) may stop the Work and terminate the affected Work or the Contract for convenience; (b) may contract others to have the Hazardous Material removed or rendered harmless or (c) issue a written Contract Change Order to amend the Contract Price/Time through the Bulletin authorization process. If the Hazardous Material is brought to site by the Contractor or as a result in whole or in part from any of its violation of any Law covering the use, handling, storage, disposal of, processing, transport and transfer or from any other act or omission within its control, the Contractor is responsible for the Delay and costs to clean up the site, remove and render harmless the Hazardous Material to the satisfaction of the Owner, State and all Political Subdivisions with jurisdiction.

6.5 Incidents with Archaeological Features: The Contractor must immediately notify the Owner in writing of any Archeological Feature deposits encountered at the site and must protect the deposits in a satisfactory manner. If the Contractor encounters such features, which result in an anticipated change to the Contract Price/Time, the Owner may issue a written Contract Change Order through the Bulletin authorization process.

6.6 Unit Price Work: Quantities as listed have been carefully estimated but are not guaranteed. The Owner reserves the right to increase or decrease the quantities of the Work to be performed at the Unit Price by amounts up to 20 percent of the listed estimated quantities. For Unit Price Work, the Contractor must promptly inform the Professional in writing if actual quantities differ from the estimated quantities for any item. For quantities over 120% or below 80% of the estimated quantity, the Owner may negotiate a Unit Price with the Contractor, or direct a unilateral change, or bid that Work under separate contract. Any adjusted Unit Price agreed upon by the Owner will only apply to the actual quantities above 120% or below 80% of the estimated quantity. No adjustment due to quantity variations must be allowed (a) unless the Contractor met the notice requirements, or (b) if any Unit Price increase results in whole or in part from any act or omission within the control of the Contractor (errors in the Contractor's Bid, unbalanced Unit Prices, etc.). If a dispute arises between the Owner and the Contractor on the adjusted Unit Price, the Contractor must carry on the Work with due diligence during the disputes/disagreements.

6.7 Cash Allowances; Provisionary Allowances: The Contractor must obtain the Professional's and Project Director's written acceptance before providing materials, equipment, or other items covered by Cash Allowance. Work authorized under any Provisionary Allowance may consist of (a) changes required by actual conditions, as determined by the **Professional**, and (b) any other Work authorized and completed under the pertinent provisions of the Contract Documents.

6.8 Changes in Contract Price:

6.8.1 The Contractor's proposals or claims for Work Involved must detail all affected items of Work, whether increased, revised, added, or deleted, and must be fully documented and itemized as to (a) individual adds and deducts in Work quantities and labor man-hours; (b) corresponding itemized cost of Work Involved; (c) materials and equipment cost including transportation, storage, and suppliers' field services; and (d) Fee.

6.8.1.1 No proposal or claim by the Contractor on account of any asserted change not issued as a Bulletin by the PSC or Owner, shall be allowed unless initiated by written notice of such proposal or claim to the Professional and Owner within 21 days after the occurrence of the event giving rise to the proposal or claim. A full and detailed breakdown of cost and time requested, with supporting documentation, if not provided with the initial notice shall be delivered to the Professional and Owner within 15 days of the notice, unless otherwise agreed in writing, by the Owner prior to expiration of such time.

6.8.2 For Contractor's proposals or claims for adjustments in Contract Price arising from Delays, the Contractor's estimates must be as comprehensive and detailed as may be appropriate to support the proposal or claim. Examples of related information include labor manpower levels, production data and Progress Schedule revision.

6.8.3 If the Contract Documents use lump sum or Unit Prices for the Work Involved, those prices must be used in estimating the price change. Otherwise, the Owner may direct the Contractor to proceed (a) on a negotiated lump sum; or (b) on an actual cost basis with or without a guaranteed maximum; or (c) through a unilateral Change Order on a lump sum basis or a not-to-exceed basis, based on the Professional's estimate of the anticipated Cost of the Work Involved and a fee. Items making-up the Cost of the Work Involved must be allowable to the extent (a) consistent with those prevailing in the Project locality, (b) necessary, reasonable, and clearly allocable to the Work Involved, and (c) limited to labor costs, subcontract costs, material and equipment costs, construction equipment costs and general conditions costs.

- 6.8.4 In estimating any additional cost by the Contractor or its Subcontractor, the rates for the craft labor man-hour used in estimating changes in Contract Price must not exceed the rates in Means Cost Data (Means) or other cost guide acceptable to the Owner. If the rates exceed the acceptable cost guides, the Contractor must provide proper justifications acceptable to the Professional and the Owner. The payroll costs may be used to quote a Bulletin. However, the payroll costs must include wages, labor burdens and a factor for field supplies and purchase costs (less market values if not consumed) of tools not owned by the workers. Labor burdens must be certified by an authorized financial representative of the Contractor and may include social security, unemployment, taxes, workers' compensation, health and retirement benefits, vacation, and holiday pay. The factor for field supplies and tools (individually valued at less than \$1,000.00) must not exceed 4% of the wages without burdens, unless detailed data, which supports higher costs, is provided. Rates for owned, rented, or leased construction equipment must be in accordance with the contract price rates. Otherwise, the appropriate hourly, daily, weekly, or monthly rates listed in Means must be used. However, if the total rental or lease cost of an item to the Project exceeds the reasonable purchase price of the rented or leased item, the Owner reserves the right to pay only the purchase price of the item and take title to the item. Operating cost must not exceed the hourly operating rate in Means and for multiple shifts, rates must not exceed the shift work adjustments recommended in the cost guide.
- 6.8.5 The cost of any Work Involved may include necessary general conditions costs to the extent those costs increase or decrease on account of, or are directly attributable to, the performance of the furnishing and/or performance of the additional Work Involved or are required due to an extension in Contract Times or Delays. Such costs may include payroll costs of personnel, temporary facilities at the site, liability insurance and bond premiums, Subcontractors, royalty payments and fees for permits and licenses and taxes on the Work Involved.
- 6.8.6 A contractor or subcontractor who performs the Work may charge a fee of up to 15% of the cost of Work involved for overhead and profit. Contractor may charge a mark-up fee of up to 5% of its Subcontractor's cost excluding fees if the Work is performed by the Subcontractor. If Work is to be performed by lower tier subcontractor(s), intermediate subcontractors and the Contractor must share a fee of up to 5% of the lowest tier subcontractor's cost excluding fees. The total mark-up fees for the Work must not exceed 20% of the lowest tier subcontractor's cost excluding fees. If the adjustment to the Contract Price incorporates a contractor reservation of rights to claim additional adjustments, the fees must be reduced by one-third. Contractor's administrative costs and home office overhead must be non-reimbursable expenses covered by the Fee for the Work.

6.9 Changes in Contract Time:

- 6.9.1 If a justified extension beyond the Contract Time is not reasonably anticipatable under the circumstances, the Owner may approve an extension to the Contract Time through the Bulletin authorization process at no additional cost to the Owner. Examples of events that may justify an extension in the Contract Time include acts of God; acts of the public enemy; fires; floods; and strikes.
- 6.9.2 If, at any time during the life of this Contract, the Contractor finds that for reasons beyond its control, it will be impossible to complete the Work on or before the Contract completion date, a written request for a change to the Contract extending the time of completion must be submitted. Such a request must set forth in precise detail the reasons believed to justify an extension and must be in such format as the State may require.
- 6.9.3 When submitting a quotation for a Contract change authorization for extra work or change in plans, the Contractor must include as part of the quotation, a statement requesting any extra time necessary to complete the related Work. Lack of such a statement will serve as notification that the extra time will not be required to complete the Contract work and will waive the right to a later claim. The Owner will not pay additional compensation to the Contractor for performing Contract Work during any extension period granted.
- 6.9.4 If the Progress Schedule and the funding allow for an early completion date, the Contractor may submit to the Owner for approval, a request to shorten the Contract Time. If approved by the Owner, the new Contract Time applies to the Project and liquidated damages, if any, will be assessed for any delays after the new completion date.

- 6.10 Price Reduction for Defective Cost or Pricing Data:** Whenever the Contractor signs a proposal for a change in the Contract or claim settlement, the Contractor will be deemed to have certified on behalf of itself, Subcontractors and Suppliers, to its best knowledge and belief that the proposal and its contents (a) were made in good faith and are consistent with the facts and the provisions of the Contract; and (b) are current, complete, and accurate. If the Contract Price/Time is increased by any Change Order, claim or dispute settlement because the Contractor, Subcontractor or Supplier, at any tier, represented or furnished cost or pricing data of any kind that were false, contained math errors or were incomplete, the Contract Price must be correspondingly reduced by Change Order. If there is a good cause to doubt the Contractor's compliance with the Defective cost and pricing data requirements, the Owner must be entitled to make an appropriate withholding from any payment otherwise owed to the Contractor.

7. Payments

- 7.1 Schedule of Values:** The Schedule of Values must be approved by the Professional and accepted by the Owner and must divide the Work into pay items for significant Sections and areas, facilities, or structures, with subtotals for first tier Subcontractors. As required or as noted in Division 1, the accepted Schedule of Values must be supported by a more detailed breakdown allocating the pay items to the Progress Schedule Activities. It must tabulate labor costs, Subcontract costs and material and equipment costs. Labor costs must include appropriate sums for construction equipment costs, general conditions costs, administrative costs, and profit, unless separate pay items are itemized for those costs. The Schedule of Values must include two percent of the Contract Price for each of the following close-out pay items: (a) fire safety inspection, certificate of occupancy and other code approvals, as specified in the Contract Documents, (b) manufacturer warranties, finalized operating and maintenance documentation, Owner training documentation, and test and balance reports, and (c) finalized as built/Record Documents.
- 7.2 Requests for Payment:** Not more than once every thirty Calendar Days, the Contractor may submit to the Professional a Request for Payment on the Owner's form signed by the Contractor certifying Work completed and enclosing all supporting documentation. A draft copy of the payment request must be submitted to the Owner Field Representative for review and comments. For projects under \$50,000, the Contractor may not submit more than two requests in addition to the final payment request. Each Request for Payment must certify that all monies owed by the Contractor to Subcontractors and Suppliers for which payment previously has been sought has been paid from payments received and include a sworn statement. No Request for Payment must include amounts for a Subcontractor or Supplier if the Contractor does not intend to use the payments requested, when received, to reduce the Contractor's outstanding obligations on the Work. The Owner will pay the Contractor within thirty Calendar Days after the Owner receives and approves a certified Request for Payment from the Professional. The Contractor will provide a certification in writing that the payment request submittal is true and accurate. If payment is requested based on materials and equipment stored at the site or at another location agreed to in writing, the Request for Payment also must be accompanied by (a) consent of surety, (b) a bill of sale, invoice or other documentation warranting that the 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 and other arrangements to protect them and the Owner's interests. The Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Request for Payment, whether incorporated in the Work or not, will pass to the Owner free and clear of all liens no later than at the time of payment by the Owner to the Contractor.
- 7.2.1 Electronic Funds Transfer:** The State will only disburse payments under this Contract through Electronic Funds Transfer (EFT). Contractor must register with the State at <http://www.michigan.gov/SIGMAVSS> to receive electronic fund transfer payments. If Contractor does not register, the State is not liable for failure to provide payment. Without prejudice to any other right or remedy it may have, the State reserves the right to set off at any time any amount then due and owing to it by Contractor against any amount payable by the State to Contractor under this Contract.
- 7.3 Review of Request for Payment; Intent of Review:** Within ten Calendar Days after receipt of a Request for Payment, the Professional must certify to the Owner the amount the Professional determines to be due or must return the Request for Payment to the Contractor indicating the reasons for withholding certification. The Professional's certification of any Request for Payment constitutes a representation to the Owner that the Work has progressed to the point indicated; that to the best of the Professional's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents; and that the Contractor is entitled to payment in the amount certified. In the case of final payment, the Professional's certification of final payment and recommendation that the Work is acceptable must be a further representation that conditions governing final payment to the Contractor have been met.
- 7.4 Refusal to Make or to Recommend Payment:** The Owner may withhold from any payment an amount based on the (a) Professional's refusal to recommend payment or (b) Owner's estimate of the fair value of items included in the payment request. The Owner will give the Contractor reasonably prompt written notice supporting such action. The Professional may refuse to recommend any part of any payment, or because of subsequently discovered evidence, inspections or tests or the value of the Punch List, nullify all or any portion of any payment previously recommended, as the Professional may consider necessary to protect the Owner from loss because:
- (a) the Work is Defective or completed Work has been damaged requiring correction or replacement,
 - (b) a defective work/non-compliance notice has not been acknowledged by the Contractor,
 - (c) the Contract Price has been reduced by Change Order,
 - (d) it has been necessary that the Owner correct Defective Work or complete Work,
 - (e) reasonable evidence exists that all or a part of the Work will not be completed within the corresponding Contract Time,
 - (f) the Contractor failed to comply with any material requirements of the Contract, including, but not limited to the failure to submit Progress Schedule Submittals or as built/Record Documents when due,
 - (g) stored materials for which payment has been made or is sought has been determined by the Professional or the Owner Field Representative to be damaged or missing, or
 - (h) the Professional reasonably believes or knows of the occurrence of an event justifying termination for cause.
- 7.5 Request for Final Inspection:** The Contractor must complete the Substantial Completion Punch List within the Contract Time and date. The Contractor must assemble all required documentation before requesting final inspection in writing.

- 7.6 The Contractor may request final inspection of the entire Work, or the part of the Work for which final payment is specified in the Contract Documents. Upon this written notice, and if deemed appropriate by the professional, the Professional will make a final completion inspection with the Owner and Contractor and notify the Contractor of all incomplete or Defective Work revealed by the Final Inspection. The Contractor must immediately correct and complete the Work.
- 7.6 **Close-out Documents:** The Contractor must prepare and submit the following documentation before requesting final inspection or final payment: final operating and maintenance documentation (with revisions made after Substantial Completion), warranties, inspection certificates, as built/Record Documents, release of payment claim forms, and all other required documents.
- 7.7 **Request for Final Payment:** The Contractor may request final payment after correcting or completing the Work to the satisfaction of the Professional and delivering close-out documentation (7.6). The Contractor's request for final payment must also enclose:
- (a) evidence of completed operations insurance and an affidavit certifying that the insurance coverage will not be canceled, materially changed, or renewal refused,
 - (b) an affidavit certifying that the surety agrees that final payment does not relieve the surety of any of its obligations under the Performance Bond and Payment Bond,
 - (c) a completed DTMB-0460 Form close out checklist,
 - (d) a list of all pending insurance claims arising out of or resulting from the Work being handled by the Contractor and/or its insurer
 - (e) Contractor's 'Guarantee and Statement' (DTMB-0437) containing a statement of guaranteed indebtedness acceptable to the Owner in the full amount of the Contract Price, or a release of payment claims in the form of a release of liens, or a Bond or other security acceptable to the Owner to indemnify the Owner against any payment claim.
- 7.8 **Final Payment and Acceptance:** If the Professional is satisfied that the entire Work, or the part of the Work for which final payment is specified in the Contract Documents, is complete and the Contractor's other obligations under the Contract Documents has been fulfilled, the Professional will furnish to the Owner and Contractor the Professional's certification of final payment and acceptance within thirty Calendar Days after receipt of the final payment request. If the Professional is not satisfied, the Professional will return the request to the Contractor indicating in writing the reasons for not certifying final payment. If the final payment request is returned, the Contractor must correct the deficiencies and re-request final payment. If the Owner concurs with the Professional's certification of final payment the Owner will, within thirty Calendar Days after receipt of the Professional's certification of final payment, pay the balance of the Contract Price subject to those provisions governing final payment specified in the Contract Documents. If the Owner does not concur with the Professional's determination, the Owner will return the request for final payment to the Contractor with written reasons for refusing final payment and acceptance.
- 7.9 **Contractor's Continuing Obligation:** The following does not constitute acceptance of the Work in the event the Work or any Work is not in accordance with the Contract Documents, and therefore does not release the Contractor from its obligation to perform and furnish the Work in accordance with the Contract Documents:
- (a) a certification by the Professional of any Request for Payment or final payment.
 - (b) the issuance of a Substantial Completion certificate.
 - (c) any payment by the Owner to the Contractor.
 - (d) any Partial Use.
 - (e) any act of acceptance by the Owner or any failure to do so.
 - (f) any review and approval of a Shop Drawing, sample, test procedure or other Submittal.
 - (g) any review of a Progress Schedule.
 - (h) any On-Site Inspection.
 - (i) any inspection, test, or approval.
 - (j) any issuance of a notice of acceptability by the Professional; or
 - (k) any correction of Defective Work or any completion of Work by the Owner.
- 7.10 **Waiver of Claims:** The making of final payment does not constitute a waiver by the Owner of any rights as to the Contractor's continuing obligations under the Contract Documents, nor will it constitute a waiver of any claims by the Owner against the Contractor still unsettled, or arising from unsettled payment claims, Defective Work appearing after final inspection or failure by the Contractor to comply with the Contract Documents or the terms of any special warranties provided by the Contract Documents or by Law. The acceptance of final payment will constitute a waiver of all claims by the Contractor against the Owner, other than those claims previously made in writing, on a timely basis.
8. **Other Work:** During the Contract Time, the Owner may self-perform or Contract for other work at the site. By doing so, the Owner or its representative will coordinate the operations of the Contractor and the other work. Whenever the other work interfaces with the Contractor's Work on site, the Contractor must coordinate its activities with the interfacing work, inspect the other work and promptly report to the Professional in writing if the other work is unavailable or unsuitable. The Contractor's failure to do so will constitute an acceptance of such other work as fit and proper for integration with the Work except for latent or non-apparent defects and deficiencies in the other work. The Contractor must provide proper and safe access to the site for handling, unloading and storage of their materials and equipment and for the execution of the other work.

The Contractor must do all cutting, fitting, patching, and interfacing of the Work that may be required to make any part of the Work come together properly and integrate with other work. If the Contractor becomes party to a dispute or claim due to damages caused to its Work/property or other work/their property, the Contractor must promptly attempt, without involving the Owner or the Professional or their agents, to settle with the other party by agreement or otherwise resolve the claim. If the Owner determines that the other work resulted in a delay to the Work to be performed by the Contractor and such delay justifies a Change Order, the Owner will authorize the necessary adjustment in Contract Price and/or Time.

9. Stop Work Orders and Suspension of Work: The Owner may order the Contractor in writing to defer, stop, suspend, or interrupt all or part of the Work, in the event any of the following situations:

- (a) any Work is Defective,
- (b) any Work, when completed, will not conform to the Contract Documents,
- (c) any materials or equipment are unsuitable,
- (d) any workers are insufficiently skilled,
- (e) failure of the Contractor to implement appropriate measures for the SESC, or
- (f) as the Owner may determine appropriate for its convenience. The Contractor is responsible for the Delays and any additional costs if at fault. Any justified increase in Contract Price/Time due to suspension of Work must be submitted within twenty-one Calendar Days of knowing the extent of Delays and before submitting the final payment.

10. Termination:

10.1 Termination for Breach: The Owner may elect to terminate all or any part of the Work if:

- (a) the Contractor fails to complete the Work, or a specified part of the Work, within the corresponding Contract Time; fails or refuses to supply sufficient management, supervision, workers, materials, or equipment; or otherwise fails to prosecute the Work, or any specified part of the Work, with the diligence required to comply with the Contract Time(s).
- (b) the Contractor persistently disregards the authority of the Professional or violates or disregards a provision of the Contract Documents or the Laws of any Political Subdivision with jurisdiction.
- (c) the Contractor admits in writing, or the Owner otherwise establishes, the Contractor's inability or refusal to pay the Contractor's debts generally as they become due.
- (d) in response to the Owner's demand, the Contractor fails to provide adequate, written assurance that the Contractor has the financial resources necessary to complete the Work within the Contract Time.
- (e) the Contractor fails to comply with the Michigan Residency requirements (1984 PA 431, as amended, MCL 18.1241a); or is found to be in violation of Section 4 of 1980 PA 278 concerning unfair labor practices, or any nondiscrimination requirements imposed by Law.
- (f) at any time, the Contractor, Subcontractor or Supplier is in violation of unfair labor practices prohibited by Section 8 of Chapter 327 of the National Labor Relations Act, 29 U.S.C. 158; or
- (g) the Contractor violates or breaches any material provision of the Contract Documents, which provides contractually for cause termination or rescission of the Contract or of the Contractor's right to complete the Work.

Within seven Calendar Days after the Contractor receives a notice requiring assurance of due performance for any of the above occurring non-conformances, the Contractor must meet with the Owner and present the Contractor's plan to correct the problems. If the Owner determines that the Contractor's plan provides adequate assurance of correction, that determination does not waive the Owner's right to subsequently default the Contractor or affect any rights or remedies of the Owner against the Contractor and/or surety then existing or that may accrue in the future. The Owner, after giving the Contractor and surety seven Calendar Days' written notice of intent to default, may declare the Contractor in default and terminate the services of the Contractor for cause. Unless otherwise agreed between the Owner and Contractor, at the expiration of the Seven-Calendar Day (intent to default) period, the Contractor must immediately stop all Work and proceed in accordance with the Owner's instructions. Following the expiration of the Seven-Calendar Day (intent to default) notice, the Contractor will be sent a default letter – notice of termination for cause. The Owner will issue a Contract Change Order to revise the name of the contract party to the name of the surety company. The surety company must undertake to perform and complete the Work, in accordance with the Contract Documents, in place of the Contractor, either through the surety's agents or by executing agreements with qualified contractors (excluding the Contractor and any of the Contractor's affiliates), or both.

The Owner may issue a fifteen-Calendar Day notice of intent to default the surety company if they fail to execute in a timely manner the completion of the Contract Work. Without an adequate plan of correction, the Owner may issue a notice of termination for cause letter to the surety. If a termination of the contract with the surety occurs, the Owner reserves the right to complete the Work.

If the Owner has terminated the Contractor, any such termination will not affect any rights or remedies of the Owner against the Contractor or surety, or both, then existing or that may accrue after termination. All provisions of the Contract Documents that, by their nature, survive final acceptance of the Work must remain in full force and effect after a termination for cause of the Contractor or default of the surety, or both. The Owner may, in its sole discretion, permit the Contractor to continue to perform Work when the Contractor is in default or has been defaulted. Such decision by the Owner in no way operates as a waiver of any of the Owner's rights under the Contract Documents or Performance Bond, nor in the event of a subsequent default, entitle the Contractor or surety to continue to perform or prosecute the Work to completion.

- 10.2 Termination on Non-Bonded Project:** For non-bonded projects, the Owner will follow the termination protocol in Paragraph 10.1 without involving a surety.
- 10.3 Termination for Convenience of the Owner:** Upon fifteen Calendar Days' written notice to the Contractor and surety, or sooner if reasonable under the circumstances, the Owner may, without cause and without prejudice to any other right or remedy it may have, elect to terminate any part of the Work, or the Contract in whole or in part, as the Owner may deem appropriate for its convenience. Upon receipt of any such termination notice, the Contractor must immediately proceed in accordance with any specific instructions, protect and maintain the Work, and make reasonable and diligent efforts to mitigate costs associated with the termination. In such termination, the Contractor must be paid in accordance with the terms of this Contract for only services rendered before the effective date of termination. Upon termination for convenience, the Contractor must be released from any obligation to provide further services and the Owner must have full power and authority to take possession of the Work, assume any agreements with Subcontractors and Suppliers that the Owner selects, and prosecute the Work to completion by Contract or as the Owner may deem expedient.
- 10.4 Termination for Lack of Funding:** If expected or actual funding is withdrawn, reduced, or limited in any way before the completion date set forth in this Contract or in any amendment, the State may, upon written notice to the Contractor, terminate this Contract in whole or in part in accordance with Paragraph 10.3.
- 11. Disputes:** All claims, counterclaims, disputes, and other matters in question between the Owner and Contractor arising out of or relating to the Contract Documents must be submitted in writing to the Professional and otherwise processed and resolved as provided in this Article. *Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker (Professional/PSC). Claims by either party must be initiated within 21 days after the occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognized the condition giving rise to the claim. Provided such timely notice is delivered, a full and detailed breakdown of cost and time requested, with supporting documentation, if not provided with initial notice shall be delivered to Professional and Owner within 15 days of the notice, unless otherwise agreed in writing, by the Owner prior to expiration of such time.* The Contractor must carry on the Work with due diligence during all disputes or disagreements. Work must not be delayed or postponed pending resolution of any disputes or disagreements. The Contractor must exercise reasonable precautions, efforts, and measures to avoid situations that would cause delay.
- 11.1 Notice of Claim:** Except for Owner claims for liquidated damages, no claim is valid unless it is based upon written notice delivered by the claimant to the other party and the Professional/PSC within 21 days of the event giving rise to the claim. The notice must state the nature of the dispute, the amount involved, if any, and the remedy sought. The claim submittal with all supporting data must be delivered within thirty (30) Calendar Days after the initial notice unless the Professional allows an extension by written approval. A claim by the Contractor must be submitted to the Professional and Project Director for a recommendation or decision from the Professional. A claim by the Owner must be submitted to the Contractor and the Professional for a written recommendation or decision by the Professional. The Owner reserves the right to audit any Contractor claim (or claim package) that the Contractor values at more than \$50,000.00. Pending final resolution of any claim under this Article, the Contractor must proceed diligently with the Work and comply with any decision of the Owner and/or Professional. For all Contractor claims seeking an increase in Contract Price or Contract Time, the Contractor must submit an affidavit, certifying that the amount claimed accurately reflects any Delay and all costs that the Contractor is entitled from the occurrence of the claimed event and that supporting cost and pricing data are current, accurate, complete and represent the Contractor's best knowledge and belief. The affidavit must be signed in the same manner as required in Item 6 of Section 00100.
- 11.2 Recommendations or Decisions from the Professional:** For claims under \$100,000.00, if requested in writing by the Contractor, the Professional will render a recommendation or decision within thirty Calendar Days after the request and the Owner will issue, if necessary, a determination within thirty Calendar Days after the Professional's recommendation or decision. For claims exceeding \$100,000.00, the Professional will issue its recommendation or decision and the Owner, if necessary, will issue its determination, within sixty Calendar Day.

If the Professional denies a Contractor claim or agrees with an Owner claim, that decision must be final and binding on the Contractor, without any determination by the Owner, unless the Contractor files a request for a presentation with the Director-DCD within thirty Calendar Days. To the extent that any recommendation from the Professional is partly or wholly adverse to a claim from the Owner, that determination must be final and binding on both the Owner and Contractor unless either party files a request for a presentation with the Director-DCD within thirty Calendar Days. If the Professional recommends payment of any Contractor claim which increases the Contract Price, that recommendation is subject to the Owner's written approval. In the event any such determination from the Owner is partly or wholly adverse to the preceding recommendation from the Professional, that determination must be final and binding on the Contractor unless the Contractor files suit in the Michigan Court of Claims within thirty Calendar Days after receipt of such determination. The claim is waived if not made in accordance with these requirements.

If either the Contractor or Owner is not satisfied with any decision of the Professional on a claim, that party must, within thirty Calendar Days of receiving that decision, file a written appeal with complete supporting documentation with the Director-DCD. The Director-DCD has discretion concerning the allowability of evidence submitted and is not bound to any rules of evidence. If the right to a presentation is waived or if a presentation is conducted and the dispute remains unresolved, the Director-DCD, at the Director-DCD's sole option, must specify in which forum the dispute must be conducted by issuing a written determination to the Contractor that the dispute if the Contractor so elects, be submitted in writing to the Michigan Court of Claims.

The Director-DCD's determination on the dispute is final and binding on the Contractor unless the Contractor files a lawful action in the Michigan Court of Claims within thirty Calendar Days after receiving the Director-DCD's determination. After settlement or final adjudication of any claim, if payment by the Contractor is not made to the Owner, the Owner may offset the appropriate amounts against (a) payments due to the Contractor under any other Contract between the Owner and the Contractor, or (b) any amounts for which the Owner may be obligated to the Contractor in any capacity. The Director-DCD may designate someone to fulfill the Director-DCD's duties under these terms and conditions.

END OF SECTION 00700

SECTION 00750 SPECIAL WORKING CONDITIONS

1. The Work is for the Department of Natural Resources and their special working conditions are included in Appendix II. Contractor must comply with all security regulations. Access to and egress from the buildings and State Agency grounds must be via routes specifically designated by the State Agency. Whenever the Contractor has caused an operating security or fire system to go out of service or left unsecured openings in existing facilities or security fences, the Contractor must furnish a security guard or fire watch acceptable to the Owner to maintain security of the facility outside of normal working hours and will be held responsible for any losses from the facility.
2. The Contractor must maintain, at all times, dust control measures to the satisfaction of the Owner.

END OF SECTION 00750

SECTION 00800 SUPPLEMENTARY CONDITIONS

1. The following conditions must supplement the general conditions:

END OF SECTION 00800

SECTION 00900 ADDENDA

1. Each Bid submittal must include acknowledgement of receipt and review of all Addenda issued during the Bidding period.

END OF SECTION 00900

DIVISION 01

GENERAL REQUIREMENTS

SECTION 01010 SUMMARY OF WORK

1. General

1.1 General information covering the "Scope of Work" is specified on the Invitation to Bid. Additional information is as follows:

(a).

1.2 The Agency will provide the following Work:

(a) State Salvage: The State reserves the right to salvage certain items and equipment and those salvaged items will be identified to the Bidder at the time of their inspection of the proposed Work. The State will remove salvaged items before commencement of the Work.

(b) Moving Furnishings and Equipment: The Contractor must give timely notice to the State Agency representative identified in the pre-construction meeting of all furnishings, window covering and movable equipment that will interfere with the Work or which the Contractor cannot protect with coverings of paper, plastic, drop cloths or clean tarpaulin. The Contractor must furnish, install, maintain, and remove all coverings used to protect furnishings, window coverings and movable equipment.

END OF SECTION 01010

SECTION 01020 ALLOWANCES

1. Allowances

1.1 Cash Allowances:

- (a) Bidders must include in their Base Proposal Sum an allowance of \$ 0 to cover *** specified in Section ***. The base bid shall include bonds and insurance on the value of the allowance.
- (b) Monies in the allowance will be used only if directed in writing by the Project Director and Professional.
- (c) Payments under a Cash Allowance must be on actual cost and exclude cost for supervision, handling, unloading, storage, installation, testing, fee, premiums for bond and insurance, etc.
- (c) Unused allowances will be deducted from the contract amount through contract change order.

1.2 Provisional/Contingency Allowances:

- (a) Bidders must include in their Base Proposal Sum a contingency allowance of \$35,000.00. The base bid shall include bonds and insurance on the value of the allowance.
- (b) Monies will be used in the contingency allowance only if directed in writing by the Project Director and Professional.
- (c) Payments under a Provisionary Allowance will include not only the purchase/furnished cost of the materials and equipment involved, but also all related labor costs, subcontract costs, construction equipment costs, general conditions costs and Fee, provided they are calculated in accordance with the requirements of the contract documents.
- (c) Unused allowances will be deducted from the contract amount through contract change order.

END OF SECTION 01020

SECTION 01025 MEASUREMENT AND PAYMENT

- 1. **Schedule of Values:** Unless noted otherwise, before mobilization and start of construction, the Contractor must submit a Schedule of Values to the Professional for review and approval, of the various tasks that must be performed to complete all the Work. The schedule must show each task and the corresponding value of the task, including separate monies allocated for General Condition items and Project close-out. The aggregate total value for all tasks must be equal to the total Contract sum.

END OF SECTION 01025

SECTION 01030 ALTERNATES

- 1. **Use of Alternates:** Determination of the lowest three Bidders shall be based on the sum of the Base Bid and any additive and deductive Alternates the Owner accepts, in the order in which they are listed only. The Owner will accept an Alternate only if all other previously listed Alternates are also accepted unless acceptance by the Owner of Alternates in a different order does not affect determination of the lowest three bidders in any way.
- 2. **Execution:** (a) Coordinate pertinent related Work and modify surrounding work as required to complete the Project for each alternate.

END OF SECTION 01030**SECTION 01040 COORDINATION****1. Project Coordination:**

- (a) Before beginning Work the Contractor must coordinate with the State Agency representative to implement the schedule for the Project. Once the Project is started, it must be carried to completion without delay. (b) Any building utility service interruptions or outages including security required by the Contractor in performing the Work must be prearranged with the staff of the State Agency and must occur only during those scheduled times. (c) The Contractor is not responsible for removing room furnishings unless is required by the Contract Documents.

2. Cutting and Patching:

- (a) The Contractor must do all cutting, fitting, or patching of the Work that may be required to make its several parts fit together properly or make new Work join with the existing structure. The Contractor must take proper precautions so as not to endanger any existing Work. The Contractor must not cut or alter existing structural members or foundations unless specifically required by the Contract Documents.
- (b) Holes or openings cut in exterior walls and roofs for installation of materials or equipment must be waterproofed by appropriate, approved materials and methods.
- (c) All adjacent finished surfaces that are damaged by the new Work must be patched with materials matching existing surfaces. Joints between patched and existing material must be straight, smooth, and flush. Workers skilled in its installation must apply all patching material.

END OF SECTION 01040**SECTION 01050 FIELD ENGINEERING**

1. When applicable, the Contractor must employ a surveyor who must establish and maintain all lines and levels required for laying out and constructing the Work. The Contractor agrees to assume all responsibility due to inaccuracy of any Work of the surveyor, and including incorrect benchmarks, their loss or disturbance. Upon completion of the Project, the Contractor must submit two copies of site layout Drawings prepared for the Project and certified by the surveyor.

END OF SECTION 01050**SECTION 01060 REGULATORY REQUIREMENTS**

1. **Laws:** The Contractor and its Subcontractors/Suppliers must comply with all Federal, State, and local Laws applicable to the Work and site.
2. **Codes:** All Works must be provided in accordance with the State Construction Code Act, 1972 PA 230, as amended, MCL 125.1501 et seq., International Building and Residential Codes and all applicable Michigan construction codes and fire safety including but not limited to: Michigan Building Code, Michigan Residential Code, Michigan Uniform Energy Code, Michigan Electrical Code, Michigan Rehabilitation Code for Existing Buildings, Michigan Mechanical Code, Michigan Elevator Code and Michigan Plumbing Code. If the Contractor observes that any Contract Document conflicts with any Laws or the State Construction Code or any permits in any respect, the Contractor must promptly notify the Professional in writing. If the Contractor provides any Work knowing or having to reason to know of such conflict, the Contractor must be responsible for that performance.
3. **Permits:** All required construction permits must be secured and their fees including inspection costs must be paid by the Contractor. The time incurred by the Contractor in obtaining construction permits must constitute time required to complete the Work and does not justify any increases to the Contract Time or Price, except when revisions to the Drawings and/or Specifications required by the permitting authority cause the Delays. The Contractor must pay all charges of Public Utilities for connections to the Work, unless otherwise provided by Cash Allowances specific to those connections. The following permit fees will be paid by the Owner: [Permit fees to be paid by the Contractor](#).
4. **Taxes:** The Contractor must pay all Michigan sales and use taxes and any other similar taxes covering the Work that are currently imposed by legislative enactment and as administered by the Michigan Department of Treasury, Revenue Division. If the Contractor is not required to pay or bear the burden or obtains a refund of any taxes deemed to have been included in the Bid and Contract Price, the Contract Price must be reduced by a like amount and that amount, whether as a refund or otherwise, must ensure solely to the benefit of the State of Michigan.
5. **Safety and Protection:** The Contractor and its Subcontractors/Suppliers must comply with all applicable Federal, State, and local Laws governing the safety and protection of persons or property, including, but not limited to the Michigan Occupational Safety and Health Act (MIOSHA), 1974 PA 154, as amended, MCL 408.1001 et seq., and all rules promulgated under the Act. The Contractor is responsible for all damages, injury or loss to the Work, materials, equipment, fines, penalties as a result of any violation of such Laws, except when it's due to the fault of the Drawings or Specifications or to the Act, error, or omission of the

Owner or Professional. The Contractor is solely responsible for initiating, maintaining, and supervising all safety precautions and programs and such responsibility must continue until such time as the Professional is satisfied that the Work, or Work inspected, is completed and ready for final payment. In doing the Work and/or in the event of using explosives, the Contractor must take all necessary precautions for the safety of, and must erect and maintain all necessary safeguards and provide the necessary protection to prevent damage, injury or loss to: (a) all employees on the Work and other persons who may be affected by the Work, (b) all the Work and materials and equipment to be incorporated into the Work, whether stored on or off the site, and (c) other property at or adjacent to the site, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Utilities not designated for removal, relocation or replacement. In the event of severe weather, the Contractor must inspect the Work and the site and take all reasonably necessary actions and precautions to protect the Work and ensure that public access and safety are maintained.

6. Fire Hazard Conditions:

- (a). The fire hazard classification of finish materials where used in the specification must be in accordance with the current Michigan Building Code.
- (b) Classification must be determined by tunnel test in accordance with National Fire Protection Association (NFPA-255), American Society for Testing Materials (ASTM E-84) or Underwriters' Laboratories, Inc. (UL-723).

7. Flame/Smoke Resistance Standards: The Contractor must provide carpeting complying with "Class B" requirements as set forth in Michigan Department of State Police State Fire Safety Board "Health Care Facilities Fire Safety Rules" R29.1243, Rule 243, when tested in accordance with the following procedures:

- (a) Tunnel Test: Test for surface burning characteristics, with ratings for flame spread, fuel contribution, and/or smoke density; ASTM E 84, UL 723, or NFPA No. 255.
- (b) Pill Test: Test for flammability; ASTM D 2859, or DOC FF-1-70.
- (c) Floor Radiant Panel Test: Test for burning under varying radiant energy levels; ASTM E 648, with minimum average radiant flux ratings not less than 0.45 watts/sq. cm.
- (d) Smoke Density Test: Test in radiant heat chamber, with and without flame, for density of smoke generated; ASTM E 662, or NFPA No. 258, also known as NBS Smoke Density Chamber Test.***

8. Michigan Right-To-Know Law: The Contractor and its Subcontractors/Suppliers must comply with MIOSHA, Michigan Right-to-Know Law (Public Act 80 of 1986) and the rules promulgated under it. The Act places certain requirements on employers to develop a communication program designed to safeguard the handling of hazardous chemicals through labeling of chemical containers and development and availability of Safety Data Sheets (SDS), and to provide training for employees who work with these chemicals and develop a written hazard communications program. The Act also provides for specific employee rights, including the right to be notified of the location of SDS and to be notified at the site of new or revised SDS within five Business Days after receipt and to request SDS copies from their employers. The Contractor, employer or Subcontractor must post and update these notices at the site.

9. Environmental Requirements: The Contractor and its Subcontractors/Suppliers must comply with all applicable Federal, State and local environmental Laws, standards, orders or requirements including but not limited to the National Environmental Policy Act of 1969, as amended, Michigan Natural Resources and Environmental Protection Act, P.A. 451 of 1994, as amended, the Clean Air Act, as amended, the Clean Water Act, as amended, the Safe Drinking Water Act, as amended, Pollution Prevention Act, as amended, Resource Conservation and Recovery Act, as amended, National Historic Preservation Act, as amended and Energy Policy and Conservation Act and Energy Standards for Buildings Except Low-Rise Residential Buildings, ANSI/ASHRAE/IESNA Standard 90.1.

10. Nondiscrimination: For all State Contracts for goods or services in amount of \$5,000 or more, or for Contracts entered into with parties employing three or more employees; in connection with the performance of Work under this Contract, the Contractor and its Subcontractors and Suppliers must comply with the following requirements:

- 10.1 Not to discriminate against any employee or applicant for employment because of race, color, religion, national origin, age, sex (as defined in Executive Directive 2019-09), height, weight or marital status and take affirmative action to ensure that applicants are employed, and the employees are not subject to such discrimination. Such action must include, but is not limited to, the following: employment, upgrading, demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training.
- 10.2 To state in all solicitations or advertisements for employees that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, age, sex, height, weight, or marital status.
- 10.3 To send, or have its collective bargaining representative send, each labor union or representative of workers with which there is a collective bargaining agreement or other contract or understanding, a notice advising the labor unions or workers' representative of the commitments under this provision.
- 10.4 To comply with the Elliot-Larsen Civil Rights Act, 1976 PA 453, as amended, MCL 37.2201 et seq.; the Michigan Persons with Disability Civil Rights Act, 1976 PA 220, as amended, MCL 37.1101 et Seq.; Executive Directive 2019-09; and all published rules,

regulations, directives, and orders of the Michigan Civil Rights Commission (MCRC) which may be in effect on or before the date of Bid opening.

- 10.5 The Contractor must furnish and file compliance reports within the times, and using the forms prescribed by the MCRC. Compliance report forms may also elicit information as to the practices, policies, programs, and employment statistics of the Contractor and Subcontractors. The Contractor must permit access to Records by the MCRC and its agent for purposes of ascertaining compliance with the Contract and with rules, regulations, and orders of the MCRC.
- 10.6 If, after a hearing held under its rules, the MCRC finds that the Contractor has not complied with the Elliott-Larson requirements of the Contract Documents, MCRC may, as part of its order, certify its findings to the Administrative Board of the State of Michigan, which may order the cancellation of the Contract and/or declare the Contractor ineligible for future contracts with the State until the Contractor complies with the MCRC's order.
11. **Michigan Residency for Employees:** Fifty percent of the persons employed on the Work by the Contractor must have been residents of the State of Michigan for not less than one year before beginning employment on the Work. This residency requirement may be reduced or waived to the extent that Michigan residents are not available or to the extent necessary to comply with the federal funds used for the Project. This requirement does not apply to employers who are signatories to collective bargaining agreements that allow for the portability of employees on an interstate basis.

END OF SECTION 01060

SECTION 01090 REFERENCES

1. References will be made in an abbreviated alpha numeric form to specific standard specifications, reference publications and building codes of federal or state agencies, manufacturers, associations, or trade organizations. Such references will be identified by the alphabetic abbreviation which identifies the government agency, the association or organization followed by the rule, section or detail number that are to form a part of these specifications, the same as if fully set forth herein, and must be of latest issued date in effect three months before the Bid opening date shown on the Proposal and Contract. The abbreviations used are referred to as follows:

<u>Abbreviation</u>	<u>Agency, Association or Organization</u>
ACI	American Concrete Institute
AISC	American Institute of Steel Construction, Inc.
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society of Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BOCA	Building Officials and Code
CDA	Copper Development Assn., Inc.
CLFMI	Chain Link Fence Manufacturer's Institute
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
F/M	Factory Mutual Research Corporation
FS	Federal Specifications
HEW	United States Department of Health Education and Welfare
MDOT	Michigan Department of Transportation
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation Testing Laboratory, Inc
NSWMA	National Solid Waste Management Association
PCA	Portland Cement Association
PDI	Plumbing and Drainage Institute
SMACNA	Sheet Metal & Air Conditioning Contractors
UL	Underwriters Laboratories, Inc.
USBM	United States Bureau of Mines
USDC	United States Department of Commerce

END OF SECTION 01090

SECTION 01100 PROJECT PROCEDURES

1. **Signage and Safety:** The Contractor must post appropriate construction signs to advise the occupants and visitors of occupied facilities of the limits of construction work areas, hardhat areas, excavations, construction parking and staging areas, etc. Advertising signage by contractors, subcontractors, or suppliers is not allowed. The Contractor must maintain safe and adequate pedestrian and vehicular access to fire hydrants, commercial and industrial establishments, churches, schools, parking lots, hospitals, fire, and police stations and like establishments. The Contractor must obtain written approval from the Owner ten Calendar Days before connecting to existing facilities or interrupting the services on site.
2. **Required Project Sign:** For projects costing in excess of \$500,000, the Contractor must provide and install a project sign conforming to the requirements shown in Appendix IV. The Project Director will designate the wording for the sign.
3. **Barrier and Enclosures:**
 - (a) The Contractor must furnish, install, and maintain as long as necessary and remove when no longer required adequate barriers, warning signs or lights at all dangerous points throughout the Work for protection of property, workers, and the public. The Contractor must hold the State of Michigan harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the Work under the Contract.
 - (b) **Temporary Fence:** The Contractor must entirely enclose the Contract area by means of woven wire or snow fence having minimum height of four feet. Gates must be provided at all points of access. Gates must be closed and secured in place at all times when Work under the Contract is not in progress. The fence must be removed, and grounds restored to original condition upon completion of the Work.
 - (c). **Street Barricades:** The Contractor must erect and maintain all street barricades, signal lights and lane change markers during the periods that a traffic lane is closed for their operations. There must be full compliance with rules and ordinances respecting such street barricading and devices must be removed when hazard is no longer present.
4. **Construction Aids:**
 - (a) The Contractor must furnish, install, and maintain as long as necessary and remove when no longer required, safe and adequate scaffolding, ladders, staging, platforms, chutes, railings, hoisting equipment, etc., as required for proper execution of the Work. All construction aids must conform to Federal, State, and local codes or Laws for protection of workers and the public.
 - (b) **Debris Chute:** The Contractor must use a chute to lower debris resulting from their Work. The chute must be the enclosed type with its discharge directly into the truck or approved container.
 - (c) **Pumping and Drainage:** The Contractor must provide all pumping necessary to keep excavations and trenches free from water the entire period of Work on the Contract. The Contractor must construct and maintain any necessary surface drainage systems on the Work site so as to prevent water entering existing structures or to flow onto public or private property adjacent to the Agency's land, except for existing drainage courses or into existing drainage systems. The Contractor must prevent erosion of soils and blockage of any existing drainage system.

END OF SECTION 01100

SECTION 01200 PROJECT MEETINGS

1. **Pre-Construction Conferences:** The Project Director will schedule a pre-construction conference to be attended by the Professional, State Agency staff, and the Contractors. A project procedure as outlined in Form DTMB-0460, will be established for the Work during the pre-construction meeting. When no organizational meeting is called, the Contractor, before beginning any Work, must meet with the staff of the Agency and arrange a Work schedule for the Project. Once the Project has been started, the Contractor must carry it to completion without delay.
2. **Progress Meetings:** The Professional will schedule progress meetings to be held on the job site whenever needed to supply information necessary to prevent job interruptions, to observe the Work or to inspect completed Work. The Contractor must be represented at each progress meeting by persons with full authority to act for the Contractor in regard to all portions of the Work.

END OF SECTION 01200

SECTION 01300 SUBMITTALS

1. Shop Drawings, Samples and Technical Submittals: .

1.1 Contractor's Review: Before each submission, the Contractor must:

- (a) determine and verify all field measurements, quantities, dimensions, instructions for installation and handling of equipment and systems, installation requirements (including location, dimensions, access, fit, completeness, etc.), materials, color, catalog numbers and other similar data as to correctness and completeness, and
- (b) have reviewed and coordinated that technical Submittal with other technical submittals and the requirements of the Contract Documents.

1.2 Notice of Variation: The Contractor must give the Professional specific written notice of any variation from the requirements of the Contract Documents.

1.3 Contractor's Approval: The Contractor shall not submit unapproved submittals. Each submittal shall be stamped/certified to indicate that the submittal satisfies the requirements of the Contract Documents before submission to the Professional.

1.4 Responsibility and Authority: Neither the Owner's authority to review any of the Submittals by the Contractor, nor the Owner's decision to raise or not to raise any objections about the Submittals, creates or imposes any duty or responsibility on the Owner to exercise any such authority or decision for the benefit of the Contractor/Subcontractor/Supplier, any surety to any of them or any other third party. The Contractor is not relieved of responsibility for errors or omissions in shop drawings, product data, samples, or similar submittals just because the Professional approved them for general design intent.

1.5 Final As-Built/Record Documents and Submittals: The approved Submittals are a part of the final As-Built/Record Documents required for processing final payment to the Contractor.

1.6 Submissions: Contractor must submit to the Professional:

- (a) Product Data, .pdf electronic file(s) of the drawing(s) and one bond copy of all Shop Drawings.
- (b) A 3-inch wide by 2-inch-high clear space for State approval stamp must be provided on the Title Sheet of the shop drawings.
- (c) all required samples; and
- (d) all other technical submittals (test, results, test and safety procedures, O&M manuals, etc.) that are required by the Contract Documents. In addition to electronic copies up to 2 hard copies of the approved O&M manuals may be required to be provided to the agency

1.7 Professional's Review and Return: Professional's Review and Return: Submittals will be returned to the Contractor within fifteen Calendar Days. The Contractor is responsible for any time Delay and any cost incurred by the Professional, Contractor or Subcontractors/Suppliers as a result of resubmissions and re-reviews of a particular Submittal. The Contractor shall revise, and correct submittals returned for revision and resubmittal until approval by the Professional is achieved. All time consumed by the resubmissions and rereviews of a particular Submittal shall constitute time required to furnish that Submittal or shall represent Delays not justifying any increase in Contract Time or Contract Price, or both.

2. Progress Schedule:

2.1 SUMMARY

A. The **Contractor** will submit CPM Progress Schedules to the **Owner** depicting its approach to prosecution of the Work. This includes but is not limited to the **Contractor's** approach to recovering schedule and managing the effect of changes, substitutions, and Delays on Work sequencing.

B. The Progress Schedule will include the Rev. 0 Submittal (par. 2.14), Update Submittals (par. 2.15) and Revision Submittals (par. 2.16). Each Submittal will be assigned a unique number. For a resubmission, the initial number will be modified by the letter A, B, C, etc., as appropriate.

C. Through the Progress Schedule, the **Owner** will seek to stay current on progress, updated Activity and Milestone Dates, and the **Contractor's** approach to Work remaining.

D. References to the Critical Path Method (CPM) are to CPM construction industry standards that are consistent with the requirements of this Section.

2.2 RELATED SECTIONS

A. Section 00700 General Conditions; and Section 00800 Supplementary Conditions.

2.3 GLOSSARY OF TERMS

A. Capitalized terms not already defined in any Division 0 Specification have the following intent and meanings:

- 1. Milestone—A key point of progress, designating interim targets toward the Contract Times. They may pinpoint critical path foundations, key deliveries, building framing, start of MEP rough-in, building enclosure, partitions, interior finishes, conditioned space, commissioning stages, Substantial Completion, and other events of like import.
- 2. Official Schedule—The most recent Revision Submittal returned to the **Contractor** as Resubmittal Not Required. The Rev. 0 Official Schedule is the *As-Planned* Schedule.
- 3. Revision 0 Submittal—Progress Schedule submitted by the **Contractor** depicting the entire Work as awarded.
- 4. Update Submittal—A monthly Progress Schedule update reflecting progress and minor adjustments on the Activities, sequencing and restraints for Work remaining.

2.4 QUALITY ASSURANCE

- A. The **Contractor** will obtain a written interpretation from the **Professional**, if the **Contractor** believes the selection of Activities, logic ties or restraints requires an interpretation of the Contract Documents. With each submission, the **Contractor** will point out by specific, written notation, any Progress Schedule feature that may reflect variations from any requirements of the Contract Documents.
- B. The **Contractor** is responsible to obtain information from each Subcontractor and Supplier when scoping their respective Activities, Values, logic ties and restraints
- C. No review of any Progress Schedule by or on behalf of the **Owner** will relieve the **Contractor** from complying with the Contract Times and any required sequence of Work or from completing Work omitted from the Progress Schedule. No review will imply approval of any variation from or interpretation of the Contract Documents, unless approved by the **Professional** through a written interpretation or by means of a separate, written notation.

2.5 ALLOWANCES

- A. Work covered by Cash Allowances will be completed within the Contract Times. To the extent reasonable and consistent with the **Contractor's** plan, Work authorized by provisionary contingency allowances will be completed within the Contract Times. The Progress Schedule will incorporate the **Contractor's** best estimate of the Activities, logic and restraints required, using the information in the Contract Documents, or as indicated by the **Professional** in writing.

2.6 "OR EQUALS" AND SUBSTITUTIONS

- A. Activities in the Rev. 0 Progress Schedule will be based on materials and equipment required by the Contract Documents and will not reflect any "or equal" or substitute materials or equipment, even if the **Contractor** intends to pursue "or equal" and substitution proposals. This limitation also applies to any Means and Methods indicated in or required by the Contract Documents.

2.7 MEASUREMENT AND PAYMENT

- A. The Schedule of Values will include a Progress Schedule *pay item*. Fifteen percent (15%) of this *pay item* will be eligible for payment upon delivery of the *complete* Rev. 0 Submittal. The balance of this *pay item* will be eligible for payment, on a prorated basis, with each Request for Payment attaching an Update Submittal.

2.8 PROGRESS SCHEDULE SUBMITTALS

- A. Each Progress Schedule Submittal will consist of an electronic copy the **Contractor's file**, a narrative and a PDF file of the project schedule report and plots, each file appropriately titled for the schedule version and date of publishing.
- B. The CPM scheduling software will be Primavera Project Planner®, SureTrak® or Microsoft Project®.
- C. In addition to the monthly update schedule submittal, **Contractor** shall provide prior to each Progress Meeting, a 2-week look ahead schedule extracted from the current overall schedule and providing sufficient additional activity detail to appropriately define the expected activity during the upcoming 2-week period.

2.9 PRINTOUTS

- A. Schedule Reports will include Activity (ID) code and description, duration, calendar, Early Dates, Late Dates and Total Float, all of which will comport with the requirements of paragraph 8.3.4 of Section 00700 General Conditions.
 - 1. Late Finish Date for an Activity pinpointing a Contract Time will equal that Contract Time. Early Start Date for an Activity designating a Contract restraint will equal the proper Notice to Proceed date. Schedule Reports may or may not append CPM Plots (time-scaled Activity/logic).
 - 2. For Precedence Diagram Method, separate Schedule Reports will tabulate, for each Activity, all preceding and succeeding logic types and lead times, whether CPM Plots displaying vertical logic ties are appended or not.
- B. CPM Schedule Plots will be plotted on a suitable time scale and identify the Contract Times, Critical Paths, and sub-Critical Paths. Activities will be shown on the Early Dates with Total Floats noted by Late Date flags.
- C. Line of Balance Plots will reflect industry practice for repetitive construction and will segregate the production lines for all trades within the hammock Activities.

2.10 NARRATIVE REQUIREMENTS

- A. In general, a narrative will describe the **Contractor's** approach to prosecution of the Work, subject to the requirements of the Contract Documents. Further, each narrative will list the Critical Path Activities and compare Early and Late Dates with Contract Times and Milestone Dates. The basis for restraint dates will be explained.
- B. For each Update Submittal, the narrative will compare current Dates to the respective Milestone Dates, describe changes in crewing and construction equipment and identify new Delays. For each Revision Submittal, the narrative also will itemize changes in Activities, logic ties and restraint dates made necessary by each change, Delay, schedule recovery, substitution and **Contractor**-initiated revision occurring since the previous Submittal.

2.12 ACTIVITY REQUIREMENTS

- A. The Progress Schedule will detail Work sequencing only to the extent necessary to allow the **Owner** to correlate percent complete, compare actual dates with Milestones and Contract Times and the data in Requests for Payment.
- B. Separate Activities will designate permits, construction, Submittal preparation/review (and resubmission and re-review, for same); MEP coordination drawings; deliveries; commissioning; and Punch List. Separate Activities will designate **Owner**-furnished items, interface with other work and the **Owner** and **Professional's** responsibilities.
- C. Activities will be detailed only to the extent required to show the transition of trade Work. Activities will detail the progression through site/excavation, foundations, building framing, start/completion of interior partitions, MEP rough-in, building enclosure, interior finishes, conditioned space, and commissioning.
 - 1. Submittal Activities will segregate long-lead items, any item requiring structural access and other procurements that, in the **Contractor's** judgment, may bear on the rate of progress. Separate MEP coordination drawing Activities will be used for each floor. Beyond these requirements, it is not necessary to burden the Progress Schedule with Activities for less significant Submittals and deliveries.
 - 2. For multiunit Work (e.g., rough-in overhead MEP for each floor, etc.), detailed Activities will be shown for a typical (often, the first) unit). Other or follow-on units may be replicated, as appropriate, or modeled with a hammock Activity combining

- the sum total of the typical detailed Activities. Separate Activities, as may be suitable to the Divisions of Work involved, will be identified for single-unit Work. This requirement applies to such scope as Work in mechanical rooms, building framing, commissioning, etc.
3. Activities will not combine separate or non-concurrent items of Unit Price or lump sum Work, Work in separate structures and Work in distinct areas, locations or floors within an area or structure; or rough-in and finish Work.
- D. Activity durations will equal the Business Days required to sufficiently complete the Work designated by the Activity (i.e., when finish-to-start successors may start, even if the Activity is not quite 100% complete). Installation Activities will last from twenty (20) to forty (40) Days.
- E. Activities will be assigned consistent descriptions and identification codes. Sort codes will group Activities by building or structure, floor or area, Change Order and Change Authorization and other meaningful schemes.
- 2.13 FLOAT TOLERANCES
- A. Any Progress Schedule with Early Dates after a Contract Time will yield negative Total and Contract Floats, whether shown/calculated or not. Any Revision Submittal with less than negative twenty (20) Days of Float will be returned as "Revise and Resubmit," unless a time extension is requested, or the **Owner** withholds liquidated damages or asserts intent to do so in the event schedule is not recovered.
- B. Floats calculated from the definitions given in Section 00020 Glossary supersede any conflicting Float values calculated within any early completion Progress Schedule.
- 2.14 REVISION 0 (Rev. 0) SUBMITTAL
- A. The complete Revision 0 Submittal will be due with the first Request for Payment. The Rev. 0 Submittal will show the Work as awarded, without Delays, "or equal" or substitutions, Change Orders or Change Authorizations.
1. The Rev. 0 narrative will detail the **Contractor's** management of the site (lay down, parking, etc.). Further, the Rev. 0 narrative will identify shifts, weekend Work, Activity calendars, Delays since award and all pending and anticipated "or equal" and substitution proposals.
- B. Once endorsed by the **Owner** and returned as "Resubmittal Not Required," the Rev. 0 Progress Schedule (or Rev. 0A, etc.) will be the As-Planned Schedule and the basis for Update Submittals until the Rev. 1 Official Schedule is established. Once the As-Planned Schedule is established, the **Owner** will select Milestones and note Milestone Early and Late Dates. As the Official Schedule evolves, Milestone Dates will be revised accordingly.
- D. If the **Owner** refuses to endorse the Rev. 0 Submittal (or Rev. 0A, for a resubmission) as "Resubmittal Not Required," the As-Planned Schedule will not be established. In that event, the **Contractor** will continue to submit Update and Revision Submittals reflecting progress and the **Contractor's** approach to remaining Work. The **Owner** will rely on the available Update and Revision Submittals, subject to whatever adjustments it determines appropriate.
- 2.15 UPDATE SUBMITTALS
- A. Update Submittals with progress up to the closing date and updated Early and Late Dates for progress and remaining Activities will be due with each Request for Payment. As-built data will consist of actual start dates, percent complete, actual finish dates, changes, Delays, and other significant events occurring before the closing date.
- 2.16 REVISION SUBMITTALS
- A. Progress Schedule Revisions will be submitted with the third Request for Payment and every two (2) months after that, or more often, if necessary due to schedule recovery or other Progress Schedule revisions. Revisions will revise the Update Submittal attached to the prior Request for Payment.
- B. Progress Schedule revisions will detail all impacts on pre-existing Activity scope, logic ties and restraint dates and reflect the Contractor's current approach to Work remaining. Revisions may be required because of changes in the Work, substitutions, schedule recovery and Delays.
- C. Once endorsed by the **Owner** and returned as "Resubmittal Not Required," a Revision Submittal becomes the Rev. 1, Rev. 2, etc. Official Schedule and the basis for subsequent Update Submittals until a more current Official Schedule is established. If the **Owner** refuses to endorse a Revision Submittal as "Resubmittal Not Required," the **Contractor** will continue to submit Update and Revision Submittals when and as required in this Section.
- 2.17 RETROSPECTIVE DELAY ANALYSIS
- A. If the **Owner** refuses to endorse any Revision Submittal as "Resubmittal Not Required," the **Contractor** and **Owner** will use the latest Official Schedule when evaluating the effect of Delays on Contract Time and/or Contract Price. The procedure will consist of progressively revising the latest Official Schedule at key Revision Submittal closing dates. For each Progress Schedule iteration, slippage between actual Milestone Dates and Rev. 0 Milestone Dates will be correlated to Delays occurring solely in that iteration. Revisions affecting Work after any iteration will be included only to the extent consented by the **Owner** at that time and/or if confirmed by as-built progress.

3. **Shop Drawings:** The Contractor shall deliver shop drawings of products, materials, assemblies, or equipment to the Professional.

<u>Section Number</u>	<u>Item of Work</u>
031000	Concrete Forming and Accessories
032000	Concrete Reinforcing
033000	Cast-In Place Concrete
051200	Structural Steel Framing
074213.20	Acoustic Barrier Wall Systems
231123	Facility Gas Piping
260010	Supplemental Requirements for Electrical
260519	Low-Voltage Electrical Power Conductors and Cables
260526	Grounding and Bonding for Electrical Systems
260529	Hangers and Supports for Electrical Systems
260533.13	Conduits for Electrical Systems
260533.16	Boxes and Covers for Electrical Systems
260544	Sleeves and Sleeve Seals for Electrical Raceways and Cabling
260553	Identification for Electrical Systems
262726.33	General-Grade Duplex Straight-Blade Receptacles
262726.37	Receptacles with Arc-Fault and Ground-Fault protective Devices
263213.16	Gaseous emergency engine Generators
2636000	Transfer Switches
23500	Site Screening Devices

3. **Samples:** The Contractor must deliver all samples of material or equipment to the job site for examination by the State Agency and the Professional. Samples will be examined by the Professional for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents.

The Contractor must furnish all Work in accordance with approved samples. The following general classifications of material and equipment require submission of samples. Samples of other items may be requested by the Professional at any time.

<u>Item of Work</u>	<u>Type of Sample</u>	<u>Section Number</u>
Acoustic Barrier Wall Systems	Color Samples	074213.20

END OF SECTION 01300

SECTION 01400 QUALITY CONTROL

1. **Testing Laboratory Services:** All tests required by the Owner must fulfill ASTM, ANSI, Commercial and other Standards for testing. The Contractor must submit a minimum of three copies of each test report to the Professional for evaluation and subsequent distribution. The following general classifications of Work require submission of test reports and/or certificates of inspection. Additional submissions may be requested by the Professional at any time.

<u>Item of Work</u>	<u>Test Type</u>	<u>Section Number</u>
Earthwork	Compaction and Density	02200
Portland Cement Conc. Paving	Core Analysis	02512
Cast-in-place Concrete	Compression Tests	03300

2. **Tests:**

(a) Paid by Contractor:

3. **Concrete/Asphalt Materials:** Before placement of any concrete, the Contractor must submit for the Professional's approval complete data on the trial concrete mix formulation and a testing laboratory report for ASTM C94, twenty-eight-day standard cylinder test for compressive strength of a sample of the concrete mix. For asphalt paving, the Contractor must submit the data and testing reports for ASTM D946, AC-5. The mix must have 4.5 to 6 percent of asphalt cement by weight for binder course

and 5 to 7 percent of asphalt cement by weight for surface course in accordance with Asphalt Institute Manual MS-4, MS-13, and the current Michigan Department of Transportation (MDOT) Standard Specifications for Construction.

- (a) The Contractor must furnish to the Professional tickets showing mix formulation, Contractor's name, Project name, mix identification for each load of concrete/asphalt delivered and installed. If the technical specifications allow added water to the concrete mix after leaving the batch plant, the delivery ticket must reflect the added water. The Owner Field Representative must receive a copy of each delivery ticket for transmittal to the Professional for evaluation.
- (c) The Professional may require the Contractor to core drill questionable cast-in-place concrete/asphalt for laboratory testing. Should the laboratory analysis indicate the concrete/asphalt fails to meet specification requirements, the Contractor must pay all costs for core drilling and testing in the laboratory and replace the concrete/asphalt found to fail meeting the specification requirements.

Should the laboratory analysis confirm that the concrete/asphalt meets specification requirements, the Owner will pay the Contractor for their costs for core drilling, concrete/asphalt patching and the laboratory fee for testing of the concrete/asphalt core samples.

END OF SECTION 01400

SECTION 01500 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1. The Contractor must furnish and install all temporary facilities and controls required by the Work, must remove them from State property upon completion of the Work, and the grounds and existing facilities must be restored to their original condition.
2. If water or electricity is available in the area where Work will be performed, the Contractor will not be charged for reasonable use of these services for construction operation. The Contractor must pay costs for installation and removal of any temporary connections including necessary safety devices and controls. Use of services must not disrupt or interfere with operations of the State Agency.
3. **Temporary Sanitary Facilities:**
 - (a) **Portable Toilets:** The Contractor must provide and maintain a sufficient number of portable temporary toilets in locations approved by the State Agency. They must comply with all Federal, State, and local code requirements. The Contractor must maintain the temporary toilets in a sanitary condition at all times and must remove them when the Work under this Contract is complete. The Contractor's employees are not allowed to use any existing State toilet facility.
 - (b) **State Toilets:** If available, the State Agency will designate a permanent toilet facility on the premises for use by personnel employed in the Work. The Contractor must repair any damage to the toilet facility caused by their employees and maintain it in a clean and sanitary condition.
4. **Field Office:**
 - (a) **On Site Trailer:** At the beginning of the Work, the Contractor may provide a field office and storage building at the site in a location acceptable to the Owner. The building may be a trailer. The Contractor may provide such other temporary buildings as he may require for the use of workers and safe storage for tools and materials. Job signs with the Contractor's name, logos, specialty, ... etc., are not allowed.
 - (b) On site trailers are not allowed.

END OF SECTION 01500

SECTION 01600 MATERIAL AND EQUIPMENT

1. The Contractor must furnish and be responsible for all materials, equipment, facilities, tools, supplies and utilities necessary for completing the Work. All materials and equipment must be provided as described in the Contract Documents and of good quality, free of defect and new and must be applied, installed, connected, erected, used, cleaned and conditioned following the manufacturer's and Suppliers' instructions.
2. **Delivery, Storage, and Handling:** All materials and equipment delivered to and used in the Work must be suitably stored and protected from the elements. The areas used for storage must only be those approved by the State Agency. The Owner assumes no responsibility for stored material. The ownership and title to materials will not be vested in the Owner before materials are incorporated in the Work unless payment is made by the Owner for stored materials and equipment. After delivery, before and after installation, the Contractor must protect materials and equipment against theft, injury, or damage from all causes. For all materials and equipment, the Contractor must provide complete information on installation, operation, and preventive maintenance.

- (a) The Contractor must cover and protect bulk materials while in storage which are subject to deterioration because of dampness, the weather or contamination. The Contractor must keep materials in their original sealed containers, unopened, with labels plainly indicating manufacturer's name, brand, type, and grade of material and must immediately remove from the Work site containers which are broken, opened, watermarked and/or contain caked, lumpy, or otherwise damaged materials.
- (b) The Contractor must keep equipment stored outdoors from contact with the ground, away from areas subject to flooding and covered with weatherproof plastic sheeting or tarpaulins.
- (c) The Contractor must certify that any materials stored off-site are:
 - a) Stored on property owned or leased by the Contractor or owned by the agency.
 - b) Insured against loss by fire, theft, flood, or other hazards.
 - c) Properly stored and protected against loss or damage.
 - d) In compliance with the plans and specifications.
 - e) Specifically allotted, identified, and reserved for the project.
 - f) Itemized for tracking and payment.
 - g) Subject to these conditions until the items are delivered to the project site.

END OF SECTION 01600

SECTION 01650 FACILITY START-UP

1. **Tests:** The complete installation consisting of the several parts of equipment and systems installed according to the requirements of the Contract Documents must be ready in all respects for use by the State Agency and must be subjected to a test at full operating conditions and pressures for normal conditions of use.
2. **Adjustments:** Contractor must adjust and replace the Work which is necessary to fulfill the requirements of the Contract Documents and to comply with the directions and recommendations of the manufacturer of the several parts of equipment, and to comply with all provisions of architectural and/or engineering drawings/specifications and all codes and regulations which may apply to the entire installation.
3. **Demonstration:** Contractor must provide an on-site demonstration and training of all systems operations to the Owner when it is substantially completed.

END OF SECTION 01650

SECTION 01700 CONTRACT CLOSE-OUT

1. **Substantial Completion:** The Contractor must notify the Professional, the Project Director and the Agency when the Work will be substantially complete. If the Professional, Owner, and Agency agree that the project is Substantially Complete, the Professional and Project Director will inspect the Work. The Professional, upon determining that the Work, or a portion of the Work inspected, is substantially complete, will prepare a Punch List and will attach it to the respective Certificate of Substantial Completion. The Contractor must be represented on the job site at the time this inspection is made and thereafter must complete all Work by the date set for final acceptance by the Owner.
2. **Cleaning:**
 - (a) **Regular Cleaning:** The Contractor must remove all scrap or removed material, debris, or rubbish from the Project work site at the end of each working day and more frequently whenever the Owner Field Representative deems such material to be a hazard. The Contractor cannot discard materials on the grounds of the State Agency without the express permission of the Project Director. No salvage or surplus material may be sold on the premises of the State Agency. No burning of debris or rubbish is allowed. Any recyclable materials must be recycled, and the Contractor will be required to provide recycling plan.
 - (b) **Final Cleaning:** Before final acceptance by the State, the Contractor must clean all Work and existing surfaces, building elements and contents that were soiled by their operations and make repairs for any damage or blemish that was caused by the Work.

END OF SECTION 01700

SECTION 01800 MAINTENANCE

1. The Contractor is responsible for maintaining the following parts of Work in good order and proper working conditions and must take all necessary actions for their protection until they are placed for use by the Owner:

END OF SECTION 01800

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Disposing of nonhazardous construction waste.
- B. Related Requirements:
 - 1. Section 312200 "Earthwork"
 - 2. Appendix V – Soil Management Plan

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.3 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.4 INFORMATIONAL SUBMITTALS

- A. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.5 QUALITY ASSURANCE

- A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

- A. General: Remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
 - C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Form-facing material for cast-in-place concrete.

B. Related Requirements:

1. Section 033300 "Cast-In-Place Concrete" for expansion strips and vapor retarders.

1.2 DEFINITIONS

- A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.

- B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.3 ACTION SUBMITTALS

A. Product Data: For each of the following:

1. Form ties.
2. Form-release agent.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

2.2 FORM-FACING MATERIALS

A. As-Cast Surface Form-Facing Material:

1. Provide continuous, true, and smooth concrete surfaces.
2. Furnish in largest practicable sizes to minimize number of joints.
3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:
 - a. Plywood, metal, or other approved panel materials.

B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.

1. Provide lumber dressed on at least two edges and one side for tight fit.

C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class.

1. Provide forms with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

2.3 RELATED MATERIALS

A. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

B. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

C. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

- A. Comply with ACI 301.
- B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.
- C. Limit concrete surface irregularities as follows:
 - 1. Surface Finish-1.0: ACI 117 Class D, 1 inch.
 - 2. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.
 - 3. Surface Finish-3.0: ACI 117 Class A, 1/8 inch.
- D. Construct forms tight enough to prevent loss of concrete mortar.
 - 1. Minimize joints.
 - 2. Exposed Concrete: Symmetrically align joints in forms.
- E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.
 - 1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
 - 2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 3. Install keyways, reglets, recesses, and other accessories, for easy removal.
- F. Do not use rust-stained, steel, form-facing material.
- G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.
 - 1. Provide and secure units to support screed strips
 - 2. Use strike-off templates or compacting-type screeds.
- H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.
 - 1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
 - 2. Locate temporary openings in forms at inconspicuous locations.
- I. Chamfer exterior corners and edges of permanently exposed concrete.

- J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.
- K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.
 - 1. Determine sizes and locations from trades providing such items.
 - 2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.
- L. Construction and Movement Joints:
 - 1. Construct joints true to line with faces perpendicular to surface plane of concrete.
 - 2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 3. Place joints perpendicular to main reinforcement.
 - 4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.
 - a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 6. Space vertical joints in walls [as indicated on Drawings] <Insert spacing>.
 - a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
- M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.
 - 1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
 - 2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.
- N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.
 - 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
 - 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
 - 5. Clean embedded items immediately prior to concrete placement.

3.3 REMOVING AND REUSING FORMS

- A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
- B. Clean and repair surfaces of forms to be reused in the Work.
 - 1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
 - 2. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.
 - 1. Align and secure joints to avoid offsets.
 - 2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

END OF SECTION

SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
3. For structural thermal break insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Architect.

1.3 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For the following, from a qualified testing agency:

1. Mechanical splice couplers.

B. Field quality-control reports.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
 - 1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60 , deformed.
- B. Plain-Steel Welded-Wire Reinforcement: ASTM A185, plain, fabricated from as-drawn steel wire into flat sheets.

2.2 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.
 - 1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.
- C. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.
 - 1. Finish: Plain.

2.3 FABRICATING REINFORCEMENT

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

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protection of In-Place Conditions:
 - 1. Do not cut or puncture vapor retarder.
 - 2. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.
- B. Accurately position, support, and secure reinforcement against displacement.
 - 1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
 - 2. Do not tack weld crossing reinforcing bars.
- C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.
- D. Provide concrete coverage in accordance with ACI 318.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Splices: Lap splices as indicated on Drawings.
 - 1. Bars indicated to be continuous, and all vertical bars shall be lapped as indicated on the Drawings.
 - 2. Stagger splices in accordance with ACI 318.
 - 3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.
- G. Install structural thermal break insulated connection system in accordance with manufacturer's instructions.
- H. Install welded-wire reinforcement in longest practicable lengths.
 - 1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."

- a. For reinforcement less than W4.0 or D4.0, continuous support spacing shall not exceed 12 inches.
2. Lap edges and ends of adjoining sheets as indicated on the Drawings.
3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.
4. Lace overlaps with wire as indicated on the Drawings.

3.3 JOINTS

- A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 1. Place joints perpendicular to main reinforcement.
 2. Continue reinforcement across construction joints unless otherwise indicated.
 3. Do not continue reinforcement through sides of strip placements of floors and slabs.
- B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

- A. Comply with ACI 117.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for form-facing materials and concrete inserts.
2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.

1.2 DEFINITIONS

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

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.
2. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction joints, control joints, isolation joints, and joint-filler strips.
 - c. Anchor rod and anchorage device installation tolerances.

- d. Cold and hot weather concreting procedures.
- e. Concrete finishes and finishing.
- f. Curing procedures.
- g. Forms and form-removal limitations.
- h. Shoring and reshoring procedures.
- i. Methods for achieving specified floor and slab flatness and levelness.
- j. Floor and slab flatness and levelness measurements.
- k. Concrete repair procedures.
- l. Concrete protection.
- m. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following.

- 1. Portland cement.
- 2. Fly ash.
- 3. Aggregates.
- 4. Admixtures:
 - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
- 5. Fiber reinforcement.
- 6. Joint fillers.
- 7. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

- 1. Mixture identification.
- 2. Minimum 28-day compressive strength.
- 3. Durability exposure class.
- 4. Maximum w/cm.
- 5. Calculated equilibrium unit weight, for lightweight concrete.
- 6. Slump limit.
- 7. Air content.
- 8. Nominal maximum aggregate size.
- 9. Synthetic micro-fiber content.
- 10. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
- 11. Include manufacturer's certification that permeability-reducing admixture is compatible with mix design.
- 12. Include certification that dosage rate for permeability-reducing admixture matches dosage rate used in performance compliance test.
- 13. Intended placement method.

14. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Architect.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Ready-mixed concrete manufacturer.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Fiber reinforcement.
4. Vapor retarders.
5. Semirigid joint filler.
6. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:
 - a. Permeability-Reducing Admixture: Include independent test reports, indicating compliance with specified requirements, including dosage rate used in test.

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician .

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.
 - B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
 - C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.
 1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.
 - D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
 1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Comply with ASTM C94/C94M and ACI 301.
- 1.8 FIELD CONDITIONS
- A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.
 1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 3. Do not use frozen materials or materials containing ice or snow.
 4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

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

2.2 CONCRETE MATERIALS

- A. Source Limitations:
1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
- B. Cementitious Materials:
1. Portland Cement: ASTM C150/C150M, Type I, gray.
 2. Fly Ash: ASTM C618, Class C or F.
 3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
- C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S Class 3M Class 1N coarse aggregate or better, graded. Provide aggregates from a single source.
1. Maximum Coarse-Aggregate Size:
 - a. Footings: 1-1/2 inches.
 - b. Foundation walls and slabs: 3/4 inch.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C260/C260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Air-Entraining:

- a. Comply with ASTM C260.
 - b. Products: Daravair 1000, by W.R. Grace & Company; MasterAir AE 200, by Master Builders; or equal
- 2. Water-Reducing Admixture:
 - a. Products: Mira 110, by W.R. Grace & Company; MasterPolyheed 1020, by Master Builders; or equal.
- 3. Water-Reducing and Retarding Admixture:
 - a. Comply with ASTM C494/C494M, Type D.
 - b. Products: Daratard 17, by W.R. Grace & Company; MasterSet R 100, by Master Builders; or equal.
- 4. High-Range, Water-Reducing Admixture:
 - a. Comply with ASTM C494/C494M, Type F.
 - b. Products: Mira 110 and Duraset 400, by W.R. Grace & Company; MasterSet FP 20, by Master Builders; or equal.
 - c. High-Range, Water-Reducing and Retarding Admixture: Comply with ASTM C494/C494M, Type G.
 - d. Products: Mira 110, by W.R. Grace & Company; MasterRheobuild 1000, by Master Builders; or equal.
- 5. Water Reducing and Accelerating:
 - a. Comply with ASTM C494, Type E, or combine ASTM C494, Type A and Type C admixtures.
 - b. Products: Mira 110 and Duraset 400, by W.R. Grace & Company; MasterSet FP 20, by Master Builders; or equal.
- F. Water and Water Used to Make Ice: ASTM C94/C94M, potable.

2.3 FIBER REINFORCEMENT

- A. Synthetic Monofilament Micro-Fiber: Monofilament polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C1116/C1116M, Type III, 1/2 to 1-1/2 inches long.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ABC Polymer Industries, LLC.
 - b. BASF Corporation.
 - c. Euclid Chemical Company (The); an RPM company.
 - d. GCP Applied Technologies Inc.

- e. Propex Operating Company, LLC.
- f. Sika Corporation.
- g. Barrier-Bac; Intoplast Group, Ltd.
- h. Poly-America, L.P.

2.4 CURING MATERIALS

- A. Water: Potable or complying with ASTM C1602/C1602M.
- B. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.

2.5 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

2.6 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.7 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.
 1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 1. Fly Ash or Other Pozzolans: 25 percent by mass.
 2. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
- C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.
 1. Use water-reducing or plasticizing admixtures in concrete, as required, for placement and workability.
 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture when pumped concrete is required or for concrete with a w/cm below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.8 CONCRETE MIXTURES

- A. Provide concrete mixtures for various locations as scheduled on the Drawings.

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
 1. Daily access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
 4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
 3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.4 JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.

- b. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 6. Space vertical joints in walls as indicated on Drawings.
 - 7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.
 - D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
 - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
 - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
 - E. Doweled Joints:
 - 1. Install dowel bars and support assemblies at joints where indicated on Drawings.
 - 2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.
 - F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.
- 3.5 CONCRETE PLACEMENT
- A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
1. If a section cannot be placed continuously, provide construction joints as indicated.
 2. Deposit concrete to avoid segregation.
 3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Do not place concrete floors and slabs in a checkerboard sequence.

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

3.6 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
 - a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
 - b. Remove projections larger than 1/4 inch.
 - c. Patch tie holes.
 - d. Surface Tolerance: ACI 117 Class B.
 - e. Locations: Apply to concrete surfaces exposed to public view,.

B. Rubbed Finish: Apply one of the following to as cast surface finishes when final work is exposed to public view:

1. Smooth-Rubbed Finish:
 - a. Perform no later than one day after form removal.
 - b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.
 - c. If sufficient cement paste cannot be drawn from the concrete by the rubbing process, use a grout made from the same cementitious materials used in the in-place concrete.
2. Grout-Cleaned Rubbed Finish:
 - a. Clean concrete surfaces after contiguous surfaces are completed and accessible.
 - b. Do not clean concrete surfaces as Work progresses.
 - c. Mix 1 part portland cement to 1-1/2 parts fine sand, complying with ASTM C144 or ASTM C404, by volume, with sufficient water to produce a mixture with the consistency of thick paint. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces.
 - d. Wet concrete surfaces.

- e. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap, and keep surface damp by fog spray for at least 36 hours.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.7 FINISHING FLOORS AND SLABS

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
3. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:

- a. Slabs on Ground:

- 1) Specified overall values of flatness, FF 35; and of levelness, FL 25; with minimum local values of flatness, FF 24; and of levelness, FL 17.

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

3.8 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.
 - a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - b. Cast anchor-bolt insert into bases.
 - c. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.9 INSTALLATION OF DETECTABLE WARNINGS

- A. Blockouts: Form blockouts in concrete for installation of detectable paving units specified on Drawings.

1. Tolerance for Opening Size: Plus 1/4 inch, no minus.

3.10 CONCRETE CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.
4. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

- B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. If forms remain during curing period, moist cure after loosening forms.
3. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.

- C. Curing Unformed Surfaces:

1. Begin curing immediately after finishing concrete.
2. Curing Methods: Cure concrete by moisture curing, curing compound or a combination of these as follows:
 - a. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - 1) Water.
 - 2) Continuous water-fog spray.
 - b. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.11 TOLERANCES

- A. Conform to ACI 117.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least one month.
 2. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.
- D. Overfill joint, and trim joint filler flush with top of joint after hardening.
- E. Fill the following joints:
 1. Perimeter expansion joints.
 2. Saw cut joints in areas with exposed (sealed and polished) concrete floor finishes.
 3. Perimeter of elevated slabs at pour stops where exposed in finished work.

3.13 CONCRETE SURFACE REPAIRS

- A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.
 2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch.
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces:
1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
 - a. Correct low and high areas.
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

3. After concrete has cured at least 14 days, correct high areas by grinding.
 4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
 - a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
 6. Correct other low areas scheduled to remain exposed with repair topping.
 - a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
 - b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
 - a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
 8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.
 - a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
 - 1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
 - 2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
 - 3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
 - a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:
 - 1) Project name.
 - 2) Name of testing agency.
 - 3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
 - 4) Name of concrete manufacturer.
 - 5) Date and time of inspection, sampling, and field testing.
 - 6) Date and time of concrete placement.
 - 7) Location in Work of concrete represented by samples.
 - 8) Date and time sample was obtained.
 - 9) Truck and batch ticket numbers.
 - 10) Design compressive strength at 28 days.
 - 11) Concrete mixture designation, proportions, and materials.
 - 12) Field test results.
 - 13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
 - 14) Type of fracture and compressive break strengths at seven days and 28 days.
- C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

D. Inspections:

1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Verification of concrete strength before removal of shores and forms from beams and slabs.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M:
 - a. 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.
 - b. Perform additional tests when concrete consistency appears to change.
3. Slump Flow: ASTM C1611/C1611M:
 - a. 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.
 - b. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete; .
 - a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C1064/C1064M:
 - a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
6. Compression Test Specimens: ASTM C31/C31M:
 - a. Cast and laboratory cure two sets of three 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C39/C39M.

- a. Test one set of three laboratory-cured specimens at seven days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. 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 if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests:
- a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.
 - 1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

- F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 72 hours of completion of floor finishing and promptly report test results to Architect.

3.15 PROTECTION

- A. Protect concrete surfaces as follows:
1. Protect from petroleum stains.
 2. Diaper hydraulic equipment used over concrete surfaces.

3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Structural steel.
 - 2. Shrinkage-resistant grout.

1.2 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.
- B. Heavy Sections: Rolled and built-up sections as follows:
 - 1. Shapes included in ASTM A6/A6M with flanges thicker than 1-1/2 inches.
 - 2. Welded built-up members with plates thicker than 2 inches.
 - 3. Column base plates thicker than 2 inches.
- C. Fabricator: An individual, firm or corporation that assembles raw structural steel items into structural steel building members.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.4 ACTION SUBMITTALS

- A. Product Data:
 - 1. Structural-steel materials.
 - 2. High-strength, bolt-nut-washer assemblies.
 - 3. Anchor rods.
 - 4. Threaded rods.

5. Shop primer.
6. Galvanized repair paint.
7. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Identify members not to be shop primed.

C. Delegated-Design Submittal: For structural-steel connections indicated on Drawings to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Mill test reports for structural-steel materials, including chemical and physical properties.
- E. Product Test Reports: For the following:
 1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
 2. Direct-tension indicators.
 3. Tension-control, high-strength, bolt-nut-washer assemblies.
- F. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. The work under this Section shall be performed by a Fabricator and Erector acceptable to the Owner. The Fabricator and Erector shall submit conclusive evidence of having satisfactorily completed work of similar scope and of having the necessary skill, equipment, facilities and capacity to fabricate the structural steel and to perform the erection in accordance with the construction schedules and in full compliance with all requirements of the Contract Documents.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide positive identification for each steel type and tensile strength classification, except A36 steel, by a uniform marking system on each piece. All steel shall be newly rolled steel.

2.2 PERFORMANCE REQUIREMENTS

- A. Comply with applicable provisions of the following specifications and documents:
 - 1. ANSI/AISC 303.

2. ANSI/AISC 341.
3. ANSI/AISC 360.
4. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Option 3 and 3B: Design connections and final configuration of member reinforcement at connections in accordance with ANSI/AISC 303 by fabricator's qualified professional engineer.
 - a. Use Load and Resistance Factor Design; data are given at factored-load level unless otherwise noted.

C. Moment Connections: Type FR, fully restrained.

D. Construction: Combined system of braced frames, and shear walls.

2.3 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: Material and Grade per Drawings.
- B. Channels and Angles: Material and Grade per Drawings.
- C. Plate and Bar: Material and Grade per Drawings.
- D. Steel Pipe: Material and Grade per Drawings.
- E. Welding Electrodes: Comply with AWS requirements.

2.4 BOLTS AND CONNECTORS

- A. High-Strength Bolts, Nuts, and Washers: Material and Grade per Drawings.

2.5 RODS

- A. Unheaded Anchor Rods: ASTM F1554, Grade 36 .
 1. Configuration: Straight.
 2. Nuts: ASTM A563 heavy-hex carbon steel.
 3. Plate Washers: ASTM A36/A36M carbon steel.
 4. Washers: ASTM F436, Type 1, hardened carbon steel.
 5. Finish: Hot-dip zinc coating, ASTM A153/A153M, Class C.
- B. Headed Anchor Rods: ASTM F1554, Grade 36 , straight.
 1. Nuts: ASTM A563 heavy-hex carbon steel.

2. Plate Washers: ASTM A36/A36M carbon steel.
3. Washers: ASTM F436, Type 1, hardened carbon steel.
4. Finish: Hot-dip zinc coating, ASTM A153/A153M, Class C.

C. Threaded Rods: ASTM A36/A36M.

1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM F436, Type 1, hardened carbon steel.
3. Finish: Plain.

2.6 PRIMER

A. Steel Primer:

1. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.
 - a. Color: Grey.

2.7 SHRINKAGE-RESISTANT GROUT

- A. Metallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.8 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.
 1. Camber structural-steel members where indicated.
 2. Fabricate beams with rolling camber up.
 3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
 4. Mark and match-mark materials for field assembly.
 5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

- C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 1.
- F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.
 - 4. Do not cut openings differing from or in addition to those shown on approved shop drawings, without prior written approval of the Architect.

2.9 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.10 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.
 - 1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
 - 2. Galvanize all exterior steel.

2.11 SHOP PRIMING

- A. Shop prime steel surfaces, except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Galvanized surfaces unless indicated to be painted.
- B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards:
 - 1. SSPC-SP 2.
- C. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner or in accordance with SSPC-SP 16.
- D. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.12 IDENTIFICATION

- A. Structural steel members shall have an assigned position and identification mark, clearly indicated on each piece near one end. Marks shall correspond to that given on Shop Drawings and erection drawings related to specific members.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. The Contractor shall accept full responsibility for the design, strength, safety and adequacy of all temporary bracing and all methods of handling and erection and sequencing of erection of structural steel to brace the structure.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.
 1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.
- C. Care shall be exercised to avoid abrasion and other damage. Stack material out of mud and dirt and provide for proper drainage. Protect from damage or soiling by adjacent construction operations. Unload, handle and erect the steel to avoid bends, twists, loss of camber, and other distortions and damage.
- D. Before starting the work, verify all dimensions and levels. Levels shall be established accurately at certain points of the building and shall be maintained carefully during the progress of the work. Erect and install all steel and steel joists in accordance with the approved shop drawings and conforming to all specified tolerances. Erect plumb and true to the lines and levels of the contract drawings.
- E. Align, level, and adjust all members accurately prior to final fastening. Bearing surfaces and surfaces that will be in permanent contact shall be cleaned prior to final assembly of members. Drift pins shall be used only to bring together the several parts. They shall not be used in such manner as to distort or damage the metal.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.
- B. Baseplates Bearing Plates and Leveling Plates: Clean concrete and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified unless more stringent criteria indicated.

1. Joint Type:

- a. Bolts to connect beams to columns in moment connections shall be installed and fully pre-tensioned in accordance with AISC specifications.
- b. All other connections, unless noted on drawings, may be installed and tightened to the snug tight condition in accordance with AISC Specifications.

2. After having been fully tightened, A490 bolts shall not be re-tightened and A325 bolts may be re-tightened not more than one time. Replace with new bolts any bolts that have been loosened and for which re-tightening is prohibited.

3. Correct poor matching of holes by drilling and reaming. Drill to the next larger size and use larger size bolt, if approved by Owner. Welding for redrilling is not permitted.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
 3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.5 CORRECTIVE WORK

- A. Structural steel members or assemblages having fabrication errors, or which exceed permissible tolerances, or which have errors or deformations preventing proper assembly and fitting of parts, shall be reported immediately to Contractor, Owner and Owner's Testing Agency. They shall not be incorporated in the finished work. Such members or assemblages shall be corrected if permitted by Owner, and otherwise shall be replaced. Contractor shall submit drawings showing the errors or deformations and the methods and details of proposed corrective work, and obtain approval prior to performing any corrective work

3.6 REPAIR

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.
- B. Touchup Painting:
 1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

3.7 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
 2. Verify weld materials and inspect welds.
 3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
 2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

END OF SECTION

SECTION 074213.19 - INSULATED METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Acoustic Wall System.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below.
1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.
- E. Delegated-Design Submittal: For all structural and panel components, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 1.4 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For metal panels to include in maintenance manuals.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
 - B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
 - C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
 - D. Retain strippable protective covering on metal panels during installation.

1.6 FIELD CONDITIONS

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

1.7 COORDINATION

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

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: One years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance:
 - 1. Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E72:
 - a. Wind Loads: As indicated on Drawings.
 - b. Other Design Loads: As indicated on Drawings.
 - c. Deflection Limits: For wind loads, no greater than 1/180 of the span.
 - 2. The structural members shall be designed as a complete, field, bolt-together system. All holes in column webs, backer angles and base plates shall be factory drilled. All nuts, bolts, and washers are to be supplied by barrier wall system manufacturer. Field welding of structural components is not permitted.

- a. Columns shall be supplied as factory-welded assemblies by the barrier wall system manufacturer.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- C. Acoustic Performance:
 1. The panels shall be backed by certified independent test data indicating sound absorption and transmission loss characteristics of the panel assembly. Test data must be obtained through independent tests conducted in a NVLAP accredited laboratory in accordance with ASTM E90, Standard Recommended Practice for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and ASTM C423, Standard Method of Test for Sound Absorption of Acoustic Materials in Reverberant Rooms.
 2. Panels shall exhibit a minimum STC 40 and NRC 1.0.

2.2 FOAMED-INSULATION-CORE METAL WALL PANELS

- A. General: All barrier panels and their components shall be factory fabricated, sectional, and all metal-clad modular designed for easy and accurate field assembly. The panels and components shall not be susceptible to damage due to extended exposure to vibration, air temperature or humidity with the passage of time.
 1. Basis-of-Design Product: Subject to compliance with the requirements, provide Kinetics Noise Control, Inc, NOISEBLOCK Barrier Panels, or comparable product by one of the following:
 - a. Pre-approved equivalent.
 2. All panels shall be four inches thick, as noted on drawings, with a solid exterior shell and a perforated/solid interior shell.
 - a. All material to be galvanized steel, Type G90, or galvalume, if painted.
 3. The panel shells, framing members, and internal reinforcements shall be spot welded together to form a metal-sheathed panel of sufficient strength for maximum operating loads specified in the structural performance section of these specifications.
 4. The outer galvanized steel shell thickness shall be 16 ga. minimum and the inner galvanized steel shell shall be 22-ga. minimum thickness.

5. Where perforated materials are indicated, all perforations shall be 3/32" dia. holes on 3/16" staggered centers and shall result in an open area of no less than 23 percent.
6. All panel internal reinforcing members shall be minimum 18 ga. galvanized steel, type G90.
7. Each panel shall be filled with sound absorbing materials that are inert, mildew-resistant, vermin proof, and incombustible and inherently suitable for wet/dry, freeze/thaw cycles. Use of a moisture barrier is not permitted.

2.3 MISCELLANEOUS MATERIALS

- A. All accessory trim items shall be of 18 ga. minimum galvanized steel, type G90 and shall be furnished in factory standard lengths to be field cut to specified dimensions. The location and quantity of sheet metal screws and trim requirements shall be in accordance with the barrier wall system manufacturer's installation details.
- B. All external panel connections, trim items, accessories, panel interfaces and other sections as noted on the drawings shall be sealed with an acoustical sealant that shall not harden and prevent disassembly in the future.

2.4 FABRICATION

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

- a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Panels and Accessories:
 1. Manufacturer's high performance Polyester Powder Paint coating for applications to meet warranty requirements.
 - a. Color: As selected by Architect from manufacturer's standard range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 METAL PANEL INSTALLATION

- A. Install panels according to manufacturer's instructions noting type, color, length, and recommendations, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.
 1. Field cutting of exterior panels should be approved by the manufacturer.
 2. Install panels with exposed fasteners pre-finished to match panel finishes.

- B. Accessories: Install components required for a complete acoustical barrier panel system, including trim, coping, supports and attachments, connections between panels, seam covers, sealants, fillers, closures strips and similar items.

3.3 CLEANING AND PROTECTION

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

END OF SECTION

SECTION 231123 - FACILITY NATURAL-GAS PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipes, tubes, and fittings.
2. Piping specialties.
3. Joining materials.
4. Manual gas shutoff valves.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Piping specialties.
2. Valves. Include pressure rating, capacity, settings, and electrical connection data of selected models.

B. Shop Drawings: For facility natural-gas piping layout. Include plans, piping layout and elevations, sections, and details for fabrication of pipe anchors, hangers, supports for multiple pipes, alignment guides, expansion joints and loops, and attachments of the same to building structure. Detail location of anchors, alignment guides, and expansion joints and loops.

1. Shop Drawing Scale: 1/4 inch per foot.

1.3 INFORMATIONAL SUBMITTALS

A. Certificates:

1. Welding certificates.

B. Site Survey: Plans, drawn to scale, on which natural-gas piping is shown and coordinated with other services and utilities.

C. Field Quality-Control Submittals:

1. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Pipe Welding: Qualify procedures and operators in accordance with the ASME Boiler and Pressure Vessel Code.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Natural-Gas Service: Do not interrupt natural-gas service to facilities occupied by Owner or others unless permitted under the following conditions, and then only after arranging to provide purging and startup of natural-gas supply in accordance with requirements indicated:
 - 1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of natural-gas service.
 - 2. Do not proceed with interruption of natural-gas service without Construction Manager's written permission.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with the 2015 International Fuel Gas Code.
- B. Minimum Operating-Pressure Ratings:
 - 1. Piping and Valves: 100 psig minimum unless otherwise indicated.

2.2 PIPES, TUBES, AND FITTINGS

- A. Steel Pipe: ASTM A53/A53M, black steel, Schedule 40, Type E or S, Grade B.
 - 1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
 - 2. Wrought-Steel Welding Fittings: ASTM A234/A234M for butt welding and socket welding.
 - 3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.

4. Protective Coating for Underground Piping: Factory-applied, three-layer coating of epoxy, adhesive, and PE.

- a. Joint Cover Kits: Epoxy paint, adhesive, and heat-shrink PE sleeves.

2.3 PIPING SPECIALTIES

A. Y-Pattern Strainers:

1. Body: ASTM A126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: 60-mesh startup strainer, and perforated stainless steel basket with 50 percent free area.
4. CWP Rating: 125 psig.

2.4 JOINING MATERIALS

- A. Joint Compound and Tape: Suitable for natural gas.
- B. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.5 MANUAL GAS SHUTOFF VALVES

- A. See "Aboveground, Manual Gas Shutoff Valve Schedule" articles for where each valve type is applied in various services.
- B. General Requirements for Metallic Valves, NPS 2 and Smaller: Comply with ASME B16.33.
 1. CWP Rating: 125 psig.
 2. Threaded Ends: Comply with ASME B1.20.1.
 3. Dryseal Threads on Flare Ends: Comply with ASME B1.20.3.
 4. Tamperproof Feature: Locking feature for valves indicated in "Underground, Manual Gas Shutoff Valve Schedule" and "Aboveground, Manual Gas Shutoff Valve Schedule" articles.
 5. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for valves 1 inch and smaller.
 6. Service Mark: Valves NPS 1-1/4 to NPS 2 having initials "WOG" permanently marked on valve body.
- C. General Requirements for Metallic Valves, NPS 2-1/2 and Larger: Comply with ASME B16.38.

1. CWP Rating: 125 psig.
2. Flanged Ends: Comply with ASME B16.5 for steel flanges.
3. Tamperproof Feature: Locking feature for valves indicated in "Underground, Manual Gas Shutoff Valve Schedule" and "Aboveground, Manual Gas Shutoff Valve Schedule" articles.
4. Service Mark: Initials "WOG" permanently marked on valve body.

D. Bronze Plug Valves: MSS SP-78.

1. Body: Bronze, complying with ASTM B584.
2. Plug: Bronze.
3. Ends: Threaded, socket, or flanged as indicated in "Underground, Manual Gas Shutoff Valve Schedule" and "Aboveground, Manual Gas Shutoff Valve Schedule" articles.
4. Operator: Square head or lug type with tamperproof feature where indicated.
5. Pressure Class: 125 psig.
6. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Close equipment shutoff valves before turning off natural gas to premises or piping section.
- B. Inspect natural-gas piping in accordance with the 2015 International Fuel Gas Code to determine that natural-gas utilization devices are turned off in piping section affected.
- C. Comply with the 2015 International Fuel Gas Code requirements for preventing accidental ignition.

3.2 INSTALLATION OF OUTDOOR PIPING

- A. Comply with the 2015 International Fuel Gas Code for installation and purging of natural-gas piping.
- B. Install underground, natural-gas piping buried at least 12 inches below finished grade.
- C. Steel Piping with Protective Coating:
 1. Apply joint cover kits to pipe after joining to cover, seal, and protect joints.
 2. Repair damage to PE coating on pipe as recommended in writing by protective coating manufacturer.
- D. Install fittings for changes in direction and branch connections.

3.3 INSTALLATION OF VALVES

- A. Install manual gas shutoff valve for each gas appliance.

3.4 PIPING JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints:
 - 1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
 - 2. Cut threads full and clean using sharp dies.
 - 3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
 - 4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.
 - 5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Welded Joints:
 - 1. Construct joints in accordance with AWS D10.12/D10.12M, using qualified processes and welding operators.
 - 2. Bevel plain ends of steel pipe.
 - 3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.
- E. Flared Joints: Cut tubing with roll cutting tool. Flare tube end with tool to result in flare dimensions complying with SAE J513. Tighten finger tight, and then use wrench. Do not overtighten.

3.5 PIPING CONNECTIONS

- A. Install natural-gas piping electrically continuous, and bonded to gas-appliance equipment grounding conductor of the circuit powering the appliance in accordance with NFPA 70.
- B. Where installing piping adjacent to appliances, allow space for service and maintenance of appliances.

- C. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.

3.6 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Test, inspect, and purge natural gas in accordance with the 2015 International Fuel Gas Code and authorities having jurisdiction.
 - 2. Natural-gas piping will be considered defective if it does not pass tests and inspections.
- B. Prepare test and inspection reports.

3.7 OUTDOOR PIPING SCHEDULE

- A. Underground natural-gas piping is to be the following:
 - 1. Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping.
- B. Aboveground natural-gas piping is to be one of the following:
 - 1. Steel pipe with malleable-iron fittings and threaded joints.
 - 2. Steel pipe with wrought-steel fittings and welded joints.

3.8 ABOVEGROUND, MANUAL GAS SHUTOFF VALVE SCHEDULE

- A. Valves for pipe sizes NPS 2 and larger at service meter are to be the following:
 - 1. Bronze plug valve.
- B. Distribution piping valves for pipe sizes NPS 2 and larger are to be the following:
 - 1. Bronze plug valve.
- C. Valves in branch piping for single appliance are to be the following:
 - 1. Bronze plug valve.

END OF SECTION

SECTION 260010 - SUPPLEMENTAL REQUIREMENTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Supplemental requirements generally applicable to the Work specified in Division 26. This Section is also referenced by related Work specified in other Divisions.

1.2 REFERENCES

A. Abbreviations and Acronyms for Electrical Terms and Units of Measure:

1. A: Ampere, unit of electrical current.
2. AC or ac: Alternating current.
3. AFCI: Arc-fault circuit interrupter.
4. AIC: Ampere interrupting capacity.
5. AL, Al, or ALUM: Aluminum.
6. ASD: Adjustable-speed drive.
7. ATS: Automatic transfer switch.
8. AWG: American wire gauge; see ASTM B258.
9. BAS: Building automation system.
10. BIL: Basic impulse insulation level.
11. BIM: Building information modeling.
12. CAD: Computer-aided design or drafting.
13. CATV: Community antenna television.
14. CB: Circuit breaker.
15. cd: Candela, the SI fundamental unit of luminous intensity.
16. CO/ALR: Copper-aluminum, revised.
17. COPS: Critical operations power system.
18. CU or Cu: Copper.
19. CU-AL or AL-CU: Copper-aluminum.
20. dB: Decibel, a unitless logarithmic ratio of two electrical, acoustical, or optical power values.
21. dB(A-weighted) or dB(A): Decibel acoustical sound pressure level with A-weighting applied in accordance with IEC 61672-1.
22. dB(adjusted) or dBa: Decibel weighted absolute noise power with respect to 3.16 pW (minus 85 dBm).
23. dBm: Decibel absolute power with respect to 1 mW.
24. DC or dc: Direct current.
25. DDC: Direct digital control (HVAC).
26. EGC: Equipment grounding conductor.
27. EMI: Electromagnetic interference.

- 28. EPM: Electrical preventive maintenance.
- 29. EPS: Emergency power supply.
- 30. EPSS: Emergency power supply system.
- 31. EV: Electric vehicle.
- 32. EVSE: Electric vehicle supply equipment.
- 33. fc: Footcandle, an internationally recognized unit of illuminance equal to one lumen per square foot or 10.76 lx. The simplified conversion 1 fc = 10 lx in the Specifications is common practice and considered adequate precision for building construction activities. When there are conflicts, lux is the primary unit; footcandle is specified for convenience.
- 34. FLC: Full-load current.
- 35. ft: Foot.
- 36. ft-cd: Foot-candle, the antiquated U.S. Standard unit of illuminance, equal to one international candle measured at a distance of one foot, that was superseded in 1948 by the unit "footcandle" after the SI unit candela (cd) replaced the international candle; see "fc,"
- 37. GEC: Grounding electrode conductor.
- 38. GFCI: Ground-fault circuit interrupter.
- 39. GFPE: Ground-fault protection of equipment.
- 40. GND: Ground.
- 41. HACR: Heating, air conditioning, and refrigeration.
- 42. HDPE: High-density polyethylene.
- 43. HP or hp: Horsepower.
- 44. HVAC: Heating, ventilating, and air conditioning.
- 45. Hz: Hertz.
- 46. IBT: Intersystem bonding termination.
- 47. inch: Inch. To avoid confusion, the abbreviation "in." is not used.
- 48. IP: Ingress protection rating (enclosures); Internet protocol (communications).
- 49. IR: Infrared.
- 50. IS: Intrinsically safe.
- 51. IT&R: Inspecting, testing, and repair.
- 52. ITE: Information technology equipment.
- 53. kAIC: Kiloampere interrupting capacity.
- 54. kcmil or MCM: One thousand circular mils.
- 55. kV: Kilovolt.
- 56. kVA: Kilovolt-ampere.
- 57. kVA_r or kVAR: Kilovolt-ampere reactive.
- 58. kW: Kilowatt.
- 59. kWh: Kilowatt-hour.
- 60. LAN: Local area network.
- 61. lb: Pound (weight).
- 62. lbf: Pound (force).
- 63. LCD: Liquid-crystal display.
- 64. LED: Light-emitting diode.
- 65. Li-ion: Lithium-ion.
- 66. lm: Lumen, the SI derived unit of luminous flux.
- 67. LNG: Liquefied natural gas.
- 68. LP-Gas: Liquefied petroleum gas.

- 69. LRC: Locked-rotor current.
- 70. LV: Low voltage.
- 71. lx: Lux, the SI derived unit of illuminance equal to one lumen per square meter.
- 72. m: Meter.
- 73. MG set: Motor-generator set.
- 74. MLO: Main lugs only.
- 75. MV: Medium voltage.
- 76. MVA: Megavolt-ampere.
- 77. mW: Milliwatt.
- 78. MW: Megawatt.
- 79. MWh: Megawatt-hour.
- 80. NC: Normally closed.
- 81. Ni-Cd: Nickel-cadmium.
- 82. NO: Normally open.
- 83. NPT: National (American) standard pipe taper.
- 84. OCPD: Overcurrent protective device.
- 85. PC: Personal computer.
- 86. PF or pf: Power factor.
- 87. PHEV: Plug-in hybrid electric vehicle.
- 88. PLC: Programmable logic controller.
- 89. PLFA: Power-limited fire alarm.
- 90. PoE: Power over Ethernet.
- 91. PVC: Polyvinyl chloride.
- 92. pW: Picowatt.
- 93. RFI: (electrical) Radio-frequency interference; (contract) Request for interpretation.
- 94. RMS or rms: Root-mean-square.
- 95. RPM or rpm: Revolutions per minute.
- 96. SCR: Silicon-controlled rectifier.
- 97. SPD: Surge protective device.
- 98. sq.: Square.
- 99. SWD: Switching duty.
- 100. TCP/IP: Transmission control protocol/Internet protocol.
- 101. TEFC: Totally enclosed fan-cooled.
- 102. TR: Tamper resistant.
- 103. TVSS: Transient voltage surge suppressor.
- 104. UL: (standards) Underwriters Laboratories, Inc.; (product categories) UL, LLC.
- 105. UL CCN: UL Category Control Number.
- 106. UPS: Uninterruptible power supply.
- 107. UV: Ultraviolet.
- 108. V: Volt, unit of electromotive force.
- 109. V(ac): Volt, alternating current.
- 110. V(dc): Volt, direct current.
- 111. VA: Volt-ampere, unit of complex electrical power.
- 112. VAR: Volt-ampere reactive, unit of reactive electrical power.
- 113. VFC: Variable-frequency controller.
- 114. VOM: Volt-ohm-multimeter.

- 115. VRLA: Valve regulated lead acid; also called "sealed lead acid (SLA)" or "valve regulated sealed lead acid."
- 116. W: Watt, unit of real electrical power.
- 117. Wh: Watt-hour, unit of electrical energy usage.
- 118. WR: Weather resistant.

B. Definitions:

- 1. Basic Impulse Insulation Level (BIL): Reference insulation level expressed in impulse crest voltage with a standard wave not longer than 1.5 times 50 microseconds and 1.5 times 40 microseconds.
- 2. Cable: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "cable" is (1) a conductor with insulation, or a stranded conductor with or without insulation (single-conductor cable); or (2) a combination of conductors insulated from one another (multiple-conductor cable).
- 3. Conductor: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "conductor" is (1) a wire or combination of wires not insulated from one another, suitable for carrying an electric current; (2) (National Electrical Safety Code) a material, usually in the form of wire, cable, or bar, suitable for carrying an electric current; or (3) (general) a substance or body that allows a current of electricity to pass continuously along it.
- 4. Enclosure: The case or housing of an apparatus, or the fence or wall(s) surrounding an installation, to prevent personnel from accidentally contacting energized parts or to protect the equipment from physical damage. Types of enclosures and enclosure covers include the following:
 - a. Cabinet: An enclosure that is designed for either surface mounting or flush mounting and is provided with a frame, mat, or trim in which a swinging door or doors are or can be hung.
 - b. Concrete Box: A box intended for use in poured concrete.
 - c. Conduit Body: A means for providing access to the interior of a conduit or tubing system through one or more removable covers at a junction or terminal point. In the United States, conduit bodies are listed in accordance with outlet box requirements.
 - d. Conduit Box: A box having threaded openings or knockouts for conduit, EMT, or fittings.
 - e. Cutout Box: An enclosure designed for surface mounting that has swinging doors or covers secured directly to and telescoping with the walls of the enclosure.
 - f. Device Box: A box with provisions for mounting a wiring device directly to the box.
 - g. Extension Ring: A ring intended to extend the sides of an outlet box or device box to increase the box depth, volume, or both.
 - h. Floor Box: A box mounted in the floor intended for use with a floor box cover and other components to complete the floor box enclosure.

- i. Floor-Mounted Enclosure: A floor box and floor box cover assembly with means to mount in the floor that is sealed against the entrance of scrub water at the floor level.
 - j. Junction Box: A box with a blank cover that joins different runs of raceway or cable and provides space for connection and branching of the enclosed conductors.
 - k. Outlet Box: A box that provides access to a wiring system having pryout openings, knockouts, threaded entries, or hubs in either the sides or the back, or both, for the entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting an outlet box cover, but without provisions for mounting a wiring device directly to the box.
 - l. Pull Box: A box with a blank cover that joins different runs of raceway and provides access for pulling or replacing the enclosed cables or conductors.
 - m. Recessed Access Floor Box: A floor box with provisions for mounting wiring devices below the floor surface.
 - n. Recessed Access Floor Box Cover: A floor box cover with provisions for passage of cords to recessed wiring devices mounted within a recessed floor box.
 - o. Ring: A sleeve, which is not necessarily round, used for positioning a recessed wiring device flush with the plaster, concrete, drywall, or other wall surface.
 - p. Ring Cover: A box cover, with raised center portion to accommodate a specific wall or ceiling thickness, for mounting wiring devices or luminaires flush with the surface.
5. Emergency Systems: Those systems legally required and classed as emergency by municipal, state, federal, or other codes, or by any governmental agency having jurisdiction that are designed to ensure continuity of lighting, electrical power, or both, to designated areas and equipment in the event of failure of the normal supply for safety to human life.
6. Fault Limited: Providing or being served by a source of electrical power that is limited to not more than 100 W when tested in accordance with UL 62368-1.
- a. The term "fault limited" is intended to encompass most Class 1, 2, and 3 power-limited sources complying with Article 725 of NFPA 70; Class ES1 and ES2 electrical energy sources that are Class PS1 electrical power sources (e.g., USB); and Class ES3 electrical energy sources that are Class PS1 and PS2 electrical power sources (e.g., PoE). See UL 62368-1 for discussion of classes of electrical energy sources and classes of electrical power sources.
7. High-Performance Building: A building that integrates and optimizes on a life-cycle basis all major high-performance attributes, including energy conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.
8. Jacket: A continuous nonmetallic outer covering for conductors or cables.
9. Plenum: A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.

10. Receptacle: A fixed connecting device arranged for insertion of a power cord plug. Also called a power jack.
11. Receptacle Outlet: One or more receptacles mounted in a box with a suitable protective cover.
12. Sheath: A continuous metallic covering for conductors or cables.
13. UL Category Control Number (CCN): An alphabetic or alphanumeric code used to identify product categories covered by UL's Listing, Classification, and Recognition Services.
14. Voltage Class: For specified circuits and equipment, voltage classes are defined as follows:
 - a. Control Voltage: Having electromotive force between any two conductors, or between a single conductor and ground, that is supplied from a battery or other Class 2 or Class 3 power-limited source.
 - b. Line Voltage: (1) (controls) Designed to operate using the supplied low-voltage power without transformation. (2) (transmission lines, transformers, SPDs) The line-to-line voltage of the supplying power system.
 - c. Extra-Low Voltage (ELV): Not having electromotive force between any two conductors, or between a single conductor and ground, exceeding 30 V(ac rms), 42 V(ac peak), or 60 V(dc).
 - d. Low Voltage (LV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated above 30 V but not exceeding 1000 V.
 - e. Medium Voltage (MV): Having electromotive force between any two conductors, or between a single conductor and ground, that is rated about 1 kV but not exceeding 69 kV.
15. Wire: In accordance with NIST NBS Circular 37 and IEEE standards, in the United States for the purpose of interstate commerce, the definition of "wire" is a slender rod or filament of drawn metal. A group of small wires used as a single wire is properly called a "stranded wire." A wire or stranded wire covered with insulation is properly called an "insulated wire" or a "single-conductor cable." Nevertheless, when the context indicates that the wire is insulated, the term "wire" will be understood to include the insulation.

1.3 SEQUENCING

- A. Conduct and submit results of power system studies before submitting Product Data and Shop Drawings for electrical equipment.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data:
 1. Provide emergency operation, normal operation, and preventive maintenance manuals for each system, equipment, and device listed below:

- a. Medium Voltage Transformer.
 - b. Switchboards
 - c. Generators
 - d. Transfer Switches
2. Include the following information:
 - a. Manufacturer's operating specifications.
 - b. User's guides for software and hardware.
 - c. Schedule of maintenance material items recommended to be stored at Project site.
 - d. Detailed instructions covering operation under both normal and abnormal conditions.
 - e. Time-current curves for overcurrent protective devices and manufacturer's written instructions for testing and adjusting their settings.
 - f. List of load-current and overload-relay heaters with related motor nameplate data.
 - g. Manufacturer's instructions for setting field-adjustable components.
 - h. Manufacturer's instructions for testing, adjusting, and reprogramming microprocessor controls.
 - i. EPSS: Manufacturer's system checklists, maintenance schedule, and maintenance log sheets in accordance with NFPA 110.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 CLOSEOUT ACTIVITIES

- A. Training: With assistance from factory-authorized service representatives, train Owner's maintenance personnel on the following topics:
 1. How to adjust, operate, and maintain equipment specified in Section 261219 "Pad-Mounted, Liquid-Filled, Medium-Voltage Transformers."
 2. How to adjust, operate, and maintain equipment specified in Section 261326 "Medium-Voltage Metal-Clad Switchgear."
 3. How to adjust, operate, and maintain equipment specified in Section 262300 "Low-Voltage Switchgear."
 4. How to adjust, operate, and maintain equipment specified in Section 263213.13 "Diesel-Engine-Driven Generator Sets."
 5. How to adjust, operate, and maintain equipment specified in Section 263213.16 "Gas-Engine-Driven Generator Sets."
 6. How to adjust, operate, and maintain transfer switches and related equipment, including ground-fault protection system, specified in Section 263600 "Transfer Switches."

7. How to adjust, operate, and maintain devices specified in Section 264313 "Surge Protective Devices for Low-Voltage Electrical Power Circuits."

END OF SECTION

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire.
2. Connectors and splices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260513 "Medium-Voltage Cables" for single-conductor and multiconductor cables, cable splices, and terminations for electrical distribution systems with 601 to 35 000 V.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

D. Conductor Insulation:

1. Type THHN and Type THWN-2. Comply with UL 83.

2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
 - 1. Material: Copper.
 - 2. Type: Two hole with standard barrels.
 - 3. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders:
 - 1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits:
 - 1. Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- B. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway .

3.3 INSTALLATION, GENERAL

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points in accordance with Section 260533.13 "Conduits for Electrical Systems" prior to pulling conductors and cables.

- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inch of slack.
- D. Comply with requirements in Section 284621.11 "Addressable Fire-Alarm Systems" for connecting, terminating, and identifying wires and cables.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.7 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

3.8 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
 - 2. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors feeding the following critical equipment and services for compliance with requirements:
 - a. Transfer Switches.
 - b. Generator.
 - 3. Perform each of the following visual and electrical tests:
 - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
 - b. Test bolted connections for high resistance using one of the following:
 - 1) A low-resistance ohmmeter.
 - 2) Calibrated torque wrench.
 - 3) Thermographic survey.
 - c. Inspect compression-applied connectors for correct cable match and indentation.
 - d. Inspect for correct identification.
 - e. Inspect cable jacket and condition.
 - f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500 V(dc) for 300 V rated cable and 1000 V(dc) for 600 V rated cable for a one-minute duration.
 - g. Continuity test on each conductor and cable.
 - h. Uniform resistance of parallel conductors.
 - 4. Initial Infrared Scanning: After Substantial Completion, but before Final Acceptance, perform an infrared scan of each splice in conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner. Correct deficiencies determined during the scan.

- a. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - b. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
5. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.
- B. Cables will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports to record the following:
 1. Procedures used.
 2. Results that comply with requirements.
 3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.
2. Grounding and bonding clamps.
3. Grounding and bonding bushings.
4. Grounding and bonding connectors.
5. Grounding and bonding busbars.
6. Grounding (earthing) electrodes.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. In addition to items specified in Section 260010 "Supplemental Requirements for Electrical," include the following:
 - a. Plans showing locations of grounding features described in "Field Quality Control" Article, including the following:
 - 1) Rod electrodes.
 - 2) Grounding arrangements and connections for separately derived systems.
 - b. Instructions for periodic testing and inspection of grounding features at grounding connections for separately derived systems based on NFPA 70B.
 - 1) Tests must determine if ground-resistance or impedance values remain within specified maximums, and instructions must recommend corrective action if values do not.
 - 2) Include recommended testing intervals.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. General Characteristics: 600 V, THHN/THWN-2, copper wire or cable, green color, in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. ASTM - Bare Copper Grounding and Bonding Conductor:

1. Referenced Standards: Complying with one or more of the following:
 - a. Soft or Annealed Copper Wire: ASTM B3
 - b. Concentric-Lay Stranded Copper Conductor: ASTM B8.
 - c. Tin-Coated Soft or Annealed Copper Wire: ASTM B33.
 - d. 19-Wire Combination Unilay-Stranded Copper Conductor: ASTM B787/B787M.

2.2 GROUNDING AND BONDING CLAMPS

A. Description: Clamps suitable for attachment of grounding and bonding conductors to grounding electrodes, pipes, tubing, and rebar. Grounding and bonding clamps specified in this article are also suitable for use with communications applications; see Section 270526 "Grounding and Bonding for Communications Systems," for selection and installation guidelines.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
 - b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.

D. UL KDER and KDSH - Hex-Fitting-Type Pipe and Rod Grounding and Bonding Clamp :

1. General Characteristics:
 - a. Two pieces with zinc-plated bolts.
 - b. Clamp Material: Aluminum.
 - c. Listed for outdoor use.

E. UL KDER - Beam Grounding and Bonding Clamp :

1. General Characteristics: Mechanical-type, terminal, ground wire access from four directions; with dual, tin-plated or silicon bronze bolts.

F. UL KDER - Exothermically Welded Connection :

1. General Characteristics: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING AND BONDING BUSHINGS

A. Description: Bonding bushings connect conduit fittings, tubing fittings, threaded metal conduit, and unthreaded metal conduit to metal boxes and equipment enclosures, and have one or more bonding screws intended to provide electrical continuity between bushing and enclosure. Grounding bushings have provision for connection of bonding or grounding conductor and may or may not also have bonding screws.

B. Source Limitations: Obtain products from single manufacturer.

C. Performance Criteria:

1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

D. UL KDER - Grounding Bushing :

1. General Characteristics: Threaded bushing with insulated throat and mechanical-type wire terminal.

2.4 GROUNDING AND BONDING CONNECTORS

- A. Source Limitations: Obtain products from single manufacturer.
- B. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
 - b. Grounding and Bonding Equipment for Communications: UL CCN KDSH; including UL 467.
- C. UL KDER - Pressure-Type Grounding and Bonding Busbar Cable Connector :
 - 1. General Characteristics: Copper or copper alloy, for compression bonding of one or more conductor directly to copper busbar. Listed for direct burial.
- D. UL KDER - Crimped Lug Pressure-Type Grounding and Bonding Busbar Terminal :
 - 1. General Characteristics: Cast silicon bronze, solderless compression-type wire terminals; with long barrel and two holes spaced on 5/8 or 1 inch centers for two-bolt connection to busbar.
- E. UL KDER - Split-Bolt Service-Post Pressure-Type Grounding and Bonding Busbar Terminal :
 - 1. General Characteristics: Bolts that surround cable and bond to cable under compression when nut is tightened after assembly is screwed into busbar opening.
- F. UL KDER - Crimped Pressure-Type Grounding and Bonding Cable Connector :
 - 1. General Characteristics: Crimp-and-compress connectors that bond to conductor when connector is compressed around conductor.
 - a. Copper, C and H shaped.

2.5 GROUNDING (EARTHING) ELECTRODES

- A. Description: Grounding electrodes include rod electrodes, ring electrodes, metal underground water pipes, metal building frames, concrete-encased electrodes, and pipe and plate electrodes.
- B. Source Limitations: Obtain products from single manufacturer.
- C. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
- D. UL KDER - Rod Electrode :
 - 1. General Characteristics: Copper-clad steel, sectional type; 3/4 inch by 10 ft.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine facility's grounding electrode system and equipment grounding for compliance with requirements for maximum ground-resistance level and other conditions affecting performance of grounding and bonding of electrical system.
- B. Inspect test results of grounding system measured at point of electrical service equipment connection.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with connection of electrical service equipment only after unsatisfactory conditions have been corrected.

3.2 SELECTION OF GROUNDING AND BONDING CONDUCTORS

- A. Conductors: Install solid conductor for 8 AWG and smaller, and stranded conductors for 6 AWG and larger unless otherwise indicated.
- B. Custom-Length Insulated Equipment Bonding Jumpers: 6 AWG, 19-strand, Type THHN.
- C. Bonding Cable: 28 kcmil, 14 strands of 17 AWG conductor, 1/4 inch in diameter.
- D. Bonding Conductor: 4 AWG or 6 AWG, stranded conductor.
- E. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inch wide and 1/16 inch thick.
- F. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inch wide and 1/16 inch thick.

3.3 SELECTION OF CONNECTORS

- A. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Connections to Ground Rods at Test Wells: Bolted connectors.

3.4 INSTALLATION

- A. Comply with manufacturer's published instructions.
- B. Reference Standards:
 - 1. Consult Architect for resolution of conflicting requirements.
- C. Special Techniques:
 - 1. Conductors:
 - a. Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
 - 2. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

- a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
- b. Make connections with clean, bare metal at points of contact.
- c. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
- d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
- e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- f. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1) Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate adjacent parts.
 - 2) Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3) Use exothermic-welded connectors for outdoor locations; if disconnect-type connection is required, use bolted clamp.

3. Electrodes:

- a. Ground Rods: Drive rods until tops are 2 inch below finished floor or final grade unless otherwise indicated.
 - 1) Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
 - 2) Use exothermic welds for below-grade connections.

4. Grounding Separately Derived Systems:

- a. Generator: Install grounding electrode(s) at generator location. Electrode must be connected to equipment grounding conductor and to frame of generator.

5. Equipment Grounding:

- a. Install insulated equipment grounding conductors with feeders and branch circuits.
- b. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1) Feeders and branch circuits.
 - 2) Receptacle circuits.
 - 3) Three-phase motor and appliance branch circuits.
- c. Metallic Fences: Comply with requirements of IEEE C2.

- 1) Grounding Conductor: Bare, tinned copper, not less than 8 AWG.
- 2) Gates: Must be bonded to grounding conductor with flexible bonding jumper.
- 3) Barbed Wire: Strands must be bonded to grounding conductor.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with calibrated torque wrench in accordance with manufacturer's published instructions.
3. Test completed grounding system at each location where maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method in accordance with IEEE Std 81.
 - c. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.
4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to record of tests and observations. Include number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

B. Nonconforming Work:

1. Grounding system will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective components and retest.

C. Collect, assemble, and submit test and inspection reports.

1. Report measured ground resistances that exceed the following values:
 - a. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.

- b. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms. |
- c. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
- d. Power Distribution Units or Panelboards Serving Electronic Equipment: 1 ohm .
- e. Substations and Pad-Mounted Equipment: 5 ohms.
- f. Manhole Grounds: 10 ohms.

3.6 PROTECTION

- A. After installation, protect grounding and bonding cables and equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Support, anchorage, and attachment components.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame Rating: Class 1.
2. Self-extinguishing according to ASTM D635.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.

1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Material for Channel, Fittings, and Accessories: Galvanized steel.
3. Channel Width: Selected for applicable load criteria.
4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

PART 3 - EXECUTION

3.1 SELECTION

- A. Comply with the following standards for selection and installation of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 - 1. NECA NEIS 101
 - 2. NECA NEIS 102.
 - 3. NECA NEIS 105.
 - 4. NECA NEIS 111.
- B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.
- C. Comply with requirements for raceways specified in Section 260533.13 "Conduits for Electrical Systems."
- D. Comply with requirements for boxes specified in Section 260533.16 "Boxes and Covers for Electrical Systems."
- E. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and ERM as required by NFPA 70. Minimum rod size must be 1/4 inch in diameter.
- F. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- G. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2 inch and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 INSTALLATION OF SUPPORTS

- A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.
- B. Raceway Support Methods: In addition to methods described in NECA NEIS 1, EMT and ERM may be supported by openings through structure members, in accordance with NFPA 70.

- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inch thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inch thick.
 - 6. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated, but not less than 4 inch larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000 psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 033000 "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base as follows:
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.4 PAINTING

A. Touchup:

1. Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
2. Comply with requirements in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION

SECTION 260533.13 - CONDUITS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type EMT-S duct raceways and elbows.
2. Type ERMC-S duct raceways, elbows, couplings, and nipples.
3. Type FMC-S and Type FMC-A duct raceways.
4. Type LFMC duct raceways.
5. Type PVC duct raceways and fittings.
6. Fittings for conduit, tubing, and cable.
7. Solvent cements.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

C. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260519 "Low-Voltage for Electrical Power Conductors and Cables" for nonmetallic underground conduit with conductors (Type NUCC).

1.2 DEFINITIONS

- A. Conduit: A structure containing one or more duct raceways.
- B. Duct Raceway: A single enclosed raceway for conductors or cable.
- C. Duct Bank: An arrangement of conduit providing one or more continuous duct raceways between two points.

PART 2 - PRODUCTS

2.1 TYPE EMT-S DUCT RACEWAYS AND ELBOWS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FJMX; including UL 797.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL FJMX - Steel Electrical Metal Tubing (EMT-S) and Elbows:

1. Material: Steel.
2. Options:
 - a. Exterior Coating: Zinc.
 - b. Interior Coating: Zinc.
 - c. Minimum Trade Size: Metric designator 21 (trade size 3/4).
 - d. Colors: As indicated on Drawings.

2.2 TYPE ERM-C-S DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYIX; including UL 6.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERM-C-S-G), Elbows, Couplings, and Nipples:

1. Exterior Coating: Zinc.
2. Options:
 - a. Interior Coating: Zinc.
 - b. Minimum Trade Size: Metric designator 21 (trade size 3/4).
 - c. Colors: As indicated on Drawings.

2.3 TYPE FMC-S AND TYPE FMC-A DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXUZ; including UL 1.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXUZ - Steel Flexible Metal Conduit (FMC-S):

1. Material: Steel.
2. Options:
 - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
 - b. Colors: As indicated on Drawings.

2.4 TYPE LFMC DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXHR; including UL 360.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXHR - Steel Liquidtight Flexible Metal Conduit (LFMC-S):

1. Material: Steel.
2. Options:
 - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

- b. Colors: As indicated on Drawings.

2.5 TYPE PVC DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DZYR; including UL 651.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DZYR - Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:

1. Dimensional Specifications: Schedule 40.
2. Options:
 - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
 - b. Markings: For use with maximum 90 deg C wire.

2.6 FITTINGS FOR CONDUIT, TUBING, AND CABLE

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL EBMB - Duct Fittings for Hazardous (Classified) Locations:

1. Listing Criteria: UL CCN EBMB; including UL 1203.

D. UL DWTT - Fittings for Type ERM C, Type IM C, Type PVC, Type HDPE, Type EPEC, and Type RTRC Duct Raceways:

1. Listing Criteria: UL CCN DWTT; including UL 514B.
2. Options:
 - a. Material: Die cast.
 - b. Coupling Method: Setscrew coupling. Setscrew couplings with only single screw per conduit are unacceptable.
 - c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.

E. UL FKA V - Fittings for Type EMT Duct Raceways:

1. Listing Criteria: UL CCN FKA V; including UL 514B.
2. Options:
 - a. Material: Die cast.
 - b. Coupling Method: Setscrew coupling. Setscrew couplings with only single screw per conduit are unacceptable.
 - c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.

F. UL ILNR - Fittings for Type FMC Duct Raceways:

1. Listing Criteria: UL CCN ILNR; including UL 514B.

G. UL DXAS - Fittings for Type LFMC and Type LFNC Duct Raceways:

1. Listing Criteria: UL CCN DXAS; including UL 514B.

2.7 SOLVENT CEMENTS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DWTT; including UL 514B.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

PART 3 - EXECUTION

3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.
- B. Outdoors:
 - 1. Exposed and Subject to Severe Physical Damage: ERM C.
 - 2. Exposed and Subject to Physical Damage: ERM C.
 - a. Locations less than 2.5 m (8 ft) above finished floor.
 - 3. Exposed and Not Subject to Physical Damage: ERM C.
 - 4. Concealed Aboveground: ERM C.
 - 5. Direct Buried: PVC-40.
 - 6. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
- C. Indoors:
 - 1. Exposed and Subject to Severe Physical Damage: ERM C. Locations include the following:
 - a. Loading docks.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - d. Vehicle Areas under 20-feet above finished floor.
 - 2. Exposed and Not Subject to Physical Damage: EMT.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT .
 - 4. Damp or Wet Locations: ERM C.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC FMC.
- D. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.
 - 1. ERM C and IMC: Provide threaded-type fittings unless otherwise indicated.

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Comply with manufacturer's published instructions.

B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:

1. Type EMT-S: Article 358 of NFPA 70 and NECA NEIS 101.
2. Type ERMC-S: Article 344 of NFPA 70 and NECA NEIS 101.
3. Type FMC-S: Article 348 of NFPA 70 and NECA NEIS 101.
4. Type LFMC: Article 350 of NFPA 70 and NECA NEIS 101.
5. Type PVC: Article 356 of NFPA 70 and NECA NEIS 111.
6. Expansion Fittings: NEMA FB 2.40.
7. Consult Architect for resolution of conflicting requirements.

C. Special Installation Techniques:

1. General Requirements for Installation of Duct Raceways:

- a. Complete duct raceway installation before starting conductor installation.
- b. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of 2 ft above finished floor.
- c. Install no more than equivalent of three 90-degree bends in conduit run except for control wiring conduits, for which no more than equivalent of two 90-degree fewer bends are permitted. Support within 12 inch of changes in direction.
- d. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
- e. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- f. Support conduit within 12 inch of enclosures to which attached.
- g. Install duct sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed duct raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install duct sealing fittings in accordance with NFPA 70.
- h. Install devices to seal duct raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of duct raceways at the following points:
 - 1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2) Where an underground service duct raceway enters a building or structure.
 - 3) Conduit extending from interior to exterior of building.
 - 4) Conduit extending into pressurized duct raceway and equipment.

- 5) Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
 - 6) Where otherwise required by NFPA 70.
- i. Do not install duct raceways or electrical items on "explosion-relief" walls or rotating equipment.
 - j. Do not install conduits within 2 inch of the bottom side of a metal deck roof.
 - k. Keep duct raceways at least 6 inch away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
 - l. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
 - m. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb tensile strength. Leave at least 12 inch of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
 - n. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.
- 1) Termination fittings with shoulders do not require two locknuts.
- o. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- 2. Types ERM and IMC:
 - a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.
- 3. Types FMC, LFMC, and LFNC:
 - a. Provide a maximum of 72 inch of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
- 4. Types PVC, HDPE, and EPEC:

- a. Do not install Type PVC, Type HDPE, or Type EPEC conduit where ambient temperature exceeds 122 deg F. Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
 - b. Comply with manufacturer's published instructions for solvent welding and fittings.
- 5. Duct Raceways Embedded in Slabs:
 - a. Run duct raceways larger than metric designator 27 (trade size 1) below concrete slab Run duct raceways larger than metric designator 27 (trade size 1) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place duct raceway close to slab support. Secure duct raceways to reinforcement at maximum 10 ft intervals.
 - b. Arrange duct raceways to cross building expansion joints with expansion fittings at right angles to the joint.
 - c. Arrange duct raceways to ensure that each is surrounded by minimum of 2 inch of concrete without voids.
 - d. Do not embed threadless fittings in concrete unless locations have been specifically approved by Architect.
- 6. Stub-ups to Above Recessed Ceilings:
 - a. Provide EMT, IMC, or ERM C for duct raceways.
 - b. Provide a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- 7. Duct Raceway Terminations at Locations Subject to Moisture or Vibration:
 - a. Provide insulating bushings to protect conductors, including conductors smaller than 4 AWG. Install insulated throat metal grounding bushings on service conduits.
- 8. Duct Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.
 - a. EMT: Provide setscrew, cast-metal fittings. Comply with NEMA FB 2.10.
 - b. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.
- 9. Expansion-Joint Fittings:
 - a. Install in runs of aboveground PVC that are located where environmental temperature change may exceed 30 deg F and that have straight-run length that exceeds 25 ft. Install in runs of aboveground ERM C and EMT conduit that are located where environmental temperature change may exceed 100 deg F and that have straight-run length that exceeds 100 ft.
 - b. Install type and quantity of fittings that accommodate temperature change listed for the following locations:

- 1) Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
 - 2) Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
 - 3) Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
 - 4) Attics: 135 deg F temperature change.
- c. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.
 - d. Install expansion fittings at locations where conduits cross building or structure expansion joints.
 - e. Install expansion-joint fitting with position, mounting, and piston setting selected in accordance with manufacturer's published instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
10. Identification: Provide labels for conduit assemblies, duct raceways, and associated electrical equipment.
 - a. Provide warning signs.
- D. Interfaces with Other Work:
1. Coordinate installation of new products with existing conditions.
 2. Coordinate with Section 078413 "Penetration Firestopping" for installation of firestopping at penetrations of fire-rated floor and wall assemblies.
 3. Coordinate with Section 260529 "Hangers and Supports for Electrical Systems" for installation of conduit hangers and supports.

3.3 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 260533.16 - BOXES AND COVERS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metallic outlet boxes, device boxes, rings, and covers.
2. Junction boxes and pull boxes.
3. Cover plates for device boxes.
4. Hoods for outlet boxes.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

C. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Cover Plates.
2. Hoods for outlet boxes.

PART 2 - PRODUCTS

2.1 METALLIC OUTLET BOXES, DEVICE BOXES, RINGS, AND COVERS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN QCIT; including UL 514A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT - Metallic Outlet Boxes and Covers:

1. Description: Box having pryout openings, knockouts, threaded entries, or hubs in either the sides of the back, or both, for entrance of conduit, conduit or cable fittings, or cables, with provisions for mounting outlet box cover, but without provisions for mounting wiring device directly to box.
2. Options:
 - a. Material: Sheet steel.
 - b. Sheet Metal Depth: Minimum 2.5 inch.
 - c. Cast-Metal Depth: Minimum 2.4 inch.
 - d. Luminaire Outlet Boxes and Covers: Nonadjustable, listed and labeled for attachment of luminaire weighing up to 50 lb.

D. UL QCIT - Metallic Device Boxes:

1. Description: Box with provisions for mounting wiring device directly to box.
2. Options:
 - a. Material: Sheet steel and Cast metal.
 - b. Sheet Metal Depth: minimum 2.5 inch.
 - c. Cast-Metal Depth: minimum 2.4 inch.

E. UL QCIT - Metallic Extension Rings:

1. Description: Ring intended to extend sides of outlet box or device box to increase box depth, volume, or both.

2.2 JUNCTION BOXES AND PULL BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN BGUZ; including UL 50 and UL 50E.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL BGUZ - Indoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:
 - a. Degree of Protection: Type 1.

D. UL BGUZ - Indoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:
 - a. Degree of Protection: Type 1.

E. UL BGUZ - Outdoor Sheet Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:
 - a. Degree of Protection: Type 3R.

F. UL BGUZ - Outdoor Cast-Metal Junction and Pull Boxes:

1. Description: Box with a blank cover that serves the purpose of joining different runs of raceway or cable.
2. Options:
 - a. Degree of Protection: Type 3R.

2.3 COVER PLATES FOR DEVICES BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria: UL CCN QCIT or UL CCN QCMZ; including UL 514D.
3. Wallplate-Securing Screws: Metal with head color to match wallplate finish.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL QCIT or QCMZ - Metallic Cover Plates for Device Boxes:

1. Options:
 - a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
 - b. Wallplate Material: 0.032 inch thick, Type 302/304 non-magnetic stainless steel with brushed finish.

D. UL QCIT or QCMZ - Nonmetallic Cover Plates for Device Boxes:

1. Options:
 - a. Damp and Wet Locations: Listed, labeled, and marked for location and use. Provide gaskets and accessories necessary for compliance with listing.
 - b. Wallplate Material: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device.
 - c. Color: As indicated on architectural Drawings.

2.4 HOODS FOR OUTLET BOXES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70 and marked for intended location and use.
2. Listing Criteria:
 - a. UL CCN QCIT or UL CCN QCMZ; including UL 514D.
 - b. Receptacle, Hood, Cover Plate, Gaskets, and Seals: UL 498 Supplement SA when mated with box or enclosure complying with UL 514A, UL 514C, or UL 50E.
3. Mounts to box using fasteners different from wiring device.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.

2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.
- C. UL QCIT or QCMZ - Extra-Duty, While-in-Use Hoods for Outlet Boxes:
1. Additional Characteristics: Marked "Extra-Duty" in accordance with UL 514D.
 2. Options:
 - a. Provides gray, weatherproof, "while-in-use" cover.
 - b. Manufacturer may combine nonmetallic device box with hood as extra-duty rated assembly.

PART 3 - EXECUTION

3.1 SELECTION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

- A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of boxes and enclosures. Consult Architect for resolution of conflicting requirements.
- B. Degree of Protection:
1. Outdoors:
 - a. Type 3R unless otherwise indicated.
 - b. Locations Exposed to Hosedown: Type 4.
 - c. Locations Subject to Potential Flooding: Type 6P.
 - d. Locations Aboveground Where Mechanism Must Operate When Ice Covered: Type 3S.
 - e. Locations in-Ground or Exposed to Corrosive Agents: Type 4X.
 - f. Locations in-Ground or Exposed to Corrosive Agents Where Mechanism Must Operate When Ice Covered: Type 3SX.
 2. Indoors:
 - a. Type 1 unless otherwise indicated.
 - b. Damp or Dusty Locations: Type 12.
- C. Exposed Boxes Installed Less Than 2.5 m (8 ft) Above Floor:
1. Provide cast-metal boxes.
 2. Provide exposed cover. Flat covers with angled mounting slots or knockouts are prohibited.

3.2 INSTALLATION OF BOXES AND COVERS FOR ELECTRICAL SYSTEMS

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:
 - 1. Outlet, Device, Pull, and Junction Boxes: Article 314 of NFPA 70.
 - 2. Consult Architect for resolution of conflicting requirements.
- C. Special Installation Techniques:
 - 1. Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures.
 - 2. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
 - 3. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for purpose.
 - 4. Fasten junction and pull boxes to, or support from, building structure. Do not support boxes by conduits.
 - 5. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to ensure a continuous ground path.
 - 6. Identification: Provide labels for boxes and associated electrical equipment.
 - a. Identify field-installed conductors, interconnecting wiring, and components.
 - b. Provide warning signs.
 - c. Label each box with engraved metal or laminated-plastic nameplate.

3.3 CLEANING

- A. Remove construction dust and debris from boxes before installing wallplates, covers, and hoods.

3.4 PROTECTION

- A. After installation, protect boxes from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 260544 - SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Round sleeves.
2. Sleeve-seal fittings.
3. Pourable sealants.
4. Foam sealants.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 078413 "Penetration Firestopping" for penetration firestopping installed in fire-resistance-rated walls, horizontal assemblies, and smoke barriers, with and without penetrating items.

PART 2 - PRODUCTS

2.1 ROUND SLEEVES

A. Steel Wall Sleeves:

1. General Characteristics: ASTM A53/A53M, Type E, Grade B, Schedule 40, zinc coated, plain ends and integral waterstop.

B. Cast-Iron Wall Sleeves:

1. General Characteristics: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop.

C. PVC Pipe Sleeves:

1. General Characteristics: ASTM D1785, Schedule 40.

D. PVC Molded Sleeves:

1. General Characteristics: With nailing flange for attaching to wooden forms.

E. Round, Galvanized-Steel, Sheet Metal Sleeves:

1. General Characteristics: Galvanized-steel sheet; thickness not less than 0.0239 inch; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.

2.2 SLEEVE-SEAL FITTINGS

- A. General Characteristics: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit must have plastic or rubber waterstop collar with center opening to match piping OD.

2.3 POURABLE SEALANTS

A. Performance Criteria:

1. General Characteristics: Single-component, neutral-curing elastomeric sealants of grade indicated below.
 - a. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.

2.4 FOAM SEALANTS

A. Performance Criteria:

1. General Characteristics: Multicomponent, liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam. Foam expansion must not damage cables or crack penetrated structure.

PART 3 - EXECUTION

3.1 INSTALLATION OF SLEEVES FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

- A. Sleeves for Conduits Penetrating Above-Grade, Non-Fire-Rated, Concrete and Masonry-Unit Floors and Walls:
1. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
 2. Size pipe sleeves to provide 1/4 inch annular clear space between sleeve and raceway or cable, unless sleeve-seal system is to be installed.

3. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
 4. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inch above finished floor level. Install sleeves during erection of floors.
- B. Sleeves for Conduits Penetrating Non-Fire-Rated Wall Assemblies:
1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
 2. Seal space outside of sleeves with approved joint compound for wall assemblies.
- C. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve-seal systems. Size sleeves to allow for 1 inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- D. Underground, Exterior-Wall and Floor Penetrations:
1. Install cast-iron pipe sleeves with integral waterstops. Size sleeves to allow for 1 inch annular clear space between raceway or cable and sleeve for installing sleeve-seal system. Install sleeve during construction of floor or wall.
 2. Install steel pipe sleeves. Size sleeves to allow for 1 inch annular clear space between raceway or cable and sleeve for installing sleeve-seal system. Grout sleeve into wall or floor opening.

END OF SECTION

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Bands and tubes.
3. Tapes and stencils.
4. Tags.
5. Signs.
6. Cable ties.
7. Miscellaneous identification products.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1 and IEEE C2.

B. Signs, labels, and tags required for personnel safety must comply with the following standards:

1. Safety Colors: NEMA Z535.1.
2. Facility Safety Signs: NEMA Z535.2.
3. Safety Symbols: NEMA Z535.3.
4. Product Safety Signs and Labels: NEMA Z535.4.
5. Safety Tags and Barricade Tapes for Temporary Hazards: NEMA Z535.5.

C. Comply with NFPA 70E requirements for arc-flash warning labels.

D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, must comply with UL 969.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 1000 V or Less:

1. Black letters on orange field.
2. Legend: Indicate voltage and system or service type.

B. Color-Coding for Phase- and Voltage-Level Identification, 1000 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

1. Color must be factory applied or field applied for sizes larger than 8 AWG if authorities having jurisdiction permit.
2. Colors for 208Y/120 V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
3. Colors for 480Y/277 V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
4. Color for Neutral: White.
5. Color for Equipment Grounds: Green.

C. Warning Label Colors:

1. Identify system voltage with black letters on orange background.

D. Warning labels and signs must include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 3 FEET MINIMUM."

E. Equipment Identification Labels:

1. Black letters on white field.

2.3 LABELS

- A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.
 - B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.
 - C. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3 mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
 - a. Ideal Industries, Inc.
 - b. LEM Products Inc.
 - c. Marking Services Inc.
- 2. Minimum Nominal Size:
 - a. 3-1/2 by 5 inch for equipment.

2.4 BANDS AND TUBES

- A. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inch long, with diameters sized to suit diameters and that stay in place by gripping action.

2.5 TAPES AND STENCILS

- A. Underground-Line Warning Tape:
 - 1. Tape:
 - a. Recommended by manufacturer for method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - b. Printing on tape must be permanent and may not be damaged by burial operations.
 - c. Tape material and ink must be chemically inert and not be subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.
 - 2. Color and Printing:
 - a. Comply with APWA Uniform Color Code using NEMA Z535.1 safety colors.

- b. Inscriptions for Red Tapes: "CAUTION BURIED ELECTRIC LINE BELOW".
- c. Inscriptions for Orange Tapes: "CAUTION BURIED COMMUNICATION LINE BELOW".

3. Type IID Tape:

- a. Reinforced, detectable three-layer laminate, consisting of printed pigmented woven scrim, solid aluminum-foil core, and clear protective film that allows inspection of continuity of conductive core; bright-colored, continuous-printed on one side with inscription of utility, compounded for direct-burial service.
- b. Width: 3 inch.
- c. Overall Thickness: 8 mil.
- d. Foil Core Thickness: 0.35 mil.
- e. Weight: 34 lb/1000 sq. ft.
- f. Tensile in accordance with ASTM D882: 300 lbf and 12,500 psi.

2.6 TAGS

- A. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.
 - a. Marking Services Inc.
- B. Nonmetallic Preprinted Tags: Polyethylene tags, 0.023 inch thick, color-coded for phase and voltage level, with factory printed permanent designations; punched for use with self-locking cable tie fastener.

2.7 SIGNS

- A. Baked-Enamel Signs:
 - 1. Preprinted aluminum signs, high-intensity reflective, punched or drilled for fasteners, with colors, legend, and size required for application.
 - 2. 1/4 inch grommets in corners for mounting.
 - 3. Nominal Size: 7 by 10 inch.
- B. Laminated Acrylic or Melamine Plastic Signs:
 - a. Marking Services Inc.
 - 2. Engraved legend.
 - 3. Thickness:
 - a. For signs up to 20 sq. inch, minimum 1/16 inch thick.
 - b. Engraved legend with black letters on white face white letters on dark gray background Insert colors.

- c. Exterior: Punched or drilled for mechanical fasteners with 1/4 inch (6.4 mm) grommets in corners for mounting
- d. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

- 1. Ideal Industries, Inc.
 - 2. Marking Services Inc.
- B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
- 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
 - 3. Temperature Range: Minus 40 to plus 185 deg F.
 - 4. Color: Black, except where used for color-coding.
- C. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
- 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength at 73 deg F in accordance with ASTM D638: 12,000 psi.
 - 3. Temperature Range: Minus 40 to plus 185 deg F.
 - 4. Color: Black.
- D. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.
- 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength at 73 deg F in accordance with ASTM D638: 7000 psi.
 - 3. UL 94 Flame Rating: 94V-0.
 - 4. Temperature Range: Minus 50 to plus 284 deg F.
 - 5. Color: Black.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.
- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. System Identification for Raceways and Cables under 1000 V: Identification must completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
 - 1. Secure tight to surface of conductor, cable, or raceway.
- H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- I. Emergency Operating Instruction Signs: Install instruction signs with white legend on red background with minimum 3/8 inch high letters for emergency instructions at equipment used for power transfer.
- J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from floor.
- K. Accessible Fittings for Raceways: Identify cover of junction and pull box of the following systems with wiring system legend and system voltage. System legends must be as follows:
 - 1. "EMERGENCY POWER."
 - 2. "POWER."
- L. Vinyl Wraparound Labels:
 - 1. Secure tight to surface of raceway or cable at location with high visibility and accessibility.

2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to location and substrate.
- M. Snap-Around Labels: Secure tight to surface at location with high visibility and accessibility.
- N. Self-Adhesive Wraparound Labels: Secure tight to surface at location with high visibility and accessibility.
- O. Self-Adhesive Labels:
1. Install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high label; where two lines of text are required, use labels 2 inch high.
- P. Snap-Around Color-Coding Bands: Secure tight to surface at location with high visibility and accessibility.
- Q. Heat-Shrink, Preprinted Tubes: Secure tight to surface at location with high visibility and accessibility.
- R. Marker Tapes: Secure tight to surface at location with high visibility and accessibility.
- S. Self-Adhesive Vinyl Tape: Secure tight to surface at location with high visibility and accessibility.
1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for minimum distance of 6 inch where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- T. Underground Line Warning Tape:
1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inch below finished grade. Use multiple tapes where width of multiple lines installed in common trench or concrete envelope exceeds 16 inch overall.
 2. Install underground-line warning tape for direct-buried cables and cables in raceways.
- U. Metal Tags:
1. Place in location with high visibility and accessibility.
 2. Secure using UV-stabilized cable ties.
- V. Nonmetallic Preprinted Tags:
1. Place in location with high visibility and accessibility.
 2. Secure using UV-stabilized plenum-rated cable ties.

W. Baked-Enamel Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on minimum 1-1/2 inch high sign; where two lines of text are required, use signs minimum 2 inch high.

X. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.

Y. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 1000 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.
1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.
- D. Accessible Fittings for Raceways and Cables within Buildings: Identify cover of junction and pull box of the following systems with self-adhesive labels containing wiring system legend and system voltage. System legends must be as follows:
1. "EMERGENCY POWER."
 2. "POWER."
- E. Power-Circuit Conductor Identification, 1000 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use vinyl wraparound labels to identify phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft maximum intervals in straight runs, and at 25 ft maximum intervals in congested areas.
- F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use self-adhesive labels with conductor or cable designation, origin, and destination.
- G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with conductor designation.
- H. Conductors to Be Extended in Future: Attach marker tape to conductors and list source.
- I. Auxiliary Electrical Systems Conductor Identification: Self-adhesive vinyl tape that is uniform and consistent with system used by manufacturer for factory-installed connections.
 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
- J. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- K. Instructional Signs: Self-adhesive labels, including color code for grounded and ungrounded conductors.
- L. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.
 1. Apply to exterior of door, cover, or other access.
 2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
 - a. Power-transfer switches.
 - b. Controls with external control power connections.
- M. Arc Flash Warning Labeling: Self-adhesive labels.
- N. Operating Instruction Signs: Baked-enamel warning signs.
- O. Emergency Operating Instruction Signs: Baked-enamel warning signs with white legend on red background with minimum 3/8 inch high letters for emergency instructions at equipment used for power transfer.
- P. Equipment Identification Labels:
 1. Indoor Equipment: Baked-enamel signs.

2. Outdoor Equipment: Laminated acrylic or melamine sign Stenciled legend 4 inch high.
3. Equipment to Be Labeled:
 - a. Enclosures and electrical cabinets.
 - b. Access doors and panels for concealed electrical items.
 - c. Emergency system boxes and enclosures.
 - d. Power-transfer equipment.
 - e. Power-generating units.
 - f. Monitoring and control equipment.

END OF SECTION

SECTION 262726.33 - GENERAL-GRADE DUPLEX STRAIGHT-BLADE RECEPTACLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Duplex straight-blade receptacles.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 262726.37 "Receptacles with Arc-Fault and Ground-Fault Protective Devices" for AFCI and GFCI receptacles.

1.2 CLOSEOUT SUBMITTALS

- A. Warranty documentation.

PART 2 - PRODUCTS

2.1 DUPLEX STRAIGHT-BLADE RECEPTACLES

- A. Description: General-grade duplex receptacles for use in wiring systems recognized by NFPA 70.

B. Performance Criteria:

1. Regulatory Requirements:

- a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

a. Reference Standards:

- 1) UL CCN RTRT and UL 498.

C. Duplex Straight-Blade Receptacle:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
 - b. Leviton Manufacturing Co., Inc.
 - c. Pass & Seymour; Legrand North America, LLC.
 - d. Wiring Device-Kellems; Hubbell Incorporated, Commercial and Industrial.
2. Options:
 - a. Device Color: White.
 - b. Configuration:
 - 1) Heavy-duty, NEMA 5-20R.
 - 2) Heavy-duty, NEMA 6-20R.
3. Accessories:
 - a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
 - b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

D. Weather-Resistant Duplex Straight-Blade Receptacle :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
 - b. Leviton Manufacturing Co., Inc.
 - c. Pass & Seymour; Legrand North America, LLC.
 - d. Wiring Device-Kellems; Hubbell Incorporated, Commercial and Industrial.
2. Options:
 - a. Device Color: White.
 - b. Configuration:
 - 1) Heavy-duty, smooth face, NEMA 5-20R.
3. Accessories:
 - a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.

- b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that receptacles to be procured and installed for Owner-furnished equipment are compatible with mating attachment plugs on equipment.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions.
- B. Reference Standards:
 - 1. Unless more stringent requirements are specified in Contract Documents or manufacturers' instructions, comply with installation instructions in NECA NEIS 130.
 - 2. Mounting Heights: Unless otherwise indicated in Contract Documents, comply with mounting heights recommended in NECA NEIS 1.
 - 3. Receptacle Orientation: Unless otherwise indicated in Contract Documents, orient receptacle to match configuration diagram in NEMA WD 6.
 - 4. Consult Architect for resolution of conflicting requirements.
- C. Identification:
 - 1. Identify cover or cover plate for device with panelboard identification and circuit number in accordance with Section 260553 "Identification for Electrical Systems."
 - a. Mark cover or cover plate using hot, stamped, or engraved machine printing with black -filled lettering, and provide durable wire markers or tags inside device box or outlet box.

3.3 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Insert and remove test plug to verify that device is securely mounted.
 - 2. Verify polarity of hot and neutral pins.
 - 3. Measure line voltage.
 - 4. Measure percent voltage drop.
 - 5. Measure grounding circuit continuity; impedance must be not greater than 2 ohms.

6. Perform additional installation and maintenance inspections and diagnostic tests in accordance with NECA NEIS 130 and manufacturers' instructions.

B. Nonconforming Work:

1. Device will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Assemble and submit test and inspection reports.

3.4 PROTECTION

- A. Schedule and sequence installation to minimize risk of contamination of wires and cables, devices, device boxes, outlet boxes, covers, and cover plates by plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other materials.
- B. After installation, protect wires and cables, devices, device boxes, outlet boxes, covers, and cover plates from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 262726.37 - RECEPTACLES WITH ARC-FAULT AND GROUND-FAULT PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Receptacles with GFCI devices.

B. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 262726.33 "General-Grade Duplex Straight-Blade Receptacles" for duplex receptacles that are not hospital grade.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Receptacles with GFCI devices.

PART 2 - PRODUCTS

2.1 RECEPTACLES WITH GFCI DEVICES

A. Description: Receptacles containing GFCI device for use in accordance with NFPA 70.

B. Performance Criteria:

1. Regulatory Requirements:

- a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

2. General Characteristics:

- a. Reference Standards: UL CCN KCXS, UL 498, and UL 943.

C. General-Grade Duplex Straight-Blade Receptacle with GFCI Device :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
 - b. Leviton Manufacturing Co., Inc.
 - c. Pass & Seymour; Legrand North America, LLC.
 - d. Wiring Device-Kellems; Hubbell Incorporated, Commercial and Industrial.
2. Options:
 - a. Device Color: White.
 - b. Configuration: Heavy-duty, NEMA 5-20R.
3. Accessories:
 - a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
 - b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

D. General-Grade, Weather-Resistant Duplex Straight-Blade Receptacle with GFCI Device :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Arrow Hart, Wiring Devices; Eaton, Electrical Sector.
 - b. Leviton Manufacturing Co., Inc.
 - c. Pass & Seymour; Legrand North America, LLC.
 - d. Wiring Device-Kellems; Hubbell Incorporated, Commercial and Industrial.
2. Options:
 - a. Device Color: White.
 - b. Configuration: Heavy-duty, NEMA 5-20R.
3. Accessories:
 - a. Cover Plate: 0.060 inch thick, high-impact thermoplastic (nylon) with smooth finish and color matching wiring device; from same manufacturer as wiring device.
 - b. Securing Screws for Cover Plate: Metal with head color matching wallplate finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that receptacles to be procured and installed for Owner-furnished equipment are compatible with mating attachment plugs on equipment.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions.
- B. Reference Standards:
 - 1. Unless more stringent requirements are specified in Contract Documents or manufacturers' instructions, comply with installation instructions in NECA NEIS 130.
 - 2. Mounting Heights: Unless otherwise indicated in Contract Documents, comply with mounting heights recommended in NECA NEIS 1.
 - 3. Receptacle Orientation: Unless otherwise indicated in Contract Documents, orient receptacle to match configuration diagram in NEMA WD 6.
 - 4. Consult Architect for resolution of conflicting requirements.
- C. Identification:
 - 1. Identify cover or cover plate for device with panelboard identification and circuit number in accordance with Section 260553 "Identification for Electrical Systems."
 - a. Mark cover or cover plate using hot, stamped, or engraved machine printing with black -filled lettering, and provide durable wire markers or tags inside device box or outlet box.

3.3 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Insert and remove test plug to verify that device is securely mounted.
 - 2. Verify polarity of hot and neutral pins.
 - 3. Measure line voltage.
 - 4. Measure percent voltage drop.
 - 5. Measure grounding circuit continuity; impedance must be not greater than 2 ohms.
 - 6. Perform additional installation and maintenance inspections and diagnostic tests in accordance with NECA NEIS 130 and manufacturers' instructions.

B. Nonconforming Work:

1. Device will be considered defective if it does not pass tests and inspections.
2. Remove and replace defective units and retest.

C. Assemble and submit test and inspection reports.

3.4 PROTECTION

- A. Schedule and sequence installation to minimize risk of contamination of wires and cables, devices, device boxes, outlet boxes, covers, and cover plates by plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other materials.
- B. After installation, protect wires and cables, devices, device boxes, outlet boxes, covers, and cover plates from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION

SECTION 263213.16 - GAS-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Engine.
 - 2. Gas fuel system.
 - 3. Control and monitoring.
 - 4. Generator overcurrent and fault protection.
 - 5. Generator, exciter, and voltage regulator.
 - 6. Outdoor generator-set enclosure.
 - 7. Vibration isolation devices.

- B. Related Requirements:

- 1. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

1.3 DEFINITIONS

- A. EPS: Emergency power supply.
- B. EPSS: Emergency power supply system.
- C. LP: Liquefied petroleum.
- D. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 ACTION SUBMITTALS

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

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Include thermal damage curve for generator.
3. Include time-current characteristic curves for generator protective device.
4. Include fuel consumption in cubic feet per hour (cubic meters per hour) at 0.8 power factor at 0.5, 0.75 and 1.0 times generator capacity.
5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
6. Include air flow requirements for cooling and combustion air in cfm at 0.8 power factor, with air supply temperature of 95 deg F, 80 deg F, 70 deg F, and 50 deg F. Provide drawings showing requirements and limitations for location of air intake and exhausts.
7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for EPS equipment and functional relationship between all electrical components.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For engine generators to include in emergency, operation, and maintenance manuals.
 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

- a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
- b. Operating instructions laminated and mounted adjacent to generator location.
- c. Training plan.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
 2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
 3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
 4. Tools: Each tool listed by part number in operations and maintenance manual.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Testing Agency Qualifications: Accredited by NETA.
 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Caterpillar, Inc.; Electric Power Division.
2. Cummins Power Generation.
3. Generac Power Systems, Inc.
4. Kohler Power Systems.
5. MTU Onsite Energy Corporation.

- B. Source Limitations: Obtain packaged engine generators and auxiliary components through one source from a single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. B11 Compliance: Comply with B11.19.
- B. NFPA Compliance:
1. Comply with NFPA 37.
 2. Comply with NFPA 70.
 3. Comply with NFPA 110 requirements for Level 2 EPSS.
- C. UL Compliance: Comply with UL 2200.
- D. Engine Exhaust Emissions: Comply with EPA Tier 2 requirements and applicable state and local government requirements.
- E. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.
- F. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
1. Ambient Temperature: 5 to 104 deg F.
 2. Relative Humidity: Zero to 95 percent.
 3. Altitude: Sea level to 1000 feet.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

- A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a testing agency acceptable to authorities having jurisdiction, and marked for intended location and use.

- C. Power Rating: Standby.
- D. Overload Capacity: 110 percent of service load for 1 hour in 12 consecutive hours.
- E. Service Load: 250 kVA.
- F. Power Factor: 0.8, lagging.
- G. Frequency: 60 Hz.
- H. Voltage: 480 V ac.
- I. Phase: Three-phase, four wire, wye.
- J. Induction Method: Turbocharged.
- K. Governor: Adjustable isochronous, with speed sensing.
- L. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.
 - 1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and generator-set center of gravity.
- M. Capacities and Characteristics:
 - 1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries, with capacity as required to operate as a unit as evidenced by records of prototype testing.
 - 2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.
- N. Engine Generator Performance:
 - 1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
 - 2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
 - 3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
 - 4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.

5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time:
 - a. Comply with NFPA 110, system requirements.
 - b. 10 seconds.

O. Engine Generator Performance for Sensitive Loads:

1. Oversizing generator compared with the rated power output of the engine is permissible to meet specified performance.
 - a. Nameplate Data for Oversized Generator: Show ratings required by the Contract Documents rather than ratings that would normally be applied to generator size installed.
2. Steady-State Voltage Operational Bandwidth: 1 percent of rated output voltage from no load to full load.
3. Transient Voltage Performance: Not more than 10 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 0.5 second.
4. Steady-State Frequency Operational Bandwidth: Plus or minus 0.25 percent of rated frequency from no load to full load.
5. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
6. Transient Frequency Performance: Less than 2-Hz variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within three seconds.
7. Output Waveform: At no load, harmonic content measured line to neutral shall not exceed 2 percent total with no slot ripple. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
8. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to winding insulation or other generator system components.
9. Excitation System: Performance shall be unaffected by voltage distortion caused by nonlinear load.

- a. Provide permanent magnet excitation for power source to voltage regulator.

10. Start Time:

- a. Comply with NFPA 110, system requirements.
- b. 10 seconds.

2.4 GAS ENGINE

- A. Fuel: Natural gas.
- B. Rated Engine Speed: 1800 rpm.
- C. Lubrication System: Engine or skid-mounted.
 - 1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
 - 2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
 - 3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.
- D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with UL 499.
- E. Integral Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator mounting frame and integral engine-driven coolant pump.
 - 1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
 - 2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
 - 3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
 - 4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
 - 5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, ultraviolet-, and abrasion-resistant fabric.
 - a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and noncollapsible under vacuum.
 - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

F. Muffler/Silencer:

1. Commercial type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
 - a. Minimum sound attenuation of 12 dB at 500 Hz.
 - b. Sound level measured at a distance of 25 feet from exhaust discharge after installation is complete shall be 70 dBA or less.

G. Air-Intake Filter: Standard-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

H. Starting System: 12-V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: 60 seconds.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least three times without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Compartment: Factory fabricated of metal with acid-resistant finish and thermal insulation. Thermostatically controlled heater shall be arranged to maintain battery above 50 deg F regardless of external ambient temperature within range specified in "Performance Requirements" Article. Include accessories required to support and fasten batteries in place. Provide ventilation to exhaust battery gases.
7. Battery Stand: Factory-fabricated, two-tier metal with acid-resistant finish designed to hold the quantity of battery cells required and to maintain the arrangement to minimize lengths of battery interconnections.
8. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35 A minimum continuous rating.
9. Battery Charger: Current-limiting, automatic-equalizing and float-charging type designed for lead-acid batteries. Unit shall comply with UL 1236 and include the following features:
 - a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.

- b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg F to 140 deg F to prevent overcharging at high temperatures and undercharging at low temperatures.
- c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
- d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
- e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
- f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.5 GAS FUEL SYSTEM

- A. Natural Gas Piping: Comply with requirements in Section 231123 "Facility Natural Gas Piping."
- B. Gas Train: Comply with NFPA 37.
- C. Engine Fuel System:
- D. Natural Gas, Vapor-Withdrawal System:
 - 1. Carburetor.
 - 2. Secondary Gas Regulators: One for each fuel type, with atmospheric vents piped to building exterior.
 - 3. Fuel-Shutoff Solenoid Valves: NRTL-listed, normally closed, safety shutoff valves; one for each fuel source.
 - 4. Fuel Filters: One for each fuel type.
 - 5. Manual Fuel Shutoff Valves: One for each fuel type.
 - 6. Flexible Fuel Connectors: Minimum one for each fuel connection.
 - 7. LP gas flow adjusting valve.
 - 8. Fuel change gas pressure switch.

2.6 CONTROL AND MONITORING

- A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of same switch initiates generator-set shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

- B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts engine generator. The off position of same switch initiates generator-set shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.
- C. Provide minimum run time control set for 30 minutes with override only by operation of a remote emergency-stop switch.
- D. Comply with UL 508A.
- E. Configuration:
 - 1. Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method shall isolate the control panel from generator-set vibration. Panel shall be powered from the engine generator battery.
- F. Control and Monitoring Panel:
 - 1. Digital controller with integrated LCD, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
 - 2. Analog control panel with dedicated gages and indicator lights for the instruments and alarms indicated below.
 - 3. Instruments: Located on the control and monitoring panel and viewable during operation.
 - a. Engine lubricating-oil pressure gage.
 - b. Engine-coolant temperature gage.
 - c. DC voltmeter (alternator battery charging).
 - d. Running-time meter.
 - e. AC voltmeter, for each phase connected to a phase selector switch.
 - f. AC ammeter, for each phase connected to a phase selector switch.
 - g. AC frequency meter.
 - h. Generator-voltage adjusting rheostat.
 - 4. Controls and Protective Devices: Controls, shutdown devices, and common visual alarm indication, including the following:
 - a. Cranking control equipment.
 - b. Run-Off-Auto switch.
 - c. Control switch not in automatic position alarm.
 - d. Overcrank alarm.
 - e. Overcrank shutdown device.
 - f. Low water temperature alarm.
 - g. High engine temperature prealarm.
 - h. High engine temperature.

- i. High engine temperature shutdown device.
- j. Overspeed alarm.
- k. Overspeed shutdown device.
- l. Low fuel main tank.

- 1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for the duration required for the indicated EPSS class.

- m. Coolant low-level alarm.
- n. Coolant low-level shutdown device.
- o. Coolant high-temperature prealarm.
- p. Coolant high-temperature alarm.
- q. Coolant low-temperature alarm.
- r. Coolant high-temperature shutdown device.
- s. EPS supplying load indicator.
- t. Battery high-voltage alarm.
- u. Low cranking voltage alarm.
- v. Battery-charger malfunction alarm.
- w. Battery low-voltage alarm.
- x. Lamp test.
- y. Contacts for local and remote common alarm.
- z. Low-starting air pressure alarm.
- aa. Low-starting hydraulic pressure alarm.
- bb. Remote manual stop shutdown device.
- cc. Air shutdown damper alarm when used.
- dd. Air shutdown damper shutdown device when used.
- ee. Hours of operation.
- ff. Engine generator metering, including voltage, current, Hz, kW, kVA, and power factor.
- gg. Generator overcurrent protective device not closed alarm.

G. Common Remote Panel with Common Audible Alarm: Include necessary contacts and terminals in control and monitoring panel. Remote panel shall be powered from the engine generator battery.

H. Remote Alarm Annunciator: An LED indicator light labeled with proper alarm conditions shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

- 1. Overcrank alarm.
- 2. Coolant low-temperature alarm.
- 3. High engine temperature prealarm.
- 4. High engine temperature alarm.
- 5. Low lube oil pressure alarm.

6. Overspeed alarm.
7. Low fuel main tank alarm.
8. Low coolant level alarm.
9. Low cranking voltage alarm.
10. Contacts for local and remote common alarm.
11. Audible-alarm silencing switch.
12. Air shutdown damper when used.
13. Run-Off-Auto switch.
14. Control switch not in automatic position alarm.
15. Fuel tank derangement alarm.
16. Fuel tank high-level shutdown of fuel supply alarm.
17. Lamp test.
18. Low cranking voltage alarm.
19. Generator overcurrent protective device not closed.

- I. Remote Emergency-Stop Switch: Surface; wall mounted, unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.
- J. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator, unless otherwise indicated.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

- A. Overcurrent protective devices shall be coordinated to optimize selective tripping when a short circuit occurs.
 1. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.
 2. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.
- B. Generator Overcurrent Protective Device:
 1. Molded-case circuit breaker, electronic-trip type; 100 percent rated; complying with UL 489:
 - a. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
 - b. Trip Settings: Selected to coordinate with generator thermal damage curve.
 - c. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
 - d. Mounting: Adjacent to or integrated with control and monitoring panel.

- C. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator protector or other generator-set protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector performs the following functions:
 - 1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms. Contacts shall be available for load shed functions.
 - 2. Under single or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
 - 3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the engine generator.
 - 4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.
- D. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground fault.
 - 1. Indicate ground fault with other engine generator alarm indications.
 - 2. Trip generator protective device on ground fault.

2.8 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

- A. Comply with NEMA MG 1.
- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H.
- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide six lead alternator.
- E. Range: Provide limited range of output voltage by adjusting the excitation level.
- F. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- G. Enclosure: Dripproof.
- H. Instrument Transformers: Mounted within generator enclosure.

- I. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified.
 - 1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
 - 2. Maintain voltage within 15 percent on one step, full load.
 - 3. Maintain frequency within 15 percent and stabilize at rated frequency within 5 seconds.
- J. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- K. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- L. Subtransient Reactance: 12 percent, maximum.

2.9 OUTDOOR GENERATOR-SET ENCLOSURE

- A. Description:
 - 1. Vandal-resistant, sound-attenuating, weatherproof steel housing, wind resistant up to 100 mph. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.
 - a. Sound Attenuation Level: 2.
 - 2. Prefabricated or pre-engineered galvanized-steel-clad, integral structural-steel-framed, walk-in enclosure, erected on concrete foundation.
- B. Structural Design and Anchorage: Comply with ASCE/SEI 7 for wind loads up to 100 mph.
- C. Hinged Doors: With padlocking provisions.
- D. Space Heater: Thermostatically controlled and sized to prevent condensation.
- E. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine generator components.
- F. Muffler Location: Within enclosure.
- G. Engine Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for 2 hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Fixed-engine, cooling-air inlet and discharge. Storm-proof and drainable louvers prevent entry of rain and snow.
 2. Ventilation: Provide temperature-controlled exhaust fan interlocked to prevent operation when engine is running.
- H. Interior Lights with Switch: Factory-wired, vapor-proof fixtures within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.
1. AC lighting system and connection point for operation when remote source is available.
- I. Convenience Outlets: Factory wired, GFCI. Arrange for external electrical connection.

2.10 VIBRATION ISOLATION DEVICES

- A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.
1. Material: Standard neoprene separated by steel shims.
 2. Shore "A" Scale Durometer Rating: .
 3. Number of Layers: Three.
 4. Minimum Deflection: 1 inch.
- B. Vibration isolation devices shall not be used to accommodate misalignments or to make bends.

2.11 FINISHES

- A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.12 SOURCE QUALITY CONTROL

- A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
1. Tests: Comply with IEEE 115.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Test generator, exciter, and voltage regulator as a unit.
3. Full load run.
4. Maximum power.
5. Voltage regulation.
6. Transient and steady-state governing.
7. Single-step load pickup.
8. Safety shutdown.
9. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
10. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.
- B. Examine roughing-in for piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
 1. Notify Architect no fewer than 10 working days in advance of proposed interruption of electrical service.
 2. Do not proceed with interruption of electrical service without Architect's written permission.

3.3 INSTALLATION

- A. Comply with NECA 1 and NECA 404.
- B. Comply with packaged engine generator manufacturers' written installation and alignment instructions.

C. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

D. 1 inch4-inch-Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

E. Drain Piping: Install condensate drain piping to muffler drain outlet with a shutoff valve, stainless-steel flexible connector, and Schedule 40, black steel pipe, the full size of the drain connection, with welded joints.

F. Gaseous Fuel Piping:

1. Natural gas piping, valves, and specialties for gas distribution are specified in Section 231123 "Facility Natural Gas Piping."

G. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

3.4 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.

B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow service and maintenance.

C. Connect engine exhaust pipe to engine with flexible connector.

D. Gaseous Fuel Connections:

1. Connect fuel piping to engines with a gate valve and union and flexible connector.
2. Install manual shutoff valve in a remote location to isolate gaseous fuel supply to the generator.
3. Vent gas pressure regulators outside building a minimum of 60 inches from building openings.

E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

- F. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.
- G. Balance single-phase loads to obtain a maximum of 10 percent unbalance between any two phases.

3.5 IDENTIFICATION

- A. Identify system components according to Section 230553 "Identification for HVAC Piping and Equipment" and Section 260553 "Identification for Electrical Systems."

3.6 FIELD QUALITY CONTROL

- A. Testing Agency:
 - 1. Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- B. Tests and Inspections:
 - 1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in the first two subparagraphs below as specified in the NETA ATS. Certify compliance with test parameters.
 - a. Visual and Mechanical Inspection:
 - 1) Compare equipment nameplate data with drawings and specifications.
 - 2) Inspect physical and mechanical condition.
 - 3) Inspect anchorage, alignment, and grounding.
 - 4) Verify the unit is clean.
 - b. Electrical and Mechanical Tests:
 - 1) Perform insulation-resistance tests in accordance with IEEE 43.
 - a) Machines larger than 200 hp. Test duration shall be 10 minutes. Calculate polarization index.
 - b) Machines 200 hp or less. Test duration shall be one minute. Calculate the dielectric-absorption ratio.
 - 2) Test protective relay devices.
 - 3) Verify phase rotation, phasing, and synchronized operation as required by the application.

- 4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
 - 5) Perform vibration test for each main bearing cap.
 - 6) Verify correct functioning of the governor and regulator.
 2. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
 - a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
 - b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
 - c. Verify acceptance of charge for each element of the battery after discharge.
 - d. Verify that measurements are within manufacturer's specifications.
 3. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
 4. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
 5. Exhaust-System Back-Pressure Test: Use a manometer with a scale exceeding 40-inch wg. Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
 6. Exhaust Emissions Test: Comply with applicable government test criteria.
 7. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
 8. Harmonic-Content Tests: Measure harmonic content of output voltage at 25 percent and 100 percent of rated linear load. Verify that harmonic content is within specified limits.
 9. Noise Level Tests: Measure A-weighted level of noise emanating from generator-set installation, including engine exhaust and cooling-air intake and discharge, at [four] <Insert number> locations [25 feet from edge of the generator enclosure] [on the property line] <Insert location for measurement>, and compare measured levels with required values.
- C. Coordinate tests with tests for transfer switches and run them concurrently.
- D. Test instruments shall have been calibrated within the last 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.
- E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

- F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.
- G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- H. Remove and replace malfunctioning units and [retest] [reinspect] as specified above.
- I. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.
- J. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- K. Infrared Scanning: After Substantial Completion, but not more than 60 days after final acceptance, perform an infrared scan of each power wiring termination and each bus connection while running with maximum load. Remove all access panels so terminations and connections are accessible to portable scanner.
 - 1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
 - 2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - 3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.7 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of manufacturer's designated service organization. Include quarterly exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

3.8 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY,
MANAGEMENT AND BUDGET
Design & Construction Division
Outdoor Adventure Center - Emergency Back Up Power
File No.: 751-23030.MNB

CED Project No. 23015965G
Bids, 11/14/2025

END OF SECTION

SECTION 263600 - TRANSFER SWITCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Contactor-type automatic transfer switches.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for transfer switches.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and accessories.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, details showing minimum clearances, conductor entry provisions, gutter space, and installed features and devices.
 - 2. Include material lists for each switch specified.
 - 3. Single-Line Diagram: Show connections between transfer switch, [bypass/isolation switch,]power sources, and load; and show interlocking provisions for each combined transfer switch and bypass/isolation switch.
 - 4. Riser Diagram: Show interconnection wiring between transfer switches, bypass/isolation switches, annunciators, and control panels.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Features and operating sequences, both automatic and manual.
 - b. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Member company of NETA.
 - a. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.7 FIELD CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service:
 - 1. Notify Architect no fewer than ten days in advance of proposed interruption of electrical service.
 - 2. Do not proceed with interruption of electrical service without Architect's written permission.

1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of transfer switch or transfer switch components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NEMA ICS 1.
- C. Comply with NFPA 99.
- D. Comply with NFPA 110.
- E. Comply with UL 1008 unless requirements of these Specifications are stricter.
- F. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer, including tungsten filament lamp loads not exceeding 30 percent of switch ampere rating, unless otherwise indicated.
- G. Tested Fault-Current Closing and Short-Circuit Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.
 - 1. Where transfer switch includes internal fault-current protection, rating of switch and trip unit combination shall exceed indicated fault-current value at installation location.
 - 2. Short-time withstand capability for three cycles.
- H. Repetitive Accuracy of Solid-State Controls: All settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.
- I. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.62. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.
- J. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism. Switches for emergency or standby purposes shall be mechanically and electrically interlocked in both directions to prevent simultaneous connection to both power sources unless closed transition.
- K. Service-Rated Transfer Switch:
 - 1. Comply with UL 869A and UL 489.

2. Provide terminals for bonding the grounding electrode conductor to the grounded service conductor.
 3. In systems with a neutral, the bonding connection shall be on the neutral bus.
 4. Provide removable link for temporary separation of the service and load grounded conductors.
 5. Surge Protective Device: Service rated.
 6. Ground-Fault Protection: Comply with UL 1008 for normal bus.
 7. Service Disconnecting Means: Externally operated, manual mechanically actuated.
- L. Neutral Switching: Where four-pole switches are indicated, provide neutral pole switched simultaneously with phase poles.
- M. Neutral Terminal: Solid and fully rated unless otherwise indicated.
- N. Oversize Neutral: Ampacity and switch rating of neutral path through units indicated for oversize neutral shall be double the nominal rating of circuit in which switch is installed.
- O. Heater: Equip switches exposed to outdoor temperatures and humidity, and other units indicated, with an internal heater. Provide thermostat within enclosure to control heater.
- P. Battery Charger: For generator starting batteries.
1. Float type, rated 10 A.
 2. Ammeter to display charging current.
 3. Fused ac inputs and dc outputs.
- Q. Annunciation, Control, and Programming Interface Components: Devices at transfer switches for communicating with remote programming devices, annunciators, or annunciator and control panels shall have communication capability matched with remote device.
- R. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, by color-code or by numbered or lettered wire and cable with printed markers at terminations. Color-coding and wire and cable markers are specified in Section 260553 "Identification for Electrical Systems."
1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.
 2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.
 3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.
 4. Accessible via front access.
- S. Enclosures: General-purpose NEMA 250, Type 3R, complying with NEMA ICS 6 and UL 508, unless otherwise indicated.

2.2 CONTACTOR-TYPE AUTOMATIC TRANSFER SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Emerson.
- B. Comply with Level 1 equipment according to NFPA 110.
- C. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.
 - 1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are unacceptable.
 - 2. Switch Action: Double throw; mechanically held in both directions.
 - 3. Contacts: Silver composition or silver alloy for load-current switching. Contactor-style automatic transfer-switch units, rated 600 A and higher, shall have separate arcing contacts.
 - 4. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 5. Material: Hard-drawn copper, 98 percent conductivity.
 - 6. Main and Neutral Lugs: Mechanical type.
 - 7. Ground Lugs and Bus-Configured Terminators: Mechanical type.
 - 8. Connectors shall be marked for conductor size and type according to UL 1008.
- D. Automatic Open-Transition Transfer Switches: Interlocked to prevent the load from being closed on both sources at the same time.
 - 1. Sources shall be mechanically and electrically interlocked to prevent closing both sources on the load at the same time.
- E. Manual Switch Operation, Load-Breaking: Under load, with door closed and with either or both sources energized. Transfer time is same as for electrical operation. Control circuit automatically disconnects from electrical operator during manual operation.
- F. Manual Switch Operation, Non-Load-Breaking: Unloaded. Control circuit automatically disconnects from electrical operator during manual operation.
- G. Electric Switch Operation: Electrically actuated by push buttons designated "Normal Source" and "Alternative Source." Switch shall be capable of transferring load in either direction with either or both sources energized.
- H. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval shall be adjustable from 1 to 30 seconds.
- I. Digital Communication Interface: Matched to capability of remote annunciator or annunciator and control panel.

J. Automatic Transfer-Switch Controller Features:

1. Controller operates through a period of loss of control power.
2. Undervoltage Sensing for Each Phase of Normal [and Alternate]Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage shall be adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.
3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
4. Time Delay for Retransfer to Normal Source: Adjustable from zero to 30 minutes, and factory set for 10 minutes. Override shall automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.
7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
 - a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
 - b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."
8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Transfer Override Switch: Overrides automatic retransfer control so transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts:
 - a. Instantaneous; shall initiate shutdown sequence at remote engine-generator controls after retransfer of load to normal source.
 - b. Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.

12. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods shall be adjustable from 10 to 30 minutes. Factory settings shall be for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:

- a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
- b. Push-button programming control with digital display of settings.
- c. Integral battery operation of time switch when normal control power is unavailable.

2.3 TRANSFER SWITCH ACCESSORIES

A. Remote Annunciator System:

1. Source Limitations: Same manufacturer as transfer switch in which installed.
2. Functional Description: Remote annunciator panel shall annunciate conditions for indicated transfer switches.
3. Annunciation panel display shall include the following indicators:
 - a. Sources available, as defined by actual pickup and dropout settings of transfer-switch controls.
 - b. Switch position.
 - c. Switch in test mode.
 - d. Failure of communication link.
4. Annunciator Panel: LED-lamp type with audible signal and silencing switch.
 - a. Indicating Lights: Grouped for each transfer switch monitored.
 - b. Label each group, indicating transfer switch it monitors, location of switch, and identity of load it serves.
 - c. Mounting: Flush, modular, steel cabinet unless otherwise indicated.
 - d. Lamp Test: Push-to-test or lamp-test switch on front panel.

2.4 SOURCE QUALITY CONTROL

- A. Factory Tests: Test and inspect components, assembled switches, and associated equipment according to UL 1008. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.
- B. Prepare test and inspection reports.

1. For each of the tests required by UL 1008, performed on representative devices, for [emergency] [legally required] systems. Include results of test for the following conditions:
 - a. Overvoltage.
 - b. Undervoltage.
 - c. Loss of supply voltage.
 - d. Reduction of supply voltage.
 - e. Alternative supply voltage or frequency is at minimum acceptable values.
 - f. Temperature rise.
 - g. Dielectric voltage-withstand; before and after short-circuit test.
 - h. Overload.
 - i. Contact opening.
 - j. Endurance.
 - k. Short circuit.
 - l. Short-time current capability.
 - m. Receptacle withstand capability.
 - n. Insulating base and supports damage.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Floor-Mounting Switch: Anchor to floor by bolting.
 1. Install transfer switches on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
 2. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
 3. Provide workspace and clearances required by NFPA 70.
- B. Annunciator and Control Panel Mounting: Flush in wall unless otherwise indicated.
- C. Identify components according to Section 260553 "Identification for Electrical Systems."
- D. Set field-adjustable intervals and delays, relays, and engine exerciser clock.
- E. Comply with NECA 1.

3.2 CONNECTIONS

- A. Wiring to Remote Components: Match type and number of cables and conductors to generator sets, control, and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.
- B. Wiring Method: Install cables in raceways and cable trays except within electrical enclosures. Conceal raceway and cables except in unfinished spaces.
 - 1. Comply with requirements for raceways and boxes specified in Section 260533 "Raceways and Boxes for Electrical Systems."
- C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii.
- D. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."
- E. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- F. Route and brace conductors according to manufacturer's written instructions and Section 260529 "Hangers and Supports for Electrical Systems." Do not obscure manufacturer's markings and labels.
- G. Brace and support equipment according to Section 260548.16 "Seismic Controls for Electrical Systems."
- H. Final connections to equipment shall be made with liquidtight, flexible metallic conduit no more than 18 inches in length.

3.3 FIELD QUALITY CONTROL

- A. Adminstrant for Tests and Inspections:
 - 1. Engage factory-authorized service representative to administer and perform tests and inspections on components, assemblies, and equipment installations, including connections.
- B. Tests and Inspections:
 - 1. After installing equipment, test for compliance with requirements according to NETA ATS.
 - 2. Visual and Mechanical Inspection:

- a. Compare equipment nameplate data with Drawings and Specifications.
- b. Inspect physical and mechanical condition.
- c. Inspect anchorage, alignment, grounding, and required clearances.
- d. Verify that the unit is clean.
- e. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
- f. Verify that manual transfer warnings are attached and visible.
- g. Verify tightness of all control connections.
- h. Inspect bolted electrical connections for high resistance using one of the following methods, or both:
 - 1) Use of low-resistance ohmmeter.
 - 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method according to manufacturer's published data.
- i. Perform manual transfer operation.
- j. Verify positive mechanical interlocking between normal and alternate sources.
- k. Perform visual and mechanical inspection of surge arresters.
- l. Inspect control power transformers.
 - 1) Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.
 - 2) Verify that primary and secondary fuse or circuit-breaker ratings match Drawings.
 - 3) Verify correct functioning of drawout disconnecting contacts, grounding contacts, and interlocks.

3. Electrical Tests:

- a. Perform insulation-resistance tests on all control wiring with respect to ground.
- b. Perform a contact/pole-resistance test. Compare measured values with manufacturer's acceptable values.
- c. Verify settings and operation of control devices.
- d. Calibrate and set all relays and timers.
- e. Verify phase rotation, phasing, and synchronized operation.
- f. Perform automatic transfer tests.
- g. Verify correct operation and timing of the following functions:
 - 1) Normal source voltage-sensing and frequency-sensing relays.
 - 2) Engine start sequence.
 - 3) Time delay on transfer.
 - 4) Alternative source voltage-sensing and frequency-sensing relays.
 - 5) Automatic transfer operation.

- 6) Interlocks and limit switch function.
 - 7) Time delay and retransfer on normal power restoration.
 - 8) Engine cool-down and shutdown feature.
4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.
 - a. Check for electrical continuity of circuits and for short circuits.
 - b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
 - c. Verify that manual transfer warnings are properly placed.
 - d. Perform manual transfer operation.
5. After energizing circuits, perform each electrical test for transfer switches stated in NETA ATS and demonstrate interlocking sequence and operational function for each switch at least three times.
 - a. Simulate power failures of normal source to automatic transfer switches and retransfer from emergency source with normal source available.
 - b. Simulate loss of phase-to-ground voltage for each phase of normal source.
 - c. Verify time-delay settings.
 - d. Verify pickup and dropout voltages by data readout or inspection of control settings.
 - e. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for one pole deviating by more than 50 percent from other poles.
 - f. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.
6. Ground-Fault Tests: Coordinate with testing of ground-fault protective devices for power delivery from both sources.
 - a. Verify grounding connections and locations and ratings of sensors.
- C. Coordinate tests with tests of generator and run them concurrently.
- D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.
- E. Transfer switches will be considered defective if they do not pass tests and inspections.
- F. Remove and replace malfunctioning units and retest as specified above.
- G. Prepare test and inspection reports.

- H. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.
 - 1. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - 2. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
 - 3. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment.
- B. Training shall include testing ground-fault protective devices and instructions to determine when the ground-fault system shall be retested. Include instructions on where ground-fault sensors are located and how to avoid negating the ground-fault protection scheme during testing and circuit modifications.
- C. Coordinate this training with that for generator equipment.

END OF SECTION

SECTION 323500 - SITE SCREENING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Pre-Formed Panels: For screening or buffering trash enclosures, utility areas, privacy areas, mechanical units, etc.
 - 1. Powder coated metal.
 - 2. Painted metal.
- B. Aluminum Support Framing: For direct attachment of screen support columns to/into concrete pads, piers, or footings provided by others.
- C. Operable gates for access through screens.
- D. Not Included in This Specification:
 - 1. Touch-up painting required for scratches and screw heads.
 - 2. Field painting of prime painted screens

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM B 221 - Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire Profiles, and Tubes.
- B. The Aluminum Association, Inc. (AA):
 - 1. AA ADM-1516166 - Aluminum Design Manual
- C. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7-18 - Minimum Design Loads for Buildings and Other Structures.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data:
 - 1. Manufacturer's data sheets on each product to be used.

2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Typical installation methods.
5. Sufficient data and detail to indicate compliance with these specifications.

C. Verification Samples: Two representative units of each panel type.

1. Color Selection: Submit paint chart with full range of colors available for Architect's selection. Custom color samples available upon purchase

D. Shop Drawings: Indicate layout heights, component connection details, and details of interface with adjacent construction.

E. Certification: Manufacturer's Certificate of Compliance certifying that panels supplied meet or exceed requirements specified.

F. Closeout Submittals: Warranty documents, issued and executed by manufacturer, countersigned by Contractor.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum one years documented experience.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.

C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

1.5 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1. Notify Architect four (4) calendar days in advance of scheduled meeting date.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.

B. Storage and Handling: Protect materials and finishes during handling and installation to prevent damage.

- C. Protect from damage due to weather, excessive temperature, and construction operations.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
- B. Field Measurements: Take measurements of supporting paving, footings, or piers. Indicate measurements on shop drawings fully documenting any field condition that may interfere with the screen system installation.

1.8 COORDINATION

- A. Installer for work under this Section shall be responsible for coordination of panel and framing sizes and required options with the Contractor's requirements.
 - 1. Request information on sizes and options required from the Contractor.
- B. Submit shop drawings to the Contractor and obtain written approval of shop drawing from the Contractor prior to fabrication.
- C. Confirm size, type, and location of supporting construction as adequate to resist column supports.

1.9 WARRANTY

- A. If any part of the screen system fails because of a manufacturing defect within 1 to 5 years from the date of substantial completion, the manufacturer will furnish the required replacement parts without charge. Any local transportation, related service labor, or diagnostic call charges are not included.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CityScapes International Inc., which is located at: 4200 Lyman Ct., Hilliard, OH 43026; Toll Free: 877-SCREENS; Phone: 614-850-2549; Email: contact@cityscapesinc.com; Web: <https://cityscapesinc.com/>
 - 1. Basis of Design: Covrit Gates and Screening System by CityScapes International Inc.

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 PERFORMANCE AND DESIGN REQUIREMENTS

- A. Regulatory Requirements: Comply with requirements of building authorities having jurisdiction in Project location.
- B. Design Criteria: Manufacturer is responsible for the structural design of all materials, assembly, and attachments to resist snow, wind, suction and uplift loading at any point without damage or permanent set.
 - 1. Framing: Designed in accordance with the Aluminum Design Manual to resist the following loading:
 - a. ASCE 7-18 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers.

2.3 MATERIALS

- A. Paneling: Minimum Thickness: 0.050"
 - 1. Aluminum Extruded Sheets: Powder coated.
 - 2. Aluminum Extruded Shapes: Powder coated.
- B. Operable Access Gates: Minimum Panel thickness: 0.050"
 - 1. ToughGate: Powder coated extruded Aluminum sheets.
- C. Framing: Aluminum Plate, Shapes and Bar: ASTM B221, alloy 6005-T5, 6061-T5 or 6063-T5.
- D. Threaded Fasteners: Screws, bolts, nut and washers to be Stainless Steel.
 - 1. Post Backer assembly fasteners shall be #10-16 stainless steel Self-Drilling screws.
 - 2. Provide lock washer or other locking device at all bolted connections.

2.4 FABRICATION

- A. Factory-Formed Panel Systems: Continuous interlocking panel connections and indicated or necessary components.

1. Form components true to shape, accurate in size, square and free from distortion or defects. Cut panels to precise lengths indicated on approved shop drawings.

B. Fabricate products to the following configurations:

1. Panel Style: Planar Formed Aluminum Panel.
2. ToughGate Gate Style: Planar Formed aluminum panel.
3. Panel Height: See Plan.
4. Panel Height: Custom, see plan.
5. Panel and Gate Height: Custom, see plan.
6. Gate Width: See Plan.
7. Column Cap Style: Aluminum fitted cap.
8. Trim and Closures: Fabricated and finished with Manufacturer's standard coating system, unless shown otherwise on drawings.

C. Framing: Fabricate and assemble components in largest practical sizes, for delivery to the site.

1. Construct corner assemblies to required shape with joints tightly fitted.
2. Supply components required for anchorage of framing. Fabricate anchors and related components of material and finish as required, or as specifically noted.

D. Gate Hardware: Provide manufacturer's adjustable standard of size required to fit support pipe provided.

1. Hinge Type: Cradle.
2. Latch Type: Modern Lockable Latch.
3. Door Handle Type: Bridge type (each leaf).
4. Miscellaneous Hardware: Manufacturer's standard drop pins (each leaf).

2.5 FINISHES

A. Aluminum Framing: Mill finish.

B. Panel Coating: Manufacturer's standard powder coating system, factory applied.

1. Color: Selected from full range of manufacturer's standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Installer's Examination: Examine conditions under which construction activities of this section are to be performed.

1. Submit written notification to Architect and Screen manufacturer if such conditions are unacceptable.
2. Beginning erection constitutes installer's acceptance of conditions.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Install units in accordance with the manufacturer's instructions and approved shop drawings. Keep perimeter lines straight, plumb, and level. Provide brackets, anchors, and accessories necessary for complete installation.
- B. Fasten structural supports to/into paving, footings, or piers at spacing as indicated on approved shop drawings.
- C. Metal Separation: Where aluminum materials would contact dissimilar materials, insert rubber grommets at attachment points, thus eliminating where dissimilar metals would otherwise be in contact.
- D. Do not cut or abrade finishes which cannot be restored. Return items with such finishes to shop for required alterations.

3.4 ERECTION TOLERANCES

- A. Maximum misalignment from true position: 1/4 inch.

3.5 CLEANING AND PROTECTION

- A. Remove all protective masking from material immediately after installation.
- B. Protection:
 1. Ensure that finishes and structure of installed systems are not damaged by subsequent construction activities.
 2. If minor damage to finishes occurs, repair damage in accordance with manufacturer's recommendations; provide replacement components if repaired finishes are unacceptable to Architect.

- C. Prior to Substantial Completion: Remove dust or other foreign matter from component surfaces; clean finishes in accordance with manufacturer's instructions.
 - 1. Clean units in accordance with the manufacturer's instructions.

END OF SECTION

SECTION 31 22 00 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Topsoil stripping, stockpiling, and spreading.
 - 2. Cutting, grading, filling, and rough contouring the site.
 - 3. Dewatering.
 - 4. Rock removal.
 - 5. Building subbase pad and contract access roads and lots.
 - 6. Contractor shall provide on-site containers as necessary for work of this Section. Locate as directed by Construction Manager.

1.3 REFERENCES

- A. Section 017419 Construction Waste Management
- B. Appendix VI – Soil Management Plan

1.4 DEFINITIONS

- A. Excavation consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.
- B. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Construction Manager. Unauthorized excavation, as well as remedial work directed by Construction Manager, shall be at Contractor's expense.
 - 1. Backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Construction Manager.
- C. Dewatering: Dewatering is the removal of water, including precipitation, surface water and groundwater encountered during course of construction.
- D. Subgrade: The undisturbed earth or the compacted soil layer immediately below floor slab base course, granular base, aggregate base, drainage fill, or topsoil materials.
- E. Fill: Either native material, or imported material placed above the native material immediately below the site topsoil layer or the building or parking lot subgrade.
- F. Over excavation: The extension of the excavation effort below required development subgrade elevations.
- G. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.

- H. Rock: Rock shall be defined as all material which cannot be excavated except by drilling, blasting, or wedging. It shall consist of non-decomposed stone hard enough to ring under a hammer, and the amount of solid stone shall be not less than 1/2 cubic yard in volume. Decomposed rock and similar material that can be removed by a D-8 dozer equipped with a single-tooth ripper (or similar equipment) shall be classified as earth excavation.
- I. Greenbelt Areas: Areas within and around the parking lot that do not have bituminous or concrete paving. Outlots shall not be considered greenbelt areas for the purpose of this specification.
- J. Slag Aggregates: By-products formed in the production of iron, copper, and steel.
- K. Impacted Soil: soil containing field-observable evidence of hazardous substances such as unnatural vapors, staining, non-aqueous liquids, or sheens, or, laboratory-tested concentrations of hazardous substances greater than State-specific residential standards and/or naturally occurring background threshold levels.
- L. Demarcation Layer: plastic orange grid (aka "safety fence") material that was previously placed on the below the surface of the Site to delineate clean, uncompacted surface soils from impacted subgrade soils.

1.5 SUBMITTALS

- A. Product data:
 - 1. Submit under the appropriate provisions of the state Department of Transportation specifications for the required aggregate and granular fills.
- B. Test Reports:
 - 1. Submit tests for off-site topsoil and subsoil with comparisons to state criteria.
- C. Close Out Requirements
 - 1. Submit record documents indicating accurate locations of utilities remaining, by horizontal dimensions, elevations or inverts, pipe material, and slope gradients.

1.6 QUALITY ASSURANCE

- A. Reference Data: Soil boring logs are included in Division 01 for information only. Additional subsurface investigation reports will be available to the Contractor for information only.
 - 1. Additional test borings and other exploratory operations may be performed by Contractor, at the Contractor's option; however, no change in the Contract Sum will be authorized for such additional exploration. Explorations shall be with Owner's approval.
- B. Existing Utilities:
 - 1. Known existing underground utilities are shown on the contract documents in their approximate locations according to the best available information. The Contractor shall be responsible for determining the exact location of the existing utilities and repairing any damage done to the utilities during probing and construction.
 - 2. Contact state emergency dialing system 3 working days prior to the start of work of this Section for location of recorded underground utilities in and near construction zone.
 - 3. If utilities are indicated to remain in place, the Contractor shall provide adequate means of support and protection during earthwork operations. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Construction Manager immediately for directions. Repair damaged utilities to satisfaction of utility Owner.

4. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Owner and then only after acceptable temporary utility services have been provided.
 - a. Provide minimum of 48-hour notice to Owner and receive written notice to proceed before interrupting any utility.
- C. Approval of soil imported/exported at site:
 1. Contractors must obtain all geotechnical specifications applicable to the fill material to be utilized at the project site from the Owner at the outset of the project and conduct such testing of the proposed fill source as is necessary to demonstrate compliance with the specification(s).
 - a. Provide a physical description of the fill material, including, but not limited to: (1) for soil, the soil type, characteristics, moisture content, and bearing capacity under anticipated soil density; and (2) for stone or other engineering fills, a gradation summary.
 - b. Determine the geotechnical requirements for the fill material and establish a testing program to demonstrate that criteria are met. All test results must be supplied to, and approved by, the Owner prior to moving soil to the project site.
 2. It is the Contractor's responsibility to document to Owner's satisfaction that fill materials from off-site borrows do not contain contaminants above background levels. All fill material from off-site sources must be approved by the Owner prior to bringing the material on site. The Contractor assumes all risk for all fill materials brought on site that do not have a submittal requirement. Owner reserves the right to request removal of any non-submittal fill material with the removal to be performed at the Contractor's expense.
 3. Establishing Environmental Acceptability
 - a. Import of Clean Soil
 - 1) Provide address, description, history (i.e., current, and past uses), and owner information for all proposed borrow site (i.e., source) locations.
 - 2) Conduct "representative sampling" to verify that imported soil is "clean" and/or obtain "certified clean" documentation from the borrow source.
 - 3) "Representative sampling" shall consist of:
 - a) Minimum sampling frequency of three (3) samples up to the first 10,000 cubic yards (per soil type) from the proposed borrow area (i.e., from the actual soil to be imported) and one (1) additional sample for every additional $\leq 10,000$ cubic yards from the proposed borrow area. A modified sampling frequency may be warranted based on the proposed borrow site description and history information provided in 1.6(C)(3)(a)(1).
 - b) Collect samples in an evenly distributed manner (horizontally and vertically) within the proposed borrow area.
 - c) Collect discrete samples. Contractor may propose composite sampling (e.g. "incremental sampling protocol" or other established methodology). Contractor shall submit composite sampling plan to the Owner for review and approval.
 - d) Laboratory analysis shall be by a State-certified laboratory.
 - e) Laboratory detection limits shall be less than State-specific residential standards and State-specific naturally occurring background threshold values (metals).
 - 4) "Clean" soil shall consist of:
 - a) Free from solid waste, debris, asbestos-containing material, visual staining, and chemical odor.
 - b) Concentrations of RCRA metals less than State-specific naturally occurring background threshold levels.

- c) Concentrations of polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs) less than State-specific residential standards (i.e., screening levels, cleanup levels, or residual contaminant levels, etc.).
 - d) Concentrations of other applicable borrow site-specific parameters (i.e., based on borrow site description and history) less than State-specific residential standards and State-specific naturally occurring background threshold values.
 - 5) Borrow source "certified clean" documentation, if provided in lieu of Contractor representative sampling, shall be based on previous sampling of proposed borrow area.
 - 6) Submit import soil plan, including the above information, to the Owner for review and approval. Owner reserves the right to reject any proposed import soil.
 - 7) Provide import soil implementation documentation to Owner, including a listing of import soil load transport information [i.e., transport company, truck ID, delivery date and time, approximate volume, and weight (if scaled at import site)].
- b. Export of Excess Soil
 - 1) Excess soil from this project shall only be transported to an Owner designated or approved licensed landfill as specified in 1.6(C)(3)(c).
 - 2) Provide export soil implementation documentation to Owner, including a listing of export soil load transport information [i.e., transport company, truck ID, delivery date and time, approximate volume, and weight (if scaled at export site)].
- c. Disposal of Site Impacted Soil
 - 1) Site impacted soil designated for off-site disposal shall only be transported to an Owner designated or approved licensed landfill.
 - 2) Coordinate disposal profiling and manifesting with Owner.
 - 3) Impacted soil shall be transported by a licensed hauler in accordance with Federal, State, and local marking, labeling, placarding, and manifesting requirements.
 - 4) Provide Owner with generator copies of manifests and a final landfill facility generated ticket listing of all transported loads.
- D. On-Site Impacted-Soil Management
 - 1. The management (i.e., handling, relocation, or grading) of on-Site impacted soil shall be conducted in accordance with the Owner-provided "Soil Management Plan".
 - 2. Contractor shall document all areas of On-Site impacted soil discovery (i.e., as-built surveying of the horizontal and vertical extent of all impacted-soil origin areas) and provide survey documentation to Owner as pdf and CAD files.
 - 3. Impacted soil disturbance activities shall be conducted in a manner that minimizes the generation of "contact water" (i.e., groundwater or stormwater that comes in contact with impacted soil). The management of contact water, if generated, shall be conducted in accordance with the Owner provided "Soil Management Plan" and the Owner-provided Stormwater Pollution Prevention Plan (SWPPP).

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All imported materials in this section must be extracted, harvested, or recovered, as well as manufactured, within 500 miles of the project site.
- B. Satisfactory Site Topsoil for Reuse or Stockpiling: Excavated organic based material, fertile, friable, natural loam, graded, free of roots, rocks larger than 1 inch, subsoil, debris, and large weeds or litter, as approved by owner.
 - 1. All topsoil shall be screened prior to placement.
 - 2. Tests shall be performed per specification 32 91 13 Soil Preparation.
 - 3. Refer to Subgrade Certification Form, Appendix A of this document.
- C. Unsatisfactory Site Subgrade:
 - 1. Material containing lumps larger than 6 inches, rocks larger than 3 inches, and debris.
 - 2. Material complying with ASTM D2487 soil classification groups ML, OL, MH, CH, OH, and PT, unless approved by Geotechnical Consultant.
 - 3. Moisture content shall not be a criteria for determination of acceptable soil.
 - 4. Material not meeting site compaction requirements.
- D. Unsatisfactory Site Fill:
 - 1. Material containing lumps larger than 6 inches, rocks larger than 3 inches, and debris.
 - 2. Material complying with ASTM D2487 soil classification groups ML, OL, MH, CH, OH, and PT, unless approved by Geotechnical Consultant.
 - 3. Moisture content shall not be a criteria for determination of acceptable soil.
 - 4. Material not meeting site compaction requirements.
- E. Aggregate Base Material:
 - 1. Artificially graded mixture of crushed stone, dense-graded aggregate, conforming to state highway specifications as listed on the site drawing documents.
 - 2. Materials must conform to DOT design specifications for recycled concrete, except Los Angeles Abrasion test.
 - 3. The use of slag aggregates is not permitted within the limits of the project site.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 31 10 13 - Site Preparation.
- B. Verify that survey control points and benchmarks and intended elevations for the work are as indicated.

3.2 PROTECTION

- A. Locate, identify, and protect utilities that remain from damage.
- B. Protection of Adjacent Lands: As specified in Section 31 25 00 - Erosion and Sedimentation Control.
- C. Erosion Control and Dust Control: As specified in Section 31 25 00 - Erosion and Sedimentation Control.
 - 1. Provide dust control during sitework demolition or removals. Control dust created from on-site construction and associated traffic using water or other approved means.

- D. Environmental protection: As specified in Division 01.
- E. Protect benchmarks from damage and displacement.
- F. Temporary and permanent stockpiles shall stay within construction limits.
- G. Contractor shall be responsible for providing all sheeting, shoring, and bracing, and other protective measures as may be required.
- H. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.
- I. Demarcation Layer: disturbance of the existing demarcation layer shall be limited to the minimum necessary to complete the construction of subgrades, structures and utilities detailed in the project plans, and shall be replaced in-kind following construction and prior to placement of clean fill.

3.3 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Maintain positive site drainage at all times, including pumping accumulated surface water if necessary.
- C. Verify that the first 12 inches of subgrade in areas where fill or aggregate base courses are to be placed meet site compaction requirements.

3.4 TOPSOIL STRIPPING & STOCKPILING

- A. Strip all topsoil and organic material on site within the construction limits of the project where grades are to be changed, or in areas to be improved.
- B. If material complies with requirements of this section, and is approved by the Owner's Testing Contractor, it shall be stockpiled as shown on the plans or as directed by the Construction Manager for later spreading by this Contractor in regraded greenbelt areas.
- C. See specification 32 91 13 – Soil Preparation for testing and respreading.
- D. Unless otherwise directed, all stripped topsoil and organic material not utilized for respreading or berm construction shall be removed from the site to a spoil location approved by the Owner, following the testing requirements in 1.6(C)(3).

3.5 SOIL EXCAVATION

- A. Excavate soil from areas to achieve site subgrade balance.
- B. Excess, impacted, or unsuitable subgrade soil shall be disposed off-site, in accordance with 1.6(C)(3) and the Owner-provided "Soil Management Plan".

3.6 PROOF-ROLLING

- A. Prior to fill operations and after achieving finished subgrade elevation in cut areas, such areas shall be proof-rolled in preparation for testing to meet the necessary compaction specified herein. Proof-rolling shall be performed on an exposed subgrade free of surface water. Proof-rolling shall be performed with a rubber-tired rear tandem-axle dump truck with an effective weight as prescribed in the Geotechnical report, with 20 tons being the minimum effective weight to be used. The vehicle shall make a minimum of three passes in each of two perpendicular directions at speeds between 2 and 3 mph, covering the proposed development area. Perform proof-rolling in the presence of the Construction Manager and project's Quality Control (QC) agency. If testing indicates additional remediation is necessary, cultivate material as needed in perpendicular directions to a depth of 12 inches and replace with materials as recommended by the project's QC agency. The re-compaction of the failing area(s) shall be provided and is considered a part of the base bid. Additional work effort beyond this will be negotiated, working where possible with the unit price requested in the bid proposal.
- B. Proof-rolling shall be required for final acceptance of structural subgrade. Contractor is responsible for subgrade failure in fill areas.
- C. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- D. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
- E. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Soils Engineer, and replace as directed in Section 31 32 00 Soil Stabilization, Soil Modification or Cement-treated Base.

3.7 DEWATERING

- A. Remove and dispose of all surface and ground water which affects the work within the construction boundaries.
- B. Each excavation shall 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 causes will result. If damage should occur from any source whatsoever, the Contractor shall make good all damage and shall replace such pipe and structures as required by the Construction Manager and/or the Civil Engineer.
- C. Where work is in soil containing an excessive amount of water, the Contractor shall provide, install, and maintain suitable well points connected to manifolds or reliable pumping equipment or submersible wells with suitable discharge lines and shall so operate them to ensure proper construction of the work. The Contractor shall make every effort to prevent sand, sediment, or debris from entering any existing pipe line or conduit which he may use for drainage purposes. The repair or cleaning of drainage structures made necessary by the Contractor's operations shall be performed by and at the expense of the Contractor. Arrangements for discharge of ground water

into any public sewer shall have been previously approved by the utility Owner. The Contractor will be held responsible for the conditions of any pipe line or drainage way which they may use for drainage purposes, and all such pipes or conduits shall be left clean and free from sediment.

- D. All excavations for concrete structures or trenches which extend down to or below the static ground water elevations shall be de-watered by lowering and maintaining the ground water surface beneath such excavations a distance of not less than 12 inches below the bottom of the excavation, or as approved by the Construction Manager and/or the Civil Engineer. Surface water discharged from the dewatering effort shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.

3.8 ROCK REMOVAL

- A. When rock is encountered, it shall be uncovered and the Construction Manager notified immediately.
- B. Rock shall not be excavated until it has been observed by the Construction Manager and/or the Civil Engineer and Geotechnical Consultant and its removal has been approved by the Owner in writing.
- C. Rock removal shall be accomplished by chipping, drilling, wedging, or blasting.
- D. All rock which cannot be handled and compacted as earth shall be kept separate from other excavated materials and shall not be mixed with other backfill materials except as specified or directed.
- E. Rock Removal by Blasting:
 - 1. Firm Qualifications: The blasting company shall be one specializing in explosives for disintegration of rock, with minimum of 5 years documented experience, licensed, and insured for same.
 - 2. Care shall be used whenever blasting is necessary relative to the stringing and handling of explosives, loading, firing of blasts, and the protection of personnel. Warnings shall be given before the firing of any blast and blasts shall not be fired until all persons in the vicinity are known to have reached positions out of danger.
 - 3. Advise Owners of adjacent buildings or structures in writing, prior to executing any blasting. Explain planned blasting operations.
 - 4. Repairs and Damage: In case damage occurs to any portion of the work, or to the materials surrounding or supporting the same, the Contractor, at their own expense, shall remove such damaged work. Any damage whatever to any existing structure shall be promptly, completely, and satisfactorily repaired by the Contractor at their own expense.
 - 5. Contractor shall obtain necessary permits and comply with all applicable laws associated with this type of work.

3.9 FILLING

- A. Repair or replace demarcation layer wherever disturbed due to excavation.
- B. Fill areas to proposed contours and elevations with approved materials.
- C. Fill: Place and compact material in continuous layers not exceeding 12 inches loose thickness, compacted to 95 percent of maximum density in accordance with ANSI/ASTM D1557 (modified proctor) or 98% of maximum density in accordance with ANSI/ASTM D698 (standard proctor).

- D. Greenspace: When specifically noted on the drawings, backfill and bedding material under greenspace areas shall be mechanically compacted to achieve a minimum density of 90 percent at optimum moisture content as determined by Modified Proctor Analysis (ASTM D1557) or to achieve a minimum density of 93 percent at optimum moisture content as determined by Standard Proctor Analysis (ASTM D698). Outlot areas that could be built on in the future are not to be considered "green space."
- E. Maintain moisture content of fill materials to attain required compaction density. Material having a moisture content in excess of 3% above optimum shall be dried until coming back into conformance with specification.
- F. Make grade changes gradual. Blend slope into level areas.
- G. It is the goal and intent, if possible, to balance the earthwork with on-site materials, to the extent that borrow areas on site may be expanded, deepened, and backfilled with site topsoil and other unsuitable soils as authorized by the Construction Manager and/or the Civil Engineer.
- H. The Owner reserves the right to separately purchase off-site materials for site balance if it is necessary. Placement and compaction of materials delivered to the site will then be done by the Contractor of this contract at no additional cost to the Owner.
- I. Excess topsoil may be used as fill in greenbelt areas not designated for future building or parking lot development as approved by the Construction Manager and/or the Civil Engineer.
- J. Do not place backfill on fill material surfaces that are muddy, frozen, or contain frost or ice.
- K. Place backfill evenly adjacent to foundations and structures.

3.10 ROCK FILLING

- A. Rock fill shall consist of hard, durable, relatively well graded particles or fragments of sound rock that can be compacted into a dense and stable subbase. Rock fill shall be environmentally clean, free from soft or disintegrated pieces, dirt, vegetative matter, shale, lumps, or excessive amounts of clay, and other objectionable or foreign materials. Rock fill shall have a maximum fragment size of 12 inches and have no concentrations of limestone dust. Material that does not meet the specified limits shall either be removed from the fill or processed to meet the required gradation. A typical gradation for rock fill is as follows:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
12 inches	100
6 inches	26 - 75
1/2 inch	11 - 25
200	0 - 10

- B. Rock fill shall be placed and manipulated so that no large voids are present. A maximum loose lift thickness of 12 inches must be maintained. The rock fill must be compacted by "tracking in" with a large dozer (i.e., Cat D-8 or equivalent). The fill must be placed to provide a dense, essentially unyielding subbase when proof rolled with heavy construction equipment. Where insufficient rock fines are available to properly choke the fill section, sand, or fine gravel shall be used. Field density testing of the rock will not be required. However, all phases of the rock placement and compaction operations must be monitored on a full-time basis to check that a dense structure is achieved. The monitoring must be carried out by a soils technician under the direct supervision of the Owner's Testing Contractor. After the rock has been placed and approved, the aggregate base shall be immediately placed and compacted over the rock fill surface to required subgrade elevation.
- C. Clearance from rock fill:
 - 1. Rock shall be removed to provide a clearance for all pipes, appurtenances, or structures of at least 6 inches below the pipe and a minimum of 6 inches on each side of the pipe. Adequate clearance for properly jointing the pipe laid in rock trenches shall be provided at all bell holes. Excavations below pipe foundation grade in rock and boulders shall be refilled to pipe foundation grade with approved material compacted per specifications.
 - 2. 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.
 - 3. Pavement aggregate bases shall clear rock a minimum of 6 inches with medium between filled with a free draining granular material.

3.11 TOLERANCES

- A. Surface of Subgrade: Plus, or minus 1/10 foot with the intent of achieving the overall planned subgrade elevation.
- B. The Contractor shall provide a digital topographic as-built drawing on a CD, at [their](#) expense, showing the high and low points and surveyed on a 25-foot grid at the gas station pad and parking area, a 50-foot grid over the main store building pad, and a 100-foot grid over the entire paved parking and drive area. Survey shall be sealed by a licensed surveyor, verifying that the above tolerance is met and that the proper elevation in this area is achieved.

3.12 SITE MAINTENANCE DURING CONSTRUCTION

- A. Site excavation and fill placement areas shall be maintained daily to minimize potential surface entrapment of rainfall and runoff.
- B. Inadequately compacted fills that become saturated during the construction effort are the responsibility of the Contractor to disc, aerate, and recompact or replace as necessary to achieve required compaction.
- C. Slope sides of excavations, embankment areas, and stockpiles to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of earthwork effort.

3.13 CLEAN-UP

- A. For duration of work, Contractor is to maintain work area free of waste material, debris and the like.

1. Contractor shall provide on-site containers as necessary for work of this section. Locate as directed by Construction Manager.
- B. Upon completion and when directed by Construction Manager, Contractor shall remove all excess material, debris, and equipment occasioned by the work.

END OF SECTION 31 22 00

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APPENDIX I

GLOSSARY

GLOSSARY

Activity– An element in the Progress Schedule establishing a requisite step, or the time and resources required, for completing the part of the Work associated with that Activity.

Addenda– Written instruments that are used by the Owner and/or Professional to incorporate interpretations or clarifications, modifications, and other information into the Bidding Documents. An Addendum issued after Bid opening to those Bidders who submitted a Bid, for the purpose of re-bidding the Work without re-advertising, is referred to as a **post-Bid Addendum**.

Agency– Any unit, section, division, department, or other instrumentality of the State that benefits from the Work.

Alternate– Refers to work specified in the Bidding Documents for which the Bidder must bid a Bid Price.

Apparent Low Bidders: Those Bidders whose Base Bid, when added to those specific Alternates the Owner intends to accept, yields the three lowest sums of Bid and Alternates. Additional Bidders may be considered Apparent Low Bidders if their Bid, when added to those specific Alternates the Owner intends to accept, yields a sum within 10% of the lowest of the Apparent Low Bidder's sum. If a qualified disabled veteran meets the requirements of the contract solicitation, provides acceptable responses to both Part One and Part Two of the Best Value Construction Bidder Evaluation to achieve a Best Value recommendation and with the veteran's preference is the lowest responsive, responsible, best value Bidder it is considered the Apparent Low Bidder.

Archaeological Feature– Any prehistoric or historic deposit of archaeological value, as determined by a representative of a State Agency that is duly authorized to evaluate such findings and render such judgments. An Archaeological Feature deposit may include, but is not limited to Indian habitations, ceremonial sites, abandoned settlements, treasure trove, artifacts, or other objects with intrinsic archaeological value and that relate to the history and culture of the State of Michigan.

Authorized Technical Data– Information and data contained in a report of exploration and tests of subsurface conditions. Also, any physical data (dimension, location, conditions, etc.) contained in those Drawings of physical conditions of existing surface and subsurface facilities.

Best Value– The bids will be evaluated for best value based on price and qualitative components that may include but are not limited to technical design, technical approach, quality of proposed personnel, and management plans, per PA 430 of 2012.

Bid– Written offer by a Bidder for the Work, as specified, which designates the Bidder's Base Bid and Bid Prices for all Alternates. The term *Bid* includes a *re-bid*.

Bidder– The Person acting directly, or through an authorized representative, who submits a Bid directly to the **Owner**.

Bidding Documents– The proposed Contract Documents as advertised, and all Addenda issued before execution of the Contract.

Bid Price– The Bidder's price for a lump sum item of work, or the product of the Bidder's unit price for an item of Unit Price Work times the quantity given on the Bid Form for that item.

Bid Security– A security serving as a guarantee that the Bidder will conform to all conditions.

Bidding Requirements – The Advertisement, Instructions to Bidders, Supplementary Instructions, Information for Bidders, Bid Form, Bid Form Attachments, and qualification submittals, as advertised and as modified by Addenda, and any other Section included within Division 0 of the Bidding Documents for the purpose of governing bidding and award of the Contract.

Board– The Administrative Board of the State of Michigan.

Bond– Security furnished by the **Contractor**, as required by the Contract Documents.

Business Day– Any Day except Saturdays, Sundays and holidays observed by the **Owner**.

Bulletin– A request used by the **Owner** to describe a change in the Work under consideration by the **Owner** and to request the **Contractor** to submit a proposal for the corresponding adjustment in Contract Price and/or Contract Time, if any.

Calendar Day– Every day shown on the calendar, Saturdays, Sundays, and holidays included.

Cash Allowance– An **Owner**-specified sum included within the Contract Price to reimburse the **Contractor** for the actual purchase/furnished cost of materials and/or equipment or other designated items, as specifically provided in the Contract Documents. Although the scope (e.g., the required quantity) of any Work covered by a Cash Allowance is sufficiently detailed in the Contract Documents for the purposes of bidding the required labor costs, Subcontract costs, construction equipment costs and general conditions costs and Fee, it is understood that the required materials, equipment or other designated items are of uncertain purchase cost at the time of Bid or are yet to be specified in more detail by the **Professional** as to quality, appearance, durability, finish and such other necessary features affecting purchase price.

Change Order– A written order issued and signed by the **Owner**, which amends the Contract Documents for changes in the Work or an adjustment in Contract Price and/or Contract Time, or both.

Construction Mechanic– A skilled or unskilled mechanic, laborer, worker, helper, assistant, or apprentice working on a state project but shall not include executive, administrative, professional, office, or custodial employees.

Contract Award– The official action of the **Board**, the **Director-SFA** or the **Director-DCD** awarding the Contract to the **Contractor**.

Contract Documents– Written and graphic documents that form the legal agreement between the **Owner** and the **Contractor**, consisting of this document, completed Bid and Contract forms, terms and conditions of the contract, specifications, drawings, addenda, Notice of Award, Notice-to-Proceed and contract change orders.

Contract Price– The total compensation, including authorized adjustments, payable by the **Owner** to the **Contractor** (subject to provisions for Unit Price Work).

Contract Times–The Contract Times for the entire Work are the periods allowed, including authorized adjustments, for Substantial Completion and final completion of the Work. The Contract Times for a designated portion of the Work are the periods allowed for Substantial Completion and final completion of any such portion of the Work, as specified in the Contract Documents.

Contractor– Business enterprise with which the **Owner** has entered into the Contract.

Correction Period– A period during which the **Contractor** must, in accordance with the Contract Documents, (a) correct or, if rejected, remove, and replace Defective Work, and (b) maintain warranties for materials and equipment in full force and effect.

Cost of the Work Involved– The sum of all costs that would be, or were, necessarily incurred by the **Contractor** in providing any Work Involved with the related change, less the costs that would be, or would have been, incurred by the **Contractor** to provide such Work without the related change.

Defective– As determined by the Professional, an adjective which when referring to or when applied to the term “Work” refers to (a) Work not conforming to the Contract Documents or not meeting the requirements of an inspection, test, or approval, or (b) Work itemized in a Punch List which the **Contractor** fails to complete or correct within a reasonable time after issuance of the Punch List by the **Professional**.

Delay– Any act or omission or other event that in any manner adversely affects or alters the schedule, progress or completion of all or any part of the Work. Delay is a generic term intended to include deferral, stoppage, slow down, interruption and extended performance, and all related hindrance, rescheduling, disruption, interference, inefficiency and productivity and production losses.

Department (DTMB)– Department of Technology, Management and Budget of the State of Michigan.

Director- The Director of the **Department**.

Director-SFA- The Director of **DTMB** State Facilities Administration.

Director-DCD- The Director of **DTMB** State Facilities Administration, Design and Construction Division.

Division– Each of the numbered, distinct parts (starting with Division 0) into which the Specifications are divided.

Drawings– Part of the Contract Documents showing the Work. Drawings must neither serve nor be used as Shop Drawings.

Emergency– A condition affecting the safety or protection of persons, or the Work, or property at or adjacent to the site.

State Facilities Administration (SFA)-Entity in the **Department** responsible for design, construction, and operations and maintenance of facilities.

Fee for the Work Involved (Fee)– An established, percentage mark-up on the Cost of the Work Involved which is allowed to the **Contractor** for (a) reasonable administrative costs, and (b) negotiated, reasonable profit on the Cost of the Work Involved.

Hazardous Material– Asbestos containing materials (ACMs), Polychlorinated biphenyls (PCBs), petroleum products, such construction materials as paint thinners, solvents, gasoline, oil, etc., and any other like material the manufacture, use, treatment, storage, transportation, or disposal of which is regulated by federal, state, or local Laws governing the protection of public health, natural resources, or the environment.

Invitation To Bid (ITB) - The solicitation document presenting the terms and conditions that will become part of the Contract when the Bid is accepted.

Law(s)– Means federal, state, and local statutes, ordinances, orders, rules and/or regulations.

MCL– The Michigan Compiled Laws of the State of Michigan.

Means and Methods– Includes means, methods, techniques, sequences and/or procedures applicable to the Work.

Notice of Award– Written notice accepting the Bid to the lowest responsive, responsible Bidder and designating the Contract Price (and establishing the Alternates accepted by the **Owner**).

Notice-to-Proceed– Written notice issued by the Project Director directing the Contractor to commence the construction activities and establishing the start date of the Contract Time.

On-Site Inspection– The **Professional's** on-site examination of the **Contractor's** completed or in progress Work to determine and verify to the Project Director that the quantity and quality of all Work complies with the requirements of the Contract Documents.

Owner– The State of Michigan, with whom the **Contractor** has entered into the Contract and for whom the Work is to be provided.

Owner Field Representative– A State employee or consultant, acting collaboratively with the Project Director, providing on-site, periodic observation and documentation of the Work for compliance with the Contract Documents.

Partial Use– The use, by the **Owner**, of a designated portion of the Work before accomplishing Substantial Completion of the entire Work. Partial Use does not mean Substantial Completion of the portion of the Work placed in use by the **Owner**.

Person–Individuals, partnerships, corporations, receivers, trustees, joint ventures or any other legal entity and any combinations of any of them.

Political Subdivision– Any county, city, village, or other local unit of the State, including any agency, department, or instrumentality of any such county, city, village, or other local unit.

Post-Bid Submittal– A Qualification Submittal required of the Bidder selected under Section 00100 - 22 before Contract Award, and which is used by the Owner in the evaluation of the Bid of the selected Bidder.

Professional Services Contractor (PSC or Professional)– The individual or business entity who has the authority to practice the design disciplines required by the Contract Documents. An Agency with appropriate licensing may replace the PSC in their role if a consultant is not used.

Project– The total construction, which includes the Work and possibly other work completed by others, as indicated in the Contract Documents.

Project Director- Designated State employee(s) (a) Responsible for directing and supervising the **Professional's** services during the period allowed for completion of the Work; and/or (b) Acting as representative for the **Owner** and for the enforcement of the Contract Documents, approving payment to the **Contractor** and coordinating the activities of the State, **Owner**, **Professional** and **Contractor**.

Project Schedule– Work Schedule that shows the **Contractor's** approach to planning, scheduling, and execution of the Work and that accurately portrays completed Work as to sequencing and timing, as provided in the Contract Documents.

Project Specifications– The Contract Documents organized into Divisions. "Technical Specifications" means Divisions of the Specifications consisting of technical descriptions of materials, equipment, construction systems, standards, and workmanship.

Provisionary Allowance– An amount included within the Contract Price to reimburse the **Contractor** for the cost to furnish and perform Work that is uncertain because, for example, it is indeterminate in scope and may not be shown or detailed in the Contract Documents.

Punch List– A list of minor items to be completed or corrected by the **Contractor**, any one of which do not materially impair the use of the Work for its intended purpose.

Qualified Disabled Veteran (QDV)- QDV as defined by Public Act 22 of 2010, MCL 18.1241.3 and supported by a DD214 Proof of Service and Discharge, a Veterans Administration rating decision letter, proof of disability (if the disability is not indicated on the DD214), and appropriate legal documents setting forth the 51% natural persons QDV ownership.

Record Documents– Drawings, Specifications, Addenda, Change Orders, Change Authorizations, Bulletins, inspection, test and approval reports, photographs, written clarifications and interpretations and all other documents recording, or annotated to show, all revisions and deviations between the as-built installation and the Contract Documents, all approved Submittals and all clarifications and interpretations.

Records– Books, reports, documents, electronic data, and other evidence relating to the bidding, award and furnishing and performance of the Work.

Recycled Material– Recycled paper products, structural materials made from recycled plastics, re-refined lubricating oils, reclaimed solvents, recycled asphalt and concrete, recycled glass products, re-treaded tires, ferrous metals containing recycled scrap metals and all other materials that contain (a) waste materials generated by a business or consumer, (b) materials that have served their intended purpose, and/or (c) materials that have been separated from solid waste for collection, recycling and disposition in the percentage determined by the State as provided by Law.

Request for Payment– The form provided by the **Owner** (Payment Request DTMB-0440) to be used by the **Contractor** in requesting payment for Work completed, which must enclose all supporting information required by the Contract Documents.

Schedule of Values– A schedule of pay items, which subdivides the Work into its various parts and which details, for each itemized part, cost and pricing information required for making payments for Work performed. The sum of all pay item costs in the Schedule of Values must equal the Contract Price for the Work.

Shop Drawings– Includes drawings, diagrams, illustrations, standard schedules, performance charts, instructions and other data prepared by or for the **Contractor** to illustrate some part of the Work, or by a Supplier and submitted by the **Contractor** to illustrate items of material or equipment.

Soil Erosion and Sedimentation Control– The planning, design and installation of appropriate Best Management Practices designed and engineered specifically to reduce or eliminate the off-site migration of soils via water runoff, wind, vehicle tracking, etc. Soil erosion and sedimentation control in the State of Michigan is regulated under The Natural Resources Environmental Protection Act; Soil Erosion and Sedimentation Control, 1994 PA 451, Part 91, as amended, MCL 324.9101 et seq. Soil erosion and sedimentation control associated with this Contract is monitored and enforced by the DTMB-SFA.

State– The State of Michigan in its governmental capacity, including its departments, divisions, agencies, boards, offices, commissions, officers, employees, and agents. Non-capitalized references to a state refer to a state other than the State of Michigan.

State Construction Code– The Michigan State Construction Code Act, 1972 PA 230, as amended, MCL 125.1501 et seq.

Subcontractor– A Person having an agreement with the Contractor to provide labor at the site and furnishing materials and/or equipment for incorporation into the Work.

Submittals– Includes technical Submittals, Progress Schedules and those other documents required for submission by the Contract Documents. The term "technical Submittal" includes Shop Drawings, brochures, samples, Operation and Maintenance (O&M) Manuals, test procedures and any other Submittal the Contract Documents require the **Contractor** to submit to demonstrate how the items covered, after installation or incorporation into the Work, will conform to the information given in the Contract Documents and be compatible with the design of the completed Work as a functioning whole as indicated in the Contract Documents.

Substantial Completion– The Work, or a portion of the Work designated in the Contract Documents as eligible for separate Substantial Completion, has been completed in accordance with the Contract Documents as determined by the PSC, to the extent that the **Owner** can use or occupy the entire Work, or the designated portion of the Work, for the use intended without any outstanding, concurrent Work at the site, except as may be required to complete or correct Punch List items.

Supplier– A manufacturer or fabricator, or a distributor, material man or vendor representing a manufacturer or fabricator, who has an agreement with the Contractor to furnish materials and/or equipment.

Underground Utilities– Pipelines, piping, conduit, duct, cables, wells, tanks, tunnels and appurtenances, or other similar facilities, installed underground to convey or support conveyance of potable water, sprinkler or irrigation water, fire protection systems,

electricity, gases, steam, petroleum products, sewerage and drainage removal, telephone, communications, cable TV, traffic, or control systems.

Unit Price Work– The work involving specified quantities (i.e., related Work quantities) which, when performed, is measured by the **Professional** and paid using the measured quantities and unit prices contained in the Contract Documents. Performance of Unit Price Work for undefined quantities is contingent upon conditions encountered at the site, as determined, and authorized by the **Professional**.

Unit Price Work, Specific– Work of specified and defined quantities (i.e., quantities are detailed in, and can be taken-off from, the Contract Documents) that when performed is measured by the **Professional** and paid based on the measured quantities and unit prices contained in the Contract Documents.

Work- (as in “*the Work*,” “*the entire Work*”)– The entire *completed Construction* required by the Contract Documents. The Work results from furnishing and performing all services, obligations, responsibilities, management, supervision, labor, materials, equipment, construction equipment, general conditions, permits, taxes, patent fees and royalties, testing, inspection and approval responsibilities, warranties, temporary facilities, small tools, field supplies, Bonds, insurance, mobilization, close-out, overhead and all connections, devices and incidental items of any kind or nature required and/or made necessary by the Contract Documents.

Work Involved, any Work Involved– Existing or prospective Work (a) reflected in any notice, proposal, or claim, or (b) reflected in changes ordered or in process, or (c) affected by Delay.

APPENDIX II

SPECIAL WORKING CONDITIONS

DEPARTMENT OF NATURAL RESOURCES

The Work comprising this Project will be performed at a site of the Department of Natural Resources. The Contractor must comply with all rules and regulations pertaining to such sites and must conform to the following rules:

1. The Contractor must always provide a competent Superintendent satisfactory to the Department of Natural Resources on the work site during working hours with full authority to act for him. It must be the Contractor's responsibility to furnish the Department of Natural Resources with the name, address, and telephone number of the responsible person to contact for Emergency during after hour, weekend, and holiday periods.
2. Access to and egress from the site must be via routes specifically designated by the Department of Natural Resources authorized representative.
3. All work will be coordinated to minimally interfere with the normal function of the Outdoor Adventure Center which will be open and operational. Specifically, the building can be accessed between 8 am and 5 pm, Monday – Friday with the exception of State Holidays.
 - 3.1 No Work must be performed at the site during night hours without the written permission from the Department of Natural Resources; and no work on the following state holidays; President's Day, Easter Sunday, Memorial Day, Juneteenth, July 4, Labor Day, Election Day, Veteran's Day, Thanksgiving and Day After, Christmas Eve, Christmas Day, New Year's Eve, and New Year's Day.
 - 3.2 Work and access to the construction site is allowed on weekends from 8am to 4:30pm if access to the public areas/spaces is not required.
 - 3.3 Access to the mechanical room and access to the electrical panels is to be coordinated with the Outdoor Adventure Center Representative.
 - ~~3.4 No Work must be performed during the month of September without the written permission from the Department of Natural Resources.~~
4. Areas on the site for employee parking, toolboxes, material lay down, etc., must be assigned by the Department of Natural Resources. All firearms, weapons, alcoholic beverages, or explosives must be removed from vehicles before entering the site.
5. Heavy equipment such as bulldozers and power shovels must be locked or immobilized in an acceptable manner when not in use. No tools, small pipe, copper, or wire must remain on the site overnight, unless acceptably locked inside shanties or tool chests. There will be no exchange, loaning or borrowing of tools, equipment or manpower between the Department of Natural Resources and the Contractor.
6. The Contractor must comply with the special condition requirements of the Department of Natural Resources and the United States Army Corps of Engineers Permit Sections appended to these specifications.
7. Work Schedule:
 - 7.1 Stage One starting by **January 2026 and taking place over approximately 400 calendar days**. Work, including but not limited to, must be Mobilization, Removals, Earth Excavation, Site Prep, Gas service, Electrical Conduit with wires, aggregate base, foundations and concrete work, generator procurement, and screen wall/enclosure construction.
 - ~~7.2 Stage Two starting ***month/year*** completed by ***month/day/year***. Work included must be Alternate #1.~~
 - ~~7.3 Stage Three starting ***month/year*** completed by ***month/day/year***. Work included must be Alternates #2, #3, #4 and #5.~~

APPENDIX III

SPECIAL PROJECT PROCEDURES

SOIL EROSION AND SEDIMENTATION CONTROL PROJECT PROCEDURES FOR CONTRACTORS ON DTMB OWNED AND MANAGED PROPERTIES

1. Comply with Part 91, Soil Erosion and Sedimentation Control of the Natural Resources and Environmental Protection Act 1994 PA 451, as amended.
2. Contact the DTMB, SFA, Design and Construction Division to discuss the implementation of soil erosion and sedimentation control (SESC) on the Project with DTMB SESC Officer. Phone **(517) 388-3045** or Email DTMB-SESC@michigan.gov.
3. Following the award of a contract, the Contractor will be required to prepare and issue for approval an SESC Implementation Plan, which indicates the Contractor's intended implementation of SESC on the project including a schedule and sequence. The Environmental Health and Safety Section, upon approval of the implementation plan, will issue to the Contractor an "Authorization to Proceed with Earth Change" document, which is to be posted at the job site. This document is issued in lieu of a permit from the county. Earthwork shall not begin prior to the issuance of this Authorization. Upon receipt of the Authorization document, the Contractor may begin earth change activities.
4. See below the "Checklist for Contractor's SESC Implementation Plan" for details of the required information necessary for the Contractor to create the SESC Implementation Plan. The intent of this plan is to ensure that the Contractor has reviewed and understands the SESC provisions within the plans and specifications.
5. CHECKLIST FOR CONTRACTOR'S SOIL EROSION AND SEDIMENTATION CONTROL IMPLEMENTATION PLAN (For projects that include earth changes or disturb existing vegetation):

DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION, DESIGN AND CONSTRUCTION DIVISION
SOIL EROSION AND SEDIMENTATION CONTROL PROGRAM
P.O. Box 30026, Lansing, Michigan 48909

PROJECT TITLE:**PROJECT LOCATION:****PROJECT FILE NUMBER:****INDEX NUMBER:**

Prior to the start of earthwork, the Contractor must submit a Soil Erosion and Sedimentation Control (SESC) Implementation Plan to the Michigan Department of Technology, Management and Budget, Soil Erosion and Sedimentation Control Program. The intent of this plan is to ensure that the Contractor has reviewed and understands the SESC provisions within the plans and specifications. The following checklist will provide Contractors with assistance in creating the SESC Implementation Plan.

The SESC Implementation Plan must include:

1. ☐ A written plan or letter demonstrating:
 - ☐ The Contractor's means and methods for the implementation of SESC provisions included within the plans and specifications and compliance with the provisions of Part 91 of PA 451 of 1994, as amended.
 - ☐ The Contractor's plan for dust control.
 - ☐ The Contractor's plan for inspection and maintenance of temporary SESC's.
2. ☐ A map, location plan, drawing, or amended copy of the Project SESC or grading plan showing:
 - ☐ The locations of any stockpiles of soil associated with the Project
 - ☐ The temporary SESC controls associated with stockpiles of soil
 - ☐ The Contractor's suggested or proposed additions or relocations of any temporary or permanent SESC's associated with the Project plans and specifications (subject to approval by Engineer and DTMB)
 - ☐ Location of site entrances, exits and vehicle routes
 - ☐ Location of site superintendent's/project manager's site trailer or office (for SESC Inspector check-in)
3. ☐ A schedule for the installation and removal of temporary controls and the installation of permanent soil erosion and sedimentation controls in relation to the overall construction schedule.

Submit the above items to the above address.

Upon approval of the Contractor's plan, an "Authorization to Proceed with Earth Change" will be issued by DTMB, Design and Construction Division.

DEMOLITION/REMODELING PROJECT PROCEDURES

Furnish all equipment, materials, labor, and services necessary to complete all building demolition required in connection with the existing building, in order to permit the installation of new Work. The goal of the Owner is to generate the least amount of waste or debris possible. However, inevitable waste and debris that are generated shall be reused, salvaged, or recycled, and disposal in landfills shall be minimized to the extent economically feasible. The Contractor will be required to prepare waste management plan for the collection, handling, storage, transportation, and disposal of the waste generated at the construction site for the Owner's review and approval. The Contractor will be required to produce waste management progress reports.

1. **Locations:** Notations are made in various places on the Drawings to call attention to building demolition which is required; however, these Drawings are not intended to show every item to be removed. The Contractor and the Subcontractors for the various trades must remove the materials related to their respective trades as required to permit the construction of the new Work as shown.
2. **Permits:** The Contractor must secure from the appropriate agencies all required permits necessary for proper execution of the work before starting work on the project site. All fees for securing the permits must be paid by the Contractor, including all inspection costs which may be legally assessed by the Bureau of Construction Codes in accordance with the authority granted under the Public Act 1980 PA 371, as amended.
3. **Enclosures:** Where it is necessary to make alterations to walls, floors or roof of the existing building, the Contractor must provide and maintain dustproof partitions to separate the parts where Work is being done from the adjoining parts occupied by the State Agency. Where any parts are opened and exposed to the elements, the Contractor must provide weather tight enclosures to fully protect the structure and its contents.
4. **Waste Management Plan:** The management plan must address waste source identification and separation, returns, reuse and salvage, recycling, landfill options, alternatives to landfilling, materials handling procedures and transportation.
5. **Preparation:** Protect all existing Work that is to remain and restore in an approved manner any such Work that becomes damaged.
 - 5.1 Rubbish and debris resulting from the Work must be removed immediately from the site by the Contractor. However, any recyclable materials must be recycled; the Contractor will be required to use alternatives to landfills for waste disposal such as reuse or recycle of asphalt, bricks, concrete, masonry, plastics, paint, glass, carpet, metals, wood, drywall, insulation, and any other waste materials to the extent practical.
 - 5.2 Unless otherwise specified, the Agency will remove existing furniture, drapery tracks, draperies, window blinds, and other equipment items, which might interfere with the new construction.
6. **Coordination:** Demolition work, in connection with any new unit of Work, must not be commenced until all new materials required for completion of that new item of Work are at hand.
7. **Waste Management Plan Progress Reports:** Submit an updated report with the payment requests. The progress reports shall include:
 - a. The amount of waste sent to a landfill, tipping fees paid and the total disposal cost. Include supporting documents such as manifests, weight tickets, receipts and/or invoices.
 - b. Records for each material recycled/reused/salvaged from the project including the amount, date removed from the job site, destination, transportation cost, recycled materials, and the net cost/ savings.
 - c. Breakdown of waste by type generated to date.
 - d. Recycling/salvage/landfill rates.
 - e. Percent of waste recycled/salvaged to date.

HAZARDOUS MATERIALS PROJECT PROCEDURES

1. The Contractor must use, handle, store, dispose of, process, transport and transfer any material considered a Hazardous Material in accordance with all federal, state, and local Laws. If the Contractor encounters material reasonably believed to be a Hazardous Material and which may present a substantial danger, the Contractor must immediately stop all affected work, give written notice to the Owner of the conditions encountered, and take appropriate health and safety precautions.
2. This project has been identified by the DTMB-SFA as having a possibility of containing Hazardous Waste materials to be legally removed from the Project job site to complete the Work as described in the Proposal and Contract. If removal of friable asbestos material is required, the Contractor must contact the Air Quality Division, Department of Environment, Great Lakes, and Energy, at **(517) 284-6773**, for a permit and furnish all training, labor, materials, services, insurance, and equipment necessary to carry out the removal operations of all Hazardous Materials from the Project job site, as identified by the Scope of Work, or encountered on the Project job site, in accordance with State and Federal Hazardous Waste Codes. A Contract Change Order will be written to modify the existing Contract to pay for the additional cost.
3. Environmental Hazards (air, water, land and liquid industrial) are handled by the Waste and Hazardous Materials Division, Michigan Department of Environment, Great Lakes, and Energy (EGLE) in carrying out the requirements of the Federal Environmental Protection Agency (EPA). For general information and/or a copy of the latest regulations and publications call (517) 335-2690.
4. The Michigan Occupational Safety and Health Administration (MIOSHA) provides protection and regulations for the safety and health of workers. The Department of Licensing and Regulatory Affairs provides for the safety of workers. The Department of Community Health provides for the health of workers (517/373-3740) (TDD 517/373-3573).
 - 4.1 Contractor must post any applicable State and/or Federal government regulations at the job site in a prominent location.
 - 4.2 Contractor must be responsible for training their workers in safe work practices and in proper removal methods when encountering hazardous chemicals.
5. Applicable Regulations:
 - 5.1 Natural Resources and Environmental Protection Act – PA 451 of 1994, as amended, including Part 111 – Hazardous Waste Management, Part 121 – Liquid Industrial Waste and Part 147 – PCB compounds.
 - 5.2 RCRA, 1976 - Resource Conservation and Recovery Act: This federal statute regulates generation, transportation, treatment, storage, or disposal of hazardous wastes nationally.
 - 5.3 TSCA, 1979 – Toxic Substances Control Act: This statute regulates the generation, transportation, storage, and disposal of industrial chemicals such as PCBs.
6. Definitions: Hazardous substances are ignitable, corrosive, reactive, and/or toxic, based on their chemical characteristics.
 - 6.1 Under Federal and Michigan Law, a Small Quantity Generator of hazardous waste provides from 220 to less than 2,000 lbs./month or never accumulates 2,200 lbs. or more.
 - 6.2 A Generator size provider of hazardous waste provides 2,200 lbs. or more/month or accumulates above 2,200 lbs.
7. Disposals: To use an off-site hazardous waste disposal facility, the Contractor must use the Uniform Hazardous Waste Manifest (shipping paper). Small quantities of hazardous waste may not be disposed of in sanitary landfills used for solid waste.
8. Federal, state, and local Laws and regulations may apply to the storage, handling and disposal of Hazardous Materials and wastes at each State Agency. Contact the **Environmental Assistance Center** of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) at **1-800-662-9278**, Fax to: 517-241-0673 or e-mail

to: DEQ-EAD-env-assist@michigan.gov for general EGLE information including direct and referral assistance on air, water and wetlands permits; contaminated site clean-ups; underground storage tank removals and remediation; hazardous and solid waste disposal; pollution prevention and recycling; and compliance-related assistance. The Center provides businesses, municipalities, and the public with a single point of access to EGLE's environmental programs.

ASBESTOS ABATEMENT PROJECT PROCEDURES

Should this Work require the renovation or demolition of a building or structure initially constructed on or prior to 1980, *****Professional shall request and include Building Asbestos Survey for inclusion with bidding documents***** the Contractor will use the attached copy of a Comprehensive Asbestos Building Survey for those portions of the building or structure being impacted and must plan his or her work to minimize disturbance of any known or assumed asbestos containing materials (ACM). In addition, if this building or structure was constructed on or prior to 1980, the Contractor's On-Site Superintendent and all Subcontractor On-Site Superintendents for trades that could potentially disturb known or assumed ACM, must, as a minimum, have and provide documentation of current Asbestos Awareness Training.

If the Comprehensive Asbestos Building Survey identifies known or assumed ACM that will potentially be disturbed as a part of the Contractor's renovation or demolition activities, the Contractor must remove, transport, and dispose of these materials at no additional cost to the Owner and prior to any other work taking place within the immediate vicinity of said material. If required, the Contractor must provide the Owner a minimum of 10 working day notification prior to the start of any asbestos abatement activities with abatement in occupied buildings being completed even if they will be conducted during off hours (nights, weekends, and state holidays).

If the Contractor encounters a suspected ACM that was not previously identified within the Comprehensive Asbestos Building Survey, the Contractor must immediately stop all affected work, give written notice to the Owner of the conditions encountered, and take appropriate health and safety precautions. If, after providing Owner notification, the Contractor is directed to sample and/or remove the suspected ACM in question, a Contract Change Order will be written to modify the existing Contract to pay for the additional cost. Any abatement shall be completed in accordance with the requirements of this Section.

If removal of ACM is required, removal must be completed by a contractor currently licensed to remove asbestos by the State of Michigan, Department of Licensing and Regulatory Affairs (DLARA) Asbestos Program and abatement must be performed in accordance with all federal, state, and local Laws and Regulations. Prior to commencing any asbestos abatement activities, the licensed abatement contractor must submit, as required by Federal, State and Local Laws and Regulations, a "Notification of Intent to Renovate/Demolish" to both the State of Michigan, Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division and to the DLARA, Asbestos Program, to comply with National Emission Standards for Hazardous Air Pollutants (NESHAP), and the Clean Air Act (CAA). All regulated ACM must be disposed of at an approved Type II (general refuse) landfill and must be in leak-tight wrapping or containers. ACM that is non friable and is not in poor condition or will not become regulated ACM at any time can be disposed of in a Type III (construction debris) landfill.

At the completion of each abatement activity, the Contractor must perform clearance testing in accordance with National Institute for Occupational Safety and Health (NIOSH) 582 "Sampling and Evaluating Airborne Asbestos Dust". All air samples shall indicate concentrations of less than 0.01 fibers/cc for clearance to be met. Clearance testing shall be performed by a third-party Asbestos Consultant. The Asbestos Consultant selected by the Contractor shall be experienced and knowledgeable about the methods for asbestos air sampling and be able to select representative numbers and locations of samples. It is mandatory that the Asbestos Consultant's on-site hygienist performing sampling and analysis have certification that he/she has passed a NIOSH 582 or equivalent course.

The NESHAP asbestos regulations, notification form, guidelines and fact sheets are available on EGLE's web site www.michigan.gov/egle under heading Air; then click on Compliance; then click on Asbestos NESHAP Program. For guidelines on submitting notifications pursuant to the Asbestos Contractors Licensing Act, contact the DLARA, Occupational Health Division, Asbestos Program at (517) 322-1320 or visit DLARA's web site www.michigan.gov/asbestos.

LEAD ABATEMENT PROJECT PROCEDURES

Should this Work require the renovation or demolition of a building or structure, the workers are assumed to be exposed to lead or materials containing lead above acceptable levels until proven otherwise through personal air sampling and analysis. The Contractor shall take all steps necessary to assure that his/her employees, are not exposed to lead at concentrations greater than the Permissible Exposure Limit as per the State of Michigan Department of Licensing and Regulatory Affairs Occupational Health Standards Part 603 "Lead Exposure in Construction". In addition, the Contractor shall convey this same requirement to all subcontractors that may be under his/her control.

The employer shall comply with the Michigan Lead Abatement Act, as amended, and the Lead Hazard Control rules and must communicate information concerning lead hazards according to the requirements of Michigan Occupational Safety and Health Administration (MIOSHA) Part 603 and the Occupational Safety and Health Administration's (OSHA's) Hazard Communication Standard for the construction industry, 29 CFR 1926.59, including but not limited to safety equipment (e.g. personal fit-tested and approved respirators and protective clothing), worker rotation (on a short-cycle and regular basis), working practices (e.g. sanding, cutting, grinding, abraded, burning and heat-gun stripping of lead based paint are not allowed), the requirements concerning warning signs and labels, Safety Data Sheets (SDS), and employee information and training. Employers shall comply with the requirements of 29 CFR 1926.62(l) - Employee Information and Training.

If lead or materials containing lead will be disturbed as a part of the work to be performed, the Contractor must remove, transport, and dispose of these materials at no additional cost to the Owner and prior to any other work taking place within the immediate vicinity of said material. The Contractor must provide the Owner a minimum 10 working day notification prior to the start of any lead abatement activities with abatement in occupied buildings being completed even if they will be conducted during off hours (nights, weekends, and state holidays). Abatement is defined as an activity specifically designed to permanently remove lead paint, lead-contaminated dust or other lead containing materials, the installation of a permanent enclosure or encapsulation of lead paint or other lead containing materials, the replacement of lead-painted surfaces or fixtures, the removal or covering of lead-contaminated soil, and any preparation, cleanup, disposal, and post-abatement clearance testing associated with these activities. Renovation, remodeling, landscaping, or other activity, that is not designed to permanently eliminate lead paint hazards, but is instead designed to repair, restore, or remodel a structure, or housing unit even though the activity may incidentally result in a reduction or elimination of a lead paint hazard is not considered abatement.

If abatement of lead or materials containing lead is required, abatement must be completed by a qualified Lead Abatement Contractor. In addition, Specifications for the Lead Abatement should be based upon a Lead Inspection/Risk Assessment report. The Lead Inspection/Risk Assessment report and clearance testing upon completion should be performed by a Certified Inspector or Risk Assessor. Lead abatement including clearance testing shall be performed in accordance with the State of Michigan, Lead Abatement Act, Part 54A Lead Abatement and with all other federal, state, and local Laws and Regulations that may apply.

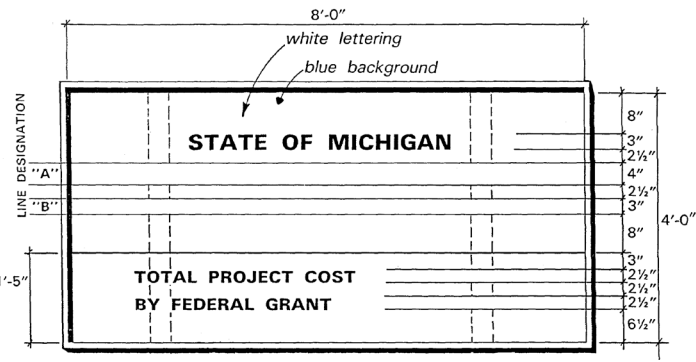
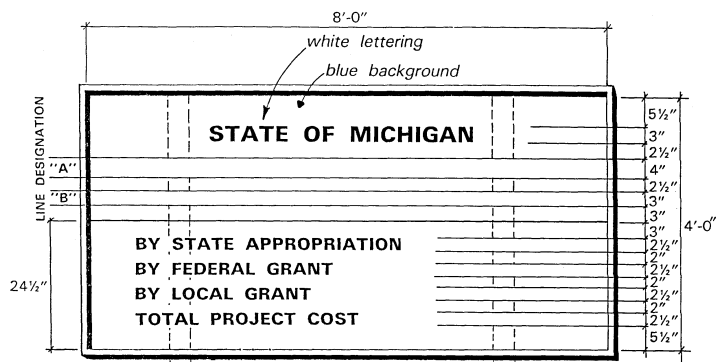
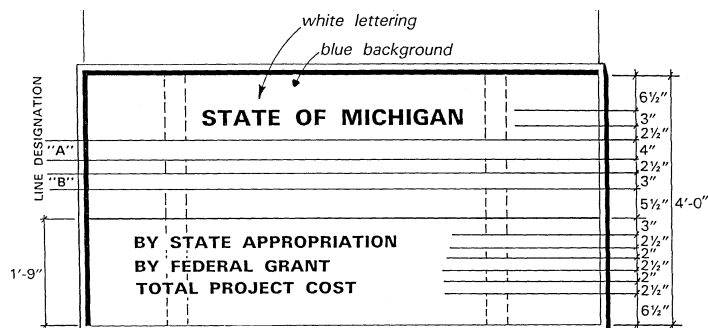
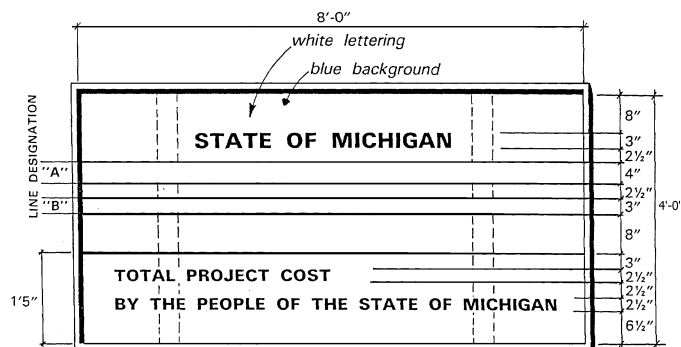
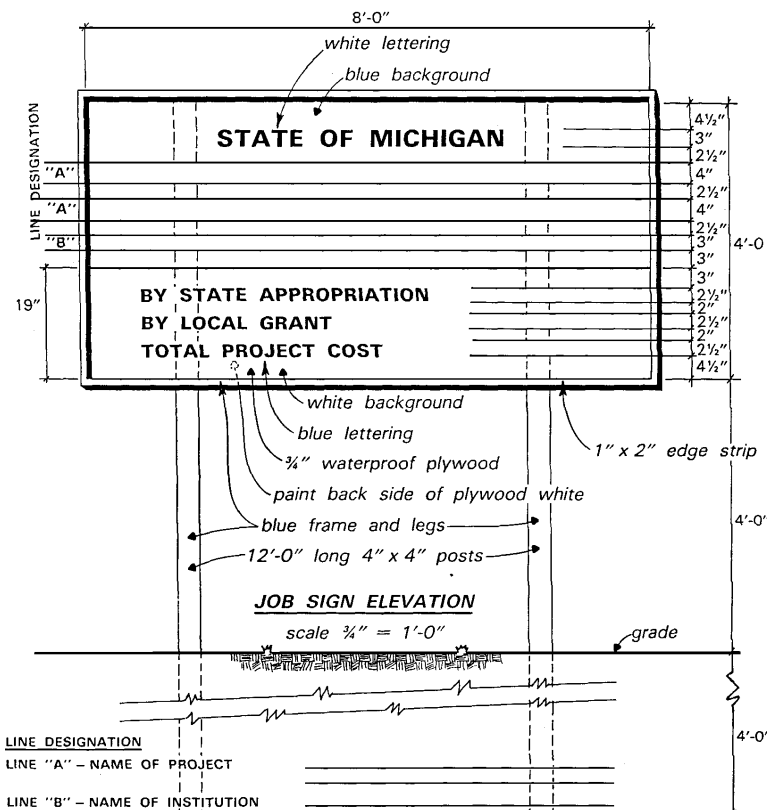
For additional information about certifications, guidance, and regulations for lead hazard control activities, visit www.michigan.gov/lead.

APPENDIX IV

**PROJECT SIGN FOR PROJECTS COSTING IN EXCESS OF
\$500,000**

PROJECT SIGNS – PROJECTS IN EXCESS OF \$500,000

Five examples of project signs. Sign lettering corresponds with the funding arrangement of the project. Alternate signs may be considered; please contact the DTMB Project Director.



APPENDIX V

PREVAILING WAGE RATE SCHEDULES AND FEDERAL PROVISIONS ADDENDUM

Federal Provisions Addendum

This addendum applies to purchases that will be paid for in whole or in part with funds obtained from the federal government. The provisions below are required and the language is not negotiable. If any provision below conflicts with the State's terms and conditions, including any attachments, schedules, or exhibits to the State's Contract, the provisions below take priority to the extent a provision is required by federal law; otherwise, the order of precedence set forth in the Contract applies. Hyperlinks are provided for convenience only; broken hyperlinks will not relieve Contractor from compliance with the law.

1. Equal Employment Opportunity

If this Contract is a “**federally assisted construction contract**” as defined in [41 CFR Part 60-1.3](#), and except as otherwise may be provided under [41 CFR Part 60](#), then during performance of this Contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

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

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of [Executive Order 11246](#) of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by [Executive Order 11246](#) of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in [Executive Order 11246](#) of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in [Executive Order 11246](#) of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of [Executive Order 11246](#) of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided*, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

2. Davis-Bacon Act (Prevailing Wage)

If this Contract is a **prime construction contracts** in excess of \$2,000, the Contractor (and its Subcontractors) must comply with the Davis-Bacon Act ([40 USC 3141-3148](#)) as supplemented by Department of Labor regulations ([29 CFR Part 5](#), "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"), and during performance of this Contract the Contractor agrees as follows:

- (1) All transactions regarding this contract shall be done in compliance with the Davis-Bacon Act (40 U.S.C. 3141- 3144, and 3146-3148) and the requirements of 29 C.F.R. pt. 5 as may be applicable. The contractor shall comply with 40 U.S.C. 3141-3144, and 3146-3148 and the requirements of 29 C.F.R. pt. 5 as applicable.
- (2) Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor.
- (3) Additionally, contractors are required to pay wages not less than once a week.

3. Copeland “Anti-Kickback” Act

If this Contract is a contract for construction or repair work in excess of \$2,000 where the Davis-Bacon Act applies, the Contractor must comply with the Copeland “Anti-Kickback” Act ([40 USC 3145](#)), as supplemented by Department of Labor regulations ([29 CFR Part 3](#), “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”), which prohibits the Contractor and subrecipients from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled, and during performance of this Contract the Contractor agrees as follows:

- (1) Contractor. The Contractor shall comply with 18 U.S.C. §874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.
- (2) Subcontracts. The Contractor or Subcontractor shall insert in any subcontracts the clause above and such other clauses as FEMA or the applicable federal awarding 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 of these contract clauses.
- (3) Breach. A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a Contractor and Subcontractor as provided in 29 C.F.R. § 5.12.

4. Contract Work Hours and Safety Standards Act

If the Contract is **in excess of \$100,000** and **involves the employment of mechanics or laborers**, the Contractor must comply with [40 USC 3702](#) and [3704](#), as supplemented by Department of Labor regulations ([29 CFR Part 5](#)), as applicable, and during performance of this Contract the Contractor agrees as follows:

- (1) Overtime requirements. No Contractor or Subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the Contractor and any Subcontractor responsible therefor 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 (1) of this section, in the sum of \$27 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 (1) of this section.
- (3) Withholding for unpaid wages and liquidated damages. The State 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 (2) of this section.
- (4) Subcontracts. The Contractor or Subcontractor shall insert in any subcontracts the clauses set forth in paragraph (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 (1) through (4) of this section.

5. Rights to Inventions Made Under a Contract or Agreement

If the Contract is funded by a federal “funding agreement” as defined under [37 CFR §401.2 \(a\)](#) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with [37 CFR Part 401](#), “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

6. Clean Air Act and the Federal Water Pollution Control Act

If this Contract is **in excess of \$150,000**, the Contractor must comply with all applicable standards, orders, and regulations issued under the Clean Air Act ([42 USC 7401-7671g](#)) and the Federal Water Pollution Control Act ([33 USC 1251-1387](#)), and during performance of this Contract the Contractor agrees as follows:

Clean Air Act

1. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.
2. The Contractor agrees to report each violation to the State and understands and agrees that the State will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency or the applicable federal awarding agency, and the appropriate Environmental Protection Agency Regional Office.

3. The Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA or the applicable federal awarding agency.

Federal Water Pollution Control Act

1. The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.
2. The Contractor agrees to report each violation to the State and understands and agrees that the State will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency or the applicable federal awarding agency, and the appropriate Environmental Protection Agency Regional Office.
3. The Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA or the applicable federal awarding agency.

7. Debarment and Suspension

A “contract award” (see [2 CFR 180.220](#)) must not be made to parties listed on the government-wide exclusions in the [System for Award Management](#) (SAM), in accordance with the OMB guidelines at [2 CFR 180](#) that implement [Executive Orders 12549](#) ([51 FR 6370; February 21, 1986](#)) and 12689 ([54 FR 34131; August 18, 1989](#)), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than [Executive Order 12549](#).

- (1) This Contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the Contractor is required to verify that none of the Contractor’s principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).
- (2) The Contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- (3) This certification is a material representation of fact relied upon by the State. If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to the State, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- (4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

8. Byrd Anti-Lobbying Amendment

Contractors who apply or bid for an award of **\$100,000 or more** shall file the required certification in Exhibit 1 – Byrd Anti-Lobbying Certification below. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

9. Procurement of Recovered Materials

Under [2 CFR 200.322](#), Contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act.

- (1) In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—
 1. Competitively within a timeframe providing for compliance with the contract performance schedule;
 2. Meeting contract performance requirements; or
 3. At a reasonable price.
- (2) Information about this requirement, along with the list of EPA- designated items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>.
- (3) The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act.

10. Additional FEMA Contract Provisions.

The following provisions apply to purchases that will be paid for in whole or in part with funds obtained from the Federal Emergency Management Agency (FEMA):

- (1) Access to Records. The following access to records requirements apply to this contract:
 - a. The Contractor agrees to provide the State, the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.
 - b. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
 - c. The Contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.
 - d. In compliance with the Disaster Recovery Act of 2018, the State and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.

(2) Changes.

See the provisions regarding modifications or change notice in the Contract Terms.

(3) DHS Seal, Logo, And Flags

The Contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.

(4) Compliance with Federal Law, Regulations, and Executive Orders

This is an acknowledgement that FEMA financial assistance will be used to fund all or a portion of the contract. The Contractor will comply with all applicable Federal law, regulations, executive orders, FEMA policies, procedures, and directives.

(5) No Obligation by Federal Government

The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the State, Contractor, or any other party pertaining to any matter resulting from the Contract.”

(6) Program Fraud and False or Fraudulent Statements or Related Acts

The Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor's actions pertaining to this contract.

Exhibit 1 - Byrd Anti-Lobbying Certification

Contractor must complete this certification if the purchase will be paid for in whole or in part with funds obtained from the federal government and the purchase is greater than \$100,000.

APPENDIX A, 44 C.F.R. PART 18 – CERTIFICATION REGARDING LOBBYING**Certification for Contracts, Grants, Loans, and Cooperative Agreements**

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official

Name and Title of Contractor's Authorized Official

Date

§ 200.322 Domestic Preferences for Procurements

- (a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.
- (b) For purposes of this section:
 - (1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 - (2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

FEDERAL FUNDED CONTRACT REGISTRATION REQUIREMENTS

Each primary contracted contractor with the DTMB must register with the Federal System for Award Management (SAM) must register prior to contract execution. The SAM website is <https://sam.gov/content/home>. The direct hyperlink for SAM.gov registration is <https://sam.gov/content/entity-registration>

The Federal government will use a Unique Entity Identifier (UEI) created in SAM.gov as the official subrecipient identifier. All primary contracted contractors with the DTMB will be required to maintain an active registration on SAM.gov. To receive payment, all primary contracted vendors need to have a Unique Entity Identifier (UEI) number and have the UEI entered in their SIGMA account. Information on the UEI and sign up can be obtained at: <https://www.gsa.gov/about-us/organization/federal-acquisition-service/fas-initiatives/integrated-award-environment/iae-systems-information-kit/unique-entity-id-is-here>

Contractor is to fill in and provide the following documentation for use in SLFRF reporting prior to Contract Execution for use in the reporting requirements:

Contractor's UEI _____

Contractor's Full Legal Name _____

Primary Point-of-Contact Email Address _____

Business Address _____

City Business is located _____

State Business is located _____

US Zip Code + 4 digits _____



GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF LABOR AND ECONOMIC OPPORTUNITY
WAGE AND HOUR DIVISION

SUSAN CORBIN
DIRECTOR

Prevailing Wage Rates for State Funded Projects Official Rate Schedule

ORS#:	ORS-003464
Date Issued:	10/06/2025
Contract Award By Date:	01/04/2026
Contracting Agency:	DTMB Design & Construction Division (CA-0007)
Contracting Agency Representative:	Don Klein (KleinD4@michigan.gov)
Project Number:	751/23030.MNB
Project Name:	Outdoor Adventure Center
Project Description:	Emergency Backup Power

FOR ALL AWARDED CONTRACTS ONLY

- Every Contractor and Subcontractors shall keep Posted on the Construction Site, in a conspicuous place, a copy of all applicable prevailing wage rate schedules contained in a contract.
- The Prevailing rate schedule provides an hourly rate which includes wage and fringe benefit totals for designated classifications.
- Please refer to WHD-9917 & WHD 9918 for any additional information.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Asbestos & Lead Abatement Laborer	Asbestos Abatement Worker or Environmental Remediation Worker	04/04/2025

Classification Description: Asbestos & Lead Abatement Laborer

4 ten hour days @ straight time allowed Monday-Saturday, must be consecutive calendar days

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$50.60	\$65.37	\$80.13
Apprentice: Trainee 600 hours + 1 year	\$37.02	\$43.03	\$51.45

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$65.37
10th hour	\$65.37
Beyond 10 hours	\$65.37

Saturday

First 8 hours	\$65.37
9th hour	\$65.37
10th hour	\$65.37
Beyond 10 hours	\$65.37

Sunday/Holiday	\$80.13
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Boilermaker	Boilermaker	04/04/2025

Classification Description: Boilermaker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$72.47	\$107.56	\$142.63
Apprentice: 1st Period	\$53.53	\$79.15	\$104.75
Apprentice: 2nd Period	\$55.14	\$81.57	\$107.97
Apprentice: 3rd Period	\$56.73	\$83.94	\$111.15
Apprentice: 4th Period	\$58.31	\$86.32	\$114.31
Apprentice: 5th Period	\$59.85	\$88.62	\$117.39
Apprentice: 6th Period	\$63.03	\$93.39	\$123.75
Apprentice: 7th Period	\$66.17	\$98.10	\$130.03
Apprentice: 8th Period	\$69.32	\$102.83	\$136.33

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$107.55
10th hour	\$107.55
Beyond 10 hours	\$107.55

Saturday

First 8 hours	\$107.55
9th hour	\$107.55
10th hour	\$107.55
Beyond 10 hours	\$107.55

Sunday/Holiday	\$142.63
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Bricklayers, Stone Mason, Pointer, Cleaner & Caulker - BAC 2 - Metro Detroit	Bricklayer	04/04/2025

Classification Description: Bricklayers, Stone Mason, Pointer, Cleaner & Caulker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$65.01	\$97.53	\$130.02
Apprentice: Bricklayer Apprentice Level 5	\$52.46	\$78.71	\$104.92
Apprentice: Bricklayer Apprentice Level 6	\$54.31	\$81.48	\$108.62
Apprentice: Bricklayers Apprentice 2nd Level	\$46.91	\$70.38	\$93.82
Apprentice: Bricklayers Apprentice 4th Level	\$50.61	\$75.93	\$101.22
Apprentice: Bricklayers Apprentice Level 1	\$45.06	\$67.61	\$90.12
Apprentice: Bricklayers Apprentice Level 3	\$48.76	\$73.16	\$97.52
Apprentice: Bricklayers Apprentice Level 7&8	\$56.16	\$84.26	\$112.32

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$97.51
10th hour	\$97.51
Beyond 10 hours	\$97.51

Saturday

First 8 hours	\$97.51
9th hour	\$97.51
10th hour	\$97.51
Beyond 10 hours	\$97.51

Sunday/Holiday	\$130.02
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Between Nov. 1 and Apr 30, if inclement weather, or other conditions beyond the Employer's control, Saturdays may be worked as make-up days. Make-up time shall be paid at the straight time rate until forty hrs are worked unless the standard workweek included a holiday, then 32 hrs straight time

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Carpenter/Piledriver-687-Z1	Carpenter	04/04/2025

Classification Description: Carpenter/Piledriver

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$72.05	\$92.86	\$113.66
Apprentice: 1st year	\$47.22	\$59.81	\$72.39
Apprentice: 2nd year	\$53.43	\$68.07	\$82.71
Apprentice: 3rd year	\$59.64	\$76.34	\$93.03
Apprentice: 4th year	\$65.85	\$84.60	\$103.35

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$92.86
10th hour	\$92.86
Beyond 10 hours	\$92.86

Saturday

First 8 hours	\$92.86
9th hour	\$92.86
10th hour	\$92.86
Beyond 10 hours	\$92.86

Sunday/Holiday	\$113.66
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Yes, but Saturdays may not be used as a make-up day. One and a half (1 ½) the straight time rate applies to all Saturday hours, and those over 40 hours per week. Double time applies on all Sundays, Holidays, and all time over 12 hours per day.

Base Rate Comment: 4-10s allowed Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Carpet & Resilient Floor Layer	Carpenter	04/04/2025

Classification Description: Carpet and Resilient Floor Layer, (does not include installation of prefabricated formica & parquet flooring which is to be paid carpenter rate)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$64.51	\$82.93	\$101.34
Apprentice: Apprentice 1st Year	\$42.73	\$53.88	\$65.03
Apprentice: Apprentice 2nd Year	\$48.17	\$61.14	\$74.10
Apprentice: Apprentice 3rd Year	\$53.61	\$68.39	\$83.17
Apprentice: Apprentice 4th Year	\$59.07	\$75.67	\$92.27

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$64.51
10th hour	\$64.51
Beyond 10 hours	\$82.92

Saturday

First 8 hours	\$82.92
9th hour	\$82.92
10th hour	\$82.92
Beyond 10 hours	\$101.34

Sunday/Holiday	\$0.00
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Diver Tender-687-Z1	Carpenter	04/04/2025

Classification Description: Journeyman-Diver Tender

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$71.16	\$91.97	\$112.77

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$91.97
10th hour	\$91.97
Beyond 10 hours	\$91.97

Saturday

First 8 hours	\$91.97
9th hour	\$91.97
10th hour	\$91.97
Beyond 10 hours	\$91.97

Sunday/Holiday	\$112.77
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Yes, but Saturdays may not be used as a make-up day. One and a half (1 ½) the straight time rate applies to all Saturday hours, and those over 40 hours per week. Double time applies on all Sundays, Holidays, and all time over 12 hours per day.

Overtime Rate Comment: Double time over 12 hours/day.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Cement Mason	Cement Mason	09/11/2025

Classification Description: Nature of work: applies to workers who set up rodding and finish fresh concrete, perform work on existing concrete, or work with various cementitious products.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$64.27	\$96.41	\$128.54
Apprentice: Apprentice Level 1	\$47.90	\$71.25	\$94.59
Apprentice: Apprentice Level 2	\$50.43	\$75.04	\$99.65
Apprentice: Apprentice Level 3	\$52.96	\$78.84	\$104.71
Apprentice: Apprentice Level 4	\$55.49	\$82.63	\$109.77
Apprentice: Apprentice Level 5	\$58.03	\$86.44	\$114.85
Apprentice: Apprentice Level 6	\$60.56	\$90.24	\$119.91

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$64.27
10th hour	\$64.27
Beyond 10 hours	\$64.27

Saturday

First 8 hours	\$64.27
9th hour	\$64.27
10th hour	\$64.27
Beyond 10 hours	\$64.27

Sunday/Holiday	\$64.27
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Class I	Diver	04/04/2025

Classification Description: Class I - diver/wet tender, engineer, blaster, leverman

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$82.82	\$107.82	\$132.82

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$32.82
10th hour	\$107.82
Beyond 10 hours	\$107.82

Saturday

First 8 hours	\$107.82
9th hour	\$107.82
10th hour	\$107.82
Beyond 10 hours	\$107.82

Sunday/Holiday	\$132.82
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Diver-687-Z1	Diver	04/04/2025

Classification Description: Diver

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$82.48	\$107.41	\$132.34

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$107.41
10th hour	\$107.41
Beyond 10 hours	\$107.41

Saturday

First 8 hours	\$107.41
9th hour	\$107.41
10th hour	\$107.41
Beyond 10 hours	\$107.41

Sunday/Holiday	\$132.34
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Yes, but Saturdays may not be used as a make-up day. One and a half (1 ½) the straight time rate applies to all Saturday hours, and those over 40 hours per week. Double time applies on all Sundays, Holidays, and all time over 12 hours per day.

Overtime Rate Comment: Double time due when over 12 hours worked per day

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Drywall Taper	Drywaller	04/04/2025

Classification Description: Drywall Taper

Four 10s allowed Monday-Thursday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$45.91	\$59.74	\$73.56
Apprentice: 4th 6 months	\$41.76	\$53.51	\$65.26
Apprentice: First 3 months	\$32.08	\$38.99	\$45.90
Apprentice: Second 3 months	\$34.85	\$43.14	\$51.44
Apprentice: Second 6 months	\$37.62	\$47.30	\$56.98
Apprentice: Third 6 months	\$40.38	\$51.44	\$62.50

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$59.74
10th hour	\$59.74
Beyond 10 hours	\$73.56

Saturday

First 8 hours	\$59.74
9th hour	\$73.56
10th hour	\$73.56
Beyond 10 hours	\$73.56

Sunday/Holiday	\$73.56
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Four 10-hour days allowed? - Yes**Make Up Day Allowed?** - Yes

Friday make-up day for bad weather or holidays

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Communication Technician	Electrician	04/04/2025

Classification Description: Communication Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.89	\$98.24	\$128.58

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Saturday

First 8 hours	\$98.24
9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Sunday/Holiday	\$128.58
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Base Rate Comment: Foreman (112.5% above JL Rate)

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Fiber Optic Splicer	Electrician	04/04/2025

Classification Description: Fiber Optic Splicer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.89	\$98.24	\$128.58

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Saturday

First 8 hours	\$98.24
9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Sunday/Holiday	\$128.58
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman Inside Wireman	Electrician	04/04/2025

Classification Description: -Duties: Install, repair, and maintain electrical systems, install lighting, receptacles, and fixtures
-Materials: Wire and electrical cable, Conduit, Lighting, receptacles, and fixtures
-Equipment: pliers, screwdrivers, wire cutters, measuring tapes, drills, electric screw guns, and hydraulic benders, voltmeters and ammeters

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$75.36	\$107.79	\$140.22
Apprentice: 1st Period	\$46.28	\$61.78	\$73.67
Apprentice: 2nd Period	\$53.43	\$70.24	\$83.46
Apprentice: 3rd Period	\$56.08	\$74.22	\$88.75
Apprentice: 4th Period	\$58.71	\$78.18	\$94.03
Apprentice: 5th Period	\$61.36	\$82.14	\$99.32
Apprentice: 6th Period	\$66.64	\$90.07	\$109.89

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	\$101.02
10th hour	\$101.02
Beyond 10 hours	\$101.02
Saturday	
First 8 hours	\$101.02
9th hour	\$101.02
10th hour	\$101.02
Beyond 10 hours	\$101.02
Sunday/Holiday	
	\$126.68

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman Signal Technician	Electrician	04/04/2025

Classification Description: Journeyman Signal Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.89	\$98.24	\$128.58
Apprentice: Apprentice 1st 6 months	\$43.61	\$61.82	\$80.02
Apprentice: Apprentice 2nd 6 months	\$46.65	\$66.38	\$86.10
Apprentice: Apprentice 3rd 6 months	\$49.68	\$70.92	\$92.16
Apprentice: Apprentice 4th 6 months	\$52.71	\$75.47	\$98.22
Apprentice: Apprentice 5th 6 months	\$55.75	\$80.03	\$104.30
Apprentice: Apprentice 6th 6months	\$61.82	\$89.13	\$116.44

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Saturday

First 8 hours	\$98.24
9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Sunday/Holiday	\$128.58
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman Specialist	Electrician	04/04/2025

Classification Description: Journeyman Specialist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$76.98	\$111.88	\$146.76

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$111.87
10th hour	\$111.87
Beyond 10 hours	\$111.87

Saturday

First 8 hours	\$111.87
9th hour	\$111.87
10th hour	\$111.87
Beyond 10 hours	\$111.87

Sunday/Holiday	\$146.76
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Tower Technician	Electrician	04/04/2025

Classification Description: Tower Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.89	\$98.24	\$128.58

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Saturday

First 8 hours	\$98.24
9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$98.24

Sunday/Holiday	\$128.58
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

ONLY due to inclement weather or customer requirements may Friday be used as a make up day if the normal scheduled work week was interrupted and time lost of five (5) hours or more was incurred by workmen covered under the terms of the 6-17-C/6-876-T agreement.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Elevator Constructor Mechanic	Elevator Constructor	04/04/2025

Classification Description: Elevator Constructor Mechanic

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$96.27	\$124.00	\$151.73
Apprentice: 1st Year Apprentice	\$70.42	\$85.67	\$100.92
Apprentice: 2nd Year Apprentice	\$75.97	\$94.00	\$112.02
Apprentice: 3rd Year Apprentice	\$78.74	\$98.15	\$117.56
Apprentice: 4th Year Apprentice	\$84.29	\$106.48	\$128.66

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$151.73
10th hour	\$151.73
Beyond 10 hours	\$151.73

Saturday

First 8 hours	\$151.73
9th hour	\$151.73
10th hour	\$151.73
Beyond 10 hours	\$151.73

Sunday/Holiday	\$151.73
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Glazier	Glazier	04/04/2025

Classification Description: Glazier

If 4 10 hour day workweek is scheduled, four 10s must be consecutive, M-F.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.55	\$70.10	\$86.65
Apprentice: 1st 6 months	\$37.00	\$45.27	\$53.55
Apprentice: 2nd 6 months	\$37.75	\$46.40	\$55.05
Apprentice: 3rd 6 months	\$41.97	\$52.73	\$63.49
Apprentice: 4th 6 months	\$43.62	\$55.21	\$66.79
Apprentice: 5th 6 months	\$45.27	\$57.68	\$70.09
Apprentice: 6th 6 months	\$46.93	\$60.17	\$73.41
Apprentice: 7th 6 months	\$48.59	\$62.66	\$76.73
Apprentice: 8th 6 months	\$51.89	\$67.61	\$83.33

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$70.10
10th hour	\$70.10
Beyond 10 hours	\$70.10

Saturday

First 8 hours	\$70.10
9th hour	\$70.10
10th hour	\$70.10
Beyond 10 hours	\$70.10

Sunday/Holiday	\$86.65
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Glaziers	Glazier	09/16/2025

Classification Description: Nature of work: installing, setting, cutting, preparing, fabricating, distributing, handling, or removing the following: glass and glass substitutes used in place of glass, preglazed windows, retrofit window systems, mirrors, curtain wall systems, window wall systems, suspended glass systems, louvers, skylights, entrance ways including automatic doors, patio doors, store front, column covers, panels and panel systems, glass hand rails, decorative metals as part of the glazing system, and the sealing of all architectural metal and glass systems for weatherproofing and structural reasons.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.95	\$86.22	\$107.22
Apprentice: Apprentice Level 1	\$51.15	\$63.75	\$76.35
Apprentice: Apprentice Level 2	\$53.25	\$66.90	\$80.55
Apprentice: Apprentice Level 3	\$55.35	\$70.05	\$84.75
Apprentice: Apprentice Level 4	\$57.45	\$73.20	\$88.95
Apprentice: Apprentice Level 5	\$59.55	\$76.35	\$93.15
Apprentice: Apprentice Level 6	\$61.65	\$79.50	\$97.35
Apprentice: Apprentice Level 7	\$63.75	\$82.65	\$101.55
Apprentice: Apprentice Level 8	\$65.85	\$85.80	\$105.75

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$67.95
10th hour	\$67.95
Beyond 10 hours	\$67.95

Saturday

First 8 hours	\$67.95
9th hour	\$67.95
10th hour	\$67.95
Beyond 10 hours	\$67.95

Sunday/Holiday

\$67.95

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Heat & Frost Insulator - Spray Insulation	Heat and Frost Insulator	04/04/2025

Classification Description: Spray Insulation

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$25.29	\$36.51	\$47.73

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$36.51
10th hour	\$36.51
Beyond 10 hours	\$36.51

Saturday

First 8 hours	\$36.51
9th hour	\$36.51
10th hour	\$36.51
Beyond 10 hours	\$36.51

Sunday/Holiday	\$47.73
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Heat & Frost Insulator Asbestos	Heat and Frost Insulator	04/04/2025

Classification Description: Heat and Frost Insulators and Asbestos Workers 4-10s must be worked a minimum of 2 weeks consecutively, Monday thru Thursday. Hours worked in excess of 10 will be paid at double time. Hours worked on the fifth day, Monday thru Friday @ time and half

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$62.65	\$78.41	\$94.16
Apprentice: 1st Year	\$46.90	\$54.78	\$62.66
Apprentice: 2nd Year	\$50.05	\$59.50	\$68.96
Apprentice: 3rd Year	\$53.20	\$64.23	\$75.26
Apprentice: 4th Year	\$56.35	\$68.96	\$81.56

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$78.41
10th hour	\$78.41
Beyond 10 hours	\$78.41

Saturday

First 8 hours	\$78.41
9th hour	\$78.41
10th hour	\$78.41
Beyond 10 hours	\$78.41

Sunday/Holiday	\$94.16
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Ironworker - Rigger Machinery Mover	Ironworker	04/04/2025

Classification Description: Rigging Work

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.78	\$96.21	\$113.63
Apprentice: Level 1	\$54.18	\$65.03	\$75.87
Apprentice: Level 2	\$54.18	\$65.03	\$75.87
Apprentice: Level 3	\$57.29	\$69.02	\$80.75
Apprentice: Level 4	\$60.00	\$72.45	\$84.89
Apprentice: Level 5	\$63.12	\$76.45	\$89.78
Apprentice: Level 6	\$65.82	\$79.86	\$93.90
Apprentice: Level 7	\$68.94	\$83.87	\$98.80
Apprentice: Level 8	\$72.05	\$87.87	\$103.69

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$96.21
10th hour	\$96.21
Beyond 10 hours	\$113.63

Saturday

First 8 hours	\$96.21
9th hour	\$96.21
10th hour	\$96.21
Beyond 10 hours	\$113.63

Sunday/Holiday	\$113.63
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Reinforced Ironworker	Ironworker	04/04/2025

Classification Description: Reinforced Iron Work

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$65.70	\$82.42	\$99.13
Apprentice: Level 1	\$54.67	\$66.54	\$78.41
Apprentice: Level 2	\$57.24	\$69.61	\$81.98
Apprentice: Level 3	\$59.13	\$71.84	\$84.54
Apprentice: Level 4	\$62.02	\$75.56	\$89.10
Apprentice: Level 5	\$64.92	\$79.30	\$93.67
Apprentice: Level 6	\$72.26	\$88.98	\$105.69
Apprentice: Level 7	\$72.26	\$88.98	\$105.69
Apprentice: Level 8	\$72.26	\$88.98	\$105.69

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$82.41
10th hour	\$82.41
Beyond 10 hours	\$99.13

Saturday

First 8 hours	\$82.41
9th hour	\$82.41
10th hour	\$82.41
Beyond 10 hours	\$99.13

Sunday/Holiday	\$99.13
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Four 10-hour days allowed? - No

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Structural Ironworker	Ironworker	04/04/2025

Classification Description: Structural, ornamental, welder and pre-cast

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.91	\$105.80	\$132.69
Apprentice: Level 1	\$54.18	\$65.03	\$75.87
Apprentice: Level 2	\$55.00	\$66.20	\$77.40
Apprentice: Level 3	\$57.29	\$69.02	\$80.75
Apprentice: Level 4	\$60.00	\$72.45	\$84.89
Apprentice: Level 5	\$63.12	\$76.45	\$89.78
Apprentice: Level 6	\$65.82	\$79.86	\$93.90
Apprentice: Level 7	\$68.94	\$83.87	\$98.80
Apprentice: Level 8	\$72.05	\$87.87	\$103.69

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$96.69
10th hour	\$96.69
Beyond 10 hours	\$114.46

Saturday

First 8 hours	\$96.69
9th hour	\$96.69
10th hour	\$96.69
Beyond 10 hours	\$114.46

Sunday/Holiday	\$114.46
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Class A Laborer - Zone A	Laborer, Common	04/04/2025

Classification Description: Construction Laborer, Demolition Laborer, Mason Tender, Carpenter Tender, Drywall Handler, Concrete Laborer, Cement Finisher tender, concrete chute and concrete Bucket Handler, Concrete Laborer, Cement Finisher Tender

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$50.10	\$64.48	\$78.85
Apprentice: 0-1,000 Hours	\$42.91	\$53.69	\$64.47
Apprentice: 1,001-2,000 Hours	\$44.35	\$55.85	\$67.35
Apprentice: 2,001-3,000 Hours	\$45.79	\$58.01	\$70.23
Apprentice: 3,001-4,000 Hours	\$48.66	\$62.31	\$75.97

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$64.48
10th hour	\$64.48
Beyond 10 hours	\$64.48

Saturday

First 8 hours	\$64.48
9th hour	\$64.48
10th hour	\$64.48
Beyond 10 hours	\$64.48

Sunday/Holiday	\$78.85
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Construction Mechanic 1	Laborer, Common	04/04/2025

Classification Description: CONSTRUCTION LABORER, DEMOLITION LABORER, MASON TENDER, CARPENTER TENDER, DRYWALL HANDLER, CONCRETE LABORER, CONCRETE CHUTE AND CONCRETE BUCKET HANDLER, AND CEMENT FINISHER TENDER

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.30	\$68.72	\$84.14
Apprentice: Apprentice Laborer 1	\$45.09	\$56.66	\$68.22
Apprentice: Apprentice Laborer 2	\$46.63	\$58.97	\$71.30
Apprentice: Apprentice Laborer 3	\$48.17	\$61.28	\$74.38
Apprentice: Apprentice Laborer 4	\$51.26	\$65.91	\$80.56

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$68.72
10th hour	\$68.72
Beyond 10 hours	\$68.72

Saturday

First 8 hours	\$68.72
9th hour	\$68.72
10th hour	\$68.72
Beyond 10 hours	\$68.72

Sunday/Holiday	\$84.14
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Base Rate Comment: Ground Burner: Base wage is \$.50 per hour more than the hourly rate for a Demolition Laborer.
High Burner: Base wage is \$1.00 per hour more than the hourly rate for a Demolition Laborer.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Construction Mechanic 6	Laborer, Common	04/04/2025

Classification Description: Cleaner/Sweeper Laborer; Furniture Laborer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$47.85	\$60.55	\$73.24

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$60.55
10th hour	\$60.55
Beyond 10 hours	\$60.55

Saturday

First 8 hours	\$60.55
9th hour	\$60.55
10th hour	\$60.55
Beyond 10 hours	\$60.55

Sunday/Holiday	\$73.24
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - A-E	Laborer, Common	04/04/2025

Classification Description: Cleaner/sweeper laborer, furniture laborer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$44.65	\$56.30	\$67.95

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$56.30
10th hour	\$56.30
Beyond 10 hours	\$56.30

Saturday

First 8 hours	\$56.30
9th hour	\$56.30
10th hour	\$56.30
Beyond 10 hours	\$56.30

Sunday/Holiday	\$67.95
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - A-F	Laborer, Common	04/04/2025

Classification Description: Expediter man, topman and/or bottom man (blast furnace work or battery work)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$51.51	\$66.69	\$81.87

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$66.59
10th hour	\$66.59
Beyond 10 hours	\$66.59

Saturday

First 8 hours	\$66.59
9th hour	\$66.59
10th hour	\$66.59
Beyond 10 hours	\$66.59

Sunday/Holiday	\$81.67
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - A-W	Laborer, Common	04/04/2025

Classification Description: Laborer -Wall and ceiling material handler, plasterer tender, mortar mixer and plastering machine operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$46.90	\$59.78	\$72.65
Apprentice: 0-1,000 Hours	\$40.46	\$55.20	\$69.93
Apprentice: 1,001-2,000 Hours	\$41.75	\$57.13	\$72.50
Apprentice: 2,001-3,000 Hours	\$43.04	\$59.06	\$75.08
Apprentice: 3,001-4,000 Hours	\$45.61	\$62.92	\$80.23

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$59.78
10th hour	\$59.78
Beyond 10 hours	\$59.78

Saturday

First 8 hours	\$59.78
9th hour	\$59.78
10th hour	\$59.78
Beyond 10 hours	\$59.78

Sunday/Holiday	\$72.65
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday make up day due to conditions beyond control or holiday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class II - Z1	Laborer, Common	04/04/2025

Classification Description: Class II - Manhole, headwall, catch basin builder, bricklayer tender, mortar man, material mixer, fence erector, and guard rail builder.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.28	\$51.82	\$62.36
Apprentice: 0-1,000 work hours	\$35.58	\$44.85	\$54.11
Apprentice: 1,001-2,000 work hours	\$36.62	\$46.41	\$56.19
Apprentice: 2,001-3,000 work hours	\$37.66	\$47.97	\$58.27
Apprentice: 3,001-4,000 work hours	\$39.74	\$51.09	\$62.43

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$51.82
10th hour	\$51.82
Beyond 10 hours	\$51.82

Saturday

First 8 hours	\$51.82
9th hour	\$51.82
10th hour	\$51.82
Beyond 10 hours	\$51.82

Sunday/Holiday	\$62.36
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class IV - Z1	Laborer, Common	04/04/2025

Classification Description: Class IV - Tunnel, shaft and caisson mucker, bracer man, liner plate man, long haul dinky driver and well point man.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.52	\$52.18	\$62.84
Apprentice: 0-1,000 work hours	\$35.76	\$45.12	\$54.47
Apprentice: 1,001-2,000 work hours	\$36.82	\$46.71	\$56.59
Apprentice: 2,001-3,000 work hours	\$37.87	\$48.28	\$58.69
Apprentice: 3,001-4,000 work hours	\$39.97	\$51.44	\$62.89

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$52.18
10th hour	\$52.18
Beyond 10 hours	\$52.18

Saturday

First 8 hours	\$52.18
9th hour	\$52.18
10th hour	\$52.18
Beyond 10 hours	\$52.18

Sunday/Holiday	\$62.84
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class I - Z1	Laborer, Common	04/04/2025

Classification Description: Construction Laborer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$36.91	\$47.01	\$57.10
Apprentice: 0-1,000 work hours	\$35.39	\$44.56	\$53.73
Apprentice: 1,001-2,000 work hours	\$36.42	\$46.11	\$55.79
Apprentice: 2,001-3,000 work hours	\$37.44	\$47.64	\$57.83
Apprentice: 3,001-4,000 work hours	\$39.49	\$50.72	\$61.93

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$47.01
10th hour	\$47.01
Beyond 10 hours	\$47.01

Saturday

First 8 hours	\$47.01
9th hour	\$47.01
10th hour	\$47.01
Beyond 10 hours	\$47.01

Sunday/Holiday	\$57.10
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class II - Z1	Laborer, Common	04/04/2025

Classification Description: Mortar and material mixer, concrete form man, signal man, well point man, manhole, headwall and catch basin builder, guard rail builders, headwall, seawall, breakwall, dock builder and fence erector.

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage	\$37.05	\$47.22	\$57.38	9th hour \$47.22
Apprentice: 0-1,000 work hours	\$35.47	\$44.68	\$53.89	10th hour \$47.22
Apprentice: 1,001-2,000 work hours	\$36.50	\$46.23	\$55.95	Beyond 10 hours \$47.22
Apprentice: 2,001-3,000 work hours	\$37.54	\$47.79	\$58.03	
Apprentice: 3,001-4,000 work hours	\$39.60	\$50.88	\$62.15	Saturday
				First 8 hours \$47.22
				9th hour \$47.22
				10th hour \$47.22
				Beyond 10 hours \$47.22
				Sunday/Holiday \$57.38

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class IV - Z1	Laborer, Common	04/04/2025

Classification Description: Trench or excavating grade man.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$40.76	\$52.62	\$64.47
Apprentice: 0-1,000 work hours	\$35.57	\$44.84	\$54.09
Apprentice: 1,001-2,000 work hours	\$36.61	\$46.40	\$56.17
Apprentice: 2,001-3,000 work hours	\$37.65	\$47.96	\$58.25
Apprentice: 3,001-4,000 work hours	\$39.72	\$51.06	\$62.39

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	\$51.14
10th hour	\$51.14
Beyond 10 hours	\$51.14
Saturday	
First 8 hours	\$51.14
9th hour	\$51.14
10th hour	\$51.14
Beyond 10 hours	\$51.14
Sunday/Holiday	\$61.52

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class VI - Z1	Laborer, Common	04/04/2025

Classification Description: Grouting man, top man assistant, 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 appurtenan

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$38.27	\$48.88	\$59.49
Apprentice: 0-1,000 work hours	\$33.70	\$42.03	\$50.35
Apprentice: 1,001-2,000 work hours	\$34.62	\$43.41	\$52.19
Apprentice: 2,001-3,000 work hours	\$35.53	\$44.78	\$54.01
Apprentice: 3,001-4,000 work hours	\$37.36	\$47.52	\$57.67

Overtime Provisions

Over 8-hour day/40-hour

week

9th hour	\$47.41
10th hour	\$47.41
Beyond 10 hours	\$47.41

Saturday

First 8 hours	\$47.41
9th hour	\$47.41
10th hour	\$47.41
Beyond 10 hours	\$47.41

Sunday/Holiday

\$56.54

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer, Common	Laborer, Common	09/18/2025

Classification Description: Nature of work: Performing tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites including the following tasks or other tasks not listed which are not considered skilled craft work.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$55.88	\$72.38	\$88.88
Apprentice: Apprentice Level 1	\$48.25	\$60.63	\$73.00
Apprentice: Apprentice Level 2	\$49.90	\$63.10	\$76.30
Apprentice: Apprentice Level 3	\$51.55	\$65.58	\$79.60
Apprentice: Apprentice Level 4	\$54.85	\$70.53	\$86.20

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$55.88
10th hour	\$55.88
Beyond 10 hours	\$55.88

Saturday

First 8 hours	\$55.88
9th hour	\$55.88
10th hour	\$55.88
Beyond 10 hours	\$55.88

Sunday/Holiday	\$55.88
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer, Common	Laborer, Common	09/18/2025

Classification Description: Nature of work: Performing tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites including the following tasks or other tasks not listed which are not considered skilled craft work.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$56.50	\$73.00	\$89.50
Apprentice: Apprentice Level 1	\$48.25	\$60.63	\$73.00
Apprentice: Apprentice Level 2	\$49.90	\$63.10	\$76.30
Apprentice: Apprentice Level 3	\$51.55	\$65.58	\$79.60
Apprentice: Apprentice Level 4	\$54.85	\$70.53	\$86.20

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$56.50
10th hour	\$56.50
Beyond 10 hours	\$56.50

Saturday

First 8 hours	\$56.50
9th hour	\$56.50
10th hour	\$56.50
Beyond 10 hours	\$56.50

Sunday/Holiday	\$56.50
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 1	Laborer, Common	04/04/2025

Classification Description: General Laborer for rehab work or normal cleaning and cctv work-top man, scaffold man, CCTV assistant, jetter-vac assistant

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$28.20	\$38.20	\$48.19

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$38.20
10th hour	\$38.20
Beyond 10 hours	\$38.20

Saturday

First 8 hours	\$38.20
9th hour	\$38.20
10th hour	\$38.20
Beyond 10 hours	\$38.20

Sunday/Holiday	\$38.20
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - Hazardous - Class A - Z1	Laborer, Hazardous	04/04/2025

Classification Description: Class A performing work in conjunction with site preparation and other preliminary work prior to actual removal, handling, or containment of hazardous waste substances not requiring use of personal protective equipment required by state or federal regulation

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$46.90	\$64.85	\$82.80
Apprentice: 0-1,000 work hours	\$40.46	\$55.19	\$69.92
Apprentice: 1,001-2,000 work hours	\$41.75	\$57.13	\$72.50
Apprentice: 2,001-3,000 work hours	\$43.04	\$59.07	\$75.08
Apprentice: 3,001-4,000 work hours	\$45.61	\$62.92	\$80.22

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$59.78
10th hour	\$59.78
Beyond 10 hours	\$59.78

Saturday

First 8 hours	\$59.78
9th hour	\$59.78
10th hour	\$59.78
Beyond 10 hours	\$59.78

Sunday/Holiday	\$72.65
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th or T-F; inclement weather makeup day Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - Hazardous - Class B - Z1	Laborer, Hazardous	04/04/2025

Classification Description: Class B performing work in conjunction with the removal, handling, or containment of hazardous waste substances when the use of personal protective equipment levels "A", "B" or "C" is required.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$47.90	\$66.35	\$84.80
Apprentice: 0-1,000 work hours	\$41.21	\$56.32	\$71.42
Apprentice: 1,001-2,000 work hours	\$42.55	\$58.33	\$74.10
Apprentice: 2,001-3,000 work hours	\$43.89	\$60.34	\$76.78
Apprentice: 3,001-4,000 work hours	\$46.56	\$64.35	\$82.12

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$61.28
10th hour	\$61.28
Beyond 10 hours	\$61.28

Saturday

First 8 hours	\$61.28
9th hour	\$61.28
10th hour	\$61.28
Beyond 10 hours	\$61.28

Sunday/Holiday	\$74.65
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th or T-F; inclement weather makeup day Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - Landscape - Class B1 - Z1	Laborer, Landscaping	04/04/2025

Classification Description: Class B1: Landscape Operator includes air, gas, and diesel equipment operator, lawn sprinkler installer, skidsteer, mini excavators, backhoe loaders, ride and walk behind trenchers, off road dump vehicle, articulated haulers, hydroseeder, wheel loaders

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$32.40	\$42.43	\$52.95

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$42.93
10th hour	\$42.93
Beyond 10 hours	\$42.93

Saturday

First 8 hours	\$42.93
9th hour	\$42.93
10th hour	\$42.93
Beyond 10 hours	\$42.93

Sunday/Holiday	\$53.45
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - Landscape - Class B1 - Z1	Laborer, Landscaping	04/04/2025

Classification Description: Class B1: Landscape Operator includes air, gas, and diesel equipment operator, lawn sprinkler installer, skidsteer, mini excavators, backhoe loaders, ride and walk behind trenchers, off road dump vehicle, articulated haulers, hydroseeder, wheel loaders

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$34.62	\$46.26	\$57.89

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$11.35
10th hour	\$46.26
Beyond 10 hours	\$46.26

Saturday

First 8 hours	\$46.26
9th hour	\$46.26
10th hour	\$46.26
Beyond 10 hours	\$46.26

Sunday/Holiday	\$57.89
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - Landscape - Class B2 - Z1	Laborer, Landscaping	04/04/2025

Classification Description: Class B2: Skilled Landscape Laborer: small power tool operator, lawn sprinkler installers' tender, irrigation installers' tender, material mover

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$30.40	\$39.93	\$49.45

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$39.93
10th hour	\$39.93
Beyond 10 hours	\$39.93

Saturday

First 8 hours	\$39.93
9th hour	\$39.93
10th hour	\$39.93
Beyond 10 hours	\$39.93

Sunday/Holiday	\$49.45
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class VII - Z1	Laborer, Landscaping	04/04/2025

Classification Description: Class VII - Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes and flagstones.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$35.58	\$43.17	\$50.76
Apprentice: 0-1,000 work hours	\$31.39	\$38.56	\$45.73
Apprentice: 1,001-2,000 work hours	\$32.15	\$39.70	\$47.25
Apprentice: 2,001-3,000 work hours	\$32.91	\$40.84	\$48.77
Apprentice: 3,001-4,000 work hours	\$34.43	\$43.12	\$51.81

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$43.17
10th hour	\$43.17
Beyond 10 hours	\$43.17

Saturday

First 8 hours	\$43.17
9th hour	\$43.17
10th hour	\$43.17
Beyond 10 hours	\$43.17

Sunday/Holiday	\$50.76
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class VII - Z1	Laborer, Landscaping	04/04/2025

Classification Description: Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes, flagstones etc.

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage	\$34.89	\$43.81	\$52.73	9th hour \$42.34
Apprentice: 0-1,000 work hours	\$31.17	\$38.24	\$45.29	10th hour \$42.34
Apprentice: 1,001-2,000 work hours	\$31.91	\$39.34	\$46.77	Beyond 10 hours \$42.34
Apprentice: 2,001-3,000 work hours	\$32.66	\$40.47	\$48.27	
Apprentice: 3,001-4,000 work hours	\$34.15	\$42.70	\$51.25	Saturday
				First 8 hours \$42.34
				9th hour \$42.34
				10th hour \$42.34
				Beyond 10 hours \$42.34
				Sunday/Holiday \$49.78

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Construction Mechanic 2	Laborer, Skilled	04/04/2025

Classification Description: SIGNAL MAN (on sewer and caisson work); AIR, ELECTRIC OR GASOLINE TOOL OPERATOR (including concrete vibrator operator, acetylene torch and air hammer operator); SCAFFOLD BUILDER; CAISSON WORKER

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.60	\$69.17	\$84.74

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$69.17
10th hour	\$69.17
Beyond 10 hours	\$69.17

Saturday

First 8 hours	\$69.17
9th hour	\$69.17
10th hour	\$69.17
Beyond 10 hours	\$69.17

Sunday/Holiday	\$84.74
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Construction Mechanic 3	Laborer, Skilled	04/04/2025

Classification Description: LANSING BURNER, BLASTER AND POWDER MAN; AIR, ELECTRIC OR GASOLINE TOOL OPERATOR
(Blast Furnace work or Battery Work)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$54.16	\$70.01	\$85.86

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$70.01
10th hour	\$70.01
Beyond 10 hours	\$70.01

Saturday

First 8 hours	\$70.01
9th hour	\$70.01
10th hour	\$70.01
Beyond 10 hours	\$70.01

Sunday/Holiday	\$85.86
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Construction Mechanic 4	Laborer, Skilled	04/04/2025

Classification Description: FURNACE BATTERY HEATER TENDERS, BURNING BAR AND OXY-ACETYLENE GUN

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.60	\$53.60	\$53.60

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$69.17
10th hour	\$69.17
Beyond 10 hours	\$69.17

Saturday

First 8 hours	\$69.17
9th hour	\$69.17
10th hour	\$69.17
Beyond 10 hours	\$69.17

Sunday/Holiday	\$84.74
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Construction Mechanic 5	Laborer, Skilled	04/04/2025

Classification Description: EXPEDITER MAN, TOP AND/OR BOTTOM MAN
(Blast Furnace work or Battery Work)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$54.71	\$70.84	\$86.96

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$54.71
10th hour	\$54.71
Beyond 10 hours	\$54.71

Saturday

First 8 hours	\$54.71
9th hour	\$54.71
10th hour	\$54.71
Beyond 10 hours	\$54.71

Sunday/Holiday	\$54.71
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - A-B	Laborer, Skilled	04/04/2025

Classification Description: Signal man (on sewer & caisson work); air,electric or gasoline tool operator (including concrete vibrator operator,acetylene torch & air hammer operator); scaffold builder, caisson worker

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$50.40	\$64.93	\$79.45

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$64.93
10th hour	\$64.93
Beyond 10 hours	\$64.93

Saturday

First 8 hours	\$64.93
9th hour	\$64.93
10th hour	\$64.93
Beyond 10 hours	\$64.93

Sunday/Holiday	\$79.45
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - A-C	Laborer, Skilled	04/04/2025

Classification Description: Lansing Burner, Blaster & Powder Man; Air, electric Gasoline Tool Operator (Blast furnace work or battery work)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$50.96	\$65.77	\$80.57

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$65.77
10th hour	\$65.77
Beyond 10 hours	\$65.77

Saturday

First 8 hours	\$65.77
9th hour	\$65.77
10th hour	\$65.77
Beyond 10 hours	\$65.77

Sunday/Holiday	\$80.57
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday,

If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer - A-D	Laborer, Skilled	04/04/2025

Classification Description: Furnance battery heater tender, burning bar & oxy-acetylene gun

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage	\$50.67	\$65.33	\$79.99	9th hour \$65.33
				10th hour \$65.33
				Beyond 10 hours \$65.33
				Saturday
				First 8 hours \$65.33
				9th hour \$65.33
				10th hour \$65.33
				Beyond 10 hours \$65.33
				Sunday/Holiday
				\$79.99

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Saturday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class I - Z1	Laborer, Skilled	04/04/2025

Classification Description: Class I - Tunnel, shaft and caisson laborer, dump man, shanty man, hog house tender, testing man (on gas), and watchman.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.17	\$51.66	\$62.14
Apprentice: 0-1,000 work hours	\$34.45	\$43.16	\$51.85
Apprentice: 1,001-2,000 work hours	\$36.54	\$46.29	\$56.03
Apprentice: 2,001-3,000 work hours	\$37.57	\$47.84	\$58.09
Apprentice: 3,001-4,000 work hours	\$39.64	\$50.94	\$62.23

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$51.66
10th hour	\$51.66
Beyond 10 hours	\$51.66

Saturday

First 8 hours	\$51.66
9th hour	\$51.66
10th hour	\$51.66
Beyond 10 hours	\$51.66

Sunday/Holiday	\$62.14
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class III - Z1	Laborer, Skilled	04/04/2025

Classification Description: Class III - Air tool operator (jack hammer man, bush hammer man and grinding man), first bottom man, second bottom man, cage tender, car pusher, carrier man, concrete man, concrete form man, concrete repair man, cement invert laborer, cement finisher, con

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.34	\$51.91	\$62.48
Apprentice: 0-1,000 work hours	\$35.63	\$44.92	\$54.21
Apprentice: 1,001-2,000 work hours	\$36.67	\$46.48	\$56.29
Apprentice: 2,001-3,000 work hours	\$37.71	\$48.04	\$58.37
Apprentice: 3,001-4,000 work hours	\$39.80	\$51.18	\$62.55

Overtime Provisions

Over 8-hour day/40-hour

week

9th hour	\$51.91
10th hour	\$51.91
Beyond 10 hours	\$51.91

Saturday

First 8 hours	\$51.91
9th hour	\$51.91
10th hour	\$51.91
Beyond 10 hours	\$51.91

Sunday/Holiday

\$62.48

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class V - Z1	Laborer, Skilled	04/04/2025

Classification Description: Class V - Tunnel, shaft and caisson miner, drill runner, keyboard operator, power knife operator, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.77	\$52.56	\$63.34
Apprentice: 0-1,000 work hours	\$35.95	\$45.40	\$54.85
Apprentice: 1,001-2,000 work hours	\$37.02	\$47.01	\$56.99
Apprentice: 2,001-3,000 work hours	\$38.08	\$48.60	\$59.11
Apprentice: 3,001-4,000 work hours	\$40.21	\$51.80	\$63.37

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$52.56
10th hour	\$52.56
Beyond 10 hours	\$52.56

Saturday

First 8 hours	\$52.56
9th hour	\$52.56
10th hour	\$52.56
Beyond 10 hours	\$52.56

Sunday/Holiday	\$63.34
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer Underground - Tunnel, Shaft & Caisson - Class VI - Z1	Laborer, Skilled	04/04/2025

Classification Description: Class VI - Dynamite man and powder man.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.90	\$54.33	\$66.75
Apprentice: 0-1,000 work hours	\$36.20	\$45.78	\$55.35
Apprentice: 1,001-2,000 work hours	\$37.28	\$47.40	\$57.51
Apprentice: 2,001-3,000 work hours	\$38.36	\$49.02	\$59.67
Apprentice: 3,001-4,000 work hours	\$40.52	\$52.26	\$63.99

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	\$52.85
10th hour	\$52.85
Beyond 10 hours	\$52.85
Saturday	
First 8 hours	\$52.85
9th hour	\$52.85
10th hour	\$52.85
Beyond 10 hours	\$52.85
Sunday/Holiday	
	\$63.80

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class III - Z1	Laborer, Skilled	04/04/2025

Classification Description: Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodder, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars, etc.), cement finisher, welder, pipe jacking and boring man, wagon

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$40.68	\$52.50	\$64.31
Apprentice: 0-1,000 work hours	\$35.51	\$44.74	\$53.97
Apprentice: 1,001-2,000 work hours	\$36.54	\$46.29	\$56.03
Apprentice: 2,001-3,000 work hours	\$37.58	\$47.85	\$58.11
Apprentice: 3,001-4,000 work hours	\$39.65	\$50.96	\$62.25

Overtime Provisions

Over 8-hour day/40-hour

week

9th hour	\$51.02
10th hour	\$51.02
Beyond 10 hours	\$51.02

Saturday

First 8 hours	\$51.02
9th hour	\$51.02
10th hour	\$51.02
Beyond 10 hours	\$51.02

Sunday/Holiday

\$61.36

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Laborer -Underground Open Cut - Class V - Z1	Laborer, Skilled	04/04/2025

Classification Description: Pipe Layer (including crock, metal pipe, mulitplate or other conduits)

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage	\$40.82	\$52.71	\$64.59	9th hour \$51.23
Apprentice: 0-1,000 work hours	\$35.62	\$44.91	\$54.19	10th hour \$51.23
Apprentice: 1,001-2,000 work hours	\$36.66	\$46.47	\$56.27	Beyond 10 hours \$51.23
Apprentice: 2,001-3,000 work hours	\$37.70	\$48.03	\$58.35	Saturday
Apprentice: 3,001-4,000 work hours	\$39.78	\$51.15	\$62.51	First 8 hours \$51.23
				9th hour \$51.23
				10th hour \$51.23
				Beyond 10 hours \$51.23
				Sunday/Holiday \$61.64

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 4	Laborer, Skilled	04/04/2025

Classification Description: Boiler Operator: unit driver and operator of steam/water heater units and all ancillary equipment associated

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$33.20	\$45.70	\$58.19

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$45.70
10th hour	\$45.70
Beyond 10 hours	\$45.70

Saturday

First 8 hours	\$45.70
9th hour	\$45.70
10th hour	\$45.70
Beyond 10 hours	\$45.70

Sunday/Holiday	\$45.70
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 5	Laborer, Skilled	04/04/2025

Classification Description: Combo Unit driver & Jetter-Vac Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$33.20	\$45.70	\$58.19

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$45.70
10th hour	\$45.70
Beyond 10 hours	\$45.70

Saturday

First 8 hours	\$45.70
9th hour	\$45.70
10th hour	\$45.70
Beyond 10 hours	\$45.70

Sunday/Holiday	\$45.70
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 6	Laborer, Skilled	04/04/2025

Classification Description: Pipe Bursting & Slip-lining Equipment Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$34.20	\$47.20	\$60.19

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$47.20
10th hour	\$47.20
Beyond 10 hours	\$47.20

Saturday

First 8 hours	\$47.20
9th hour	\$47.20
10th hour	\$47.20
Beyond 10 hours	\$47.20

Sunday/Holiday	\$47.20
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Class II (A)	Operating Engineer	04/04/2025

Classification Description: Class II (A) - Crane/backhoe operator, material handler, all self-propelled drill rigs, mechanic/welder, hydraulic dredge, diver tender

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$81.32	\$105.57	\$129.82

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$32.82
10th hour	\$105.57
Beyond 10 hours	\$105.57

Saturday

First 8 hours	\$105.57
9th hour	\$105.57
10th hour	\$105.57
Beyond 10 hours	\$105.57

Sunday/Holiday	\$129.82
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Class II (B)	Operating Engineer	04/04/2025

Classification Description: Class II (B) - friction, lattice boom, tug or tug boat operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$84.32	\$110.07	\$135.82

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$110.07
10th hour	\$110.07
Beyond 10 hours	\$110.07

Saturday

First 8 hours	\$110.07
9th hour	\$110.07
10th hour	\$110.07
Beyond 10 hours	\$110.07

Sunday/Holiday	\$135.82
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Class III	Operating Engineer	04/04/2025

Classification Description: Class III - Deck equip. operator, maintenance of crane or excavator, tug/launch operator, loader/dozer on barge/deck machinery, truck-able tug, lead surveyor, ROV operator, AB deckhand, welder

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$76.82	\$98.82	\$120.82

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.82
10th hour	\$98.82
Beyond 10 hours	\$98.82

Saturday

First 8 hours	\$98.82
9th hour	\$98.82
10th hour	\$98.82
Beyond 10 hours	\$98.82

Sunday/Holiday	\$120.82
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Class IV	Operating Engineer	04/04/2025

Classification Description: Class IV - Deck equipment operator, machineryman/fireman, off road trucks, deck hand, tug engineer, assistant tug operator, blaster helper, deck hand, jet machine, subsea plow, trencher, tug engineer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$72.32	\$92.07	\$111.82

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$32.82
10th hour	\$92.07
Beyond 10 hours	\$92.07

Saturday

First 8 hours	\$92.07
9th hour	\$92.07
10th hour	\$92.07
Beyond 10 hours	\$92.07

Sunday/Holiday	\$111.82
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	Operating Engineer	04/04/2025

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$41.43	\$54.43	\$67.42

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$54.43
10th hour	\$54.43
Beyond 10 hours	\$67.42

Saturday

First 8 hours	\$54.43
9th hour	\$54.43
10th hour	\$54.43
Beyond 10 hours	\$67.42

Sunday/Holiday	\$67.42
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	Operating Engineer	04/04/2025

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage				9th hour \$73.32
				10th hour \$73.32
				Beyond 10 hours \$87.81
				Saturday
				First 8 hours \$73.32
				9th hour \$73.32
				10th hour \$73.32
				Beyond 10 hours \$87.81
				Sunday/Holiday
				\$87.81

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	Operating Engineer	04/04/2025

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage	\$64.70	\$81.75	\$98.80	9th hour \$81.75
				10th hour \$81.75
				Beyond 10 hours \$98.80
				Saturday
				First 8 hours \$81.75
				9th hour \$81.75
				10th hour \$81.75
				Beyond 10 hours \$98.80
				Sunday/Holiday \$98.80

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	Operating Engineer	04/04/2025

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage				9th hour \$88.88
				10th hour \$88.88
				Beyond 10 hours \$108.15
				Saturday
				First 8 hours \$88.88
				9th hour \$88.88
				10th hour \$88.88
				Beyond 10 hours \$108.15
				Sunday/Holiday
				\$108.15

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Extended Boom Forklift Operator - Over 5,000	Operating Engineer	04/04/2025

Classification Description: Extended boom forklift/forktruck over 5,000lb capacity, 1 drum hoist

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage				9th hour \$79.73
				10th hour \$79.73
				Beyond 10 hours \$96.16
				Saturday
				First 8 hours \$79.73
				9th hour \$79.73
				10th hour \$79.73
				Beyond 10 hours \$96.16
				Sunday/Holiday
				\$96.16

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Fireman or Oiler	Operating Engineer	04/04/2025

Classification Description: Fireman or Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$59.08	\$75.85	\$92.62

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$59.08
10th hour	\$59.08
Beyond 10 hours	\$88.24

Saturday

First 8 hours	\$59.08
9th hour	\$88.24
10th hour	\$88.24
Beyond 10 hours	\$88.24

Sunday/Holiday	\$88.24
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman - Class I	Operating Engineer	04/04/2025

Classification Description: Journeyman - Class I

Asphalt Transfer Machine (Shuttle Buggy)

Concrete/Asphalt Pavers

Excavators Installing Utilities over 20 feet in depth

GPS or Electronic Grade Equipment (employee must be able to set up and use it on machine themselves, and employee can install it and calibrate it on their own)

Hydraulic/Lattice Lifting Cranes over 25 tons

Mechanic

****On bridge construction projects when a Class I Crane Operator is erecting structural components as part of a composite crew with Structural Ironworkers, the Base Rate and Vacation and Holiday pay shall be at the Crane Operator rate as set forth in the current agreement between the Union and the Great Lakes Fabricators and Erectors Association.**

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$69.17	\$88.16	\$107.14
Apprentice: Apprentice Engineer 0-6 months	\$56.03	\$71.32	\$86.60
Apprentice: Apprentice Engineer 13-18	\$60.40	\$77.87	\$95.34
Apprentice: Apprentice Engineer 19-24 months	\$62.21	\$80.59	\$98.96
Apprentice: Apprentice Engineer 25-30 months	\$64.76	\$84.42	\$104.06
Apprentice: Apprentice Engineer 31-36 months	\$67.08	\$87.90	\$108.70
Apprentice: Apprentice Engineer 7-12 months	\$58.21	\$74.58	\$90.96

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather, Monday through Thursday, the Friday work may be scheduled for ten (10) hours, at straight time, as a make-up day.

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	\$88.16
10th hour	\$88.16
Beyond 10 hours	\$88.16
Saturday	
First 8 hours	\$88.16
9th hour	\$88.16
10th hour	\$88.16
Beyond 10 hours	\$88.16
Sunday/Holiday	\$107.14

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman - Class II	Operating Engineer	04/04/2025

Classification Description: Journeyman - Class II

Air Compressors in Manifold with throttle valve + 750 cfm
Asphalt Bituminous Compactor / Roller
Asphalt Planner self-propelled
Asphalt Plant on project including operating from on site or operating remotely
Asphalt Screed or Screw (per Employer Past Practice)
Auto Grade or similar type machine
Backhoe on Farm Type Tractor 45 H.P. & over
Ballast Jack Tamper
Ballast Regulator (R.R.)
Batch Plant (concrete-central mix)
Bituminous Paver (self-propelled)
Blade Grader
Bull Dozer
Caisson Drilling Machine
Cherry Picker – 15 ton or over
Chip Spreader
Concrete Batch or Drum Mix Plant on project including operating from on site or operating remotely
Concrete Belt Placer (Formless)
Concrete Cure / Finish Machine (burlap, tinning or grooving)
Concrete Mixer 21 cu. Ft. Or over
Concrete Pump (Truck Mount)
Concrete Pump (3 inch and over)
Concrete / Asphalt Saw Power Driven (3 yrs experience or more)
Conveyor Loader (Euclid type)
Core Drilling Machine
Curb-Barrier Wall Machine CMI type
Directional Drill / Boring Machine
Dredge Engineer
Dredge
Drilling Machine on which the drill is an integral part
Earth Mover – rubber tired – (paddle wheel, Cat 619, 631, TS-24 or similar type)
Earth Mover rubber tired-tandem

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$68.02	\$86.51	\$104.99

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$86.50
10th hour	\$86.50
Beyond 10 hours	\$86.50

Saturday

First 8 hours	\$86.50
9th hour	\$86.50
10th hour	\$86.50
Beyond 10 hours	\$86.50

Sunday/Holiday	\$104.99
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman - Class III	Operating Engineer	04/04/2025

Classification Description: Journeyman - Class III

Air Compressor with Throttle Valve or Clever Brooks type comb.
Backhoe less than 1 cyd. Including Farm Type
Bituminous Plant Engineer
Chemical / Grout Machine 21 cft. Or larger
Cherry Picker under 15 ton
Chip Spreader (self-propelled)
Crusher
Concrete Barrier Moving Machine (per Employer Past Practice)
Concrete Pump
Concrete Spreader--Power Driven
End Loader under 1-1/2 cu yd.
Grease Truck
Gunit Machine
Lowboy (per Employer Past Practice)
Mesh or Steel Placer (motorized)
Multiple Tamping Machine (R.R.)
Refrigerating Machine--Freezing operation
Roller-Waterbound Macadam, Bituminous Macadam, Brick
Ross Carrier
Self-propelled convey transfer devise.
Side Boom Tractor (smaller than D-4 type or equivalent)
Sweeper (Wayne type and similar equipment)
Macadam, Brick Surface
Trench Machine 24" and under
Tube Float (motorized)

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$61.29	\$76.85	\$92.41

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	\$30.17
10th hour	\$76.85
Beyond 10 hours	\$76.85
Saturday	
First 8 hours	\$76.85
9th hour	\$76.85
10th hour	\$76.85
Beyond 10 hours	\$76.85
Sunday/Holiday	
	\$92.41

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman - Class IV	Operating Engineer	04/04/2025

Classification Description: Journeyman - Class IV

Air Compressor
All mulching equipment
All Walk Behind or Remote Control Powered Equipment (autonomous equipment)
Assistant to Engineer Automatic Dry Batch Plant Belt Spreader (motorized including transfer device by remote, wireless or cable)
Bituminous Distributor
Bituminous Patching Machine
Broom & Belt Machine
Chair Cart (self-propelled)
Concrete Pumps (under 3")
Concrete Breaker
Curb Machine
Curing Equipment (self-propelled)
Deck Hand
Digger Post Hole (power-driven)
Dump Truck
End Dumps (per Employer Past Practice)
End Loader (under $\frac{3}{4}$ yard capacity)
Farm Tractor-incl. farm tractor with all attachments except backhoe and incl. highlift end loaders of 1 cu. Yard capacity or less
Fireman (on boiler)
Fork Lift – under 10 ton
Form Grader (if motorized)
Georgia Buggy – Power wheel barrel $\frac{3}{4}$ yard with a seat
Generator (15 kw or greater)
Greaser Helper
Guard Post Driver (power driven)

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$60.73	\$76.05	\$91.36

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$76.05
10th hour	\$76.05
Beyond 10 hours	\$76.05

Saturday

First 8 hours	\$76.05
9th hour	\$76.05
10th hour	\$76.05
Beyond 10 hours	\$76.05

Sunday/Holiday	\$91.36
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Journeyman - Class V	Operating Engineer	04/04/2025

Classification Description: Journeyman - Class V

Concrete/Asphalt Saw - Power Driven (Less than 3 yrs. experience)

Density/Soil Engineer

Directional Boring Utility Man

Discharge Pumps 4" or less (1-4 units)

Dumper (Wagon, Truck, Etc.)-½ yard or less

Fence Erector/Power Driven

Light Plants (1 to 5 units)

Paving Batch Truck Dumper

Roto Mill Utility Grade Control

Sign Installer/Sign Installer with Remote Control Operated Equipment

Top Man, And Railroad Track and Trestle Engineer

Utility Engineer

Water Blasting Utility Engineer

1 to 4 pcs. of minor equip.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$42.35	\$55.33	\$68.31

Overtime Provisions

Over 8-hour day/40-hour

week

9th hour	\$55.33
10th hour	\$55.33
Beyond 10 hours	\$55.33

Saturday

First 8 hours	\$55.33
9th hour	\$55.33
10th hour	\$55.33
Beyond 10 hours	\$55.33

Sunday/Holiday

\$68.31

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 A140	Operating Engineer	04/04/2025

Classification Description: Crane with boom & jib or leads 140' or longer

Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.59	\$100.24	\$122.89

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$100.24
10th hour	\$100.24
Beyond 10 hours	\$100.24

Saturday

First 8 hours	\$100.24
9th hour	\$100.24
10th hour	\$100.24
Beyond 10 hours	\$100.24

Sunday/Holiday	\$122.89
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 A220	Operating Engineer	04/04/2025

Classification Description: Crane with boom & jib or leads 220' or longer

Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.86	\$100.63	\$123.40

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$100.63
10th hour	\$100.63
Beyond 10 hours	\$100.63

Saturday

First 8 hours	\$100.63
9th hour	\$100.63
10th hour	\$100.63
Beyond 10 hours	\$100.63

Sunday/Holiday	\$123.40
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 B120	Operating Engineer	04/04/2025

Classification Description: Crane Operator w/120' of Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.41	\$99.99	\$122.56

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$99.98
10th hour	\$99.98
Beyond 10 hours	\$99.98

Saturday

First 8 hours	\$99.98
9th hour	\$99.98
10th hour	\$99.98
Beyond 10 hours	\$99.98

Sunday/Holiday	\$122.56
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 GM	Operating Engineer	04/04/2025

Classification Description: Ground Man/Light Plants/Welder/Pumps Under 6"

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$43.83	\$57.87	\$71.91

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$57.87
10th hour	\$57.87
Beyond 10 hours	\$57.87

Saturday

First 8 hours	\$57.87
9th hour	\$57.87
10th hour	\$57.87
Beyond 10 hours	\$57.87

Sunday/Holiday	\$71.91
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - Below 5,000lb Capacity	Operating Engineer	04/04/2025

Classification Description: Ind. forklift/forktruck under 5,000lb capacity
power jacks/power packs, composite crew only

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.10	\$85.19	\$103.28

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$85.19
10th hour	\$85.19
Beyond 10 hours	\$85.19

Saturday

First 8 hours	\$85.19
9th hour	\$85.19
10th hour	\$85.19
Beyond 10 hours	\$85.19

Sunday/Holiday	\$103.28
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - Crane Operator w/Oiler	Operating Engineer	04/04/2025

Classification Description: Crane Operator w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.05	\$99.47	\$121.89

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$99.47
10th hour	\$99.47
Beyond 10 hours	\$99.47

Saturday

First 8 hours	\$99.47
9th hour	\$99.47
10th hour	\$99.47
Beyond 10 hours	\$99.47

Sunday/Holiday	\$121.89
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - Crane, TDH, Excavator	Operating Engineer	04/04/2025

Classification Description: Crane Operator, Job Mechanic, Three Drum Hoist and Excavator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$76.05	\$98.04	\$120.02
Apprentice: Apprentice Engineer 0-6 months	\$60.84	\$78.54	\$96.24
Apprentice: Apprentice Engineer 13-18 months	\$65.90	\$86.13	\$106.36
Apprentice: Apprentice Engineer 19-24 months	\$68.42	\$89.92	\$111.40
Apprentice: Apprentice Engineer 25-30 months	\$70.95	\$93.71	\$116.46
Apprentice: Apprentice Engineer 31-36 months	\$73.48	\$97.50	\$121.52
Apprentice: Apprentice Engineer 7-12 months	\$63.40	\$82.38	\$101.36

Overtime Provisions

Over 8-hour day/40-hour week	
9th hour	\$98.03
10th hour	\$98.03
Beyond 10 hours	\$98.03
Saturday	
First 8 hours	\$98.03
9th hour	\$98.03
10th hour	\$98.03
Beyond 10 hours	\$98.03
Sunday/Holiday	
	\$120.02

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - CW	Operating Engineer	04/04/2025

Classification Description: Compressor or welding machine
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$54.86	\$69.72	\$84.58

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$67.78
10th hour	\$67.78
Beyond 10 hours	\$67.78

Saturday

First 8 hours	\$67.78
9th hour	\$80.70
10th hour	\$80.70
Beyond 10 hours	\$80.70

Sunday/Holiday	\$80.70
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - F	Operating Engineer	04/04/2025

Classification Description: Forklift, lull, extend-a-boom forklift

Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$63.36	\$79.81	\$96.25

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$79.81
10th hour	\$79.81
Beyond 10 hours	\$79.81

Saturday

First 8 hours	\$79.81
9th hour	\$96.25
10th hour	\$96.25
Beyond 10 hours	\$96.25

Sunday/Holiday	\$96.25
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - FO	Operating Engineer	04/04/2025

Classification Description: Fireman or oiler

Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.83	\$68.18	\$82.52

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$66.31
10th hour	\$66.31
Beyond 10 hours	\$66.31

Saturday

First 8 hours	\$66.31
9th hour	\$78.78
10th hour	\$78.78
Beyond 10 hours	\$78.78

Sunday/Holiday	\$78.78
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - FSM	Operating Engineer	04/04/2025

Classification Description: Forklift or Straight Mast

Four 10 hour days may be scheduled M-Th or T-F. Work not performed due to weather on M-Th may be scheduled on Friday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$57.50	\$71.40	\$85.29

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$71.40
10th hour	\$71.40
Beyond 10 hours	\$71.40

Saturday

First 8 hours	\$71.40
9th hour	\$85.29
10th hour	\$85.29
Beyond 10 hours	\$85.29

Sunday/Holiday

\$85.29

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - I	Operating Engineer	04/04/2025

Classification Description: Lull or Extend-a-Boom Forklift

Four 10 hour days may be scheduled M-Th or T-F. Work not performed due to weather on M-Th may be scheduled on Friday

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$59.73	\$77.09	\$94.45

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$74.83
10th hour	\$74.83
Beyond 10 hours	\$74.83

Saturday

First 8 hours	\$74.83
9th hour	\$89.92
10th hour	\$89.92
Beyond 10 hours	\$89.92

Sunday/Holiday	\$89.92
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Friday

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - OE 324 A120	Operating Engineer	04/04/2025

Classification Description: Crane with boom & jib or leads 120' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$68.55	\$87.30	\$106.04

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$87.30
10th hour	\$87.30
Beyond 10 hours	\$87.30

Saturday

First 8 hours	\$87.30
9th hour	\$87.30
10th hour	\$87.30
Beyond 10 hours	\$87.30

Sunday/Holiday	\$106.04
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - RC	Operating Engineer	04/04/2025

Classification Description: Regular crane, job mechanic, concrete pump with boom

Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$64.85	\$84.71	\$104.56

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$82.12
10th hour	\$82.12
Beyond 10 hours	\$82.12

Saturday

First 8 hours	\$82.12
9th hour	\$99.38
10th hour	\$99.38
Beyond 10 hours	\$99.38

Sunday/Holiday	\$99.38
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - Skidsteer Operator	Operating Engineer	04/04/2025

Classification Description: Skidsteer forklift when working with fence and Door companies

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$65.69	\$83.17	\$100.65

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$83.17
10th hour	\$83.17
Beyond 10 hours	\$83.17

Saturday

First 8 hours	\$83.17
9th hour	\$83.17
10th hour	\$83.17
Beyond 10 hours	\$83.17

Sunday/Holiday	\$100.65
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - TDH, Backhoe	Operating Engineer	04/04/2025

Classification Description: Hoisting Operator, Two Drum Hoist, Rubber Tire Backhoe

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$75.41	\$97.11	\$118.82

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$97.11
10th hour	\$97.11
Beyond 10 hours	\$97.11

Saturday

First 8 hours	\$97.11
9th hour	\$97.11
10th hour	\$97.11
Beyond 10 hours	\$97.11

Sunday/Holiday	\$118.82
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Boom and Jib or Leads 120' or longer	Operating Engineer	04/04/2025

Classification Description: Engineer when operating Crane with Boom and Jib or Leads 120' or longer

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$70.96	\$93.68	\$116.38	Over 8-hour day/40-hour week
				9th hour \$70.96
				10th hour \$70.96
				Beyond 10 hours \$90.70
				Saturday
				First 8 hours \$90.70
				9th hour \$110.45
				10th hour \$110.45
				Beyond 10 hours \$110.45
				Sunday/Holiday \$110.45

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Boom and Jib or Leads 140' or longer	Operating Engineer	04/04/2025

Classification Description: Engineer when operating Crane with Boom and Jib or Leads 140' or longer

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$71.78	\$94.91	\$118.02	Over 8-hour day/40-hour week
				9th hour \$71.78
				10th hour \$71.78
				Beyond 10 hours \$91.89
				Saturday
				First 8 hours \$71.78
				9th hour \$111.99
				10th hour \$111.99
				Beyond 10 hours \$111.99
				Sunday/Holiday \$111.99

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Boom and Jib or Leads 220' or longer	Operating Engineer	04/04/2025

Classification Description: Engineer when operating Crane with Boom and Jib or Leads 220' or longer

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage				9th hour \$92.31
				10th hour \$92.31
				Beyond 10 hours \$92.31
				Saturday
				First 8 hours \$72.08
				9th hour \$112.55
				10th hour \$112.55
				Beyond 10 hours \$112.55
				Sunday/Holiday
				\$112.55

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Boom and Jib or Leads 300' or longer	Operating Engineer	04/04/2025

Classification Description: Engineer when operating Crane with Boom and Jib or Leads 300' or longer

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$73.58	\$97.60	\$121.62	Over 8-hour day/40-hour week
				9th hour \$73.58
				10th hour \$73.58
				Beyond 10 hours \$73.58
				Saturday
				First 8 hours \$73.58
				9th hour \$115.35
				10th hour \$115.35
				Beyond 10 hours \$115.35
				Sunday/Holiday \$115.35

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Mon-Fri-Double time after 12 hrs/day
Sat-time and a half first 8 hours unless over 40, then double time

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Boom and Jib or Leads 400' or longer	Operating Engineer	04/04/2025

Classification Description: Engineer when operating Crane with Boom and Jib or Leads 400' or longer

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$75.08	\$96.62	\$118.16	Over 8-hour day/40-hour week
Apprentice: Apprentice Engineer 1 - 999 Hours	\$56.05	\$71.31	\$86.56	9th hour \$75.08
Apprentice: Apprentice Engineer 1,000 - 1,999 Hours	\$58.22	\$74.56	\$90.90	10th hour \$75.08
Apprentice: Apprentice Engineer 2,000 - 2,999 Hours	\$60.56	\$78.07	\$95.58	Beyond 10 hours \$96.62
Apprentice: Apprentice Engineer 3,000 - 3,999 hours	\$62.58	\$81.11	\$99.62	Saturday
Apprentice: Apprentice Engineer 4,000 - 4,999 hours	\$64.77	\$84.39	\$104.00	First 8 hours \$75.08
Apprentice: Apprentice Engineer 4,999 - 5,999 hours	\$68.03	\$89.28	\$110.52	9th hour \$118.16
				10th hour \$118.16
				Beyond 10 hours \$118.16
				Sunday/Holiday \$118.16

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Compressor or Welding Machine	Operating Engineer	04/04/2025

Classification Description: Engineer operating Compressor or Welding Machine

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$60.11	\$77.40	\$94.68

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$60.11
10th hour	\$60.11
Beyond 10 hours	\$90.17

Saturday

First 8 hours	\$60.11
9th hour	\$90.17
10th hour	\$90.17
Beyond 10 hours	\$90.17

Sunday/Holiday	\$90.17
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer-Forklift	Operating Engineer	04/04/2025

Classification Description: Lull or Extend-A-Boom Forklift

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$67.42	\$88.36	\$109.30

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$67.42
10th hour	\$67.42
Beyond 10 hours	\$103.84

Saturday

First 8 hours	\$67.42
9th hour	\$103.84
10th hour	\$103.84
Beyond 10 hours	\$103.84

Sunday/Holiday	\$103.84
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Regular Crane Operator	Operating Engineer	04/04/2025

Classification Description: Job Mechanic, Concrete Pump with Boom, and High/Long Reach Shear

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$70.10	\$92.38	\$114.66

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$70.10
10th hour	\$70.10
Beyond 10 hours	\$89.47

Saturday

First 8 hours	\$89.47
9th hour	\$108.85
10th hour	\$108.85
Beyond 10 hours	\$108.85

Sunday/Holiday	\$108.85
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Regular Engineer	Operating Engineer	04/04/2025

Classification Description: Hydro Excavator, Remote Controlled Concrete Breaker, and Concrete Saw operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$69.13	\$90.93	\$112.72

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$69.13
10th hour	\$69.13
Beyond 10 hours	\$88.08

Saturday

First 8 hours	\$69.13
9th hour	\$107.03
10th hour	\$107.03
Beyond 10 hours	\$107.03

Sunday/Holiday	\$107.03
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Monday-Friday-Double time after 12hrs/day
Saturday-Double time starts after 40 hrs otherwise first 8 are time and a half

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Sewer Relining Operator - Class II	Operating Engineer	04/04/2025

Classification Description: Class II-Operator of hot water heaters and circulation system; water jetters; and vacuum and mechanical debris removal systems and those assisting.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$50.80	\$68.49	\$86.18

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$66.30
10th hour	\$66.30
Beyond 10 hours	\$66.30

Saturday

First 8 hours	\$66.30
9th hour	\$66.30
10th hour	\$66.30
Beyond 10 hours	\$66.30

Sunday/Holiday	\$81.79
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Marine Construction and Dredging Class I - OE324	Operating Engineer, Dredge or Marine Engineer	04/04/2025

Classification Description: Craft Foreman, Diver/Wet Tender, Engineer, Engineer (hydraulic dredge), Blaster

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage				9th hour \$110.05
				10th hour \$110.05
				Beyond 10 hours \$110.05
				Saturday
				First 8 hours \$110.05
				9th hour \$110.05
				10th hour \$110.05
				Beyond 10 hours \$110.05
				Sunday/Holiday
				\$135.80

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Marine Construction and Dredging Class II A - OE324	Operating Engineer, Dredge or Marine Engineer	04/04/2025

Classification Description: Crane, Backhoe, Material Handler, All Self-Propelled Drill Rigs, Mechanic/Welder, Asst. Engineer (hydraulic dredge), Leverman (hydraulic dredge), Diver Tender.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$82.80	\$107.80	\$132.80

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$107.80
10th hour	\$107.80
Beyond 10 hours	\$107.80

Saturday

First 8 hours	\$107.80
9th hour	\$107.80
10th hour	\$107.80
Beyond 10 hours	\$107.80

Sunday/Holiday	\$132.80
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Marine Construction and Dredging Class II B - OE324	Operating Engineer, Dredge or Marine Engineer	04/04/2025

Classification Description: Friction, Lattice Boom, or Crane License Cert., Endorse Tug or Tow Boat Operator

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$85.80	\$112.30	\$138.80	Over 8-hour day/40-hour week
				9th hour \$112.30
				10th hour \$112.30
				Beyond 10 hours \$112.30
				Saturday
				First 8 hours \$112.30
				9th hour \$112.30
				10th hour \$112.30
				Beyond 10 hours \$112.30
				Sunday/Holiday \$138.80

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Marine Construction and Dredging Class III - OE324	Operating Engineer, Dredge or Marine Engineer	04/04/2025

Classification Description: Deck Equipment Operator, (Machineryman), Maintenance of Crane, Tug/Launch Operator, Loader/Dozer on Barge, Deck Machinery, etc.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.30	\$101.05	\$123.80

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$101.05
10th hour	\$101.05
Beyond 10 hours	\$101.05

Saturday

First 8 hours	\$101.05
9th hour	\$101.05
10th hour	\$101.05
Beyond 10 hours	\$101.05

Sunday/Holiday	\$123.80
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Marine Construction and Dredging Class IV - OE324	Operating Engineer, Dredge or Marine Engineer	04/04/2025

Classification Description: Deck Equipment Operator, Machineryman/Fireman, (4 equipment units or more), Off Road Trucks, Deck Hand, Tug/Engineer, Crane Maint. (50 ton and under/Backhoe 115,000 lbs. or less), Asst. Tug Operator, Blaster Helper.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$73.35	\$93.85	\$114.35

Overtime Provisions

Over 8-hour day/40-hour

week

9th hour	\$93.85
10th hour	\$93.85
Beyond 10 hours	\$93.85

Saturday

First 8 hours	\$93.85
9th hour	\$93.85
10th hour	\$93.85
Beyond 10 hours	\$93.85

Sunday/Holiday

\$114.35

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Underground-324-Class I	Operating Engineer, General Construction & Underground	04/04/2025

Classification Description: Class I Equipment-Air Compressors in Manifold with throttle valve Auto Grade or similar type machine
Backfill Tamper Backhoe
Backhoe on Farm Type Tractor 45 H.P. & over. Ballast Regulator (R.R.)
Batch Plant (concrete - central mix) Batch Plant Operator (concrete) Blade Grader Operator
Bulldozer
Caisson Drilling Machine Cherry Picker--15 ton or over Clamshell
Concrete/Asphalt Saw Operator - Power Driven (3yrs experience or more) Concrete Belt Placer (Formless)
Concrete Cure/Finish Machine Operator
Concrete Mixer 21 cu. ft. or over Concrete Paver [two (2) drums or larger] Concrete Pump (Truck Mount)
Concrete Pump (3 inch and over) Concrete Pump with Boom Operator Conveyor Loader Operator (Euclid type) Core Drilling Machine
Crane (Crawler, truck type or pile driving)
Crane or De1Tick with any attachment incl. clamshell, dragline, shovel, backhoe, etc. Directional Drill/Boring Machine Operator
Dozer Dragline
Dredge Engineer Dredge Operator
Drilling Machine on which the drill is an integral part
Earth Mover--rubber tired--(paddle wheel, 619, 631, TS-24 or similar type) Earth Mover rubber tired--tandem (\$.50 cents per hr. added for each bowl) Elevating
Grader Operator
End Loader
End Loader Operator (1½ yard capacity and over)
Excavator
Farm type tractor with attached pan
Finishing Machine Operator (Asphalt or Concrete) Foreman/Operating Engineer
Forklift (10 ton or over)
GPS or Electronic Grade on motorized equipment Gradall and similar type machine
Grader
Gravel Processing plant (portable) Operator of Guard Rail Post Driver Haul Units (off-highway) Helicopter crew
Highlift Shovel--1-1 /2 cu. yd. or over Hoisting Engineer
Horizontal Directional Drill Hydraulic Boom Truck
Hydro demolition equipment (water blaster) Hydro Excavator
Loader--Self-propelled (Belt-Chain- Wheel) (Holland or similar type) Locomotive and/or Dinkey Engine
Mechanic Milling Machine
Mucking Machine
Operator of Guard Rail Post Driver Paver Operator - Concrete
Pile Driver--Skid or Crawler Power Shovel
Rock Breaking Plant
Rock Crushing Plant (Portable)
Root Rake, Tractor Mounted Sand Blaster Vacuum Roto Mill
Scraper Self-Propelled or Tractor Drawn

Self-propelled Widener or Gravel distributing shoulder machine Shovel Operator
Side Boom Tractor (type D-4 or equivalent or larger) Slope Paver
Stump Remover Tractor Mounted Surface Heater & Planer
Surface Roller with Dozer Blade
Swinging Boom Truck (over 12-ton capacity) Tilling Machine or (Roto Grader)
Tractor Operator
Tractor--Boom, Winch or Hoe Head Tractor--Push
Tractor with Scoop Tractor Mounted Spreader Tree Mover
Trench Machine (ladder or wheel type) Trencher (over 8ft. digging capacity) Tugboat Operator
Tunnel Boring Machine Tunnel Shield
Vacuum Machine/Truck Operator Well Drilling Machine
Well Drilling Rig
Winch Truck with A Frame

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$68.12	\$87.01	\$105.89
Apprentice: Apprentice Engineer 0-999 hours	\$54.36	\$69.57	\$84.77
Apprentice: Apprentice Engineer 1,000-1,999 hours	\$56.53	\$72.83	\$89.11
Apprentice: Apprentice Engineer 2,000-2,999 hours	\$58.69	\$76.06	\$93.43
Apprentice: Apprentice Engineer 3,000-3,999 hours	\$60.87	\$79.33	\$97.79
Apprentice: Apprentice Engineer 4,000-4,999 hours	\$64.22	\$84.36	\$104.49
Apprentice: Apprentice Engineer 5,000-5,999 hours	\$65.06	\$85.62	\$106.17

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$87.00
10th hour	\$87.00
Beyond 10 hours	\$87.00

Saturday

First 8 hours	\$87.00
9th hour	\$87.00
10th hour	\$87.00
Beyond 10 hours	\$87.00

Sunday/Holiday	\$105.89
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Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Underground-324- Class II	Operating Engineer, General Construction & Underground	04/04/2025

Classification Description: Class II Equipment

Air Compressor with Throttle Valve or Clever Brooks type comb. Backhoe (with 3/8-yard bucket or less)

Backhoe on Farm Type Tractor under 45 H.P.

Batch Plant (concrete-dry batch)

Boom Truck (power swing type boom)

Cherry Picker under 15 ton

Crusher

Crusher Operator

Concrete Pump

Concrete Mesh Depressor--independently operated Concrete Spreader--Power Driven

End Dumps when operated by an Operating Engineer End Loader under 1-1/2 cu yd.

Guniting Machine

Head Greaser

Hoist

Lowboy Operator

Mesh or Steel Placer (motorized)

Multiple Tamping Machine (R.R.)

Power Curing Spraying Machine (Formless)

P.C.C. Concrete Belt Placer (form type)

Pull Grader--Power Control

Pump Operator (6" discharge or over, gas diesel, powered or generator of 300 amp or larger)

Refrigerating Machine--Freezing operation Ross Carrier

Self-propelled convey transfer device. Sheepfoot Roller (self-propelled)

Side Boom Tractor (smaller than D-4 type or equivalent)

Sweeper (Wayne type and similar equipment)

Telescoping laser finish machine (laser screed)

Tractor (pneu-tired, other than backhoe or front-end loader)

Trencher (8ft. digging capacity and smaller)

Trench Machine 24" and under

Tube Float (motorized)

Vac Truck

Washing Plant Operator Welder

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$64.00	\$83.38	\$102.75

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$80.82
10th hour	\$80.82
Beyond 10 hours	\$80.82

Saturday

First 8 hours	\$80.82
9th hour	\$80.82
10th hour	\$80.82
Beyond 10 hours	\$80.82

Sunday/Holiday	\$97.65
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Underground-324- Class III	Operating Engineer, General Construction & Underground	04/04/2025

Classification Description: Class III Equipment

Air Compressor (600 CFM or larger)

Air Compressor [two (2) or more - less than 600 CFM] Base Paver (Jersey or similar type machine)

Boom Truck (Non swinging, Non powered type boom) Concrete Breaker

Concrete Finishing Machine

Concrete Paver (1 drum - ½ yard or larger) Curb Machine

Elevator (other than passenger) Hoist (one drum)

Jacks - Hydraulic Power-driven multiple jack system Maintenance Man

Mechanics Helper Paving Breaker

Power Broom Self-propelled

Pump [two (2) or more 4 inch up to 6-inch discharge gas or diesel powered-excluding submersible pumps)

Pumpcrete Machine and similar equipment Roller (Earth & Sub-base material) Screening Plant Operator

Spike Machine (R.R.)

Tamper-Multiple Vibrating-Earth and Sub-base material Tractor with Drill--50 H.P. or over Well Point System Wagon Drill (multiple)

Welding Machine or Generator [two (2) or more 300 amp. Or larger -gas or diesel powered]

Well Point System

Widener (Apsco or similar type)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$63.27	\$82.28	\$101.29

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$79.78
10th hour	\$79.78
Beyond 10 hours	\$79.78

Saturday

First 8 hours	\$79.78
9th hour	\$79.78
10th hour	\$79.78
Beyond 10 hours	\$79.78

Sunday/Holiday	\$96.29
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Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Underground-324- Class IV	Operating Engineer, General Construction & Underground	04/04/2025

Classification Description: Class IV Equipment

Air Compressor Operator (over 250 CFM)

All Mulching Equipment

All Walk Behind or Remote-Control Powered Equipment (autonomous equipment)

Assistant to Engineer Automatic Dry Batch Plant

Belt Spreader (motorized including transfer device by remote, wireless or cable) Boiler

Boom or Winch truck operator

Broom & Belt Machine

Chair Cart (Self-propelled) Concrete Pumps (under 3")

Curing Equipment Operator (self-propelled)

Deck Hand

Digger Post Hole (Power-driven)

End loader Operator (under 3/4-yard capacity)

Extend A Boom Forklift--under 10 Ton

Farm Tractor with attachments Finishing Machine (concrete)

Forklift under 10 ton

Form Grader (if motorized)

Georgia Buggy -Power wheel barrel I ¾ yard with a seat Generator (15 kw or greater)

Greaser Helper

Hydraulic pipe pushing machine Mechanical Heater

Mechanics Helper

Outboard or Inboard Motorboat Power Bin Operator

Pug Mill

Pumps - [two (2) or more up to 4 in. discharge if used three (3) hours or more a day - gas or diesel powered- excluding submersible pumps]

Roller (other than asphalt)

Seaman Tiller

Skid Steer

Stump Remover (Grinder)

Sweeper (Wayne type and similar equipment) Tamper

Trencher (service)

Vibratory Compaction Equipment Operator (6 ft. wide or over)

Walk Behind Forklift

Water Wagon

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$62.70	\$81.43	\$100.15

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$78.96
10th hour	\$78.96
Beyond 10 hours	\$78.96

Saturday

First 8 hours	\$78.96
9th hour	\$78.96
10th hour	\$78.96
Beyond 10 hours	\$78.96

Sunday/Holiday	\$95.22
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Underground-324- Class V	Operating Engineer, General Construction & Underground	04/04/2025

Classification Description: Class V Equipment

Concrete/Asphalt Saw Operator- Power Driven (Less than 3 yrs. experience) Density/Soil Engineer

Directional Boring Utility Man

Discharge Pumps 4" or less (1 - 4 units) Dump Truck Operator

Dumper (Wagon, Truck, Etc.) - or trade Fence Erector /Power Driven

Guard Post Driver Operator (power driven) Hydra Seeder

Light Plants (1 to 5 units) Oiler Fireman

Operator of minor equip.

Roto Mill Utility Grade Control Operator

Scissor lifts and basket lifts where used for material hoisting

Sign Installer/Sign Installer with Remote Control Operated Equipment

Straw Blower or Brush Mulcher

Top Man, And Railroad Track and Trestle Engineer Utility Engineer

Water Blasting Utility Engineer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$39.95	\$53.88	\$67.80

Overtime Provisions

**Over 8-hour day/40-hour
week**

9th hour	\$52.06
10th hour	\$52.06
Beyond 10 hours	\$52.06

Saturday

First 8 hours	\$52.06
9th hour	\$52.06
10th hour	\$52.06
Beyond 10 hours	\$52.06

Sunday/Holiday	\$64.17
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Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

In the event work is unable to be performed on account of weather Monday through Thursday, then Friday work may be scheduled for the ten (10) hours, at straight-time.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Crane Operator - 324 B400	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane Operator w/400' Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$81.86	\$106.37	\$130.88

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$106.37
10th hour	\$106.37
Beyond 10 hours	\$106.37

Saturday

First 8 hours	\$106.37
9th hour	\$106.37
10th hour	\$106.37
Beyond 10 hours	\$106.37

Sunday/Holiday	\$130.88
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 A300	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane with boom & jib or leads 300' or longer
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$79.36	\$102.78	\$126.20

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$102.78
10th hour	\$102.78
Beyond 10 hours	\$102.78

Saturday

First 8 hours	\$102.78
9th hour	\$102.78
10th hour	\$102.78
Beyond 10 hours	\$102.78

Sunday/Holiday	\$126.20
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours Mon-Sat.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 A400	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane with boom & jib or leads 400' or longer
Work in excess of 12 per day M-F shall be paid at double time.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$80.86	\$104.94	\$129.01

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$104.93
10th hour	\$104.93
Beyond 10 hours	\$104.93

Saturday

First 8 hours	\$104.93
9th hour	\$104.93
10th hour	\$104.93
Beyond 10 hours	\$104.93

Sunday/Holiday	\$129.01
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours/day Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 A50	Operating Engineer, Steel Work	04/04/2025

Classification Description: Tower Crane & Derrick Operator 50' or More

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.14	\$99.59	\$122.05

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$99.59
10th hour	\$99.59
Beyond 10 hours	\$99.59

Saturday

First 8 hours	\$99.59
9th hour	\$99.59
10th hour	\$99.59
Beyond 10 hours	\$99.59

Sunday/Holiday	\$122.05
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 B140	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane Operator w/140' of /Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.59	\$101.68	\$124.76

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$101.67
10th hour	\$101.67
Beyond 10 hours	\$101.67

Saturday

First 8 hours	\$101.67
9th hour	\$101.67
10th hour	\$101.67
Beyond 10 hours	\$101.67

Sunday/Holiday	\$124.76
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 B220	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane Operator w/220' of Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.86	\$100.76	\$123.97

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$102.06
10th hour	\$102.06
Beyond 10 hours	\$102.06

Saturday

First 8 hours	\$102.06
9th hour	\$102.06
10th hour	\$102.06
Beyond 10 hours	\$102.06

Sunday/Holiday	\$125.27
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 B300	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane Operator w/300' of Boom or Longer w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$80.36	\$104.22	\$128.07

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$104.22
10th hour	\$104.22
Beyond 10 hours	\$104.22

Saturday

First 8 hours	\$104.22
9th hour	\$104.22
10th hour	\$104.22
Beyond 10 hours	\$104.22

Sunday/Holiday	\$128.07
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time over 12 hours Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 B50	Operating Engineer, Steel Work	04/04/2025

Classification Description: Tower Crane & Derrick Operator 50' or more w/Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.14	\$101.03	\$123.92

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$101.03
10th hour	\$101.03
Beyond 10 hours	\$101.03

Saturday

First 8 hours	\$101.03
9th hour	\$101.03
10th hour	\$101.03
Beyond 10 hours	\$101.03

Sunday/Holiday	\$123.92
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - 324 PRE60118	Operating Engineer, Steel Work	04/04/2025

Classification Description: Oiler/pumps over 6" **Applies to Operators who have previously worked under this classification PRIOR to 6/1/18**

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$61.22	\$76.76	\$92.29

Overtime Provisions

Over 8-hour day/40-hour

week

9th hour	\$76.75
10th hour	\$76.75
Beyond 10 hours	\$76.75

Saturday

First 8 hours	\$76.75
9th hour	\$76.75
10th hour	\$76.75
Beyond 10 hours	\$76.75

Sunday/Holiday

\$92.29

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Rate Comment: Double time after 12 Mon-Sat

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer - EF	Operating Engineer, Steel Work	04/04/2025

Classification Description: Extended boom forklift over 5,000 lb capacity, 1 Drum Hoist

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$72.21	\$92.53	\$112.84

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$92.53
10th hour	\$92.53
Beyond 10 hours	\$112.84

Saturday

First 8 hours	\$92.53
9th hour	\$92.53
10th hour	\$92.53
Beyond 10 hours	\$112.84

Sunday/Holiday	\$112.84
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW120	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 120' boom or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$74.14	\$95.24	\$116.33

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$95.24
10th hour	\$95.24
Beyond 10 hours	\$116.33

Saturday

First 8 hours	\$95.24
9th hour	\$95.24
10th hour	\$95.24
Beyond 10 hours	\$116.33

Sunday/Holiday	\$116.33
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW1200	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 120' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$75.01	\$96.54	\$118.07

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$96.54
10th hour	\$96.54
Beyond 10 hours	\$118.07

Saturday

First 8 hours	\$96.54
9th hour	\$96.54
10th hour	\$96.54
Beyond 10 hours	\$118.07

Sunday/Holiday	\$118.07
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW140	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 140' boom or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$75.19	\$96.80	\$118.41

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$96.80
10th hour	\$96.80
Beyond 10 hours	\$118.41

Saturday

First 8 hours	\$96.80
9th hour	\$96.80
10th hour	\$96.80
Beyond 10 hours	\$118.41

Sunday/Holiday	\$118.41
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW1400	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 140' boom or longer W/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$76.19	\$98.24	\$120.28

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$120.28

Saturday

First 8 hours	\$98.24
9th hour	\$98.24
10th hour	\$98.24
Beyond 10 hours	\$120.28

Sunday/Holiday	\$120.28
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW220	Operating Engineer, Steel Work	04/04/2025

Classification Description: Boom & Jib 220' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$76.46	\$98.62	\$120.78

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$98.62
10th hour	\$98.62
Beyond 10 hours	\$120.78

Saturday

First 8 hours	\$98.62
9th hour	\$98.62
10th hour	\$98.62
Beyond 10 hours	\$120.78

Sunday/Holiday	\$120.78
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW2200	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 220' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$74.01	\$95.11	\$116.20

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$95.11
10th hour	\$95.11
Beyond 10 hours	\$116.20

Saturday

First 8 hours	\$95.11
9th hour	\$95.11
10th hour	\$95.11
Beyond 10 hours	\$116.20

Sunday/Holiday	\$116.20
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW300	Operating Engineer, Steel Work	04/04/2025

Classification Description: Boom & Jib 300' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$76.96	\$99.34	\$121.72

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$99.34
10th hour	\$99.34
Beyond 10 hours	\$121.72

Saturday

First 8 hours	\$99.34
9th hour	\$99.34
10th hour	\$99.34
Beyond 10 hours	\$121.72

Sunday/Holiday	\$121.72
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW3000	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 300' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.96	\$100.78	\$123.59

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$100.78
10th hour	\$100.78
Beyond 10 hours	\$123.59

Saturday

First 8 hours	\$100.78
9th hour	\$100.78
10th hour	\$100.78
Beyond 10 hours	\$123.59

Sunday/Holiday	\$123.59
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW400	Operating Engineer, Steel Work	04/04/2025

Classification Description: Boom & Jib 400' or longer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.46	\$101.49	\$124.52

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$101.49
10th hour	\$101.49
Beyond 10 hours	\$124.52

Saturday

First 8 hours	\$101.49
9th hour	\$101.49
10th hour	\$101.49
Beyond 10 hours	\$124.52

Sunday/Holiday	\$124.52
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SW400	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane w/ 400' boom or longer w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$79.46	\$102.93	\$126.39

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$102.93
10th hour	\$102.93
Beyond 10 hours	\$126.39

Saturday

First 8 hours	\$102.93
9th hour	\$102.93
10th hour	\$102.93
Beyond 10 hours	\$126.39

Sunday/Holiday	\$126.39
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWCO	Operating Engineer, Steel Work	04/04/2025

Classification Description: Crane Operator, Job Mechanic, 3 Drum Hoist & Excavator

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$73.65	\$94.59	\$115.53	Over 8-hour day/40-hour week
Apprentice: 0-999 hours	\$59.16	\$76.02	\$92.88	9th hour \$94.59
Apprentice: 1,000-1,999 hours	\$61.56	\$79.63	\$97.68	10th hour \$94.59
Apprentice: 2,000-2,999 hours	\$63.96	\$83.22	\$102.48	Beyond 10 hours \$115.53
Apprentice: 3,000-3,999 hours	\$66.38	\$84.18	\$101.98	Saturday
Apprentice: 4,000-4,999 hours	\$68.78	\$90.46	\$112.12	First 8 hours \$94.59
Apprentice: 5,000 hours	\$71.20	\$91.09	\$110.99	9th hour \$94.59
				10th hour \$94.59
				Beyond 10 hours \$115.53
				Sunday/Holiday \$115.53

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWCO-Operating Engineer, Steel Work		04/04/2025

Classification Description: Crane Operator w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$74.65	\$96.03	\$117.40

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$96.03
10th hour	\$96.03
Beyond 10 hours	\$117.40

Saturday

First 8 hours	\$96.03
9th hour	\$96.03
10th hour	\$96.03
Beyond 10 hours	\$117.40

Sunday/Holiday	\$117.40
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWCW	Operating Engineer, Steel Work	04/04/2025

Classification Description: Compressor or Welder Operator

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$37.03	\$49.48	\$61.92

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$47.85
10th hour	\$47.85
Beyond 10 hours	\$58.67

Saturday

First 8 hours	\$47.85
9th hour	\$47.85
10th hour	\$47.85
Beyond 10 hours	\$58.67

Sunday/Holiday	\$58.67
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWHO	Operating Engineer, Steel Work	04/04/2025

Classification Description: Hoisting Operator, 2 Drum Hoist, & Rubber Tire Backhoe

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$73.01	\$93.67	\$114.33

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$93.67
10th hour	\$93.67
Beyond 10 hours	\$114.33

Saturday

First 8 hours	\$93.67
9th hour	\$93.67
10th hour	\$93.67
Beyond 10 hours	\$114.33

Sunday/Holiday	\$114.33
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWO	Operating Engineer, Steel Work	04/04/2025

Classification Description: Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.42	\$67.61	\$81.80

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$65.74
10th hour	\$65.74
Beyond 10 hours	\$78.06

Saturday

First 8 hours	\$65.74
9th hour	\$65.74
10th hour	\$65.74
Beyond 10 hours	\$78.06

Sunday/Holiday	\$78.06
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWTD50	Operating Engineer, Steel Work	04/04/2025

Classification Description: Tower Crane & Derrick where work is 50' or more

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$74.74	\$96.16	\$117.57

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$96.16
10th hour	\$96.16
Beyond 10 hours	\$117.57

Saturday

First 8 hours	\$96.16
9th hour	\$96.16
10th hour	\$96.16
Beyond 10 hours	\$117.57

Sunday/Holiday	\$117.57
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Operating Engineer Steel Work - SWTD50 O	Operating Engineer, Steel Work	04/04/2025

Classification Description: Tower Crane & Derrick 50' or more w/ Oiler

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$75.84	\$97.69	\$119.54

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$97.69
10th hour	\$97.69
Beyond 10 hours	\$119.54

Saturday

First 8 hours	\$97.69
9th hour	\$97.69
10th hour	\$97.69
Beyond 10 hours	\$119.54

Sunday/Holiday	\$119.54
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

4 10s allowed M-Th with Friday makeup day because of bad weather

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Commercial and industrial Painter	Painter	08/19/2025

Classification Description: Commercial and industrial painting

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$50.27	\$65.20	\$80.13

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$65.20
10th hour	\$65.20
Beyond 10 hours	\$65.20

Saturday

First 8 hours	\$65.20
9th hour	\$65.20
10th hour	\$65.20
Beyond 10 hours	\$65.20

Sunday/Holiday	\$80.13
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

A make-up day may be scheduled for work missed due to holiday or inclement weather.

Base Rate Comment: The regular weekly work schedule may consist of 4 10s on consecutive days, Monday thru Saturday

Foreman Rate \$1.00 Per Hour

Night Rate \$.50 Per Hour

Spray Rate Premium \$.80 Per Hour

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Residential Painting	Painter	08/19/2025

Classification Description: Residential Painting

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$45.35	\$57.82	\$70.29

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$57.82
10th hour	\$57.82
Beyond 10 hours	\$57.82

Saturday

First 8 hours	\$57.82
9th hour	\$57.82
10th hour	\$57.82
Beyond 10 hours	\$57.82

Sunday/Holiday	\$70.29
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

A makeup day may be scheduled for work missed due to holiday or inclement weather.

Base Rate Comment: The regular weekly work schedule may consist of 4 10s on consecutive days, Monday thru Saturday.

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Piledriver	Piledriver	09/19/2025

Classification Description: Nature of work: performing pile work and driving piles of any type, including, but not limited to, wood, steel, concrete, and composite materials. Includes bridge work, bridge demolition, and pile driving work related to waterfront and marine installations. Set up and operation of vibratory equipment.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$74.81	\$96.28	\$117.75
Apprentice: Apprentice Level 1	\$48.71	\$61.59	\$74.47
Apprentice: Apprentice Level 2	\$55.39	\$70.50	\$85.60
Apprentice: Apprentice Level 3	\$61.86	\$79.09	\$96.31
Apprentice: Apprentice Level 4	\$68.34	\$87.69	\$107.04

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$74.81
10th hour	\$74.81
Beyond 10 hours	\$74.81

Saturday

First 8 hours	\$74.81
9th hour	\$74.81
10th hour	\$74.81
Beyond 10 hours	\$74.81

Sunday/Holiday	\$74.81
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipefitter	Plumber	04/04/2025

Classification Description: Pipefitter, Steamfitter, HVAC-R mechanic

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$77.06	\$100.47	\$118.67
Apprentice: 10th period	\$42.91	\$57.34	\$70.42
Apprentice: 1st & 2nd periods	\$34.00	\$43.98	\$52.60
Apprentice: 3rd period	\$35.25	\$45.85	\$55.10
Apprentice: 4th period	\$36.25	\$47.35	\$57.10
Apprentice: 5th period	\$36.98	\$48.44	\$58.56
Apprentice: 6th period	\$38.23	\$50.32	\$61.06
Apprentice: 7th period	\$39.48	\$52.20	\$63.56
Apprentice: 8th period	\$40.48	\$53.70	\$65.56
Apprentice: 9th period	\$41.48	\$55.20	\$67.56

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$95.27
10th hour	\$95.27
Beyond 10 hours	\$113.47

Saturday

First 8 hours	\$95.27
9th hour	\$95.27
10th hour	\$113.47
Beyond 10 hours	\$113.47

Sunday/Holiday	\$113.47
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Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Plumber	Plumber	04/04/2025

Classification Description: Plumber

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$79.32	\$97.22	\$115.11
Apprentice: 1st Year	\$29.48	\$38.33	\$47.18
Apprentice: 2nd Year	\$33.10	\$42.83	\$52.55
Apprentice: 3rd Year	\$34.75	\$45.23	\$55.70

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$97.22
10th hour	\$97.22
Beyond 10 hours	\$115.11

Saturday

First 8 hours	\$97.22
9th hour	\$115.11
10th hour	\$115.11
Beyond 10 hours	\$115.11

Sunday/Holiday	\$115.11
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Roofer - WOM	Roofer/Waterproofeer	04/04/2025

Classification Description: Commercial Roofer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$62.82	\$79.68	\$96.53
Apprentice: Apprentice 1	\$48.74	\$58.55	\$68.37
Apprentice: Apprentice 2	\$49.25	\$59.32	\$69.39
Apprentice: Apprentice 3	\$50.76	\$61.59	\$72.41
Apprentice: Apprentice 4	\$52.26	\$63.83	\$75.41
Apprentice: Apprentice 5	\$53.77	\$66.10	\$78.43
Apprentice: Apprentice 6	\$55.18	\$68.21	\$81.25
Apprentice: Apprentice 7	\$56.79	\$70.63	\$84.47
Apprentice: Apprentice 8	\$58.27	\$72.85	\$87.43
Apprentice: new apprentice	\$48.68	\$58.47	\$68.25

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$79.68
10th hour	\$79.68
Beyond 10 hours	\$79.68

Saturday

First 8 hours	\$79.68
9th hour	\$79.68
10th hour	\$79.68
Beyond 10 hours	\$79.68

Sunday/Holiday	\$96.53
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Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Sheet Metal Worker	Sheet Metal Worker	04/04/2025

Classification Description: Journeyman -

A 4 10 schedule may be worked, 4 consecutive days Monday thru Friday.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$74.96	\$95.01	\$115.06
Apprentice: 1st & 2nd Periods	\$48.51	\$59.65	\$70.77
Apprentice: 3rd & 4th Periods	\$50.74	\$62.99	\$75.23
Apprentice: 5th & 6th Periods	\$52.96	\$66.32	\$79.67
Apprentice: 7th & 8th Periods	\$55.19	\$69.67	\$84.13

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$95.01
10th hour	\$95.01
Beyond 10 hours	\$115.06

Saturday

First 8 hours	\$95.01
9th hour	\$115.06
10th hour	\$115.06
Beyond 10 hours	\$115.06

Sunday/Holiday	\$115.06
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Sprinkler Fitter Journeyman	Sprinkler Fitter	04/04/2025

Classification Description: Sprinkler Fitter Journeyman -

4 ten hour days allowed Monday-Friday

Double time pay due after 12 hours worked M-F

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$78.57	\$102.66	\$126.74
Apprentice: 10th Period	\$69.91	\$87.12	\$104.33
Apprentice: 1st Period	\$31.91	\$40.00	\$48.09
Apprentice: 2nd Period	\$51.25	\$60.36	\$69.47
Apprentice: 3rd Period	\$53.58	\$63.71	\$73.83
Apprentice: 4th Period	\$55.91	\$67.04	\$78.17
Apprentice: 5th Period	\$58.25	\$70.40	\$82.55
Apprentice: 6th Period	\$60.58	\$73.73	\$86.89
Apprentice: 7th Period	\$62.91	\$77.08	\$91.24
Apprentice: 8th Period	\$65.25	\$80.44	\$95.62
Apprentice: 9th Period	\$67.58	\$83.78	\$99.98

Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$102.66
10th hour	\$102.66
Beyond 10 hours	\$126.74

Saturday

First 8 hours	\$102.66
9th hour	\$126.74
10th hour	\$126.74
Beyond 10 hours	\$126.74

Sunday/Holiday \$126.74

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Tile, Marble & Terrazzo Finisher-BAC2-Metro Detroit	Tile Setter	04/04/2025

Classification Description: Work: Assisting mechanics (e.g., tile, marble, terrazzo workers) with tasks necessary for completing installations.

Materials: Supporting materials used for tile, marble, or terrazzo work, such as cement and adhesives.

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$54.19	\$68.23	\$82.26	Over 8-hour day/40-hour week
Apprentice: TMT Finisher Apprentice Level 4	\$40.89	\$52.12	\$63.35	9th hour \$68.23
Apprentice: TMT Finisher Apprentice 1st Level	\$36.68	\$45.81	\$54.93	10th hour \$68.23
Apprentice: TMT Finisher Apprentice 2nd Level	\$38.08	\$47.91	\$57.73	Beyond 10 hours \$68.23
Apprentice: TMT Finisher Apprentice 3rd Level	\$39.48	\$50.01	\$60.53	Saturday
Apprentice: TMT Finisher Apprentice Level 5	\$42.29	\$54.22	\$66.15	First 8 hours \$68.23
Apprentice: TMT Finisher Apprentice Level 6	\$43.69	\$56.32	\$68.95	9th hour \$68.23
Apprentice: TMT Setter Apprentice 7thLevel	\$45.10	\$58.44	\$71.77	10th hour \$68.23
				Beyond 10 hours \$68.23
				Sunday/Holiday \$82.26

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Tile, Marble & Terrazzo Mechanic - BAC 2 - Metro Detroit	Tile Setter	04/04/2025

Classification Description: Work: Installing and finishing mosaic and terrazzo materials, including precision tasks like grinding and polishing. Adding aggregate to the top of the finished base and troweled or rolled into the finish.
Materials: Marble, mosaic, Venetian enamel, terrazzo, granules of marble, granite, bluestone, enamel, mother of pearl, quartz, ceramic-colored quartz, rubber, neoprene, vinyl, magnesium chloride, and resinous or chemical substances.

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
Total Hourly Wage	\$60.99	\$87.01	\$113.01	Over 8-hour day/40-hour week
Apprentice: TMT Setter Apprentice 1st Level	\$41.07	\$51.50	\$61.93	9th hour \$87.01
Apprentice: TMT Setter Apprentice 2nd Level	\$42.81	\$54.11	\$65.41	10th hour \$87.01
Apprentice: TMT Setter Apprentice 3rd Level	\$44.55	\$56.72	\$68.89	Beyond 10 hours \$87.01
Apprentice: TMT Setter Apprentice 4th Level	\$46.29	\$59.33	\$72.37	Saturday
Apprentice: TMT Setter Apprentice 5th Level	\$48.03	\$61.94	\$75.85	First 8 hours \$87.01
Apprentice: TMT Setter Apprentice 6th Level	\$49.76	\$64.55	\$79.33	9th hour \$87.01
Apprentice: TMT Setter Apprentice 7th Level	\$51.50	\$67.15	\$82.79	10th hour \$87.01
Apprentice: TMT Setter Apprentice 8th Level	\$53.24	\$69.76	\$86.27	Beyond 10 hours \$87.01
				Sunday/Holiday \$113.01

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Truck Driver - RB1	Truck Driver	04/04/2025

Classification Description: on all trucks of 8 cubic yard capacity or less (except dump trucks of 8 cubic yard capacity or over, tandem axle trucks, transit mix and semis, euclid type equipment, double bottoms and low boys)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$53.95	\$70.30	\$86.64

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$69.32
10th hour	\$69.32
Beyond 10 hours	\$69.32

Saturday

First 8 hours	\$69.32
9th hour	\$69.32
10th hour	\$69.32
Beyond 10 hours	\$69.32

Sunday/Holiday	\$84.69
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Truck Driver - RB1A	Truck Driver	04/04/2025

Classification Description: of all trucks of 8 cubic yard capacity or over semi, tractor trailer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$54.10	\$70.52	\$86.94

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$69.55
10th hour	\$69.55
Beyond 10 hours	\$69.55

Saturday

First 8 hours	\$69.55
9th hour	\$69.55
10th hour	\$69.55
Beyond 10 hours	\$69.55

Sunday/Holiday	\$84.99
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Truck Driver - RB1B	Truck Driver	04/04/2025

Classification Description: on euclid type equipment, Pole drier, lowboy, doubles, fuel, bus, water

Wage Rates	Straight Time	Time and a Half	Double Time	Overtime Provisions
				Over 8-hour day/40-hour week
Total Hourly Wage				
				9th hour \$69.70
				10th hour \$69.70
				Beyond 10 hours \$69.70
				Saturday
				First 8 hours \$69.70
				9th hour \$69.70
				10th hour \$69.70
				Beyond 10 hours \$69.70
				Sunday/Holiday
				\$85.19

Four 10-hour days allowed? - Yes

Make Up Day Allowed? - Yes

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Truck Driver - RB2	Truck Driver	04/04/2025

Classification Description: of all trucks of 8 cubic yd capacity or over

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$44.10	\$48.81	\$49.80

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$56.55
10th hour	\$56.55
Beyond 10 hours	\$56.55

Saturday

First 8 hours	\$56.55
9th hour	\$56.55
10th hour	\$56.55
Beyond 10 hours	\$56.55

Sunday/Holiday	\$56.55
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Truck Driver - RB2A	Truck Driver	04/04/2025

Classification Description: of all trucks of 8 cubic yard capacity or less (except dump trucks of 8 cubic yard capacity or over, tandem axle trucks, transit mix and semis, euclid type equipment, double bottoms and low boys)

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$44.00	\$48.66	\$49.60

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$56.40
10th hour	\$56.40
Beyond 10 hours	\$56.40

Saturday

First 8 hours	\$56.40
9th hour	\$56.40
10th hour	\$56.40
Beyond 10 hours	\$56.40

Sunday/Holiday	\$56.40
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Truck Driver - RB2B	Truck Driver	04/04/2025

Classification Description: on euclid type equipment

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$44.25	\$49.04	\$0.00

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$56.78
10th hour	\$56.78
Beyond 10 hours	\$56.78

Saturday

First 8 hours	\$56.78
9th hour	\$56.78
10th hour	\$56.78
Beyond 10 hours	\$56.78

Sunday/Holiday	\$56.78
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 2	Wiring System Installer; Technology Circuits or Systems Installer	04/04/2025

Classification Description: Tap cutter/CCTV Tech/Grout Equipment Operator: unit driver and operator of CCTV; grouting equipment and tap cutting equipment

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$32.70	\$44.95	\$57.19

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$44.95
10th hour	\$44.95
Beyond 10 hours	\$44.95

Saturday

First 8 hours	\$44.95
9th hour	\$44.95
10th hour	\$44.95
Beyond 10 hours	\$44.95

Sunday/Holiday	\$44.95
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Pipe and Manhole Rehab - 3	Wiring System Installer; Technology Circuits or Systems Installer	04/04/2025

Classification Description: CCTV Technician/Combo Unit Operator: unit driver and operator of cctv unit or combo unit in connection with normal cleaning and televising work

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$31.45	\$43.07	\$54.69

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$43.07
10th hour	\$43.07
Beyond 10 hours	\$43.07

Saturday

First 8 hours	\$43.07
9th hour	\$43.07
10th hour	\$43.07
Beyond 10 hours	\$43.07

Sunday/Holiday	\$43.07
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Sewer Relining Operator - Class I	Wiring System Installer; Technology Circuits or Systems Installer	04/04/2025

Classification Description: Class I-Operator of audio visual CCTV system including remote in-ground cutter and other equipment used in conjunction with CCTV system.

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$52.84	\$69.23	\$85.62
Apprentice: 0-6 months	\$41.58	\$54.66	\$67.74
Apprentice: 6-12 months	\$45.31	\$60.26	\$75.20

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$69.23
10th hour	\$69.23
Beyond 10 hours	\$69.23

Saturday

First 8 hours	\$69.23
9th hour	\$69.23
10th hour	\$69.23
Beyond 10 hours	\$69.23

Sunday/Holiday	\$85.62
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Four 10-hour days allowed? - No

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Sound and Communication Installer	Wiring System Installer; Technology Circuits or Systems Installer	04/04/2025

Classification Description: Sound and Communication Installer

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$48.26	\$64.55	\$80.85
Apprentice: Apprentice 1st Period	\$34.69	\$43.65	\$52.61
Apprentice: Apprentice 2nd Period	\$36.32	\$46.09	\$55.87
Apprentice: Apprentice 3rd Period	\$37.96	\$48.56	\$59.14
Apprentice: Apprentice 4th Period	\$39.58	\$51.00	\$62.40
Apprentice: Apprentice 5th Period	\$41.21	\$53.44	\$65.65
Apprentice: Apprentice 6th Period	\$42.84	\$55.88	\$68.91

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$64.08
10th hour	\$64.08
Beyond 10 hours	\$64.08

Saturday

First 8 hours	\$64.08
9th hour	\$64.08
10th hour	\$64.08
Beyond 10 hours	\$64.08

Sunday/Holiday	\$79.90
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No

Prevailing Wage Rates for State Funded Projects

Official Rate Schedule

Wayne

Classification Name	Category	Last Updated
Sound and Communication Technician	Wiring System Technician; Technology Circuits or Systems Technician	04/04/2025

Classification Description: Sound and Communication Technician

Wage Rates	Straight Time	Time and a Half	Double Time
Total Hourly Wage	\$56.80	\$77.37	\$97.93
Apprentice: Period 1	\$34.18	\$14.45	\$14.67
Apprentice: Period 2	\$36.23	\$15.13	\$15.58
Apprentice: Period 3	\$38.27	\$14.58	\$14.85
Apprentice: Period 4	\$40.31	\$14.66	\$14.95
Apprentice: Period 5	\$42.35	\$14.71	\$15.03
Apprentice: Period 6	\$44.40	\$14.79	\$15.13

Overtime Provisions

Over 8-hour day/40-hour week

9th hour	\$76.77
10th hour	\$76.77
Beyond 10 hours	\$76.77

Saturday

First 8 hours	\$76.77
9th hour	\$76.77
10th hour	\$76.77
Beyond 10 hours	\$76.77

Sunday/Holiday	\$96.73
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Four 10-hour days allowed? - Yes

Make Up Day Allowed? - No



STATE OF MICHIGAN
Informational Sheet: Prevailing Wages on State Projects

General Information Regarding Fringe Benefits

Certain fringe benefits **may** be credited toward the payment of the Prevailing Wage Rate:

- If a fringe benefit is paid directly to a construction mechanic
- If a fringe benefit contribution or payment is made on behalf of a construction mechanic
- If a fringe benefit, which may be provided to a construction mechanic, is pursuant to a written contract or policy
- If a fringe benefit is paid into a fund, for a construction mechanic

When a fringe benefit is not paid by an hourly rate, the hourly credit will be calculated based on the annual value of the fringe benefit divided by 2080 hours per year (52 weeks @ 40 hours per week).

The following is an example of the types of fringe benefits allowed and how an hourly credit is calculated:

Vacation	40 hours X \$14.00 per hour = \$560/2080 =	\$0.27
Dental insurance	\$31.07 monthly premium X 12 mos. = \$372.84 /2080 =	\$0.18
Vision insurance	\$5.38 monthly premium X 12 mos. = \$64.56/2080 =	\$0.03
Health insurance	\$230.00 monthly premium X 12 mos. = \$2,760.00/2080 =	\$1.33
Life insurance	\$27.04 monthly premium X 12 mos. = \$324.48/2080 =	\$0.16
Tuition	\$500.00 annual cost/2080 =	\$0.24
Bonus	4 quarterly bonus/year x \$250 = \$1000.00/2080 =	\$0.48
401k Employer Contribution	\$2000.00 total annual contribution/2080 =	\$0.96
Total Hourly Credit		\$3.65

Other examples of the types of fringe benefits allowed:

- Sick pay
- Holiday pay
- Accidental Death & Dismemberment insurance premiums

The following are examples of items that **will not** be credited toward the payment of the Prevailing Wage Rate

- Legally required payments, such as:
 - Unemployment Insurance payments
 - Workers' Compensation Insurance payments
 - FICA (Social Security contributions, Medicare contributions)
- Reimbursable expenses, such as:
 - Clothing allowance or reimbursement
 - Uniform allowance or reimbursement
 - Gas allowance or reimbursement
 - Travel time or payment
 - Meals or lodging allowance or reimbursement
 - Per diem allowance or payment
- Other payments to or on behalf of a construction mechanic that are not wages or fringe benefits, such as:
 - Industry advancement funds
 - Financial or material loans



STATE OF MICHIGAN

Informational Sheet: Prevailing Wages on State Projects

OVERTIME PROVISIONS for MICHIGAN PREVAILING WAGE RATE COMMERCIAL SCHEDULE

- Overtime is represented as a nine character code. Each character represents a certain period of time after the first 8 hours Monday thru Friday.

	Monday thru Friday	Saturday	Sunday & Holidays	Four 10s
First 8 Hours		4	8	9
9th Hour	1	5		
10th Hour	2	6		
Over 10 hours	3	7		

Overtime for Monday thru Friday after 8 hours:

the 1st character is for time worked in the 9th hour (8.1 - 9 hours)

the 2nd character is for time worked in the 10th hour (9.1 - 10 hours)

the 3rd character is for time worked beyond the 10th hour (10.1 and beyond)

Overtime on Saturday:

the 4th character is for time worked in the first 8 hours on Saturday (0 - 8 hours)

the 5th character is for time worked in the 9th hour on Saturday (8.1 - 9 hours)

the 6th character is for time worked in the 10th hour (9.1 - 10 hours)

the 7th character is for time worked beyond the 10th hour (10.01 and beyond)

Overtime on Sundays & Holidays

The 8th character is for time worked on Sunday or on a holiday

Four Ten Hour Days

The 9th character indicates if an optional 4-day 10-hour per day workweek can be worked **between Monday and Friday without paying overtime after 8 hours worked, unless otherwise noted in the rate schedule. To utilize a 4 ten workweek, notice is required from the employer to employee prior to the start of work on the project.**

- Overtime Indicators Used in the Overtime Provision:

H - means TIME AND ONE-HALF due

X - means TIME AND ONE-HALF due after 40 HOURS worked

D - means DOUBLE PAY due

Y - means YES an optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked

N - means NO an optional 4-day 10-hour per day workweek *cannot* be worked without paying overtime after 8 hours worked

- EXAMPLES:

HHHHHHHDN - This example shows that the 1½ rate must be used for time worked after 8 hours Monday thru Friday (*characters 1 - 3*); for all hours worked on Saturday, 1½ rate is due (*characters 4 - 7*). Work done on Sundays or holidays must be paid double time (*character 8*). The N (*character 9*) indicates that 4 ten-hour days is not an acceptable workweek at regular pay.

XXXHHHHDY - This example shows that the 1½ rate must be used for time worked after 40 hours are worked Monday thru Friday (*characters 1-3*); for hours worked on Saturday, 1½ rate is due (*characters 4 – 7*). Work done on Sundays or holidays must be paid double time (*character 8*). The Y (*character 9*) indicates that 4 ten-hour days is an acceptable alternative workweek.



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Informational Sheet: Prevailing Wages on State Projects

ENGINEERS - CLASSES OF EQUIPMENT LIST

UNDERGROUND ENGINEERS

CLASS I

Backfiller Tamper, Backhoe, Batch Plant Operator, Clam-Shell, Concrete Paver (2 drums or larger), Conveyor Loader (Euclid type), Crane (crawler, truck type or pile driving), Dozer, Dragline, Elevating Grader, End Loader, Gradall (and similar type machine), Grader, Power Shovel, Roller (asphalt), Scraper (self propelled or tractor drawn), Side Broom Tractor (type D-4 or larger), Slope Paver, Trencher (over 8' digging capacity), Well Drilling Rig, Mechanic, Slip Form Paver, Hydro Excavator.

CLASS II

Boom Truck (power swing type boom), Crusher, Hoist, Pump (1 or more 6" discharge or larger gas or diesel powered by generator of 300 amps 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' digging capacity and smaller), Vac Truck.

CLASS III

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, ½ yard or larger), Elevator (other than passenger), Maintenance Man, Mechanic Helper, Pump (2 or more 4" up to 6" discharge, gas or diesel powered, excluding submersible pump), Pumpcrete Machine (and similar equipment), Wagon Drill Machine, Welding Machine or Generator (2 or more 300 amp or larger, gas or diesel powered).

CLASS IV

Boiler, Concrete Saw (40HP or over), Curing Machine (self-propelled), Farm Tractor (w/attachment), Finishing Machine (concrete), Firemen, Hydraulic Pipe Pushing Machine, Mulching Equipment, Oiler (2 or more up to 4", exclude submersible), Pumps (2 or more up to 4" discharge if used 3 hrs or more a day-gas or diesel powered, excluding submersible pumps), Roller (other than asphalt), Stump Remover, Vibrating Compaction Equipment (6' wide or over), Trencher (service) Sweeper (Wayne type and similar equipment), Water Wagon, Extend-a-Boom Forklift.

HAZARDOUS WASTE ABATEMENT ENGINEERS

CLASS I

Backhoe, Batch Plant Operator, Clamshell, Concrete Breaker when attached to hoe, Concrete Cleaning Decontamination Machine Operator, Concrete Pump, Concrete Paver, Crusher, Dozer, Elevating Grader, Endloader, Farm Tractor (90 h.p. and higher), Gradall, Grader, Heavy Equipment Robotics Operator, Hydro Excavator, Loader, Pug Mill, Pumpcrete Machines, Pump Trucks, Roller, Scraper (self-propelled or tractor drawn), Side Boom Tractor, Slip Form Paver, Slope Paver, Trencher, Ultra High Pressure Waterjet Cutting Tool System Operator, Vactors, Vacuum Blasting Machine Operator, Vertical Lifting Hoist, Vibrating Compaction Equipment (self-propelled), and Well Drilling Rig.

CLASS II

Air Compressor, Concrete Breaker when not attached to hoe, Elevator, End Dumps, Equipment Decontamination Operator, Farm Tractor (less than 90 h.p.), Forklift, Generator, Heater, Mulcher, Pigs (Portable Reagent Storage Tanks), Power Screens, Pumps (water), Stationary Compressed Air Plant, Sweeper, Water Wagon and Welding Machine.



STATE OF MICHIGAN

Informational Sheet: Prevailing Wages on State Projects

CARPENTER CRAFT JURISDICTION

Michigan recognizes the Carpenters for any and all work related to weatherization that has historically been the work of the Carpenter. This work shall include, but not be limited to: all work defined under the Federal Weatherization Assistance Program.

The jurisdiction of Carpenters, as to all work that has historically and traditionally been performed consisting of the milling, fashioning, joining, assembling, erecting, fastening or dismantling of all materials of wood, plastic, metal, fiber, cork, or composition and all other substitute materials, as well as the handling, cleaning, erecting, installing and dismantling of all machinery, equipment and all materials used by Carpenters.

The jurisdiction, therefore, extends over the following divisions and subdivisions of the trade: Carpenters and Joiners, Millwrights, Pile Drivers, Bridge, Dock and Wharf Carpenters, Underpinners, Timbermen, and Core-drillers, Shipwrights, Boat Builders, Ship-hand, Stair-Builders, Millmen, Wood and Resilient Floor Decorators, Floor Finishers, Carpet-layers, Shinglers, Siders, Insulators, Acoustic and Drywall Applicators, Sharers and House Movers, Loggers, Lumber and Sawmill Workers, Reed and Rattan Workers, Shingle Weavers, Casket and Coffin Makers, Railroad Carpenters and Car Builders, regardless of material used and all those engaged in the operation of woodworking or other machinery required in fashioning, milling or manufacturing of products used in the trade, and the handling, erecting and installing materials on any of the above divisions or sub-divisions, burning, welding and rigging incidental to the trade. When the term "Carpenter and Joiner" is used, it shall mean all the subdivisions of the trade. The trade autonomy of Carpenters therefore extends over the divisions and subdivisions of the trade, which are set forth as follows:

- (a) The framing, erecting and prefabrication of roofs, partitions, floors and other parts of buildings of wood, metal, plastic or other substitutes; application of all metal flashing used for hips, valleys and chimneys; the erection of Stran Steel section or its equal. The building and setting of all forms and centers for brick and masonry. The fabrication and erection of all forms for concrete and decking, the dismantling of same (as per International Agreement) when they are to be re-used on the job or stored for re-use. The cutting and handling of all falsework for fireproofing and slabs. Where power is used in the setting or dismantling of forms, all signaling and handling shall be done by carpenters. The setting of templates for anchor bolts for structural members and for machinery, and the placing, leveling and bracing of these bolts. All framing in connection with the setting or metal columns. The setting of all bulkheads, footing forms and the setting of and fabrication of, screeds and stakes for concrete and mastic floors where the screed is notched or fitted, or made up of more than one member. The making of forms for concrete block, bulkheads, figures, posts, rails, balusters and ornaments, etc.
- (b) The handling and erecting of rough material and drywall, the handling, assembly, setting and leveling of all fixtures, display cases, all furniture such as tables, chairs, desks, coat racks, etc., all de-mountable or moveable partitions such as Von wall, E Wall, Steel Case, Herman Miller, Haworth, American Seating, Westinghouse, Lazy Boy, rosewood, etc. All rebuilding, remodeling and setting up of all kinds of partitions, finished lumber, metal and plastic trim to be erected by Carpenters shall be handled from the truck or vehicle delivering same to the job by Carpenters.



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CARPENTER CRAFT JURISDICTION

- (c) The building and moving of all scaffolding runways and staging where carpenters' tools are used, the building from the ground up of all scaffolds over fourteen (14) feet in height including metal and specially designed scaffolding. The building and construction of all hoists and derricks made of wood; the making of mortar boards, boxes, trestles, all shoring, razing and moving of buildings. Lift type trucks are to be considered a tool of the trade. Metal siding and metal roofing fall within the scope of jurisdiction for the carpenters.
- (d) The cutting or framing and fireproofing of the openings for pipes, conduits, ducts, etc., where they pass through floors, partitions, walls, roofs or fixtures composed in whole or in part of wood. The laying out of making and installation of all inserts and sleeves for pipes, ducts, etc., where carpenters' tools and knowledge are required. The making and installing of all wooden meter boards, crippling and backing for fixtures. The welding of studs and other fastenings to receive material being applied by carpenters.
- (e) The installation of all grounds, furring or stripping, ceilings and sidewalks, application of all types of shingling and siding, etc.
- (f) The installation of all interior and exterior trim or finish of wood, aluminum, kalamein, hollow or extruded metal, plastic, doors, transoms, thresholds, mullions and windows. The setting of jambs, bucks, window frames of wood or metal where braces or wedges are used. The installation of all wood, metal or other substitutes of casing, molding, chair rail, wainscoting, china closets, base of mop boards, wardrobes, metal partitions as per National Decisions or specific agreements, etc. The complete laying out, fabrication and erection of stairs. The making and erecting of all fixtures, cabinets, shelving, racks, louvers, etc. The mortising and application of all hardware in connection with our work. The sanding and refinishing of all wood, cork or composition floors to be sanded or scraped, filled, sized and buffed, either by hand or power machines. The assembling and setting of all seats in theaters, halls, churches, schools, auditorium, grandstands and other buildings. All bowling alley work.
- (g) The manufacture, fabrication and installation of all screens, storm sash, storm doors and garage doors; the installation of wood, canvas, plastic or metal awnings or eye shades, door shelters, jalousies, etc. The laying of wood, wood block and wood composition in floors.
- (h) The installation of all materials used in drywall construction, such as plasterboard, all types of asbestos boards, transite and other composition board. The application of all material which serves as base for acoustic tile, except plaster. All acoustical applications as per National Agreement or specific agreement.
- (i) The building and dismantling of all barricades, hand rails, guard rails, partitions and temporary partitions. The erection and dismantling of all temporary housing on construction projects.
- (j) The installation of rock wool, cork and other insulation material used for sound or weatherproofing. The removal of caulking and placing of staff bead and brick mold and all Oakum caulking, substitutes, etc., and all caulking in connection with carpentry work.
- (k) The installation of all chalk boards/marker boards.



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CARPENTER CRAFT JURISDICTION

- (l) The operation of all hand operated winches used to raise wooden structures.
- (m) The erection of porcelain enameled panels and siding.
- (n) The unloading and distribution of all furnished, prefabricated and built-up sections such as door bucks, window frames, cupboards, cabinets, store fixtures, counters and show cases or comparably finished or prefabricated materials, to the job sites or points of installation as used in the construction, alteration and remodeling industry.
- (o) The handling of doors, metal, wood or composite, partitions and other finished bulk materials used for trim from the point of delivery.
- (p) All processing of these materials and handling after processing.
- (q) The making up of panels and fitting them into walls, all bracing and securing, all removal of panels from the casting including all braces, walers, hairpins, etc.
- (r) The handling and setting of all metal pans and sections from the stock piles of reasonable distance as required by job needs shall be performed by carpenters. The stripping of such metal pans, panels or sections is to be performed by carpenters.
- (s) The sharpening of all carpenter hand or power tools, or those used by carpenters.
- (t) The layout, fabrication, assembling of and erection and dismantling of all displays made of wood, metal, plastic, composition board or any substitute material; the covering of same with any type of material, the crating and un-crating, the handling from the point of unloading and back to the point of loading of all displays and other materials or components.
- (u) The same shall apply to all other necessary component parts used for display purposes such as turntables, platforms, identification towers and fixtures, regardless of how constructed, assembled or erected or dismantled.
- (v) The make-up, handling, cutting and sewing of all materials used in buntings, flags, banners, decorative paper, fabrics and similar materials used in the display decorative industry for draperies and back drops. The decorative framing of trucks, trailers and autos used as floats or moving displays. The slatting of walls to hand fabrics and other decorative materials, drilling of all holes to accommodate such installations. Setting up and removal of booths constructed of steel or aluminum tubing as stanchions, railings, etc., handling and placing of furniture, appliances, etc., which are being used to complete the booth at the request of the exhibitor. Fabricating and application of leather, plastic and other like materials used for covering of booths. The handling of all materials, fabricating of same. The loading and unloading, erecting and assembling at the exhibit of show area, also in or out of storage when used in booth decorations.



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CARPENTER CRAFT JURISDICTION

- (w) A display shall be construed as any exhibit or medium of advertising, open to private or public showing, which is constructed of wood, metal, plastic or any other substitute to accomplish the objectives of advertising or displaying.
- (x) Handling, fitting, draping, measuring and installation of fixtures and other hardwares for draperies, all manner of making, measuring, repairing, sizing, hanging and installation of necessary fixtures and hardware for shades and Venetian blinds.
- (y) Work consisting of cutting and/or forming of all materials in preparation for installing of floors, walls and ceilings; the installation of all resilient floor and base; wall and ceiling materials to include cork, linoleum, prefabricated, laminated, rubber, asphalt, vinyl, metal, plastic, seamless floors and all other similar materials in sheet, interlocking liquid or tile form; the installation of all artificial turf, the installation, cutting and/or fitting of carpets; installation of padding, matting, linen crash and all preformed resilient floor coverings; the fitting of all devices for the attachment of carpet and other floor, wall and ceiling coverings; track sewing of carpets, drilling of holes for sockets and pins, putting in dowels and slats; and all metal trimmings used; the installation of all underlayments, sealants in preparation of floors, walls and ceilings, the unloading and handling of all materials to be installed and the removal of all materials in preparing floors when contracted for by the employer, shall be done only by employees covered under this Agreement.
- (z) The installation of all sink-tops and cabinets, to include all metal trim and covering for same. All cork, linoleum, congo-wall, linewall, veos tile, plexiglass, vinawall tile, composition tile, plastic tile, aluminum tile and rubber in sheets or tile form and the application thereof. All bolta-wall and bolta-wall tile and similar products.
- (aa) The handling and placing of all pictures and frames and the assembly of bed frames and accessories. The hanging and placing of all signage.
- (bb) The installation of all framework partitions and trim materials for toilets and bathrooms made of wood, metal, plastics or composition materials; fastening of all wooden, plastic or composition cleats to iron or any other material for accessories.
- (cc) The erection of cooling towers and tanks.
- (dd) The setting, lining, leveling and bracing of all embedded plates, rails and angles. The setting of all stay in place forms.
- (ee) Environmental: Clean room, any type of environmental chamber, walk in refrigerated coolers and all refrigerated rooms or buildings.



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CARPENTER CRAFT JURISDICTION

PILE DRIVING AND CAISSON DRILLING

(ff) All unloading, handling, signaling and driving of piles, whether wood, steel, pipe, beam pile, composite, concrete or molded in place, wood and steel sheeting, cofferdam work, trestle work, dock work, floating derricks, caisson work, foundation work, bridge work, whether old or new, crib work, pipe line work and submarine work. Cutting of all wood, steel or concrete pile, whether by machine or hand; welding and cutting, peeling, and heading of all wood pile, steel sheeting and wood sheeting. The erecting and dismantling of all pile driving rigs, also derricks whether on land or water; also the moving, shoring and underpinning of all buildings. The loading and unloading of all derricks, cranes and pile driving materials. The tending, maintenance and operation of all valves pertaining to the operation of driving of pile. All diving and tending essential to the completion of jurisdictional claims.

All work done in the established yards of the Company and all work not enumerated above, shall be handled and manned as the Employer decides.

The pile driver will unload all material shipped in by rail from the point that the rail car is spotted.

All cleaning and preparation of all piling prior to driving.

The welding and attachment of all boot plates, pile points, splice plates, connectors, rock crosses, driving crosses, driving rigs, point reinforcements and overboots.

The construction, reconstruction, repair, alteration, demolition and partial or complete removal of all marine work including, but not limited to, docks, piers, wharves, quays, jetties, cribs, causeways, breakwaters, lighthouses and permanent buoys, etc. (mixing and placing of concrete excepted).

The driving and pulling of all wood, steel and concrete foundation piles and sheet piling.

The heading, pointing, splicing, cutting and welding of all piles.

The placing of all wales, bolts, studs, lagging, rods and washers including the cutting, drilling, boring or breaking of all holes or openings thereof.

The removal of all materials and/or obstructions of any nature (rip-rap included) that retard or interfere with the driving of piles or with the placing of wales, bolts and rods.



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CARPENTER CRAFT JURISDICTION

This is to be subject to the discretion of the contractor who may choose to use blasting specialists or other demolition specialists.

The handling on the job of all materials used in the work.

The manning of all floating equipment (towing equipment excepted) engaged in the work enumerated, including deck engines, except machinery manned by Operating Engineers.

The placing of all rip-rap, fill stone, bedding stone, cover stone and concrete blocks in connection with marine construction. Work normally performed by Employers, such as soil tests, shoring, underpinning of buildings, cribbing, driving of sheet piling, marine divers, tenders, underwater construction workers and similar operations shall continue to be included in the jurisdiction of this Agreement.

All burning, cutting, welding and fabrication of pipe, H-beams, sheet pile (metal or wood), done on the job site or in the yard of the Employer shall be done by pile drivers. The driving of bearing piles, sheet piling with heavy equipment, caissons, pile caps, auger drilling and boring, the setting up for load testing for any type of piling, all layout and spotting for piling, caisson and boring work, all earth retention, ditch boarding, installing tiebacks.

ASBESTOS ABATEMENT CARPENTERS

(gg) All erection and maintenance of barriers and partitions used in the removing of asbestos or any abatement work. The abatement of any materials previously installed by the carpenter such as transite, ceiling and floor tiles. All operating and maintaining of current equipment used in any abatement work.



STATE OF MICHIGAN
Informational Sheet: Prevailing Wages on State Projects

ELECTRICIAN – SOUND AND COMMUNICATION / DATA/ VOICE JURISDICTION

The installation, testing, service and maintenance, of systems which utilize the transmission and/or transference of voice, sound, vision or digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, CATV and CCTV, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, radio page, school intercom and sound, burglar alarms, low voltage fire alarm systems, low voltage master clock systems, distributed antenna systems (DAS), IP data networks, and all surface-mounted (non-power) telecommunications wiremold. Shall additionally include the installation of all raceway systems of unlimited length in telecommunications rooms, entrance facilities, equipment rooms, and similar areas. Energy management systems. Security systems; perimeter, vibration, card access, access control and sonar/infrared monitoring equipment. Communications systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; SCADA (Supervisory Control and Data Acquisition), PCM (Pulse Code Modulation), Digital Data Systems, Broadband and Baseband and Carriers, POS (Point of Sale systems), VSAT Data Systems, RF and Remote Control Systems, Fiber Optic Data Systems and Voice and Data Infrastructure and Backbone.



STATE OF MICHIGAN

Wage and Hour Division

PO Box 30476

Lansing, MI 48909

517-284-7800

Informational Sheet: Prevailing Wages on State Funded Projects

REQUIREMENTS

Effective February 13, 2024

The purpose of establishing prevailing rates is to provide minimum rates of pay that must be paid to workers on construction projects that are financed or financially supported by the state. Prevailing rates compiled from the rates contained in collectively bargained agreements which cover the locations of the state projects. While the prevailing wage rates are compiled through surveys of collectively bargained agreements, a collective bargaining agreement is not required for contractors to be on or be awarded state projects. The prevailing rate schedule provides an hourly rate which includes wage and fringe benefit totals for designated construction mechanic classifications. The overtime rates also include wage and fringe benefit totals. Please pay special attention to the overtime and premium pay requirements. The prevailing wage is satisfied when wages plus fringe benefits are equal to or greater than the required rate.

State of Michigan responsibilities:

- The department establishes the prevailing rate for each classification of construction mechanic requested by the contracting agents prior to contracts being let out for bid on a state project.

DTMB responsibilities

- If a contract is not awarded or construction does not start within 90 days of the date of the issuance of rates, a re-determination of rates must be requested by the contracting agents.
- Rates for classifications needed but not provided on the Prevailing Rate Schedule, ***must*** be obtained ***prior*** to contracts being let out for bid on a state project.

Contractor responsibilities:

- Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing rates prescribed in a contract.
- Every contractor and subcontractor shall keep an accurate record showing the name and occupation of and the actual wages and benefits paid to each construction mechanic. This record shall be available for reasonable inspection by DTMB or the department.
- Each contractor or subcontractor is liable for the payment of the prevailing rate to its employees.
- The prime contractor is responsible for advising all subcontractors of the requirement to pay the prevailing rate prior to commencement of work.
- A construction mechanic ***shall only*** be paid the apprentice rate if registered with the United States Department of Labor, Bureau of Apprenticeship and Training and the rate is included in the contract.

Enforcement:

A person who has information of an alleged prevailing wage violation on a prevailing wage project may file a complaint with the State of Michigan. The department will investigate and attempt to resolve the complaint informally. During the course of an investigation, if the requested records and posting certification are not made available in compliance with contractual requirements, the Contracting Agent may consider the Contractor to be in material breach of the contract and may terminate the contract for cause at the sole discretion. There are also civil penalties for failure to be in compliance with Act 10. View the entire text of Act 10 of 2023 at michigan.gov/wagehour.

APPENDIX VI

SOIL MANAGEMENT PLAN



SOIL MANAGEMENT PLAN
OUTDOOR ADVENTURE CENTER
1801 ATWATER STREET
DETROIT, MICHIGAN

Prepared for:



Engineering
& Design

20750 Civic Center Drive, Suite 305
Southfield, Michigan 48076

Owner:



Michigan Department of Natural Resources
26000 W. Eight Mile Road
Southfield, MI 48034

September 10, 2025



Somat Engineering,
INCORPORATED

**SOIL MANAGEMENT PLAN
OUTDOOR ADVENTURE CENTER
EMERGENCY BACKUP POWER
DETROIT, MICHIGAN**

Somat Engineering, Inc. (Somat), as a subconsultant to Colliers Engineering and Design (Colliers), has prepared this Soil Management Plan for earthwork and related construction activities at the Michigan Department of Natural Resources (MDNR), Outdoor Adventure Center, located at 1801 Atwater Street in Detroit, Michigan.

1.0 PURPOSE

The Outdoor Adventure Center (OAC) is operated as a museum and interpretive facility, with indoor and outdoor activity space. Future use of the site will be non-residential.

The site of the OAC is a former industrial property. Prior construction activities performed for the development of the OAC have encountered remnant industrial debris, underground structures, and contaminated soils containing hazardous substances, resulting from historical site use.

Prior site preparation has included removal of identified contaminated surface soils (topsoil), placement of a demarcation layer (orange-colored “snow-fence” material) over contaminated subgrade soils, and placement of clean imported topsoil over the demarcation layer to create an uncontaminated ground surface. Similar contaminated materials may be encountered if the planned construction for this project includes soil excavation below the demarcation layer.

This Soil Management Plan was developed to guide construction activities at the site in compliance with Michigan environmental protection regulations. The recommendations and procedures presented in this ECMP are designed to protect construction workers from short-term exposures to hazardous substances while the site is being developed.



2.0 SITE ENVIRONMENTAL SETTING

Previous soil testing on the OAC site has identified hazardous substances in site soils (0-2 feet below ground surface). The detected hazardous substances include heavy metals and polynuclear aromatic hydrocarbon (PAH) concentrations exceeding Michigan Act 451, Part 201, criteria for response actions. Concentrations of lead and benzo(a)pyrene exceeded direct contact criteria for nonresidential exposures, which is the applicable criteria for construction workers and utility workers that may contact contaminated soils.

3.0 SECURITY AND ACCESS

During construction activities, only authorized personnel will have access to the portions of the site under construction, at the discretion of the site owner and the Colliers site representative. The property will be secured against unauthorized access, including members of the public, by secure fencing. Access and egress shall be limited to designated entry locations.

4.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) AND HYGIENE

Personnel working in contact with soils beneath the demarcation layer on the site shall wear clothing, gloves, and work shoes that cover all exposed skin below the neck-line. Shoes worn onsite should be removed before entering personal residences. Clothing worn onsite should be washed separately from other clothing whenever they become soiled.

Handwashing and sanitation facilities shall be provided onsite or within the property during construction. Construction workers shall wash hands and any soiled skin prior to eating, smoking, or leaving the site.

5.0 RESPONSE ACTIONS DURING CONSTRUCTION

This section outlines the required course of action if contaminated materials are encountered during construction activities.

5.1 Identified Contamination

Soils impacted with hazardous substances have been identified on the OAC property. These soils pose a low risk to humans and the environment. In some areas, soil concentrations of lead and benzo(a)pyrene



exceed EGLE nonresidential direct contact criteria (DCC). The soil direct contact pathway has the potential to impact site workers and underground utility workers during construction and maintenance. Therefore, appropriate handling and disposal of disturbed soils is necessary.

5.2 Unidentified Contamination

Construction and excavation activities on the OAC property includes a risk of encountering remnants and effects of the historical land use. Potential impacted soils may be identified by odors, staining, sheens, or oily liquids. Buried items such as underground storage tanks, piping, conduits, abandoned utilities, or underground structures, may also contain hazardous substances such as petroleum products, tars, vapors, or industrial wastes, at unsampled areas of the site.

If unidentified impacted soils are encountered during site work, the environmental compliance supervisor shall be immediately notified. Immediate actions shall be taken to prevent releases of hazardous substances to the environment, and to protect site occupants and workers, in accordance with applicable health and safety laws and regulations. Activities should be paused in that area until an assessment of the potential for environmental risk is properly characterized. This ECMP will be modified as appropriate based on the characterization results.

5.3 Management of Contaminated Materials

- Impacted soils to be disposed off-site shall be direct-loaded into trucks or roll-off containers for immediate transport to the designated disposal location. Impacted soil that cannot be direct-loaded, shall be stockpiled on tarps or plastic to prevent mixing with other soils on the site. Stockpiled impacted soils must be covered each night with secured tarps or plastic material to minimize fugitive dust, unnecessary contact, and erosion or runoff due to precipitation.
- To the extent possible, impacted soil excavated at the site will be placed back in the area from which it was removed.
- Impacted soils that cannot be backfilled on site will require waste characterization prior to offsite disposal at a licensed landfill. Impacted soils shall be properly staged in a designated area until characterization is complete and appropriate disposal or relocation options are determined.
- Transport trucks or containers leaving the construction site for offsite disposal shall be covered with tarps and cleaned of any loose materials on the exterior, frame, or wheels of the transport vehicle to prevent track-out or accidental deposition of impacted soil at unapproved locations.



All haul roads or truck routes shall be kept clean of soils tracked from the site to prevent wind-borne migration or stormwater runoff of impacted soils.

- At the completion of soil excavation and re-grading activities, the demarcation layer, clean topsoil, and/or surface pavement, shall be reconstructed. Vegetative cover shall be re-established in accordance with the project specifications to secure the surface materials against stormwater or wind erosion.
- Impacted soil requiring offsite disposal will be transported by a licensed non-hazardous waste hauler and disposed into a licensed non-hazardous landfill facility (Type II Landfill). Contact the landfill manager or waste hauler for appropriate analyses of soils for disposal. Consult with the Colliers site representative for assistance.
- Off-site impacted soil disposal activities will be recorded by appropriate documentation including manifests, trucking logs, landfill receipts, and other documentation consistent with PA 451, Section 20120c. Copies of these records shall be provided to the Colliers site representative.



6.0 GROUNDWATER AND DEWATERING

If groundwater is encountered during construction, maintenance, and/or any other excavation activities at the OAC, the following actions must be followed:

- Groundwater that requires de-watering should be pumped into a portable holding tank or other container suitable for the volume generated.
- Prior to disposal, the water must be sampled and analyzed in accordance with State regulations concerning the disposal of contaminated groundwater. Contact the disposal facility manager or waste hauler for appropriate analyses of water for disposal. Consult with the Colliers site representative for assistance.
- Off-site water disposal activities will be recorded by appropriate documentation including manifests, trucking logs, disposal facility receipts, and other documentation consistent with PA 451, Section 20120c. Copies of these records shall be provided to the Colliers site representative.

7.0 CONSTRUCTION RELATED HAZARDOUS MATERIAL STORAGE

The locations at which construction-related hazardous materials may be stored will be identified in the project construction documents. Storage and management of construction-related hazardous materials will be performed in a manner designed to protect the public and the environment, and in a manner and location that will prevent releases of hazardous materials, including the use of double-walled containers or temporary secondary containment systems.

8.0 RELEASE OF HAZARDOUS MATERIALS DURING CONSTRUCTION

If there is a release of hazardous materials during construction activities (e.g., release from temporary storage tanks, etc.), actions consistent with requirements of Part 201 or Part 213, as applicable, will be implemented, including:

- Immediately stopping or preventing the release at its source(s);
- Determine the extent and severity of the release;
- Immediately identify and eliminate any threat of fire or explosion or any direct contact hazards;
- Report the release to the Colliers site representative or owner's representative,
- If the release exceeds the applicable reportable quantity (if any) or there is a threat or imminent and substantial endangerment to the public or the environment, report to the Pollution Emergency Alerting System (PEAS, 1-800-292-4706).



9.0 DOCUMENTATION AND RECORD-KEEPING

Off-site disposal of impacted soil shall be recorded by appropriate documentation, including load manifests, trucking logs, landfill receipts, and other documentation consistent with PA 451, Section 20120c. Proposed forms for these records shall be submitted by the contractor to Colliers for approval along with pre-construction submittals.

Each load of impacted soil leaving the site for offsite disposal shall be documented with a non-hazardous solid waste manifest or hazardous liquid waste manifest, in triplicate, and bearing a unique sequential identifying number. The load manifest shall identify the generator (site owner), transporter (trucking contractor), and receiver (disposal facility) of the load.

The generator and transporter shall sign the load manifest prior to departure from the site. The approved facility receiving the load shall sign the manifest upon acceptance of the load, and issue a load acceptance/weight receipt for each load accepted. The weight receipt shall include the loaded weight of the inbound transporter, and the tare weight of the outbound, unloaded transporter, as measured at the receiving facility scales.

Completed signed copies of each load manifest, and matching acceptance/weight receipt, shall be returned to the Colliers site representative daily.

The Colliers site representative will maintain a log of each truck leaving the site, the manifest number that was issued with that load, and the load acceptance/ weight receipt returned for that load. Missing load acceptance/weight receipts may disqualify a load from payment under the contract terms. At the completion of construction, the Colliers site representative will prepare a summary report of all disposal documentation for the Owner's record-keeping.

10.0 CONTACTS

Colliers Engineering Site Representative: Brian Rais, (248)728-4782

Somat Engineering Representative: Brian Smits, (313) 912-5291

