

UNIVERSITY OF MINNESOTA

Crookston Duluth Morris Rochester Twin Cities

Lump Sum Request for Proposal ("RFP") for
U of MN Morris EcoCenter - Pre-Engineered Shelter
RFP # 04-700-20-1443

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All checked Attachments listed below are part of the RFP.

X	Attachment A:	RFP Cover Page and Declaration
X	Attachment B:	Respondent Team Qualifications
X	Attachment C:	Project Approach and Work Plan
X	Attachment D:	Project Schedule
X	Attachment E:	Project Cost
	Attachment F:	Workforce and Equal Pay Verification of Compliance
X	Attachment G:	Responsible Contractor Verification of Compliance

Throughout this RFP "Respondent" or "you" means the prime firm responding to this RFP.

1.0 PROJECT INFORMATION

1.1 Background

The Board of Regents of the University of Minnesota (the "University") is requesting Proposals to provide construction services for a Pre-Engineered Shelter located on the Morris campus (the "Project").

1.2 Project Description (the "Work")

General Contractor will need a Building permit from the U of MN Building Codes Department. Excavation contractor will need an Excavation permit.

Refer to the attached RFP Document for full Project details/requirements.

Engan Associates PA is the Architect/Engineer of Record for the Project.

1.3 University-Provided Information

The University has assembled the following information about the Project (collectively, the "RFP Documents") for review by the Respondent:

- This RFP and all Attachments
- RFx Instructions, Requirements, and Rights Reserved by the University
- Current Prevailing Wage Rates
- Specifications
- Drawings

The University has assembled the following additional RFP Documents (available to view online) for review by the Respondent:

- The Contract
- The General Conditions of the Contract for Construction
- The University's Building Standards
- Schedule of Values Pay Application Form

However, note the RFP Documents are subject to change. The University will provide notice of any changes to the RFP via addenda. Any information provided to Respondents during the RFP process, including the documents enumerated in this Section 1.3, is provided only for your use in preparing your Proposal. Respondents shall independently evaluate the information for their use in preparing the Proposal and shall be solely responsible for their use or interpretation of the information.

1.4 Contract Sum

The selected Respondent will perform the Work for a Contract Sum that shall be a fixed, lump sum that shall include all costs necessary to complete the Work in accordance with the Contract Documents, including Respondent's overhead and profit.

The total construction budget for this Project is $360,000 (current dollars, no escalation).

1.5 Critical Project Schedule Dates

The University requires the Project to be substantially complete by no later than September 30, 2027

1.6 Form of Contract between the University and the Selected Respondent

1.6.1 The Contract between the selected Respondent and the University will be the University's Construction Agreement, OGC-SC900, which is incorporated into this RFP (the "Contract"). By submitting a Proposal, Respondent acknowledges and agrees that it received, read, understands, and shall be bound by and comply with the Contract. No exceptions or deviations to the Contract will be considered.

1.6.2 The Contract will incorporate by reference this RFP and any RFP Attachments, the General Conditions for the Contract for Construction, AIA A201-2017, as modified by the University on January 1, 2026, and any RFP modifications agreed to by the University. The University may attach to the Contract as Supplementary Conditions Respondent's Proposal, selected provisions of Respondent's Proposal or modifications to Respondent's Proposal agreed to by University and Respondent.

2.0 PROPOSAL REQUIREMENTS AND EVALUATION CRITERIA

2.1 Tentative Schedule of Selection Process

The University's intended schedule for selection of the selected Respondent is set forth below.

Activity	Date*
RFP Available for Distribution	September 30, 2026
Pre-Proposal Meeting	October 13, 2026 at 10:00 AM
Deadline for RFP Questions	October 20, 2026 at Noon
RFP Due Date	October 27, 2026 at 2:00 PM
Identification of Potential Selected Respondent	November 20, 2026
Anticipated Authorization to Proceed	November 27, 2026

*All times are noted in Central Time Zone

2.2 Pre-Proposal Meeting

A Pre-Proposal Meeting has been scheduled for the date and time noted in section 2.1 of this RFP. Attendance at this Pre-Proposal Meeting is **Non-Mandatory**; however, it is highly encouraged for prime firms that are interested in responding to this RFP.

The location of the Pre-Proposal Meeting is:

716 Camden Hall
Meet in Room 10
600 East 4th Street
Morris, Minnesota 56267

Campus navigation and parking information for the Pre-Proposal Meeting can be found on our Interactive Campus Maps.

Attendees shall park in North Lot Visitor Parking.

2.3 Evaluation Criteria

2.3.1 The University will evaluate Proposals against the evaluation criteria for the degree to which each Proposal meets the criteria as follows:

Attachment / Section	Description	Value
Attachment A	RFP Cover Page and Declaration	Pass / Fail
Attachment B	Respondent Team Qualifications	30
Attachment C	Project Approach and Work Plan	30
Attachment D	Project Schedule	10
Attachment E	Project Cost	25
Attachment F	Workforce and Equal Pay Verification of Compliance	N/A
Attachment G	Responsible Contractor Verification of Compliance	Pass / Fail
Section 2.11	Safety	5

2.3.2 In order to be considered responsive, each Respondent must complete and submit all required Attachments without any modifications to the RFP Documents. Failure to complete or follow directions within any of the Attachments may result in disqualification or loss of RFP points for said Attachment.

2.3.3 The University will evaluate each Proposal based on the criteria noted above. The Respondent selected for an award will be the one whose Proposal is responsive, responsible, and is the most advantageous to the University, as determined by the University in its sole discretion, whether or not the Proposal is the lowest cost or the highest scorer.

2.3.4 Submission of a Proposal indicates the Respondent's acceptance of the evaluation criteria.

2.4 RFP Cover Page and Declaration

The Respondent will prepare and submit the RFP Cover Page and Checklist. This completed document should be the cover page of the Respondent's Proposal. Failure to answer "Yes" to certain questions may result in disqualification.

2.5 Respondent Team Qualification

The Respondent will prepare and submit information pertaining to their Team's Qualification which will identify the experience of the Respondent and its Team Members. A lack of prior experience and/or working together on comparable projects may hinder your overall score. The University reserves the right to contact any noted references, consider other references, or consider Respondent's documented past performance at the University.

2.6 Project Approach and Work Plan

The Respondent will prepare and submit information regarding their approach / plan to working on the Project.

2.7 Project Schedule

The Respondent will prepare and submit information regarding their proposed schedule for the Project. The Respondent must take into account any critical dates identified in section 1.5 when building their schedule.

2.8 Project Cost

The Respondent will prepare and submit information regarding their proposed Project cost(s).

2.9 Workforce and Equal Pay Verification of Compliance

Section intentionally omitted as it does not apply to this RFP.

2.10 Responsible Contractor Verification of Compliance

Respondent acknowledges that the University has elected to voluntarily comply with Minnesota Statutes, Section 16C.285, which sets forth minimum criteria that Respondent must meet to establish itself as a responsible contractor. "Responsible contractor" means a Respondent that conforms to the responsibility requirements in this RFP and verifies that it meets the minimum criteria set forth in Minnesota Statute, Section 16C.285, Subdivision 3 ("Minimum Criteria"). The Minimum Criteria are included in the "Responsible Contractor Certification of Compliance" attached as Attachment G ("Compliance Certificate"). If Respondent or any subcontractor or motor carrier does not meet the Minimum Criteria or fails to verify that it meets the Minimum Criteria, it is not a responsible contractor and is not eligible to be awarded a contract for the Project or to perform work on the Project. A false statement under oath verifying compliance with any of the Minimum Criteria shall render Respondent or a subcontractor or motor carrier that makes the false statement ineligible to be awarded a contract on the Project and may result in termination of a contract awarded to Respondent or a subcontractor or motor carrier that submits a false statement.

Respondent must submit the Compliance Certificate and "First-Tier Subcontractor List" (University Document 00900) as evidence that it meets the Minimum Criteria. Failure to complete these submissions may result in disqualification. If Respondent is selected to be awarded a contract for the Project, Respondent shall submit a supplemental verification (University Document 00901) containing its then-complete list of first-tier subcontractors and verifying that such subcontractors meet the Minimum Criteria. Respondent must obtain Compliance Certificates from each of its first-tier subcontractors in the forms attached as Attachment G and Attachment G-1. If Respondent retains additional subcontractors on the Project after submitting University Document 00901, Respondent shall submit the "List of Additional Subcontractors" (University Document 00902) within 14 days of retaining the additional subcontractors. Respondent shall submit to the University upon request copies of the signed Compliance Certificates from all subcontractors of any tier and all motor carriers.

Respondent may be required to furnish information or evidence as requested by the University to support or otherwise verify the statements in the Compliance Certificate(s) and verification(s). Such information shall be submitted within 3 business days of receipt of the University's request. Failure of the Respondent to timely provide the requested information may result in the Respondent's response being rejected.

2.11 Safety

The purpose of the safety score is to confirm that the Respondents performing the Work for the University are meeting or exceeding applicable safety, health and environmental laws, statutes, regulations, ordinances, rules, directives, and procedures.

If the Respondent currently has an active safety score with the University (available to view here), that score will be taken into account as part of the evaluation criteria noted in

this RFP. Only those Respondents with a safety score of 5.0 or greater will be considered for award.

If the Respondent does NOT currently have an active safety score, they must prepare and submit their safety information per the instructions noted here. Respondent should take the noted processing time into account when submitting their safety information.

If deemed necessary, the University may request a safety score from the selected Respondent's subcontractor(s) prior to issuance of the Authorization to Proceed.

ATTACHMENT A: RFP COVER PAGE AND DECLARATION

1. Does the Respondent acknowledge and confirm they have adhered to all **page limit requirements** and have **not modified the RFP Attachments**? ☐ Yes ☐ No
2. Does the Respondent agree to sign the **Contract** referenced in this RFP with no exceptions or deviations? ☐ Yes ☐ No
3. Does the Respondent's Proposal include the costs for an acceptable **Certificate of Insurance** and **Payment and Performance Bonds** that will meet the University's requirements? ☐ Yes ☐ No
4. Does the Respondent understand and agree to meet the **Prevailing Wage Rate** requirements for this Project? ☐ Yes ☐ No

Respondent's Legal Name of Firm

Date of Submission

Respondent's Mailing Address

Name of Respondent's Primary Contact (to whom all future communication regarding this Proposal will be sent)

Email Address of Respondent's Primary Contact

Phone Number of Respondent's Primary Contact

Name of Respondent's Authorized Signee (to whom all future Contract documents will be sent)

Email Address of Respondent's Authorized Signee

ATTACHMENT B: RESPONDENT TEAM QUALIFICATIONS

1. Complete the following Team Member Matrix (Attachment B-1) identifying the key Team Members / Subcontractors that will contribute to the success of the Project.

2. Complete and submit the following Project Data Sheet(s) (Attachment B-2) identifying the specific project experience of the Respondent and their Critical Team Members. Note the following when documenting this information:

    a. A separate Project Data Sheet must be prepared for EACH project with only one project allowed per sheet.
    b. Submit up to, and no more than, THREE total projects.
    c. Listed project(s) must have been commenced/completed within the last FIVE years and should be similar to the University's Project.
    d. Listed project(s) must have been managed by the Respondent or any other firm's on the Respondent's team.
    e. It is recommended that you list projects completed by the Team Members identified in Attachment B-1.
    f. Attach any photos or additional information (no more than two pages worth) with each Project Data Sheet.

ATTACHMENT B-1: TEAM MEMBER MATRIX

Project Role / Subcontractor	Individual Name	Firm Name	Firm Location (City, State)
Project Manager			
Site Superintendent			
Excavation Subcontractor			

ATTACHMENT B-2: PROJECT DATA SHEET

Construction Firm Name		Project Owner	
Project Name		Project Owner Contact	
Project Location	City, State	Project Owner Contact Email	
Construction Cost		Project Architect Firm Name	
Construction Commencement Date		Project Architect Contact	
Construction Completion Date		Project Architect Contact Email	
Project Size (square feet, etc.)		Proposed Team Members from Attachment B-1 that worked on this project	
Type of Services Provided (Pre-Construction, Construction, etc.)			
Construction Delivery Method (CMAR, Design-Build, etc.)			

Briefly describe how this project is similar to the University's Project. Identify any challenges you encountered on the project and briefly describe how these issues were resolved

ATTACHMENT C: PROJECT APPROACH AND WORK PLAN

NOTE: Your response to this Attachment must NOT exceed FIVE (5) pages.
You may also NOT include or reference supplemental information as an Appendix/Exhibit or in virtual form (e.g., hyperlinks to documents/videos/images stored elsewhere).

1. Describe your anticipated approach to this Project by addressing the following (at a minimum):

    a. Supervision and Management
    b. Site Logistics
    c. Required Permitting
    d. Accounting Methods

2. Itemize and describe any difficulties, challenges or risks you foresees in completing the Work on this Project. Describe how you expect to manage these difficulties, challenges or risks, and what assistance will be required from the University. In particular, address site security, safety, traffic management and other issues related to minimizing disruption on campus while performing the Work.

3. Itemize and describe any value-added services, unique product characteristics, or other cost and/or time saving benefits/advantages that will be afforded to the University in selecting the Respondent and their team for the Project.

4. Identify any concerns you noted in your review of the RFP Documents and/or any other Project/RFP requirements.

ATTACHMENT D: PROJECT SCHEDULE

1. Respondent must attach a DRAFT Critical Path Method ("CPM") Schedule for the Project. The CPM schedule should identify tasks to be performed and/or deliverables to be provided and time frames to complete performance of the identified tasks and the expected time frame in which the Project would be completed. For readability purposes, the CPM schedule may be submitted in an 11 by 17 format. When preparing the CPM schedule, assume the following:

   a) All schedule dates noted in Sections 1.5 and 2.1 of the RFP. The Respondent MUST use the Anticipated Authorization to Proceed date as the starting point of their Project Schedule. Respondent should not be doing any Work prior to this Anticipated Authorization to Proceed date.

   b) University Project team reviews will occur as required by the University's Standards and Procedures for Design. While progress on design can be made during the review periods, reviewers have two weeks to provide responses.

   c) Permitting is required for various components of this Project. The University's Project Manager will cooperate in the application for building and other permits. The selected Respondent will be required to obtain and pay for all required permits, assessments, and governmental fees, licenses, and inspections, excluding Sewer Availability Charges and Water Access Charges assessed by the Metropolitan Waste Control Commission.

2. Include a written narrative that provides a detailed description of the scheduling logic and assumptions that were used when preparing the CPM Schedule.

3. State what events or issues, if any, could impede your ability to achieve the substantial completion date (or any other critical dates) stated in Section 1.5 of the RFP.

4. Identify specific strategies to avoid and/or mitigate project construction delays. Provide an estimate of the earliest start date following execution of a Contract and indicate what could delay the start of the Project.

ATTACHMENT E: PROJECT COST

Total Base Bid Lump Sum Cost*	**$**

Alternate # 1: Provide non-frost susceptible structural fill as noted on drawings S30 and S31.	**Lump Sum***	**$**	**Add / Deduct**
Unit Price # 1: Additional engineering fill material as required by onsite observation during construction.	**Per Cubic Yard**	**$**	**N/A**

*As a requirement of the RFP, the selected Respondent must complete the Schedule of Values Pay Application Form (as referenced in Section 1.3) and submit within two days after the Identification of Potential Selected Respondent date. Any subsequent contract change orders must be submitted using the same schedule of values format.

ATTACHMENT F: WORKFORCE AND EQUAL PAY VERIFICATION OF COMPLIANCE

Attachment intentionally omitted as it does not apply to this RFP.

ATTACHMENT G: RESPONSIBLE CONTRACTOR VERIFICATION OF COMPLIANCE (UNIVERSITY DOCUMENT 00900)

Minnesota Statutes, Section 16C.285, subdivision 3. **Responsible Contractor, Minimum Criteria**. "Responsible Contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the Work on the Project and verifies that it meets the minimum criteria set forth below. Each contractor or subcontractor shall obtain from all subcontractors with which it will have a direct contractual relationship a signed statement under oath by an owner or officer verifying that they meet all of the minimum criteria in subdivision 3 prior to execution of a construction contract with each subcontractor.

1. The Contractor:

   i. is in compliance with workers' compensation and unemployment insurance requirements;
   ii. is in compliance with the Department of Revenue and the Department of Employment and Economic Development registration requirements if it has employees;
   iii. has a valid federal tax identification number or a valid Social Security number if an individual; and
   iv. has filed a certificate of authority to transact business in Minnesota with the secretary of state if a foreign corporation or cooperative.

2. The contractor or related entity is in compliance with and, during the three-year period before submitting verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, section 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:

   i. repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of $25,000 or more within the three-year period, provided that a failure to pay is "repeated" only if it involves two or more separate and distinct occurrences of underpayment during the three-year period;
   ii. has been issued an order to comply by the commissioner of labor and industry that has become final;
   iii. has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;
   iv. has been found by the commissioner of labor and industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;
   v. has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or
   vi. has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction.

   Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties;*

3. The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final

administrative or licensing order;*

4. The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office;*

5. The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification; and*

6. The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions that have authority to debar a contractor.

*Any violations, suspensions, revocations, or sanctions, as defined in clauses 2 to 5 occurring prior to July 1, 2014, shall not be considered in determining whether a contractor or related entity meets the minimum criteria.

Certification

By signing this document, I am certifying that I am an owner or officer of the contractor and am verifying under oath that:

1. **Contractor is in compliance with Minnesota Statutes, Section 16C.285,**
2. **I have included Attachment G-1, and**
3. **if contractor is awarded a contract, I or another owner or officer will also submit Form 00901 prior to execution of the contract (applicable to prime contractors only) and Form 00902 if subcontractors are subsequently added to the project.**

Contractor Company Name	Date
Authorized Signature of Owner or Officer	Printed Name
Title	

ATTACHMENT G-1:FIRST-TIER SUBCONTRACTOR LIST
(Initial List)

SUBMIT WITH CONTRACTOR SOLICITATION RESPONSE

Minnesota Statutes, Section 16C.285, subdivision 5. A prime contractor or subcontractor shall include in its verification of compliance . . . a list of all of its first-tier subcontractors that it intends to retain for work on the Project.

NAMES OF FIRST TIER SUBCONTRACTORS (Legal name of company as registered with the Secretary of State)	Company Address	Work To Be Performed

Request for Proposal/Bid (RFx) Instructions, Requirements, and Rights Reserved by the University

For the purpose of this document:

- "RFx" refers to both Request for Proposal and Request for Bid.
- "Response" refers to both Proposal and Bid.
- "Respondent" or "you" means the prime firm responding to this RFx.
- "Project" and "Contract" are further defined in the RFx.

1.0 Sourcing Tool

The University of Minnesota's sourcing tool, referred to as MBid, is provided by Ionwave. Section 1 of this document contains information that will help guide you through this sourcing tool.

1.1 MBid Help

Help for using the tool is available in several ways:

- Access the "Supplier Resources" documents by clicking the "Help" icon found in the "Quick Links" box located on your supplier home page within MBid.
- View the FAQ found on the Purchasing Services website.
- Contact the Purchasing Representative responsible for the RFx.
- Contact the Purchasing Services department via email (purchase@umn.edu).

1.2 MBid Guidelines

Consider the following when reviewing/responding to the RFx:

- Mandatory attributes must be answered. You will not be able to submit your Response without responding to all the mandatory attributes which are marked with an asterisk.
- All submitted attachments should be labeled as 'firmname'. DO NOT USE A "#" SIGN OR "&" SIGN IN YOUR ATTACHMENT NAME. You may also consider adding an abbreviated RFx Title to the file name as well.
- You are responsible for ensuring that your Responses are accurate and complete, and will remain so through the term of any Contract that may be awarded to you as a result of your Response. The University will rely on your Responses, and they will be deemed a part of the Contract.
- Clicking "Read and Understood," "Acknowledged," or "Yes" next to any attribute means that you have made that certification to the University, and it will be deemed part of any Contract to you as a result of your Response.

1.3 Questions and Answers

Questions regarding this RFx shall be submitted through the MBid sourcing tool. Pay particular attention to the Question Cutoff Date as the University is not obligated to respond to any questions that are received after this deadline.

To submit a question:

1. Go to the “Questions” tab found within the RFx.
2. Click on “Ask Question.”
3. Type in your question and click on “Save.”
4. Your question will be added to the queue. Note: Other firms cannot see your submitted question until it is answered by the Purchasing Representative.

An email notification will be sent out when the answers are posted. A PDF extract of the Questions and Answers can be downloaded by clicking the "Documents" icon at the top of the page.

The University may decline to answer a question, summarize a question, or combine several questions into one response.

Oral and other interpretations or clarifications, including those occurring at pre-proposal/bid meetings, site visits, tours, etc. are not binding unless otherwise stated in writing or via Addenda.

1.4 Addenda

The University reserves the right to amend all or any portion of the RFx at any time for any reason. If the University modifies the RFx, the University will issue an Addenda. An email notification will be sent upon issuance of said Addenda.

Respondent shall independently evaluate the information in each Addenda for use in preparing their Response and shall be solely responsible for their use or interpretation of the information. All information included in each Addenda will become part of the selected Respondent’s Contract.

1.5 Response Submissions

All Responses must be submitted electronically using this system. No email or paper copies are allowed unless specifically required and noted in the RFx. All supplemental information must be uploaded as requested throughout the RFx and clearly labeled for each file.

1.6 Withdrawing Response

You may withdraw your Response at any time prior to the Close Date & Time by viewing your submitted Response in the system and then clicking on “Retract Response.” You may submit another Response or resubmit your Response at any time prior to the Close Date & Time. No Response may be withdrawn after the Close Date & Time without the

University's written approval. Such approval shall be based on your written submittal of a reason acceptable to the University in its sole discretion.

1.7 Deadlines and Late Submissions

Note RFx deadlines and plan accordingly. You assume all risks of submitting your Response by the Close Date & Time. The University is not responsible for internet or telecommunications failures or delays. The system will NOT allow a late submittal. If you have not submitted your Response by clicking on the "Submit" button on time, your Response will not be accepted by the system.

Enter information early to ensure that all requirements are addressed. Incomplete Responses will be evaluated as though they were complete. Failure to provide required information may result in disqualification. If you submit early and wish to change an answer, click "Retract Response," make any changes and then hit "Submit" again. You must be sure to resubmit your Response.

2.0 Respondent's Response

Section 2 of this document contains information regarding the Respondent's Response to this RFx.

2.1 Response Ownership

All materials submitted in response to this RFx become the property of the University and may become a part of any resulting Contract. Award or rejection of a Response does not affect this right.

2.2 One Response Per Respondent

A Respondent may submit only one (1) response to this RFx. If a Respondent submits multiple responses, the University will only evaluate the last response successfully submitted and received prior to the Close Date & Time. All prior responses from that Respondent will be deemed overwritten, superseded, and rejected.

2.3 Errors in Response

The University shall not be liable for any errors in your Response. Except during negotiations initiated by the University, no modifications to a Response shall be accepted after the Close Date & Time. You must ensure that all information, including pricing, is current, accurate, and complete.

You are responsible for all errors and omissions contained in your Response. The University may reject a Response because of erroneous or omitted information, even if the correct or complete information was available to the University elsewhere. Similarly, the University may accept your Response based on the erroneous or omitted information, and you will be bound by the information as it appears in the Response, even if the correct or

complete information was available to the University elsewhere.

2.4 Duration of Offer

Responses to the RFx are irrevocable for 120 days following the Close Date & Time. This phase may be extended by written mutual agreement between a Respondent and the University.

2.5 Expenses

Under no circumstances shall the University be responsible for any Response preparation expenses, submission costs, or any other expenses, costs or damages, of any nature, incurred as a result of the Respondent's participation in this RFx process.

2.6 Public Information and Trade Secrets; Use of Responses by the University

All materials submitted in response to the RFx are subject to the provisions of Minnesota Statutes, Chapter 13, including Section 13.591, Subdivision 3.

After the Contract is fully executed, materials received as a result of this RFx may be considered public information and available for public inspection. By submission of a Response, Respondent releases the University from any liability resulting from the University's disclosure of such materials and the information contained in them.

If Respondent believes it is submitting information in its Response that constitutes "trade secret information" within the meaning of Minnesota Statutes, Section 13.37, Respondent should clearly mark each page containing such information as "trade secret," delete the specific information that constitutes a trade secret and insert the words, "redacted trade secret." Submit the redacted material, as a separate electronic file, along with the Response. The file name should include the words "confidential." Your communication must also include an attorney's opinion for each item, indicating the legal basis for regarding it as trade secret information. Only legitimate trade secret information within the meaning of Minnesota Statutes, Section 13.37, as determined solely by the University, may be protected from disclosure.

By submitting a Response, Respondent also agrees to defend any legal or administrative action seeking release of materials Respondent believes to be trade secret information and to indemnify and hold harmless the University from any judgments or damages awarded in favor of any party requesting the materials, including any costs connected to that defense. If a request is made under Minnesota Statutes, Chapter 13, for release of any materials submitted by Respondent that Respondent deems to be trade secret information, the University will notify Respondent of such a request, but the University will have no obligation to commence or defend any action to prevent the disclosure of any materials, including materials Respondent believes to be trade secret information or otherwise confidential.

The University has the right to use the content of any Response unless Respondent

expresses a clear statement of objection to such use in the Response. In no event will such objection be considered valid with respect to the use of ideas which are not the proprietary or trade secret information of the Respondent and so designated in the Response, or which were known to the University before submission of such Response, or which properly became known to the University thereafter through other sources.

All requests for data as it relates to this RFx shall be submitted through the University's Data Request Center.

2.7 Intellectual Property Indemnification

Respondent warrants that any information Respondent submits to the University in connection with the RFx will not infringe or violate any patent, copyright, trade secret, or any other intellectual property right of any third party. By submitting information to the University, the Respondent agrees that, in the event any third party brings an intellectual property infringement claim against the University, the Respondent, at its expense, shall indemnify and defend the University against any loss, cost, expense, or liability (including attorneys' fees) arising out of such claim, whether or not such claim is successful against the University.

2.8 Conflict of Interest

Respondent certifies that it has not had any contractual relationship with any University employee in the 12 months immediately prior to the issuance of the RFx, or any contact with University personnel regarding the RFx, the Project, preparation of the Respondent's Response, or evaluation of Responses. Respondent further certifies that none of its executive or management personnel and none of its personnel involved in its Response is a parent, child, sibling, or first cousin (or any of those in a grand-, step- or in-law relationship) of any University employee who may play any material role in the University's purchasing decision. Respondent further certifies that it has no reason to believe that its Response may result in a violation of Minnesota Statutes, Section 15.43, or create any similar real or potential conflict of interest. Any failure to make any such unqualified certification may, in the sole discretion of the University, be grounds for rejection of the Respondent's Response or termination of any Contract awarded.

2.9 Rights Reserved by the University

The University reserves the right to:

- Cancel the RFx at any time.
- Modify or eliminate the interview process.
- Reject any and all Responses in whole or in part.
- Waive any irregularities or inconsistencies in Responses.
- Clarify or seek from Respondents additional information on any Response.
- Select for Contract negotiation, and award the Contract to, the Respondent whose Response is the most advantageous to the University, as determined by the University in its sole discretion whether or not the Response is the lowest

cost or the highest scorer.

- Consider and/or accept a written modification (as requested by the University) of a Response if the Response itself was submitted on time, and the modified Response is more favorable to the University.
- Negotiate any aspect of a Response with any Respondent and negotiate with more than one Respondent at the same time.
- Incorporate the Project budget or any Alternate/Unit Prices (if applicable) into its RFx evaluation.
- Select more than one Respondent to perform various elements of the Project.
- Terminate negotiations and prepare and release a new RFx, or take such other action as the University deems appropriate if negotiations fail to result in a Contract within a time acceptable to the University in its sole discretion.
- Approve or deny any subcontractor(s) and/or any internal personnel proposed to be used by a selected Respondent.
- Re-scope the Project.

3.0 Selected Respondent's Contract

Section 3 of this document contains information regarding the selected Respondent's Contract for the Project.

3.1 Liability and Insurance Requirements

The proposed insurer for all required insurance must be listed by A.M. Best with a rating of A- VII or better.

The selected Respondent must maintain insurance coverage for the Project of the types and in the amounts set forth in the Contract.

3.2 Subcontracting

The selected Respondent may perform the work through subcontractors approved by the University, provided the selected Respondent shall be responsible for the performance of all of its subcontractors. Use of any specific subcontractors in the performance of the Contract shall be subject to University consent. The selected Respondent must ensure that any subcontractors abide by all the terms and conditions of the Contract.

3.3 Smoke-and-Tobacco-Free Campus

Smoking or using tobacco products and electronic cigarettes is prohibited in all facilities and on all University property. All employees of the selected Respondent and their subcontractors must adhere to this policy while working on campus. Information regarding the University's Smoke-and-Tobacco-Free Campus policy can be found here.

3.4 Project Management Information System

The University may, at its sole option, direct the selected Respondent to use the

University's internet-based Project Management Information System. The functionality of this software includes, but is not limited to, the processing of plan reviews, purchase orders, change orders, Contract amendments, and payment.

3.5 Project Evaluation

Upon completion of the Project, the University may evaluate the selected Respondent based on their performance, including, but not limited to: overall quality, ability to manage cost and schedule, high customer satisfaction, and submission of accurate documents. The selected Respondent's performance on this Project may be taken into consideration when evaluating their Response to a future RFx.

3.6 Audits

The books, records, documents and accounting procedures and practices of any Respondent the University selects for negotiation are subject to examination by the University as set forth in the Contract.

3.7 Laws and Regulations; Governing Law

The internal laws of the State of Minnesota, without giving effect to its conflict of laws principles, shall govern the validity, construction and enforceability of the RFx, the Response, and the Contract. All suits, actions, claims and causes of action relating to the construction, validity, performance and enforcement of the RFx, the Response, and the Contract shall be in the courts of the State of Minnesota and venue shall be in Hennepin County, Minnesota and Respondent consents to such jurisdiction and venue.

3.8 Performance and Payment Bonds – Pertains to Construction Contracts

If required by Minnesota Statutes, Section 574.26, the selected Respondent must furnish to the University a Performance Bond and a Labor and Material Payment Bond for the Project on University-approved bond forms, which are available on-line at the Purchasing Services website. The Bonds shall be issued by a surety satisfactory to the University, licensed to issue bonds in the State of Minnesota, rated by A.M. Best as A-minus or better, and listed in the current printing of the U.S. Treasury Department listing of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies." The surety's underwriting limit set by the Treasury Department as the net limit on any single risk for the surety shall be equal to or greater than the dollar amount of the Bond. If multiple sureties are listed on a Bond, each surety must have an underwriting limit that meets or exceeds the dollar amount of the Bond, in addition to meeting all other foregoing requirements.

Performance and Payment Bonds are required on all Projects that exceed the value identified by Minnesota Statutes, Section 471.345, Subdivision 3.

3.9 Prevailing Wage Rates on Project Work Site – Pertains to Construction Contracts

Pursuant to Minnesota Statutes, Sections 177.41 to 177.44, and corresponding Minnesota Rules 5200.1000 to 5200.1120, the Contract is subject to the prevailing wages as established by the Minnesota Department of Labor and Industry. Specifically, all contractors and subcontractors must pay all laborers, workers, and mechanics the established prevailing wages for work performed under the Contract. Failure to comply with the aforementioned may result in civil or criminal penalties.

Each contractor and subcontractor performing work on the Project shall post on site the applicable prevailing wage rates and hourly basic rates of pay for the county or area within which the Project is being performed, including the effective date of any changes thereof, in at least one conspicuous place for the information of the employees working on the Project. The information posted shall include a breakdown of the contributions for health and welfare benefits, vacation benefits, pension benefits and any other economic benefit required to be paid.

Upon request, each contractor and subcontractor shall furnish to the University copies of any or all certified payroll for the Project. All certified payroll records shall be properly completed and submitted on Minnesota State Colleges and Universities Prevailing Wage Payroll Forms, and shall be submitted to the University within 14 days of the date of the request.

3.10 Building Permits – Pertains to Construction Contracts

The selected Respondent shall pay and pull all necessary permits for the Project. All associated permit fees must be included in the Respondent's Response cost. Information on Building Permits and Permit Fees can be found on the Building Code Division website.

3.11 Hazardous Materials – Pertains to Construction Contracts (except for any work directly covered by a Hazardous Materials Abatement Agreement)

The Contract provides that if the selected Respondent encounters existing environmental contamination during any phase of the Project, selected Respondent will immediately stop work in the vicinity of the contamination and notify the University's Department of Environmental Health and Safety. The University will proceed with the abatement measures under separate contract.

3.12 American-made Steel – Pertains to Construction Contracts

If required by applicable law, the selected Respondent may be required to use American-made steel.

3.13 Workforce Certificate – Pertains to Construction Contracts

If required by applicable law, the selected Respondent may be required to provide a Workforce Certificate, or certify that the Respondent is exempt from the Workforce Certificate requirements, prior to the execution of the Contract.

3.14 Equal Pay Certificate – Pertains to Construction Contracts

If required by applicable law, the selected Respondent may be required to provide an Equal Pay Certificate, or certify that the Respondent is exempt from the Equal Pay Certificate requirements, prior to the execution of the Contract.

Appendix 1: Form Revision History

1. Version 1 – Initiated January 1, 2014
2. Version 2 - Revised March 14, 2014
    a. Added “Smoke-and-Tobacco-Free Campus” clause
3. Version 3 - Revised July 1, 2014
    a. Added “American-made Steel” clause
4. Version 4 - Revised January 1, 2015
    a. Reorganized the form
    b. Updated hyperlinks
5. Version 5 - Revised February 19, 2016
    a. Added “Energy Efficient Commercial Building Tax Deduction” clause
6. Version 6 - Revised November 1, 2016
    a. Updated hyperlinks
7. Version 7 - Revised July 18, 2018
    a. Incorporated “Request for Bid’ into the form
    b. Reorganized the form
    c. Updated hyperlinks
8. Version 8 - Revised October 1, 2018
    a. Incorporated MBid instructions into the form
9. Version 9 - Revised January 1, 2022
    a. Added “Workforce Certificate” clause
10. Version 10 - Revised September 11, 2025
    a. Added Expiration Date of June 30, 2026 to “Energy Efficient Commercial Building Tax Deduction” clause
11. Version 11 - Revised July 1, 2026
    a. Added “One Response Per Respondent” clause
    b. Removed “Energy Efficient Commercial Building Tax Deduction” clause

MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS

THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

Construction Type: Commercial

County Number: 75

County Name: STEVENS

Effective: 2025-12-22

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate. *Note: Overtime pay after eight (8) hours on the project must be paid even if the worker does not exceed forty (40) hours in the work week.*

Violations should be reported to:

Department of Labor and Industry
Prevailing Wage Section
443 Lafayette Road N
St Paul, MN 55155
(651) 284-5091
DLI.PrevWage@state.mn.us

* Indicates that adjacent county rates were used for the labor class listed.

County: STEVENS (75)

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)					
101*	LABORER, COMMON (GENERAL LABOR WORK)	2025-12-22	37.67	25.69	63.36
		2026-05-01	40.52	27.48	68.00
102	LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2025-12-22	37.67	25.69	63.36
		2026-05-01	40.52	27.48	68.00
103	LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2025-12-22	17.50	0.00	17.50
104	FLAG PERSON	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
105*	WATCH PERSON	2025-12-22	31.00	1.35	32.35

LABOR CODE AND CLASS			EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
106	BLASTER		FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
107*	PIPELAYER (WATER, SEWER AND GAS)		2025-12-22	29.75	19.94	49.69
108	TUNNEL MINER		FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
109*	UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)		2025-12-22	27.75	19.94	47.69
110*	SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.	+$950,000	2025-12-22	26.51	17.69	44.20
		-$950,000	2025-12-22	24.76	17.69	42.45
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)		FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
SPECIAL EQUIPMENT (201 - 204)						
201*	ARTICULATED HAULER		2025-12-22	17.50	0.00	17.50
202*	BOOM TRUCK		FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
203*	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT		2025-12-22	11.41	0.00	11.41

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
	(EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS				
204	OFF-ROAD TRUCK	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2025-12-22	18.00	0.00	18.00
HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR					
GROUP 2 *		2025-12-22	40.00	0.00	40.00
306	GRADER OR MOTOR PATROL				
308	TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)				
GROUP 3 *		2025-12-22	37.00	0.00	37.00
309	ASPHALT BITUMINOUS STABILIZER PLANT				
310	CABLEWAY				
312	DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)				
314	DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER				
316	LOCOMOTIVE CRANE OPERATOR				
320	TANDEM SCRAPER				
322	TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)				
GROUP 4 *		2025-12-22	38.00	0.00	38.00
323	AIR TRACK ROCK DRILL				
324	AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)				
325	BACKFILLER OPERATOR				
327	BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)				
328	BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)				
329	BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS				
330	CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS				
331	CHIP HARVESTER AND TREE CUTTER				
332	CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
334	CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)				
335	CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT				
336	CURB MACHINE				
337	DIRECTIONAL BORING MACHINE				
338	DOPE MACHINE (PIPELINE)				
340	DUAL TRACTOR				
341	ELEVATING GRADER				
345	GPS REMOTE OPERATING OF EQUIPMENT				
347	HYDRAULIC TREE PLANTER				
348	LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)				
349	LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)				
350	MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE				
352	PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE				
354	PIPELINE WRAPPING, CLEANING OR BENDING MACHINE				
356	POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES				
357	PUGMILL				
359	RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)				
360	SCRAPER				
361	SELF-PROPELLED SOIL STABILIZER				
362	SLIP FORM (POWER DRIVEN) (PAVING)				
363	TIE TAMPER AND BALLAST MACHINE				
365	TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)				
367	TUB GRINDER, MORBARK, OR SIMILAR TYPE				
GROUP 5 *		2025-12-22	33.00	0.00	33.00
370	BITUMINOUS ROLLER (UNDER EIGHT TONS)				
371	CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)				
372	FORM TRENCH DIGGER (POWER)				
375	HYDRAULIC LOG SPLITTER				
376	LOADER (BARBER GREENE OR SIMILAR TYPE)				
377	POST HOLE DRIVING MACHINE/POST HOLE AUGER				
379	POWER ACTUATED JACK				
381	SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)				
382	SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER				
383	SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER				
384	STUMP CHIPPER AND TREE CHIPPER				
385	TREE FARMER (MACHINE)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
GROUP 6 *		2025-12-22	14.00	0.00	14.00
387	CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER				
389	DREDGE DECK HAND				
391	GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)				
393	LEVER PERSON				
395	POWER SWEEPER				
396	SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS				
397	TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING				
COMMERCIAL POWER EQUIPMENT OPERATOR					
GROUP 1 *		2025-12-22	43.35	22.85	66.20
501	HELICOPTER PILOT (COMMERCIAL CONSTRUCTION ONLY)				
502	TOWER CRANE 250 FEET AND OVER (COMMERCIAL CONSTRUCTION ONLY)				
503	TRUCK CRAWLER CRANE WITH 200 FEET OF BOOM AND OVER, INCLUDING JIB (COMMERCIAL CONSTRUCTION ONLY)				
GROUP 2 *		2025-12-22	49.80	29.36	79.16
		2026-05-04	51.52	30.96	82.48
504	CONCRETE PUMP WITH 50 METERS/164 FEET OF BOOM AND OVER (COMMERCIAL CONSTRUCTION ONLY)				
505	PILE DRIVING WHEN THREE DRUMS IN USE (COMMERCIAL CONSTRUCTION ONLY)				
506	TOWER CRANE 200 FEET AND OVER (COMMERCIAL CONSTRUCTION ONLY)				
507	TRUCK OR CRAWLER CRANE WITH 150 FEET OF BOOM UP TO AND NOT INCLUDING 200 FEET, INCLUDING JIB (COMMERCIAL CONSTRUCTION ONLY)				
GROUP 3 *		2025-12-22	35.50	10.53	46.03
508	ALL-TERRAIN VEHICLE CRANES (COMMERCIAL CONSTRUCTION ONLY)				
509	CONCRETE PUMP 32-49 METERS/102-164 FEET (COMMERCIAL CONSTRUCTION ONLY)				
510	DERRICK (GUY & STIFFLEG) (COMMERCIAL CONSTRUCTION ONLY)				
511	STATIONARY TOWER CRANE UP TO 200 FEET				
512	SELF-ERECTING TOWER CRANE 100 FEET AND OVER MEASURED FROM BOOM FOOT PIN (COMMERCIAL CONSTRUCTION ONLY)				
513	TRAVELING TOWER CRANE (COMMERCIAL CONSTRUCTION ONLY)				
514	TRUCK OR CRAWLER CRANE UP TO AND NOT INCLUDING 150 FEET OF BOOM, INCLUDING JIB (COMMERCIAL CONSTRUCTION ONLY)				
GROUP 4 *		2025-12-22	40.58	21.70	62.28
515	CRAWLER BACKHOE INCLUDING ATTACHMENTS (COMMERCIAL CONSTRUCTION ONLY)				
516	FIREPERSON, CHIEF BOILER LICENSE (COMMERCIAL CONSTRUCTION ONLY)				
517	HOIST ENGINEER (THREE DRUMS OR MORE) (COMMERCIAL CONSTRUCTION ONLY)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
518	LOCOMOTIVE (COMMERCIAL CONSTRUCTION ONLY)				
519	OVERHEAD CRANE (INSIDE BUILDING PERIMETER) (COMMERCIAL CONSTRUCTION ONLY)				
520	TRACTOR . BOOM TYPE (COMMERCIAL CONSTRUCTION ONLY)				
GROUP 5 *		2025-12-22	45.21	29.36	74.57
		2026-05-04	46.41	30.96	77.37
521	AIR COMPRESSOR 450 CFM OR OVER (TWO OR MORE MACHINES) (COMMERCIAL CONSTRUCTION ONLY)				
522	CONCRETE MIXER (COMMERCIAL CONSTRUCTION ONLY)				
523	CONCRETE PUMP UP TO 31 METERS/101 FEET OF BOOM				
524	DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL WHEN USED FOR CAISSON FOR ELEVATOR OR BUILDING CONSTRUCTION (COMMERCIAL CONSTRUCTION ONLY)				
525	FORKLIFT (COMMERCIAL CONSTRUCTION ONLY)				
526	FRONT END, SKID STEER 1 C YD AND OVER				
527	HOIST ENGINEER (ONE OR TWO DRUMS) (COMMERCIAL CONSTRUCTION ONLY)				
528	MECHANIC-WELDER (ON POWER EQUIPMENT) (COMMERCIAL CONSTRUCTION ONLY)				
529	POWER PLANT (100 KW AND OVER OR MULTIPLES EQUAL TO 100KW AND OVER) (COMMERCIAL CONSTRUCTION ONLY)				
530	PUMP OPERATOR AND/OR CONVEYOR (TWO OR MORE MACHINES) (COMMERCIAL CONSTRUCTION ONLY)				
531	SELF-ERECTING TOWER CRANE UNDER 100 FEET MEASURED FROM BOOM FOOT PIN (COMMERCIAL CONSTRUCTION ONLY)				
532	STRADDLE CARRIER (COMMERCIAL CONSTRUCTION ONLY)				
533	TRACTOR OVER D2 (COMMERCIAL CONSTRUCTION ONLY)				
534	WELL POINT PUMP (COMMERCIAL CONSTRUCTION ONLY)				
GROUP 6 *		2025-12-22	37.75	21.70	59.45
535	CONCRETE BATCH PLANT (COMMERCIAL CONSTRUCTION ONLY)				
536	FIREPERSON, FIRST CLASS BOILER LICENSE (COMMERCIAL CONSTRUCTION ONLY)				
537	FRONT END, SKID STEER UP TO 1 C YD				
538	GUNITE MACHINE (COMMERCIAL CONSTRUCTION ONLY)				
539	TRACTOR OPERATOR D2 OR SIMILAR SIZE (COMMERCIAL CONSTRUCTION ONLY)				
540	TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER				
GROUP 7 *		2025-12-22	42.29	29.36	71.65
		2026-05-04	43.38	30.96	74.34
541	AIR COMPRESSOR 600 CFM OR OVER (COMMERCIAL CONSTRUCTION ONLY)				
542	BRAKEPERSON (COMMERCIAL CONSTRUCTION ONLY)				
543	CONCRETE PUMP/PUMPCRETE OR COMPLACO TYPE (COMMERCIAL CONSTRUCTION ONLY)				
544	FIREPERSON, TEMPORARY HEAT SECOND CLASS BOILER LICENSE (COMMERCIAL CONSTRUCTION ONLY)				
545	OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS AND MILLING MACHINES, OR OTHER SIMILAR POWER EQUIPMENT) (COMMERCIAL CONSTRUCTION ONLY)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
546	PICK UP SWEEPER (ONE CUBIC YARD HOPPER CAPACITY) (COMMERCIAL CONSTRUCTION ONLY)				
547	PUMP AND/OR CONVEYOR (COMMERCIAL CONSTRUCTION ONLY)				
GROUP 8		FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
548	ELEVATOR OPERATOR (COMMERCIAL CONSTRUCTION ONLY)				
549	GREASER (COMMERCIAL CONSTRUCTION ONLY)				
550	MECHANICAL SPACE HEATER (TEMPORARY HEAT NO BOILER LICENSE REQUIRED) (COMMERCIAL CONSTRUCTION ONLY)				
TRUCK DRIVERS					
GROUP 1 *		2025-12-22	28.00	0.84	28.84
601	MECHANIC . WELDER				
602	TRACTOR TRAILER DRIVER				
603	TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)				
GROUP 2		2025-12-22	26.00	0.00	26.00
604	FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK				
GROUP 3		2025-12-22	23.11	15.25	38.36
605	BITUMINOUS DISTRIBUTOR DRIVER				
606	BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607	THREE AXLE UNITS				
GROUP 4		2025-12-22	16.00	0.00	16.00
608	BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)				
609	DUMP PERSON				
610	GREASER				
611	PILOT CAR DRIVER				
612	RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS				
613	TWO AXLE UNIT				
614	SLURRY OPERATOR				
615	TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)				
616	TRACTOR OPERATOR, UNDER 50 H.P.				
SPECIAL CRAFTS					
701	HEATING AND FROST INSULATORS	2025-12-22	24.00	0.60	24.60

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
702*	BOILERMAKERS	2025-12-22	48.35	31.93	80.28
703	BRICKLAYERS	2025-12-22	44.37	29.94	74.31
		2026-05-04	47.87	29.94	77.81
704	CARPENTERS	2025-12-22	36.14	27.98	64.12
		2026-05-04	39.14	27.98	67.12
705*	CARPET LAYERS (LINOLEUM)	2025-12-22	27.15	17.38	44.53
706*	CEMENT MASONS	2025-12-22	49.31	27.22	76.53
		2026-05-01	52.20	27.22	79.42
707	ELECTRICIANS	2025-12-22	50.00	30.86	80.86
		2026-07-01	54.86	30.86	85.72
708*	ELEVATOR CONSTRUCTORS	2025-12-22	62.52	45.36	107.88
		2026-01-01	65.21	46.21	111.42
709	GLAZIERS	2025-12-22	50.98	28.25	79.23
		2026-06-01	54.03	28.25	82.28
710*	LATHERS	2025-12-22	23.50	0.92	24.42
712*	IRONWORKERS	2025-12-22	46.35	37.86	84.21
		2026-05-03	49.50	37.86	87.36
714*	MILLWRIGHT	2025-12-22	42.95	37.81	80.76
		2026-05-01	46.15	37.81	83.96
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2025-12-22	33.13	26.14	59.27
		2026-05-01	35.73	26.14	61.87
716	PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2025-12-22	27.46	16.11	43.57

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
717	PIPEFITTERS . STEAMFITTERS	2025-12-22	51.00	37.00	88.00
		2026-06-01	55.93	37.00	92.93
718*	PLASTERERS	2025-12-22	45.98	24.45	70.43
719	PLUMBERS	2025-12-22	56.91	32.21	89.12
720*	ROOFER	2025-12-22	44.93	24.21	69.14
		2026-04-06	46.93	24.21	71.14
		2026-10-05	48.68	24.21	72.89
721	SHEET METAL WORKERS	2025-12-22	50.86	30.51	81.37
		2026-05-01	54.96	30.51	85.47
722*	SPRINKLER FITTERS	2025-12-22	45.93	27.26	73.19
		2026-04-01	48.71	28.56	77.27
723*	TERRAZZO WORKERS	2025-12-22	37.58	16.83	54.41
724*	TILE SETTERS	2025-12-22	30.66	10.53	41.19
725	TILE FINISHERS	2025-12-22	20.50	1.50	22.00
726	DRYWALL TAPER	2025-12-22	34.42	25.62	60.04
		2026-06-01	37.47	25.62	63.09
727	WIRING SYSTEM TECHNICIAN	2025-12-22	51.07	24.02	75.09
		2026-07-02	54.44	24.02	78.46
728*	WIRING SYSTEMS INSTALLER	2025-12-22	35.78	19.15	54.93
		2026-07-02	38.15	19.15	57.30
729*	ASBESTOS ABATEMENT WORKER	2025-12-22	41.23	25.99	67.22
730*	SIGN ERECTOR	2025-12-22	37.19	19.88	57.07

MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGES FOR STATE FUNDED CONSTRUCTION PROJECTS

THIS NOTICE MUST BE POSTED ON THE JOBSITE IN A CONSPICUOUS PLACE

Construction Type: Highway and Heavy

Region Number: 04

Counties within region:

- BECKER-03
- BIG STONE-06
- CLAY-14
- DOUGLAS-21
- GRANT-26
- MAHNOMEN-43
- OTTERTAIL-56
- POPE-61
- STEVENS-75
- SWIFT-76
- TRAVERSE-78
- WILKIN-84

Effective: 2025-11-03 Revised: 2025-12-01

This project is covered by Minnesota prevailing wage statutes. Wage rates listed below are the minimum hourly rates to be paid on this project.

All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at a rate of one and one half (1 1/2) times the basic hourly rate. *Note: Overtime pay after eight (8) hours on the project must be paid even if the worker does not exceed forty (40) hours in the work week.*

Violations on MnDOT highways and road projects should be reported to:

Department of Transportation
Office of Construction
Transportation Building MS650
John Ireland Blvd
St. Paul, MN 55155
(651) 366-4209

All other prevailing wage violations and questions should be sent to:

Department of Labor and Industry
Prevailing Wage Section
443 Lafayette Road N
St Paul, MN 55155
(651) 284-5091
DLI.PrevWage@state.mn.us

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
LABORERS (101 - 112) (SPECIAL CRAFTS 701 - 730)					
101	LABORER, COMMON (GENERAL LABOR WORK)	2025-11-03	34.50	24.26	58.76
102	LABORER, SKILLED (ASSISTING SKILLED CRAFT JOURNEYMAN)	2025-11-03	34.50	24.26	58.76

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
103	LABORER, LANDSCAPING (GARDENER, SOD LAYER AND NURSERY OPERATOR)	2025-11-03	25.00	2.00	27.00
104	FLAG PERSON	2025-11-03	24.04	18.05	42.09
105	WATCH PERSON	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
106	BLASTER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
107	PIPELAYER (WATER, SEWER AND GAS)	2025-11-03	38.00	24.26	62.26
108	TUNNEL MINER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
109	UNDERGROUND AND OPEN DITCH LABORER (EIGHT FEET BELOW STARTING GRADE LEVEL)	2025-11-03	36.00	24.26	60.26
110	SURVEY FIELD TECHNICIAN (OPERATE TOTAL STATION, GPS RECEIVER, LEVEL, ROD OR RANGE POLES, STEEL TAPE MEASUREMENT; MARK AND DRIVE STAKES; HAND OR POWER DIGGING FOR AND IDENTIFICATION OF MARKERS OR MONUMENTS; PERFORM AND CHECK CALCULATIONS; REVIEW AND UNDERSTAND CONSTRUCTION PLANS AND LAND SURVEY MATERIALS). THIS CLASSIFICATION DOES NOT APPLY TO THE WORK PERFORMED ON A PREVAILING WAGE PROJECT BY A LAND SURVEYOR WHO IS LICENSED PURSUANT TO MINNESOTA STATUTES, SECTIONS 326.02 TO 326.15.	2025-11-03	21.39	14.90	36.29
111	TRAFFIC CONTROL PERSON (TEMPORARY SIGNAGE)	2025-11-03	23.04	17.10	40.14
112	QUALITY CONTROL TESTER (FIELD AND COVERED OFF-SITE FACILITIES; TESTING OF AGGREGATE, ASPHALT, AND CONCRETE MATERIALS); LIMITED TO MN DOT HIGHWAY AND HEAVY	2025-11-03	22.00	8.84	30.84

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
	CONSTRUCTION PROJECTS WHERE THE MN DOT HAS RETAINED QUALITY ASSURANCE PROFESSIONALS TO REVIEW AND INTERPRET THE RESULTS OF QUALITY CONTROL TESTERS. SERVICES PROVIDED BY THE CONTRACTOR.				
SPECIAL EQUIPMENT (201 - 204)					
201	ARTICULATED HAULER	2025-11-03	40.00	26.40	66.40
202	BOOM TRUCK	2025-11-03	37.75	29.17	66.92
		2026-05-04	38.83	30.77	69.60
203	LANDSCAPING EQUIPMENT, INCLUDES HYDRO SEEDER OR MULCHER, SOD ROLLER, FARM TRACTOR WITH ATTACHMENT SPECIFICALLY SEEDING, SODDING, OR PLANT, AND TWO-FRAMED FORKLIFT (EXCLUDING FRONT, POSIT-TRACK, AND SKID STEER LOADERS), NO EARTHWORK OR GRADING FOR ELEVATIONS	2025-11-03	27.00	2.00	29.00
204	OFF-ROAD TRUCK	2025-11-03	51.13	3.48	54.61
205	PAVEMENT MARKING OR MARKING REMOVAL EQUIPMENT (ONE OR TWO PERSON OPERATORS); SELF-PROPELLED TRUCK OR TRAILER MOUNTED UNITS.	2025-11-03	35.00	13.24	48.24
HIGHWAY/HEAVY POWER EQUIPMENT OPERATOR					
GROUP 2		2025-11-03	36.03	29.17	65.20
		2026-05-04	37.04	30.77	67.81
302	HELICOPTER PILOT (HIGHWAY AND HEAVY ONLY)				
303	CONCRETE PUMP (HIGHWAY AND HEAVY ONLY)				
304	ALL CRANES WITH OVER 135-FOOT BOOM, EXCLUDING JIB (HIGHWAY AND HEAVY ONLY)				
305	DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR OTHER SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS THREE CUBIC YARDS AND OVER MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)				
306	GRADER OR MOTOR PATROL				
307	PILE DRIVING (HIGHWAY AND HEAVY ONLY)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
308	TUGBOAT 100 H.P. AND OVER WHEN LICENSE REQUIRED (HIGHWAY AND HEAVY ONLY)				
GROUP 3		2025-11-03	34.96	29.17	64.13
		2026-05-04	35.93	30.77	66.70
309	ASPHALT BITUMINOUS STABILIZER PLANT				
310	CABLEWAY				
311	CONCRETE MIXER, STATIONARY PLANT (HIGHWAY AND HEAVY ONLY)				
312	DERRICK (GUY OR STIFFLEG)(POWER)(SKIDS OR STATIONARY) (HIGHWAY AND HEAVY ONLY)				
313	DRAGLINE, CRAWLER, HYDRAULIC BACKHOE (TRACK OR WHEEL MOUNTED) AND/OR SIMILAR EQUIPMENT WITH SHOVEL-TYPE CONTROLS, UP TO THREE CUBIC YARDS MANUFACTURER.S RATED CAPACITY INCLUDING ALL ATTACHMENTS (HIGHWAY AND HEAVY ONLY)				
314	DREDGE OR ENGINEERS, DREDGE (POWER) AND ENGINEER				
315	FRONT END LOADER, FIVE CUBIC YARDS AND OVER INCLUDING ATTACHMENTS. (HIGHWAY AND HEAVY ONLY)				
316	LOCOMOTIVE CRANE OPERATOR				
317	MIXER (PAVING) CONCRETE PAVING, ROAD MOLE, INCLUDING MUCKING OPERATIONS, CONWAY OR SIMILAR TYPE				
318	MECHANIC . WELDER ON POWER EQUIPMENT (HIGHWAY AND HEAVY ONLY)				
319	TRACTOR . BOOM TYPE (HIGHWAY AND HEAVY ONLY)				
320	TANDEM SCRAPER				
321	TRUCK CRANE . CRAWLER CRANE (HIGHWAY AND HEAVY ONLY)				
322	TUGBOAT 100 H.P AND OVER (HIGHWAY AND HEAVY ONLY)				
GROUP 4		2025-11-03	34.60	29.17	63.77
		2026-05-04	35.55	30.77	66.32
323	AIR TRACK ROCK DRILL				
324	AUTOMATIC ROAD MACHINE (CMI OR SIMILAR) (HIGHWAY AND HEAVY ONLY)				
325	BACKFILLER OPERATOR				
326	CONCRETE BATCH PLANT OPERATOR (HIGHWAY AND HEAVY ONLY)				
327	BITUMINOUS ROLLERS, RUBBER TIRED OR STEEL DRUMMED (EIGHT TONS AND OVER)				
328	BITUMINOUS SPREADER AND FINISHING MACHINES (POWER), INCLUDING PAVERS, MACRO SURFACING AND MICRO SURFACING, OR SIMILAR TYPES (OPERATOR AND SCREED PERSON)				
329	BROKK OR R.T.C. REMOTE CONTROL OR SIMILAR TYPE WITH ALL ATTACHMENTS				
330	CAT CHALLENGER TRACTORS OR SIMILAR TYPES PULLING ROCK WAGONS, BULLDOZERS AND SCRAPERS				
331	CHIP HARVESTER AND TREE CUTTER				
332	CONCRETE DISTRIBUTOR AND SPREADER FINISHING MACHINE, LONGITUDINAL FLOAT, JOINT MACHINE, AND SPRAY MACHINE				
333	CONCRETE MIXER ON JOBSITE (HIGHWAY AND HEAVY ONLY)				
334	CONCRETE MOBIL (HIGHWAY AND HEAVY ONLY)				
335	CRUSHING PLANT (GRAVEL AND STONE) OR GRAVEL WASHING, CRUSHING AND SCREENING PLANT				
336	CURB MACHINE				
337	DIRECTIONAL BORING MACHINE				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
338	DOPE MACHINE (PIPELINE)				
339	DRILL RIGS, HEAVY ROTARY OR CHURN OR CABLE DRILL (HIGHWAY AND HEAVY ONLY)				
340	DUAL TRACTOR				
341	ELEVATING GRADER				
342	FORK LIFT OR STRADDLE CARRIER (HIGHWAY AND HEAVY ONLY)				
343	FORK LIFT OR LUMBER STACKER (HIGHWAY AND HEAVY ONLY)				
344	FRONT END, SKID STEER OVER 1 TO 5 C YD				
345	GPS REMOTE OPERATING OF EQUIPMENT				
346	HOIST ENGINEER (POWER) (HIGHWAY AND HEAVY ONLY)				
347	HYDRAULIC TREE PLANTER				
348	LAUNCHER PERSON (TANKER PERSON OR PILOT LICENSE)				
349	LOCOMOTIVE (HIGHWAY AND HEAVY ONLY)				
350	MILLING, GRINDING, PLANNING, FINE GRADE, OR TRIMMER MACHINE				
351	MULTIPLE MACHINES, SUCH AS AIR COMPRESSORS, WELDING MACHINES, GENERATORS, PUMPS (HIGHWAY AND HEAVY ONLY)				
352	PAVEMENT BREAKER OR TAMPING MACHINE (POWER DRIVEN) MIGHTY MITE OR SIMILAR TYPE				
353	PICKUP SWEEPER, ONE CUBIC YARD AND OVER HOPPER CAPACITY(HIGHWAY AND HEAVY ONLY)				
354	PIPELINE WRAPPING, CLEANING OR BENDING MACHINE				
355	POWER PLANT ENGINEER, 100 KWH AND OVER (HIGHWAY AND HEAVY ONLY)				
356	POWER ACTUATED HORIZONTAL BORING MACHINE, OVER SIX INCHES				
357	PUGMILL				
358	PUMPCRETE (HIGHWAY AND HEAVY ONLY)				
359	RUBBER-TIRED FARM TRACTOR WITH BACKHOE INCLUDING ATTACHMENTS (HIGHWAY AND HEAVY ONLY)				
360	SCRAPER				
361	SELF-PROPELLED SOIL STABILIZER				
362	SLIP FORM (POWER DRIVEN) (PAVING)				
363	TIE TAMPER AND BALLAST MACHINE				
364	TRACTOR, BULLDOZER (HIGHWAY AND HEAVY ONLY)				
365	TRACTOR, WHEEL TYPE, OVER 50 H.P. WITH PTO UNRELATED TO LANDSCAPING (HIGHWAY AND HEAVY ONLY)				
366	TRENCHING MACHINE (SEWER, WATER, GAS) EXCLUDES WALK BEHIND TRENCHER (HIGHWAY AND HEAVY ONLY)				
367	TUB GRINDER, MORBARK, OR SIMILAR TYPE				
368	WELL POINT DISMANTLING OR INSTALLATION (HIGHWAY AND HEAVY ONLY)				
GROUP 5		2025-11-03	32.64	29.17	61.81
		2026-05-04	33.51	30.77	64.28
369	AIR COMPRESSOR, 600 CFM OR OVER (HIGHWAY AND HEAVY ONLY)				
370	BITUMINOUS ROLLER (UNDER EIGHT TONS)				
371	CONCRETE SAW (MULTIPLE BLADE) (POWER OPERATED)				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
372	FORM TRENCH DIGGER (POWER)				
373	FRONT END, SKID STEER UP TO 1C YD				
374	GUNITE GUNALL (HIGHWAY AND HEAVY ONLY)				
375	HYDRAULIC LOG SPLITTER				
376	LOADER (BARBER GREENE OR SIMILAR TYPE)				
377	POST HOLE DRIVING MACHINE/POST HOLE AUGER				
378	POWER ACTUATED AUGER AND BORING MACHINE				
379	POWER ACTUATED JACK				
380	PUMP (HIGHWAY AND HEAVY ONLY)				
381	SELF-PROPELLED CHIP SPREADER (FLAHERTY OR SIMILAR)				
382	SHEEP FOOT COMPACTOR WITH BLADE . 200 H.P. AND OVER				
383	SHOULDERING MACHINE (POWER) APSCO OR SIMILAR TYPE INCLUDING SELF-PROPELLED SAND AND CHIP SPREADER				
384	STUMP CHIPPER AND TREE CHIPPER				
385	TREE FARMER (MACHINE)				
GROUP 6		2025-11-03	31.95	29.17	61.12
		2026-05-04	32.79	30.77	63.56
387	CAT, CHALLENGER, OR SIMILAR TYPE OF TRACTORS, WHEN PULLING DISK OR ROLLER				
388	CONVEYOR (HIGHWAY AND HEAVY ONLY)				
389	DREDGE DECK HAND				
390	FIRE PERSON OR TANK CAR HEATER (HIGHWAY AND HEAVY ONLY)				
391	GRAVEL SCREENING PLANT (PORTABLE NOT CRUSHING OR WASHING)				
392	GREASER (TRACTOR) (HIGHWAY AND HEAVY ONLY)				
393	LEVER PERSON				
394	OILER (POWER SHOVEL, CRANE, TRUCK CRANE, DRAGLINE, CRUSHERS, AND MILLING MACHINES, OR OTHER SIMILAR HEAVY EQUIPMENT) (HIGHWAY AND HEAVY ONLY)				
395	POWER SWEEPER				
396	SHEEP FOOT ROLLER AND ROLLERS ON GRAVEL COMPACTION, INCLUDING VIBRATING ROLLERS				
397	TRACTOR, WHEEL TYPE, OVER 50 H.P., UNRELATED TO LANDSCAPING				
TRUCK DRIVERS					
GROUP 1		2025-11-03	28.92	21.35	50.27
601	MECHANIC . WELDER				
602	TRACTOR TRAILER DRIVER				
603	TRUCK DRIVER (HAULING MACHINERY INCLUDING OPERATION OF HAND AND POWER OPERATED WINCHES)				
GROUP 2		2025-11-03	35.66	18.07	53.73
604	FOUR OR MORE AXLE UNIT, STRAIGHT BODY TRUCK				

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
GROUP 3		2025-11-03	33.58	26.79	60.37
605	BITUMINOUS DISTRIBUTOR DRIVER				
606	BITUMINOUS DISTRIBUTOR (ONE PERSON OPERATION)				
607	THREE AXLE UNITS				
GROUP 4		2025-11-03	30.87	23.70	54.57
608	BITUMINOUS DISTRIBUTOR SPRAY OPERATOR (REAR AND OILER)				
609	DUMP PERSON				
610	GREASER				
611	PILOT CAR DRIVER				
612	RUBBER-TIRED, SELF-PROPELLED PACKER UNDER 8 TONS				
613	TWO AXLE UNIT				
614	SLURRY OPERATOR				
615	TANK TRUCK HELPER (GAS, OIL, ROAD OIL, AND WATER)				
616	TRACTOR OPERATOR, UNDER 50 H.P.				
SPECIAL CRAFTS					
701	HEATING AND FROST INSULATORS	2025-11-03	17.50	0.00	17.50
702	BOILERMAKERS	2025-11-03	48.35	31.93	80.28
703	BRICKLAYERS	2025-11-03	35.88	23.20	59.08
704	CARPENTERS	2025-11-03	40.67	29.69	70.36
		2026-05-01	43.48	29.69	73.17
705	CARPET LAYERS (LINOLEUM)	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
706	CEMENT MASONS	2025-11-03	47.57	25.72	73.29
707	ELECTRICIANS	2025-11-03	50.86	30.00	80.86
711	GROUND PERSON	2025-11-03	40.14	0.00	40.14
712	IRONWORKERS	2025-11-03	42.89	37.78	80.67
		2026-05-03	46.79	37.78	84.57
713	LINEMAN	2025-11-03	36.26	6.93	43.19

LABOR CODE AND CLASS		EFFECT DATE	BASIC RATE	FRINGE RATE	TOTAL RATE
714	MILLWRIGHT	2025-11-03	45.13	32.44	77.57
		2026-05-01	48.23	32.44	80.67
715	PAINTERS (INCLUDING HAND BRUSHED, HAND SPRAYED, AND THE TAPING OF PAVEMENT MARKINGS)	2025-11-03	33.88	26.13	60.01
		2026-05-01	36.48	26.13	62.61
716	PILEDRIVER (INCLUDING VIBRATORY DRIVER OR EXTRACTOR FOR PILING AND SHEETING OPERATIONS)	2025-11-03	47.71	31.98	79.69
		2026-05-01	50.90	31.98	82.88
717	PIPEFITTERS . STEAMFITTERS	2025-11-03	47.91	20.04	67.95
719	PLUMBERS	2025-11-03	44.78	23.04	67.82
721	SHEET METAL WORKERS	2025-11-03	27.00	3.33	30.33
723	TERRAZZO WORKERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
724	TILE SETTERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
725	TILE FINISHERS	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
727	WIRING SYSTEM TECHNICIAN	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
728	WIRING SYSTEMS INSTALLER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
729	ASBESTOS ABATEMENT WORKER	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			
730	SIGN ERECTOR	FOR RATE CALL 651-284-5091 OR EMAIL DLI.PREVWAGE@STATE.MN.US			

ENGAN ASSOCIATES
ARCHITECTS | INTERIOR DESIGNERS
shared vision. innovative design.

UofM Morris Eco Center
Pre-Engineered Shelter Project

36608 Grue Church LN
Battle Lake, MN 56515

Project Number: 04-700-20-1443
(Architects project number: 154.89)

UNIVERSITY OF MINNESOTA
MORRIS

Prepared By:
Engan Associates
311 4th Street SW
Willmar, MN 56201
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June 15, 2026

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SECTION 00 0101
PROJECT TITLE PAGE

PROJECT MANUAL

FOR

154.89 UOFM MORRIS ECO CENTER - PRE-ENGINEERED SHELTER PROJECT
OWNER PROJECT NUMBER: 04-700-20-1443

UNIVERSITY OF MINNESOTA - MORRIS

36608 GRUE CHURCH LN
BATTLE LAKE, MINNESOTA56515

DATE OF DOCUMENTS: 06-15-2026

PREPARED BY:

ENGAN ASSOCIATES ARCHITECTS

END OF SECTION

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SECTION 00 0105
CERTIFICATIONS PAGE

ARCHITECT

I HEREBY CERTIFY THAT THIS SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 6/15/2026 **REG. NO.** 051238

SIGNATURE _____

PRINTED NAME Andrew M. Engan

STRUCTURAL ENGINEER

I HEREBY CERTIFY THAT THIS SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE June 15, 2026 **REG. NO.** 40855

SIGNATURE _____

PRINTED NAME Bryan Asche

END OF SECTION

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SECTION 00 4011
DESCRIPTION OF BASE BID, UNIT PRICES AND ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Each bidder shall be familiar with the entire work. The work is indicated on the following plans and specifications.

B. Each contractor is responsible for being knowledgeable of work by other contractors or subcontractors and is responsible for incidental items of his trade mentioned in the document of the other contractors or subcontractors.

C. Any alternate is an adjustment in the general contractor's total price to the owner. Each alternate includes the costs of related coordination, modification, or adjustment. The work in add alternates in not included in the base bid. The owner has the right to select any alternates in any order. The alternates and unit price items will be considered in determining the low bidder.

D. Base Bid "G":
   1. All work associated within the plans for construction of the pre-engineered shelter, trellis, and concrete.

E. Alternate "A-1": Non-Frost Susceptable Structural Fill
   1. Is an add alternate to provide non-frost susceptible structural fill beneath all foundations to maxiumum frost depth, consisting of a medium to coarse grained, free-draining sand having a maxiumum size of 1 inch, with less than 40% by weight passing the #40 sieve and less than 5% by weight passing the #200 sieve. See structural drawings.

F. Unit Price "UP-1"
   1. Is a unit price per cubic yard for additional engineering fill material as required by onsite observation during construction. The unit price includes removal of existing material and placement and compaction of the new material.

END OF SECTION

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SECTION 01 1000
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: 154.89 UofM Morris Eco Center - Pre-Engineered Shelter Project

B. Owner's Name: University of Minnesota - Morris .

C. The Project consists of the construction of a pre-enginnered outdoor shelter system with required site work, concrete foundations, and concete slab-on-grade. Conduit to be installed for future electrical.

D. Permits: Include cost for a Univeristy of Minnesota Building Permit.
   1. Building Code Department, UMN University Health and Safety; www.hsrm.umn.edu/building-code/building-code-department

E. Project is Sale Tax Exempt - Form ST3, Certificate of Exemption will be given to the awarded contractor for this project.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of alterations work is indicated on drawings.

1.04 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others.
   3. Work by Owner.
   4. Use of site and premises by the public.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Time Restrictions:

1.05 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner.

1.06 SPECIFICATION SECTIONS APPLICABLE TO EVERY CONTRACT

A. Unless otherwise noted, provisions of the sections listed below apply to every contract. Specific items of work listed under individual contract descriptions constitute exceptions.

B. Section 01 2000 - Price and Payment Procedures.

C. Section 01 2200 - Unit Prices.

D. Section 01 2300 - Alternates.

E. Section 01 3000 - Administrative Requirements.

F. Section 01 4000 - Quality Requirements.

G. Section 01 5000 - Temporary Facilities and Controls.

H. Section 01 5100 - Temporary Utilities.

I. Section 01 6000 - Product Requirements.

J. Section 01 7000 - Execution and Closeout Requirements.

K. Section 01 7800 - Closeout Submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 00 7200 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.

B. Section 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.

C. Section 01 2200 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

D. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 SCHEDULE OF VALUES

A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.

C. Forms filled out by hand will not be accepted.

D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.

E. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

G. Use data from approved Schedule of Values. Show separate line items for material and labor for each item for portion of work performed and for stored products.

H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

I. Submit one electronic orthree hard-copies of each Application for Payment. The submitted format shall be consistent throughout the project.

J. Include the following with the application:
   1. Transmittal letter as specified for submittals in Section 01 3000.
   2. Partial release of liens from major subcontractors and vendors.

K. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
   2. Promptly execute the change.

C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.

D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 6000.

E. Substantiation of Costs: Provide full information required for evaluation.
   1. On request, provide the following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.
      c. Overhead and profit.
      d. Justification for any change in Contract Time.
      e. Credit for deletions from Contract, similarly documented.
   2. Support each claim for additional costs with additional information:
      a. Origin and date of claim.
      b. Dates and times work was performed, and by whom.
      c. Time records and wage rates paid.
      d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
   3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

F. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

G. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. Completion of project closeout requirements.
   2. Completion of items noted in Substantial Completion Review..
   3. Assurance that unsettled claims will be settled..
   4. Assurance that work not complete and accepted will be completed without undue delay..

END OF SECTION

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 00 2113 - Instructions to Bidders: Restrictions on timing of substitution requests.

B. Section 00 4325 - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).

C. Section 01 2200 - Unit Prices, for additional unit price requirements.

D. Section 01 2300 - Alternates, for product alternatives affecting this section.

E. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.

F. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
      a. Unavailability.
      b. Regulatory changes.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
      a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
   4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   5. Waives claims for additional costs or time extension that may subsequently become apparent.
   6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

B. A Substitution Request for specified installer constitutes a representation that the submitter:
   1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
   1. Note explicitly any non-compliant characteristics.

D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
    1. No specific form is required. Contractor's Substitution Request documentation must include the following:
        a. Project Information:
            1) Official project name and number, and any additional required identifiers established in Contract Documents.
        b. Substitution Request Information:
            1) Indication of whether the substitution is for cause or convenience.
            2) Issue date.
            3) Description of Substitution.
            4) Reason why the specified item cannot be provided.
            5) Differences between proposed substitution and specified item.
            6) Description of how proposed substitution affects other parts of work.
        c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
            1) Physical characteristics.
            2) Expected durability.
            3) Visual effect.
            4) Warranties.
            5) Include, as appropriate or requested, the following types of documentation:
                (a) Product Data:
                (b) Samples.
                (c) Certificates, test, reports or similar qualification data.
                (d) Drawings, when required to show impact on adjacent construction elements.
        d. Impact of Substitution:
            1) Savings to Owner for accepting substitution.
            2) Change to Contract Time due to accepting substitution.

E. Limit each request to a single proposed substitution item.
    1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:
    1. Architect will consider requests for substitutions only if submitted at least 10 days prior to the date for receipt of bids.

B. Submittal Form (before award of contract):
    1. Submit substitution requests by completing the form in Section 00 4325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submit request for Substitution for Convenience within 14 days of discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
    1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
    2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
    3. Bear the costs engendered by proposed substitution of:
        a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.

B. Substitutions will not be considered under one or more of the following circumstances:
   1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
   2. When acceptance will require revisions to Contract Documents.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

END OF SECTION

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SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Electronic document submittal service.

C. Preconstruction meeting.

D. Site mobilization meeting.

E. Progress meetings.

F. Construction progress schedule.

G. Progress photographs.

H. Submittals for review, information, and project closeout.

I. Number of copies of submittals.

J. Requests for Interpretation (RFI) procedures.

K. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 7200 - General Conditions: Dates for applications for payment.

B. Section 00 7300 - Supplementary Conditions: Duties of the Construction Manager.

C. Section 01 6000 - Product Requirements: General product requirements.

D. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

E. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Make the following types of submittals to Architect:
   1. Requests for Interpretation (RFI).
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.
   6. Manufacturer's instructions and field reports.
   7. Applications for payment and change order requests.
   8. Progress schedules.
   9. Coordination drawings.
   10. Correction Punch List and Final Correction Punch List for Substantial Completion.
   11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Architect will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.

3. Contractor.
4. Major Trade Contractors.
5. Other Subcontractors, dependent upon current scope of work.

C. Agenda:
1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
5. Designation of personnel representing the parties to Contract, General Contractor and Architect.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

A. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:
1. Contractor.
2. Owner.
3. Architect.
4. Contractor's superintendent.
5. Major subcontractors.

C. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Maintenance of quality and work standards.
11. Effect of proposed changes on progress schedule and coordination.
12. Other business relating to work.

D. The Architect shall record minutes of profress meetings and distribute to participants to allow for review prior to the next scheduled progress meeting. These notes will be distributed to the representatives of the Owner and General Contractor.

3.03 CONSTRUCTION PROGRESS SCHEDULE

A. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.

C. Within 10 days after joint review, submit complete schedule.

D. Submit updated schedule with each Application for Payment.

3.04 PROGRESS PHOTOGRAPHS

A. Submit new photographs at least once a month, within 3 days after being taken.

B. Photography Type: Digital; electronic files.

C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.

D. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Completion of site clearing.
   2. Excavations in progress.
   3. Foundations in progress and upon completion.
   4. Structural framing in progress and upon completion.
   5. Enclosure of building, upon completion.
      a. Typical window installation and how it relates to barriers; vapor, weather, and thermal.
      b. Typical door installation and how it relates to barriers; vapor, weather, and thermal.
   6. Final completion, minimum of ten (10) photos.

E. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   2. Consult with Architect for instructions on views required.
   3. Provide factual presentation.
   4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email or through Online Construction Project Management Software.
      a. If using Online Construction Project Management Software, contractor will provide access to and archive all construction photos.
   2. File Naming: Include project identification, date and time of view, and view identification.

3.05 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
   1. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.

2. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
   1. Official Project name and number, and any additional required identifiers established in Contract Documents.
   2. Discrete and consecutive RFI number, and descriptive subject/title.
   3. Issue date, and requested reply date.
   4. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
   5. Annotations: Field dimensions and/or description of conditions which have engendered the request.
   6. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.

H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.

3.06 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

C. Samples will be reviewed for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

3.07 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.08 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

3.09 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.10 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a single transmittal for related items.
   2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   4. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
   5. Provide space for Contractor and Architect review stamps.
   6. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.

B. Product Data Procedures:
   1. Submit only information required by individual specification sections.
   2. Collect required information into a single submittal.
   3. Submit concurrently with related shop drawing submittal.
   4. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
   2. Do not reproduce Contract Documents to create shop drawings.
   3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
   1. Transmit related items together as single package.
   2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.11 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.

D. Architect's and consultants' actions on items submitted for review:
   1. Authorizing purchasing, fabrication, delivery, and installation:
      a. "Reviewed", or language with same legal meaning.
      b. "Reviewed as Noted, Resubmission not required", or language with same legal meaning.
         1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
   2. Not Authorizing fabrication, delivery, and installation:
      a. "Revise and Resubmit".
      b. "Rejected".

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Testing and inspection agencies and services.

C. Control of installation.

D. Mock-ups.

E. Manufacturers' field services.

F. Defect Assessment.

1.02 RELATED REQUIREMENTS

A. Document 00 3100 - Available Project Information: Soil investigation data.

B. Document 00 7200 - General Conditions: Inspections and approvals required by public authorities.

C. Section 01 3000 - Administrative Requirements: Submittal procedures.

D. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

A. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Compliance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 MOCK-UPS

A. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

2.03 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.

3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
a. To provide access to Work to be tested/inspected.
b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
c. To facilitate tests/inspections.
d. To provide storage and curing of test samples.
4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

2.04 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, and _____ as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

2.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

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SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities.

B. Temporary telecommunications services.

C. Temporary sanitary facilities.

D. Temporary Controls: Barriers, enclosures, and fencing.

E. Waste removal facilities and services.

F. Project identification sign.

1.02 TEMPORARY UTILITIES - SEE SECTION 01 5100

A. No power available on site.

B. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

C. At end of construction, return facilities to same or better condition as originally found.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

A. Construction: Contractor's option.

1.07 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

1.08 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.09 PROJECT IDENTIFICATION

A. No other signs are allowed without Owner permission except those required by law.

1.10 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 8 persons.

C. Locate offices a minimum distance of 30 feet (10 m) from existing structures.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet (600 mm). Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 5713
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

B. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.

C. Section 32 1500 - Aggregate Surfacing: Temporary and permanent roadways.

1.03 REFERENCE STANDARDS

A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus; 2021.

B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 2022.

C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).

D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a (Reapproved 2023).

E. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile; 2021a.

F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).

1.04 PERFORMANCE REQUIREMENTS

A. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

D. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

E. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

F. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

G. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

I. Open Water: Prevent standing water that could become stagnant.

J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

C. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mulch: Use one of the following:
   1. Wood waste, chips, or bark.

B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
   1. Average Opening Size: 30 U.S. Std. Sieve (0.600 mm), maximum, when tested in accordance with ASTM D4751.
   2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491/D4491M.
   3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
   4. Tensile Strength: 100 pounds-force (450 N), minimum, in cross-machine direction; 124 pounds-force (550 N), minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.

5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
6. Tear Strength: 55 pounds-force (245 N), minimum, when tested in accordance with ASTM D4533/D4533M.
7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.

D. Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:

E. Gravel: See Section 31 2323 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
1. Width: As required; 20 feet (7 m), minimum.
2. Length: 50 feet (16 m), minimum.
3. Provide at each construction entrance from public right-of-way.
4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.
1. Provide linear sediment barriers:
   a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
2. Space sediment barriers with the following maximum slope length upslope from barrier:
   a. Slope of Less Than 2 Percent: 100 feet (30 m)..
   b. Slope Between 2 and 5 Percent: 75 feet (23 m).
   c. Slope Between 5 and 10 Percent: 50 feet (15 m).
   d. Slope Between 10 and 20 Percent: 25 feet (7.5 m).
   e. Slope Over 20 Percent: 15 feet (4.5 m).

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

G. Soil Stockpiles: Protect using one of the following measures:
1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.

H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

I. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:

1. Excavate minimum of 6 inches (150 mm).
2. Place geotextile fabric full width and length, with minimum 12 inch (300 mm) overlap at joints.
3. Place and compact at least 6 inches (150 mm) of 1 1/2 to 3 1/2 inch (40 to 90 mm) diameter stone.

B. Silt Fences:
1. Store and handle fabric in accordance with ASTM D4873/D4873M.
2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch (405 mm) high barriers with minimum 36 inch (905 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 4 inches (100 mm) in ground.
3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch (710 mm) high barriers, minimum 48 inch (1220 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet (6 m), use nominal 32 inch (810 mm) high barriers with woven wire reinforcement and steel posts spaced at 4 feet (1220 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
5. Install with top of fabric at nominal height and embedment as specified.
6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches (460 mm), with extra post.
7. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches (300 mm) high with post spacing not more than 4 feet (1220 mm).

C. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft (0.5 kg per 100 sq m).
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft (6 to 8 kg per 100 sq m).
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch (12 to 25 mm) deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches (13 mm) or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Clean out temporary sediment control structures weekly and relocate soil on site.

E. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

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SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Procedures for Owner-supplied products.

G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

A. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.

B. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Made using or containing CFC's or HCFC's.
   2. Made of wood from newly cut old growth timber.
   3. Containing lead, cadmium, or asbestos.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:
   1. Arrange and pay for product delivery to site.
   2. On delivery, inspect products jointly with Contractor.
   3. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   4. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
   1. Review Owner reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

H. Comply with manufacturer's warranty conditions, if any.

I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

J. Prevent contact with material that may cause corrosion, discoloration, or staining.

K. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

L. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Pre-installation meetings.

C. Cutting and patching.

D. Cleaning and protection.

E. Starting of systems and equipment.

F. Demonstration and instruction of Owner personnel.

G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

H. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 3000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.

C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.

D. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.

E. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.

F. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

G. Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.

C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean-up of work of separate sections.

F. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Architect four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-complying work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

3.10 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

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SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

D. Online Construction Project Management Software.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Additional information as specified in individual product specification sections.

D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

H. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch (216 by 280 mm) three D side ring binders with durable plastic covers; 2 inch (50 mm) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Product data, shop drawings, and other submittals.
      c. Operation and maintenance data.
      d. Field quality control data.
      e. Photocopies of warranties and bonds.

K. A PDF version of an assembled operations and maintenance manuals shall be provided to the owner and organized in the same order as the bound version.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

3.07 ONLINE CONSTRUCTION PROJECT MANAGEMENT SOFTWARE

A. Use of online construction project management software is an option.

B. When utilizing online construction project management software, the contractor shall share access with the design team.

C. At the time of substantial completion, the contractor shall extract the project information and archive via flash drive for the owner and design team's use.
   1. The contractor shall make every attempt to get all information on to a single flash drive.
   2. The contractor shall provide (2) two copies of information on flash drives(s) to the owner.
   3. The contractor shall provide (2) two copies of information on flash drives(s) to the design team.

END OF SECTION

SECTION 03 2000 - CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS (LATEST EDITION)

A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.

B. ACI 318 – Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International.

C. ACI SP-66 - ACI Detailing Manual; American Concrete Institute International.

D. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

E. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

F. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

G. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrups spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.
   1. Maintain one copy of each document on project site.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store reinforcing steel off the ground with timbers, planks, or pallets free of mud and standing water. If storage occurs during winter months, cover and ventilate. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M Grade 60, deformed.

B. Joint Dowel Bars: ASTM A615/A615M Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

C. Steel Welded Wire Reinforcement: ASTM A185/A185M, plain type.
   1. Fabricated from as-drawn steel wire into flat sheets.
   2. Mesh Size and Wire Gage: As indicated on drawings.

D. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage.
   2. Bar Supports: Chairs, Bolsters, Bar Supports, Spacers and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Sized and shaped for adequate support of reinforcement during concrete placement. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice", of greater compressive strength than concrete.
   3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces, unless noted otherwise on Structural drawings. Wood materials are prohibited.
   4. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
   5. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is not permitted.

C. Locate reinforcing splices not indicated on drawings at point of minimum stress.
   1. Review locations of splices with Engineer.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position. Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
   1. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

B. Do not displace, cut, puncture or damage vapor barrier. Repair damage and reseal vapor retarder before placing concrete.

C. Accommodate placement of formed openings.

D. Conform to applicable code for concrete cover over reinforcement, and as specified on drawings.

E. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

F. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

G. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 4000, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

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SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete formwork.

B. Floors and slabs on grade.
   1. Vapor barrier and granular fill below concrete slab-on-grade

C. Concrete foundation walls.

D. Concrete foundations

E. Joint devices associated with concrete work.

F. Miscellaneous concrete elements, including curbs and equipment pads.

G. Concrete curing.

H. Waterstops

I. Concrete finishes

J. Non-Shrink Cementitious Grout

1.02 RELATED REQUIREMENTS

A. Section 03 2000 - Concrete Reinforcing.

B. Section 07 9005 - Joint Sealers: Sealants for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS (LATEST EDITION)

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International.

B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International.

C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.

D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.

F. ACI 305R - Hot Weather Concreting; American Concrete Institute International.

G. ACI 306R - Cold Weather Concreting; American Concrete Institute International.

H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International.

I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International.

J. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International.

K. ASTM C33/C33M - Standard Specification for Concrete Aggregates.

L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.

N. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or Cube Specimens).

O. ASTM C150/C150M - Standard Specification for Portland Cement.

P. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.

Q. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

R. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.

S. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

T. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.

U. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

V. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.

W. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding System for Concrete.

X. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

Y. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.

Z. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

AA. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

AB. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

AC. ASTM D2103 – Standard Specification for Polyethylene Film and Sheeting.

AD. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

AE. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers.

AF. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

AG. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

AH. COE CRD-C 48 – Method of Test for Water Permeability of Concrete; Corps of Engineers

AI. COE CRD-C 513 - Corps of Engineers Specifications for Rubber Waterstops; Corps of Engineers

AJ. COE CRD-C 572 - Corps of Engineers Specifications for Polyvinylchloride Waterstop; Corps of Engineers.

AK. NSF 61 - Drinking Water System Components - Health Effects.

1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.

C. Samples: Submit samples of under-slab vapor retarder to be used.

D. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

E. Concrete Mix Design:
   1. Submit proposed concrete mixes for each type of concrete required. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   2. Submit aggregate test reports and mix designs for approval 14 days prior to placing concrete.
   3. Test each type of fine and coarse aggregate for conformance to ASTM C33-78. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
   4. Design mixes in accordance with ACI 301, Section 3.8.2, Method 1 or Method 2.

F. Slab-on-grade Construction/Control Joint Layout: Indicate proposed construction/contraction joints. Space joints to comply with requirements in structural general notes. Location of contraction joints is subject to approval of Engineer.

G. Material Certificates: For each of the following, signed by manufacturers:
   1. Cementitious materials
   2. Admixtures
   3. Form materials and form-release agents
   4. Curing compounds
   5. Bonding agents
   6. Adhesives

7. Vapor retarders
8 Semi-rigid joint fillers
9. Joint filler strips
10. Repair materials

H. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

I. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

J. Qualification Data: Upon Architect's request, provide qualification data for installer and manufacturers.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301, ACI 318, and ACI 317, unless modified by requirements in the Contract Documents.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

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

E. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94 requirements for production facilities and equipment.

F. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician – Grade II.

G. Source Limitations: Obtain each type or class of cementious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 PRODUCTS

2.01 FORMWORK

A. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.

B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

1. Smooth Form Facing for Exposed Finish Concrete: Contractor's choice of materials (plywood, metal, or other approved panel materials) that will provide continuous, true, smooth, stain-free final appearance. Furnish in largest practicable sizes to minimize number of joints.
2. Rough Form Facing for Non-Exposed Finish Concrete: Contractor's choice of materials; plywood, lumber, metal, or other approved panel materials. Provide lumber dressed on at least two edges and one side for tight fit.
3. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
4. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
5. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
6. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 x 3/4 inch, minimum.
7. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
8. Form Coating: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete or interfere with application of coatings.
9. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
    a. Furnish units that will leave no corrodible metal closer than 1-1/2 inches to the plane of exposed concrete surface.
    b. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.02 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I/II - Normal Portland type, unless noted otherwise in Structural Drawings. Use same cementitious materials, of the same type, brand, and source throughout Project.

B. Normal-Weight Aggregates: ASTM C33, Class 3S coarse aggregate or better, graded.
1. Acquire all aggregates for entire project from same source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementious materials.
2. Maximum Coarse-Aggregate Size: 1 inch nominal.
3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
4. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling. In no case shall the use of pit-run or naturally mixed aggregates be permitted. Shale and iron based aggregate shall not be used.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: ASTM C94, clean, potable and not detrimental to concrete.

E. For concrete exposed to de-icers, limit percentage, by weight, of Cementitious materials other than Portland cement according to ACI 301 requirements.

2.03 CHEMICAL ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air-Entraining Admixture: ASTM C260.

C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

D. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.

E. High-Range, Water-Reducing Admixture: ASTM C494, Type F.

F. Water-Reducing Admixture: ASTM C494, Type A.

2.04 ACCESSORY MATERIALS

A. Under-slab Vapor Retarder (Material ID: VPR RET-4): Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
   1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
   2. Acceptable Products:
      a. Intertape Polymer Group, Inc; VaporMaster 15: www.intertapepolymer.com.
      b. W.R. Meadows, Inc.; PERMINATOR 15 mils (0.38 mm): www.wrmeadows.com.
      c. Raven Industries; VaporBlock VB 15: www.ravenefd.com.
      d. Stego Industries, LLC; Stego Wrap Vapor Barrier 15 mil: www.stegoindustries.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.
   3. Fine-Graded Granular Fill: Unless noted otherwise, clean mixture of crushed stone, crushed gravel, and manufactured; ASTM D448, Size 10, with 100 percent passing a 3/8-inch sieve, 10 to 30 percent passing a No. 100 sieve, and at least 5 percent passing No. 200 sieve; complying with deleterious substances limits of ASTM C33 for fine aggregates.

B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; non-corrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.
   1. ASTM C1107/C1107M; Grade A, B, or C.

2.05 BONDING AND JOINTING PRODUCTS

A. Bonding Agent: Non-redispersible, acrylic emulsion or styrene butadiene complying with ASTM C1059, Type II.

B. Epoxy Bonding System: Complying with ASTM C881/C881M; two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements.

C. Waterstops: Flexible PVC waterstop, complying with COE CRD-C 572, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory-fabricate corners, intersetions, and directional changes. Waterstop material fabricated from virgin materials.

1. Profile: Flat, Ribbed with center bulb; Greenstreak 705, 643 or approved equal.
2. Profile: Flat, Ribbed; Greenstreak 781, 783 or approved equal.

D. Waterstops: Cold Joint Waterstop Hydrotite, item CJ-0725-3D (nominal size – 1 inch x ¼-inch), as manufactured by Greenstreak or approved equal.

E. Waterstops: Bentonite and butyl rubber, complying with NSF 61.
1. Configuration: As indicated on drawings.
2. Size: As indicated on drawings.

F. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.

G. Slab Expansion/Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
1. Material: ASTM D1751, asphalt-saturated cellulose fiber.

H. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch (25 mm) diameter holes for conduit or rebars to pass through at 6 inches (150 mm) on center; ribbed steel stakes for setting.

I. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.06 CURING MATERIALS

A. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
1. Material ID: <CONC SLR-1>
2. Vehicle: Water-based.
3. Solids by Mass: 20 percent, minimum.
4. Products:
a. W.R. Meadows, Inc.; VOCOMP-20: www.wrmeadows.com.
b. BASF; Kure 1315: www.buildingsystems.basf.com.
c. Scofield; Cureseal-W: www.scofield.com.
d. Substitutions: See Section 01 6000 - Product Requirements.

B. Curing and Sealing Compound, High Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
1. Material ID: <CONC SLR-2>
2. Vehicle: Water-based.
3. Solids by Mass: 30 percent, minimum.
4. Products:
a. W.R. Meadows, Inc.; VOCOMP-30: www.wrmeadows.com.
b. Substitutions: See Section 01 6000 - Product Requirements.

C. Moisture Retaining Sheet: ASTM C171
1. Polyethylene film, clear, minimum nominal thickness of 0.0040 inche.
2. White burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide.

D. Polyethylene Film: ASTM D2103, 4 mil thick, clear.

E. Water: Potable, not detrimental to concrete.

F. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz. / square yard when dry.

2.07 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
   1. For trial mixtures method, employ a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
   2. Adjustments to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in Work.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
   1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementious materials ratio below 0.50.

E. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: as indicated on Structural Drawings.
   2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.

2.08 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as follows:
   1. Minimum Compressive Strength: 4000 psi at 28 days.
   2. Maximum Water-Cementitious Materials Ratio: 0.45.
   3. Slump Limit: 4 inches, plus or minus 1 inch.
   4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
   5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch and 3/4-inch nominal maximum aggregate size.

B. Foundation Walls: Proportion normal-weight concrete mixture as follows:
   1. Minimum Compressive Strength: 4000 psi at 28 days.
   2. Maximum Water-Cementitious Materials Ratio: 0.45.
   3. Slump Limit: 2 to 4 inches, plus or minus 1 inch. If admixture is utilized, not more than 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.

4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch and 3/4-inch nominal maximum aggregate size.

C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch and 3/4-inch nominal maximum aggregate size.
6. Air Content: Do not allow air content of trowel-finished floors exceed 3 percent for interior slabs.

2.09 MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and ASTM C1116, furnish batch ticket information.
1. When air temperature is between 85 and 90 degree F, reduce mixing and delivery time from 90 minutes to 75 minutes; when air temperature is above 90 degree F, reduce mixing and delivery time to 60 minutes.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thickness from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C150, 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 ¼ inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C109.

B. Repair Overrlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thickness from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
1. Cement Binder: ASTM C150, 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 ¼ inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C109.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Formwork: Design, erect, shore, brace, and maintain according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, and for easy removal without damage to concrete.
   1. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
   2. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
      a. Class A, 1/8 inch for smooth-formed finished surfaces.
      b. Class C, 1/2 inch for rough-formed finished surfaces.
   3. Construct forms tight enough to prevent loss of concrete mortar.
   4. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1.0 vertical.
      a. Install keyways, reglets, recesses, and the like, for easy removal.
      b. Do not use rust-stained steel form-facing material.
   5. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
   6. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
   7. Chamfer exterior corners and edges of permanently exposed concrete.
   8. Forming openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
   9. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
   10. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
   11. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
   12. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
   13. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
   1. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
      a. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings, and Bridges".
      b. 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.
      c. Install dovetail anchor slots in concrete structures as indicated.

D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, and epoxy adhere steel dowels.

F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
   1. Granular Fill Over Vapor Retarder: Cover vapor retarder with compactible granular fill as shown on the drawings. Do not use sand.
   2. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as shown on the drawings. Do not use sand.
   3. Place granular fill and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4-inch.

3.03 WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.
   1. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items are complete and that required inspections have been performed.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Notify Architect not less than 24 hours prior to commencement of placement operations.

D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement. Maintain reinforcement in position on chairs during concrete placement.

F. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.

G. Place concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At

each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

H. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   2. Screed slab surfaces with a straightedge and strike off to correct elevations.
   3. Slope surfaces uniformly to drains where required.
   4. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

I. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   3. Do not use calcium chloride, salt, or other materials containing anti-freeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

K. Hot-Weather Placement: Comply with ACI 301 and as follows:
   1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.05 REMOVING AND REUSING FORMS

A. General: 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 had enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
   1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
   2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Engineer.

3.06 SLAB JOINTING

A. Locate joints as indicated on the drawings. Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
   1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
   2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

D. Load Transfer Construction and Contraction Joint: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding one side of joint. Saw cut joint at surface as indicated for contraction joints.

E. Saw Cut Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Saw cut joints before concrete begins to cool and develops random contraction cracks; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

F. Construction Joints: Install so strength and appearance of concrete are not impaired, at location indicated or as approved by Structural Engineer.
   1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
   3. Locate joints for beams, structural slabs, joists, and girders in the middle third of spans (unless noted otherwise). Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
   5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

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

3.07 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Upon Architect's request, an independent testing agency, as specified in Section 01 4000, will inspect finished slabs for conformance to specified tolerances.

B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
   1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15.
   2. Under Raised Access Flooring: F(F) of 20; F(L) of 15.
   3. Under Thick-Bed Tile: F(F) of 20; F(L) of 15.
   4. Under Carpeting: F(F) of 25; F(L) of 20.
   5. Under Thin Reslient Flooring and Thin set Tile: F(F) of 35; F(L) of 25.
   6. Warehouse Floors On Grade: F(F) of 20; F(L) of 15.

C. Measure F(F) and F(L) in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.

D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.08 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
   1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
   2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture, of a consistency of thick paint to coat surfaces and fill small holes, by brush or spray; scrub immediately to remove excess grout. Mix 1.0 part Portland cement to 1.5 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. After drying, rub vigorously with clean burlap, and keep surface damp by fog spray for at least 36 hours.
   3. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
   4. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction. Apply scratch finish to surfaces indicated and to receive concrete floor topping or to receive mortar setting beds for bonded Cementitious floor finishes.
   2. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and terrazzo with full bed setting system. Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing.

3. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Decorative Exposed Surfaces: "Steel trowel" as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to be polished, and all other slab surfaces. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
5. Trowel and Fine-Broom Finish: Apply a first trowel finish to surface where ceramic or quarry tile is to be installed by either thickset or thin set method. While concrete is still plastic, slightly scarify surface with a fine broom.
6. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
7. Architectural Concrete Finish: Match Architect's approved sample, identified and described as indicated, to satisfaction of Architect.

3.09 MISCELLANEOUS CONCRETE ITEMS

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

B. 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: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

3.10 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported structural slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Surfaces Not in Contact with Forms: Cure unformed surfaces, including floors and slabs, concrete floor toppings and other surfaces.

1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
2. Initial Curing: Start as soon as free water has disappeared and before surface is dry.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray; spray water over floor slab areas and maintain wet.
      c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
   2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
      a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor covers.
      b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
      c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
   3. 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.
      a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

3.11 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Test of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

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

F. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:
   1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 1 cubic yard, but less than 25 cubic yards, plus one set for each additional 50 cubic yards or fraction thereof.
      a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   3. Air Content: ASTM C231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
   5. Unit Weight: ASTM C567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   6. Compression Test Specimens: ASTM C31/C31M.
      a. Cast and laboratory cure standard cylinder specimens for each composite sample.
      b. For 4x8 cylinders; cast 5 cylinders specimens for each composite sample. For 6x12 cylinders, cast 4 cylinder specimens for each composite sample.
      c. Additional cylinders requested by the Contractor are the responsibility of the Contractor.
   7. Compressive-Strength Tests: ASTM C39/C39M.
      a. For 4x8 cylinders; test one cylinder specimen at 7 days, test three cylinder specimens at 28 days, and hold the remaining cylinder specimen. For 6x12 cylinders; test one cylinder specimen at 7 days, test two cylinder specimens at 28 days, and hold the remaining cylinder specimen.
      b. A compressive-strength test shall be the average compressive strength from 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.
   10. Test results shall be reported in writing to Architect/Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
   11. Non-destructive Testing: Impact hammer, sonoscope, or other non-destructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.
   12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Engineer.
   13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

G. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

H. Measure floor and slab flatness and levelness according to ASTM E1155 within 48 hours of finishing.

3.12 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

E. Patching Mortar: Mix dry-pack patching mortar, consisting of 1.0 part Portland cement to 2.5 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
   1. Cut out honeycombs, rock pockets, voids over 1/4-inch in any direction, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete suface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
   2. For surfaces exposed to view, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

F. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
   3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

G. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pocket, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas schedule to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4-inch clearance all around. Dampen concrete surface in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

H. Perform structural repairs of concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

I. Repair materials and installation not specified above may be used, subject to Engineer's approval.

3.13 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

B. 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.

END OF SECTION

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SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Mortar and grout.

C. Reinforcement and anchorage.

D. Flashings.

E. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2024.

C. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.

D. ASTM C129 - Standard Specification for Dry-Cast Nonloadbearing Concrete Masonry Units; 2025.

E. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2026.

F. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.

G. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

H. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2024.

I. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

J. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

K. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

L. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2025a.

M. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2024.

N. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

O. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2024.

P. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

Q. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.

R. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.

S. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.

D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

E. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

1.06 QUALITY ASSURANCE

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

C. Store cementious materials on elevated platforms, under cover, and in a dry location.

D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

E. Deliver pre-blended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store pre-blended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

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

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches (400 by 200 mm) and nominal depth of 8 inches (200 mm).
   2. Load-Bearing Units: ASTM C90, normal weight.
      a. Hollow block, as indicated.
   3. Nonloadbearing Units: ASTM C129.
      a. Hollow block, as indicated.
   4. Split Face Concrete Masonry Units: Complying with ASTM C 90, Type I moisture-controlled units.
      a. Manufacturers:
         1) Anchor Block; www.anchorblock.com/
         2) Amcon; www.tccmaterials.com/brand/amcon/
         3) Substitutions: See Section 01 6000 - Product Requirements.
      b. Color: As selected by Architect from manufacturer's standard range.
      c. Provide finishes, sizes, coursings, etc. as shown in the drawings.
      d. Provide special shaped units for corners and other locations where multiple faces are visible.
      e. Provide manufacturer's standard factory applied sealer (such as TK 192 by TK Products) on each ground surface to facilitate cleaning on the job site.

5. Supplier of exterior concrete masonry units shall guarantee that the finished product will not be stained or damaged due to iron or shale deposits in the face of the concrete masonry units for a period of 5 years.
6. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at time of manufacture.
    a. Performance of Units with Integral Water Repellent:
        1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.
            (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour (0.05 L per hour) at the end of 24 hours.
            (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
        2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
        3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
    b. Use only in combination with mortar that also has integral water repellent admixture.
    c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.02 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of Portland cement complying with ASTM C 150, Type I or Type II, and hydrated lime complying with ASTM C 207, Type S.

D. Mortar Aggregate: ASTM C144.
    1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

E. Grout Aggregate: ASTM C404.

F. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.

G. Water: Clean and potable.

H. Cold-Weather admixture: not permitted.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
    1. Blok-Lok Limited; _____: www.blok-lok.com/#sle.
    2. Hohmann & Barnard, Inc; X-Seal Anchor: www.h-b.com/#sle.
    3. WIRE-BOND: www.wirebond.com/#sle.
    4. Substitutions: See Section 01 6000 - Product Requirements.

B. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi) (280 MPa), deformed billet bars; galvanized.

C. Joint Reinforcement: ASTM A951 Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
    1. Interior walls: Hot-dipped galvanized, carbon steel.
    2. Exterior walls: Hot-dipped galvanized, carbon steel.
    3. Wire size for Side Rods: W1.7 or 0.148 inch diameter.
    4. Wire size for Cross Rods: W1.7 or 0.148 inch diameter.
    5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
    6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

D. Single Wythe Joint Reinforcement: Ladder type with single pair of side rods; width as required to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) of mortar coverage on each exposure.

E. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A153/A153M, Class B.
   1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
   3. Vertical adjustment: Not less than 3-1/2 inches.

F. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch (4.8 mm) thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch (16 mm) of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in (32 mm).

2.04 FLASHINGS

A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet, laminated to stainless steel drip; 0.040 inch minimum total thickness; with cross-linked polyethylene top and bottom surfaces. Provide stainless steel termination bar over flashing, fastened at 16 inches on center.
   1. Manufacturers:
      a. Carlisle Coatings & Waterproofing; Product CCW-705-TWF.
      b. DuPont; Product Thru-Wall Flashing.
      c. W.R. Grace; Product Perm-A-Barrier Wall Flashing.
      d. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORIES

A. Preformed Control Joints: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated. Provide with corner and tee accessories, fused joints.

B. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
   1. Mortar Diverter: Panels designed for installation at flashing locations.
      a. Manufacturers:
         1) Advanced Building Products Inc: www.advancedflashing.com.
         2) Mortar Net USA, Ltd; Mortar Net with Insect Barrier: www.mortarnet.com.
         3) Substitutions: See Section 01 6000 - Product Requirements.

C. Weeps:
   1. Type: Polyester mesh.

D. Cavity Vents:

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

F. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D226, Type I (No. 15 asphalt felt).

G. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

H. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.

2.06 MORTAR AND GROUT MIXING

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Limit cementious materials in mortar to Portland cement and lime.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project Site.

C. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
   1. For reinforced masonry, use Type S.

D. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).

E. Grout: ASTM C476.
   1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout space and pour height.
   2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143.
   3. Minimum Compressive Strength: 2,000 psi at 28 curing days.

F. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

G. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

D. Verify that foundations are within tolerances specified.

E. Verify that reinforcing dowels are properly placed.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions.
   1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 degrees F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

3.04 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
   1. Mix units from several pallets or cubes as they are placed.
   2. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
   3. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
   4. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
   5. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
   6. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

3.05 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-typoe joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs and, where possible, at other locations.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches (200 mm).
   3. Mortar Joints: Concave.

3.06 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work, buttered ends with sufficient mortar to fill head joints and shore into place. Do not deeply burrow bed joints or slush head joints.

B. Lay hollow masonry units as follows:
   1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
   2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
   3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
   4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
   1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
   2. Wet joint surface thoroughly before applying mortar.

D. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

E. Remove excess mortar and mortar smears as work progresses.
   1. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.

F. Interlock intersections and corners.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, use motor-driven saws. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

I. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

3.07 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 16 inches (406 mm) on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

B. Install weeps in head joints in exterior withes of first course of masonry immediately above embedded flashing and as follows:
   1. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
   2. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

3.08 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. Install cavity mortar control panels continuously throughout full height of exterior masonry cavities during construction of exterior wythe, complying with manufacturer's installation instructions.

3.09 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

3.10 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
   1. Provide an open space not less than 1/2 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar and other rigid materials.
   2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
   3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.11 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

1. Extend flashings full width at such interruptions and at least 6 inches (152 mm), minimum, into adjacent masonry or turn up flashing ends at least 1 inch (25.4 mm), minimum, to form watertight pan at nonmasonry construction.
2. Remove or cover protrusions or sharp edges that could puncture flashings.
3. Seal lapped ends and penetrations of flashing before covering with mortar.
4. Extend rubberized asphalt flashings to within 1/4 inch of exterior face of masonry.
5. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.
6. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before cover with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
7. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads, and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
8. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.
9. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

B. Terminate flashing up 8 inches (203 mm) minimum on vertical surface of backing:

C. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.

D. Support flexible flashings across gaps and openings.

3.12 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch (13 mm) of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches.

3.13 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.14 TOLERANCES

A. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
1. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
2. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
3. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
4. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
5. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.
6. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.15 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.
   1. In the event the unit masonry assemblies do not satisfy the Unit Strength Method requirements as outlined in IBC Section 2105.2.2.1, Prism Tests will be required. Perform prism tests in accordance with IBC Section 2105 and as follows:
      a. A set of 3 masonry prisms for each masonry type requiring testing, shall be built and tested in accordance with ASTM C1314 prior to the start of construction.
      b. During construction a set of 3 masonry prisms shall be built and tested in accordance with ASTM C1314 for each 5,000 square feet of wall area, but not less than one set of 3 masonry prisms for the project.
      c. The compressive strength of masonry determined in accordance with ASTM C1314 for each set of prisms shall equal or exceed specified f'm.
      d. Preparation, storage, handling of prism tests. (Contractor shall provide labor and materials to construct all prism tests.)

C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

D. Grout Tests (compressive strength): Compressive strength of grout shall be determined in accordance with ASTM C1019.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.16 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry unites that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Remove excess mortar and mortar droppings.

E. Replace defective mortar. Match adjacent work.

F. Clean soiled surfaces with cleaning solution.

G. Use non-metallic tools in cleaning operations.

3.17 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

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SECTION 04 7200
CAST STONE MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural cast stone.

B. Units required are indicated on drawings as "cast stone".

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Installation of cast stone in conjunction with masonry.

B. Section 07 9200 - Joint Sealants: Sealing joints indicated to be left open for sealant.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2024.

C. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2024.

D. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2025.

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2024.

F. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2024a.

G. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

H. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

I. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2024.

J. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete; 2021.

K. ASTM C1364 - Standard Specification for Architectural Cast Stone; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Test results of cast stone components made previously by the manufacturer.

C. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.

D. Mortar Color Selection Samples.

E. Verification Samples: Pieces of actual cast stone components not less than 6 inches (152 mm) square, illustrating range of color and texture to be anticipated in components furnished for the project.

F. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. A firm with a minimum of 5 years experience producing cast stone of types required for project.
   2. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.

B. Number each piece individually to match shop drawings and schedule.

C. Store cast stone components and installation materials in accordance with manufacturer's instructions.

D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.

E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

F. Store mortar materials where contamination can be avoided.

G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Cast Stone:
   1. American Artstone Company, 507-233-3700, www.american-artstone.com
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ARCHITECTURAL CAST STONE

A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural granite, complying with ASTM C1364.
   1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
   2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
   3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet (6 meters).
   4. Remove cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.
   1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch (3 mm) or length divided by 360, whichever is greater, but not more than 1/4 inch (6 mm).
   2. Unless otherwise indicated on drawings, provide:
      a. Wash or slope of 1:12 on exterior horizontal surfaces.
      b. Drips on projecting components, wherever possible.
      c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI CODE-318.

2.03 MATERIALS

A. Portland Cement: ASTM C150/C150M.
   1. For Mortar: Type I or II, except Type III may be used in cold weather.

B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.

C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.

D. Admixtures: ASTM C494/C494M.

E. Water: Potable.

F. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi) (280 MPa), deformed bars, galvanized.

1. Galvanized in accordance with ASTM A767/A767M, Class I.

G. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.

H. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.

I. Mortar: Portland cement-lime, as specified in Section 04 0511 ; do not use masonry cement.

J. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.04 SOURCE QUALITY CONTROL

A. Test compressive strength and absorption of specimens selected at random from plant production.
   1. Test in accordance with ASTM C642.
   2. Select specimens at rate of 3 per 500 cubic feet (3 per 14 cubic m), with a minimum of 3 per production week.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.

B. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 2000.

B. Mechanically anchor cast stone units indicated; set remainder in mortar.

C. Setting:
   1. Drench cast stone components with clear, running water immediately before installation.
   2. Set units in a full bed of mortar unless otherwise indicated.
   3. Fill vertical joints with mortar.
   4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

3.03 TOLERANCES

A. Joints: Make all joints 3/8 inch (9.5 mm), except as otherwise detailed.
   1. Rake mortar joints 3/4 inch (19 mm) for pointing.
   2. Remove excess mortar from face of stone before pointing joints.
   3. Point joints with mortar in layers 3/8 inch (9.5 mm) thick and tool to a slight concave profile.
   4. Leave the following joints open for sealant:
      a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
      b. Joints in projecting units.
      c. Joints between rigidly anchored units, including soffits, panels, and column covers.
      d. Joints below lugged sills and stair treads.
      e. Joints below ledge and relieving angles.
      f. Joints labeled "expansion joint".

3.04 REPAIR

A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet (6 m).

B. Repair with matching touch-up material provided by the manufacturer and in accordance with manufacturer's instructions.

C. Repair methods and results subject to Architect 's approval.

3.05 CLEANING

A. Keep cast stone components clean as work progresses.

3.06 PROTECTION

A. Protect completed work from damage.

B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.

END OF SECTION

SECTION 05 5213
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Free-standing railings at steps and ramp.

1.02 REFERENCE STANDARDS

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

B. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube; 2022.

C. ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2020.

D. ASTM B483/B483M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Tube and Drawn Pipe for General Purpose Applications; 2021.

E. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Handrails and Railings:
   1. ATR Technologies Inc; Aluminum Multi-Line Railing: http://www.atr-technologies.com/#sle.
   2. Avcon Railing Systems: www.avcon.com/#sle.
   3. Greco Aluminum Railings; _____: www.grecorailings.com/#sle.
   4. Superior Aluminum Products, Inc; Series 5H Pipe Railing: www.superioraluminum.com/#sle.
   5. Ultra Aluminum Manufacturing, Inc: www.ultrafence.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds (890 N) applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935

C. Allow for expansion and contraction of members and building movement without damage to connections or members.

D. Dimensions: See drawings for configurations and heights.

E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

F. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.03 ALUMINUM MATERIALS

A. Aluminum Pipe: Schedule 40; ASTM B429/B429M, ASTM B241/B241M, or ASTM B483/B483M.

B. Welding Fittings: No exposed fasteners; cast aluminum.

C. Straight Splice Connectors: Concealed spigot; cast aluminum.

2.04 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:

1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

2.05 ALUMINUM FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

B. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

END OF SECTION

SECTION 13 3400
PREFABRICATED STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Custom prefabricated steel pavilion structure, including roofing, structural steel supporting members, fittings, and accessories. Pavilion engineering is by supplier.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Concrete foundations.

B. Section 04 2000 – Unit Masonry: Block foundations.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit product data sheets, including material descriptions and finishes, and preparation instructions and recommendations.

C. Shop Drawings: Submit construction drawings including plans, elevations, details, dimensions, support steel sizing and hardware. Include:
   1. Exact interface geometry determination and definitions.
   2. Coordination between roofing and structural supports
   3. Interfaces to foundation supports
   4. Design loads used in structural calculations.
   5. Foundation reaction loads.
   6. Stamp or seal of design engineer.

D. Samples: Submit sample of roofing and colors.

E. Erection/Stressing Plan: Submit a compressive erection and stressing plan, including drawings that clearly show the proposed erection procedure for the roof elements, and structural steel during each stage of construction.

F. Foundation Design: Contractor is to supply the shelter manufacturer's engineered drawings for coordination of the concrete after the bid is awarded. A structural review by the owner's structural engineer will be required. Any changes to the design will be issued with a change order.
   1. Foundation material shall be provided by the General Contractor.

G. Quality Control: Submit outline of manufacturer's Quality Control Program.

H. Safety Program: Submit copy of manufacturer's safety manual for installation.

I. Operating and Maintenance Data: Manufacturer's instructions.

J. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm that is capable of assuming complete responsibility for design, engineering, fabrication, delivery, preparation, installation, adjusting, and cleaning of structure, and:
   1. Having minimum of 5 years experience in design and fabrication of structures of similar size and complexity to that specified.

B. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Installer Qualifications: Manufacturer or authorized by manufacturer.

D. Pre-installation Meeting: Convene a pre-installation meeting two (2) weeks before start of installation of tensioned fabric structure. Require attendance of parties directly affecting work of this section, including Architect, Owner, Contractor, and installation superintendent.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

1.06 STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, IN A CLEAN, DRY, WELL VENTILATED AREA, ABOVE GROUND ON BLOCKING, AND DO NOT ALLOW MATERIALS TO BECOME WET, STAINED, OR DIRTY.

A. Handle materials so as to protect materials, coatings, and finishes during handling and installation to prevent damage

B. Prior to delivery of steel members from factory to job site all members shall be wrapped in a protective wrap to protect the factory finish during shipping. Protective wrap should be removed upon receipt of delivery to avoid prolonged exposure to packaging materials which could damage factory finish. Should damage occur to the surface finish, whether during shipment or on-site, touch up paint is provided.

1.07 WARRANTY

A. Manufacturer shall warranty the structure steel frame members to be free from defects in materials and workmanship under normal use for 10 years from delivery date.

B. Finish Warranty: Provide manufacturer's 10 year warranty on factory finish against cracking, peeling, and blistering.

C. Pass through warranty of metal roof manufaturer shall be provided.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Poligon, a product of PorterCorp.
   1. 4240 N 136th Ave., Holland, MI 49424
   2. Phone: 616-399-1963
   3. Email: info@poligon.com
   4. www.poligon.com
   5. MN Contact: Briana Cohen, Northland Recreation, 952-388-7355

B. Approved Equal

C. Substitutions: See Section01 6000-Product Requirements.

2.02 PREFABRICATED PARK SHELTER

A. Shelter Basis of Design: Kokomo Amphitheater by Poligon.

B. Trellis Basis of Design: Concord Trellis by Poligon.

C. All shelter components shall be designed and fabricated per the latest applicable edition of the International Building Code (IBC). Structure is typically designed for a 25 lb live load, a 90 mph wind load and applicable seismic loads, and can be designed based on specific site requirements upon request.

D. All structural members shall be designed according to the American Institute of Steel Construction (AISC) and the American Iron and Steel Institute (AISI) specifications.

E. All welding is to be done in accordance with the latest American Welding Society (AWS) standards and all welds are to develop full strength of component parts (E7081 Electrodes).

F. The Manufacturer shall submit site specific engineer sealed structural calculations by a registered engineer in the state of the shelter location.

2.03 FOOTINGS & COLUMNS

A. Standard columns shall have a welded base plate to be surface mounted to concrete footings. All concrete material and installation shall be supplied by the owner / contractor. Anchor bolts shall be ASTM A307 and will be provided along with bracing templates by the Manufacturer.

2.04 FRAMING MEMBERS

A. All frame members shall be structural steel tube ASTM A-500 Grade B with ASTM A-36 welded connection plates. Minimum steel tube wall thickness shall be 0.120 (1/8”) and minimum connection plate thickness shall be 0.250 (1/4”).

B. All framing connections are done using ASTM A-325 grade bolts (included with shelter) within concealed access openings from above and will later be concealed by the roofing. All roof framing shall be flush against the underside of the roof decking to eliminate the possibility of bird nesting.

C. Open framing members such as “I” beams, angle iron and “C” or “Z” channels shall not be used.

D. All frame members shall be blasted and washed to a white condition to completely rid the steel of all rust, oil, grease and contaminates. 3-6 mils (0.1524 mm) of electro-statically applied epoxy primer and 4-6 mils of electro-statically applied TGIC polyester powder coat. Final powder coat is oven cured at 400 degrees. 16 standard color choices.

2.05 ROOFING & TRIM

A. Roof Deck: Factory pre-stained tongue and grove (TG):
   1. T&G shall be of 2x6 tongue and groove, Hem Fir, Select Structural KD 15. Factory stained. Color to be selected by Architect
   2. Manufacturer shall supply 30 pound felt and drip edge if both primary and secondary roofs are being supplied by the manufacturer.
   3. Contractor shall cut T&G down to required lengths.

B. All roofing shall be 22ga concealed fastner standing seam panels. 16" wide with ribs 1-3/4" high

C. Roof surface shall be painted 20 year warranted Kynar 500 to the manufacturer’s standard colors. Color to be selected by Architect. Ceiling surface shall be a "wash coat" primer.

D. Angles shall be cut in the field.

E. Metal roofing trim shall match the color of the roof and shall be factory made of 26 gauge Kynar 500 painted steel.

F. Roof panels have factory eave notch, simplifying installing around offset cleat.

G. Trim shall include panel ridge caps, hip caps, eave trim, splice channels, rake trim, roof peak cap, and corner trim as applicable for model selected. Trim may need to be cut to length and notched. Installation drawings shall have detailed information on how to cut and affix roof trim.

H. Ridge, hip, and valley caps shall be pre-formed with a single central bend to match the roof pitch and shall be hemmed on the sides.

I. Roof peak cap shall be pre-manufactured.

J. Manufacturer shall supply painted screws and butyl tape.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine area to receive structure. Notify Architect if area is not acceptable. Do not begin installation until unacceptable conditions have been corrected.

B. Examine foundations and anchor bolts for location and elevation. Notify Architect of inaccuracies. Do not begin installation until unacceptable conditions have been corrected.

3.02 PREPARATION

A. Prepare an erection plan for all structural and roofing installation activity, including a detailed sequence of the work.

B. Prepare a clear, flat, smooth, and clean layout area on ground of sufficient size for assembly of prefabricated structure. Prepare area adjacent to location of structure installation.

3.03 INSTALLATION

A. The Manufacturer shall provide complete installation drawings and instructions. Installation should be performed by someone of experience and competence. It shall be the responsibility of the installer to properly assemble the shelter as described in installation documents and to construct shelter foundations as specified in supplemental engineering documents.

3.04 ADJUSTING

A. Make final adjustments to structure as required for structural integrity, geometric shape, and free from objectionable wrinkles when viewed from the normally occupied space.

B. Do not attempt any field changes to structure without first contacting manufacturer.

3.05 CLEANING

A. Clean structure in accordance with manufacturer's instructions.

END OF SECTION

SECTION 31 1000
SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clearing and grubbing.

B. Selective removal and trimming.

C. Earth stripping and stockpiling.

D. Repair and restoration.

E. Debris removal.

1.02 REFERENCE STANDARDS

A. 29 CFR 1910.266 - Logging Operations; Current Edition.

B. ANSI A300 Part 1 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning); 2017.

C. ANSI Z133 - American National Standard for Arboricultural Operations - Safety Requirements; 2017.

1.03 FIELD CONDITIONS

A. Ambient Conditions: Terminate work during hazardous environmental conditions according to 29 CFR 1910.266.

B. Temporary Erosion and Sediment Control: Comply with other requirements specified in Section 01 5713 - Temporary Erosion and Sediment Control.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sedimentation Barrier: See Section 01 5713 - Temporary Erosion and Sediment Control.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate work with utility companies; notify before starting work and comply with local requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Protect existing structures and other elements that are to remain.

E. Install sedimentation barrier according to Section 01 5713 - Temporary Erosion and Sediment Control.

3.02 CLEARING AND GRUBBING

A. Clearing: Cut trees, stumps, shrubs, downed timber, and other vegetation for removal within identified area as indicated on drawings according to 29 CFR 1910.266. Follow recommendations of ANSI Z133 and best local practices for species involved.

B. Do not remove or damage vegetation beyond limits indicated on drawings.

3.03 SELECTIVE REMOVAL AND TRIMMING

A. Selective Removal: Individual tree and shrub identified for removal according to 29 CFR 1910.266.

1. Fill holes left by removal of stumps and roots, using suitable fill material, with top surface neat in appearance and matching existing grade.

B. Selective Trimming: Individual limbs and branches cut back according to ANSI A300 Part 1 identified for removal as indicated on drawings. Follow recommendations of ANSI Z133 and best local practices for species involved.

3.04 EARTH STRIPPING AND STOCKPILING

A. Stripping:
   1. Remove topsoil within identified area as indicated on drawings.

B. Stockpiling:
   1. Place topsoil in identified areas as indicated on drawings:
      a. Pile depth not to exceed 8 feet (2.5 m).

3.05 REMOVED VEGETATION PROCESSING

A. Do not burn, bury, landfill, or leave on-site, except as indicated on drawings.

B. Trees: Sell if marketable.

3.06 REPAIR AND RESTORATION

A. Remaining Existing Facilities, Utilities, and Site Features: If damaged due to this work, repair or replace to original condition.

B. Vegetation: Replace damaged or destroyed vegetation identified to remain as indicated on drawings at no cost to Owner:
   1. Outside removal limits.

3.07 DEBRIS REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and windblown debris from public and private lands.

3.08 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.

C. Leave site clean and ready to receive work.

END OF SECTION

SECTION 31 2200
GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough grading.

B. Fine grading.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing.

B. Section 31 2316 - Excavation.

C. Section 31 2323 - Fill.

1.03 REFERENCE STANDARDS

A. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017 (Reapproved 2025).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.05 QUALITY ASSURANCE

A. Perform in accordance with State of Minnesota, Highway Department standards.
   1. Maintain one copy on-site.

PART 2 PRODUCTS

2.01 MATERIALS

A. Gravel: Excavated on-site.
   1. Graded according to ASTM D2487 Group Symbol GW, GP, or SP.

B. Other Fill Materials: See Section 31 2323.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify survey bench mark and intended elevations for grading areas are as indicated.

B. Verify the absence of standing or ponding water.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect above- and below-grade utilities to remain.

D. Notify utility company to remove and relocate utilities.

E. Provide temporary means and methods to remove standing or ponding water from areas prior to grading.

F. Protect site features to remain, including but not limited to bench marks, survey control points, and fences.

G. Remove topsoil in accordance with Section 31 1000.

H. Excavate materials in accordance with Section 31 2316.

I. Fill and backfill in accordance with Section 31 2323.

3.03 ROUGH GRADING

A. Excavate and fill subgrade material to elevations indicated on plans.

B. Replace displaced subgrade in accordance with Section 31 2323.

C. Remove and replace unsuitable materials as specified fill.

D. See Section 31 2316 for stockpiling procedures.

3.04 FINE GRADING

A. Scrape and spread subgrade material uniformly smooth and without disruptions as indicated on drawings.

B. Slopes: Transition smoothly to adjacent areas.

C. See Section 31 2323 for final compaction.

3.05 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.

C. Leave site clean and raked, ready to receive work.

END OF SECTION

SECTION 31 2316
EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavation.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing.

B. Section 31 2200 - Grading.

C. Section 31 2323 - Fill.

1.03 PRICE AND PAYMENT PROCEDURES

A. Unit Prices:
   1. See Section 01 2200 - Unit Prices for additional requirements.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.05 FIELD CONDITIONS

A. Ambient Conditions: Do not perform excavation during periods of heavy rain as directed by Architect.

B. Utility Location: Notify Call Before You Dig (811) before excavation to request approximate underground utility marking.

PART 3 EXECUTION

2.01 EXAMINATION

A. Verify survey bench mark elevations are as indicated on drawings.

2.02 PREPARATION

A. See Section 31 1000 for site clearing and topsoil removal.

B. Identify required lines, levels, contours, and datum locations.

C. Protect survey bench marks, control points, and monuments from excavating equipment and vehicular traffic.

D. Locate and identify known utilities to remain and protect from damage.

2.03 EXCAVATION

A. General Excavation:
   1. Excavate to indicated contours, elevations, and grades.

B. Excavation to accommodate foundations and underground utilities.
   1. Excavate to specified elevations.

C. Notify Architect of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

2.04 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

2.05 PROTECTION

A. Divert surface water away from excavations.

B. Maintain stability of banks and loose soils; prevent from falling into excavations.

C. Maintain excavations in satisfactory, undisturbed condition.

D. Protect bottom of excavations from freezing.

END OF SECTION

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SECTION 31 2323
FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for building volume below grade, footings, slabs-on-grade, paving, and utilities within the building.

1.02 RELATED REQUIREMENTS

A. Section 32 9119 - Landscape Grading.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 2200 - Unit Prices, for general requirements applicable to unit prices for earthwork.

1.04 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

1.05 REFERENCE STANDARDS

A. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2025.

B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).

C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

D. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017 (Reapproved 2025).

1.06 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Compaction Density Test Reports.

1.07 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.08 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Complying with State of Minnesota Highway Department standard.

B. Structural Fill: Complying with State of Minnesota Highway Department standard.

C. Granular Fill: Coarse aggregate, complying with State of Minnesota Highway Department standard.

D. Sand: Complying with State of Minnesota Highway Department standard.

E. Topsoil: See Section 32 9119.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the Work are as indicated.

B. Identify required lines, levels, contours, and datum locations.

C. See Section 31 2200 for additional requirements.

D. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches (150 mm) to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches (150 mm) compacted depth.

F. Slope grade away from building minimum 2 inches in 10 feet (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

G. Correct areas that are over-excavated.
   1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 100 percent of maximum dry density.
   2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.

H. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.

I. Reshape and re-compact fills subjected to vehicular traffic.

J. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

A. Structural Fill:
   1. Maximum depth per lift: 6 inches (150 mm), compacted.
   2. Compact to minimum 95 percent of maximum dry density.

B. Under Interior Slabs-On-Grade:
   1. Use granular fill.
   2. Compact to 95 percent of maximum dry density.

C. At Foundation Walls and Footings:
   1. Use general fill.
   2. Compact each lift to 90 percent of maximum dry density.
   3. Do not backfill against unsupported foundation walls.

D. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches:
   1. Bedding: Use general fill.
   2. Cover with general fill.
   3. Compact in maximum 8 inch (200 mm) lifts to 95 percent of maximum dry density.

E. At Lawn Areas:
   1. Use general fill.
   2. Fill up to 6 inches (150 mm) below finish grade elevations.
   3. Compact to 95 percent of maximum dry density.
   4. See Section 32 9119 for topsoil placement.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Soil Fill Materials:
   1. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
   2. If tests indicate work does not meet specified requirements, remove work, replace and retest.
   3. Frequency of Tests: Test at subbase, test for compaction of slab base..
   4. Proof roll compacted fill at surfaces that will be under slabs-on-grade.

3.06 CLEANING

A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

B. Leave unused materials in a neat, compact stockpile.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

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