GREAT LAKES CAMPUS
NORTH PAVER REPLACEMENT

715 E. Front St., Traverse City, MI

PROJECT NO. 22.523

For Bid - Construction
October 09, 2023

Owner's Representative
Northwestern Michigan College
1701 E Front St.
Traverse City, MI 49686
phone: 231-995-1114
contact:
Troy Kierczynski, VP of Finance & Administration
e-mail: tkierczynski@nmc.edu
Pat Quinlan, Campus Services Director
e-mail: pquinlan@nmc.edu

Architecture
Cornerstone Architects, Inc.
122 S. Union Street, Suite 200
Traverse City, MI 49684
phone: 616-774-0100 sext 103
contact: Dan Iacovoni, RA
e-mail: diacovoni@cornerstone-arch.com
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INVITATION TO BID

FROM:

The Owner (hereinafter referred to as Owner):
Northwestern Michigan College
1701 E. Front Street
Traverse City, MI 49684
Contact Person: Pat Quinlan
Phone: 231-995-1114

And the Architect:
Cornerstone Architects, Inc.
122 S. Union Street, Suite 200
Traverse City, MI 49684
Phone: 616.774.0100 x101; cell: 616.813.6502
email: diacovoni@cornerstone-arch.com
Contact Person: Dan Iacovoni, RA Associate Principal


TO: POTENTIAL BIDDERS

The Owner will receive sealed bids from Pre-Qualified and Approved General Contractors for the Paver Replacement at, NMC Great Lakes Campus, 715 E. Front Street, Traverse City, Michigan 49686.

Bids for a Stipulated Sum contract will be received and opened at a private bid opening at 2:00pm on Thursday, November 09, 2023 at NMC Facilities Building, 1701 Front Street, Traverse City, Michigan 49686. Submitted Bids will be privately opened at that time. Any bids received after the specified date and time will not be considered.

Bidders may hand deliver or mail their sealed bids to the Reception Desk at the NMC Facilities Building, 1701 Front Street, Traverse City. **Bids must be received prior to 2:00pm**, Facsimile or emailed bids will not be opened or read.

**Project Description:**
The project is: Site concrete paver and sidewalk replacement requiring field investigation and take off, careful demolition of existing concrete pavers as noted.

**The Project Scope is:**
- Demolition of existing pavers and concrete sidewalk.
- Replacement of pavers and concrete sidewalk.
- Installation of new light poles and lights.

The construction period begins following Board Approval on **Monday May 06, 2024** with **Substantial Completion by Friday June, 07, 2024**. Construction to be coordinated with NMC to maintain access to surrounding buildings.
Bidding Documents:

Complete sets of Bid Documents can be obtained by bidders from Traverse Reproduction and Supply, 1373 Barlow Street, Traverse City, MI, between 8:00 am and 5:00 pm, beginning Monday, October 09, 2023. Call the business (231.947.6284) prior to picking up sets to confirm availability.

Bidding documents may also be reviewed at the Builders Exchange - Traverse City at 1373 Barlow Street, Traverse City, MI 231-946-5531 (info@bxtvc.com) and the Builders Exchange - Grand Rapids, 4461 Cascade Rd SE, Grand Rapids, MI 616.949.8650 (projects@grbx.com)

Pre-Bid Meeting:

There is a Mandatory Pre-Bid on site meeting Tuesday October 17, 2023 at 10:00am.

Bidding:

Bidders are required to provide Bid security in the form of a Bid Bond of a sum no less than 5 percent of the Bid Amount.

Refer to other bidding requirements described in Document 00 21 13 - Instructions to Bidders; and Document 00 30 00 - Information Available to Bidders.

Submit your offer on the Bid Form provided – Document 00 41 00 – Bid Form. Bidders may supplement this form as appropriate.

Bids shall be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the Owner or any employee of the bidder and any Northwestern Michigan College administration personnel. Use the Form provided as Section 00 45 50 – Statement Regarding Familial Relationship and the form provided as Section 00 45 51 00 - Statement regarding Iran Sanctions.

Your offer will be required to be submitted under a condition of irrevocability for a period of 60 days after submission.

The Owner reserves the right to accept or reject any or all offers, waive irregularities, and to accept the bid that in their opinion is in the best interest of the owner.

For: Northwestern Michigan College
Pat Quinlan, Campus Services Director

END OF SECTION 00 11 16
Bidding Documents:

Complete sets of Bid Documents can be obtained by bidders from Traverse Reproduction and Supply, 1373 Barlow Street, Traverse City, MI, between 8:00 am and 5:00 pm, beginning Monday, October 09, 2023. Call the business (231.947.6284) prior to picking up sets to confirm availability.

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Your offer will be required to be submitted under a condition of irrevocability for a period of 60 days after submission.

The Owner reserves the right to accept or reject any or all offers, waive irregularities, and to accept the bid that in their opinion is in the best interest of the owner.

For: Northwestern Michigan College
Pat Quinlan, Campus Services Director

END OF SECTION 00 11 16
SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 DOCUMENT INCLUDES

A. Invitation
   1. Bid Submission
   2. Intent
   3. Work Identified in the Contract Documents
   4. Contract Time

B. Bid Documents and Contract Documents
   1. Definitions
   2. Contract Documents Identification
   3. Availability
   4. Examination
   5. Inquiries/Addenda
   6. Product/Assembly/System Substitutions

C. Site Assessment
   1. Site Examination
   2. Prebid Conference

D. Qualifications
   1. Qualifications
   2. Subcontractors/Suppliers/Others

E. Bid Submission
   1. Bid Ineligibility
   2. Submission Procedure

F. Bid Enclosures/Requirements
   1. Security Deposit
   2. Performance Assurance
   3. Insurance
   4. Bid Form Requirements
   5. Fees for Changes in the Work
   6. Bid Form Signature
   7. Additional Bid Information

G. Offer Acceptance/Rejection
   1. Duration of Offer
   2. Acceptance of Offer

1.02 RELATED DOCUMENTS

A. Division 00 - Invitation to Bid.
B. Division 00 - Information Available To Bidders.
C. Division 00 - Bid Form.
D. Division 00 - Supplements to Bid Form.
E. Division 00 - Supplementary Conditions:
INVITATION

2.01 BID SUBMISSION
A. Bids signed and under seal, executed, and dated will be received at NMC, 1701 E. Front Street, Traverse City, Michigan.
B. Bids will be received by **2:00pm on Thursday, November 09, 2023**. A private bid opening to follow.
C. Offers submitted after the above time shall be returned to the bidder unopened.
D. Submit required Supplements to Bid Forms within 24 as indicated after closing time for receiving bids.
E. Offers will be opened privately immediately after the time for receipt of bids.

2.02 INTENT
A. The intent of this Bid request is to obtain an offer to perform work as identified in the Construction Documents for the **NMC Great Lakes Campus North Paver Replacement** project located 715 E. Front St., Traverse City, Michigan 49686 for a Stipulated Sum contract, in accordance with the Contract Documents.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS
A. General Contractor Based: Work of this proposed Contract comprises building construction, site development, renovation, and demolition, including general construction and civil work.

2.04 CONTRACT TIME
A. Perform the Work within the time stated in Document 00 73 00 - Supplementary Conditions.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 DEFINITIONS
A. Bid Documents: Contract Documents supplemented with Bid Solicitation, Instructions to Bidders, Information Available to Bidders, Bid Form, Supplements To Bid Forms and Appendices and Bid securities identified.
B. Contract Documents: Defined in AIA A201 Article 1 including issued Addenda.
C. Bid, Offer, or Bidding: Act of submitting an offer under seal.
D. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

3.02 CONTRACT DOCUMENTS IDENTIFICATION
A. The Contract Documents are identified as Project Number 17.503, as prepared by Architect, and with contents as identified in the Project Manual.

3.03 AVAILABILITY
A. Complete sets of Bid Documents can be obtained by bidders from Traverse Reproduction and Supply, 1373 Barlow Street, Traverse City, MI, between 8:00 am and 5:00 pm, beginning **Tuesday, October 09, 2023**. Call the business (231.947.6284) prior to picking up sets to confirm availability.
B. Bidding documents may also be reviewed at the Builders Exchange - Traverse City at 1373 Barlow Street, Traverse City, MI 231-946-5531 (info@bxtvc.com) and the Builders Exchange - Grand Rapids, 4461 Cascade Rd SE, Grand Rapids, MI 616.949.8650 (projects@grbx.com)

E. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.04 EXAMINATION
A. Bid Documents are on display at the offices of the following construction plan rooms:
   1. Builders Exchange at 1373 Barlow Street, Traverse City, MI.
   2. Grand Rapids Builders Exchanges at 4461 Cascade Rd SE, Grand Rapids, MI 49546
   3. Displayed on Northwestern Michigan College website. www.nmc.edu

B. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.

C. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

3.05 INQUIRIES / ADDENDA
A. Direct questions to Cornerstone Architects: diacovoni@cornerstone-arch.com

B. Addenda will only be issued to General Contractors who are plan holders.

C. Addenda may be issued via email during the bidding period.
   1. Provide your email contact information to Architect's office upon receiving Bid Documents.

D. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Amount.

E. Verbal answers are not binding on any party.

F. Clarifications requested by bidders must be in writing / email by end of day Tuesday October 24, 2023. The reply will be in the form of an Addendum, a copy will be forwarded to known recipients via email.

3.06 PRODUCT / ASSEMBLY / SYSTEM SUBSTITUTIONS
A. Where the Bid Documents stipulates a particular product, substitutions will be considered up to 10 days before receipt of bids.

B. When a request to substitute a product is made, Architect may approve the substitution and will issue an Addendum to known bidders.

C. The submission shall provide sufficient information to determine acceptability of such products.

D. Provide complete information on required revisions to other work to accommodate each proposed substitution.

E. Provide products as specified unless substitutions are submitted in this manner and accepted.

F. See Section 01 60 00 - Product Requirements for additional requirements.
SITE ASSESSMENT

4.01 SITE EXAMINATION
   A. There is a Mandatory Pre-Bid on site meeting Tuesday October 17, 2023.
   B. Contact Pat Quinlan Campus Services Director at 231-995-1114 to schedule any site meeting prior to or after the Mandatory Prebid meeting.

4.02 PREBID CONFERENCE
   A. There is a Mandatory Prebid Conference site visit scheduled on Tuesday October 17, 2023 at 10:00AM, however it is recommended that all bidders visit the site prior to submitting a bid.
   B. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients.

QUALIFICATIONS

5.01 SUBCONTRACTORS/SUPPLIERS/OTHERS
   A. Subcontract bidders shall furnish documentation to the Architect, not less than 48 hours prior to Bid Opening, confirming and stating the following, at a minimum:
      1. That the subcontract bidder is capable of furnishing a 5% Bid Bond, 100% Performance Bond and a 100% labor and material Bond all as set forth in the Bid Documents as though they were being awarded a prime contract.
   B. Owner reserves the right to reject a proposed subcontractor for reasonable cause.
   C. Refer to AIA A201 Article 5 of General Conditions.

BID SUBMISSION

6.01 SUBMISSION PROCEDURE
   A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
   B. Submit one copy of the executed offer on the Bid Forms provided, signed and sealed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.
   C. Improperly completed information, irregularities in security deposit, may be cause not to open the Bid Form envelope and declare the bid invalid or informal.
   D. An abstract summary of submitted bids will be made available to all bidders following bid opening.
6.02 BID INELIGIBILITY

A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.

B. Bid Forms, Appendices, and enclosures which are improperly prepared may, at the discretion of Owner, be declared unacceptable.

C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Owner, be waived.

BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

A. Bids shall be accompanied by a security deposit as follows:

   1. Bid Bond of a sum no less than 5 percent of the Bid Amount.

B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.

C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.

D. Include the cost of bid security in the Bid Amount.

E. After a bid has been accepted, all securities will be returned to the respective bidders.

F. If no contract is awarded, all security deposits will be returned.

7.02 PERFORMANCE ASSURANCE

A. Accepted Bidder: Provide a Performance and Payment bond as described in Document 00 73 00 - Supplementary Conditions.

B. Include the cost of performance assurance bonds in the Bid Amount.

7.03 INSURANCE

A. Provide an executed "Undertaking of Insurance" on a standard form provided by the insurance company stating their intention to provide insurance to the bidder in accordance with the insurance requirements of the Contract Documents.

B. Provide a copy of coverage for Builder Risk Insurance.

7.04 BID FORM REQUIREMENTS

A. Complete all requested information in the Bid Form and Appendices.

7.05 FEES FOR CHANGES IN THE WORK

A. Include the fees for overhead and profit on own Work and Work by subcontractors, identified in Document 00 73 00 - Supplementary Conditions.
7.06 AS-BUILT DRAWINGS
A. Include the fees for incorporating Record Drawings and Shop Drawings into the project CAD documents as identified in Document 01 78 00 – Closeout Submittals.

7.07 BID FORM SIGNATURE
A. The Bid Form shall be signed by the bidder, as follows:
   1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
   2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
   3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
   4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

7.08 ADDITIONAL BID INFORMATION
A. Submit the following Supplements 24 hours after bid submission:
   1. Document 00 43 00 - Supplements - Subcontractors: Include the names of all Subcontractors and the portions of the Work they will perform.

B. Submit the following Supplements 48 hours after bid submission:

OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER
A. Bids shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after the bid closing date.

8.02 ACCEPTANCE OF OFFER
A. Owner reserves the right to accept or reject any or all offers.
B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Notice To Proceed.
SECTION 00 31 00

INSURANCE

Insurance coverage in the amounts indicated below shall be carried by the G.C. for the duration of this project, and appropriate proof of insurance coverage shall be submitted to the owner for his file.

1. Workman Compensation: Including Occupational Disease and Employers Liability Insurance in accordance with current laws and regulations, on all employees, agents, servants or others connected with the scope of this project. Project Policy Limits shall not be under $1,000,000.00 or as dictated by Michigan Law, for Employers Liability Coverage.

2. Comprehensive Public Liability and Property Damage Insurance on an occurrence basis, covering the work and everything incidental thereto, including, where applicable, but not limited to:
   - Premises operations
   - Products, including completed operations
   - Contractual agreements
   - Bodily injury limits shall not be less than $500,000.00 per person and $1,000,000.00 aggregate, and property damage limit not less than $100,000.00 per occurrence.

3. Automobile Public Liability and Property Damage Insurance, including coverage on owned vehicles and automobiles, hired automobiles and vehicles, used in conjunction with the work, with bodily injury limits of not less than $250,000.00 per person and $500,000.00 aggregate, and property damage limit of not less than $1,000,000.00.

The Insurance listed above must name the owner, architect, etc., as the insured. All of the above mentioned insurance must be written by a Company licensed to do business in the State of Michigan and in the State where the project is to be done. No insurance coverage must be canceled or expire without at least thirty (30) days written notice of intent, to each party.

4. Each contractor shall hold Builders Risk Insurance.

5. Contact Northwestern Michigan College (NMC) regarding specific requirements.

END OF SECTION 00-31-00
Bidder's Name ________________________________________
Legal Address _________________________________________
Telephone #         _________________  Fax# _____________

Proposal for General Construction

Project Description:
    The project is: Exterior concrete paver and sidewalk replacement requiring field investigation and take off, careful demolition of existing concrete pavers as noted.

Construction Documents consist of Drawings listed in Section 00 01 15 and book specifications.

Project Location:
NMC Great Lakes Campus North Paver Replacement
715 E. Front St.
Traverse City, Michigan 49686

Proposal:
Bidders:

In response to your invitation to bid this project, the undersigned submits the following offer to enter into a contract with Northwestern Michigan College and extends this offer for Sixty (60) calendar days subsequent to the opening of bids. This offer has been prepared after our examination of the complete set of construction documents, and the examination of existing conditions for the proposed work including materials, equipment, and labor. Included in this bid is all costs necessary to complete all work in accordance with the construction documents as prepared by Cornerstone Architects, Inc. for the sum of:

__________________________________ Dollars ($ ) inclusive of noted allowance amounts (01 21 00 Allowances)

TOTAL BID:

__________________________________ Dollars ($)
Addenda:
The General Contractor Acknowledgment Receipt and Pricing of the Following Addendums

Number 1:__________
Number 2:__________
Number 3:__________

Completion of the Work:
If awarded the contract, the undersigned agrees that time is essential in completing this project and will agree to a substantial completion of this project, no later than: To Be Determined.

________________________
Signature:
The bidder declares the following legal status in submitting this proposal:
(     ) A corporation organized and existing under the laws of the State of:__________
(     ) A partnership.
(     ) An individual doing business as:_____________________________________
Respectfully submitted:

By _________________________________________________

Title _________________________________________________

Date _________________________________________________

Affix corporate seal, if appropriate. This Section uses the term “Architect.” Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.
SECTION 00 41 10
REQUEST FOR INFORMATION (RFI) FORM

Request for Information #

Date:

To: Dan Iacovoni-Cornerstone Architects
diacovoni@cornerstone-arch.com

From:

Job Name: NMC Great Lakes Campus North Paver Replacement

Job Number: 22.523

Referenced Drawing Sheet:
(if applicable)

Referenced Specification Sheet:
(if applicable)

Question:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Name (Print): Phone # e-mail Need Response by:

END OF SECTION 00-41-00
SECTION 00 43 00

SUPPLEMENTS TO BID FORM

PARTICULARS

1.01 TO: Northwestern Michigan College (NMC)

1.02 PROJECT: Great Lakes Campus North Paver Replacement -22.523

1.03 DATE:_____________

1.04 SUBMITTED BY: (BIDDER TO INSERT FULL NAME AND ADDRESS)

In accordance with Document 00 21 00 Instructions to Bidders and Document 00 41 00 Bid Form, we include the Supplements to Bid Form listed below. The information provided shall be considered an integral part of the Bid Form.

1.05 SUPPLEMENTS TO BID FORM

A. List of selected sub-contractors to be submitted by 4:00 pm on bid day.

B. Identify the following team members and include number of years each member has been employed by your company and a list of projects that each member has worked on while employed with your company:

1. Project Manager: _____________________________________________

2. Site Superintendent: _____________________________________________

3. Other Relevant Staff: _____________________________________________

1.06 PRICING ALTERNATES

A. 

B. ________________________________________________

SIGNATURE(S)

2.01 THE CORPORATE SEAL OF

A. ________________________________________________

(Bidder please print the full name of your Proprietorship, Partnership, or Corporation)

2.02 WAS HEREUNTO AFFIXED IN THE PRESENCE OF:

A. ________________________________________________

(Authorized signing officer) (Title)

END OF SECTION 00-43-00
SECTION 00 45 50
STATEMENT REGARDING FAMILIAL RELATIONSHIP

I am the ____________________________ of ____________________________ , a bidder on a
(Title)         (Company Name)
construction project for Northwestern Michigan College that involves the NMC Great Lakes Campus
Paver Replacement.

☐ I have personal knowledge and/or I have personally verified that the following are all of the familial
relationships existing between the owner(s) and employee(s) of the aforementioned contractor and
the college president and/or board members.

The following are the familial relationship(s):

<table>
<thead>
<tr>
<th>Owner / Employee Name</th>
<th>Related to:</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ____________________</td>
<td>____________</td>
<td>____________</td>
</tr>
<tr>
<td>2. ____________________</td>
<td>____________</td>
<td>____________</td>
</tr>
<tr>
<td>3. ____________________</td>
<td>____________</td>
<td>____________</td>
</tr>
</tbody>
</table>

(Attach additional pages if necessary to disclose familial relationships)

I have authority to bind the aforementioned contractor with the representations contained herein, and I am
fully aware that the school district will rely on my representations in evaluating bids for the construction
project.

☐ There is no familial relationship that exists between the owner(s) and employee(s) of the
aforementioned contractor and the College President and/or board members.

BIDDER’S FIRM NAME   _________________________________________________________
BY (SIGNATURE)    _________________________________________________________
PRINTED NAME AND TITLE _________________________________________________________

Subscribed and sworn before me, this ________ Seal:
day of ________________, 2023, a Notary Public
In and for _________________ County, _____
_______________________________________
Signature

My commission expires ____________________

END OF SECTION 00 45 50
SECTION 00 45 51
IRAN ECONOMIC SANCTIONS ACT CERTIFICATION

I am the ________________________________ of _____________________________, a bidder on a
(Title)         (Company Name)
construction project for Northwestern Michigan College - Great Lakes Campus Paver Replacement.

I have authority to bind the aforementioned contractor with the representations contained herein, and I am fully aware that the school district will rely on my representations in evaluating bids.

I have knowledge of the matters described in this Certification, and I am familiar with the Iran Economic Sanctions Act, MCL 129.311, et seq. ("Act").

I certify that this Bidder, or any subcontractors to this Bidder, is not an Iran-linked business, as that term is defined in the Act.

I understand that submission of a false certification may result in contract termination, ineligibility to bid for three (3) years, and a civil penalty of $250,000 or twice the bid amount, whichever is greater, plus related investigation and legal costs.

BIDDER’S FIRM NAME   _________________________________________________________
BY (SIGNATURE)    _________________________________________________________
PRINTED NAME AND TITLE _________________________________________________________

Witnessed and Notarized:
Subscribed and sworn before me, this ________    Seal:
day of ______________, 2023, a Notary Public
in and for _________________ County, ______

_______________________________________
Signature

My commission expires ____________________

END OF SECTION 00 45 51
SECTION 00 52 13

AGREEMENT

FORM OF AGREEMENT


END OF SECTION
SECTION 00 72 00
GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS


Copies of AIA Documents A201 may be purchased by interested parties from the following:
AIA Michigan, 553 East Jefferson, Detroit, MI 48226 - Phone (313) 965-4100: www.AIAMI.com

SUPPLEMENTARY CONDITIONS
Refer to Section Division 00 for amendments to these General Conditions.

END OF 00 72 00 - GENERAL CONDITIONS
SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

INTENT

1.01 These Supplementary Conditions amend and supplement the General Conditions and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

1.02 The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

MODIFICATIONS TO AIA A201

2.01 ARTICLE 7.3 - CONSTRUCTION CHANGE DIRECTIVES
A. Add the following subparagraph:
   1. 7.3.11: The following fees apply to Changes in the Work in accordance with Subparagraph 7.3.7:
       a. 7 percent overhead and profit on the net cost of Work done by the Contractor;
       b. 7 percent overhead and profit on the cost of Work done by any Subcontractor;
       c. On Work deleted from the Contract, credit to the Owner shall be the Architect approved net cost plus one-half of the overhead and profit percentage noted above.

2.02 ARTICLE 9.3 - APPLICATION FOR PAYMENT
A. Add the following subparagraph:
   1. 9.3.1.3: Until the Work is 50 percent complete, the Owner shall pay 90 percent of the amount due to the Contractor on account of progress payments. At the time the work is 50 percent complete and thereafter, the Architect will authorize remaining partial payments to be paid in full.

2.03 ARTICLE 9.8 - SUBSTANTIAL COMPLETION
A. Add the following subparagraph:
   1. 9.8.1.1: The date established for Substantial Completion is Friday May 31, 2024.

2.04 ARTICLE 11.1 - CONTRACTOR'S LIABILITY INSURANCE
A. Add the following subparagraph:
   1. 11.1.2.1: The Insurance limits shall be written for not less than the following limits, or greater limits if required by law:
      a. Workmen’s Compensation including occupational disease coverage, with limits as follows:
         1) State: Statutory Limits.
         2) Employer's Liability: $1,000,000.00.
         3) Benefits required by Union Labor contracts: As applicable.
      b. Comprehensive General Liability (including premises-operations; Independent contractor’s protective; product and completed operations; broad form property damage), with limits as follows:
         1) Bodily Injury: $1,000,000.00 Each Occurrence, $1,000,000.00 Aggregate.
         2) Property Damage: $1,000,000.00 Each Occurrence, $1,000,000.00 Aggregate.
      c. Products and completed operations insurance shall be maintained for a minimum period of one (1) year after final payment and contractor shall continue to provide evidence of such coverage to Owner on an annual basis during the aforementioned period.
         1) Property Damage:
            (a) Liability Insurance: Include "XCU" coverage.
         2) Contractual Liability (hold harmless coverage):
            (a) Bodily Injury: $1,000,000.00 Each Occurrence.
(b) Property Damage: $1,000,000.00 Each Occurrence, $1,000,000.00 Aggregate.

3) Personal Injury with Employment Exclusion deleted:
   (a) $1,000,000.00 Aggregate.

d. Comprehensive Automobile Liability (owned, non-owned, hired), with limits as follows:
   1) Bodily Injury: $1,000,000.00 Each Person, $1,000,000.00 Each Accident.
   2) Property Damage: $1,000,000.00 Each Occurrence.
   3) Excess Umbrella Liability: $1,000,000.00 Each Occurrence, $1,000,000.00 Aggregate.

e. Property Insurance:
   1) Contractor shall purchase All Risk insurance on completed value form in the names of the Owner, Contractor, Subcontractor, and Sub-Subcontractors as their interests may appear with limits in the amount of the insurable value of the work.

2.05 ARTICLE 11.3.7 – WAIVERS OF SUBROGATION
A. This Paragraph shall be deleted from the A201.

2.06 ARTICLE 11.4 - PERFORMANCE BOND AND PAYMENT BOND
A. Add the following subparagraph:
   1. 11.4.3: The bond value requirements are as follows:
      a. Provide bonds on AIA A312.
      b. Provide a 100 percent Performance Bond.
      c. Provide a 100 percent Payment Bond.
      d. Deliver bonds within 2 days after execution of the Contract.

ADDITIONAL ARTICLE - DEFINITIONS

Products:
Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

Furnish or Supply:
To supply and deliver, unload, inspect for damage.

Install:
To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and ready for use.

Provide:
To furnish or supply, plus install.

Project Manual:
The Project Manual is the volume usually assembled for the Work which includes the Bid Documents, Contract Documents, and Specifications.

Conflicts and Discrepancies:
When there is a conflict or discrepancy within the construction documents not clarified by the Architect prior to bidding, the more stringent requirement shall apply.

END OF SECTION
PART 1 GENERAL

1.01 PROJECT

A. Project Name: Great Lakes Campus North Paver Replacement
B. Owner's Name: Northwestern Michigan College
C. Architect's Name: Cornerstone Architects
D. The project is:
   North Plaza Paver Replacement to Great Lakes Campus,
   located at 715 Front Street, Traverse City, Michigan.

   **The Project Scope is:**
   - Concrete and Paver Demolition and Replacement.
   - Installation of new pole site lighting.

The construction period begins **May 1st, 2024** following **Board Approval on November 20th, 2023** with **Substantial Completion by Friday May 31st, 2024.**

- (This is a tentative schedule and will be coordinated with the chosen contractor and Northwestern Michigan College.)

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Sum Price as described in Section 00 52 13 - Agreement.

1.03 DESCRIPTION OF WORK

A. General Construction: window demolition and replacement.

1.04 OWNER SCHEDULE

A. Construction Start: May 1st, 2024.
B. Substantial Completion: Friday May 31st, 2024.

1.05 OWNER OCCUPANCY

A. Owner intends to occupy the Project throughout construction.
B. Schedule and phase the Work to accommodate Owner occupancy.
1.06 CONTRACTOR USE OF SITE AND PREMISES

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

B. No Smoking on the premises of the school property is allowed for the full duration of the project.

C. Provide access to and from site as required by law and by Owner:
   1. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to the hours of 9:00 am to 5:00 pm.

E. Temporary Utilities
   1. General Contractor is responsible for provision and payment for temporary utilities during construction.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 11 00
PART 1 - GENERAL

1.1 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to immediate area of construction limits as defined by the construction documents, inclusive of exterior circulation access to west entrance.

2. Owner Occupancy: Allow for Owner occupancy of site and use by the public in parking and athletic facility areas. Secure all construction areas from the public, with use of barricades, etc.

3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule deliveries to minimize use of driveways and entrances.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Use of Existing Building: Maintain existing building in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period. Secure the building for after hours, to prevent unauthorized entry.

1.2 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner may occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.

B. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

   1. Architect will prepare a Certificate of Substantial Completion for the Work to be occupied before Owner occupancy.
   2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
   3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
   4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

END OF SECTION 01 14 00
SECTION 01 20 00
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. Correlation of Contractor submittals based on changes.
E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED SECTIONS

A. Document 00 72 00 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
B. Document 00 73 00 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.

1.03 SCHEDULE OF VALUES

A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet.
B. Submit Schedule of Values in duplicate within 7 days after date of Owner-Contractor Agreement.
C. 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 and bonds and insurance. Also identify administrative and procedural requirements, temporary facilities and controls, final cleaning, operation data, and list of Alternates.
D. Include within each line item, a direct proportional amount of Contractor's overhead and profit.
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. Present required information in typewritten form.
C. Form: AIA G702 Application and Certificate for Payment and AIA G703 - Continuation Sheet including continuation sheets when required.
D. Execute certification by signature of authorized officer.
E. 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.
F. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
G. Submit three copies of each Application for Payment.

H. Include the following with the application:
   1. Transmittal letter as specified for Submittals in Section 01 30 00.
   2. Construction progress schedule, revised and current as specified in Section 01 30 00.
   3. Partial release of liens from major Subcontractors and vendors.
   4. Affidavits attesting to off-site stored products.

I. 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. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by the Conditions of the Contract by issuing supplemental instructions on AIA Form G710.

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

D. Proposal Request: Architect may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.

E. 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 and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.

F. Computation of Change in Contract Amount:
   1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
   2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
   3. For pre-determined unit prices and quantities, the amount is based on the fixed unit prices.
   4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

G. Substantiation of Costs: Provide full information required for evaluation.
   1. Provide 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.

H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract on AIA G701.

I. 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.

J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

K. Promptly enter changes in Project Record Documents.

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. Closeout procedures specified in Section 01 78 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 20 00
SECTION 01 21 00

ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements governing the following:
   3. Contingency allowances.
   4. Testing and inspecting allowance.

B. See Division 1 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.3 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.4 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, overhead and profit, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.5 TESTING AND INSPECTING ALLOWANCES

A. Special Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results, required above the base requirements of: Soil Bearing tests, soil compaction tests, concrete strength/slump tests, or other as noted as required of the drawings and/or specifications.
B. The allowance does not include incidental labor required to assist the testing agency or costs for re-testing if previous tests and inspections result in failure.

C. Costs of services required by the Contract Documents are not to be included in or used from the allowance.

D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.6 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

   1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

2.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

2.3 SCHEDULE OF ALLOWANCES

A. Allowance #1: Construction Contingency Allowance-Unforeseen: 10% of Base Bid

END OF SECTION 01 21 00
SECTION 01 25 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. See Division 1 Section "Allowances" for procedural requirements for handling and processing allowances.

C. See Division 1 Section "Unit Prices" for administrative requirements for using unit prices.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Within time specified in the request for proposal, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

   a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

   b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

   c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use AIA Document G709

1.4 ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.

2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.

4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than 21 days after such authorization.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.

2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701

1.6 CONSTRUCTION CHANGE DIRECTIVE


1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 01 25 00
Substitution Request Form  (for use during the Bidding Period)

Substitution Requested by:

Contact Name: ___________________________ Date: __________________
Firm Name: ___________________________________________________________________
Firm Address: ___________________________________________________________________
Phone #: __________________ Fax #: __________________

Product Information:

Specification Section Title: ___________________________ Description: _________________
Specification Section No.: ______________ Page: _____ Article/Paragraph: _______________
Proposed Substitution: _________________________________
Product Trade Name: ______________________________________
Manufacturer: ______________________________________ Model No.: ___________________
Phone: ___________________________ ~ or ~ Website: ______________________

Attach appropriate Product Data to support the substitution requested:

- Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.
- Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation. (Check all that applies, below)

The Undersigned certifies: (check all appropriate boxes)

☐ Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
☐ Same warranty will be furnished for proposed substitution as for specified product.
☐ Same maintenance service and source of replacement parts, as applicable, is available.
☐ Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
☐ Proposed substitution does not affect dimensions and functional clearances.
☐ Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by (please print): _____________________________________________________________
Signed: _____________________________________________________________________________

A/E’s REVIEW AND ACTION

☐ Substitution approved –
  ▪ Make submittals in accordance with Section 016000 - Substitution Procedures.

☐ Substitution approved as noted
  ▪ Make submittals in accordance with Section 016000 - Substitution Procedures.

☐ Substitution rejected – Use specified materials.

☐ Substitution Request received too late – Use specified materials.

Signature: ___________________________ Date: __________________

Supporting Data Attached:
Drawings _____ Product Data _____ Samples _____ Tests _____ Reports _____ Other ____

END OF SUBSTITUTION REQUEST FORM
SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor’s Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Submittals Schedule and Application for Payment forms with Continuation Sheets.

2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

3. Sub schedules: Where the Work is separated into phases requiring separately phased payments, provide sub schedules showing values correlated with each phase of payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

   a. Project name and location. NMC Great Lakes Campus North Paver Replacement

   b. Name of Architect. Cornerstone Architects-Traverse City, MI

   c. Architect's project number: 22.523

   d. Contractor's name and address.

   e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

   a. Related Specification Section or Division.

   b. Description of the Work.

   c. Name of subcontractor.

   d. Name of manufacturer or fabricator.

   e. Name of supplier.

   f. Change Orders (numbers) that affect value.

   g. Dollar value.
1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: The date for each progress payment is the 15th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days before the date for each progress payment.


E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

F. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic’s Lien: With each Application for Payment, submit waivers of mechanic’s lien from every entity who is lawfully entitled to file a mechanic’s lien arising out of the Contract and related to the Work covered by the payment.

   1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
   2. When an application shows completion of an item, submit final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Waiver Delays: Submit each Application for Payment with Contractor’s waiver of mechanic’s lien for construction period covered by the application.

      a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

   1. List of subcontractors.
   2. Schedule of Values.
   3. Contractor’s Construction Schedule (preliminary if not final).
   4. Submittals Schedule (preliminary if not final).
   5. List of Contractor’s staff assignments.
   8. Certificates of insurance and insurance policies.
   10. Data needed to acquire Owner’s insurance.

I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.

3. Updated final statement, accounting for final changes to the Contract Sum.

4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."


6. AIA Document G707, "Consent of Surety to Final Payment."

7. Evidence that claims have been settled.

8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

**END OF SECTION 01 29 00**
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-Construction meeting.
B. Site mobilization meeting.
C. Progress meetings.
D. Construction progress schedule.
E. Progress photographs.
F. Coordination drawings.
G. Submittals for review, information, and project closeout.
H. Number of copies of submittals.
I. Submittal procedures.

1.02 RELATED SECTIONS

A. Section 01 70 00 - Execution Requirements: Additional coordination requirements.
B. Section 01 78 00 - Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION

A. Project Coordinator: General Contractor.
B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for vehicular access, traffic, and parking facilities.
C. During construction, coordinate use of site and facilities through the Project Coordinator.
D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
G. Make the following types of submittals to Architect through the Project Coordinator:
   1. Requests for interpretation.
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Manufacturer's instructions and field reports.
   6. Applications for payment and change order requests.
   7. Progress schedules.
   8. Coordination drawings.
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.
   3. Contractor.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   5. Designation of personnel representing the parties to Contract, 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 SITE MOBILIZATION MEETING

A. Architect will schedule a meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Contractor's Superintendent.

C. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and partial occupancy prior to completion.
   3. Construction facilities and controls provided by Owner.
   4. Temporary utilities should be included in contract.
   5. Survey and building layout.
   7. Schedules.
   8. Application for payment procedures.
   9. Procedures for testing.
   11. Requirements for start-up of equipment.
   12. Inspection and acceptance of equipment put into service during construction period.

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.

3.03 PROGRESS MEETINGS
A. Schedule and administer meetings throughout progress of the Work at maximum two week intervals.

B. Make arrangements for meetings; prepare agenda with copies for participants; preside at meetings.

C. Attendance required, as appropriate to agenda topics for each meeting:
   1. Job superintendent
   2. Major Subcontractors and suppliers
   3. Owner
   4. Architect

D. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems which impede planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Review of off-site fabrication and delivery schedules.
   7. Maintenance of progress schedule.
   8. Corrective measures to regain projected schedules.
   9. Planned progress during succeeding work period.
   10. Coordination of projected progress.
   11. Maintenance of quality and work standards.
   12. Effect of proposed changes on progress schedule and coordination.
   13. Other business relating to 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.

3.05 CONSTRUCTION PROGRESS SCHEDULE

A. Within 7 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

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

C. Within 14 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.

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

E. Submit updated schedule with each Application for Payment.

3.06 COORDINATION DRAWINGS

A. Provide information required by Project Coordinator for preparation of coordination drawings.

B. Review drawings prior to submission to Architect.

3.08 SUBMITTALS FOR REVIEW
A. When the following are specified in individual sections, submit them for review:

1. Product data.
   a. When product data submittals are prepared specifically for this project (in the absence of standard printed information) submit such information as shop drawings and not as product data submittals.
   b. Content:
      1) Submit manufacturer's standard printed data sheets.
      2) Identify the particular product being submitted; submit only pertinent pages.
      3) Identify which options and accessories are applicable.
      4) Show compliance with the specific standards referenced.
      5) Show compliance with specified testing agency listings; show the limitations of the labels or seals, if any.
      6) Identify dimensions which have been verified by field measurement.
      7) Each copy of each such item shall be provided with clear space for application of Architect's/Engineer's acceptance/rejection stamp.

2. Shop drawings.
   a. Content: Include the following information:
      1) Clearly mark drawing with name of Architect/Engineer, project name and number, name of contractor and of supplier if same is not manufacturer of material.
      2) All field measurements that have been taken, at accurate scale.
      3) Names of specific products and materials used.
      4) Identify specification section where item/product is specified by Architect/Engineer.
      5) Details, identified by contract document sheet and detail numbers.
      6) Coordination requirements; show relationship to adjacent or critical work.
   b. Preparation:
      1) Reproductions of contract documents are not acceptable as shop drawings.
      2) Space for architect's action marking shall be adjacent to the title block.

3. Samples for selection.
   a. Samples:
      1) Provide samples that are the same as proposed product.
      2) If, due to manufacturing tolerances, a quantity of a particular item is required to properly illustrate full range of color, texture or other variation that may be expected in finished work, such quantity shall be provided in duplicate
         (a) Preparation:
            1) Samples shall be submitted for all items as requested by various specification sections. In addition, Architect/Engineer reserves the right to require samples of materials of workmanship when deemed necessary for review, even though samples may not have been required of material specified.
            2) Samples shall be submitted in duplicate, unless otherwise specified for a particular item under individual specification section.
            3) Each sample shall be clearly identified on tag attached, showing name of Architect/Engineer, project number and title, names of contractor, manufacturer (an supplier if same is not manufacturer), brand name or number identification, pattern color or finish designation and location in work.

4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.

C. Samples will be reviewed only 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 78 00 - Closeout Submittals.

3.08 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. No action will be taken.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   5. Other types as indicated.

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

3.10 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:
   1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Architect.
   2. Larger Sheets, Not Larger Than 24 x 36 inches: Submit one reproducible transparency and one opaque reproduction.
   3. Sheets Larger than 11 by 17 inches:
         1) Exception: Full size pattern or template drawings.
      b. Number of copies:
         1) Submittals for review:
            (a) One correctable reproducible print, not folded and 3 of blue- or black-lin print(s).
            (b) Reproducible and 2 prints will be returned.
      c. Informational submittals:
         1) 2 copies of opaque prints.
            2) No copies will be returned unless action is required.
   4. Small Sheets or Pages:
      b. Maximum sheet size for opaque copies: 11 by 17 inches.
      c. Number of copies:
         1) Transparencies: Same as for larger sheets.
         2) Opaque copies:
            (a) For review: 3 copies, 2 copies will be retained.
            (b) Informational submittals: 2 copies.
   5. Samples:
      a. 2 sets or items of each.
b. 1 set or item will be returned.
c. If additional sets are needed by other entities involved in work represented by the samples, submit with original submittal.
d. Copies in excess of the number requested, will not be returned.

B. Documents for Information: Submit two copies.

C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.

D. 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.

3.11 COORDINATION OF SUBMITTALS

A. Submittals for activities that must be performed in sequence, coordinate submittals so that the architect has all the required information to properly review the submittals.

3.12 SUBMITTAL PROCEDURES

A. Transmit each submittal with approved form.
B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. 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.

E. Deliver submittals to Architect at business address.

F. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.

G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Architect review stamps.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

L. Submittals will be reviewed, marked with appropriate action, and returned.
   1. Stamped "action" markings:
      a. "Reviewed" action: Submittal has been reviewed for compliance with construction documents, no additional action necessary.
      b. "Reviewed as Noted" action: Submittal - according to Architect's review markings - has been reviewed and "marked up" for compliance with construction documents.
c. “Revise and Resubmit” action: Revise the submittal or prepare a new submittal complying with the comments made. Do not proceed with work items as shown on the submittal until a “revised and resubmitted” submittal has been reviewed for compliance with construction documents by the Architect.

END OF SECTION 01 30 00
SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General Project coordination procedures.
2. Coordination Drawings.
3. Project meetings.

B. See Division 1 Section "Summary of Contracts" for a description of the division of Work among separate contracts and responsibility for coordination activities not in this Section.

C. See Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 COORDINATION

A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.

1.3 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
   1. Indicate relationship of components shown on separate Shop Drawings.
   2. Indicate required installation sequences.

1.4 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site.
   1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
   3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within [5] five days of the meeting.

B. Pre-construction Conference: Schedule a pre-construction conference before starting construction, at a time convenient to Owner and Architect, but no later than [5] days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
   1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.
      b. Phasing.
      c. Critical work sequencing.
      d. Designation of responsible personnel.
      e. Procedures for processing field decisions and Change Orders.
      f. Procedures for processing Applications for Payment.
      g. Distribution of the Contract Documents.
      h. Submittal procedures.
      i. Preparation of Record Documents.
      j. Use of the premises.
k. Responsibility for temporary facilities and controls.
l. Parking availability.
m. Office, work, and storage areas.
n. Equipment deliveries and priorities.
o. First aid.
q. Progress cleaning.
r. Working hours.

C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   b. Options.
   c. Related Change Orders.
   d. Purchases.
   e. Deliveries.
   f. Submittals.
   g. Review of mockups.
   h. Possible conflicts.
   i. Compatibility problems.
   j. Time schedules.
   k. Weather limitations.
   l. Manufacturer's written recommendations.
   m. Warranty requirements.
   n. Compatibility of materials.
   o. Acceptability of substrates.
   p. Temporary facilities and controls.
   q. Space and access limitations.
r. Regulations of authorities having jurisdiction.

s. Testing and inspecting requirements.

t. Required performance results.

u. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements.

4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at **weekly** intervals. Coordinate dates of meetings with preparation of payment requests.

   1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

   2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Contractor’s Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor’s Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

   b. Review present and future needs of each entity present, including the following:

      1) Interface requirements.

      2) Sequence of operations.

      3) Status of submittals.

      4) Deliveries.

      5) Off-site fabrication.

      6) Access.

      7) Site utilization.

      8) Temporary facilities and controls.

      9) Work hours.

     10) Hazards and risks.

     11) Progress cleaning.

     12) Quality and work standards.
13) Change Orders.

14) Documentation of information for payment requests.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

   a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

END OF SECTION 01 31 00
SECTION 01 32 00

BONDING REQUIREMENTS

PART 1 GENERAL

A. Surety Company bond, certified check or bank money order in the amount of 5% (Five Percent) must accompany all proposals. No other form of security will be accepted.

1. A Bid Bond underwritten by a surety licensed to do business in the State of Michigan, with a power of attorney certified to the date of the Bid Bond on behalf of the individual signing for the surety company.
2. A certified check.
3. A cashier’s check.
4. The surety shall be listed in the current Federal Registrar and have an A.M. Best rating of B+ or better. Failure to meet these requirements may result in rejection of the bid.

B. The successful bidder(s) will be required to furnish surety company bonds as follows:

1. A bond in the sum amount of 100% (one hundred percent) of the contract price running to the owner to insure the construction and completion of the entire work according to the proposal and contract.
2. A bond in the sum amount of 100% (one hundred percent) of the contract price running to the owner for protection of the sub-contractor, labor, and material men, according to the statutes of the State of Michigan, at the time in effect.

C. The owner reserves the right to reject any and all bids, to accept other than the low bid, or to waive informalities in any and all bids.

END OF SECTION 01 32 00
SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. See Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.

C. See Division 1 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals.

D. See Division 1 Section "Closeout Procedures" for submitting warranties Project Record Documents and operation and maintenance manuals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

C. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow 10 days for processing each re-submittal.
4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

D. Identification: Place a permanent label or title block on each submittal for identification.
   1. Indicate name of firm or entity that prepared each submittal on label or title block.
   2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor’s review and approval markings and action taken by Architect.
   3. Include the following information on label for processing and recording action taken:
      a. Project name.
      b. Date.
      c. Name and address of Architect.
      d. Name and address of Contractor.
      e. Name and address of subcontractor.
      f. Name and address of supplier.
      g. Name of manufacturer.
      h. Unique identifier, including revision number.
      i. Number and title of appropriate Specification Section.
      j. Drawing number and detail references, as appropriate.
      k. Other necessary identification.

E. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

F. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
   1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
   1. Include Contractor’s certification stating that information submitted complies with requirements of the Contract Documents.
   2. Transmittal Form: Use AIA Document G810

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.
PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit One copy of each submittal, unless otherwise indicated. Architect will return one copy. Mark up and retain one returned copy as a Project Record Document. Provide submittal electronically to Architects E-mail. Submittals requiring color selection will need to include actual physical samples and actual color samples to select from.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:
   
a. Manufacturer's written recommendations.

b. Manufacturer's product specifications.

c. Manufacturer's installation instructions.

d. Manufacturer's catalog cuts.

e. Wiring diagrams showing factory-installed wiring.

f. Printed performance curves.

g. Operational range diagrams.

h. Compliance with recognized trade association standards.

i. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Shop drawings will be returned immediately for resubmission.

1. Preparation: Include the following information, as applicable:

a. Dimensions.

b. Identification of products.

c. Fabrication and installation drawings.

d. Roughing-in and setting diagrams.

e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.

f. Shopwork manufacturing instructions.

g. Templates and patterns.
h. Schedules.

i. Notation of coordination requirements.

j. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches. Electronic submittals are acceptable in pdf format.

D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Management and Coordination."

E. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.

2. Samples for Initial Selection: Submit manufacturer’s color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Submit one full set of all available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's FULL product line. Architect will return submittal with options selected.

3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Submit two sets of Samples. Architect will retain one Sample set; remainder will be returned.

4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect’s sample where so indicated. Attach label on unexposed side.

5. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.

6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

F. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location.

G. Delegated-Design Submittal: Comply with requirements in Division 1 Section "Quality Requirements."

H. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
I. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."

J. Schedule of Values: Comply with requirements in Division 1 Section "Payment Procedures."

K. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit electronic copies of each submittal, unless otherwise indicated. Architect will not return copies.

2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

M. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

N. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures."

O. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

P. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections.

R. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

S. Construction Photographs: Comply with requirements in Division 1 Section "Construction Progress Documentation."

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT’S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
Contact the architect for a copy of Shop drawing stamp approval.

C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01 33 00
SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Quality assurance submittals.
B. Independent Testing.
C. Special Inspections.
D. Mock-ups.
E. Control of installation.
F. Tolerances.
G. Testing and inspection services.
H. Manufacturers' field services.
I. Defect assessment.

1.02 RELATED SECTIONS
A. Section 00 72 00 - General Conditions: Inspections and approvals required by public authorities.
B. Section 01 30 00 - Administrative Requirements: Submittal procedures.
C. Section 01 42 19 - Reference Standards.
D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCES
1.04 QUALITY ASSURANCE SUBMITTALS

A. Testing Agency Qualifications:
1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

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

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. Conformance with Contract Documents.
   k. When requested by Architect, provide interpretation of results.
2. Test reports are submitted for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

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 conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

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.

F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
1. Submit report in duplicate within 30 days of observation to Architect for information.
2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

G. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.
H. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either the National Bureau of Standards (NBS) standards or to accepted values of natural physical constants.

1.05 TESTING AND INSPECTION SERVICES

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

B. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

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

D. Contractor Employed Agency:
   2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
   3. Laboratory: Authorized to operate in the State in which the Project is located.
   4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
   5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

1.06 INDEPENDENT TESTING

A. Independent testing agencies, whether employed by the Owner or the Contractor, may not change the requirements of the contract documents and may not approve any portion of the work.
   1. Soils engineer will have authority to approve or disapprove of all soil materials to be used, compactions reached, etc. on this project.

B. Employment of testing agencies, by the Contractor or the Owner, shall not relieve the Contractor of his obligation to perform the work in accordance with the contract documents.

1.07 SPECIAL INSPECTIONS

A. Special inspections as required by Michigan Building Code, 2015 edition, section 1704 will be paid for by the Owner. The contractor will be required to coordinate the testing schedule, timing, etc.

PART 2 PRODUCTS

2.01 GENERAL

A. Asbestos: No asbestos containing materials have been specified for this project. No asbestos containing building materials or other materials shall be used or installed in the completion of this project. Contractors shall be responsible to provide, as requested, material safety data sheets for all materials used.
PART 3 EXECUTION

3.01 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.

3.02 MOCK-UPS

A. Tests will 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. Accepted mock-ups shall be 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, remove mock-up and clear area when directed to do so.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION SERVICES

A. See individual specification sections for testing and inspection required.

B. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests and inspections required by Architect.
7. Submit reports of all tests/inspections specified.

C. Limits on Testing and 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.

D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used which 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.
1. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
2. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
3. Arrange with Owner’s agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Payment for retesting will be charged to the Contractor by deducting testing charges from the Contract Price.

3.05 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 of equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Architect 30 days in advance of required observations.

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

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not conforming to specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION 01 40 00
PART 1 GENERAL

REFERENCE STANDARDS

1.01 SECTION INCLUDES

   A. Requirements relating to referenced standards.

1.02 DEFINITIONS

   A. Basic contract definitions are included in the Conditions of the Contract.

   B. Approved: When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

   C. Directed: A command or instruction by the Architect. Other terms including requested, authorized, selected, approved, required, and permitted have the same meaning as directed.

   D. Indicated: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including shown, noted, scheduled, and specified have the same meaning as indicated.

   E. Regulations: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

   F. Furnish: Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

   G. Install: Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

   H. Provide: Furnish and install, complete and ready for the intended use.

   I. Project Site: Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land the Project is being built on.

1.03 QUALITY ASSURANCE

   A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes. Such standards are made part of the Contract Documents by reference.

   B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

   C. Obtain copies of standards when required by the Contract Documents or required to perform a construction activity.
D. Each entity engaged in construction on the Project should be familiar with industry standards applicable to its construction activity.

E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

G. Where abbreviations and acronyms are used in Specifications or other Contract documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 42 19
SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Contractor is to supply owner and architect with a detailed construction schedule identifying stages of enclosure, and protection from weather.

1.2 SUMMARY

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities. Include Winter Conditions if schedule warrants.

B. Temporary utilities include, but are not limited to, the following:

1. Heating and cooling facilities.
2. Ventilation.
3. Electric power service.
4. Lighting.
5. Telephone service.
6. Security related fencing, lighting, etc.

C. Support facilities include, but are not limited to, the following:

1. Project identification and temporary signs.
2. Waste disposal facilities.
3. Field offices.
4. Lifts and hoists.
5. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:

1. Environmental protection.
2. Storm water control.
3. Tree and plant protection.
4. Pest control.
5. Barricades, fencing, warning signs, and lights.
6. Temporary enclosures.
7. Temporary partitions.
8. Fire protection.

1.3 USE CHARGES
A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:

1. Owner's construction forces.
2. Occupants of Project.
3. Architect.
4. Testing agencies.
5. Personnel of authorities having jurisdiction.

B. Sewer Service: Pay sewer service use charges for sewer usage, by all parties engaged in construction, at Project site. Not applicable (NA)

C. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site. NA

D. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site. NA

1.4 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities. NA

B. Implementation and Termination Schedule: Within 15 days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility. NA

1.5 QUALITY ASSURANCE


1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Utilities:

1. Temporary Use of Permanent Facilities: User of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of services and facilities by all parties engaged in the Work:

1. Keep existing services and facilities clean and neat, and fully service-able/operational for all parties.
PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

2.2 EQUIPMENT

A. General: Provide equipment suitable for use intended.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: It is anticipated that construction trades will utilize existing facilities per the conditions listed above.

END OF SECTION 01 50 00
SECTION 01 60 00

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 and procedures.
F. Spare parts and maintenance materials.
G. "Substitution Request Form" at end of Section.

1.02 RELATED SECTIONS

A. Document 00 21 13 - Instructions to Bidders: Product options and substitution procedures prior to bid date.
B. Section 01 11 00 - Summary:
C. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.03 REFERENCES


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.

D. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. The re-use of certain materials and equipment already existing on the project site is prohibited. 
   1. Do not use other materials or equipment removed from existing premises unless specifically required or permitted by the 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.

2.02 NEW PRODUCTS

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

B. Provide interchangeable components of the same manufacture for components being replaced.

C. Motors: Refer to Section 15065, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

D. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.

E. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

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 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products 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 MATERIALS AND EQUIPMENT

A. Compatibility: Be responsible for coordinating and interrelating all sub-contracts, purchase orders, etc. Insure compatibility of materials and procedures and validity of all guarantees and warranties required by specifications.

B. Compliance with Manufacturer’s Specifications and Recommendations.
   1. All materials, equipment, devices, services, procedures, etc., named or described in specifications and/or indicated on drawings, and all others furnished as equal thereto shall be furnished, used (installed, employed, etc.) and protected in strict compliance with specifications, recommendations and instructions of manufacturer and/or supplier.
   2. This requirement does not relieve the Contractor’s responsibility for providing material and/or services beyond those required by manufacturer’s specifications, etc., where such additional materials and/or services are otherwise required by Contract Documents.
   3. Should any material, item of equipment, device or procedure furnished as equal to that specified require accessories, supplemental materials, installation procedures, etc., different from and/or in addition to those required by that which is specified, the Contractor shall provide all such items at no increase in contract sum.

C. Quality:
   1. All materials and equipment provided shall be new and of quality equal to or higher than that required by Contract Documents.
   2. In every case, requirements established by Contract Documents shall be considered a minimum, which will be accepted. Where strength of material(s) is a factor, all items furnished must have at least strength, carrying capacity and durability of item specified.
   3. All workmanship must be first class in every respect and representative of best obtainable for each trade.

D. Acceptance by Architect: All materials and equipment are subject to approval by Architect:
   1. Shop drawings and/or samples.
   2. Actual items as installed on site.
   3. Materials or equipment furnished and/or installed will not be accepted if such are found to be at variance with requirements of Contract Documents.

E. Where terms "or equal," "or approved equal," "as approved," etc., appear in specifications or on drawings:
   1. Provide equivalent materials, products or procedures as named in the specifications.
   2. Materials other than those specifically named may be used, provided the equivalent substitution is accomplished by means allowed in Contract Documents.

3.02 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
D. A request for substitution 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.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the
      Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension which may subsequently become
      apparent.
   5. Will reimburse Owner and Architect for review or redesign services associated with re-
      approval by authorities.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or
   product data submittals, without separate written request, or when acceptance will require
   revision to the Contract Documents.

F. Substitution Submittal Procedure:
   1. Submit three copies of request for substitution for consideration. Limit each request to one
      proposed substitution.
   2. Submit Substitution Request Form contained herein at the end of this section, provide
      supporting information requested to support your request for product substitution.
   3. Submit shop drawings, product data, and certified test results attesting to the proposed
      product equivalence. Burden of proof is on proposer.
   4. The Architect will notify Contractor in writing of decision to accept or reject request.

3.03 SUBSTITUTIONS BEFORE AWARD OF CONTRACT (DURING BIDDING)

A. Bidder and suppliers may submit a request for substitution to the Architect/Engineer for
   approval prior to ten (10) days before bid submission. Provide adequate information with the
   request to verify that proposed substitution meets the requirements of the specification.
   Approval or rejection of each proposed substitution or other change shall be at the discretion of
   Architect/Engineer. If proposed change is approved, Architect will issue written statement in the
   form of an Addendum certifying same.
   1. Use "Substitution Request Form" provided at the end of this section.
   2. If time permits, approved substitutions will be listed in an addendum.

B. Request for Change at time of Bid Submission by Voluntary Alternate:
   1. Bidder may submit Voluntary Alternates for materials, products or procedures for which he
      also submits bona fide base bid proposals. Voluntary Alternates shall be submitted in list
      form, naming each proposed substitute and difference, if any, which will be made in
      contract price for each substitution, should it be accepted. Owner may accept or reject
      each individual voluntary alternate.

3.04 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site
   storage time and potential damage to stored materials.
B. Transport and handle products in accordance with manufacturer's instructions.
C. Transport materials in covered trucks to prevent contamination of product and littering of
   surrounding areas.

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

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

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.
3.05 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.

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

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, 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. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

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

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

K. 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 01 60 00

~ Substitution Request Form follows ~
Substitution Request Form  
(for use during the Bidding Period)

Substitution Requested by:  
Contact Name: ______________________________ Date: __________________
Firm Name: ___________________________________________________________________
Firm Address: ___________________________________________________________________
Phone #: ______________________________ Fax #: ______________________________________

Product Information:
Specification Section Title: ______________________________ Description: _________________
Specification Section No.: ______________ Page: _____ Article/Paragraph: _____________________
Proposed Substitution: __________________________________________________________________
Product Trade Name: ________________________________________________________________
Manufacturer: ___________________________________________ Model No.: ______________________
Phone: ___________________________  ~ or ~  Website: __________________________________

Attach appropriate Product Data to support the substitution requested:
▪ Attached data includes product description, specifications, drawings, photographs, performance
  and test data adequate for evaluation of the request; applicable portions of the data are clearly
  identified.
▪ Attached data also includes a description of changes to the Contract Documents that the
  proposed substitution will require for its proper installation.  (Check all that applies, below)

The Undersigned certifies: (check all appropriate boxes)
☐ Proposed substitution has been fully investigated and determined to be equal or superior in all
  respects to specified product.
☐ Same warranty will be furnished for proposed substitution as for specified product.
☐ Same maintenance service and source of replacement parts, as applicable, is available.
☐ Proposed substitution will have no adverse effect on other trades and will not affect or delay
  progress schedule.
☐ Proposed substitution does not affect dimensions and functional clearances.
☐ Payment will be made for changes to building design, including A/E design, detailing, and
  construction costs caused by the substitution.

Submitted by (please print): _____________________________________________________________
Signed: _____________________________________________________________________________

A/E’s REVIEW AND ACTION
☐ Substitution approved –  
  ▪ Make submittals in accordance with Section 016000 - Substitution Procedures.
☐ Substitution approved as noted  
  ▪ Make submittals in accordance with Section 016000 - Substitution Procedures.
☐ Substitution rejected – Use specified materials.  
☐ Substitution Request received too late – Use specified materials.

Signature: ______________________________ Date: ______________________________
Supporting Data Attached:
Drawings ____ Product Data ____ Samples ____ Tests ____ Reports ____ Other ______

END OF SUBSTITUTION REQUEST FORM
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Examination, preparation, and general installation procedures.
   B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
   C. Pre-installation meetings.
   D. Cutting and patching.
   E. Surveying for laying out the work.
   F. Cleaning and protection.
   G. Starting of systems and equipment.
   H. Demonstration and instruction of Owner personnel.
   I. Closeout procedures, except payment procedures.

1.02 RELATED SECTIONS
   A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
   B. Section 01 30 00 - Administrative Requirements: Submittals procedures.
   C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
   D. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
   E. Individual Product Specification Sections:
      1. Advance notification to other sections of openings required in work of those sections.
      2. Limitations on cutting structural members.

1.03 SUBMITTALS
   A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
   B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
      1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
      2. Identify demolition firm and submit qualifications.
      3. Include a summary of safety procedures.
   D. Cutting and Patching: Submit written request in advance of cutting or alteration which 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.
      5. Work of Owner or separate Contractor.
6. Include in request:
   a. Identification of Project.
   b. Location and description of affected work.
   c. Necessity for cutting or alteration.
   d. Description of proposed work and products to be used.
   e. Effect on work of Owner or separate Contractor.
   f. Written permission of affected separate Contractor.
   g. Date and time work will be executed.

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

1.04 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.
   1. Minimum of five years of documented experience.

1.05 PROJECT CONDITIONS

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

C. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

D. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

E. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.06 COORDINATION

A. See Section 01100 for occupancy-related requirements.

B. 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.

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

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown 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.
F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

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

H. 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 60 00 – 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 mis-fabrication.

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/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 pre-installation 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 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Contractor shall locate and protect survey control and reference points.

D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

G. Utilize recognized engineering survey practices.

H. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

J. Periodically verify layouts by same means.

K. Maintain a complete and accurate log of control and survey work as it progresses.
3.05 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.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as shown.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.
   3. Relocate items indicated on drawings.
   4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

D. Services (Including but not limited to HVAC, Plumbing, Electrical, and telecommunications):
   Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
      a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
      b. Provide temporary connections as required to maintain existing systems in service.
   4. Verify that abandoned services serve only abandoned facilities.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above.
accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

F. Adapt existing work to fit new work:
   1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
   2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
   3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
   4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

G. Refinish existing surfaces as indicated:
   1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
   2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
   3. Patch as specified for patching new work.

H. Clean existing systems and equipment.
I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
J. Do not begin new construction in alterations areas before demolition is complete.
K. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.

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

C. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

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

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

F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07840, to full thickness of the penetrated element.

H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

I. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

J. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.08 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.

3.09 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. Prohibit traffic from landscaped areas.

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

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

B. Notify Architect and owner seven days prior to start-up of each item.

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

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

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

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

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

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

3.11 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 personnel.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner’s personnel in detail to explain all aspects of operation and maintenance.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.12 ADJUSTING

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

B. Testing, adjusting, and balancing HVAC systems: See Section 15950 and 01400.

3.13 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
   1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

B. Use cleaning materials that are nonhazardous.
C. 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.

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

E. Replace filters of operating equipment. See Section 01 57 19.11 – Indoor Air Quality Management.

F. Clean debris from roofs, gutters, downspouts, 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.

3.14 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Owner.

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

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

D. Submit written certification 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 review.

E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

F. Accompany Project Coordinator on preliminary final inspection.

G. Notify Architect when work is considered finally complete.

H. Complete items of work determined by Architect's final inspection.

3.15 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in specification sections for one year from date of Substantial Completion.

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

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

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

END OF SECTION 01 70 0
SECTION 01 73 10
CUTTING AND PATCHING

1.1 GENERAL

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include a description of cutting and patching and changes to existing construction, a list of products to be used and firms or entities that will perform the Work, dates when cutting and patching will be performed, and a list of utilities that cutting and patching procedures will disturb or affect.

1. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

2. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

B. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. Cutting of walls for new openings as part of the price alternates.

C. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.

E. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

1.2 PRODUCTS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

1.3 EXECUTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
1. **Compatibility:** Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

**B. Temporary Support:** Provide temporary support of Work to be cut.

**C. Protection:** Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

**D. Adjoining Areas:** Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

**E. Existing Services:** Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to minimize interruption of services to occupied areas.

**F. Performance:** Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

**G. Cutting:** Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. **Existing Finished Surfaces:** Cut or drill from the exposed or finished side into concealed surfaces.

3. **Concrete, Masonry:** Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. **Excavating and Backfilling:** Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. **Mechanical and Electrical Services:** Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

6. Proceed with patching after construction operations requiring cutting are complete.

**H. Patching:** Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

1. **Inspection:** Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

4. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition.

END OF SECTION 01 73 10
SECTION 01 73 20

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes demolition and removal of the following:
   1. Selected portions of a building or structure.
   2. Repair procedures for selective demolition operations.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 SUBMITTALS

A. Proposed Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate. Include measures for the following:

   1. Dust control.
   2. Noise control.
   3. Traffic control

B. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.

C. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.5 QUALITY ASSURANCE
A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Standards: Comply with ANSI A10.6 and NFPA 241.

D. Pre-demolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours’ notice to Owner of activities that will affect Owner’s operations.

B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

C. Owner assumes no responsibility for condition of areas to be selectively demolished.
   1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. Hazardous materials will be removed by Owner before start of the Work.
   2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Hazardous Materials: Hazardous materials are present in building to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
   1. Hazardous material remediation is specified elsewhere in the Contract Documents.
   2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
   3. Owner will provide material safety data sheets for materials that are known to be present in buildings and structures to be demolished because of building operations or processes performed there.

F. Storage or sale of removed items or materials on-site will not be permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY
A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
   1. If possible, retain original Installer or fabricator to patch the exposed Work listed below that is damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

A. Use repair materials identical to existing materials.
   1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.
B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

3.2 UTILITY SERVICES

A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
   1. Provide at least 72 hours’ notice to Owner if shutdown of service is required during changeover.
C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If utility services are required to be removed, relocated, or abandoned, provide temporary utilities before proceeding with selective demolition that bypass area of selective demolition and that maintain continuity of service to other parts of building.
3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

D. Utility Requirements: Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.

3. Protect existing site improvements, appurtenances, and landscaping to remain.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.

D. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

E. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

1. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.5 SELECTIVE DEMOLITION
A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

C. Removed and Salvaged Items (confirm with owner):

1. Clean salvaged items.

2. Pack or crate items after cleaning. Identify contents of containers.

3. Store items in a secure area until delivery to Owner.

4. Transport items to Owner's storage area designated by Owner.

5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.

2. Pack or crate items after cleaning and repairing. Identify contents of containers.

3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching: Comply with Division 1 Section "Cutting and Patching."
C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
   1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.

D. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

E. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

F. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 DISPOSAL OF DEMOLISHED MATERIALS (not salvaged for re-use)

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION
SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1  GENERAL

1.1 SUMMARY

A. Section includes: Requirements and procedures for ensuring optimal diversion of construction waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.

1.2 DEFINITIONS

A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations.

B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous as defined in Federal Standards. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel.

C. C&D Recycling Center. A facility that receives only C&D material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than 10% of the amount separated for reuse by weight.

D. Disposal. Final deposition of construction and demolition or inert debris into land, including stockpiling onto land of construction and demolition debris that has not been sorted for further processing or resale, if such stockpiling is for a period of time greater than 30 days; and construction and demolition debris that has been sorted for further processing or resale, if such stockpiling is for a period of time greater than one year, or stockpiling onto land of inert debris that is for a period of time greater than one year.

E. Inert Disposal Facility or Inert Waste Landfill: A disposal facility that accepts only inert waste such as soil and rock, fully cured asphalt paving, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, and ceramics, for land disposal.

F. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.

G. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.

H. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.

I. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.

J. Solid Waste: All putrescible and non-putrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.
K. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation, for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.

L. Waste Hauler: A company that possesses a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.

1.3 SUBMITTALS

A. Contractor’s Construction Waste and Recycling Plan

1. Review Contract Documents and estimate the types and quantities of materials under the Work that are anticipated to be feasible for on-site processing, source separation for re-use or recycling. Indicate the procedures that will be implemented in this program to effect jobsite source separation, such as, identifying a convenient location where dumpsters would be located, putting signage to identify materials to be placed in dumpsters, etc.


3. Contractor’s Construction Waste and Recycling Plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 SALVAGE, RE-USE, RECYCLING AND PROCEDURES

A. Identify re-use, salvage, and recycling facilities.

B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor’s Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.

1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.

2. Source separate new construction, excavation and demolition materials including, but not limited to the following types:

   a. Asphalt.
   b. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
   c. Drywall.
   d. Green materials (i.e. tree trimmings and land clearing debris).
   e. Metal (ferrous and non-ferrous).
   f. Miscellaneous Construction Debris.
   g. Paper or cardboard.
   h. Red Clay Brick.
   i. Reuse or Salvage Materials
   j. Soils.
   k. Wire and Cable.
   l. Wood.
3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source separated to a mixed materials recycling facility.

3.2 DISPOSAL OPERATIONS AND WASTE HAULING
   A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
   B. Use a permitted waste hauler or Contractor’s trucking services and personnel.
   C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities prior to delivering materials.
   D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
   E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

3.3 RE-USE AND DONATION OPTIONS
   A. Implement a re-use program to the greatest extent feasible. Options may include:
      1. Habitat for Humanity
      2. Local resources for the recycling and reuse of building materials.

3.4 REVENUE
   A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted in the Contract Documents.

END OF SECTION 01.74.19
SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

B. See Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.

C. See Division 1 Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.

D. See Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities, if required.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first.

2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.5 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

   a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.

   b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.

4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Note related Change Orders and Record Drawings, where applicable.

D. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.6 OPERATION AND MAINTENANCE MANUALS
A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Operation Data: Include emergency instructions and procedures, system and equipment descriptions, operating procedures, and sequence of operations.

2. Maintenance Data: Include manufacturer's information, list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.7 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 DEMONSTRATION AND TRAINING

A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Provide instructors experienced in operation and maintenance procedures.

2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
3. Schedule training with Owner, through Architect, with at least **seven** days' advance notice.

4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.

B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline.

1. Include instruction for system design and operational philosophy, review of documentation, operations, adjustments, troubleshooting, maintenance, and repair.

### 3.2 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Clean exposed exterior and interior hard-surfaces finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   g. Sweep concrete floors broom-clean in unoccupied spaces.
   h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
   i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
   j. Remove labels that are not permanent.
k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

l. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

m. Replace parts subject to unusual operating conditions.

n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

q. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION
SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Project Record Documents.
   B. Operation and Maintenance Data.
   C. Warranties and bonds.

1.02 RELATED SECTIONS
   A. Section 00 73 00 - Supplementary Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
   B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
   C. Section 01 70 00 - Execution Requirements: Contract closeout procedures.
   D. Individual Product Sections: Specific requirements for operation and maintenance data.
   E. 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 1 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 ten days after acceptance.
      2. Make other submittals within ten 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 ten 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 locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   2. Field changes of dimension and detail.
   3. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. 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.


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

E. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

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. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

C. Include color coded wiring diagrams as installed.

D. 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.

E. 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.

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

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

H. Include sequence of operation by controls manufacturer.

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

J. Provide control diagrams by controls manufacturer as installed.

K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

N. Include test and balancing reports.

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

3.05 OPERATION AND MAINTENANCE MANUALS
A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch 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. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.

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

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

H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.

J. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

K. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten 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 the 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. Manual: Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION 01 78 00
SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Concrete formwork.
B. Slabs on grade.
C. Concrete foundation walls.
D. Concrete reinforcement.
E. Joint devices associated with concrete work.
F. Miscellaneous concrete elements, including equipment pads, thrust blocks, and manholes.
G. Concrete curing.
H. Sealing of concrete.

1.02 RELATED SECTIONS
A. Section 07 90 00 - Joint Sealers.

1.03 REFERENCES
A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
B. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; American Concrete Institute International; 1998 (Reapproved 2004).
C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.
D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004.
E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
F. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.
G. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 1988.
H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001.
I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2005.
K. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2004b.
V. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2003.
AE. COE CRD-C 513 - COE Specifications for Rubber Waterstops; Corps of Engineers; 1974.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
C. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
D. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.
B. Acquire cement from same source and aggregate from same source for entire project.
C. Follow recommendations of ACI 305R when concreting during hot weather.
D. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
   2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   3. Form Ties: Contractor's choice of type that will leave no metal within 1-1/2 inches of concrete surface.
2.02 REINFORCEMENT

A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
   1. Deformed billet-steel bars.
   2. Unfinished.
   3. Provide reinforcement bar steel with a high percentage of post-consumer recycled content. Maximize the amount of post-consumer and pre-consumer recycled content.

B. Steel Welded Wire Reinforcement: ASTM A 185, plain type.
   1. Flat Sheets.
   3. Provide reinforcement bar steel with a high percentage of post-consumer recycled content. Maximize the amount of post-consumer and pre-consumer recycled content.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide galvanized or plastic components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C 150, Type I - Normal Portland type.
D. Fly Ash: ASTM C 618, Class C or F. Report the chemical analysis of the fly ash in accordance with ASTM C311. Evaluate and classify fly ash in accordance with ASTM D5759.
E. Ground Granulated Blast-Furnace Slag: ASTMC989, Grade100 or 120.
F. Water: Clean and not detrimental to concrete.
G. Fiber Reinforcement: Synthetic fiber shown to have long-term resistance to deterioration when exposed to moisture and alkalis; 3/4 inch length.

2.04 CHEMICAL ADMIXTURES

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

2.05 ACCESSORY MATERIALS

A. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
B. Bonding Agent: ASTM C 1059, Type II acrylic non-redispersable type.
C. Epoxy Bonding System: ASTM C 881, type as required by project conditions.
D. Underslab Vapor Retarder: Polyethylene sheet, minimum 6 mils thick.
E. Chemical Hardener: Fluosilicate solution designed for densification of cured concrete slabs.

F. Non-Shrink Grout: ASTM C 1107; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
1. Minimum Compressive Strength at 48 Hours: 2,400 psi.
2. Minimum Compressive Strength at 28 Days: 7,000 psi.

G. Moisture-Retaining Cover: ASTM C 171; regular curing paper, white curing paper, clear polyethylene, white polyethylene, or white burlap-polyethylene sheet.

H. Liquid Curing Compound: ASTM C 309, Type 2, white pigmented, Class B. - Exterior Curb and Gutter Construction
1. Dissipating, water-based curing compound for newly placed concrete surfaces.

I. Liquid Curing Compound and Sealer: ASTM C 309, Type 1, clear or translucent. Provide "Cure and Seal HS WB" manufactured by Symons.
1. Water-based, high solids acrylic curing compound and sealer for concrete.
2. Meet V.O.C. emission requirements for curing and sealing compounds.
3. Do not install this material where other floor finishes are called for on the concrete.
4. Substitutions: See Section 01600 - Product Requirements.

2.06 BONDING AND JOINTING PRODUCTS
A. Waterstops: Rubber type, COE CRD-C 513.

B. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/4 inch thick and 4 inches deep; tongue and groove profile.

C. Construction Joint Devices: Integral galvanized steel; formed to tongue and groove profile, with removable top strip exposing sealant trough, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge.

D. Sealant and Primer: As specified in Section 07 90 00.

2.07 CONCRETE MIX DESIGN
A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Proportioning Structural Lightweight Concrete: Comply with ACI 211.2 recommendations.

C. Concrete Strength: Establish required average strength for concrete on the basis of trial mixtures, as specified in ACI 301.
1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

E. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.

F. Normal Weight Concrete: Refer to the drawings for mix design guidelines.

2.08 MIXING
A. On Project Site: Mix in drum type batch mixer, complying with ASTM C 685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
B. Transit Mixers: Comply with ASTM C 94/C 94M.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

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.

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, insert steel dowels and pack solid with non-shrink grout.

F. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends.

3.03 INSTALLING REINFORCEMENT

A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

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

C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

D. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.

E. Separate slabs on grade from vertical surfaces with joint filler.
F. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.

G. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. Conform to Section 07 90 00 for finish joint sealer requirements.

H. Install expansion joint devices in accordance with manufacturer's instructions.

I. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.

J. Apply sealants in joint devices in accordance with Section 07 90 00.

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

L. Place concrete continuously between predetermined expansion, control, and construction joints.

M. Do not interrupt successive placement; do not permit cold joints to occur.

N. Saw cut control joints within 24 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness, minimum.

O. Screed floors level, maintaining the following minimum F(F) Floor Flatness and F(L) Floor Levelness values when measured in accordance with ASTM E 1155/ASTM E 1155M.
   1. F(F): Specified Overall Value (SOV) of 18; Minimum Localized Value (MLV) of 13.
   2. F(L): Specified Overall Value (SOV) of 24; Minimum Localized Value (MLV) of 17.

3.05 SEPARATE FLOOR TOPPINGS

A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.

B. Place required dividers, edge strips, reinforcing, and other items to be cast in.

C. Apply bonding agent to substrate in accordance with manufacturer's instructions.

D. Apply sand and cement slurry coat on base course, immediately prior to placing toppings.

E. Place concrete floor toppings to required lines and levels.
   1. Place topping in checkerboard panels not to exceed 20 ft in either direction.

F. Screed toppings level, maintaining surface flatness of maximum 1:1000.

3.06 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:

D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Steel trowel surfaces that will receive carpeting.
   2. Steel trowel surfaces that will be left exposed.
a. Chemical Hardener: After slab has cured, apply water-diluted hardener in three coats per manufacturer's instructions, allowing 24 hours between coats.

E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

3.07 CURING AND PROTECTION

A. Comply with requirements of ACI 308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than 7 days.
   2. High early strength concrete: Not less than 4 days.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:
   1. Start initial curing as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-fog spray, or saturated burlap.
   2. Begin final curing after initial curing but before surface is dry.
      a. Moisture-retaining cover: Seal in place with waterproof tape or adhesive.
      b. Curing compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 – Quality Requirements.

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 testing firm for review prior to commencement of concrete operations.

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

E. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of concrete placed.

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

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.

3.09 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.

END OF SECTION 03 30 00
PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Clearing site of trees, roots, stumps, brush, and other vegetation.
   2. Removing other miscellaneous structures and items identified on the plans.

B. Related Sections:
   Division 01 20 00 PRICE AND PAYMENT PROCEDURES

1.02 PAYMENT

All work performed under this section shall be included as part of the BID for this project and subject to Division 01 20 00 PRICE AND PAYMENT PROCEDURES.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 SITE CLEARING

A. General:
   1. Clear areas as approved by owner for performance of the work.
   2. Remove designated trees, stumps, roots, brush, and rocks.
   3. Work carefully around trees and overhanging branches.
   4. Trees and branches shall not be removed without permission of owner.

3.02 REMOVAL OF EXISTING IMPROVEMENTS AND MISCELLANEOUS ITEMS

A. Curb and gutter:
   1. Curb and gutter shall be removed only within the limits indicated on the plans and where damaged by the Contractor.
   2. The curb shall be saw cut full depth at the locations noted or at the nearest joint.
   3. Curbs, catch basins, and other structures to remain shall be protected from damage.

B. Pavement:
   1. Concrete pavement:
      a. Concrete pavement to be removed shall be saw cut or removed at the nearest joint.
      b. Saw cuts shall be made by cutting concrete full depth in a straight line.
      c. Concrete pavement not scheduled for removal that is damaged by the Contractor shall be saw cut in a location determined by the Engineer and removed.

C. Concrete sidewalk:
   1. Existing sidewalks indicated for removal shall be saw cut full depth or removed at the nearest joint.
   2. Sidewalk damaged by Contractor shall be saw cut in a location determined by the Engineer, and replaced at no cost to owner.
D. Concrete Pavers:
   1. Existing concrete pavers indicated for removal stored for possible reuse. Coordinate with the owner.
   2. Sidewalk damaged by Contractor shall be sawcut in a location determined by the Engineer, and replaced at no cost to owner.

3.03 DISPOSAL OF MATERIALS

   A. All concrete, trees, asphalt, gravel, etc. resulting from removal shall become the property of the Contractor.

   A. All removed materials not identified to be salvaged shall be removed from the project site and disposed of properly.

   B. Items identified to be salvaged shall be delivered to the owner in good condition.

   D. Burning is not permitted without permission from the owner.

END OF SECTION 31 00 00
SECTION 31 01 50

SHORING AND BRACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Furnish, install, and maintain sheeting, shoring, bracing, and trench boxes as required to support the sides of the excavation.

B. Prevent movement of earth that would damage the Work or existing structures, or cause injury to workmen.

1.02 RELATED SECTIONS
Division 01 20 00 PRICE AND PAYMENT PROCEDURES

1.03 PAYMENT

Sheeting, shoring and bracing will be considered incidental to the performance of the work. Unless specifically stated otherwise, all work performed under this section shall be included as part of the BID for this project and subject to Division 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.04 QUALITY ASSURANCES

Comply with all standards set forth in the Federal and State Occupational Safety and Health Act.

PART 2 PRODUCTS - Not used.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide sheeting, shoring, trench box, or bracing to prevent caving or sliding, and to protect workmen and adjacent structures and facilities.

B. Fill and compact voids outside the sheeting.

C. Prevent concentrated loads on any structure or pipe within the excavation.

3.02 REMOVAL

A. Remove sheeting without damage to the installed structure or pipe, and adjacent utilities or structures.

B. Fill all voids caused by withdrawal of sheeting with clean compacted sand.

3.03 SHEETING LEFT IN PLACE

Sheeting may be left in place with the permission of the Owner.

END OF SECTION 31 01 50
SECTION 31 23 00
EXCAVATION AND FILL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Excavating, shaping, and grading surface
   2. Excavating and backfilling for pipe trenches
   3. Placing fill and embankments
   4. Salvaging and stockpiling select material
   5. Disposal of surplus or unsuitable material
   6. Other earthwork indicated on the plans for site modification or placement of structures.

B. Related Sections
   01 20 00 PRICE AND PAYMENT PROCEDURES
   01 30 00 ADMINISTRATIVE REQUIREMENTS
   01 40 00 QUALITY REQUIREMENTS
   31 23 19 DEWATERING
   31 01 50 SHORING AND BRACING

1.02 QUALITY ASSURANCES

A. Materials:
   1. All materials used as fill or sub-base shall be approved by the Engineer.
   2. Determine gradation in accordance with ASTM C-136.
   3. Determine percent loss by washing in accordance with ASTM C-117.

B. Compaction:
   1. Determine maximum density using the Modified Proctor Method, ASTM D-1557.
   2. Engineer may approve other field determinations of maximum density, such as Michigan Cone.
   3. Field determination of in place density shall be by Nuclear Density Method, ASTM D-2922, or other approved method.

C. Except as modified by this Section, perform earthwork in accordance with Division 2, MDOT Standard Specifications.

D. Testing:
   1. See Division 01 40 00.

1.03 SITE CONDITIONS

A. Soil Borings
   1. Soil borings were conducted at the site. A geotechnical report is available from the Owner and Construction Manager.

B. Borrow Area
   1. General:
      A borrow area of suitable fill soils does not exist on site.

C. Excess Excavation Disposal
   1. General:
      An area for on site disposal of excess materials generated from the site does not exist and materials shall be removed from the site.
1.04 PAYMENT

All work performed under this section shall be included as part of the BID for this project and subject to Section 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.05 REFERENCED STANDARDS

Unless otherwise specified, the work for this Section shall conform to the applicable portions of the following Standard Specifications:

- ASTM - American Society for Testing and Materials
- MDOT - Michigan Department of Transportation
- OSHA - Occupational Health and Safety Association

PART 2 PRODUCTS

2.01 MATERIALS

A. General:
1. All fill material shall be approved by the Engineer prior to placement.
2. Fill material shall be free from clay, organic matter, roots, debris, and frozen soil.
3. Obtain fill material from on-site excavations, or from an approved borrow area.
4. Provide Testing Laboratory with access to material source.

B. Class II and III backfill:
Granular material meeting requirements of Section 902.08 of the MDOT Standard Specifications for construction.

C. Pipe Bedding:
Granular material meeting requirements of ASTM D2321

D. Topsoil:
Dark brown or black loam, clay loam, or sandy loam, of a fertile, humus soil origin.

PART 3 EXECUTION

3.01 DUST CONTROL

A. Control dust at the Work area at all times to prevent dust from becoming a nuisance to the public, neighbors, or the work of others on the site.

B. Provide moisture or otherwise treat surfaces to control dust.

3.02 TOPSOIL

A. Removal:
1. Remove all topsoil from areas to be occupied by structures, improved surfaces, or where new grades are to be established.
2. Stockpile topsoil for future use in finish grading at a site approved by the Engineer.

B. Application:
1. Provide topsoil over all disturbed areas not occupied by structures or improved surfaces.
2. Spread the stockpiled topsoil over the prepared rough grade to a minimum depth of 4 inches.
3. Provide additional topsoil as required to complete the Work.
4. Finish grade, and rake the topsoil to remove all stones, sticks, roots, and debris in preparation for seeding.
5. Excess topsoil may be used for fill in non critical areas.

3.03 EXCAVATING-GENERAL

A. Excavation shall be closely coordinated with the soil stabilization and foundation system design and installation requirements.
B. Excavate to the lines and grades shown on the plans.
C. Provide safe excavation slopes in accordance with OSHA Regulation 54 FR 45894.
D. Protect excavation bottoms from frost.
E. Dispose of excess excavated material off site or on site at a location approved by the Engineer.
F. Provide dewatering in accordance with Section 31 23 19 as required.
G. Enlarge excavations laterally to provide adequate room for construction or provide shoring and bracing in accordance with Section 31 01 50, as necessary.

3.04 EXCAVATING, BACKFILLING, AND COMPACTING FOR STRUCTURES

A. Over-excavation:
   1. In the event clay or stone is encountered at the bottom of the excavation, undercut bottom a minimum of 12 inches.
   2. If muck or other deleterious material is encountered, remove this material to a depth where suitable subgrade soil is encountered, unless otherwise instructed by the Engineer.
   3. Backfill to proposed subgrade elevation with Class II material.
   4. Compact backfill in lifts not exceeding 9 inches to 95% Modified Proctor density.
B. Backfilling:
   1. Remove all debris from excavation prior to backfilling.
   2. Compact excavation bottom to 95% Modified Proctor density to a depth of 2 feet prior to placing backfill.
   3. Backfill material shall be Class II sand.
   4. Do not backfill against cast in place structures until approved by the Engineer.
   5. Do not backfill on only one side of a vertical wall unless the walls are adequately shored or the permanent structure is in place.
   6. Compact backfill in lifts not exceeding 9 inches to 95% Modified Proctor density.

3.05 FILL AT SPECIFIC LOCATIONS

A. Under Interior Slabs-On-Grade:
   1. Use general fill.
   2. Compact to 95 percent of maximum dry density.
   3. Cover with sand.
      a. Depth: 4 inches.
      b. Compact to 95 percent of maximum dry density.
B. At Footings:
   1. Use general fill.
   2. Fill up to subgrade elevation in lifts not exceeding 9 inches.
   3. Compact each lift to 95 percent of maximum dry density.
   4. Do not backfill against unsupported foundation walls.
   5. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
3.06 EXCAVATING, BACKFILLING, AND COMPACTING FOR ROAD SUBGRADE, PAVED SURFACES AND APPURTEANCES

A. Subgrade undercutting:
   1. Remove all peat, muck, topsoil and other organic matter from the roadway subgrade.
   2. Remove all soils other than granular materials within 15 inches of the proposed subgrade elevation.
   3. Place Class II sand and compact to 95% Modified Proctor density to proposed subgrade elevation.
   4. Extend undercutting of unsuitable materials to the limit of a 1 on 1 slope spreading outward from the grade and location of the outside edge of the finished pavement, curb, or other improved surface.

B. Backfilling around curbs, sidewalks, and appurtenances:
   1. Remove all debris from excavation prior to backfilling.
   2. Compact excavation bottom to 95% Modified Proctor density to a depth of 2 feet prior to placing backfill.
   3. Backfill material shall be Class II sand.
   4. Do not backfill against cast in place structures until approved by the Engineer.
   5. Compact backfill in lifts not exceeding 9 inches to 95% Modified Proctor density.

3.07 EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

A. Trench excavation:
   1. Conduct excavation in a safe and orderly manner at all times, in compliance with all applicable safety regulations.
   2. Use hand tools where mechanical equipment will cause damage to adjacent trees, structures, or utilities.
   3. Excavate trench to the cross-section shown on the trench detail.
   4. Do not excavate the trench ahead of the pipe laying operation more than the Contractor can reasonably expect to backfill by the end of the work day.
   5. Support and protect all existing utilities encountered within the trench.
   6. Place excavated material where it will not obstruct sidewalks, driveways, roadways, or the work of others.
   7. Undercutting
      a. In the event clay or stone is encountered at the bottom of the excavation, undercut the bottom a minimum of 6 inches.
      b. Undercut the trench a minimum of 6 inches for plastic water main or sanitary sewers in all soils.
      c. If muck or other deleterious material is encountered, remove this material suitable soil, unless modified by the Engineer.
      d. Backfill to proposed pipe grade with material meeting ASTM D2321 compacted to 95% Modified Proctor density.

B. Pipe bedding:
   1. Grade trench bottom to provide uniform, firm, and stable surface, free from rocks and other unsuitable materials.
   2. Provide a tamped sand bedding for the full length of the pipe barrel, with recesses excavated for the joints.
   3. Bedding material shall meet requirements of ASTM D2321.
   4. Place bedding simultaneously on each side of the pipe for the full width of the trench, to a depth of 1 foot above the pipe.
   5. Place bedding in 9 inch layers and compact to 95% Modified Proctor Density, being careful not to displace the pipe laterally.
C. Trench backfill, critical areas:
   1. Class II material in areas under or within 10 feet of structures or improved surfaces.
   2. Place in layers not exceeding 9 inches and compact each layer, by mechanical means, to 95% Modified Proctor density.
   3. If trench settles greater than 1 inch within the one year following Owner's acceptance of project, the Contractor shall bring the trench back to grade and restore the surface at no additional cost to the Owner.

D. Trench backfill, non-critical areas:
   1. Class III material approved by the Engineer, free from frozen soil, vegetation, and debris.
   2. Place in layers not exceeding 12 inches and compact each layer by mechanical means to a minimum of 90% Modified Proctor density.

E. Pipe protection:
   1. Mound and compact additional granular backfill over pipe, if required, to provide a minimum cover depth of 3 feet to protect pipe while construction equipment is operating on site.
   2. Remove additional backfill when grading to achieve finished grade.

3.08 CONTROLLED FILLS AND EMBANKMENTS

A. General:
   1. All filling under or within a 1:1 slope from the outer edge of buildings, structures, or improved surfaces shall be controlled fill.
   2. Material: Class II granular material, unless otherwise specified by the Engineer.

B. Placing fill:
   1. Remove topsoil roots and stumps to a depth of 12 inches prior to placing fill.
   2. Compact existing ground to 95% Modified Proctor density prior to placing fill.
   3. Spread fill in uniform layers not exceeding 9 inches and compact to 95% Modified Proctor density.

C. Compaction:
   1. Compacting equipment shall be heavy duty, rolling drum, vibrating type.
   2. Use pneumatic tire rollers in predominantly granular soils.
   3. Use sheepfoot type roller in predominantly clay soils.
   4. Use hand operated vibrating sled for compaction around structures.
   5. Other methods of producing equivalent results will be allowed when approved by the Engineer.
   6. Density in areas under or adjacent to structures or improved surfaces shall be to 95% Modified Proctor density.
   7. Density in other locations shall be to 90% Modified Proctor density.

D. Moisture:
   If material is too wet or dry for satisfactory compaction, adjust moisture content as required.

3.09 GRADING

A. Conform to lines, contours, and spot elevations shown on the plans.

B. Perform finish grading on ground surfaces to an accuracy of plus or minus 0.1 feet.

C. Perform finish grading on improved surfaces to an accuracy of plus or minus 0.05 feet.

END OF SECTION 31 23 00
SECTION 31 23 19
DEWATERING

PART 1 GENERAL

1.01 SUMMARY
A. Section includes providing and maintaining dewatering equipment to dispose of surface water and ground water from all excavations and trenches.

B. Related Sections:
   Division 01 20 00 PRICE AND PAYMENT PROCEDURES

1.02 PAYMENT
Dewatering will be considered incidental to the construction. Unless specifically stated otherwise, all work performed under this section shall be included as part of the BID for this project and subject to Division 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.03 SUBMITTALS
A. Submit a description of the proposed system to the Engineer prior to installation.

B. Description shall include the number, size, and length of wells, pumping equipment, temporary underdrain location, discharge location, and sedimentation control measures.

1.04 QUALITY ASSURANCE
A. Design of the dewatering method shall be the responsibility of the Contractor.

B. Comply with the Soil Erosion and Sedimentation Control Act, and other state and local codes that govern dewatering activities.

1.05 DESIGN REQUIREMENTS
A. Dewatering system shall be capable of lowering the static water table a minimum of 12 inches below all excavations.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 PERFORMANCE REQUIREMENTS
A. Duration of dewatering:
   1. Continuously until the structure or pipe is installed.
   2. Prevent damage from hydrostatic pressure, flotation, or other causes.

B. Reliability:
   1. Monitor the dewatering system at frequent intervals to insure proper operation.
   2. Provide stand-by equipment as necessary to avoid equipment or power failure.

C. Discharge:
   1. Prevent sand and silt from discharging into sewer drains or natural waterways.
   2. Provide silt fencing, sediment traps, or other methods to protect surface water discharges.
   3. Remove all sediment deposits created as a result of the dewatering process.
4. Do not interfere with the rights of the public, owners of private property, pedestrians, vehicular traffic, or the work of other Contractors.

D. Surface water runoff:
   1. Divert surface water from entering excavated areas or trenches.
   2. Protect adjacent property from damage.
   3. Repair any damage from dewatering activities at no additional cost to the Owner.

E. Remove all dewatering wells and equipment after project completion.

END OF SECTION 31 23 19
SECTION 31 25 00
EROSION CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes, work necessary for effective temporary and permanent soil erosion and sedimentation control.

B. Related Sections:
   Section 01 20 00 PRICE AND PAYMENT PROCEDURES
   Section 31 23 00 EXCAVATION AND FILL
   Section 32 90 00 SITE RESTORATION

1.02 PAYMENT

Temporary and permanent erosion control measures will be considered incidental to the construction. Unless specifically stated otherwise, all work performed under this section shall be included as part of the BID for this project and subject to Division 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.03 QUALITY ASSURANCES

Perform all Work in accordance with the Michigan Soil Erosion and Sedimentation Control Act, Part 91 of Act 451, P.A. 1994, and with the requirements of the local agencies having jurisdiction over the Work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Seed, fertilizer, and mulch: Provide as specified in Section 32 90 00 SITE RESTORATION.

B. Provide temporary and permanent structures and materials in accordance with the Michigan Department of Management and Budget Keying System. See Figure 1 at the end of this section.

C. Mulch blanket:
   1. Materials: 100% straw sewn into a lightweight, photo degradable netting.
   3. Straw content: 0.5 pounds per square yard.

D. Geotextile filter fabric:
   1. Materials: Mechanically bonded, non-woven geotextile.
   2. Manufacturer: Amoco
   3. Model: CEF 4553
   5. Tensile elongation: 50% min. (ASTM D-4632).
E. Rip rap stone: (4-6")
   1. Material: native fieldstone from local gravel pits, exhibiting sound structure and strength for the intended use.
   2. Size: 1" to 6" stone.
   3. Gradation:
      a. \( D_{100} = 6 \text{ inch} \)
      b. \( D_{50} = 4 \text{ inch} \)
      c. \( D_{10} = 2 \text{ inch} \)

F. Rip rap stone: (10-12")
   1. Material: native fieldstone from local gravel pits, exhibiting sound structure and strength for the intended use.
   2. Size: 6" to 12" stone.
   3. Gradation:
      a. \( D_{100} = 12 \text{ inch} \)
      b. \( D_{50} = 10 \text{ inch} \)
      c. \( D_{10} = 8 \text{ inch} \)

G. Silt fence:
   1. Conforming to Section 01 57 13.

PART 3 EXECUTION

3.01 GENERAL

Conduct site evaluation with the Engineer and the soil erosion control officer prior to starting work.

3.02 TEMPORARY EROSION CONTROL

A. Minimize the area of earth disturbed at any one time.

B. Provide berms or ditches to divert storm runoff from the construction area when steep slopes or highly erodible soils are present.

C. Contain all sedimentation on site by using straw bales, filter fence, or sedimentation basins.

3.03 PERMANENT EROSION CONTROL

A. When final grades have been established, provide topsoil, seed, fertilizer, and mulch.

B. Water all seeded areas as necessary to establish proper vegetative cover.

C. Should erosion occur within the guarantee period, regrade and reseed the disturbed area at no additional cost to the Owner.

3.04 MULCH BLANKET

A. Provide mulch blanket on all disturbed surfaces with slopes 1V:3H and steeper.

B. Prepare soil prior to placing mulch blanket with topsoil, seed and fertilizer.

C. Place mulch blanket from top of slope down so overlap seams run parallel to slope.

D. Overlap seams a minimum of 2" on parallel seams, and six inches, shingle style, on perpendicular splices.
### Michigan Department of Management and Budget

#### S-E-S-C Keying System

<table>
<thead>
<tr>
<th>Key</th>
<th>Best Management Practices</th>
<th>Symbol</th>
<th>Where Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Selective Grading and Shaping</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>To reduce steep slopes and erosive velocities.</td>
</tr>
<tr>
<td>E2</td>
<td>Grubbing Omitted</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>For use on steep slopes to prevent rilling, gullying, and reduce sheet flow velocity or where clear vision corridors are necessary.</td>
</tr>
<tr>
<td>E3</td>
<td>Slope Roughening and Scarification</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Where created grades cause increased erosive velocities. Promotes infiltration and reduces runoff velocity.</td>
</tr>
<tr>
<td>E4</td>
<td>Terraces</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>On relatively long slopes up to 8% grades with fairly stable soils.</td>
</tr>
<tr>
<td>E5</td>
<td>Dust Control</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>For use on construction sites, unpaved roads, etc. to reduce dust and sedimentation from wind and construction activities.</td>
</tr>
<tr>
<td>E6</td>
<td>Mulch</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>For use in areas subject to erosive surface flows or severe wind or on newly seeded areas.</td>
</tr>
<tr>
<td>E7</td>
<td>Temporary Seeding</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Stabilization method utilized on construction sites where earth change has been initiated but not completed within a 2 week period.</td>
</tr>
<tr>
<td>E8</td>
<td>Permanent Seeding</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Stabilization method utilized on sites where earth change has been completed (final grading attained).</td>
</tr>
<tr>
<td>E9</td>
<td>Mulch Blankets</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.</td>
</tr>
<tr>
<td>E10</td>
<td>Sodding</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>On areas and slopes where immediate stabilization is required.</td>
</tr>
<tr>
<td>E11</td>
<td>Vegetated Channels</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>For use in created stormwater channels. Vegetation is used to slow water velocity and reduce erosion within the channel.</td>
</tr>
<tr>
<td>E12</td>
<td>Riprap</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.</td>
</tr>
<tr>
<td>E13</td>
<td>Gabion Walls</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>On newly created or denuded stream banks to reduce velocity until permanent stabilization is achieved or on existing banks to retard erosive velocities.</td>
</tr>
<tr>
<td>E14</td>
<td>Energy Dissipator</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Where the energy transmitted from a concentrated flow of surface runoff is sufficient to erode receiving area or watercourse.</td>
</tr>
<tr>
<td>E15</td>
<td>Temporary Slope Drain</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Where surface runoff temporarily accumulates or sheet flows over the top of a slope and must be conveyed down a slope in order to prevent erosion.</td>
</tr>
<tr>
<td>E16</td>
<td>Slope Drain</td>
<td><img src="Symbol.png" alt="Symbol" /></td>
<td>Where concentrated flow of surface runoff must be permanently conveyed down a slope in order to prevent erosion.</td>
</tr>
</tbody>
</table>

B = Bioengineering
**Michigan Department of Management and Budget**

**S-E-S-C Keying System**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>E17</td>
<td>Cellular confinement systems</td>
<td><img src="image" alt="Symbol" /></td>
<td>Used on steep slopes and high velocity channels.</td>
</tr>
<tr>
<td>E18</td>
<td>Plastic sheets</td>
<td><img src="image" alt="Symbol" /></td>
<td>Used on exposed slopes, seeded areas, new ditch bottoms, and areas subject to surface runoff and erosion. Used as a liner in temporary channels and to stabilize stockpiles.</td>
</tr>
<tr>
<td>E19</td>
<td>Temporary drainageway/stream crossing</td>
<td><img src="image" alt="Symbol" /></td>
<td>Use on construction sites where stream/drainageway crossings are required.</td>
</tr>
<tr>
<td>E20</td>
<td>Temporary bypass channel</td>
<td><img src="image" alt="Symbol" /></td>
<td>Use within existing stream corridors where existing flow cannot be interrupted, and at culvert and bridge repair sites.</td>
</tr>
<tr>
<td>E21</td>
<td>Live staking</td>
<td><img src="image" alt="Symbol" /></td>
<td>In areas requiring protection of slopes against surface erosion and shallow mass wasting.</td>
</tr>
</tbody>
</table>

**Erosion / Sediment Controls**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>ES31</td>
<td>Check dam</td>
<td><img src="image" alt="Symbol" /></td>
<td>Used to reduce surface flow velocities within constructed and existing flow corridors.</td>
</tr>
<tr>
<td>ES32</td>
<td>Stone filter berm</td>
<td><img src="image" alt="Symbol" /></td>
<td>Use primarily in areas where sheet or rill flow occurs and to accommodate dewatering flow.</td>
</tr>
<tr>
<td>ES33</td>
<td>Filter rolls</td>
<td><img src="image" alt="Symbol" /></td>
<td>In areas requiring immediate protection of slopes against surface erosion and gully formation and for perimeter sediment control.</td>
</tr>
<tr>
<td>ES34</td>
<td>Sand fence</td>
<td><img src="image" alt="Symbol" /></td>
<td>For use in areas susceptible to wind erosion, especially where the ground has not yet been stabilized by other means.</td>
</tr>
<tr>
<td>ES35</td>
<td>Dewatering</td>
<td><img src="image" alt="Symbol" /></td>
<td>Use where construction activities are limited by the presence of water and dry work is required.</td>
</tr>
<tr>
<td>ES36</td>
<td>Diversion dike/berm</td>
<td><img src="image" alt="Symbol" /></td>
<td>Within existing flow corridors to address or prevent erosion and sedimentation, or on disturbed or unstable slopes subject to erosive surface water velocities.</td>
</tr>
<tr>
<td>ES37</td>
<td>Diversion ditch</td>
<td><img src="image" alt="Symbol" /></td>
<td>In conjunction with a diversion dike, or where diversion of upland runoff is necessary to prevent damage to unstabilized or disturbed construction areas.</td>
</tr>
<tr>
<td>ES38</td>
<td>Cofferdam/sheet piling</td>
<td><img src="image" alt="Symbol" /></td>
<td>Constructed along or within water corridor or waterbody to provide dry construction area.</td>
</tr>
<tr>
<td>ES39</td>
<td>Streambank biostabilization</td>
<td><img src="image" alt="Symbol" /></td>
<td>For use along banks where stream and riparian zones may have difficulty recovering from the long-term effects of erosion.</td>
</tr>
<tr>
<td>ES40</td>
<td>Polymers</td>
<td><img src="image" alt="Symbol" /></td>
<td>To minimize soil erosion and reduce sedimentation in water bodies by increasing soil particle size.</td>
</tr>
<tr>
<td>ES41</td>
<td>Wattles</td>
<td><img src="image" alt="Symbol" /></td>
<td>In areas requiring protection of slopes against surface erosion and gully formation.</td>
</tr>
</tbody>
</table>

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## Michigan Department of Management and Budget

**S-E-S-C Keying System**

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</tr>
</thead>
<tbody>
<tr>
<td>S51</td>
<td>Silt Fence</td>
<td>![Symbol]</td>
<td>Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.</td>
</tr>
<tr>
<td>S52</td>
<td>Catch Basin Sediment Guard</td>
<td>![Symbol]</td>
<td>Use in or at stormwater inlets, especially at construction sites.</td>
</tr>
<tr>
<td>S53</td>
<td>Stabilized Construction Access</td>
<td>![Symbol]</td>
<td>Used at every point where construction traffic enters or leaves a construction site.</td>
</tr>
<tr>
<td>S54</td>
<td>Tire Wash</td>
<td>![Symbol]</td>
<td>For use on construction sites where vehicular traffic requires sediment removal from its tires in highly erosive areas.</td>
</tr>
<tr>
<td>S55</td>
<td>Sediment Basin</td>
<td>![Symbol]</td>
<td>At the outlet of disturbed areas and at the location of a permanent detention basin.</td>
</tr>
<tr>
<td>S56</td>
<td>Sediment Trap</td>
<td>![Symbol]</td>
<td>In small drainage areas, along construction site perimeters, and above check dams or drain inlets.</td>
</tr>
<tr>
<td>S57</td>
<td>Vegetated Buffer/Filter Strip</td>
<td>![Symbol]</td>
<td>Use along shorelines, waterways, or other sensitive areas. Slows velocity, reduces sediment load, and reduces erosion in areas of sheet flow.</td>
</tr>
<tr>
<td>S58</td>
<td>Inlet Protection Fabric Drop</td>
<td>![Symbol]</td>
<td>Use at stormwater inlets, especially at construction sites.</td>
</tr>
<tr>
<td>S59</td>
<td>Inlet Protection Fabric Fence</td>
<td>![Symbol]</td>
<td>Use at stormwater inlets, especially at construction sites.</td>
</tr>
<tr>
<td>S60</td>
<td>Inlet Protection Stone</td>
<td>![Symbol]</td>
<td>Use around urban stormwater inlets.</td>
</tr>
<tr>
<td>S61</td>
<td>Turbidity Curtain</td>
<td>![Symbol]</td>
<td>Use during construction adjacent to a water resource, to contain sediment within the work area when other BMP's cannot be used.</td>
</tr>
</tbody>
</table>

B = Bioengineering

**End of Section 31 25 00**
SECTION 32 14 00
UNIT PAVING

PART 1 GENERAL

1.1 INCLUDED PROVISIONS – The General Conditions as they apply to this work.

1.2 DESCRIPTION – This work includes all labor, equipment, and materials for construction of modular unit paved surfaces complete including compacted base, sand setting bed, and paver units set in locations and grades as per the plans and specifications.

PART 2 PRODUCTS

2.1 PAVERS – Basis of Design is Belden Brick Belcrest 600 or 650.
2.2 COLOR - Belden Brick Belcrest 600 or 650.
2.3 Dense, moisture resistant, frost–proof and uniform in range of color and texture.
2.4 CRUSHED STONE BASE – MDOT series 6AA crushed natural stone.
2.5 SAND BEDDING – MDOT series 2NS, clean hard sand.
2.4 JOINT FILLER – MDOT series 8NS, fine dry sand.
2.4 PAVER EDGING – as specified on the plans.

PART 3 EXECUTION

3.1 PRODUCT HANDLING

A. Aggregate materials shall be protected from traffic, construction activities, or any other disturbance which could cause the material to become contaminated.

B. Pavers shall be handled carefully to avoid cracked, chipped or otherwise damaged units. Damaged units will be rejected. Pavers shall be shipped to the site in original containers or packaging with the manufacturer’s name, product name, and any other information required to verify the authenticity of the product clearly visible.

3.2 CONSTRUCTION METHODS

A. Place crushed stone base on properly prepared sub-grade and compact to a minimum of 95 percent ASTM D 1557 or Proctor Density. Compaction shall be achieved under optimum moisture conditions unless otherwise specified and shall follow the line and grades as shown on the drawings. Omit aggregate base for pavement sections showing concrete paving as the base material.

B. Paver edging where specified shall be placed on the stone base and secured as per the manufacturer’s recommendations.

C. Place bedding sand on base course to the specified depth. Do not compact.

D. Place modular paver units on the sand setting bed in the specified pattern without disturbing the sand setting bed. Place pavers with uniform, hand tight joints that are straight, square, or smoothly curving as required for the pattern shown. Cleanly cut pavers as required to continue the specified pattern to the edge of the paving area. Rough, ragged, damaged or irregularly set pavers shall be removed and replaced at no additional cost to the owner.

E. Vibrate pavers into place with a minimum of two passes of a vibratory compactor.
F. Sweep joints with specified fine dry sand and vibrate into place. Place additional filler as required to fill all voids between pavers after the initial vibration. For turf-stone pavers omit sand in joints and fill voids with topsoil.

G. Pavers shall be set approximately ¼ inch above specified finished grades and all edging or connections to other pavement to allow for settlement

END OF SECTION 32 14 00
SECTION 32 20 00
CONCRETE SURFACES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes, all materials, labor, tools, and equipment necessary for the construction of concrete surfaces, including sidewalks and curb and gutter.

B. Related Sections:
   Section 01 20 00 PRICE AND PAYMENT PROCEDURES
   Section 31 23 00 EXCAVATION AND FILL

1.02 PAYMENT

All work performed under this section shall be included as part of the BID for this project and subject to Division 01 20 00 PRICE AND PAYMENT PROCEDURES.

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete reinforcement:
   1. Conform to MDOT Section 905.

B. Concrete:
   1. Conform to MDOT Table 601-2.
   2. MDOT Grade P1, 3500 psi concrete mix.

C. Joint filler:
   1. Fiber joint filler conforming to ASTM D-1751.

D. Sand base:
   1. Provide compacted sand base as specified in Section 31 23 00 EXCAVATION AND FILL.

E. Detectable Warning Strips

PART 3 EXECUTION

3.01 EARTHWORK

A. Perform all earthwork necessary to conform to the finish grades shown on the Plans.

B. Prepare base as specified in Section 31 23 00 EXCAVATION AND FILL.

C. Backfill and compact all voids remaining after forms are removed.

3.02 CONCRETE PAVEMENT

A. Construct concrete pavement as shown on plans in conformance with Section 602 of the MDOT Standard Specifications for concrete pavement and section 801 for concrete driveways.

B. Dimensions:
   1. Length: As required to replace existing, or as shown on Plans.
2. Width: Meet existing, or as shown on Plans.
3. Thickness: 9” minimum or greater if required to meet existing.
4. Slope: Meet existing, slope to drain.

C. Joints:
1. Concrete pavement joints shall be placed in a pattern as shown in MDOT Standard Plan II-42 series, Sheet 5 of 6, "Joints for Concrete Pavement Widening".
2. Transverse construction joints, Symbol C, shall be placed to match joints in the existing pavement.

D. Reinforcement:
1. Wire fabric reinforcement shall be placed in all concrete pavement in accordance with MDOT Standard Plan II-45 series.

E. Finish: Finish surface in accordance with MDOT Specification 4.50.

3.03 SIDEWALKS & COURTYARDS

A. Construct in conformance with Section 803 of the MDOT Standard Specifications.

B. Dimensions:
1. Length: As shown on the Plans.
2. Width: As noted on Plans.
3. Thickness:
   a. 4” except where shown 6” on plan.
   b. 6” at locations shown on plans.
4. Slope: 3/16” per foot toward curb or per grading plan.

C. Joints:
1. Expansion joints:
   a. Provide ½” expansion joints as shown on the Plans and as follows:
      i. At ends of thickened sidewalk.
      ii. At a maximum spacing of 50 feet.
      iii. Around permanent structures in sidewalk.
      iv. Between back of curb and sidewalk.
      v. Sidewalk ramps meet back of curb.
2. Plane of weakness joints:
   a. At intervals equal to the sidewalk width, or at a maximum 10 feet.
   b. In thickened sidewalk at outer edges of driveways.
   c. Where permanent structures are located in sidewalk.
   d. Cut joints to at least ¼ the thickness of the sidewalk or concrete surface.
   e. Finished joints shall be smooth and true to line.

D. Finish: Finish surface in accordance with MDOT Specification 803.

3.04 CURB AND GUTTER

A. Construct curb and gutter in accordance with Section 802 of the MDOT Standard Specifications.

B. All new curb and gutter shall be the Type, shown on the Plans.

C. Curb openings as detailed on Plans, installed at existing driveways at the location of existing curb openings.

D. Depressed curbs to 1" height at sidewalk ramps and driveway openings.
E. Joints:
   1. Provide 1” expansion joints at:
      a. Saw cut curb ends.
      b. Curb radius spring points.
      c. Approximately 10 feet each side of all catch basins.
   2. Provide contraction joints at:
      a. Opposite all transverse contraction joints in concrete pavement.
      b. At 40 foot maximum intervals.

F. Finish: Finish surface in accordance with MDOT Specification 803.

3.05 SIDEWALK RAMPS

A. Construct MDOT ADA sidewalk ramps with detectable warning strips (tactile strips) at locations where shown on the plans.

B. Construct in accordance with MDOT Special Detail R-28-F and Section 803 of the MDOT Standard Specifications.

C. Dimensions:
   1. Length: As shown on the Plans.
   2. Width: 4 feet, unless noted otherwise.
   3. Thickness:
      a. 6” unless otherwise noted on Plans.
      b. Special thickness requirements are noted on the Plans.

D. Joints:
   1. Provide control joints at 5 feet on center.
   2. Provide expansion joints at intervals not exceeding 50 feet and between all abutting buildings and structures.


END OF SECTION 32 20 00
SECTION 32 90 00
SITE RESTORATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Work necessary to restore all disturbed surfaces and areas receiving erosion control blanket. Final seed bed preparation (raking) shall be conducted by contractor and be approved by ENGINEER prior to seeding and mulching.
   2. Work necessary to complete seeding for turf areas and prairie / native seed areas.
   3. Provide, establish, and maintain seed, mulch, and erosion control materials.

B. Related Sections
   01 20 00 PRICE AND PAYMENT PROCEDURES
   31 23 00 EXCAVATION AND FILL
   31 25 00 EROSION CONTROL
   32 93 00 LANDSCAPING

1.02 PAYMENT

All work performed under this section shall be included as part of the BID for this project and subject to Division 01 20 00 PRICE AND PAYMENT PROCEDURES

PART 2 PRODUCTS

2.01 TURF GRASS MATERIALS

A. Topsoil: Provide topsoil as specified in Section 31 23 00 EXCAVATION AND FILL.

B. Turf Grass Seed: Provide improved variety seed mixture composed of the following proportion by weight:

   Creeping Red Fescue  40%
   Kentucky Blue Grass  40%
   Perennial Rye Grass  20%

   1. Mix blend available through Tri-Turf of Traverse City, MI. (800) 636-7039 or equal.

C. Prairie / Native Seed: Provide seed mixture as specified on the plans.
   1. Mix blend available through JF New Native Plant Nursery Ph. (574) 586-2412 or equal.

D. Fertilizer:
   1. Use fertilizer for turf grass areas only; DO NOT fertilize prairie or native seed areas.
   2. Provide chemical fertilizer with a 1-1-1 or 1-2-1 ratio of Nitrogen (N), Phosphoric Acid (P₂O₅), and Potash (K₂O). P
   3. Provide net weight of contents, fertilizer specification and guaranteed analysis (soil test) for approval.
   4. Fertilizer available through Tri-Turf of Traverse City, MI. (800) 636-7039

E. Mulching: Provide straw mulch conforming to MDOT Specification 8.21.11, as approved by the Engineer.
F. Netted mulch blanket - refer to section 31 25 00 EROSION CONTROL.

2.02 PLANT MATERIAL

A. Plant materials shall be freshly dug vigorous plants of specimen quality, exceptionally heavy, symmetrical, thickly branched, tightly knit plants, true to species and variety and conforming to the measurements specified in the Plant Lists. All plants shall be free of disease, insect pests, eggs or larvae, and shall have healthy, well balanced and thickly developed root systems, be matched specimens from a single block source and shall not be pruned before delivery.

B. Plant materials shall conform to the guideline standards for name, shape and quality established by the "Standardized Plant Names", 1942 Edition, American Joint Committee on Horticultural Nomenclature and the "American Standard for Nursery Stock", 1973 Edition, American Association of Nurserymen. Tree caliper measurements shall be taken at a point on the trunk 6 inches above natural ground line for trees up to and including 4 inches caliper size and at a point 12 inches above the natural ground line for larger size trees. If a range of sizes is given, no plant shall be less than the minimum size and not less than 50% of the plants shall be as large as the average size specified. No change in quality, quantity, species, variety or sex of plants from those specified will be permitted without the written approval of the LANDSCAPE ARCHITECT.

C. All plant materials shall be labeled with durable, legible labels stating the correct plant name (botanical and common name from the contract documents) and size in weather-resistant ink or embossed process capable of remaining readable at least two years and without the LANDSCAPE ARCHITECT before any excavation is made.

PART 3 EXECUTION – TURF GRASS RESTORATION

3.01 TOPSOIL PREPARATION

A. General:
   1. Prepare topsoil after finish grading of surfaces.
   2. Prepare soil to a friable condition by tilling, disk ing, harrowing, or otherwise loosening the soil to a depth of 4 inches.
   3. Tilling can be omitted for prairie / native seed areas if using a no-till seed drill, with approval by LANDSCAPE ARCHITECT
   4. Break up all lumps of soil.
   5. Rake out all stones, rocks and debris larger than ¾”.
      IMPORTANT: Coordinate with irrigation contractor so full policing occurs after main line trenching, and head work has occurred.

3.02 SOWING TURF GRASS SEED

A. Sow grass at a minimum rate of 150-175 pounds per acre.

B. Method:
   1. Sow the seed following or in conjunction with the fertilizer.
   2. Sow only while soil is in a friable condition.
   3. Do not sow through mulch.
   4. Sow seed mixture by mechanical broadcast method.
   5. Float seed sown by broadcast method so that 50% of the seed is mixed with the top ½” inch of the soil.

C. Hydro-seeding:
   1. Apply in 2-step process:
      1. Apply seed with water and work into top inch of soil.
      2. Apply wood fiber mulch or straw mulch after seeding with tackifier, final mulching
method to be approved by LANDSCAPE ARCHITECT prior to installation.

3. Apply fertilizer at either step.
2. Apply at a rate of 1440 pounds per acre for wood fiber mulch.

D. Straw Mulching:
1. Apply at a rate of 2 bales per 1000 square feet.
2. Method:
   1. Apply immediately after seeding.
   2. Apply evenly and loose enough to allow sunlight and air to penetrate, but thick enough to reduce the rate of evaporation and erosion.
   3. Apply mulch tackifier as necessary.

D. Watering:
1. Water all seeded areas to establish a smooth and full vegetative cover. IMPORTANT: water application must occur to keep seed in a damp condition until germination takes place.
2. Should erosion occur or the seed not grow within the guarantee period, re-grade and reseed the disturbed area at no additional cost.

E. Erosion control:
1. Provide measures necessary to establish well rooted vegetation on slopes and ditch bottoms.
2. Protect seeded slopes 1:3 and greater with netted mulch blankets.

F. Seasonal limitations:
1. Apply seed between May 1 and September 1.
2. Dormant seeding:
   a. Permitted in limited areas to complete a project.
   b. Apply after October 1, but not on frozen ground.

3.03 GROW-IN PROGRAM

A. The Contractor is to provide an outline of a grow-in and post-installation site management program for the maturation of the prairie / native seed areas from the time that the seeding is completed until one year later (to be renewed annually as negotiated). This grow-in program should be complete including monitoring recommendations for weed control, watering, controlled burns or mowing, exotic and invasive species eradication and until density is obtained.

B. Indicate the name of the person that will be primarily in charge of this maintenance operation and the name of any subcontractors that will be providing the maintenance for the prairie / native seeding areas.

C. Timing and duration of the grow-in program to be included in bid should commence immediately after germination has occurred and conclude when all parties have agreed density is obtained.

PART 4 EXECUTION – PLANTINGS

4.01 TRANSPORTATION AND DELIVERY OF PLANT MATERIALS

A. All plants that cannot be planted immediately on delivery shall be set on the ground or in a trench and the balls well covered with soil, manure or other acceptable material to prevent freezing, drying or over watering conditions with the roots protected at all times.

B. Anti-desiccant spray shall be applied to all evergreen or deciduous plant materials in full leaf, applying an adequate film over trunks, branches, twigs and foliage prior to digging the plants.

C. The Contractor shall notify the LANDSCAPE ARCHITECT at least 48 hours in advance of the anticipated delivery of any plant material.
D. Plants transported to the project in open vehicles shall be covered with tarpaulins or other suitable covers securely fastened to the body of the vehicle to prevent injury to the plants. Closed vehicles and covered shipments shall be adequately ventilated to prevent overheating of the plants.

E. All plants shall be kept moist, fresh and protected for the entire period during which the plants are being handled in transit or in temporary storage. No plant shall be so bound with rope or wire at any time as to damage the bark, break branches, or destroy its natural shape.

### 4.02 PLANTING OPERATIONS

A. Installation of plant materials shall take place within the following time schedule unless otherwise specified.

1. Deciduous trees and shrubs shall be transplanted during the period September 15 to June 1.
2. Evergreen trees and shrubs shall be transplanted during the period September 15 to June 1.
3. Ground cover plants shall be transplanted during the period of April 1 to June 1.

B. No digging or planting operations shall be conducted when the soil or plants are excessively wet, muddy or in a frozen condition.

C. Location for all plants and outlines for planting areas shall be staked on the ground by the Contractor and shall be approved by LANDSCAPE ARCHITECT.

D. Hardwood bark for mulching shall be finely shredded hardwood bark, free of sticks and foreign material. Before purchasing, one pound sample of the material shall be submitted to the LANDSCAPE ARCHITECT for approval.

### 4.03 PROTECTION OF EXISTING VEGETATION

A. Existing plants to remain, as shown on the plans and as indicated by field inspection shall be protected from soil compaction and other damages during the landscaping planting operations. Care will be taken by the Contractor to work in and from open areas to avoid contact with the existing trees and the root feeding areas. The Contractor is responsible to repair all damages and in the case of extreme damages shall replace the plant with a specimen nursery grown plant as similar in size as possible to the destroyed plant as directed by the LANDSCAPE ARCHITECT. Compaction of soils caused by this planting operations within root feeding areas will be loosened as directed by the LANDSCAPE ARCHITECT.

### 4.04 INSTALLATION OF PLANTINGS

A. Tree pits shall be excavated two times greater in diameter then the ball of earth or spread of roots of the tree and sufficiently deep to allow for the top of the root ball to be flush or slightly above existing adjacent grade.

B. Shrub holes shall be dug two times larger than the spread of the roots and a minimum of 18” deep below the finished grade, as necessary to properly set the plant at finished grade.

C. The Contractor shall not leave any plant hole open or unattended when an unsafe condition exists without proper protective signals, barriers, etc., or in any manner present a hazard to pedestrians or vehicles on the site.

D. All plants shall be planted in the soil mixture as specified, backfilled in 6” layers then thoroughly settled by deep watering. No material in frozen or muddy conditions shall be used for backfilling plant pits. Plant food tablets shall be placed as specified herein.

E. All ground cover plants shall be placed in rows, each being spaced in a checkerboard; i.e., alternating centers pattern, spaced as specified in the plant list.
F. The finished level of the soil in newly planted areas shall be such that when the backfill is settled and the mulch applied, the top of the mulch shall be not more than (1") one inch above the surrounding finished grades.

4.05 FERTILIZATION OF PLANTINGS

A. Planting tablets shall be placed according to the manufacturer's instruction and as follows:
   1. For Balled and Burlapped plant material use two 21 gram tablets per each one-half inch (½") of caliper.
   2. For seven (7) gallon container grown plant material use three (3) tablets of the 21 gram size for each plant.
   3. For five (5) gallon container grown plant material use two (2) tablets of the 21 gram size for each plant.
   4. For three (3), two (2) and one (1) gallon container grown plant material, use one (1) of the 21 gram tablets for each plant.

B. Granular plant food shall be applied to the surface of the plant beds including the ground cover beds which do not contain manure or the planting tablet. The plant food shall be spread over the root area starting six inches from the trunk and extending to the drip line of each plant or to the outer edge of the plant bed, whichever is larger, at the rate of two pounds (2 lbs.) per 100 square feet.

4.06 STAKING AND WRAPPING TREES

A. All trees shall be protected by tree stakes or by guying, as detailed on the drawings, using specified materials. Stakes shall be driven vertically, not closer to the trunk of the tree than sixteen (16) inches, and at sufficient distance from the tree to avoid piercing the roots or plant ball.

B. Each tree shall be staked immediately following its planting, watering and determination that it will settle to the proper grade. Plants shall stand plumb after staking.

C. Wrap trunks of deciduous trees with a spiral wrapping with fifty percent (50%) overlap to a minimum height above the second branch. Wrap from base up and tie wrapping securely every 18 inches.

D. The Contractor shall prune plants only at time of planting to remove damaged branches, all dead wood, suckers, broken or badly bruised branches after consultation with the LANDSCAPE ARCHITECT. Excessively damaged or improperly pruned plants will not be acceptable.

4.07 SAUCERS

A. A topsoil saucer, compacted to hold water, shall be constructed for all trees and shrubs. No soils in frozen or muddy condition shall be used for constructing saucers.
   1. Trees: An earth saucer 6" high and 8" wide above finished grade shall be formed inside the outer edge of each tree pit after the backfill has been brought to finished grade and settled, unless otherwise detailed.
   2. Shrubs: After the backfill around the shrubs has been brought to finish grade level and settled, a topsoil earth saucer 4" high and 6" wide shall be formed inside the outer edge of each shrub pit or around the perimeter of the entire shrub bed if approved by the LANDSCAPE ARCHITECT.
   3. Fertilizer: Granular plant food shall be applied to the surface of the plant beds including the ground cover beds. The plant food shall be spread over the root area starting six inches from the trunk and extending to the drip line of each plant or to the outer edge of the plant bed, whichever is larger, at the rate of two pounds (2 lbs.) per 100 square feet.

4.08 MULCH
A. After the plants have been watered, backfilled and allowed to settle for twenty-four hours and saucers constructed, the mulch shall be applied.
   1. Trees shall be mulched with 3” deep layer of bark mulch, **all within the saucer**.
   2. Shrubs and ground covers shall be bedded by creating a bed outline 6” outside the drip line of the shrub. The outline shall be continuously cleaned out with a spade, cut perpendicular to the lawn level. The grass within this bed outline shall be removed at least 4” deep to prevent grass growth. Then the bed shall be mulched with 3” deep layer of bark mulch. The saucers will be maintained as specified, within the plant beds.

4.09 WATERING AND MAINTENANCE

A. Watering shall be the Contractors responsibility throughout the maintenance period and includes the coordination of access to mains, irrigation systems and related supply facilities and furnishing hoses, water wagons and related equipment. The Contractor shall inspect the planting throughout the growing season and take necessary steps to control insect and blight attack. The Contractor shall also inspect the planting after each severe storm and exercise all corrective measures required to maintain a finished quality appearance and good plant vigor.

B. On March 1st and June 1st granular plant food shall be spread over the root areas starting six inches from the trunk and extending to the drip line of each plant, at the rate of two (2 lbs.) pounds per 100 square feet on the plant beds which do not contain manure or the planting tablets.

C. Plant beds shall be treated with Eptam 5 pre-emergence herbicide, or equal on March 1, June 1 and September 1, as required and as recommended by the manufacturer.

**END OF SECTION 32 90 00**