



2024 Campus Roof Replacements

March 11, 2024

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

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**INVITATION TO BID
MICHIGAN TECHNOLOGICAL UNIVERSITY
HOUGHTON, MICHIGAN 49931**

PROJECT: 2024 Campus Roof Replacements
Michigan Technological University

PREBID MEETING: A **mandatory** pre-bid walkthrough for interested **Contractors** will be held on **March 20, 2024**, beginning at the Facilities Conference Room located in Facilities Management Building #44 on the waterfront **at 1:30 PM** eastern time.

DUE DATE: Until **3:00 P.M. local time on April 4, 2024**, the Owner will receive sealed proposals for the work as herein set forth at the offices of:

Facilities Management
100 Facilities Building - Waterfront
1400 Townsend Drive
Michigan Technological University
Houghton, MI 49931

at which time and place all proposals will be publicly opened and read aloud.

DOCUMENTS: Bidding documents consisting of proposal forms, plans, specifications, and other pertinent data **will be available on March 11, 2024**. These documents can be viewed and downloaded on that date from the Facilities Management web site at the following address: <http://www.mtu.edu/facilities/planning/bids/>
Please contact **Project Manager Don Bigelow (906) 487-1761, dbigelow@mtu.edu** if you have technical questions.

**PROPOSAL
GUARANTEE:** All bidders submitting bids in excess of \$50,000 must provide a satisfactory Bid Bond executed by the Bidder and surety company, or a certified check or bank draft payable to Michigan Technological University, in an amount equal to but not less than five percent (5%) of the maximum proposal amount.

PRE-QUALIFICATION The Contractor for this project must be pre-qualified for work on Michigan Technological University's campus per the Facilities Admin & Planning pre-qualification process prior to submitting bids.

CONTRACT SECURITY: The successful bidders will be required to furnish a satisfactory performance bond and labor and material payment bond in amounts each of one hundred percent (100%) of the accepted bid.

**EQUAL EMPLOYMENT
OPPORTUNITY:** All bidders shall comply with current Federal and State Equal Employment Opportunity requirements.

Michigan Technological University is an equal opportunity educational institution/equal opportunity employer, which includes providing equal opportunity for protected veterans and individuals with disabilities.

Michigan Technological University reserves the right to reject any or all bids and to waive any informality or irregularity in any bid received.

This project is a Prevailing Wage Project under the State of Michigan Law Prevailing Wages on State Projects, MCL 408.1101 et seq.

BID PROPOSAL FORM
MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

Facilities Management
Michigan Technological University
1400 Townsend Drive
Houghton, MI 49931-1295

Contractor Name: _____

Summary: Roof replacement on three Michigan Tech University buildings: (1) R.L. Smith Building (MEEM, building #20) – Sections A, B, & C (w/ Alt. #1 – secs D, E, F, & G) per project #20-24-04; (2) Dow Environmental Sciences Building (building #8) – Section F per project #08-24-03. (3) Rozsa Center for the Performing Arts (building #10) – Section F, per project #10-24-01. Reference the project drawings for more information on the scope of work.

Having carefully read the specifications and drawings dated **March 11, 2024** for Michigan Technological University 2024 Campus Roof Replacements, the undersigned agrees to perform the work in accordance with the Contract Documents and the proposed schedule.

BASE BID PRICES:

1. **R.L. Smith Building (MEEM, building #20) – Sections A, B, & C per project #20-24-04:** Our **lump sum base bid price** to furnish and install all materials to replace the roof as noted in the bid documents complete is:

\$ _____
(Bid price in numbers and words)

2. **Dow Environmental Sciences Building (building #8) – Section F per project #08-24-03:** Our **lump sum base bid price** to furnish and install all materials to replace the roof as noted in the bid documents complete is:

\$ _____
(Bid price in numbers and words)

3. **Rozsa Center for the Performing Arts (building #10) – Section F per project #10-24-01:** Our **lump sum base bid price** to furnish and install all materials to replace the roof as noted in the bid documents complete is:

\$ _____
(Bid price in numbers and words)

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MICHIGAN TECHNOLOGICAL UNIVERSITY
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UNIT PRICES: Provide unit prices for the following work. Refer to Section 01 22 00 Unit Prices for additional information.

1. **R.L. Smith Building (MEEM, building #20) – All sections per project #20-24-04:** Our **cost per square foot unit price** to remove existing non-salvageable roof insulation (as jointly determined by the Owner and Contractor), and furnish and install new roof insulation that matches existing roof insulation size, thickness and type to properly perform the roof replacement project complete is:

\$ _____
(Unit price per square foot in numbers and words)

2. **Rozsa Center for the Performing Arts (building #10) – Section F per project #10-24-01:** Our **cost per square foot unit price** to remove existing non-salvageable roof insulation (as jointly determined by the Owner and Contractor), and furnish and install new roof insulation that matches existing roof insulation size, thickness and type to properly perform the roof replacement project complete is:

\$ _____
(Unit price per square foot in numbers and words)

ALTERNATE PRICES: The Undersigned submits for consideration by Michigan Tech, the following Alternate Prices. If the Alternate Price is accepted by Michigan Tech, the variation becomes part of the Contract and the amount quoted is added to the Lump Sum Base Bid Price. Refer to Section 01 23 00 Alternates for additional information.

Alternate #1. R.L. Smith Building (MEEM, building #20) – Sections D, E, F, & G per project #20-24-04: Our **lump sum base bid price** to furnish and install all materials to replace the roof as noted in the bid documents complete is:

\$ _____
(Alternate bid price in numbers and words)

Bidder acknowledges receipt of the following addenda:

Addendum No. _____	Dated: _____
Addendum No. _____	Dated: _____
Addendum No. _____	Dated: _____

The undersigned has used the proposal of the following subcontractors to complete the bid and plans to employ the firms listed below for the work: (include list of subs you determine are important to the project).

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The undersigned also certifies that they have been designated as pre-qualified for bidding on work at Michigan Technological University per the Facilities Admin & Planning process.

Contractor: _____

Name: _____ **Date:** _____
(Signature)

Name: _____
(Print)

Title: _____

Contact Information (Phone and email): _____

Sealed proposals will be received at Facilities Management, Bldg. 44, on the waterfront of Michigan Technological University, Houghton, Michigan until 3:00 P.M. on **April 4, 2024**.

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SECTION 00 52 00

AGREEMENT BETWEEN CONTRACTOR AND OWNER FOR CONSTRUCTION (DRAFT)

Owner:	Michigan Tech University, 1400 Townsend Dr., Houghton, MI
Project:	2024 Campus Roof Replacements
Project #:	[Abstract]
Contract for:	Roof replacement on three Michigan Tech University buildings: (1) R.L. Smith Building (MEEM, building #20) – Sections A, B, & C (w/ Alt. #1 – secs D, E, F, & G) per project #20-24-04; (2) Dow Environmental Sciences Building (building #8) – Section F per project #08-24-03. (3) Rozsa Center for the Performing Arts (building #10) – Section F, per project #10-24-01. Reference the project drawings for more information on the scope of work.
Contractor:	
Construction Start Date:	(Determine start date)
Contract Completion Date:	October 25, 2024

This Agreement, is authorized and made to be effective as of this **Xth** day of **(month and year)** between Michigan Technological University, a Michigan constitutional corporation located in Houghton, Michigan, (the “University”) and < >, (the “Contractor”), a corporation located at < >, for contract services to be provided by the Contractor to the University for, and in connection with, the following described project located at the University’s campus in Houghton, Michigan. The Contractor and the Owner, agree as follows:

ARTICLE 1 - CONTRACT DOCUMENTS

The Contract Documents consists of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Specifications, Construction Plans/Drawings, etc. as listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents other than Modifications, appears in Article 6.

ARTICLE 2 - SCOPE OF THE WORK

The Contractor shall furnish all the materials and perform all of the Work shown on the Drawings and described in the Specifications for [Abstract] for the 2024 Campus Roof Replacements prepared by Michigan Technological University.

Roof replacement on three Michigan Tech University buildings: (1) R.L. Smith Building (MEEM,

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building #20) – Sections A, B, & C (w/ Alt. #1 – secs D, E, F, & G) per project #20-24-04; (2) Dow Environmental Sciences Building (building #8) – Section F per project #08-24-03. (3) Rozsa Center for the Performing Arts (building #10) – Section F, per project #10-24-01. Reference the project drawings for more information on the scope of work.

ARTICLE 3 – SCHEDULE AND LIQUIDATED DAMAGES

The Work to be performed under this Contract shall begin after contract award in **late Spring / early Summer 2024**. The goal is to have all four roofing projects completed on or before **October 25, 2024**.

Liquidated damages do not apply to this project.

ARTICLE 4 - PROGRESS PAYMENTS

Michigan Tech shall make payments as provided in Articles 1.2.14 of the General Requirements (2015) and 01 29 00 Payment Procedures and conditions set forth and agreed upon herein:

Based upon Applications for Payment submitted to Michigan Tech by the Contractor and Certificates for Payment issued by Michigan Tech, Michigan Tech shall make payments on the Total Contract Amount to the Contractor as provided below and elsewhere in the Contract Documents.

The period covered by each Application for Payment shall be one month ending on the last day of each month.

Each Application for Payment and Conditional Waiver and Release on Progress Payment shall be based upon schedule of values consistent with format of AIA Documents G702, G703. The schedule of values (G703) shall allocate the entire Total Contract Amount among the various portions of the Work and supported by such data to substantiate its accuracy as Michigan Tech may require. This schedule of values, unless objected to by Michigan Tech, shall be used as a basis for reviewing the Contractor's Application for Payment.

Applications for Payment shall indicate the percentage of completion of each portion of Work as of the end of the period covered by the Application for Payment. The amount of each Application for Payment (progress payment) shall be computed by:

- 1) Multiply the percentage complete of each portion of the work by the share of the Total Contract Amount allocated to that portion of the Work in the schedule of values, less retainage of ten (10%). Pending final determination of cost to Michigan Tech of changes in the Work, changes for amounts not in the dispute may be included per Section 1.2.8 of the General Requirements. The Total Contract Amount must be adjusted to reflect the changes in the Work by Change Order, then payment shall be allocated as to the completed portion of the Work in the adjusted schedule of values, less retainage of ten (10%).
- 2) The portion of the Total Contract Amount that is materials and equipment delivered and suitably stored off-site at a location agreed upon in writing by Michigan Tech for subsequent incorporation in the completed construction may be included in the Application for Payment.
- 3) The amount of the Application for Payment requested shall not include any previous payments made by Michigan Tech.

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- 4) The amount of the Application for Payment requested shall not include any previous amounts that Michigan Tech has withheld or a nullified Application for Payment.
- 5) Michigan Tech shall review the Application for Payment and if acceptable, sign it; and thus it will become a Certificate of Payment.
- 6) Provided an Application for Payment and Conditional Waivers and Release for the Progress Payment are received by Michigan Tech, Michigan Tech shall make payment to the Contractor not later than thirty (30) days after receipt of the Application for Payment.

ARTICLE 5 - ACCEPTANCE AND FINAL PAYMENTS

Final Payment, constituting the entire unpaid balance of the Total Contract Amount, shall be made by Michigan Tech to the Contractor when (1) the Contract has been fully performed by the Contractor except for the Contractor's responsibility to correct nonconforming Work as provided in Subparagraph 1.2.12. of the General Conditions and to satisfy other requirements, if any, which necessarily survive final payment; and (2) a Final Certificate for Payment has been issued by Michigan Tech.

- 1) The Contractor must request in writing that Michigan Tech issue a notice of Substantial Completion. Upon receipt of written notice that the Work is ready for inspection and acceptance, Michigan Tech shall promptly inspect the Work.
- 2) If the Work has been Substantially Completed and accepted, Michigan Tech shall issue upon request by the contractor, a notice of Substantial Completion and a Final Completion Checklist as necessary. Upon completion of the Final Completion Checklist to the satisfaction of Michigan Tech, Michigan Tech shall complete a Certificate of Completion for the project.
- 3) When Michigan Tech finds the work is sufficiently complete per the Final Completion Checklist and Contract Documents in their entirety, Michigan Tech shall promptly issue the Certificate of Final Completion that states that the Work provided in this Contract is complete. Contractor shall issue a Final Pay Request along with all required close out documents. Final payment shall be due thirty (30) days after the Contract is fully performed and the Final Payment request is received.

ARTICLE 6 - CONTRACT DOCUMENTS

The Contract Documents, together with this Agreement, form the Contract, and they are as fully a part of the Contract as attached:

- Specifications for the project dated March 11, 2024 as listed in the Table of Contents
- Drawings for this project dated March 4, 2024 as listed on the Cover Sheet.
- Any Addendum issued prior to the bid date.

The Contractor's signature on this Agreement indicates that the Contractor has read and will comply with each of these documents.

The **Contract Lump Sum** is based on and including the following **Alternates**: *To be determined prior to the contract signing.*

The amount shown below shall be both in words and in figures. In case of discrepancy, the amount

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shown in words shall govern.

<i>Contract Lump Sum</i>	
<hr/>	\$ <hr/>

*The amounts agreed to for (**Allowances or Unit Prices if needed**) are as follows:*

IN WITNESS, WHEREOF, each of the parties has caused this Contract to be executed by its duly authorized representatives on the date first mentioned above.

FOR THE CONTRACTOR

_____/_____
Signature Date

Name and Title _____

FOR MICHIGAN TECHNOLOGICAL UNIVERSITY

Date
Nick Stevens
CFO / Sr. VP for Administration

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SECTION 00 60 00
PROJECT SCHEDULE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project Schedule and Milestone Concerns

1.2 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.
- B. Section 01 20 00 - Price and Payment Procedures: Applications for payment, Schedule of Values, modifications procedures, closeout procedures.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Contractor's Schedule: As soon as practical after award of the contract, the contractor shall develop their own project schedule indicating the steps needed to achieve the Owner's overall Project Schedule. Submit to the Owner for review and approval.
 - 1. Maintain project schedule and update monthly. Submit updates to Owner with each pay request.

PART 2 PRODUCTS: Not used

PART 3 EXECUTION

3.01 MAINTAINING OVERALL PROJECT SCHEDULE

- A. The Work to be performed under this Contract shall begin after contract award in **late Spring / early Summer 2024**. The completion of all three roofing projects is very important to the University. The goal is to have all three roofing projects completed on or before **October 25, 2024**.

3.02 LIQUIDATED DAMAGES

- A. Not applicable

END OF SECTION

MICHIGAN TECHNOLOGICAL UNIVERSITY 2024 CAMPUS ROOF REPLACEMENTS

01 00 00 - GENERAL REQUIREMENTS

1.1. INSTRUCTION TO BIDDERS

1.1.1. **PREPARATION OF PROPOSALS:** All proposals shall include supplying all materials, equipment, and labor, and shall be submitted on the attached proposal form. The forms are to be filled out in ink or typewritten, with the bidder's authorized agent's signature in longhand. Each proposal shall be delivered in an opaque sealed envelope marked with the project name, Bid No., and bidders name.

1.1.2. **BID FORM:** No telephonic, telegraphic or digital facsimile (FAX) bid or telephonic, telegraphic or digital facsimile (FAX) modification of a bid will be considered. No bids received after the time fixed for receiving them will be considered. Late bids will be filed unopened.

1.1.3. **BID GUARANTEE:** Each proposal for which the base bid exceeds \$50,000.00 shall be accompanied by either a certified or cashier's check on an open, solvent bank or a bid bond with an authorized surety company in the amount of 5% of the base bid, payable to Michigan Technological University, as a guarantee of good faith. If the successful bidder fails to furnish satisfactory bonds and insurance as required by the General Conditions within 7 days after notice of award, such guarantee shall be forfeited to the Owner as liquidated damages and the Owner shall be entitled at its sole option to immediately cancel, revoke, withdraw, or rescind its award. The guarantees of the three lowest bidders will be retained until the bond and insurance of the Contractor have been approved by the University. The guarantees of all other bidders will be returned within 10 days after the bid opening.

1.1.4. **REJECTION OR WITHDRAWAL:** The Owner reserves the right to accept or reject any or all proposals, in whole or in part, and also herein reserves the right to waive any informalities or irregularities in any or all proposals and to make such award as it deems, in its sole discretion, to be in the best interest of the Owner. No bid may be withdrawn within 60 days after opening date without forfeiting bid security.

1.1.5. **CONTRACT:** Upon acceptance of any proposal by the Owner, a purchase order will be issued incorporating the accepted proposal and upon the Contractor furnishing satisfactory proof of compliance with all bond and insurance requirements will constitute the Contract. The Contract shall not be binding upon the Owner until the Contractor has furnished the Owner's Facilities Management Department satisfactory certification of compliance with the insurance and bond requirements under General Conditions and the Owner may withdraw or cancel its purchase order at any time prior to receipt of all such certifications.

1.1.6. **TAXES:** The Contractor shall include all applicable Michigan sales and use taxes currently imposed by Legislative enactment and as administered by the Michigan Department of Treasury, all applicable local or state permit, license or inspection fees, and all Federal taxes or fees applicable, and no additional payment over and above the bid amount shall be allowed for the same.

1.2. GENERAL CONDITIONS

1.2.1. DEFINITIONS

UNIVERSITY OR OWNER - Michigan Technological University
ASSOCIATE VP OF FACILITIES MANAGEMENT – Gregg R. Richards
DIRECTOR OF PLANNING & CONSTRUCTION – Jacob A. Guter

CONTRACTOR - The Bidder whose proposal is accepted by the University.

CONTRACT DOCUMENTS - This document, a purchase order, drawings, and specifications.

1.2.2. **CONFLICT AND OMISSIONS:** The intent of the Contract Documents is to provide everything necessary for the proper execution of the work. In case of conflict among or ambiguity in the Contract Documents the Contractor shall immediately notify the Director of Engineering Services and the work shall not proceed until a decision has been agreed upon by all parties concerned. Any adjustment or interpretation by the Contractor without such agreement shall be at his own risk and expense. No work stoppage by the Contractor will extend the time for completion.

1.2.3. **ROYALTIES, PATENTS, NOTICES, AND FEES:** The Contractor shall give all notices and pay all royalties and fees, shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, and shall comply with all laws, ordinances, and codes applicable to any portion of the work.

1.2.4. **EXAMINATION OF PREMISES:** The Contractor shall become familiar with local and on-site conditions affecting the job and the cost thereof, shall take independent measurements and make an examination and determination of all physical conditions affecting the work, and be responsible for the correctness of same even if they differ from those anticipated or indicated in the Contract. The Contractor shall be held to have made such examinations prior to bid submission and no allowances will be made in his behalf nor will any additional expenses be recoverable by reason of any error, omission, or misunderstanding on the part of the Contractor even if such actual conditions differ from those anticipated or indicated in the Contract. If any part of the Contractor's work depends for proper results upon existing work or the work of another contractor the Contractor shall examine such work and notify, before commencing work, the Director of Engineering Services of all defects or conditions that will affect the results. Failure to so notify will constitute acceptance of the conditions and render the Contractor responsible and liable for the results of any such defects or conditions which would have been revealed by complete examination and testing.

1.2.5. **MOVING MATERIALS:** If at any time it becomes necessary for the operation of the University to move materials temporarily located which are to enter into the final construction the Contractor furnishing the material shall, when so directed and without expense to the Owner, move them to another location.

1.2.6. **MATERIALS AND WORKMANSHIP:** All materials and workmanship shall be first-class in every respect and, unless otherwise specified, all materials and equipment shall be new and of the latest design. Should any disputes arise as to the quality and fitness of workmanship, equipment, materials or items, the decisions shall rest strictly with the University, and shall be based upon the requirements of the Contract Documents. The Contractor shall, if requested by the University, furnish evidence as to kind and quality of materials, at no additional cost to the University.

1.2.7. **EMPLOYEES AND SUPERINTENDENCE:** The Contractor shall enforce good order among his employees and shall not employ on the work any negligent, disorderly, intemperate or unfit person, or anyone not skilled in the work assigned. All work shall be performed in a skillful and workmanlike manner. The Contractor, or an authorized representative, shall be at the site at all times, and shall have the plans and specifications available.

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GENERAL REQUIREMENTS
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1.2.8. EXTRA WORK AND CHANGES IN WORK: The Owner, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

In giving instructions, the Owner shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order from the Owner and no claim for an addition to the Contract sum shall be valid unless as ordered.

When so directed, the Contractor shall promptly submit his itemized estimate and proposal for such extra work or changes, as well as separate unit prices on work for both additions to and deductions from the Contract.

Adjustments in the Contract sum for any such extra work or change shall be determined by one or more of the following methods:

Method Number 1: By an acceptable estimate and lump sum proposal from the Contractor.

Method Number 2: By unit prices stated in the Contract or subsequently agreed upon.

Method Number 3: By actual cost of all labor and materials and a percentage or fixed fee for all other charges, such as overhead, profit, insurance, taxes and bonds. On any change which involves a net credit to the Owner, no allowance for overhead and profit shall be figured.

If none of the foregoing methods is agreed upon, the Contractor, upon receipt of an order as hereinbefore stated, shall proceed with the work. In such case and also under Method Number 3, the Contractor shall keep and present in such form as the Owner may direct, a correct account of the cost, together with vouchers. In any case, the Owner shall certify to the amount including the specified allowance for overhead and profit, due the Contractor.

The allowable fee for added work by Contractor's own forces shall not exceed 15% of additional cost and his fee on work performed by Subcontractors shall not exceed 7 ½% of additional cost. Quotations by Subcontractors at all times shall be subject to these same limitations.

1.2.9. OTHER CONTRACTS: The Owner may let other contracts in connection with the work and the Contractor shall properly connect and coordinate all work with the work of such other contractors. The Owner shall not be liable for any damages or increased cost occasioned by the failure of other contractors to execute their work as may be anticipated by these Contract Documents. No contractor shall commit any act which will interfere with the performance of the work by any other contractor.

1.2.10. INSURANCE: No work connected with this Contract shall be started until the Contractor has submitted evidence, satisfactory to the Owner, depicting insurance coverage in accordance with the following:

1. Worker's Disability Insurance

The Contractor shall procure and shall maintain, during the life of this contract, Worker's Disability Insurance in work on the project under this Contract. In case any such work is sublet, the Contractor shall require the Subcontractor similarly to provide Worker's Disability Insurance for all of the latter's employees engaged in such work unless such employees are covered by the protection afforded by the Contractor's Worker's Disability Insurance. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Worker's Disability Statute, the Contractor shall provide and shall cause each Subcontractor to provide Employer's General Liability Insurance for the protection of all such employees not otherwise protected.

2. General Liability Insurance

The Contractor shall carry, from the beginning of this Contract until completion of the same, general liability in the amount of \$1,000,000 for each occurrence and \$2,000,000 aggregate.

3. Property Insurance

The Contractor shall carry, from the beginning of this Contract until completion of the same, \$100,000 for each property accident other than the property covered by this Contract.

4. Builders' Risk Insurance

The Contractor will assume all risk of loss for the first \$100,000 on any single occurrence of damage to property of Owner or any third party, including the subject of this contract. This may be affected by purchase of insurance or by self-insurance, and must be primary and non-contributory. The Owner will assume all risk of loss for property damage in excess of \$100,000 for any single occurrence.

5. Worker's Compensation/Employer's Liability

The Contractor shall carry, from the beginning of this Contract until completion of the same, Worker's Compensation Employer's Liability in accordance with Statutory required by the State and \$500,000 per accident.

6. Automobile Liability

The Contractor shall carry, from the beginning of this Contract until the completion of the same, \$1,000,000 in automobile insurance for each occurrence and the State Required Personal Injury Protection benefits.

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Partial payments shall not relieve the Contractor from full responsibility for any claim which may result from any cause, including fire or any other casualty, until completion of the Contract and final payment. Any casualties shall not relieve the Contractor from performing the Contract.

Contractor will indemnify and hold harmless the University from and against all claims, judgments, liability and expense of any nature due to bodily injury, personal injury or damage to property arising out of, on account of or in connection with contractors (or any employee, subcontractor or agent of contractor) performance of the work or activity pursuant to the contract.

1.2.11. **BONDS:** The successful Contractor of a project for which the base bid exceeds \$50,000.00 shall furnish in form and with sureties acceptable to the Owner, a performance bond and a labor and material bond, each in the amount of 100% of the Contract sum, as security for the faithful performance of all Work under the Contract, and payment of all charges in connection therewith. The cost of the aforesaid bonds shall be paid by the Contractor and included in the Contract Sum. No work connected with the Project shall be started until the Contractor has placed bonds, in proper form, on file with the University.

1.2.12. **NONCOMPLIANCE WITH CONTRACT-TERMINATION:** The Owner, at its option, may order suspension of the Work in whole or in part for such time as it deems necessary because of the failure of the Contractor to comply with the contractual requirements. The contract completion date shall not be extended on account of any such suspension order by the Owner. In the event the Owner orders an suspension of the work, the Contractor shall not be entitled to any costs or damages resulting from such suspension; the Owner shall not in any manner be liable or responsible for such costs or damages. The rights of the Owner provided in this clause are in addition to any other rights or remedies provided under this Contract or by law.

In addition to all other rights and remedies contained herein, or at law or equity, the Owner may terminate this Contract when any default is not stopped immediately and corrected within a reasonable length of time after notification by the Owner. In the event of such termination the Owner may complete the contracted work and the Contractor and his surety will be liable for any excess cost occasioned by the Owner. In such case the Owner may take possession of and utilize in completing the work such necessary materials and equipment as may be on the Site.

1.2.13. **GUARANTEE:** The Contractor shall provide a written guarantee warranting all work under this Contract against faulty workmanship and defective materials, and to make good, at his own expense and promptly upon request by the Owner, all defective work and all damage to other work caused by such defective work, for 1 year from the date of signing of the Owner's Notice of Completion of Contract Work form. The provisions of this express warranty shall not affect or impair any of the Owner's rights under any other applicable, implied, or expressed warranties.

1.2.14. **PAYMENT:** Payment for the work will be made in one sum at the completion of the contract except that partial payments aggregating 90% of the value of the completed work may be made at monthly intervals. If the contractor expects to request partial payments he shall submit a schedule of costs and quantities of the various parts of the work aggregating the total contract sum. When applying for partial or full payments, the Contractor shall submit a statement based upon this schedule,

itemized and supported as the Director of Facilities Management may require and a Sworn Statement and Conditional Waiver and Release on Progress Payment setting forth the amounts due each subcontractor, supplier, and laborer.

Retainage will be 10% of the amount due to the contractor until the completion of the particular group of buildings being worked on. Upon issuance of Certificate of Final Completion by the Owner, Contractor may submit for 100% payment for that group of buildings. Contractors' one-year warranty for the work for each group of buildings being worked on will begin when the Substantial Completion Notice is issued for that group of buildings.

The Contract will not be considered complete until the work has been finally accepted by the Director of Facilities Management and the following have been furnished: (1) the required guarantee, and (2) a sworn statement that all payrolls, material bills, and other indebtedness connected with the work have been paid, including such lien waivers as the Owner may request.

No presence, inspection, supervision, testing, or monitoring by the Owner or by any agent or representative thereof shall relieve the Contractor of responsibility for compliance with the terms of and performance pursuant to this Contract and the Contract Documents; nor shall any such conduct of the Owner or its agents or representatives constitute or be interpreted as constituting a waiver of any rights whatsoever or serve to stop them from requiring full performance by the Contractor.

1.2.15. **NON-DISCRIMINATION CLAUSE:** In connection with the performance of work under this Contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, national origin, age, sex, height, weight, or marital status. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, national origin, age, sex, height, weight, or marital status. Such action shall include, but not be limited to, the following: employment upgrading; demotion or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, national origin, age, sex, height, weight, or marital status.
3. The Contractor or his collective bargaining representative will send, to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or worker's representative of the Contractor's commitments under this section.
4. The Contractor will comply with all published rules, regulations, directives, and orders of the Michigan Civil Rights Commission relevant to Article 6, 1976 PA

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453, as amended, which may be in effect prior to the taking of bids for any individual State project.

5. The Contractor will furnish and file compliance reports within such time and upon such forms as provided by the Michigan Civil Rights Commission; said forms may also elicit information as to the practices, policies, program, and employment statistics of each Subcontractor as the Contractor himself, and said Contractor will permit access to his books, records, and accounts by the Michigan Civil Rights Commission, and/or its agent, for purposes of investigation to ascertain compliance with this Contract and with rules, regulations, and orders of the Michigan Civil Rights Commission relevant to Article 6, 1976 PA 453, as amended.
6. In the event that the Civil Rights Commission finds, after a hearing held pursuant to its rules, that a contractor has not complied with the contractual obligations under this agreement, the Civil Rights Commission may, as part of its order based upon such findings, certify said findings to the State Administrative Board of the State of Michigan, which the Board may order the cancellation of the Contract found to have been violated, and/or declare the contractor ineligible for future contracts with the State and its political and civil subdivisions, departments, officers, and including the governing boards of institutions of higher education, until the contractor complies with said order of the Civil Rights Commission. Notice of said declaration of future ineligibility may be given to any or all of the persons with whom the contractor is declared ineligible to contract as a contracting party in future contracts. In any case before the Civil Rights Commission in which cancellation of an existing contract is a possibility, the contracting agency shall be notified of such possible remedy and shall be given the option by the Civil Rights Commission to participate in such proceedings.
7. The Contractor will include, or incorporate by reference, the provisions of the foregoing paragraphs "1" thru "6" in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Michigan Civil Rights Commission and will provide in every subcontract or purchase order that said provisions will be binding upon each subcontractor or seller.

1.2.16 PERMITS, FEES AND NOTICES: The Contractor Secure and pay for all permits, fees, and licenses required by State or Local governments necessary for the proper execution and completion of the work. The Contractor shall specifically secure Houghton County permits for Electrical, Mechanical and Plumbing work and schedule work inspections as required for approval. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations, and orders of any public authority bearing on the performance of the work. The University retains full jurisdiction of construction on campus and will make final determination of all permits that may be required.

1.2.17. USE OF SERVICES: The Contractor may use the Owner's water and power by contacting Michigan Tech Facilities Management for arrangements.

1.2.18. SCHEDULING: The Contractor shall meet with the Michigan Technological University Project Manager as follows: (1) prior to the start of work; (2) to schedule any interruption of University services; and (3) monthly, or as directed, to review the progress of work.

At the time work is commenced on the project, the Contractor shall prepare a progress schedule showing the dates for the commencement and completion of the various stages of construction. This schedule shall be coordinated with the Owner's required use of the facilities and other contractor's construction schedules, and shall be arrived at in consultation with the Director of Engineering Services and approved by all affected parties.

The Contractor shall furnish sufficient forces and construction plant and equipment to insure protection and progress of the work in accordance with the schedule.

Any changes in the work schedule are to be approved in advance by the Director of Engineering Services.

1.2.19. TEMPORARY CONSTRUCTION FACILITIES: All temporary construction facilities shall be neatly constructed and arranged on the Site in an orderly manner.

Suitable weather tight storage sheds, with raised floors, of capacity required to contain all materials which might be damaged by storage in the open shall be provided.

Construction equipment and other facilities such as ladders, ramps, etc., shall be strong, substantial, safe, and suitable for the purpose intended and shall comply with all University, Federal, State, and local requirements so as to maintain adequate and safe temporary access to all existing facilities. Temporary walkways, bridges, etc., shall be built with proper handrails, curbs, etc.

The Contractor will assume all risk of loss for any damage or destruction to the Contractor's temporary office, equipment, shanties, protective fence, scaffolding, staging, and all other miscellaneous materials and items owned or rented by the Contractor or any subcontractor used in the performance of this contract.

A temporary dust-proof enclosure of the work area, including existing machines and equipment, must be erected and maintained throughout the length of the project where required in the various Divisions herein.

1.2.20. CLEANLINESS OF THE WORK: The work and any public or private property occupied by the Contractor shall be kept in a neat and orderly condition at all times. Waste materials, rubbish, and debris shall be removed daily.

At the completion of the work all the Contractor's temporary buildings, equipment, tools, surplus or waste materials, and rubbish of every nature shall be removed from all occupied public and private premises and such premises shall be restored, as nearly as practicable, to the original condition. Such restoration shall be subject to the approval of the Director of Engineering Services.

Debris removed from the site must be disposed of in a licensed landfill as required by the Solid Waste Management Act, 1978 PA 614, as amended, being MCLA 299.402; MSA 13.29(1) and

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the administrative rules applying to the Act contained in the Michigan Administrative Code R 299.4101. The Contractor shall provide the Director of Engineering Services with written, dated verification that all debris removed has been disposed of in a licensed landfill. Any cost incurred by the Owner as a result of the failure of the Contractor to comply with this paragraph will be a charge against the Contractor.

All exposed surfaces of the work shall be left clean and free from all mud, grease, stains, or other extraneous materials.

The streets and service roads occupied or used by the Contractor shall be continuously kept clean of waste materials and refuse resulting from the work operations. Should the Contractor be negligent in the duties of maintaining proper cleanliness, the Owner will take steps to cause the required cleaning to be done and will deduct the cost thereof from any monies due the Contractor.

The elevators, if used, shall not be overloaded and suitable protection for the walls, floor, and ceiling shall be provided during use. Any damage to the elevators must be repaired to the Facilities Management Manager of Planning, Engineering, and Construction satisfaction.

1.2.21. FIRE PROTECTION DURING CONSTRUCTION: The Contractor shall have on the Site at all times fire protection equipment as required by applicable codes and ordinances, MISOHSA, and requirements of the Owner's insurance carriers. Prior to start of work, the Contractor shall be knowledgeable and proficient in Hot Work safety and in the Owner's Hot Work policies, procedures and requirements. The Contractor shall faithfully follow the Owner's Hot Work Policy, which regulates any temporary operation involving open flames or producing heat and/or sparks. The Contractor shall designate a Fire Safety Supervisor and Fire Watch for each Hot Work operation. The Fire Safety Supervisor shall not permit a hot work operation to proceed unless and until the provisions and required precautions checklist of the Owner's Hot Work permit are adequately addressed. The Fire Watch shall monitor the Hot Work area during and after the hot work operation to take measures to prevent fires and to respond to fires if they start.

During all construction operations in occupied building space, the Contractor shall construct and maintain a one-hour fire resistance separation between the part of the building under construction and the occupied part of the building, per the Life Safety Code NFPA 101, Section 1-3.11, 1997 Edition.

1.2.22. PARKING AND USE OF ROADS: Immediately after the award of the Contract, the Contractor shall consult with the Director of Engineering Services to determine authorized parking and access to the Site, routing of all construction vehicles, and re-routing of other traffic during construction, and shall organize the work in relation thereto.

At the beginning of the field work, the Contractor shall post signs limiting construction parking, if available, to the construction area. Parking for worker's cars is not guaranteed and is the Contractor's responsibility.

During construction, when use of roads or sidewalks is restricted by construction work, the Contractor shall erect temporary barricades, post notices and warning lights, and when required during working hours, direct traffic to prevent congestion. The Contractor shall maintain such as long as temporary work requires and then remove from the public areas.

1.2.23. SAFETY PRECAUTIONS: During the progress of the work, the Contractor shall maintain adequate facilities for the protection and safety of all persons and property. All local, state, and federal laws, ordinances, rules, and regulations pertaining to the kind, use, and loading of all apparatus and equipment shall be complied with. Work shall be done to conformance with "General Safety Rules and Regulations for the Construction Industry" published by the Department of Labor, Construction Safety Standards Commission, Lansing, Michigan 48926.

The contractor will immediately report all accidents involving persons and property to the University Public Safety Dept. A copy of the accident report must be filed with the Public Safety Dept.

The contractor shall conduct safety meetings during the progress of work. A copy of the minutes of these meetings must be submitted to the University. Contractor shall acknowledge Owner's Safety Requirements.

1.2.24. SUBSTITUTIONS:

1. The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

2. No substitution directly related to an "or equal" clause or similar language in the contract documents will be considered unless written request for approval has been submitted by the Bidder and has been received by the University at least ten days prior to the date for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance, and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment, or work that incorporation of the substitute would require shall be included. A burden of proof of the merit of the proposed substitute is upon the proposer. The University's decision of approval or disapproval of a proposed substitution shall be final.

3. If the University approves any proposed substitution, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

After receipt of bids, the University will consider a request for substitution only for the following reasons:

1. Products listed are no longer available.

2. Where the specified product or method cannot be provided within the Contract Time. However, the request will not be considered if the product or method cannot be provided as a result of the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.

3. Where the specified product or method cannot receive necessary approval by a governing authority and the requested substitution can be approved.

4. Where a substantial advantage is offered to the University, in terms of cost, time, energy conservation, or other consideration of merit, after deducting offsetting responsibilities the University may be required to bear. These additional

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responsibilities may include such considerations as additional compensation to the Architect for redesign and evaluation services, the increased cost of other work by the University or separate contractors, and similar considerations.

5. When the specified product or method cannot be provided in a manner which is compatible with other materials of the work, and where the contractor certifies that the substitution will overcome the incompatibility

6. When the specified product or method cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.

7. When the specified product or method cannot receive a warranty as required by the Contract Documents and where the Contractor certifies that the proposed substitution receive the required warranty.

1.2.25. SUBCONTRACTS: The Contractor shall, as soon as practicable after the execution of the contract, notify the Owner in writing of the names of proposed subcontractors for the work. If the Contractor submits a list of proposed subcontractors prior to the execution of the contract, the Owner must be notified in writing of any change of subcontractor after the contract is executed. The Contractor will not employ any subcontractor that the Owner may, within a reasonable time, object to as incompetent or unfit.

The Contractor agrees to be fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for persons directly employed by him.

Nothing contained in the contract documents shall create any contractual relationship between any subcontractor and the Owner.

Should material or workmanship, or parties furnishing same prove objectionable under the provisions of the contract, or should violations of the contract exist at the building or elsewhere, and continue after the contractor has received from the Owner a reasonable warning, then, upon request of the Owner, such objectionable parties shall be dismissed, removed, and excluded from the building or work. Such work shall be remedied and continued by others satisfactory to the Owner.

1.2.26. RELATIONS OF CONTRACTOR AND SUBCONTRACTOR: The Contractor agrees to bind every subcontractor and every subcontractor agrees to be bound by the terms of the Contract Documents as applicable to his work, unless specifically noted to the contrary in a subcontract approved in writing by the Owner.

1.2.27. UNIVERSITY RULES AND REGULATIONS: The Contractor shall comply with all laws, ordinances, rules, regulations, and orders of the Owner, and be responsible for and shall direct his employees to conduct themselves so as not to interfere with or disrupt the University educational activities. The Contractor, Subcontractors, and their employees and suppliers shall not use or interfere with the Owner's existing accesses, drives, walks, and roads except as specifically indicated or by prior arrangement with the Owner. The Contractor shall confine his activities, equipment, and personnel to the area within the construction limits, except for minor operations as noted and by prior arrangement with the

permission of the Owner. Existing areas disturbed outside the scope of the work shall be restored to their original state.

1.2.28. PREVAILING WAGE: Under the Michigan law Prevailing Wages on State Projects, MCL 408.1101 et seq., rates of wages and fringe benefits to be paid to each class of construction mechanics employed by the contractor and all subcontractors shall be not less than the wage and fringe benefit rates prevailing in the locality in which the work is to be performed. Every Contractor and Subcontractor shall keep an accurate record showing the name and occupation of, and the actual wages and benefits paid to each construction mechanic employed by him in connection with said contract. This record shall be available for reasonable inspection by the University and the State of Michigan.

Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract and shall keep an accurate record showing the name and occupation of and the actual wages and benefits paid to each construction mechanic employed by it in connection with said contract. This record shall be available for reasonable inspection by the contracting agent or the commissioner. MCL 408.1105. Contracting agents, contractors, and subcontractors shall maintain certified payroll records and other records required under this act for a minimum of 3 years. MCL 408.1122. A contractor or subcontractor shall not discharge, discipline, retaliate against, or otherwise discriminate against a construction mechanic, or threaten to do any of these things, because the construction mechanic reported or was about to report a violation or suspected violation of this act. MCL 408.1107. Each contractor or subcontractor is separately liable for the payment of the prevailing rate to its employees. See MCL 408.1108(2). In addition to any other penalty provided by law, the commissioner may assess a civil penalty of not more than \$5,000.00 for each violation of this act and an additional 10% penalty as determined by the commissioner. MCL 408.1113(1).

Construction mechanics are intended beneficiaries of the contractual prevailing wage, fringe benefit, and nondiscrimination nonretaliation requirements of the Michigan law Prevailing Wages on State Projects, MCL 408.1101 et seq. Any construction mechanic aggrieved by the failure of a contractor or subcontractor to pay prevailing wages or benefits as specified in the contract, or by a violation of section 7, in addition to any other remedies provided in this act or by law, may bring an action in a court of competent jurisdiction against the contractor or subcontractor for damages or injunctive relief and may be awarded reinstatement or other appropriate relief, and all damages sustained, together with actual costs and attorney fees at trial and on appeal. MCL 408.1112.

An employee believing that a violation of this act has occurred, or a third party having credible information that a violation has occurred, may file a complaint with the commissioner that a violation may have occurred. Employees filing a complaint may keep their identity confidential from release to the employer upon request to the commissioner. Upon filing, the commissioner may initiate an investigation to ascertain whether a violation of the act has occurred, and may order the contracting agent, contractor, or subcontractor, or any of the foregoing parties jointly and severally to make employees' amounts determined to be owing whole. MCL 408.1116

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1.2.29. COMPLIANCE WITH ALL APPLICABLE LAWS, RULES AND REGULATIONS: Notwithstanding any other specific provision herein, contractor (and any subcontractor) shall, at its sole expense, comply with all applicable federal, state, local and other laws, ordinances, rules and regulations in any manner applicable to the performance of the work or contractors' activities in furtherance of or in connection with the work. Contractor will indemnify and hold harmless the University from and against any and all costs, claims, expenses or orders (including any penalties or fines assessed to University) incurred as a result of contractor's failure to comply or contractor's failure to perform any obligation imposed by the contract documents.

END OF SECTION 01 00 00

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SECTION 01 00 01
SUPPLEMENTARY GENERAL CONDITIONS

PART 1 PROTECTION

- 1.1 Contractor shall properly protect all new and existing work from damage. Proper safety provisions shall be made at all times for the protection of all persons and property. Contractor shall contact "Miss Dig" for all underground construction work as required by the Miss Dig Underground Facility Damage Prevention and Safety Act, Public Act No. 174, 2013.

PART 2 SHOP DRAWINGS

- 2.1 The Contractor shall submit for approval a complete list of items that will require shop drawings.
- 2.2 The Contractor shall check and verify all field measurements and submit; with such promptness as to cause no delay in the Contractor's or any other contractor's work; electronic versions, checked and approved, of all shop or setting drawings and schedules where such submissions are stipulated in the various Divisions herein.
- 2.3 The University will check, with reasonable promptness, such drawings and schedules only for conformance with design concept and compliance with information given in the Contract Documents. The drawings will be stamped by the University as follows:
- 2.3.1 **"REVIEWED AND RELEASED"** Indicates final action by the University and are released subject to meeting the requirements of the Contract Documents.
- 2.3.2 **"REVIEWED AS NOTED & RELEASED"** Deficiencies as marked indicate the drawings and schedules are subject to corrections, however deficiencies are such that resubmittal is not required and item is released subject to meeting the requirements of the Contract Documents.
- 2.3.3 **"REVIEWED AS NOTED & RESUBMIT"** Deficiencies as marked indicate the drawings and schedules are subject to corrections, however deficiencies are such that resubmittal is required. Item is released for shop drawing work only; item is released for corrections and resubmittal for final approval.
- 2.3.4 **"REJECTED AND RETURNED"** Submittal does not meet the requirements of the Contract Documents and is rejected. Resubmittal of item meeting the Contract Document is required.
- 2.4 The University's approval of such drawings shall not relieve the Contractor from the responsibility for deviations from drawings and specifications unless he has, in accompanying letter, called the University's attention to such deviation at the time of submission and secured written approval. University's approval shall not relieve the Contractor from responsibility for errors in shop drawings and schedules.

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PART 3 DEFINITIONS

- 3.1 Furnish: This term means procurement or fabrication of materials, equipment or components; or the performance of services to the extent indicated. Where used with respect to materials, equipment, or components, the term shall include delivery to and unloading at the Project site but is not intended to include the installation of the item, either temporary or final.
- 3.2 Install: This term means the placement of materials, equipment, or components including the receiving, unloading, transporting, storage, and installing; and the performance of such testing and finish work as is compatible with the degree of installation specified.
- 3.3 Provide: This term means to Furnish and Install, complete and in place, including all accessories, finishes, tests, and services as required to render the item so specified completely ready for use.

PART 4 AS-BUILT DRAWINGS

- 4.1 Each contractor shall record, legibly and to scale, all field changes and deviations from the contract drawings as they occur. This record shall be kept on a set of contract drawings. This set of drawings shall be turned over to the University prior to final payment.

PART 5 OPERATION AND MAINTENANCE MANUALS

- 5.1 The Contractor shall provide complete operation and maintenance instructions, manuals, and other information for all architectural, electrical, mechanical, elevator equipment, and other systems installed and/or provided as part of the Work by the Contractor under the Contract. The Contractor shall furnish three complete sets of manuals bound in suitable quick release three ring binders. The intent of these manuals is that the University is provided with a complete operating and maintenance document for all significant systems, in a convenient, easy to use form.

PART 6 SCHEDULE OF VALUES

- 6.1 Within two weeks after start of job, the contractor shall provide the University with an itemized schedule of values for each division and major subdivision of work. They may be done on AIA form G703.

PART 7 DOCUMENT CLARIFICATIONS

- 7.1 All inquiries regarding project specifications and drawings shall be made to the University Project Manager noted on the invitation to bid.

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PART 8 CONTRACT COMPLETION

- 8.1 Construction work shall follow the construction schedule shown in Specification Section 00 60 00. Work on all buildings for this contract is expected to be completed on or before **October 25, 2024**.

PART 9 EQUAL EMPLOYMENT OPPORTUNITY

- 9.1 All bidders shall comply with current Federal and State of Michigan Equal Employment Opportunity requirements prior to submission of bids.

PART 10 ASBESTOS (This is not an asbestos abatement project)

- 10.1 The Contractor shall not start any work in any area that has not been inspected for asbestos by the Owner's Department of Environmental Health and Safety, or a qualified representative of the Owner, and found to be safe. If asbestos is found, safety measures as recommended by the Owner's Department of Environmental Health and Safety, or a qualified representative of the Owner, shall be implemented by the Owner before work is started. The Contractor is prohibited from using or supplying any asbestos containing materials for this project.

PART 11 SUMMARY OF WORK

- 11.1 Perform all work indicated in the Contract Documents.
- 11.2 The Project consists of Roof replacement on three Michigan Tech University buildings: (1) R.L. Smith Building (MEEM, building #20) – Sections A, B, & C (w/ Alt. #1 – secs D, E, F, & G) per project #20-24-04; (2) Dow Environmental Sciences Building (building #8) – Section F per project #08-24-03. (3) Rozsa Center for the Performing Arts (building #10) – Section F, per project #10-24-01. Reference the project drawings for more information on the scope of work.
- 11.3 See Specification Section 01 10 00 Summary and the project drawings for a more detailed description of the work.

END OF SECTION 01 00 01

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SECTION 01 00 02

PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.02 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Michigan Tech at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Specifications 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.
 - b. Michigan Tech.
 - c. Michigan Tech 's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange schedule of values consistent with format of AIA Documents G702, G703.
 - 3. Provide a breakdown of the Total Contract Amount in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Specifications table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Total Contract Amount.
 - a. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Total Contract Amount and subcontract amount.
 - 4. Round amounts to nearest whole dollar; total shall equal the Total Contract Amount.
 - a. 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.
 - b. 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.
 - 5. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders result in a change in the Total Contract Amount.

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1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Michigan Tech 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 Michigan Tech and the Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Michigan Tech 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 issued before last day of construction period covered by application.
- E. Transmittal: Submit one signed and notarized original copy of each Application for Payment to Michigan Tech by a method ensuring receipt within 24 hours. Include waivers of lien and similar attachments if required.
- F. Waivers of Lien: With each Application for Payment, submit waivers of lien as indicated in the Agreement.
- G. 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. Schedule of unit prices.
 - 5. Submittal schedule (preliminary if not final).
 - 6. List of Contractor's staff assignments.
 - 7. Report of preconstruction conference.
 - 8. Certificates of insurance and insurance policies.
- H. Application for Payment at Substantial Completion: After Michigan Tech issues 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 Total Contract Amount

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- I. Final Payment Application: After completing Project closeout requirements, 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 Total Contract Amount.
 4. Completion of the Final Completion Checklist.
 5. Sworn Statements and Waiver of Liens indicating that all sub-contractors and vendors have been paid.
 6. Approval from Surety for Final Payment.
 7. Signed Guarantee from date of Substantial Completion.
 8. O&M manuals, both digital and hard copies.
 9. All warranties required by the Specifications.

END OF SECTION 01 00 01

TO OWNER: PROJECT: APPLICATION NO: Distribution to:
☐ OWNER
☐ ARCHITECT
☐ CONTRACTOR
☐
☐

FROM CONTRACTOR: VIA ARCHITECT: PERIOD TO: PROJECT NOS: CONTRACT DATE:

CONTRACT FOR:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM \$ 0.00
2. Net change by Change Orders \$ 0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2) \$ 0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ 0.00
5. RETAINAGE:
a. 10 % of Completed Work \$ 0.00
(Column D + E on G703)
b. % of Stored Material \$
(Column F on G703)
Total Retainage (Lines 5a + 5b or
Total in Column I of G703) \$ 0.00
6. TOTAL EARNED LESS RETAINAGE \$ 0.00
(Line 4 Less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate) \$ 0.00
8. CURRENT PAYMENT DUE \$ 0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less 6) \$ 0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

Subscribed and sworn to before me this _____ day of _____, 2009

County of: _____ State of: _____

Notary Public: _____

My Commission expires on: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ _____

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)
ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

PAGE 2 OF 2 PAGES

ARCHITECT'S PROJECT NO:

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 00 08

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project:	Owner:
2024 Campus Roof Replacements	Michigan Technological University
	1400 Townsend Drive
	Houghton, MI 49931
Project Number:	
Contract for: Roof Replacement Projects	Contractor:
Contract Date:	

Substantial Completion Date and Final Completion Checklist:

The Work performed under this Contract as reviewed by the Contractor is substantially complete by the Contractor's knowledge, information, and belief; the condition of the work is sufficiently complete per Contract Documents and the Owner can occupy for intended use.

The Contractor requests that Michigan Tech issue a notice of Substantial Completion.

If necessary, any **Remaining Items** to be completed and/or corrected are included on the **01 00 10 Final Completion Checklist**. The list does not alter the responsibility of the Contractor to complete Work per Contract Documents.

By signing below, the Contractor acknowledges that they will complete and/or correct the Remaining Items as documented on the **Final Completion Checklist** when issued.

Contractor Signature By Date

Owner Signature By Substantial Completion Date
Michigan Technological University

The **Date of Commencement of Warranties** for all items, as established by the Contract Documents, including those as listed below, is also the date of **Substantial Completion Date** for the aforementioned Project.

Owner Signature By Date of Commencement of Warranties
Substantial Completion Date

END OF SECTION 01 00 08

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 00 10
FINAL COMPLETION CHECKLIST

Project:	Owner:
2024 Campus Roof Replacements	Michigan Technological University
	1400 Townsend Drive
	Houghton, MI 49931
Project Number:	
Contract for: Roof Replacement Projects	Contractor:
Contract Date:	

General Items:

1. Provide specific product warranties for roof membrane and parapet coping.
2. Provide Guaranty (attached).
3. Provide Consent of Surety for final payment (attached).
4. Provide Sworn Statement (attached).
5. Provide Full Unconditional Waiver of Lien from Contractor and major suppliers (attached).

List of Remaining Items to be completed and/or corrected:

Space	Items to Complete	Date of Completion
	1.	
	2.	
	3.	
	4.	
	5.	
	6.	
	7.	
	8.	
	9.	
	10.	

2024 Campus Roof Replacements
March 11, 2024

FINAL COMPLETION CHECKLIST
01 00 10 - 1

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 00 12
GUARANTY

The CONTRACTOR, as a condition precedent to final payment for each group of buildings, shall execute this Guaranty to the OWNER, guaranteeing for two (2) years from the date of final payment, to keep in good order and repair any defect in all the work completed under the Agreement. This includes work which may develop during said period due to improper materials, defective equipment, improper materials workmanship, or arrangements and in any work which may be affected in correcting any repairs or defects. This Guaranty will be binding upon the CONTRACTOR, his subcontractors and/or material suppliers and will be without any expense to the OWNER.

The **Date of Commencement for the Guaranty** for all items, for 2024 Campus Roof Replacement Projects as established by the Contract Documents, is _____.

OWNER: Michigan Technological University CONTRACTOR:

Print

Print

Signature

Signature

Date

Date

CONSENT OF SURETY TO FINAL PAYMENT

AIA Document G707

(Instructions on reverse side)

OWNER	<input type="checkbox"/>
ARCHITECT	<input type="checkbox"/>
CONTRACTOR	<input type="checkbox"/>
SURETY	<input type="checkbox"/>
OTHER	<input type="checkbox"/>

TO OWNER:
(Name and address)

ARCHITECT'S PROJECT NO.:

CONTRACT FOR:

PROJECT:
(Name and address)

CONTRACT DATED:

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

, SURETY,
on bond of
(Insert name and address of Contractor)

, CONTRACTOR,
hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of
any of its obligations to
(Insert name and address of Owner)

, OWNER,
as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)



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INSTRUCTION SHEET

FOR AIA DOCUMENT G707, CONSENT OF SURETY TO FINAL PAYMENT

A. GENERAL INFORMATION

1. Purpose

This document is intended for use as a companion to AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims, on construction projects where the Contractor is required to furnish a bond. By obtaining the Surety's approval of final payment to the Contractor and its agreement that final payment will not relieve the Surety of any of its obligations, the Owner may preserve its rights under the bond.

2. Related Documents

This document may be used with most of the AIA's Owner-Contractor agreements and general conditions, such as A201 and its related family of documents. As noted above, this is a companion document to AIA Document G706.

3. Use of Current Documents

Prior to using any AIA document, the user should consult the AIA, an AIA component chapter or a current AIA Documents List to determine the current edition of each document.

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B. CHANGES FROM THE PREVIOUS EDITION

Changes in the location of various items of information were made, without revision to the substance of the document.

C. COMPLETING THE G707 FORM

GENERAL: The bond form is the usual source of required information such as the contract date and the names and addresses of the Surety, Owner, Contractor and Project.

ARCHITECT'S PROJECT NO.: This information is typically supplied by the Architect and entered on the form by the Contractor.

CONTRACT FOR: This refers to the scope of the contract, such as "General Construction" or "Mechanical Work".

D. EXECUTION OF THE DOCUMENT

The G707 form requires both the Surety's seal and the signature of the Surety's authorized representative.

SWORN STATEMENT

_____, being duly sworn,

That _____ is the (contractor)

Improvement to the following described real property situated in

Michigan, described as follows:_____

That the following is a statement of each subcontractor and supplier and laborer with whom the (contractor) (subcontractor) has (contracted) (subcontracted) for performance under the contract with the owner or lessee thereof, and that the amounts due to the persons as of the date hereof are correctly and fully set forth opposite their names, as follows:

[illegible]

over

That the contractor has not procured material from, or subcontracted with, any person other than those set forth on the reverse side and owes no money for the improvement other than the sums set forth on the reverse side.

Deponent further says that he or she makes the foregoing statement as the (contractor) (subcontractor) or as _____ of the (contractor) (subcontractor) for the purpose of representing to the owner or lessee of the premises described on the reverse side and his or her agents that the property described on the reverse side is free from claims of construction liens, or the possibility of construction liens, except as specifically set forth on the reverse side.

WARNING: AN OWNER OR LESSEE OF THE PROPERTY DESCRIBED ON THE REVERSE SIDE MAY NOT RELY ON THIS SWORN STATEMENT TO AVOID THE CLAIM OF A SUBCONTRACTOR, SUPPLIER, OR LABORER WHO HAS PROVIDED A NOTICE OF FURNISHING TO THE DESIGNEE OR TO THE OWNER OR LESSEE IF THE DESIGNEE IS NOT NAMED OR HAS DIED.

Deponent

Subscribed and sworn to before me this _____ day of _____, 20 _____

Notary Public

_____ County, Michigan

My Commission Expires: _____

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 00 18
FULL UNCONDITIONAL WAIVER

My/our contract with _____ to provide
(other contracting party)

_____ for the improvement of the property described as

Michigan Tech Project [Abstract], having been fully paid and satisfied, with respect to our rights under the Payment / Lien Bond covering said Project and all of our rights to pursue payment under the Payment/Lien Bond No. issued by **Independent Roofing & Siding Company** as principal and **Nationwide Mutual Insurance Company** as surety, together with any rights, demands, or causes of action we may have against **Independent Roofing & Siding Company or Nationwide Mutual Insurance Company**, by signing this waiver, all my/our construction lien rights against such property are hereby waived and released.

(Printed Name of Lien Claimant)

(Signature of lien claimant)

Signed on: _____

Address: _____

Telephone: _____

DO NOT SIGN BLANK OR INCOMPLETE FORMS. RETAIN A COPY.

END OF SECTION 01 00 18

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 00 20
CERTIFICATE OF FINAL COMPLETION

Project:	Owner:
2024 Campus Roof Replacements	Michigan Technological University
	1400 Townsend Drive
	Houghton, MI 49931
Project Number: [Abstract]	
Contract for: Roof Projects	Contractor:
Contract Date:	

Substantial Completion Date _____

Final Completion Checklist Date _____

The Contractor certifies that the Work and all other requirements have been completed in accordance with the Contract for Construction, including, but not limited to:

1. Submission and approval of all remaining change order proposals, claims, and Applications for Payment
2. Submission of "as-built" plans and specifications, shop drawings, and other record documents
3. Completion of all discrepancies: List of Remaining Items noted on the Final Completion Checklist at the time of Substantial Completion:
 - a. Submission of all final closeout deliverables/document
 - b. Submission of Guaranty
 - c. Submission of Consent of Surety for Final Payment
 - d. Submission of Sworn Statement
 - e. Submission of Full Unconditional Waiver of Lien

The Contractor further certifies that:

4. No liens have been attached against the Project
5. No suits are pending by reason of Work on the Contract
6. All Workers' compensation claims are covered by Workers' Compensation Insurance as required by law
7. All insurance required of the Contractor beyond final payment, if any, is in effect and will not be cancelled or allowed to be expired without notice to the Owner
8. All public liability claims are adequately covered by insurance and that the Contractor shall save, protect, defend, indemnify, and hold the Owner harmless from and against any and all claims which arise as a direct or indirect result of any transaction, event occurrence, or omission related to performance of the Work contemplated under said Contract

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2024 CAMPUS ROOF REPLACEMENTS

Upon execution below, this project will be considered complete. This consideration does not relieve the Contractor from its post-construction responsibilities, including correction of discrepancies noted during the first year after Substantial Completion, warranty issues, latent defects, and other requirements of the Contract or State law.

Name of Contractor:

Notary Public:

Personally appeared before me this day of
known (or made known) to me to be

the _____ (title)

of _____ (firm),
who, being by me duly sworn, subscribed to
the forgoing affidavit in my presence.

By: _____
Authorized Representative

My Commission Expires:

_____ (date)

Owner

Owner Signature

Final Completion Date

END OF SECTION 01 00 20

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 00 22 CONTRACT CHANGE ORDER

CONTRACTOR:	CHANGE ORDER NO. PROJECT: PROJECT NO.: [Abstract]
OWNER: Michigan Technological University 1400 Townsend Drive Houghton, MI, 49931	ARCHITECT:
DATE OF ISSUE:	EFFECTIVE DATE:
<p>The Contractor is hereby directed to make the following changes in the Contract Documents.</p> <p>Description:</p> <p>Reason for Change Order:</p> <p>Attachments: <i>(List documents supporting change and justifying cost and time)</i></p>	
CHANGE IN CONTRACT PRICE: Original Contract Price: \$	CHANGE IN CONTRACT TIMES: Original Contract Times: <i>(calendar days or dates)</i>
Net changes from previous C. O.'s No. ____ to ____ \$	Net changes from previous C. O.'s No. ____ to ____ <i>(calendar days)</i>
Contract Price Prior to this Change Order: \$	Contract Times prior to this Change Order: <i>(calendar days or dates)</i>
Net Increase (decrease) of this Change Order: \$	Net Increase (decrease) of this Change Order: <i>(calendar days)</i>
Contract Price with all Approved Change Orders: \$	Contract Times with all Approved Change Orders: <i>(calendar days or dates)</i>
ACCEPTED: (Contractor) By: Date:	APPROVED: (Owner): Michigan Tech University By: Date:

END OF SECTION 01 00 22

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. 2024 Campus Roof Replacements:
- B. Owner's Name: Michigan Technological University.
- C. The Project consists of Roof replacement on three Michigan Tech University buildings: (1) R.L. Smith Building (MEEM, building #20) – Sections A, B, & C (w/ Alt. #1 – secs D, E, F, & G) per project #20-24-04; (2) Dow Environmental Sciences Building (building #8) – Section F per project #08-24-03. (3) Rozsa Center for the Performing Arts (building #10) – Section F, per project #10-24-01. Reference the project drawings for more information on the scope of work.

1.02 CONTRACT DESCRIPTION

- A. A single prime contract based on a Stipulated Price. Contractor can bid one or all of the proposed roof replacement projects.

1.03 DESCRIPTION OF WORK

- A. Scope of demolition/removal work and new work is shown on the project drawings.
- B. Disposal of removed items is by the Contractor, except for minor items that Michigan Tech Facilities Management may request.
- C. Contractor is responsible for continuous and daily progress cleanup of project-related debris into an approved dumpster or container provided by Contractor. Final cleanup of entire work area, including staging areas, is required by Contractor.

1.04 WORK BY OWNER

- A. None

1.05 OWNER OCCUPANCY

- A. Michigan Tech will be occupying the buildings receiving new roofs and adjacent buildings during the entire construction period.
- B. Cooperate with Michigan Tech to minimize conflict and to facilitate Michigan Tech's operations.

1.06 CONTRACTOR USE OF SITE AND PREMISES

- A. Campus Restrictions: See the Michigan Technological University's website for additional information on these items.
 - 1. Firearms are prohibited on the campus of Michigan Technological University
 - 2. The campus is a tobacco, smoke, and vapor free site.
- B. Construction Operations: Limited to areas immediately adjacent or in front of the buildings being worked on.
- C. Arrange use of site and premises to:
 - 1. Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - a. Driveways, Walkways and Entrances: Keep driveways loading areas, 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.
 - 1) Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - 2) Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- D. Provide access to and from site as required by law and by Michigan Tech:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

- 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
 - E. Time Restrictions:
 - 1. Limit conduct of especially noisy work that could be heard in the buildings to the hours of 8 am to 5 pm local time.
 - F. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the building is unoccupied.
 - 2. Prevent accidental disruption of utility services to other facilities.
- 1.07 WORK SEQUENCE**
- A. Coordinate construction schedule and operations with Michigan Tech.

END OF SECTION 01 10 00

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 22 00
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Providing unit prices for specific work items for possible reduction or increase in scope of work as determined by the Owner, as exact amounts required are unknown.

1.02 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals, erection, application or installation of an item of the Work, overhead, and profit.

1.03 MEASUREMENT OF QUANTITIES

- A. Quantities shall be as jointly agreed upon with Contractor and Owner based on the unit of measure.

1.04 CHANGE IN CONTRACT AMOUNT

- A. If required, the total contract amount may be reduced/increased when the unit price is multiplied by the unit of measurement for the change in scope of work.

1.05 SCHEDULE OF UNIT PRICES

- A. A cost per square foot unit price is requested for the removal of existing, non-salvageable roof insulation (as jointly determined by the Owner and Contractor) and furnishing and installing roof insulation that matches existing roof insulation size, thickness and type to properly perform the roof replacement project complete for the following Michigan Tech University buildings.
 - 1. R.L. Smith Building (MEEM, building #20) – All sections per project #20-24-04
 - 2. Rozsa Center for the Performing Arts (building #10) – Section F per project #10-24-01

END OF SECTION 01 22 00

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 23 00 – ALTERNATES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Agreement, Section 00 52 00.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements governing Alternates.
1. The Owner reserves the right to accept or decline alternates.
 2. The Owner reserves the right to accept, decline, and/or enter negotiations to modify Voluntary Alternates proposed by the Contractor and/or any subcontractor.

1.3 DEFINITIONS

- A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to, or deducted from, the Base Bid amount if the Owner decides to accept a corresponding change in the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate the Work into the Project.
1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not it is mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other Work of this Contract.
- D. A Schedule of Product Alternates and a Schedule of Mandatory Alternates is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each alternate. Also refer to the drawings.
1. Only principal items of Work are highlighted in each mandatory alternate. Include as part of each alternate, miscellaneous devices, appurtenances, and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.
 2. Voluntary alternates, as proposed by the Bidder, are as shown on the Proposal Form submitted by such Bidder.

PART 2 SCHEDULE OF ALTERNATES

1. R.L. Smith Building (MEEM, building #20) – Sections D, E, F, & G per project #20-24-04

END OF SECTION 01 23 00

MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 60 00 Product Requirements for requirements for submitting comparable product submittals for products by listed manufacturers.

1.02 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.03 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use CSI Form 13.1A.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects, engineers, and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

**MICHIGAN TECHNOLOGICAL UNIVERSITY
2024 CAMPUS ROOF REPLACEMENTS**

3. Michigan Tech's Action: If necessary, Michigan Tech will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Michigan Tech will notify Contractor of acceptance or rejection of proposed substitution within 10 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

- a. Forms of Acceptance: Change Order, Construction Change Directive, or Michigan Tech's Supplemental Instructions for minor changes in the Work.
- b. Use product specified if Michigan Tech does not issue a decision on use of a proposed substitution within time allocated.

1.04 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

PART 2 – PRODUCTS

2.01 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 10 days prior to time required for preparation and review of related submittals.

- 1. Conditions: Michigan Tech will consider Contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution will not adversely affect Contractor's construction schedule.
 - c. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - d. Requested substitution is compatible with other portions of the Work.
 - e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Not allowed.

2.02 SUBSTITUTIONS DURING THE PROJECT

- A. After initial product selection and approval during the submission process, substitutions and changes to the product selection will not be permitted.

END OF SECTION 01 25 00



SUBSTITUTION REQUEST

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

A/E Project Number: _____
Re: _____ Contract For: _____

Specification _____ Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ ZIP: _____
Trade Name: _____ Phone: _____
Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

☐ Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
Address: _____ Owner: _____
_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST (Continued)

The Undersigned certifies:

- 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.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- 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.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND RECOMMENDATION

- ☐ Approve Substitution - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- ☐ Approve Substitution as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- ☐ Reject Substitution - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

OWNER'S REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures. Prepare Change Order.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures. Prepare Change Order.
- ☐ Substitution rejected - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E

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SECTION 01 30 00

ADMINISTRATIVE SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

1.1.1 This Section applies to all administrative and technical submittals described as follows:

- 1.1.1.1 Health and Safety Plan
- 1.1.1.2 Project Schedule
- 1.1.1.3 Daily Progress Forms
- 1.1.1.4 Shop Drawings

1.2 HEALTH AND SAFETY PLAN

- 1.2.1 The Contractor shall prepare a site-specific Health and Safety Plan for project. The Health and Safety Plan shall be provided to the University for informational and review purposes. The Contractor is responsible for implementation of their Health and Safety program. The University will provide comments on the Contractor's Health and Safety Plan, but no approval of the Health and Safety Plan will be granted. Following incorporation of any comments, the University will accept the Health and Safety Plan.
- 1.2.2 The Site-Specific Health and Safety Plan shall meet the requirements, at a minimum, of the following:
 - 1.2.2.1 29 CFR 1910: Safety and Health Regulations for General Industry, United States Occupational Safety and Health Administration (OSHA), as amended.
 - 1.2.2.2 29 CFR 1926: Safety and Health Regulations for Construction, OSHA, as amended.
- 1.2.3 The Contractor's Health and Safety Plan is an enforceable document that shall guide the activities of the Contractor's personnel and all subcontractor's personnel. The Health and Safety Plan shall define site-specific safety provisions necessitated by all project activities of the Contractor and their subcontractors.
- 1.2.4 Hazard Communication Program: The Contractor shall utilize a Hazard Communication Program in accordance with 29 CFR 1926.59.
- 1.2.5 The Contractor and their designated Safety Officer shall be solely responsible for the implementation and monitoring of the Health and Safety Plan. The Health and Safety Plan shall address, but not be limited to, the following items:
 - 1.2.5.1 *Hazards:* Provide a list and description of potential chemical, biological, and physical hazards associated with the proposed scope of work.
 - 1.2.5.2 *Planning:* Describe the proposed health and safety organization and procedures for continuous updating of the Health and Safety Plan based on actual project conditions. The University shall be notified in writing of any proposed changes.
 - 1.2.5.3 *Training:* Identify the types and level of training provided to all workers and other project personnel prior to their assignment to this project.
 - 1.2.5.4 *Personal Protective Equipment:* Identify the means of protection for personnel working on the project. Identify conditions that would require increasing the level of protection during each work activity. Identify procedures for protecting personnel from other physical hazards, including but not limited to heat stress, hypothermia, and excessive noise.

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- 1.2.5.5 *Site Emergencies:* The Health and Safety Plan shall include policies and procedures for responding to emergency situations, such as fire, physical injury, release of toxic materials, etc.
- 1.2.5.6 *Waste Handling:* Identify procedures that will be used to ensure the safe handling and transfer of wastes during loading and transportation activities.
- 1.2.5.7 *Hot Work – Welding and Cutting:* The Contractor shall establish procedures for performing hot work, including but not limited to welding, cutting, burning, and heating, or any other activity capable of providing a source of ignition. Additional requirements related to hot work are defined in 29 CFR 1926, Subpart J.
- 1.2.6 The University may require revisions to the Health and Safety Plan; however, extensions to the time period of this contract will not be granted if caused by delays in developing an acceptable Health and Safety Plan.
- 1.2.7 The Contractor shall conduct all operations in accordance with the Health and Safety Plan. Disregard for the provisions of the Health and Safety Plan shall be deemed just and sufficient cause for suspension of work and/or removal of Contractor personnel without compromise or prejudice to the rights of the University.

1.3 PROJECT SCHEDULE

- 1.3.1 The Contractor shall provide a project schedule that conforms to the requirements summarized below, unless otherwise approved by the Project Engineer.
 - 1.3.1.1 The Project Schedule shall be formatted as a Gantt Chart and shall contain administrative, technical submittal dates, and required approval dates.
 - 1.3.1.2 After starting work the Contractor shall continue the work to completion unless delays are approved by the University.
 - 1.3.1.3 Work activities and durations with expected start and finish dates for each phase of the work should be included in the Project Schedule.
- 1.3.2 Procedures for updating the Project Schedule include:
 - 1.3.2.1 Update schedules a minimum of every two weeks unless otherwise specified or directed by the University.
 - 1.3.2.2 Submit updated schedules at progress meetings. If a schedule remains unchanged, submit a written notice to that effect.

1.4 DAILY PROGRESS REPORTS

- 1.4.1 The Contractor shall maintain daily progress reports that shall outline the safety topics reviewed prior to the start of work, work accomplished during the reporting period, and work to be completed during the subsequent reporting period. Problems, deficiencies, and safety concerns, real or anticipated, should be summarized in the progress reports. Work of suppliers and subcontractors shall also be included in the daily reports. Other pertinent information including, but not limited to weather conditions, project milestones, and corrective actions should also be documented.

1.5 SHOP DRAWINGS

- 1.5.1 The Contractor shall provide shop drawings for review and approval as necessitated by the work. The Contractor shall maintain one current record copy of all specifications, drawings, addenda, change orders, and shop drawings at the project site. The documents shall be kept current, in good order, and annotated to show all changes made over the course of construction.

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PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

END OF SECTION 01 30 00

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SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.02 DEFINITIONS

- B. Action Submittals: Written and graphic information and physical samples that require Michigan Tech's responsive action.
- C. Informational Submittals: Written and graphic information and physical samples that do not require Michigan Tech's responsive action. Submittals may be rejected for not complying with requirements.

1.03 ACTION SUBMITTALS

- D. Prior to ordering materials and construction, provide an Action Submittal for items specified throughout the contract documents that include the phrase 'as approved by Michigan Tech,' if the exact item as specified cannot be obtained and a similar item must be provided. This is not intended to be a substitution procedure, substitutions must follow requirements of section 01 25 00.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- E. Electronic copies of digital data files of the specified items can be provided by Michigan Tech for Contractor's use in preparing submittals.
- F. Processing Time: Provide submittals within one week after award of contract to insure sufficient lead time for materials in time for the construction start date. Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Michigan Tech's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Michigan Tech will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 7 days for review of each resubmittal.
- G. Electronic Submittals (note electronic submittals are preferred by Michigan Technological University): Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

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3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Michigan Tech.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Michigan Tech containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number, numbered consecutively.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
- H. Paper Submittals (note electronic submittals are preferred by Michigan Technological University): Place a permanent label or title block on each submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Michigan Tech.
 3. Include the following information for processing and recording action taken:
 - 1) Project name.
 - 2) Date.
 - 3) Destination (To:).
 - 4) Source (From:).
 - 5) Name and address of Architect.
 - 6) Name of Construction Manager.
 - 7) Name of Contractor.
 - 8) Name of firm or entity that prepared submittal.
 - 9) Names of subcontractor, manufacturer, and supplier.
 - 10) Category and type of submittal.
 - 11) Submittal purpose and description.
 - 12) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - 13) Specification paragraph number or drawing designation and generic name for each of multiple items.
 - 14) Drawing number and detail references, as appropriate.
 - 15) Indication of full or partial submittal.
 - 16) Transmittal number, numbered consecutively.
 - 17) Submittal and transmittal distribution record.
 - 18) Remarks.

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- 19) Signature of transmitter.
4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Michigan Tech observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
- I. Options: Identify options requiring selection by Michigan Tech.
- J. Deviations: Identify deviations from the Contract Documents on submittals.
- K. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- L. 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.
- M. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Michigan Tech's action stamp.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
1. Submit electronic submittals via email as PDF electronic files.
 - a. Michigan Tech will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. Mark each copy of each submittal to show which products and options are applicable.
 2. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 3. Submit Product Data before or concurrent with Samples.
 4. Submit Product Data in the following format:
 - a. PDF electronic file.
- 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, unless submittal based on digital data drawing files is otherwise permitted.

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1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. 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 42 inches.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Four opaque (bond) copies of each submittal. Michigan Tech will return two copy(ies).
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. 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.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. 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. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Michigan Tech will return submittal with options selected.

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6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: 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. Number of Samples: Submit one sets of Samples. Michigan Tech will retain.
 - 1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Application for Payment and Schedule of Values: Comply with requirements specified in Section 010001 Payment Procedures.
- F. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017000 Closeout Procedures.
- G. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- I. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. 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.

2.02 DELEGATED-DESIGN SERVICES

- K. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Michigan Tech.
- L. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

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PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 70 00 Closeout Procedures.
- C. 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.

3.02 MICHIGAN TECH'S ACTION

- D. General: Michigan Tech will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- E. Action Submittals: Michigan Tech will review each submittal, make marks to indicate corrections or revisions required, and return it. Michigan Tech will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- F. Informational Submittals: Michigan Tech will review each submittal and will not return it, or will return it if it does not comply with requirements. Michigan Tech will forward each submittal to appropriate party.
- G. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- H. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00

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SECTION 01 50 00
TEMPORARY FACILITIES

PART 1 – GENERAL

1.1 SUMMARY

- 1.1.1 Section includes requirements for temporary facilities, support facilities, storage facilities, and security and protection facilities.
- 1.1.2 Related Requirements:
 - 1.1.2.1 Section 01 10 00 Summary for work restrictions and limitations on utility interruptions.
 - 1.1.2.2 Comply with requirements of Section 01 74 19 - Waste Management, remove from site all materials not to be reused on site.
- 1.1.3 For this project the Contractor may use the existing building utilities as necessary at no charge. Contractor is responsible for making any temporary connections that may be necessary.
- 1.1.4 Storage on site and on Michigan Tech's campus is extremely limited. Any storage of material for the project is the Contractor's responsibility, and any cost for storage should be included in the base bid amount.

1.2 USE CHARGES

- 1.2.1 General: Installation and removal of and use charges for temporary facilities shall be included in the Total Contract Amount. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Michigan Tech, testing agencies, and authorities having jurisdiction.

1.3 INFORMATIONAL SUBMITTALS

- 1.3.1 If storage facilities are temporary facilities, the following must be provided and the facilities must adhere to the remainder of this specification, as necessary so stored materials remain free from damage.
 - 1.3.1.1 Site Plan: Coordinate with Michigan Tech regarding location temporary facilities, construction trailers, utility hookups, staging areas, and parking areas for construction personnel.
 - 1.3.1.2 Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.
- 1.3.2 If storage facilities are rented or other facilities, the facilities must adhere to the remainder of this specification, as necessary so stored materials remain free from damage.

1.4 QUALITY ASSURANCE

- 1.4.1 Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- 1.4.2 Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

- 1.5.1 Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Michigan Tech's acceptance, regardless of previously assigned responsibilities.

PART 2 – PRODUCTS

1.1 EQUIPMENT

- 1.1.1 Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required

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- by locations and classes of fire exposures.
- 1.1.2 HVAC Equipment: Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
- 1.1.2.1 Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
- 1.1.2.2 Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction and marked for intended location and application.

PART 3 – EXECUTION

3.1 GENERAL

- 3.1.1 Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- 3.1.2 Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- 3.1.3 Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
- 3.1.4 Maintain access for fire-fighting equipment and access to fire hydrants.
- 3.1.5 Debris Containers: Contractor to provide own dumpsters (debris or trash containers) for the project and is responsible for the proper removal of the disposed project-related material.
- 3.1.6 Lifts and Hoists: Contractor to provide facilities necessary for hoisting materials and personnel.
- 3.1.6.1 Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- 3.2.1 Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- 3.2.2 Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- 3.2.3 Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- 3.2.4 Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations. Coordinate with Michigan Tech for any perceived use of electrical service.

3.3 VEHICULAR ACCESS AND PARKING

- A. Comply with Michigan Tech regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Michigan Tech.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Parking and Storage Trailers; There is insufficient room over the course of the project to house Storage Trailers at the Project Location. There will be room provided in Parking Lot 26 for up to four semi-truck Storage Trailers for use by the Contractor and/or Subcontractors storage of items. Parking for Contractor and Sub-Contractor vehicles will be available on site, but

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parking is limited and the Owner reserves the right to restrict the number of vehicles parking on site. Temporary parking permits will need to be obtained from Michigan Tech (there is no charge for these permits) and displayed when the vehicle is on site.

3.4 SECURITY

- 3.4.1 Provide security and facilities to protect Work, existing facilities, and Michigan Tech's operations from unauthorized entry, vandalism, or theft.
- 3.4.2 Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- 3.4.3 Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- 3.4.4 Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire prevention program.
 - 3.4.4.1 Prohibit smoking in construction areas.
 - 3.4.4.2 Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3.4.4.3 Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 MOISTURE AND MOLD CONTROL

- 3.5.1 Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect materials from water damage and keep porous and organic materials from coming into prolonged contact with concrete.
- 3.5.2 Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 3.5.2.1 Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 3.5.2.2 Keep interior spaces reasonably clean and protected from water damage.
 - 3.5.2.3 Discard or replace water-damaged and wet material.
 - 3.5.2.4 Discard, replace, or clean stored or installed material that begins to grow mold.
 - 3.5.2.5 Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- 3.5.3 Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
 - 3.5.3.1 Control moisture and humidity inside building by maintaining effective dry-in conditions.
 - 3.5.3.2 Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.
- 3.5.4 Control moisture so stored materials, furniture, and appliances are not damaged in (temporary) storage facilities during time of storage. Contractor will assume full replacement costs without reimbursement.

3.6 BARRIERS

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

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- operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

3.7 OPERATION, TERMINATION, AND REMOVAL

- 3.7.1 Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- 3.7.2 Maintenance: Maintain facilities in good operating condition until removal.
 - 3.7.2.1 Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- 3.7.3 Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- 3.7.4 Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 3.7.4.1 Materials and facilities that constitute temporary facilities are property of Contractor. Michigan Tech reserves right to take possession of Project identification signs.
 - 3.7.4.2 At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017000 Execution and Closeout Requirements.

END OF SECTION 01 50 00

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 012500 Substitution Procedures for requests for substitutions.

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Michigan Tech's Action: If necessary, Michigan Tech will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Michigan Tech will notify Contractor of approval or rejection of proposed comparable product request within 10 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Use product specified if Michigan Tech does not issue a decision on use of a comparable product request within time allocated.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

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1.5 PRODUCTS AND PROJECT PHASING – Not Used

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.
 - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 - 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. Refer to other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 70 00 Closeout Procedures.

PART 2 - PRODUCTS

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2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Michigan Tech will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
 4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

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- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

END OF SECTION 01 60 00

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SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 01 00 08 – Substantial Completion Notice
- B. Section 01 70 10 – Final Cleaning: for final cleaning of facility
- C. Section 01 74 19 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.

1.02 COORDINATION

- A. Coordinate space requirements, supports, and installation of mechanical and electrical work that 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.
- B. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- C. Coordinate completion and clean-up of work of separate sections.
- D. 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.

1.03 SUBMITTAL OF PROJECT WARRANTIES

- A. Submit written warranties on request of Michigan Tech Facilities Management for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Michigan Tech's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

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 25 00 and Section 01 60 00.

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.

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- 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 or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Michigan Tech four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation, and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance. Provide proper sealant at all joints as necessary.

3.05 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.

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- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. 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.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, etc.): Remove, relocate, and extend existing systems to accommodate project work.
 - 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.
- D. 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.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- 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.
- 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.

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3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 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.

3.08 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.

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- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.09 ADJUSTING

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

3.10 FINAL CLEANING

- A. Do final cleaning of space after completion of construction prior to turning over to Owner. All areas shall be cleaned and ready for occupancy, and shall be inspected by Michigan Technological University's custodial staff.

3.11 CLOSEOUT PROCEDURES

- A. Notify Michigan Tech when work is considered ready for Substantial Completion, and submit the Substantial Completion Notice to the Owner.
- B. 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 Michigan Tech's review.
- C. Correct items of work listed in executed Certificates of Substantial Completion and the Final Completion Checklist.
- D. Notify Michigan Tech when work is considered finally complete.

END OF SECTION 01 70 00

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SECTION 01 07 10
FINAL CLEANING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Final cleaning of entire construction area.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.
- B. Section 01 70 00 - Execution and Closeout Requirements: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.

1.03 SUBMITTALS

- A. Documentation that Cleaning Contractor complies with paragraph 1.04 - Quality Assurance requirements. Supply references indicating performance satisfaction from past clients.

1.04 QUALITY ASSURANCE

- A. Contractor Qualifications: Cleaning contractor with a minimum of 2 years documented experience performing this type of cleaning on a commercial basis.

PART 2 PRODUCTS: Not Used

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine construction area to verify that it is ready for final cleaning, and that all construction work has been completed.

3.02 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior window glass, all surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Steam clean all carpets, mop all floors, and wipe with disinfectant all horizontal and vertical surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean surfaces and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

END OF SECTION 01 07 10

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Any cost or savings from scrap of any materials or appliances must be incorporated into the contract price.
- C. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- D. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- E. Optional Recycling, Salvage, Reuse, or Landfills.
- F. Recycling is optional for this project; Contractor is responsible for implementation. Revenue or savings must be reflected in the Contractor's bid price.
- G. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning or burying on the project site.
 - 2. Dumping or burying on other property, public or private or other illegal dumping or burying.
 - 3. Incineration, either on- or off-site.
- H. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.
- I. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- J. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Remove debris, junk, and trash from site periodically.
- K. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers.
- L. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- M. Leave site in clean condition, ready for subsequent work.
- N. Clean up spillage and wind-blown debris from public and private lands.

1.02 RELATED REQUIREMENTS

- A. Section 01 50 00 Temporary Facilities and Controls: Additional related requirements.

1.03 DEFINITIONS

- A. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- B. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- C. Reuse: To reuse a construction waste material in some manner on the project site.
- D. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

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- E. Waste: Extra material or material that has reached the end of its useful life in its intended use.
Waste includes salvageable, returnable, recyclable, and reusable material.

END OF SECTION 01 74 19

SECTION 07 54 19 PVC FULLY ADHERED ROOF SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. PVC thermoplastic membrane adhered with solvent-based adhesive.
- B. Insulation cover board, attached with mechanical fasteners.
- C. Insulation (tapered), attached with mechanical fasteners where necessary.
- D. Prefabricated flashings, corners, parapets, stacks, vents, and related details.
- E. Fasteners, adhesives, and other accessories required for a complete roofing installation.
- F. Traffic Protection.

1.2 REFERENCES

- A. NRCA - The NRCA Roofing and Waterproofing Manual.
- B. ASCE 7 - Minimum Design Loads For Buildings And Other Structures.
- C. UL - Roofing Materials and Systems Directory, Roofing Systems (TGFU.R10128).
- D. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- E. ASTM D 751 - Standard Test Methods for Coated Fabrics.
- F. ASTM D 4434 - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.
- G. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
- H. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- I. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation; 2007.
- J. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2006

1.3 SYSTEM DESCRIPTION

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Physical Properties:
 - 1. Roof product must meet the requirements of Type III PVC sheet roofing as defined by ASTM D 4434 and must meet or exceed the following physical properties.

2. Thickness: 60 mil, nominal, in accordance with ASTM D 751.
3. Breaking Strengths: ≥ 390 lbf. (MD) and ≥ 438 lbf. (XMD) in accordance with ASTM D 751, Grab Method.
4. Elongation at Break: $\geq 31\%$ (MD) and $\geq 31\%$ (XMD) in accordance with ASTM D 751, Grab Method.
5. Heat Aging in accordance with ASTM D 3045: 176 °F for 56 days. No sign of cracking, chipping or crazing. (In accordance with ASTM D 4434).
6. Factory Seam Strength: ≥ 431 lbf. in accordance with ASTM D 751, Grab Method.
7. Tearing Strength: ≥ 132 lbf. (MD) and ≥ 163 lbf. (XMD) in accordance with ASTM D 751, Procedure B.
8. Low Temperature Bend (Flexibility): Pass at -40 °F in accordance with ASTM D 2136.
9. Accelerated Weathering: No cracking, checking, crazing, erosion or chalking after 5,000 hours in accordance with ASTM G 154.
10. Linear Dimensional Change: $< 0.5\%$ (MD) and 0.10% (XMD) in accordance with ASTM D 1204 at 176 ± 2 °F for 6 hours.
11. Water Absorption: $< 2.29\%$ in accordance with ASTM D 570 at 158 °F for 166 hours.
12. Static Puncture Resistance: ≥ 33 lbs. in accordance with ASTM D 5602.
13. Dynamic Puncture Resistance: ≥ 14.7 ft-lbf. in accordance with ASTM D 5635.

D. Cool Roof Rating Council (CRRC):

1. Membrane must be listed on CRRC website.
 - a. Initial Solar Reflectance: $\geq 87\%$
 - b. Initial Thermal Emittance: $\geq 88\%$
 - c. Initial Solar Reflective Index (SRI): ≥ 111
 - d. 3-Year Aged Solar Reflectance: $\geq 68\%$
 - e. 3-Year Aged Thermal Emittance: $\geq 84\%$
 - f. 3-Year Aged Solar Reflective Index (SRI): ≥ 82

E. Insulation (only where necessary)

1. Provide overall thermal resistance for roofing system as follows:
 - a. Minimum Thickness: 4 inch.
2. Tapered Insulation Slope: 1/8 inch per foot.
3. Configuration as indicated on the Drawings.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Data sheets on each product to be used, including:
 1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.
 3. Installation methods.
 4. Maintenance requirements.
- C. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, and location of fasteners.
- D. Verification Samples: For each product specified, two samples, representing actual product, color, and finish.
1. 4-inch by 6-inch sample of roofing membrane, of color specified.
 2. Sample of roofing membrane with factory weld and T-shaped lap.
 3. 4-inch by 6-inch sample of walkway pad.
 4. Termination bar, fascia bar with cover, drip edge and gravel stop if to be used.
 5. Each fastener type to be used for installing membrane, insulation/recover board, termination bar and edge details.
- E. Installer Certification: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- F. Manufacturer's warranties.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with manufacturer's installation instructions.
- B. Manufacturer Qualifications: A manufacturer specializing in the production of PVC membranes systems and utilizing a Quality Control Manual during the production of the membrane roofing system that has been approved by and is inspected by Underwriters Laboratories.
- C. Installer Qualifications: Company specializing in installation of roofing systems similar to those specified in this project and approved by the roofing system manufacturer.
- D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.
- E. There shall be no deviations from the roof membrane manufacturer's specifications or the approved shop drawings without the prior written approval of the manufacturer.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly wind uplift and fire hazard requirements.
- B. Fire Exposure: Provide membrane roofing materials with the following fire-test-response characteristics. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
1. Exterior Fire-Test Exposure:

- a. Class A; ASTM E 108, for application and roof slopes indicated.
 2. Fire-Resistance Ratings: Comply with ASTM E 119 for fire-resistance-rated roof assemblies of which roofing system is a part.
 3. Conform to applicable code for roof assembly fire hazard requirements.
- C. Wind Uplift:
1. Roofing System Design: Provide a roofing system designed to resist uplift pressures calculated according to the current edition of the ASCE-7 Specification *Minimum Design Loads for Buildings And Other Structures*.

1.7 PRE-INSTALLATION MEETING

- A. Convene meeting not less than one week before starting work of this section.
- B. Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following.
 1. Meet with Owner, Owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 2. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 4. Review structural loading limitations of roof deck during and after roofing.
 5. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 6. Review governing regulations and requirements for insurance and certificates if applicable.
 7. Review temporary protection requirements for roofing system during and after installation.
 8. Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

- D. Store roof materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- F. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- G. Handle and store roof materials and place equipment in a manner to avoid permanent deflection of deck.

1.9 PROJECT CONDITIONS

- A. Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's specification.
- B. Do not apply roofing membrane during inclement weather, or to damp or frozen deck surface or when precipitation is anticipated.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed in the same day.

1.10 WARRANTY

- A. Contractor's Warranty: The contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the effective date of the warranty issued by the manufacturer.
- B. Manufacturer's Warranty: Must be no-dollar limit type and provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices throughout the life of the warranty. In addition, the warranty must meet the following criteria:
 - 1. Warranty Period: 20 years from date issued by the manufacturer.
 - 2. No exclusion for damage caused by ponding water.
 - 3. No exclusion for damage caused by biological growth.
 - 4. Issued direct from and serviced by the roof membrane manufacturer.
 - 5. Transferable for the full term of the warranty.
 - 6. No additional charge for the warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. All roofing system components to be provided or approved by roof system manufacturer.
- B. Acceptable Manufacturers:
 - 1. Duro-Last, Inc.

2. Johns Manville
3. IB Roof Systems

2.2 ROOFING SYSTEM COMPONENTS

- A. Roofing Membrane: PVC thermoplastic membrane conforming to ASTM D 4434, type III, fabric-reinforced, PVC. Membrane properties as follows:
 1. Thickness:
 - a. 60 mil, nominal.
 2. Exposed Face Color:
 - a. White.
- B. Accessory Materials: Provide accessory materials supplied by or approved for use by roof system manufacturer
 1. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.
 2. Factory Prefabricated Flashings: manufactured using Manufacturer's PVC membrane.
 - a. Stack Flashings.
 - b. Curb Flashings.
 - c. Inside and Outside Corners.
 - d. Parapet Flashings.
 3. Sealants and Adhesives: Compatible with roofing system and supplied by roof system manufacturer.
 - a. Caulk.
 - b. Strip Mastic.
 4. Slip Sheet: Compatible with roofing system and supplied by roof system manufacturer.
 5. Fasteners and Plates: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane and insulation to substrate. Supplied by roof system manufacturer.
 - a. Concrete or Metal deck screws as required.
 - b. Steel Membrane Plates.
 - c. 3-inch Metal Plates.
 6. Termination and Edge Details: Supplied by roof system manufacturer.
 - a. Termination Bar.
 7. Vinyl Coated Metal: 24 gauge, hot-dipped galvanized, grade 90 metal with a minimum of 17 mil of PVC roofing membrane laminated to one side.
- C. Walkways:
 1. Provide non-skid, maintenance-free walkway pads in areas of heavy foot traffic and

around mechanical equipment.

- a. Walkway Pad.

2.3 ROOF INSULATION

A. General:

1. Provide preformed roof insulation boards that comply with requirements and referenced standards, as selected from manufacturer's standard sizes.
2. Provide preformed saddles, crickets, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

B. Polyisocyanurate Board Insulation: Complying with ASTM C 1289, Type II, felt or glass- fiber mat facer on both major surfaces. Material as supplied by roof system manufacturer.

1. Polyisocyanurate (tapered).

2.4 ROOF INSULATION ACCESSORIES

A. General: Provide roof insulation accessories approved by the roof membrane manufacturer and as recommended by insulation manufacturer for the intended use.

B. Fasteners: Provide factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening insulation and/or insulation cover boards in conformance to specified design requirements.

C. Insulation Cover Board:

1. Glass-mat-faced, water-resistant gypsum substrate conforming to ASTM C 1177/C 1177M, DensDeck® Prime Roof Board as manufactured by Georgia-Pacific Corporation. Provide to ½" thick.

D. Insulation Cover Board Attachment:

1. Roof manufacturer-supplied mechanical fasteners.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that the deck is supported and secured.
- C. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.
- D. Verify that the deck surfaces are dry and free of standing water, ice or snow.
- E. Verify that all roof openings or penetrations through the roof are solidly set.
- F. If substrate preparation is the responsibility of another contractor, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Surfaces shall be clean, smooth, free of fins, sharp edges, loose and foreign material, oil, grease, and bitumen.

3.3 INSTALLATION

- A. Install insulation in accordance with the roof manufacturer's requirements.
- B. Insulation: Polyisocyanurate
 - 1. Install insulation in accordance with the roof manufacturer's requirements.
 - 2. Insulation shall be adequately supported to sustain normal foot traffic without damage.
 - 3. Where field trimmed, insulation shall be fitted tightly around roof protrusions with no gaps greater than ¼ inch.
 - 4. Tapered insulation boards shall be installed in accordance with the insulation manufacture's shop drawings.
 - 5. No more insulation shall be applied than can be covered with the roof membrane by the end of the day or the onset of inclement weather.
 - 6. If more than one layer of insulation is used, all joints between subsequent layers shall be offset by at least 6 inches.
 - 7. Mechanical Attachment: Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
 - a. Install fasteners in accordance with the roof manufacturer's requirements.
Fasteners that are improperly installed must be replaced or corrected.
 - 8. Mechanically attach Polyisocyanurate (tapered) insulation boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.
- C. Insulation Cover Board: Duro-Guard Securock Glass-Mat ½"
 - 1. Use only fasteners, stress plates and fastening patterns accepted for use by roof manufacturer using fastening patterns that meets applicable design requirements.
 - a. Install fasteners in accordance with manufacturer's requirements. Fasteners that are improperly installed shall be removed or corrected.
 - b. Attach boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.
- D. Roof Membrane: 60 mil, nominal, PVC thermoplastic membrane.
 - 1. Install in accordance with roof manufacturer's requirements.
 - 2. Use only membrane adhesive acceptable by the roof manufacturer and meets applicable design requirements.
 - 3. Cut membrane to fit neatly around all penetrations and roof projections.
 - 4. Unroll roofing membrane and positioned with a 6-inch overlap.

5. Apply adhesive in accordance with the roof manufacturer's requirements.
 - a. Apply at the required rate in smooth, even coatings without voids, globs, puddles or similar irregularities. Use care not to contaminate the area of the membrane where hot air welding will occur.
 - b. Apply adhesive to both the substrate and the bottom side of roof membrane.
 - c. Follow guidelines outlined in the adhesive's Product Data Sheet.
 - d. Read the adhesive's Safety Data Sheet (SDS) prior to using the adhesive.

E. Seaming:

1. Weld overlapping sheets together using hot air. Minimum weld width is 1-1/2 inches.
2. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.

F. Membrane Termination/Securement: All membrane terminations shall be completed in accordance with the membrane manufacturer's requirements.

1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
2. Provide securement at any angle change where the slope or combined slopes exceeds two inches in one horizontal foot.

G. Flashings: Complete all flashings and terminations as indicated on the drawings and in accordance with the membrane manufacturer's requirements.

1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
 - a. Do not apply flashing over existing thru-wall flashings or weep holes.
 - b. Secure flashing on a vertical surface before the seam between the flashing and the main roof sheet is completed.
 - c. Extend flashing membrane a minimum of 6 inches onto the main roof sheet beyond the mechanical securement.
 - d. Use care to ensure that the flashing does not bridge locations where there is a change in direction (e.g. where the parapet meets the roof deck).

2. Penetrations:

- a. Flash all pipes, supports, soil stacks, cold vents, and other penetrations passing through the roofing membrane as indicated on the Drawings and in accordance with the membrane manufacturer's requirements.
- b. Utilize custom prefabricated flashings supplied by the membrane manufacturer.
- c. Existing Flashings: Remove when necessary to allow new flashing to terminate directly to the penetration.

3. Pipe Clusters and Unusual Shapes:

- a. Clusters of pipes or other penetrations which cannot be sealed with prefabricated membrane flashings shall be sealed by surrounding them with a prefabricated vinyl- coated

metal pitch pan and sealant supplied by the membrane manufacturer.

- b. Vinyl-coated metal pitch pans shall be installed, flashed and filled with sealant in accordance with the membrane manufacturer's requirements.
- c. Pitch pans shall not be used where prefabricated, or field fabricated flashings are possible.

H. Roof Drains:

- 1. Remove existing flashing and asphalt at existing drains in preparation for sealant and membrane.
- 2. Provide a smooth clean surface on the mating surface between the clamping ring and the drain base.

I. Edge Details:

- 1. Provide edge details as indicated on the Drawings. Install in accordance with the membrane manufacturer's requirements.
- 2. Join individual sections in accordance with the membrane manufacturer's requirements.
- 3. Coordinate installation of metal flashing and counter.
- 4. Manufactured Roof Specialties: Coordinate installation of copings, counter flashing systems, gutters, downspouts, and roof expansion assemblies.

J. Walkways:

- 1. Install walkways in accordance with the membrane manufacturer's requirements.
- 2. Provide walkways where indicated on the Drawings.
- 3. Install walkway pads at roof hatches, access doors, rooftop ladders and all other traffic concentration points regardless of traffic frequency. Provided in areas receiving regular traffic to service rooftop units or where a passageway over the surface is required.
- 4. Do not install walkways over flashings or field seams until manufacturer's warranty inspection has been completed.

K. Water cut-offs:

- 1. Provide water cut-offs on a daily basis at the completion of work and at the onset of inclement weather.
- 2. Provide water cut-offs to ensure that water does not flow beneath the completed sections of the new roofing system.
- 3. Remove water cut-offs prior to the resumption of work.
- 4. The integrity of the water cut-off is the sole responsibility of the roofing contractor.
- 5. Any membrane contaminated by the cut-off material shall be cleaned or removed.

3.4 FIELD QUALITY CONTROL

- A. The membrane manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.

3.5 PROTECTION

- A. Protect installed roofing products from construction operations until completion of project.
- B. Where traffic is anticipated over completed roofing membrane, protect from damage using durable materials that are compatible with membrane.
- C. Repair or replace damaged products after work is completed.

END OF SECTION

SECTION 07 53 23 EPDM FULLY ADHERED ROOF SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Adhered roof system with ethylene propylene diene terpolymer (EPDM) roofing membrane
- B. Polyisocyanurate (tapered), attached with mechanical fasteners.
- C. Prefabricated flashings, corners, parapets, stacks, vents, and related details.
- D. Fasteners, adhesives, and other accessories required for a complete roofing installation.
- E. Traffic Protection.

1.2 REFERENCES

- A. NRCA - The NRCA Roofing and Waterproofing Manual.
- B. ASCE 7 - Minimum Design Loads For Buildings And Other Structures.
- C. UL - Roofing Materials and Systems Directory, Roofing Systems(TGFU.R10128).
- D. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2013.
- E. ASTM D 751 - Standard Test Methods for Coated Fabrics.
- F. ASTM D 4434 - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.
- G. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
- H. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- I. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation; 2007.
- J. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2006

1.3 SYSTEM DESCRIPTION

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Roofing Applications

1. EPDM Membrane Roofing: One ply membrane, fully adhered, over insulation.
2. Roofing Assembly Performance Requirements and Design Criteria

D. Insulation

1. Provide overall thermal resistance for roofing system as follows:
 - a. Match existing where replacement is required unless noted otherwise on the project drawings.
2. Tapered Insulation

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Data sheets on each product to be used, including:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
 4. Maintenance requirements.
- C. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, and location of fasteners.
- D. Verification Samples: For each product specified, two samples, representing actual product, color, and finish.
 1. 4 inch by 6 inch sample of roofing membrane, of color specified.
 2. Termination bar, fascia bar with cover, drip edge and gravel stop if to be used.
 3. Each fastener type to be used for installing membrane, insulation/recover board, termination bar and edge details.
- E. Installer Certification: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- F. Manufacturer's warranties.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with manufacturer's installation instructions.

- B. Manufacturer Qualifications: A manufacturer specializing in the production of EPDM membranes systems and utilizing a Quality Control Manual during the production of the membrane roofing system that has been approved by and is inspected by Underwriters Laboratories.
- C. Installer Qualifications: Company specializing in installation of roofing systems similar to those specified in this project and approved by the roofing system manufacturer.
- D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.
- E. There shall be no deviations from the roof membrane manufacturer's specifications or the approved shop drawings without the prior written approval of the manufacturer.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly wind uplift and fire hazard requirements.
- B. Fire Exposure: Provide membrane roofing materials with the following fire-test-response characteristics. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure:
 - a. Class A; ASTM E 108, for application and roof slopes indicated.
 - 2. Fire-Resistance Ratings: Comply with ASTM E 119 for fire-resistance-rated roof assemblies of which roofing system is a part.
 - 3. Conform to applicable code for roof assembly fire hazard requirements.
- C. Wind Uplift:
 - 1. Roofing System Design: Provide a roofing system designed to resist uplift pressures calculated according to the current edition of the ASCE-7 Specification *Minimum Design Loads for Buildings And Other Structures*.

1.7 PRE-INSTALLATION MEETING

- A. Convene meeting not less than one week before starting work of this section.
- B. Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following.
 - 1. Meet with Owner, Owner's insurer if applicable, testing and inspecting

agency representative, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.

2. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
4. Review structural loading limitations of roof deck during and after roofing.
5. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
6. Review governing regulations and requirements for insurance and certificates if applicable.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Store roof materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 WARRANTY

- A. Contractor's Warranty: The contractor shall warrant the roof application with

respect to workmanship and proper application for two (2) years from the effective date of the warranty issued by the manufacturer.

- B. Manufacturer's Warranty: Must be no-dollar limit type and provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices throughout the life of the warranty. In addition, the warranty must meet the following criteria:
 - 1. Warranty Period: 20 years from date issued by the manufacturer.
 - 2. No exclusion for damage caused by ponding water.
 - 3. No exclusion for damage caused by biological growth.
 - 4. Issued direct from and serviced by the roof membrane manufacturer.
 - 5. Transferable for the full term of the warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. All roofing system components to be provided or approved by roof system manufacturer.
- B. Acceptable Manufacturers:
 - 1. Carlisle SynTec: www.carlisle-syntec.com.
 - 2. Firestone RubberGard: www.firestonebpco.com
 - 3. Johns Manville: www.jm.com
 - 4. Versico Roofing Systems: www.versico.com

2.2 ROOFING SYSTEM COMPONENTS

- A. Membrane:
 - 1. Material: Ethylene propylene diene terpolymer (EPDM); ASTM D4637/D4637M, Type I (non-reinforced).
 - 2. Thickness: 60 mils (0.060 inch) (1.5 mm), minimum.
 - 3. Sheet Width: Factory fabricated into largest sheets possible.
 - 4. Color: White
 - 5. Product:
 - a. Carlisle Sure-Seal
 - b. Firestone Rubberguard
 - c. Johns Manville – JM EPDM R
 - d. Versico VersiGard
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Flexible Flashing Material: Same material as membrane.

- D. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.
- E. All other accessories as required by membrane manufacturer.
- F. Walkways (Not required on proposed section of the roof)
 - a. Provide non-skid, maintenance-free walkway pads in areas of heavy foot traffic and around mechanical equipment
 - b. Walkway Pad

2.3 ROOF INSULATION

- A. General:
 - 1. Provide preformed roof insulation boards that comply with requirements and referenced standards, as selected from manufacturer's standard sizes.
 - 2. Provide preformed saddles, crickets, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Polyisocyanurate Board Insulation: Complying with ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces. Material as supplied by roof system manufacturer.
 - 1. Polyisocyanurate (tapered).

2.4 ROOF INSULATION ACCESSORIES

- A. General: Provide roof insulation accessories approved by the roof membrane manufacturer and as recommended by insulation manufacturer for the intended use.
- B. Fasteners: Provide factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening insulation and/or insulation cover boards in conformance to specified design requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that the deck is supported and secured.
- C. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.
- D. Verify that the deck surfaces are dry and free of standing water, ice or snow.

- E. Verify that all roof openings or penetrations through the roof are solidly set.
- F. If substrate preparation is the responsibility of another contractor, notify Owner of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Surfaces shall be clean, smooth, free of fins, sharp edges, loose and foreign material, oil, grease, and bitumen.

3.3 INSTALLATION

- A. Install insulation in accordance with the roof manufacturer's requirements.
- B. Insulation: Polyisocyanurate
 - 1. Install insulation in accordance with the roof manufacturer's requirements.
 - 2. Insulation shall be adequately supported to sustain normal foot traffic without damage.
 - 3. Where field trimmed, insulation shall be fitted tightly around roof protrusions with no gaps greater than ¼ inch.
 - 4. Tapered insulation boards shall be installed in accordance with the insulation manufacture's shop drawings.
 - 5. No more insulation shall be applied than can be covered with the roof membrane by the end of the day or the onset of inclement weather.
 - 6. If more than one layer of insulation is used, all joints between subsequent layers shall be offset by at least 6 inches.
 - 7. Mechanical Attachment: Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
 - a. Install fasteners in accordance with the roof manufacturer's requirements.
Fasteners that are improperly installed must be replaced or corrected.
 - 8. Mechanically attach Polyisocyanurate (tapered) insulation boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.
- C. Roof Membrane: 60 mil, nominal, EPDM membrane.
 - 1. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

2. Shingle joints on sloped substrate in direction of drainage.
 3. Fully Adhered Application: Apply adhesive at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches (75 mm) of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
 4. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches (75 mm). Seal permanently waterproof. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.
 5. At intersections with vertical surfaces:
 - a. Extend membrane over vertical concrete surfaces.
 - b. Fully adhere flexible flashing over membrane and up to nailing strips.
 6. Coordinate installation of roof drains and sumps and related flashings. Locate all field splices away from low areas and roof drains. Lap upslope sheet over downslope sheet.
 7. Daily Seal: Install daily seal per manufacturer's instructions at the end of each work day. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.
 8. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.
- D. Membrane Termination/Securement: All membrane terminations shall be completed in accordance with the membrane manufacturer's requirements.
1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
 2. Provide securement at any angle change where the slope or combined slopes exceeds two inches in one horizontal foot.
- E. Flashings: Complete all flashings and terminations as indicated on the drawings and in accordance with the membrane manufacturer's requirements.
1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
 - a. Do not apply flashing over existing thru-wall flashings or weep holes.
 - b. Secure flashing on a vertical surface before the seam between the flashing and the main roof sheet is completed.
 - c. Extend flashing membrane a minimum of 6 inches onto the main roof sheet beyond the mechanical securement.
 - d. Use care to ensure that the flashing does not bridge locations where there is a change in direction (e.g. where the parapet meets the roof deck).
 2. Penetrations:
 - a. Flash all pipes, supports, soil stacks, cold vents, and other penetrations passing

through the roofing membrane as indicated on the Drawings and in accordance with the membrane manufacturer's requirements.

- b. Utilize custom prefabricated flashings supplied by the membrane manufacturer.
 - c. Existing Flashings: Remove when necessary to allow new flashing to terminate directly to the penetration.
3. Pipe Clusters and Unusual Shapes:
- a. Clusters of pipes or other penetrations which cannot be sealed with prefabricated membrane flashings shall be sealed by surrounding them with a prefabricated vinyl-coated metal pitch pan and sealant supplied by the membrane manufacturer.
 - b. Vinyl-coated metal pitch pans shall be installed, flashed and filled with sealant in accordance with the membrane manufacturer's requirements.
 - c. Pitch pans shall not be used where prefabricated or field fabricated flashings are possible.

F. Roof Drains:

- 1. Remove existing flashing and asphalt at existing drains in preparation for sealant and membrane.
- 2. Provide a smooth clean surface on the mating surface between the clamping ring and the drain base.

G. Edge Details:

- 1. Provide edge details as indicated on the Drawings. Install in accordance with the membrane manufacturer's requirements.
- 2. Join individual sections in accordance with the membrane manufacturer's requirements.
- 3. Coordinate installation of metal flashing and counter.
- 4. Manufactured Roof Specialties: Coordinate installation of copings, counter flashing systems, gutters, downspouts, and roof expansion assemblies.

H. Walkways: (Not required on proposed section of the roof)

- 1. Install walkways in accordance with the membrane manufacturer's requirements.

2. Provide walkways where indicated on the Drawings.
 3. Install walkway pads at roof hatches, access doors, rooftop ladders and all other traffic concentration points regardless of traffic frequency. Provided in areas receiving regular traffic to service rooftop units or where a passageway over the surface is required.
 4. Do not install walkways over flashings or field seams until manufacturer's warranty inspection has been completed.
- I. Water cut-offs:
1. Provide water cut-offs on a daily basis at the completion of work and at the onset of inclement weather.
 2. Provide water cut-offs to ensure that water does not flow beneath the completed sections of the new roofing system.
 3. Remove water cut-offs prior to the resumption of work.
 4. The integrity of the water cut-off is the sole responsibility of the roofing contractor.
 5. Any membrane contaminated by the cut-off material shall be cleaned or removed.

3.4 FIELD QUALITY CONTROL

- A. The membrane manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.

3.5 PROTECTION

- A. Protect installed roofing products from construction operations until completion of project.
- B. Where traffic is anticipated over completed roofing membrane, protect from damage using durable materials that are compatible with membrane.
- C. Repair or replace damaged products after work is completed.

END OF SECTION

