PROJECT MANUAL

DELTA COLLEGE

PLANETARIUM
ENTRY DOOR REPLACEMENT

Bay City, MI 48706

January 3rd, 2025

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

William A. Kibbe & Associates, Inc.
Architects – Engineers – Consultants
1475 S. Washington Ave., Saginaw, Michigan 48601
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www.kibbe.com **WAK No. 24-0543- 0241**

SECTION 000200 - INVITATION TO BID

1.1 GENERAL

A. Delta College will be receiving sealed proposals for the New Observatory Building at 1961 Delta Road, University Center, Michigan 48710.

WAGE RATES: Project will be required to comply with the latest minimum State Prevailing Wage requirements.

B. Owner requests proposals on Work as follows:

1. Project:	Delta College Planetarium Entry Door Renovation
2. Project Address:	Delta College Planetarium 100 Center Avenue Bay City, Michigan 48708
3. Owner:	Delta College Anthony Khalil, RA Planning and Construction Manager Office: 989-686-9407 anthonykhalil@delta.edu
4. Architect/Engineer:	William A. Kibbe & Associates, Inc. 1475 S. Washington Avenue Saginaw, MI 48601 Office: 989-752-5000 Ivars “Buzz” Dzirnis, AIA, Project Architect/ Manager (bdzirnis@kibbe.com) Casey Tucker, Project Manager (ctucker@kibbe.com)
5. **Sealed Bids Due:**	**By 11:00 am Local Time, Wednesday, February 5th, 2025**
6. Place Due:	Attention: Mr. Anthony Khalil, RA Delta College, Room P029 1961 Delta Road University Center, MI 48710
7. Type of Bidding:	Prime/General Contract, to include All Trades Work
8. Label Sealed Bid:	**DELTA COLLEGE** **PLANETARIUM ENTRY DOOR RENOVATION** **“SEALED BID - DO NOT OPEN”**

9. **Pre-bid Meeting**: **Wednesday, January 29th, 2025 @ 2:00 p.m.**
Delta College –Planetarium Building

C. Sealed bid proposals must be on the forms furnished by the Architect/Engineer. Blank forms for bidding are included in the electronic bid documents, which can be obtained at the offices of:

1. William A. Kibbe & Associates
1475 S. Washington Avenue, Saginaw, MI 48601
Office 989-752-5000 | Fax 989-752-5002

2. PDF Files will be e-mailed to all bidders at no cost. If a printed set is requested, they can be provided at the cost of printing and postage. Notify the Architect in advance to make sure the printed sets are available prior to pick up.

D. Bid Opening:

1. Bids will be publically opened & read immediately after the receipt of bids.

E. Withdrawal:

1. Bids may not be withdrawn prior to 60 calendar days after the actual date of opening bids.

F. Rejection:

1. Owner reserves the right to waive any informality or to reject any or all bids and to accept any bid deemed most advantageous to the Owner.

G. Bonding & Insurances:

1. 5% Bid Bond.
2. 100% Labor, Material & Performance Bonds will be required for this project, from the awarded bidder.
3. Certificate of Insurance will be required from the accepted bidder, per bid specification.

H. All other requirements for bidding are detailed in the Instruction to Bidders.

END OF SECTION 000200

SECTION 000050 – TABLE OF CONTENTS

SECTION 001000 - INSTRUCTIONS TO BIDDERS

1.1 GENERAL

A. Delta College, Anthony Khalil, RA – Planning and Construction Manager, (herein called the "Owner"), invites bids for construction of the "Delta College – Planetarium Entry Door Renovation" at the Planetarium, 100 Center Avenue, Bay City, Michigan, per the Invitation to Bid.

B. Bids will be received at the place and time indicated in the "Invitation to Bid".

C. Where any Article of the General Conditions of the Contract is supplemented hereby, provisions of such article shall remain in effect. All supplemental provisions shall be considered as added thereto. Where any such article is amended, voided or superseded, the provisions of such article not so specifically amended, voided or superseded shall remain in effect.

D. The Contractor shall provide all items, articles, materials, operations, or methods listed, mentioned, or scheduled on the drawings, and/or herein, including all labor, materials, equipment, and incidentals necessary and required for their completion.

E. For convenience of reference and to facilitate letting of subcontracts, the specifications located in this book specification & on the drawings, are separated into sections. Such separations shall not operate to make the Architect an arbiter or to establish subcontract limits between Contractor and Subcontractor.

F. Submit a sealed envelope containing bid and addressed to:

Delta College
1961 Delta Road
University Center, MI 48710
Attention: Anthony Khalil, RA; Planning & Construction Manager
Room #P029

DELTA COLLEGE
PLANETARIUM ENTRY DOOR RENOVATION
"SEALED BID - DO NOT OPEN"

G. Owner will publically open bids immediately following the receipt of bids.

H. Owner invites the Bid on the "New Observatory Building" to include the work of all trades included in contract documents. Refer to bid form for specific requirements regarding bids, alternates, unit prices and cost breakdowns.

I. Examination of Site:

1. It is necessary for bidders to inform themselves of the conditions under which work is to be performed, the sites and buildings for the work, and obstacles

which may be encountered and all other relevant matters concerning the work to be performed. The bidder, if awarded the contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which such bidder might have become fully self-informed because of a failure to have so informed self-prior to the bidding.

J. Preparation of Bid

1. Submit on forms furnished herein.
2. Fill out in ink or typewritten, without erasure, interlineation or changes.
3. Make Bid in name of principal and if co-partnership, give names of all parties. Give complete address. If bid is submitted by an agent, provide satisfactory evidence of agency authority.
4. Fill in all blank spaces for bid prices in both words and figures. Submit each bid in sealed envelope. Indicate on outside of envelope, name of bidder, bidders address, and name of project for which bid is submitted. If forwarded by mail, enclose sealed envelope containing bid in another envelope addressed indicated.
5. Bid must be received prior to due date and time indicated in Invitation for Bid.

K. Bid Guaranty / Security:

1. Proposal must be accompanied by a five percent (5%) bidder's bond, by an authorized surety company.

2. The bid guaranty of all except the three (3) lowest accepted bidders will be returned within seven (7) days after opening of bids. Bid guaranty of accepted bidders will be returned after executed contract and required bonds have been finally approved by Owner. If no award has been made within sixty (60) days after the opening of bids, the bid security shall be returned upon demand of the bidder, so long as he has not been notified of the acceptance of his bid. If any bidder refuses to enter into a contract, the Owner will retain his bid security as liquidated damages, but not as a penalty.

3. Sureties on all bonds must be acceptable to the Owner. U.S. Treasury Circular No. 570 lists approved sureties, states or licensure and underwriting limits. A copy of this circular may be obtained by writing to Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department, Washington, D.C. 20226. In addition, approved surety to be listed by A.M. Best as "B" rating or better and be licensed to operate in the State of Michigan.

L. Requirements for Signing Bids:

1. Bids which are not signed by the individual making them should have attached thereto a power of attorney evidencing authority to sign in the name of the person for whom it is signed.

2. Bids which are signed for a partnership should be signed by one of the partners or by an attorney-in-fact. If signing by an attorney-in-fact, there should be attached to the bid a power of attorney evidencing authority to sign the bid, executed by the partners.

3. Bids which are signed for a corporation should have the correct corporate name thereon and the signature of the president or other authorized officer of the corporation, manually written below the corporate name following the word, "By_____". Provide a signature authorization certificate.

M. Substitutions:

1. Proposals shall be based on the various brands, makes and standards of materials specified, and unless substitutions are authorized in writing within seven (7) days prior to the receipt of bids, all contracts will be so awarded. Requests shall clearly describe the product for which approval is requested, including all data necessary to demonstrate acceptability. If the product is acceptable, the Architect will approve it in an addendum issued to all prime bidders on record.

2. Proposed substitutions that are unable to be approved seven (7) days prior to receipt of bids may be bid as a voluntary alternate on the bid/tender form. Under this condition, each bidder shall state on the bid/tender form under voluntary alternate(s) the name(s) of proposed substitution(s) to be used if approved and the amount to be added or deducted from the proposal amount if accepted. Submit all data necessary to demonstrate acceptability to the Architect.

3. NO SUBSTITUTIONS WILL BE PERMITTED AFTER THE AWARD OF CONTRACTS.

M. Taxes:

1. Each proposal submitted shall include and the successful bidder shall be required to pay all taxes which are levied by Federal, State, or Municipal Governments upon labor, and for materials entering into the work. The Owner reserves the right to require evidence of payment of such taxes prior to final payment.

2. In compliance with the regulations of the Michigan Sales Tax Commission, sales and use tax is to be included in the proposals.

N. Withdrawal or Revision to Bid:

1. Bid may be withdrawn or revised prior to scheduled time for opening, under following terms:
   a. Bidders may, without prejudice to themselves, withdraw a bid after it has been deposited, provided request for such withdrawal is received in writing, before time set for opening. Telephonic communications are

not acceptable. After opening, no Bid may be withdrawn for the period indicated.

b. Bidder may modify his bid by written confirmation prior to scheduled time of bid opening. Bidders must have time & date noted to be valid.

O. Time for Completion:

1. It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion of each phase of the project are ESSENTIAL CONDITIONS of this contract.

2. All trades of work as specified in the contract documents shall be completed within the time frames indicated for each phase with only such minor replacements, corrections or adjustment items that do not interfere with the complete operation and utilization of all other parts of the contracted work. The project as completed must be approvable for occupancy by Governing Agencies.

3. Completion is as follows:
   a. Milestone Schedule:

January 3rd, 2025	Bid Documents Completed
January 20th, 2025	Documents available for Contractors & Submit for Plan Reviews
January 29th, 2025 @ 2:00 pm	**Site Walk-Thru (at Planetarium)**
February 5th, 2025 by 11:00 am	**Bids Due (at Delta College)**
February 6th – February 14th, 2025	Bid Review, Post bid interviews & recommendation for award letter
March 4th, 2025	Owner's Board Meeting
March 5th, 2025	Bid Award & Notice to Proceed
March 10th, 2025	Start Construction (Weather Permitting)
June 27th, 2025	Substantially Complete

4. It shall be the Prime Contractor's responsibility to immediately identify and order long lead items that may jeopardize the substantial completion and final occupancy dates as specified.

5. Contractor shall be expected to fully man the project on all working days. The only exceptions that will be accepted shall be weather, labor strikes, or unavailability of materials.

P. Irregular Bids

1. Bids are considered irregular and may be rejected for the following reasons unless otherwise provided by law:
   a. If form furnished is not used or is altered.
   b. If there are unauthorized additions, conditional bids, or irregularities of any kind which may tend to make bid incomplete, indefinite, or ambiguous as to its meaning.
   c. If bidder adds any provisions reserving right to accept or reject any award, or to into contact pursuant to an award.
   d. If unit or lump sum prices contained in bid schedule are obviously unbalanced either in excess of, or below, reasonable cost analysis values.
   e. If bidder fails to insert alternate and unit prices for every item indicated.
   f. If bidder fails to complete bid in any other particulars where information is requested so bid can not be properly evaluated.

2. Owner reserves right to reject any or all bids and to waive irregularities or informalities as may be deemed in Owner's interest.

Q. Interpretations

1. If bidder for proposed work is in doubt as to the true meaning of any part of the contact documents, submit written request for interpretation (RFI). Bidder submitting request is responsible for its prompt and actual delivery. Interpretations will not be made orally. The architect is not responsible for any other explanations or interpretations which anyone presumes to make.

2. Written request for interpretation shall be made to William A. Kibbe & Associates, Inc., 1475 S. Washington Ave., Saginaw, Michigan 48601, Ivars "Buzz" Dzirnis, AIA, bdzirnis@kibbe.com or Casey Tucker, ctucker@kibbe.com. Request must be received AT LEAST 3 DAYS PRIOR to date fixed for opening of bids. All interpretations or supplemental instructions will be in form of written addenda e-mailed or mailed prior to date fixed for opening of bids. Copy of such addenda will be e-mailed or mailed to each individual or entity issued contract documents. Failure to receive such addenda does not relieve bidder from any obligation under his bid as submitted. All addenda are part of the contract documents.

3. Bidder desiring approval of material or equipment not specified must comply with this Section for Substitutions prior to receipt of bids.

4. Project Contacts:
   i) Owner: Anthony Khalil, RA; Planning & Construction Manager
   E-mail: anthonykhalil@delta.edu

ii) Architect, Engineer & Project Manager:
Phone: 989-752-5000
Ivars “Buzz” Dzirnis, AIA
E-mail: bdzirnis@kibbe.com
Casey Tucker
E-mail: ctucker@kibbe.ciom

R. Method of Award

1. Upon receiving notice of acceptance of a bid, contractor will enter into a contract with Owner or its agent within four (4) weeks.

S. Contractor Qualifications

1. All contractors shall be licensed contractors, possessing good labor relations, capable of performing quality workmanship and working in harmony with other contractors on the job. All work shall be coordinated with the general project work. In the event contractor willfully violates the requirements of this paragraph, Owner shall have the right to order contractor to remove itself, its equipment, and its employees from the job.

2. Bidder to whom award is contemplated may be required to furnish the following information:

a. Financial statement.
b. Performance record, including past & present projects, amount of contracts, present completion, owner, architect.
c. List of references and similar projects.
d. List of company, key personnel with their background and experience.

T. Non-Iran Linked Business

1. By signing the proposal bid form, I certify and agree on behalf of myself and the company submitting this proposal the following: (1) that I am duly authorized to legally bind the company submitting this proposal; and (2) that the company submitting this proposal is not an “Iran linked business,” as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) That I and the company submitting this proposal will immediately comply with any further certifications or information submissions requested by the School District in this regard.”

U. Prevailing Wage Rates

1. This project is subject to the requirements of State of Michigan Prevailing Wage Rates. The contractor must comply with the minimum rates for wages for laborers and mechanics as determined by the Secretary of Labor in accordance with the provisions of the Prevailing Wage Rates..

END OF SECTION 001000

SECTION 003000 – BID FORM - CONSTRUCTION TRADES

BID FORM - CONSTRUCTION TRADES
DELTA COLLEGE
NEW OBSERVATORY BUILDING

PROJECT:	Delta College Planetarium Entry Door Renovation WAK Project No. 24-0543-0241
TO:	Delta College 1961 Delta Road University Center, MI 48710
ARCHITECT/ ENGINEER:	William A. Kibbe & Associates, Inc. 1475 S. Washington Avenue Saginaw, MI 48601
BASE PROPOSAL:	All Construction Trades

The Undersigned, having visited the site and familiarized themselves with the local conditions affecting the cost of the work and the contract documents, including plans, project manual, and technical specifications, Invitation to Bid, Instructions to Bidders, General Conditions, Supplementary Conditions, and any addenda issued thereto, hereby proposes to perform and to provide and furnish all the labor, materials, tools, expendable equipment, utility and transportation services, etc., necessary to perform and complete in a workmanlike manner all work required under base bid for the aforementioned project, all in strict accordance with the Contract Documents, as prepared by William A. Kibbe & Associates, Inc., Architects/Engineers.

In consideration of all the above requirements, the undersigned agrees to accept in payment the sum of:

PROPOSAL: ALL CONSTRUCTION TRADES (BASE BID):

_____($_____).

Exceptions to the specifications:_____
_____
_____
_____
_____

If none, please indicate _____ No Exceptions taken to the Project Specifications.

Said sum to be subject to all the terms of the contract and to include Wage Rates and all Taxes of whatever character or description and all requirements noted in the specifications applicable thereto.

ADDENDA: Addenda issued during bidding period covering clarifications, additions, deletions or changes are acknowledged and are included in the proposal as follows:

Addenda Number: _____ Dated _____

Addenda Number: _____ Dated _____

Addenda Number: _____ Dated _____

VOLUNTARY ALTERNATES:

The following voluntary alternates are offered for substituting materials and/or equipment. (Attach product information).

1. _____ ADD/DEDUCT $_____

2. _____ ADD/DEDUCT $_____

3. _____ ADD/DEDUCT $_____

CHANGES IN THE WORK: For authorized changes in the work, involving additions to or deletions from the work, the Undersigned agrees to perform or delete, or to cause to be performed or deleted by the subcontractors, such authorized work at net cost to him plus the following percentages to be added to the cost or credited to the Owner, which percentages shall include all the contractor's cost for on-site superintendent, supervision, overhead and profit.

Work performed by own forces:	15%
Work under subcontract:	10%

COMPLETION TIME: The Undersigned agrees to commence work operations immediately upon formal notice of award of contract and to substantially complete the whole of the work on or before the proposed substantial completion date as provided on this Bid Form.

The Prime Bidder hereby proposes to be **substantially complete** by the following date noted below:
This date will be used in the contractual agreement between the Contractor/Owner for this project.

June 27th, 2025

_____

NEGOTIATION: The Undersigned agrees that, should the overall cost exceed the funds available, they will be willing to negotiate with the Owner and Architect/Engineer for the purpose of making further reductions in the contract work, and shall agree to give full credit for all such reductions in the work requested by the Owner, including full value of labor, materials and subcontracted work and reasonable proportionate reductions in overhead and profit, thereby arriving at an agreed upon contract price. Contractor will endeavor to determine the most cost effective method of accomplishing the Owner's objective and report same to Owner and Architect/Engineer.

WITHDRAWAL/PROPOSAL GUARANTY: The Undersigned agrees in submitting this proposal (bid), that the quotation stated will not be withdrawn for a period of sixty (60) consecutive calendar days from bid due date. Further, accompanying this proposal is a proposal guaranty, as required, consisting of:

_____
(State Nature of Guarantee & Amount)

CONTRACT EXECUTION: The undersigned agrees to execute a contract for work covered by this proposal provided that notification of its acceptance is within sixty (60) calendar days after the opening of the proposal (bid).

The Undersigned hereby declares that he/she has the legal status checked below:

( ) Individual

( ) Partnership having the following partners:

_____

_____

_____

( ) Corporation incorporated under the state laws of

_____

This proposal is submitted in the name of and notice of acceptance should be mailed, telegraphed, or delivered to:

FIRM NAME_____

BY_____ TITLE_____
(Signature)

DATE_____ TELEPHONE_____

IN PRESENCE OF:

_____ TITLE_____

END OF SECTION 003000

INSTRUCTIONS: Submit one copy and retain one copy for file.

SECTION 005000 - AGREEMENT FORM

1.1 DOCUMENTS:

The "Standard Form of Agreement between Owner and Contractor", A.I.A. Document A101, 2017 Edition, where the basis of payment is a stipulated sum will be the form of agreement utilized for this project.

1.2 RELATED INFORMATION:

Attention is directed to the following divisions of the specifications for additional information relative to the agreement form.

003000	Bid Form - Under "Time of Completion"
007000	General Conditions
008000	Supplementary Conditions

Contractors shall be held responsible for having familiarized themselves with this document and all other documents affecting their contracts in this specification.

This document is on file at the Architect's office or can be obtained from:

Michigan Society of Architects
553 East Jefferson
Detroit, Michigan 48226

END OF SECTION 005000

SECTION 007000 - GENERAL CONDITIONS

1.1 DOCUMENTS:

"The General Conditions of the Contract for Construction", A.I.A. Document A-201, 2017 Edition, forms a part of these specifications and shall have the same effect as if bound herein.

This document is modified as described in Modifications of the General Conditions.

Contractors shall be held responsible for having familiarized themselves with this document and all other documents affecting their contracts in this specification.

This document is on file at the Architect's office or can be obtained from:

Michigan Society of Architects
553 East Jefferson
Detroit, Michigan 48226

END OF SECTION 007000

SECTION 008000 - SUPPLEMENTARY CONDITIONS

The following Supplementary Conditions modify, change, delete from or add to the "General Conditions of the Contract for Construction", A.I.A. Document A-201, 2017 Edition, where any article of the General Conditions is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these Supplementary Conditions. The unaltered provisions of the article, paragraph, subparagraph, or clause shall remain in effect.

ARTICLE 1 - CONTRACT DOCUMENTS

Modify Article 1.1.3 as follows:

1.1.3 The Work

The work comprises all required demolition and removal work, and completely new construction and renovation as required by the contract documents, including all labor necessary to produce such construction, and all materials, equipment and incidentals incorporated or to be incorporated in such construction to produce the intended results.

Modify Article 1.2.3 as follows:

1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the work. The Contract Documents are complimentary, and what is required by one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well known technical, or trade meanings are used in the Contract Documents in accordance with such recognized meanings. Where reference is made to specifications of manufacturers, trade associations or the like, such is understood to be made a part of this specification to have the same effect as if fully reproduced herein. Approval or equal, acceptable, and words of similar definition are understood to mean, "in the judgment of the Architect".

Add Article 1.2.4 as follows:

1.2.4 Computed dimensions take precedence over scaled dimensions, large scale details over smaller. Should there be conflict(s) between or within drawings and/or specifications, that which requires the highest degree of performance (quality, quantity, strength, finish, completion, complexity, sophistication, etc.), will be required and shall be provided at no increase in contract amount. All such conflicts shall be brought to the attention of the Architect/Engineer for interpretation of the intent of the drawings and/or specifications.

ARTICLE 2 - OWNER

Add Article 2.4.2 as follows:

2.4.2 As stated in the contract documents, certain equipment may be pre-purchased by the Owner, the cost of which is not to be included in the contract.

Add Article 2.4.3 as follows:

2.4.3 The Owner and their representative shall at all times have access to the work wherever it is in preparation of progress and the contractor shall provide proper facilities for such access and for review of construction.

ARTICLE 3 - CONTRACTOR

Add Article 3.1.4 as follows:

3.1.4 Term "GENERAL CONTRACTOR" or “PRIME CONTRACTOR” means person, firm or corporation who performs Architectural Trades Work and who is fully responsible to the Owner for all administration, handling and coordination of Work.

Add Article 3.1.5 as follows:

3.1.5 Term "MECHANICAL CONTRACTOR" means person, firm or corporation who performs the Mechanical Work, as a Subcontractor to the General Contractor. Can also be the Prime Contractor.

Add Article 3.1.6 as follows:

3.1.6 Term "PLUMBING CONTRACTOR" means person, firm or corporation who performs the Plumbing Work, as a Subcontractor to the General Contractor.

Add Article 3.1.7 as follows:

3.1.7 Term "ELECTRICAL CONTRACTOR" means person, firm or corporation who performs the Electrical Work, as a Subcontractor to the General Contractor.

Add Article 3.1.8 as follows:

3.1.8 Term "SITE CONTRACTOR" means person, firm or corporation who performs the Site Work (if other than General Contractor) as a Subcontractor to the General Contractor.

Add Article 3.3.4 as follows:

3.3.4 All work shall be furnished and installed in strict accordance with Federal, State & Local laws and codes regarding handicapped requirements as well as the requirements of the governing Health Department, State and Local Mechanical Codes, Plumbing Codes, Electrical Codes, Building Code(s), Office of Fire Safety, testing agencies referenced, i.e. U.L., F.M., etc., and/or all other governing codes.

Add Article 3.4.4 as follows:

3.4.4 The Contractor shall be responsible for all work, equipment and materials to accommodate continuous construction. Responsibility shall include but not be limited to: temporary haul roads,

temporary drives, fuel, heat, power, water, air, enclosures, blankets, straw, snow removal, etc. The Owner will not accept claims for additional costs due to site or climatic conditions.

Add Article 3.5.3 as follows:

3.5.3 The Contractor warrants that the contract has been completed in full conformity with the intent of the contract documents and has not made any substitutions of materials except as authorized in writing by the Owner and the Architect. The Contractor agrees to return to the site of the work within fourteen (14) working days of receipt of written notice from the Owner or the Architect and will furnish at contractor's expense all necessary labor and material to make proper repairs or corrections made necessary by defective materials or inferior workmanship furnished or performed under contract, including damage to adjacent materials or equipment caused by the defect, all corrective work shall be without cost to the Owner and shall be completed to the satisfaction of the Owner and Architect. Failure to take action by the contractor on warranted work shall result in notification of the bonding company by the Owner or Architect with the intent to have the defective material or inferior workmanship corrected at the contractor's expense. The warranty of work shall commence upon the substantial completion date of the project and remain in full force and effect for one (1) year from the date thereof.

Add Article 3.5.4 as follows:

3.5.4 Defective material or inferior workmanship corrected by the contractor shall be warranty for an additional year from date of acceptance by the Owner or Architect of the warranty work.

Add Article 3.6.1 as follows:

3.6.1 The Contractor submitting a bid shall include and the successful bidder shall be required to pay all taxes which are levied by Federal, State or Municipal governments upon labor, and for materials entering into the work. The Owner reserves the right to require evidence of payment of such taxes prior to final payment. The above includes taxes which are legally enacted at the time bids are received, whether or not yet effective.

Modify Article 3.7.1 as follows:

3.7.1 The Prime Contractor shall obtain and pay for the building permit and for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the work which are customarily secured after execution of the contract and which are legally required at the time bids are received, excluding the following trades:

.1 The Mechanical Trades Contractor shall obtain and pay for all required mechanical permits and inspections.

.2 The Plumbing Trades Contractor shall obtain and pay for all required plumbing permits and inspections.

.3 The Electrical Trades Contractor shall obtain and pay for all required electrical permits and inspections.

.4 The Site Work Contractor shall obtain and pay for all required site work permits and inspections.

Add Article 3.9.4 as follows:

3.9.4 The Contractor shall maintain a competent Project Manager and Superintendent approved by the Architect/Engineer and Owner throughout the period of construction. The Project Manager or Superintendent shall be deemed an agent of the contractor and any orders given him by the Architect/Engineer shall be binding upon the contractor. The Project Manager or Superintendent of the Contractor may not be removed from (or replaced on) the job during the period of construction without approval of the Architect/Engineer and Owner.

Add to Article 3.12.5 as follows:

3.12.5 The Contractor shall mark corrections, notations, etc., and note his approval on each copy of shop drawings before they are submitted to the Architect. Shop drawings which, in the opinion of the Architect have not been fully checked by the Contractor will not be reviewed by the Architect. The shop drawings will be returned for proper checking by the Contractor. No extension of the contract completion date will be allowed because of such action by the Architect.

Add Article 3.13.1 as follows:

3.13.1 The Contractor shall coordinate with the Owner all arrangements necessary to conduct construction operations, with a minimum of interference to the Owner's operations. Clean-up of areas not within the construction limits shall be daily and complete, and any damage to these areas caused by construction operations shall be repaired to original condition immediately.

Add Article 3.13.2 as follows:

3.13.2 The Contractor shall not disrupt any of the existing utility services without prior approval. The Contractor shall obtain permission to do so from the Owner through the Architect. Requests for permission to disrupt any utility shall be submitted well in advance of the need in order to not delay the work. The refusal by the Owner of such a request which is submitted on short notice, will not be accepted as a basis for time extension.

ARTICLE 4 – ARCHITECT/ENGINEER

Add Article 4.2.7.1 as follows:

4.2.7.1 The Architect/Engineer shall make all interpretations concerning the contract documents during bidding and construction phases of the project.

ARTICLE 7 - CHANGES IN THE WORK

Add Article 7.1.4 as follows:

7.1.4 If the Architect/Engineer or Owner needs or wishes to change the scope or character of the work, a bulletin may be issued by the Architect. The Contractor upon receipt of the bulletin shall within ten (10) days, submit to the Architect a completely itemized lump sum quotation in two (2) copies, indicating the cost or credit to the Owner resulting from the change in the work.

Add Article 7.1.5 as follows:

7.1.5 Extra compensation will not be authorized for work which, though not specifically detailed or specified, is reasonably inferable to satisfy the design intent and/or obviously necessary to maintain the quality of construction and finish established by the drawings and specifications. The contractor is expected to examine the drawings, specifications and site of the work carefully before submitting a proposal and to obtain from the Architect in writing, any additional information which would affect its bid.

Add Article 7.3.3.1.1 as follows:

7.3.3.1.1 By mutual acceptance of a lump sum properly itemized bulletin quotation indicating; quantities, unit costs, and total costs of materials including applicable sales and use taxes and delivery charges; hours of labor, hourly rates and total labor costs, including direct and indirect payroll taxes and insurance based upon direct cost of labor; copies of detailed subcontractor's quotations; fee as stated in the proposal and the contract, which shall include all costs for on-site superintendence, general supervision, other direct and indirect costs or charges of any nature, overhead and profit; this shall apply to subcontractors as well as the contractor. Charges for direct and indirect taxes on labor, insurance and other payroll loadings, sales and use taxes, premium time (overtime) costs shall be computed separately and shall not be subject to the percentage fee. This shall apply to subcontractors as well as the contractor. Should the change result in both work being added and work being omitted, the applicable fee shall be computed on the net costs of the change even though the change results in different trades being employed.

ARTICLE 8 - TIME

Modify Article 8.1.2 as follows:

8.1.2 The date of commencement of the work shall be the date of the Owner/Contractor Agreement.

Add Article 8.1.5 as follows:

8.1.5 The total project shall be substantially complete and ready for use by the Owner as follows:

Commence	**Substantial Completion**
March 10th, 2025 (Weather Permitting)	**June 27th, 2025**

ARTICLE 9 - PAYMENTS AND COMPLETION

Modify Article 9.3.1 as follows:

9.3.1 At least ten (10) days before the date for each progress payment established in the Owner/Contractor Agreement, the Contractor shall submit to the Architect an itemized application for payment utilizing AIA Document G702 & Continuation Sheet G703, "Application and Certificate for Payment"; notarized and supported by such data substantiating the contractor's right to payment as the Owner or the Architect may require, reflecting retainage which shall be ten (10%) percent through substantial completion of the entire project. Upon reaching substantial completion, the Architect shall determine such retainages as may be required to finish incomplete work and unsettled claims. In addition, each Application for Payment shall be accompanied by the following: all in a form and substance satisfactory to the Owner and in compliance with applicable statutes set forth by the State in which the work is being done.

.1 A current Sworn Statement from the Contractor setting forth all subcontractors and materialmen with whom the Contractor has subcontracted, the amount of each subcontract, the amount requested for any subcontractor or materialman in the application for payment and the amount to be paid to the Contractor from such progress payment, together with a current duly executed waiver of construction, mechanics' and materialmen's liens from the Contractor establishing receipt of payment or satisfaction of the payment requested by the Contractor in the current Application for Payment;

.2 Commencing with the second (2nd) Application for Payment submitted by the Contractor, duly executed so-called "after the fact" waivers of construction, mechanics' and materialmen's liens from all subcontractors, materialmen and, when appropriate from lower tier subcontractors, establishing receipt of payment or satisfaction of payment of all amounts requested on behalf of such entities and disbursed prior to submittal by the Contractor of the current Application for Payment, plus sworn statements from all subcontractors, materialmen and, where appropriate from lower tier subcontractors, covering all amounts described in previous applications for payment.

.3 Final waivers of lien must be submitted for all contracts, subcontracts and material for final payments.

Add Article 9.3.1.3 as follows:

9.3.1.3 When the construction contract has been completed to fifty (50%) percent, the Architect and Owner may, upon evaluation reduce retainage. The amount of reduction shall be determined by the Architect/Engineer and will be based upon satisfactory performance relative to percentage of completion and quality of the work in place as well as other determining factors. If in the opinion of the Architect/Engineer and Owner, the Contractor is not performing after reductions have been initiated, the Architect/Engineer reserves the authority to reinstate the ten (10%) percent retainage.

Add Article 9.10.6 as follows:

9.10.6 Upon completion of the project, or portions thereof, the Contractor shall transfer to the Owner all applicable items accumulated throughout construction. Satisfaction of the following requirements shall be considered a part of payment requests. These include but are not limited to the following items:

.1 Service manuals, installation instructions, special tools and specialties.

.2 Spare parts ordered as part of this contract.

.3 Submittal of the Contractors' one year guarantee.

.4 Submittal of manufacturer's guarantees, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.

.5 Delivery of any salvaged or borrowed materials or equipment to the Owner.

.6 Record documents of completed facilities. See separate section for specific requirements.

.7 All keys to all doors, gates and equipment.

Add Article 9.11 as follows:

9.11 Liquidated Damages: **(NOT USED)**

~~9.11.1 If the Contractor shall neglect, fail, or refuse to complete the work within the timeframes indicated, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the Owner the sum of **Five Hundred Dollars ($500.00)** per day, not as a penalty but as liquidated damages for such breach of contract, for each and every calendar day that the Contractor shall be in default after the time stipulated for completing the work or portions of the work as stipulated in Article 8.1.5 of these Supplementary Conditions.~~

~~9.11.2 The said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount shall be retained from time to time by Owner from current periodical estimates.~~

~~9.11.3 It is further agreed that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:~~

~~.1 To any preference, priority or allocation order duly issued by the Government.~~

~~.2 To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to, Acts of God, or of the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; and~~

~~.3 To any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections (.1) and (.2) of this article.~~

~~9.11.4 Provided further, that the Contractor shall, within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the contract,~~

~~notify the Owner, in writing, of the causes of the delay. The Owner shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.~~

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

Add Article 10.5 as follows:

10.5 General construction industry safety rules and regulations for the state in which the work is being prosecuted and the U.S. Department of Labor, Safety and Health Regulations for Construction, known as the U.S. Construction Safety Act shall be adhered to by all Contractors and Subcontractors on this project. Certification of this coverage shall be submitted along with that required in Article 11.

ARTICLE 11 - INSURANCE

Add to Article 11.1.1 as follows:

11.1.1 The Contractor shall purchase and maintain such insurance from a company or companies licensed to do business in the state in which the project is located and will protect him from claims set forth below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Liability insurance shall include all major divisions of coverage on a comprehensive basis including; premises operations (including X, C, U); independent contractor's protective, products and completed operations, contractual liability; owned, non-owned, and hired motor vehicles and broad form property damage including completed operations.

Modify Article 11.1.2 as follows:

11.1.2 The insurance required by subparagraph 11.1.1 shall be written for not less than any limits of liability specified in the Contract Documents, or required by law, whichever is greater, provide minimum limits as follows:

a. Worker's Compensation:

(1) State-statutory.
(2) Applicable federal - statutory.
(3) Employer's liability - $500,000.
(4) Benefits required by labor union contracts.

b. Contractor's liability insurance shall be comprehensive general liability including contractual liability.

(1) Bodily Injury:
$1,000,000 Each occurrence.
$2,000,000 Aggregate.

(2) Property damage (including completed operations broad form):
$1,000,000 Each occurrence.

$2,000,000 Aggregate.

(3) Broad form completed operations and product liability insurance shall be maintained until final payment is made and Contractor shall continue to provide evidence of such coverage to Owner on an annual basis during the coverage period**. (Name: Delta College and William A. Kibbe & Associates, Inc. & Consultants as an additional insured).**

(4) Property damage liability insurance shall include coverage for X (Explosion), C (Collapse), and U (Underground).

(5) Contractual Liability (Hold Harmless Coverage):

(a)	Bodily Injury:	$1,000,000 Each Occurrence.
(b)	Property Damage:	$1,000,000 Each Occurrence. $2,000,000 Aggregate.

(6) Personal Injury with Employment Exclusion Deleted:
$1,000,000 Each Person Aggregate.
$2,000,000 General Aggregate.

c. Comprehensive automotive liability (owned, non-owned, hired):

(1) Bodily injury:	$1,000,000	Each person.
	$1,000,000	Each occurrence.
(2) Property damage:	$1,000,000	Each occurrence.

d. An umbrella policy extending all limits to a minimum of an additional $2,000,000.

e. This insurance shall not be intended to cover any responsibility for damages as included herein under heading of "Damages", Articles 7.4 and 8.3.

Add Article 11.1.5 as follows:

11.1.5 **The Contractor shall furnish to the Owner and the Architect/Engineer, insurance policies protecting both the Owner and the Architect/Engineer from liability for damages as provided for under the Contractor's liability insurance. Liability limits shall be the same as for the Contractor's liability insurance.**

Add to Article 11.2.4 as follows:

11.2.4 The Owner shall secure and maintain property insurance, all risk, completed value, in the amount equal to the contract sum for the work.

Modify Article 11.3.1 as follows:

11.3.1 The Owner and Contractor waive all rights against: (1) each other and the subcontractors, sub-subcontractors, agents, and employees each of the other, and (2) the Architect/Engineer, his consultants,

and separate contractors, if any, and any of their subcontractors, sub-subcontractors, agents and employees for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this policy or any other property insurance applicable to the work, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The foregoing waiver afforded the Architect, his agents and employees shall not extend to the liability imposed. The Owner or the Contractor, as appropriate, shall require of the Architect/Engineer, separate contractors, subcontractors, sub-subcontractors, by appropriate agreements written where legally required for validity, similar waivers each in favor of all parties enumerated in this agreement.

Add Article 11.4.1 as follows:

11.4.1 Performance Bond and Labor and Material Payment Bond shall be from a security company duly approved by the U.S. Department of Treasury and listed in the U.S.T. Circular No. 570, latest edition. Surety company shall be rated A.M. Best as 'B' or better and licensed to operate in the State of Michigan. The total cost of the bonds or any additional costs as may be required by the Prime Contractor's Surety Company shall be borne by the Prime Contractor and included in the Prime Contractor's bid.

Add Article 15 as follows:

ARTICLE 16 - EQUAL OPPORTUNITY

16.1 The Contractor shall maintain policies of employment as follows:

16.1.1 The Contractor and all subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin or age. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, national origin or age. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

15.1.2 The Contractor and all subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or age."

END OF SECTION 008000

(Revised 06/09)

EQUAL EMPLOYMENT
OPPORTUNITY SECTION

EQUAL EMPLOYMENT OPPORTUNITY

It is the policy of Delta College not to discriminate in employment, education, public accommodation or public service on the basis of religion, race, color, national origin, age, sex, marital status, sexual orientation, height, weight, arrest record, veteran status, disability, or other classifications as required by applicable U.S. federal, state or local law. Direct inquiries to the equity/compliance officer, delta college, 1961 delta road, office j101, university center, mi 48710, telephone 989-686-9122, or email: equityoffice@delta.edu.

All contractors, subcontractors and/or vendors doing business with the Delta College shall comply with all applicable laws relative to equal employment opportunity and shall not discriminate against any employee or applicant for employment because of race, color, religion, creed, sex, height, weight, marital status, or national origin. It is expected that the contractor, subcontractor, and /or vendor will carry out that pan of this contract pertaining to equal employment opportunity with the same amount of thought and action as he will in any other part of the contract.

SECTION 010100 - SUMMARY OF WORK

1.1 GENERAL SUMMARY

A. Comply with procedures described in this section relative to construction of the project, and Owner's use of the site.

B. Related Documents:

1. Documents affecting the work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 1 of these specifications.

1.2 DESCRIPTION OF PROPOSED IMPROVEMENTS:

A. Planetarium Building- Entry Door Renovation

1. Selective demolition to remove [2] existing revolving entry door enclosures/doors and replace with [2] conventional air-lock vestibule enclosures with new aluminum storefront door(s) and sidelight framing systems. Work will include some structural components [columns and headers] as well as a new roof structure with entry door overhang protection from the elements. Door hardware, safety glazing, and walk-off carpeting, as noted. Some mechanical work for wall mounted cabinet unit heater(s) and incidental electrical work for lighting and power needs. Only one entry area can be worked on at a time.

1.3 OWNER OCCUPANCY

Students / Visitors may visit the Planetarium during the project. Provide safety barriers around construction areas and all the areas being worked on. This will need to be coordinated with the Owner & the awarded contractor. Maintain exiting and circulation to all required areas not being used for construction access.

1.4 PRE-ORDERED PRODUCTS (NOT USED)

END OF SECTION 010100

SECTION 010190 - CONTRACT CONSIDERATIONS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Attention is directed to Division 0, Bidding and Contract Requirements to Division 1, General Requirements, which are hereby made a part of this specification.

1.1 CASH ALLOWANCES

A. Construction Testing (Soils & Materials): (NOT USED).

B. Construction Staking: (NOT USED).

1.2 CONTINGENCY ALLOWANCE (NOT USED).

1.3 SPECIAL INSPECTIONS AND TESTING ALLOWANCES. (Paid for by the Owner, if required by AHJ)

1.4 SCHEDULE OF VALUES

A. Within 24 hours after opening of the proposals, the successful bidder shall submit in duplicate to the Architect for his inspection a complete bid breakdown. The schedule of values shall be on AIA Form G703. (Contractor's standard form or electronic media printout will be considered).

B. In addition, within 48 hours after the opening of bids, the successful bidder shall submit to the Architect, in duplicate, for his inspection and approval, a list of all subcontractors and major suppliers proposed to be employed on this project.

1.5 APPLICATIONS FOR PAYMENT

A. Submit three (3) copies of each application on AIA Form G702.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

1.6 CHANGE PROCEDURES

A. Change Order Forms: Change orders will be processed on forms provided by the Architect.

1.7 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option.

B. Coordinate related Work and modify surrounding Work as required.

C. Schedule of Alternates: (See Bid Form, Section 003000).

END OF SECTION 010190

SECTION 010270 - APPLICATIONS FOR PAYMENT

1.1 GENERAL SUMMARY

A. Comply with procedures described in this Section when applying for progress payment and final payment under the Contract.

B. Related Work:

1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 1 of these specifications.
2. The Contract Sum and the schedule for payments are described in the Form of Agreement.
3. Payments upon Substantial Completion and Completion of the Work are described in the General Conditions and in Section 001700 of these specifications.
4. The Architect/Engineer's approval of applications for progress payment and final payment may be contingent upon the Architect/Engineer's approval of status of Project Record Documents as described in Section 001700 of these Specifications.

1.2 QUALITY ASSURANCE

A. Prior to start of construction, secure the Architect/Engineer's approval of the schedule of values required to be submitted under Paragraph 9.2 of the General Conditions, and further described in Section 000100 of these Specifications.

B. During progress of the Work, modify the schedule of values as approved by the Architect to reflect changes in the Contract Sum due to Change Orders or other modifications of the Contract.

C. Base requests for payment on the approved schedule of values.

1.3 PROCEDURES

A. Informal submittal: Unless otherwise directed by the Architect/Engineer:

1. Make an informal submittal of request for payment by filling in, with erasable pencil or on word processor, pertinent portions of AIA Document G702, "Application and Certificate for Payment," plus continuation sheet or sheets.
2. Make this preliminary submittal to the Architect at least ten days prior to the end of the month or at the last regular job meeting of the month.
3. Revise the informal submittal of request for payment as agreed at the job meeting, initialing all copies.
4. Submit a request/application for payment each calendar month.
5. Waivers of Lien: Do not submit copies of partial or full waivers of lien with informal submittal.

B. Formal submittal: Unless otherwise directed by the Project Manager:

1. Make formal submittal of request for payment by filling in the agreed data, by typewriter or neat lettering in ink, on AIA Document G702, "Application and Certificate for Payment," plus continuation sheet or sheets.
2. Sign and notarize the Application and Certificate for Payment.
3. Submit the original and four copies of the Application and Certificate for Payment, including copies of the continuation sheet or sheets and waivers to the Project Manager.
4. Waivers of Lien: Submit partial waivers on each item for amount requested, prior to deduction for retainage, on each item. When an application shows completion of an item, submit final or full waivers.
5. Submit sworn statement with each request for payment.
6. The Architect/Engineer will compare the formal submittal with the approved informal submittal and, when approved, will sign the Application and Certificate for Payment, will make required copies, and will distribute:
   a. One copy to Contractor;
   b. Two copies to Owner;
   c. One copy to Project Manager's file.
7. The Owner, upon approval, will disburse directly to the Contractor.

END OF SECTION 010270

SECTION 010280 - CHANGE ORDER PROCEDURE

1.1 GENERAL SUMMARY

A. Make such changes in the Work, in the Contract Sum, in the Contract Time for Completion, or any combination thereof, as are described in written Change Orders signed by the Owner and the Architect/Engineer and issued after execution of the Contract, in accordance with the provisions of this Section.

B. Related Work:

1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 1 of these specifications.
2. Changes in the Work are described further in the General Conditions and Supplemental Conditions.
3. Architect/Engineer's supplemental instructions:
    a. From time to time during progress of the Work, the Architect may issue supplemental instructions which interpret the Contract Documents or order minor changes in the Work without change in Contract Sum or Contract Time.
    b. Should the Contractor consider that a change in Contract Sum or Contract Time is required, he shall submit an itemized proposal to the Architect immediately and before proceeding with the Work. If the proposal is found to be satisfactory and in proper order, the supplemental instructions in that event will be superseded by a Change Order.
4. Proposal requests:
    a. From time to time during progress of the Work, the Architect may issue a proposal request (bulletin) for an itemized quotation for changes in the Contract Sum and/or Contract Time incidental to proposed modifications to the Contract Documents.
    b. This will not be a Change Order and will not be a direction to proceed with the changes described therein.

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Maintain a "Register of proposal requests, supplemental instructions, and Change Orders" at the job site, accurately reflecting current status of all pertinent data.

B. Make the Register available to the Architect for review at his request.

1.4 PROCESSING PROPOSAL REQUESTS

A. Make written reply to the Architect in response to each proposal request.
1. State proposed change in the Contract Sum, if any.
2. State proposed change in the Contract Time of Completion, if any.
3. Clearly describe other changes in the Work, if any, required by the proposed change or desirable therewith.
4. Include full backup data such as subcontractor's letter of proposal or similar information.
5. Submit this response in single copy.

B. When cost or credit for the change has been agreed upon by the Owner and the Contractor, or the Owner has directed that cost or credit be determined in accordance with provisions of the General Conditions, the Architect/Engineer will issue a Change Order to the Contractor.

1.5 PROCESSING CHANGE ORDERS

A. Change Orders will be numbered in sequence and dated.

1. The Change Order will describe the change(s), will refer to the proposal requests or supplemental instructions involved, and will be signed by the Owner and the Architect/Engineer.
2. The Architect/Engineer will issue three copies of each Change Order to the Owner.
   a. The Owner will promptly sign all three copies and return two copies to the Architect/Engineer.
   b. The Architect/Engineer will retain one signed copy in his file, will forward one signed copy to the Contractor.

END OF SECTION 010280

SECTION 010390 - COORDINATION AND MEETINGS

1.1 GENERAL

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification.

1.2 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.

C. Coordinate space requirements and installation of special equipment, and mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable.

D. In finished areas, conceal pipes, ducts, and wiring within the construction.

1.3 CUTTING AND PATCHING

A. Employ a skilled and experienced mechanic to perform cutting and patching new or existing Work; restore Work with new Products.

B. Submit written request in advance of cutting or altering structural or building enclosure elements.

C. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

D. Refinish surfaces to match adjacent finishes.

1.4 CONFERENCES

A. Prime Contractor will schedule a pre-construction conference after Notice of Award has been sent to the Prime Contractor.

1.5 PROGRESS MEETINGS

A. The Prime Contractor will schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

END OF SECTION 010390

SECTION 013400 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1.1 GENERAL SUMMARY

A. Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements, all as described in this Section. Coordinate all submittals with the Progress Schedule and actual work progress.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Individual requirements for submittals also may be described in pertinent Sections of these Specifications.

C. Work not included:

1. Non-required submittals will not be reviewed by the Architect/Engineer.

1.2 SUBMITTALS

A. Make submittals of Shop Drawings, samples, substitution requests, and other items in accordance with the provisions of this Section. Provide additional copies as may be required for Governing Authorities.

1.3 QUALITY ASSURANCE

A. Coordination of submittals:

1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

2.0 PRODUCTS

2.1 SHOP DRAWINGS

A. Scale and measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

B. Types of prints required:

1. Submit (5 total sets) of Shop Drawings in the form of original documents or (1) electronic submittal in PDF format, e-mailed to Architect.

C. Review comments of the Architect will be shown when it is returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes.

2.2 MANUFACTURERS' LITERATURE

A. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, **clearly show which portions of the contents are being submitted for review. If actual items are not identified, they will be returned without being reviewed.**

B. Submit the number of copies which are required to be returned, plus two copies which will be retained by the Architect.

C. Where the product data is required for maintenance manuals and close-out documents, submit two additional copies which will be returned. Maintain one additional copy at the project site for reference purposes.

1. Do not proceed with the installation of manufactured products until a copy of related product data is in the installer's possession at the project site.

2.3 SAMPLES

A. Provide Sample or Samples identical to the precise article proposed to be provided. Identify as described under "Identification of Submittals" below. Colored scans are not acceptable.

B. Number of Samples required:

1. Submit three sets of samples; one set will be returned. Provide 3 or more samples in each set where variations in color, pattern or texture are observable; show average condition and extreme range of variations. Submit full documentation with each set. Sample submittals are for Architect/Engineer's review of color, texture, pattern and "kind"; maintain returned samples at project site for purposes of quality control comparisons.
2. By pre-arrangement in specific cases, a single sample may be submitted for review and, when approved, be installed in the Work at a location agreed upon by the Architect.

2.4 MISCELLANEOUS SUBMITTALS

A. Provide copies of miscellaneous submittals as follows:

1. Warranties: Submit 2 executed copies, plus additional copies as required for maintenance & close-out manuals.
2. Maintenance Manuals: Submit 2 bound copies.
3. Record Drawings: Submit original maintained marked-up prints (2 sets).

3.0 EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals.

1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
2. On re-submittals, cite the original submittal number for reference.

B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.

C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.

D. Submittal Log:

1. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times.
2. Make the submittal log available to the Architect for the Architect's review upon request.

3.2 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.

1. Partial submittals may be rejected as not complying with the provisions of the Contract.
2. The Contractor may be held liable for delays so occasioned.
3. Items requiring color selection; i.e. interior finishes shall be submitted as a group to facilitate overall color coordinated selection. Color selections will not be made until the majority of samples are received.

3.3 TIMING OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.

B. In scheduling, allow up to ten working days for review by the Architect following the Architect's receipt of the submittal.

3.4 ARCHITECT/ENGINEER'S ACTIONS

A. Review of the shop drawings by the Architect/Engineer is to determine general conformance with the design concept of the project and with the information given in the contract documents. **Neither the receipt nor the review of shop drawings by the Architect/Engineer shall relieve the contractor of his responsibility for performance of the work in accordance with the requirements of the contract documents.** Contractor shall be responsible for dimensions to be confirmed and correlated at the site; for information that pertains to fabrication process or to the means, method, techniques, sequences and procedures of construction, and for coordination of the work of all trades.

B. Contractor Submittals, Shop Drawings or Product Data from time to time are submitted with errors**. If overlooked by the Architect/Engineer review process, it shall not grant the contractor leave to proceed in error, and regardless of any information contained in the Shop Drawing review, the contractor shall be required to meet the requirements of the drawings and specifications. Shop drawings and/or product data review shall not waive or supersede in any way the requirements of the contract documents (drawings and specifications).**

3.5 REQUIRED SUBMITTALS

A. Submittals required by the Contract Documents: The General Contractor shall be responsible for review of the following divisions of the specifications and submission of requested shop drawings: Division 00 thru 33. The Mechanical & Plumbing Subcontractor shall be responsible for review of the following divisions of specifications and submission of requested shop drawings: (Division 00 thru 33). The Electrical Subcontractor shall be responsible for review of the following divisions of the specifications and submission of requested shop drawings: (Division 00 thru 33). All shop drawings shall be submitted as detailed under Division 01, Section 013400.

END OF SECTION 013400

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements, consisting of multiple products, assemblies, and subassemblies.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 DELEGATED-DESIGN SERVICES

A. 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.

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as

appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement 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, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
   1. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

   1. Date of issue.
   2. Project title and number.
   3. Name, address, telephone number, and email address of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspection.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Statement on condition of substrates and their acceptability for installation of product.
2. Statement that products at Project site comply with requirements.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Statement that equipment complies with requirements.
2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
3. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the

system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
d. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.

2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
8. Demolish and remove mockups when directed unless otherwise indicated.

1.9 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspection: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspection, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency/special inspector to conduct special tests and inspections required by (AHJ) authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections and the schedule of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspection corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched

areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.01 GENERAL SUMMARY

A. This Section describes construction facilities and temporary controls required for the Work.

B. The Contractor provides all temporary utilities, controls and services as described in this section. No extra compensation will be provided should temporary utilities, controls and services provided prove to be inadequate or incompatible with the needs of the Contractor, Subcontractors, and Sub-subcontractors. The Contractor, Subcontractors, and Sub-subcontractors shall make other arrangements as needed.

C. Related Work:

1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 1 of these specifications.
2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the Work is not part of this Section.
3. Permanent installation and hookup of the various utility lines are described in other Sections.

1.02 REQUIREMENTS

A. The General (Prime) Contractor shall provide construction facilities and temporary controls when first needed, ready for use, to avoid delay in the work. Maintain, expand and modify as needed. Do not remove until no longer needed or replaced by authorized use of permanent facilities.

B. Construction facilities and temporary controls shall consist of, but not be limited to:

1. Temporary utilities such as heat, water, electricity, and telephone;
2. Field office for the Prime Contractor's personnel, if needed.
3. Sanitary facilities need to be provided by the contractor.
4. Enclosures such as tarpaulins, temporary insulated enclosures, barricades, canopies, and temporary partitions.
5. Temporary fencing of the construction site; to be determined by the contractor and it needs to be adequate for all areas disturbed by new work, including layout & material storage areas. (if required)
6. Project sign (not required)
7. Subcontractors shall provide their own field office, if desirable, located per the Prime Contractor. All utilities and telephone to be by contractor.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

1.04 REGULATIONS, STANDARDS AND INSTALLATION

A. Regulations: Comply with requirements of local laws and regulations governing construction and local industry standards, in the installation and maintenance of temporary services and facilities.

B. Standards: Comply with the requirements of NFPA Code 241, "Building Construction and Demolition Operations", the ANSI-A10 Series Standards for "Safety Requirements for Construction and Demolition", and the NECA National Joint Guideline NJG-6 "Temporary Job Utilities and Services".

C. Installation: Use qualified tradesmen for installation. Locate temporary services and facilities where they will serve the project adequately and result in minimum interference with the work.

PART 2. PRODUCTS

A. Sanitary Facilities:

1. Contractor shall install single occupancy self-contained toilet units of the chemical, aerated recirculation or combustion type, properly vented and fully enclosed with glass fiber reinforced polyester shell.
2. Maintain in a sanitary condition at all times.
3. Construction personnel are not allowed to use existing building washroom facilities.
4. Contractor to coordinate location for toilet unit with owner.

B. First Aid Supplies:

1. The General Contractor and Subcontractors shall comply with governing regulations and recognized recommendations within the construction industry.

C. Temporary Fire Protection:

1. The Contractor and subcontractors shall keep their area clear of combustible debris. Each contractor, who is welding, cutting or performing any operation that may result in a fire, shall have an approved fire-extinguishing device in the area.

D. Temporary Controls:

1. The Contractor shall provide for site cleaning, dust control and maintenance of site traffic, including the Owner's use of the site.

E. Occupied Areas:

1. The adjacent buildings & facilities will be occupied during the construction period. Provide proper safety barricades and fencing along with dust barriers to protect the adjacent buildings & facilities from exposure.

F. Use of Premises:

1. The facility will remain in full operation during the renovations. Barricades will need to be installed and temporary signage will be needed to direct traffic around construction areas. This will need to be coordinated with the owner, engineer & awarded contractor. Maintain circulation paths not being used for construction access. All workmen shall park their cars in areas designated by the Contractor's Superintendent as agreed to by the Owner.

2.02 TEMPORARY FENCING & BARRICADES

A. The Contractor and each Subcontractor or Sub-subcontractor shall provide for their work: Barricades, Warning Signs: Comply with recognized standards and code requirements for erection of substantial barricades where needed to prevent accidents. Paint with appropriate colors and warning signs to inform personnel at the site and the public, of the hazard being protected against. Provide lighting where needed, including flashing warning lights where appropriate.

B. Provide and maintain for the duration of construction a temporary fence if so indicated on the drawings, of a design and type needed to prevent entry onto the Work by the public.

C. Interior barricades: (Not Required)

2.03 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

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

B. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 3. EXECUTION

3.01 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Establish a system for daily collection and disposal of waste materials. Enforce requirements strictly. Do not hold collected materials longer than 4 days.

1. Burying or burning of waste materials on the site or washing waste material down sewers will not be permitted.

C. Contractor, shall maintain and enforce regulations covering all fire hazards, including smoking, and shall provide adequate fire extinguishers and other protective measures in proper locations. Additionally, enforcement of all applicable provisions of the Michigan Occupational Safety and Health Act shall be the responsibility of the General Contractor.

END OF SECTION 015000

SECTION 017000 - CONTRACT CLOSEOUT

1.0 GENERAL

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification. Also see Mechanical, Plumbing & Electrical specifications for any additional requirements.

1.1 CONTRACT CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and Work is substantially complete in accordance with Contract Documents and ready for Architect/Engineer's inspection. Identify any and all items that remain to be completed or corrected.

B. After inspection by Owner and Architect, and if the Architect concurs that work is substantially completed, he shall prepare a Certification of Substantial Completion on A.I.A. Form G704, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect, Owner and General Contractor.

C. When the Contractor considers the work to be complete, he shall submit a final request for inspection. The Architect, Owner, and General Contractor shall inspect the work and if found to be acceptable, the Architect shall request the Contractor to make closeout submittals.

D. If the Contractor does not have work completed in accordance with the contract documents and ready for final inspection, and the Architect must make an additional final inspection trip, the cost of this final inspection(s) shall be deducted from the contract.

E. When Architect and Owner complete final inspection and approve the project, the Contractor shall submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due. If required, the Architect will prepare a final change order reflecting approved adjustments to the contract sum which were not previously made by change orders.

1.2 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. If the Contractor fails to clean up at the completion of the work, the Owner may do so and the cost thereof shall be charged to the Contractor(s) as the Architect so determines.

C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.

D. Remove waste and surplus materials, rubbish, demolition materials, and construction facilities from the site. Burning of rubbish and debris on the premises will not be permitted at any time.

E. Contractor shall repair all damaged site work as a result of demolition or construction.

1.3 ADJUSTING

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

1.4 PROJECT RECORD DOCUMENTS (For each Building)

A. Maintain on site, one set of Contract Documents to be utilized for record documents. This requirement is for all trades, architectural, mechanical, and electrical.

B. Record actual revisions to the Work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product Section a description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.5 OPERATION AND MAINTENANCE DATA (For each Building)

A. Submit to the Architect two (2) sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D size ring binders with durable plastic covers. One flash drive with all documents (PDF) scanned. (Separate Binder for each Building)

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", and title of project.

C. Internally subdivide the binder contents with permanent page dividers, logically organized, with tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents:
1. Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Operation and maintenance instructions, arranged by system.
3. Project documents and certificates.

1.6 WARRANTIES (for each Building)

A. Provide duplicate notarized copies.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Submit to Architect prior to final Application for Payment. (can be combined but must separate by each building)

1.7 SPARE PARTS AND MAINTENANCE MATERIALS: See individual Specifications.

END OF SECTION 017000

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused, recycled, or turned over to the owner.

1.3 DEFINITIONS

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

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

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

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

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-Demolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.5 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.6 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Coordination of Owner's continuing occupancy of portions of existing site and of Owner's partial occupancy of completed Work. See Section 010100, Summary of Work.

C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

D. Pre-demolition Photographs or Video: Submit before Work begins.

1.7 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

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

1.8 FIELD CONDITIONS

A. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

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

C. Storage or sale of removed items or materials on-site is not permitted.

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

E. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.9 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE CRITERIA

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

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer to perform an engineering survey of condition of site to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
   1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

F. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes, and templates.

1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
   1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. Arrange to shut off utilities with utility companies.
   3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems.
   4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

      a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
      b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
      c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
      d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
      e. Equipment to be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
      f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
      g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.3 PREPERATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
   8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   9. Dispose of demolished items and materials promptly. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

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

3.7 CLEANING

A. Insert other specific disposal, cleanup, or removal requirements to suit Project. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 054000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes structural cold-formed metal stud framing.

B. Related Requirements:
   1. Division 09 Section "Non-Structural Metal Framing" for interior non-load-bearing, Metal wall stud framing and for interior gypsum board ceilings and soffits.

1.3 DEFINITIONS

A. Definitions:
   1. Deferred Submittals: Those portions of the design that are not submitted at the time of the building permit application and that are to be submitted to the building official within a specified period after award of Contract but prior to beginning Work of this Section.
   2. Framing Member Nomenclature: Cold-formed framing members are notated herein per SSMA standards. Example: "600S162-54" describes a stud or joist with 6 inch deep web and with 1-5/8 inch wide flange in 54 mil thickness.
      a. Member Web Depth: Size is outside dimension except track which is inside dimension.
         1) 162 1-5/8 inch 600 6 inch
         2) 250 2-1/2 inch 800 8 inch
         3) 350 3-1/2 inch 1000 10 inch
         4) 362 3-5/8 inch 1200 12 inch
         5) 400 4 inch 1400 14 inch
         6) 550 5-1/2 inch 1600 16 inch
      b. Style:
         1) S = Stud or Joist Sections
         2) T = Track Sections
         3) U = Channel Sections
         4) F = Furring Channel Sections
      c. Flange Width:
         1) 137 1-3/8 inch
         2) 162 1-5/8 inch
         3) 200 2 inch

4) 250 2-1/2 inch

d. Metal Thickness:

1) 33 0.0346 inch 0.0329 inch 20 gage
2) 43 0.0451 inch 0.0428 inch 18 gage
3) 54 0.0566 inch 0.0538 inch 16 gage
4) 68 0.0713 inch 0.0677 inch 14 gage
5) 97 0.1017 inch 0.0966 inch 12 gage
6) 118 0.1242 inch 0.1180 inch 10 gage

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meetings: Conduct meeting at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.

B. Shop Drawings:
1. Prepared by or under the supervision of a qualified professional engineer detailing fabrication and assembly of work of this Section.
2. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including welds and mechanical fasteners.
3. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.6 INFORMATIONAL SUBMITTALS

A. Certificates:
1. Fabricator's certificate of compliance.
2. Installer's certificate of compliance, based on inspection and testing specified as part of Field Quality Control.

B. Delegated-Design Submittal: For cold-formed steel framing indicated to comply with performance requirements and design criteria, include the following signed and sealed by the qualified professional engineer responsible for their preparation:
1. Design calculations. Include the following:
a. Engineering calculations for structural forces of cold-formed steel framing applied to building structure.
2. Deferred Submittal: Submit shop drawings for deferred submittal items signed and sealed by qualified professional engineer. Architect will forward deferred submittals to authorities having jurisdiction. Do not fabricate or install deferred submittal items until the deferred submittal documents have been approved by authorities having jurisdiction.

C. Test and Evaluation Reports:
   1. Certified mill test reports for sheet steel products or data from a qualified independent testing agency, or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
   2. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.
      a. Expansion anchors.
      b. Power-actuated anchors.
      c. Mechanical fasteners.
      d. Vertical deflection clips.
      e. Horizontal drift deflection clips
      f. Miscellaneous structural clips and accessories.
   3. Field Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for current products.
   4. Research Reports: For non-standard cold-formed steel framing, from ICC-ES.

1.7 QUALITY ASSURANCE

A. Qualifications:
   1. Welder Qualifications: AWS certified within past 12 months for each type of weld required. Qualify procedures and personnel according to the following:
      a. AWS D1.1, "Structural Welding Code--Steel."
      b. AWS D1.3, "Structural Welding Code--Sheet Steel."
   2. Preconstruction Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated and accredited by IAS or ILAC Mutual Recognition Arrangement as complying with ISO/IEC Standard 17025.
   3. Field Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
   4. Licensed Professional Qualifications: Professional engineer experienced in design of specified Work and licensed or registered in jurisdiction in which Project is located who assumes responsibility for the following:
      a. Engineering calculations.
      b. Preparation of Shop Drawings.

B. Certifications:
   1. Fabricator and Installer shall certify each welder employed on Project complies with AWS qualifications.
   2. Fabricator shall certify that products fabricated for Project meet or exceed specified requirements.
   3. Installer shall certify that products are installed in accordance with Contract Documents.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.

PART 2 - PRODUCTS

2.1 DESCRIPTION

A. Cold-formed metal framing includes, but is not limited to, the following:
   1. Exterior non-load-bearing wall framing.
   2. Interior structural non-load-bearing wall framing where metal thickness is greater than shown in Division 09 Section "Non-Structural Metal Framing."
   3. Interior floor joist framing.
   4. Exterior and structural interior soffit joist framing.

B. Secondary framing includes, but is not limited to, the following:
   1. Sidewall girts.
   2. Eave struts.
   3. Sag bracing.
   4. Base or sill angles.
   5. Clips.
   6. Framing for openings.
   7. Other miscellaneous cold-formed metal structural members.

2.2 PERFORMANCE / DESIGN CRITERIA

A. Delegated Design: Professional design and engineering services by a design professional are specifically required of Contractor by the Contract Documents for cold formed metal framing. Engage a qualified professional engineer to design cold-formed metal framing, using performance requirements and design criteria indicated.
   1. Drawings are diagrammatic and broadly indicate spacing and depths of basic framing members required, but do not cover complete details of design and construction, and do not purport to identify nor solve problems of thermal or structural movement or anchorage. Requirements shown by details are intended to establish basic dimensions, visible lines and profiles of members.
   2. In addition to requirements shown or specified, comply with applicable provisions of the following for design, materials, fabrication, and installation of component parts.
      a. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.
      b. Wall Studs: AISI S21.
      c. Floor Systems: AISI S210.
      d. Headers: AISI S212.
      e. Lateral Design: AISI S213.
   3. Include necessary modifications to meet specified requirements and maintain visual design concepts.

4. Design cold-formed metal framing to accommodate expansion and contraction due to structural movement, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, and deflection of structural support framing, without detriment to appearance or performance and without damage to cold-formed metal framing system or components.
5. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
6. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
    a. Upward and downward movement of 1/2 inch.
7. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
8. Design assemblies to be free from vibration harmonics, rattles, and noise due to thermal and structural movement, and wind pressure.
9. Design attachments to accommodate anticipated movement with no possibility of loosening, weakening, or fracturing connections between adjoining system components or between system components and building structure.
10. Design anchors, fasteners and braces to be structurally stressed not more than 50 percent of allowable stress when maximum loads are applied.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.
1. Design Loads: As indicated.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
    a. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/360 of the wall height.
    b. Interior Structural Non-Load-Bearing Wall Framing: Horizontal deflection of 1/240 of the wall height under a horizontal load of 5 lbf/sq. ft.
    c. Interior Floor Joist Framing: Vertical deflection of 1/480 for live loads and l/360 for total loads of the span.
    d. Exterior and Structural Interior Soffit Joist Framing: Vertical deflection of 1/240 of the span.
    e. Sidewall Girts: Horizontal deflection of 1/180 of the span.
    f. Design framing to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.

C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.3 EXTERIOR AND STRUCTURAL INTERIOR SOFFIT JOIST FRAMING

A. Steel Soffit Joists (S): Manufacturer's standard C-shaped steel joists, unpunched, with stiffened flanges, and as follows:
   1. Member Web Depth: As indicated on Drawings.
   2. Flange Width: 162.
   3. Minimum Base-Metal Thickness: 43 mil.
   4. Section Properties: As required by structural design.

B. Steel Joist Track (T): Manufacturer's standard U-shaped steel joist track, unpunched, with unstiffened flanges, and as follows:
   1. Member Web Depth: Matching steel joists.
   2. Flange Width: 150.
   3. Minimum Base-Metal Thickness: Matching steel joists.

2.4 SECONDARY FRAMING

A. Secondary Framing: Manufacturer's standard secondary framing. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:
   1. Sidewall Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- wide flanges.
      a. Depth: As indicated.
   2. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
   3. Sag Bracing: Minimum 1-by-1-by-1/8-inch structural-steel angles.
   4. Base or Sill Angles: Minimum 3-by-2-inch zinc-coated (galvanized) steel sheet.
   5. Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
   6. Framing for Openings: Channel shapes; fabricated from cold-formed, structural steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
   7. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

2.5 MATERIALS

A. Steel Sheet for Studs and Joists: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
   1. Grade: As required by structural design.
   2. Protective Coating: ASTM A653 G60, A60, AZ50, or GF30.

B. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70; or cold-rolled,

ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80, or High-Strength Low-Alloy Steel (HSLAS), Grades 45 through 70.

C. Steel Sheet for Vertical Deflection and Drift Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
   1. Grade: As required by structural design.
   2. Coating: ASTM A653 G60.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: As specified in Division 05 Section "Shop-Applied Galvanic Coatings for Metal."

B. Shims: Load bearing, high-density multi-monomer plastic, non-leaching; or of cold formed steel of same grade and coating as framing members supported by shims.

C. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

D. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."

E. Sound Attenuation Blankets: As specified in Division 09 Section "Acoustic Insulation."

F. Sealant: As specified in Division 07 Section "Joint Sealants."

2.7 FABRICATION

A. Cold-Formed Steel Framing and Accessories: Fabricate plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
   1. Fabricate framing assemblies using jigs or templates.
   2. Cut framing members by sawing or shearing; do not torch cut.
   3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator and as required by structural design. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
   4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Secondary Framing: Shop fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
   1. Make shop connections by welding or by using non-high-strength bolts.

2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPCSP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

C. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

D. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

2.8 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Cold-Rolled Steel Channel Bridging: U-shaped steel.
1. Depth: 1-1/2 inch.
2. Minimum Base-Metal Thickness: 54 mil.
3. Clip Angle: Galvanized steel, prepunched, not less than 1-1/2 by 1-1/2 inches by stud web depth minus 1/4 to 1/2 inch.
a. Minimum Base-Metal Thickness: 54 mil.

C. Flat Strap Bridging: Galvanized steel sheet for bracing in locations indicated.
1. Width: As required by structural design.
2. Minimum Base-Metal Thickness: 54 mil.

D. Proprietary Bridging: Galvanized steel, 54 mil thickness, right-angle shaped bars, pre-notched to rigidly hold studs on 12-, 16- or 24-inch centers without supplemental fasteners.

E. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers and knee braces.
9. Joist hangers and end closures.
10. Hole reinforcing plates.
11. Backer plates.

2.9 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Vertical Deflection Clips: Manufacturer's standard bypass or head clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.
   1. Minimum Base-Metal Thickness: 68 mil.

C. Drift Clips: Vertical deflection clips, capable of also accommodating lateral drift of primary structure.

D. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel headless, hooked bolts or headless bolts, with encased end threaded, and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.

E. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

F. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated in accordance with ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

G. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

H. Welding Electrodes: Comply with AWS standards.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
   1. 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.

B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that required to obtain fire-resistance ratings indicated. Protect remaining fire-resistive materials from damage.

C. Install sealer gaskets at the following locations:
   1. Under wall bottom track.
   2. Between rim track and concrete foundation walls and slabs at stud and joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
   1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
   1. Cut framing members by sawing or shearing; do not torch cut.
   2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Division 07 Section "Thermal Insulation" and Division 09 Section "Acoustic Insulation," where indicated in built-up framing members, such as

headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
   1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 SOFFIT JOIST FRAMING INSTALLATION

A. Install perimeter track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of perimeter track.
   1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
   2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.

C. Space framing not more than 2 inches from abutting walls, and as follows:
   1. Framing Spacing: 16 inches.

D. Frame openings with built-up headers consisting of joist and joist track, or another combination of connected joists if indicated.

E. Install bridging at intervals indicated on Shop Drawings. Fasten bridging at each joist intersection as follows:
   1. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.

F. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.5 SECONDARY FRAMING

A. Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
   1. Locate and space wall girts to suit openings such as doors and windows.
   2. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of walls.

B. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

C. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.6 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
   1. Inspection of fabricators.
   2. Steel construction.

B. Testing: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

C. Field and shop welds will be subject to testing and inspecting.

D. Testing agency will report test results promptly and in writing to Contractor and Architect.

E. Remove and replace work where test results indicate that it does not comply with specified requirements.

F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780, manufacturer's written instructions and Division 05 Section "Shop Applied Galvanic Coatings for Metal."

B. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing and accessories.
   1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPCSP 3, "Power Tool Cleaning."
   2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Wood blocking**,** and nailers.
3. Plywood backing panels.

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NHLA: National Hardwood Lumber Association.
3. NLGA: National Lumber Grades Authority.
4. SPIB: The Southern Pine Inspection Bureau.
5. WCLIB: West Coast Lumber Inspection Bureau.
6. WWPA: Western Wood Products Association

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
   1. Factory mark each piece of lumber with grade stamp of grading agency.
   2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
   3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
   4. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent for 2-inch nominal thickness or less, no limit for more than 2-inch nominal thickness unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Wood Treatment: Refer to Division 06 Section "Wood Treatment" for lumber and plywood required to be preservative-treated and fire-retardant-treated.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

   1. Blocking.
   2. Nailers.
   3. Plywood Backing Panels.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any species.

C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

   1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
   2. Eastern softwoods; No. 2 Common grade; NeLMA.

3. Northern species; No. 2 Common grade; NLGA.
4. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.5 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

C. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

2.6 METAL FRAMING ANCHORS

A. Allowable design loads, as published by manufacturer, shall meet, or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

2.7 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spun bonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

F. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. ICC-ES evaluation report for fastener.

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 072100 – THERMAL INSULATION

PART I - GENERAL

1.01 SUMMARY:

A. Section includes:
1. This Section includes but is not necessarily limited to the furnishing and installation of thermal insulation as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.
2. Major items:
a. Rigid wall Insulation

1.02 REFERENCES:

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
1. ASTM Standard Specifications:
a. C 578 - Preformed, Cellular Polystyrene Thermal Insulation.
b. C 591 - Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation.
c. C 665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured
d. Housing - Metal Buildings.
e. 0 41 - Asphalt Primer Used in Roofing, Dampproofing and Waterproofing.
f. 0 226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
g. D 312 - Asphalt Used in Roofing.
h. D 2626 - Asphalt-Saturated and Coated Organic Felt Base Sheets Used in Roofing.
2. ASTM Standard Methods:
a. C 209 - Testing Insulation Board (Cellulosic Fiber), Structural and Decorative.
b. D 2482 - Wax Pick Test for Surface Strength of Paper.
3. ASTM Standard Test Methods:
a. C 177 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
b. C 272 - Water Absorption of Core Materials for Structural Sandwich Constructions.
c. C 518 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the
d. Heat Flow Meter Apparatus.
e. D 1621 - Compressive Properties of Rigid Cellular Plastics.
f. D 1622 - Apparent Density of Rigid Cellular Plastics.
g. E 84 - Surface Burning Characteristics of Building Materials.
h. E 96 - Water Vapor Transmission of Materials.
4. ASTM Standard-Recommended Practice:
a. C 165 - Measuring Compressive Properties of Thermal Insulations.

1.03 SUBMITTALS:

A. Submit in accordance with Section 01 - Submittals.

B. Product data:
1. Submit Manufacturer's installation data for each type of insulation for review by ENGINEER.

C. Certificates:
1. Submit Manufacturer's certification that materials meet Specification requirements.

1.04 QUALITY ASSURANCE:

A. Regulatory requirements:
1. All insulation, flashing and sheet metal assorted therewith shall comply with all local & state requirements.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Rigid Wall Insulation: Polyisocyanurate Rigid Board, ASTM C578, Type IV
1. Thermal Resistance R of 5.6 per inch, min.
2. Thickness as indicated on the drawings.
3. Square Edges.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. General:
1. Install insulation in accordance with:
a. This Section.
b. Insulation Manufacturer's recommendations.
c. Roofing Manufacturer's recommendations.
2. Install insulation to maintain continuous and complete thermal protection.
3. Surfaces receiving insulation shall be completed and clean of deleterious matter.
4. Cut and trim insulation neatly to fit spaces.
5. Butt ends and edges tight.
6. Do not use insulation which is broken or chipped.

B. All batt insulation shall be installed per manufacturers written instructions.

3.02 FIELD QUALITY CONTROL

A. Manufacturer's field service:
1. Arrange and pay for Manufacturer's personnel to inspect upon completion if needed for warranty.

3.03 CLEANING:

A. Prior to acceptance of the work of this Section, thoroughly clean all installed materials and related areas in accordance with Section 01 – Cleaning and Waste Management.

END OF SECTION 072100

SECTION 074130 – PRE-FORMED METAL SIDING

PART 1 - GENERAL

1.1 SUMMARY:

Metal Siding Assembly Description

"Flush Wall Panels", as manufactured by PAC-CLAD, Petersen Aluminum

Panel Thickness: 1 inch
Color: TBD, from manufacturer's standard range.
Attachment: Attached with mechanical fasteners

24 Gauge Steel
Width: 12 inches- Smooth Panel

Metal siding over building wrap on plywood sheathing over metal stud framing.

Install panels in vertical orientation and as noted on drawings.

SECTION 074600 – GUTTERS AND DOWNSPOUTS

1.1 GENERAL SUMMARY:

A. This Section includes, but is not necessarily limited to, the furnishing and installation of all gutters and downspouts and related items as indicated on the Drawings, as specified herein and as necessary for the proper and complete performance of the Work.

1.2 SUBMITTALS:

A. Submit two (2) sets of color samples to ENGINEER prior to delivery.

2.0 PRODUCTS

2.1 GUTTERS & DOWNSPOUTS:

A. Preformed/Prefinished. 24 GA., metal

B. 6”W x 4”D gutters with 4” x 4” downspouts

C. Provide with all accessories for complete installation.

D. Manufactured by Alcoa, Fabral or equal.

E. Owner to select color from full range of colors available, to match Standing Seam Metal roof.

3.0 EXECUTION

3.1 STORAGE AND HANDLING:

A. General:
1. Stack all material in a manner which ensures proper ventilation and drainage.
2. Cover all materials with waterproof coverings to protect them from the elements.

3.2 INSTALLATION:

A. General:
1. Install products per manufacturers written instructions.
2. Install materials plumb, level, true and slope gutters for proper drainage to downspouts.
3. Install all materials in accordance with manufacturer recommendations.
4. Install terminations/transitions on underground drain tiles as required.

END OF SECTION 074600

SECTION 075419- POLYVINYL -CHLORIDE (PVC) ROOFING

SUMMARY:

Roof Assembly Description

PVC thermoplastic membrane

Membrane Thickness: **60 mil**
Color: White
Attachment: Fully-adhered system over tapered insulation

Polyisocyanurate (flat & tapered)
Attachment: Attached with mechanical fasteners
Thickness: Varies - see drawings

31 mil vapor barrier-SBS Modified Bitumen
Attachment: peel and stick – self adhered

Plywood Roof Deck

PART 1 GENERAL

1.1 SECTION INCLUDES

A. PVC thermoplastic membrane attached with mechanical fasteners.

B. Polyisocyanurate (flat & tapered), attached with mechanical fasteners.

C. Polyisocyanurate (tapered) between roof drains.

D. Vapor Barrier – self adhering

E. Fiberglass-faced roof board, attached with mechanical fasteners.

F. Prefabricated flashings, corners, parapets, stacks, vents, and related details.

G. Fasteners, adhesives, and other accessories required for a complete roofing installation.

H. 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.

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. Sustainability:

a. Conform to NSF/ANSI Standard 347, “Sustainability Assessment for Single-Ply Roofing Membranes. Minimum certification level: Gold.

b. Type III product-specific Environmental Product Declaration.

c. Membrane is recyclable at end of use.

D. 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. Thickness Over Scrim: ≥ 28 mil in accordance with ASTM D 751.

4. Breaking Strengths: ≥ 390 lbf. (MD) and ≥ 438 lbf. (XMD) in accordance with ASTM D 751, Grab Method.

5. Elongation at Break: ≥ 31% (MD) and ≥ 31% (XMD) in accordance with ASTM D 751, Grab Method.

6. 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).

7. Factory Seam Strength: ≥ 417 lbf. in accordance with ASTM D 751, Grab Method.

8. Tearing Strength: ≥ 132 lbf. (MD) and ≥ 163 lbf. (XMD) in accordance with ASTM D 751, Procedure B.

9. Low Temperature Bend (Flexibility): Pass at -40 °F in accordance with ASTM D 2136.

10. Accelerated Weathering: No cracking, checking, crazing, erosion or chalking after 5,000 hours in accordance with ASTM G 154.

11. Linear Dimensional Change: < 0.5% in accordance with ASTM D 1204 at 176 ± 2 °F for 6 hours.

12. Water Absorption: < 1.7% in accordance with ASTM D 570 at 158 °F for 166 hours.

13. Static Puncture Resistance: ≥ 56 lbs. in accordance with ASTM D 5602.

14. Dynamic Puncture Resistance: ≥ 14.7 ft-lbf. in accordance with ASTM D 5635.

E. Cool Roof Rating Council (CRRC):

1. Membrane must be listed on CRRC website.

a. Initial Solar Reflectance: ≥ 88%

b. Initial Thermal Emittance: ≥ 87%

c. Initial Solar Reflective Index (SRI): ≥ 111

d. 3-Year Aged Solar Reflectance: ≥ 68%

e. 3-Year Aged Thermal Emittance: ≥ 84%

f. 3-Year Aged Solar Reflective Index (SRI): ≥ 82

F. Insulation

1. Provide overall thermal resistance for roofing system as follows:

a. Minimum R-value:

2. Install using a minimum of two layers.

3. Provide taper per roof plans.

4. Configuration as indicated on the Drawings.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

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. Sustainability Documentation:

a. NSF/ANSI Standard 347 Certificate.

b. Type III product-specific Environmental Product Declaration.

D. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, and location of fasteners.

E. 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. 4 inch by 6 inch sample of walkway pad.

3. Termination bar, fascia bar with cover, drip edge and gravel stop if to be used.

4. Each fastener type to be used for installing membrane, insulation/recover board, termination bar and edge details.

F. Installer Certification: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

G. 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. Conform to IECC (International Energy Conservation Code) and IGCC (International Green Construction Code) cool roof requirements.

D. 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, Architect, 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. Must provide positive drainage.

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. Elevate
2. Carlisle
3. Other manufacturers of comparable products.

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**.
2. Exposed Face Color:
   a. White.

B. Minimum NSF 347 Gold certified.

C. Accessory Materials: Provide accessory materials supplied by or approved for use by roof system manufacturer.

1. Sheet Flashing: Manufacturer's standard reinforced PVC sheet flashing.
2. Factory Prefabricated Flashings: manufactured using Manufacturer's standard reinforced PVC membrane.
   a. Stack Flashings.
   b. Curb Flashings.
   c. Inside and Outside Corners.
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. #14 Heavy Duty Fasteners.

b. Steel Membrane Plates.

c. 3 inch Metal Plates.

6. PV Anchors

7. Termination and Edge Details: Supplied by roof system manufacturer.

a. Termination Bar.

8. 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.

9. Two-Way Roof Vents: Supplied by roof system manufacturer. Install a minimum of 1 vent for each 1,000 ft² (93 m²) of roof area.

D. 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 (flat).

2. Polyisocyanurate (flat).

3. Polyisocyanurate (taper)

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.

2.5 GYPSUM THERMAL BARRIER

A. General: Provide gypsum based 5/8” thermal barrier as approved by the roof membrane manufacturer and as recommended by thermal barrier manufacturer for the intended use.

B. Fasteners: Provide factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening thermal barriers and or cover boards.

2.6 VAPOR BARRIER

A. General: Provided a 31 mil minimum, self-adhesive, SBS modified bitumen vapor barrier as approved by the roof membrane manufacture.

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. Separation Board: Fiberglass-faced roof board.

1. 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.

b. Attach boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.

C. Vapor Barrier: Self Adhering Modified Bitumen.

1.Clean substrate of any debris or dust

2. Install vapor barrier per manufacturer’s instructions following details on sealing around penetrations and perimeter walls.

D. Insulation: Polyisocyanurate (Flat and taper)

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. 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.
5. If more than one layer of insulation is used, all joints between subsequent layers shall be offset by at least 6 inches.
6. 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.
7. Install mechanical fasteners through top layer to attach Polyisocyanurate (flat) insulation. Install all layers in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.

E. Roof Membrane: 60 mil, PVC thermoplastic membrane.
    1. Fully adhered system

F. 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 workday.

G. 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.

H. 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 (152 mm) 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.

I. Roof Drains:

1. Coordinate installation of roof drains and vents specified in Section 15146 - Plumbing Specialties.

2. Remove existing flashing and asphalt at existing drains in preparation for sealant and membrane.

3. Provide a smooth clean surface on the mating surface between the clamping ring and the drain base.

J. 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 flashing specified in Section 07620.

4. Manufactured Roof Specialties: Coordinate installation of copings, counter flashing systems, gutters, downspouts, and roof expansion assemblies specified in Section 07710.

K. 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.

L. 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 075419

SECTION 079200 – JOINT SEALANTS

1.0 GENERAL

1.1 SECTION INCLUDES

A. Work included in this Section includes the furnishing of all labor, materials, equipment and incidentals required for complete installation of joint fillers, backing, and sealants including preparation of substrate surfaces.

1.2 SYSTEM DESCRIPTION

A. System performance to achieve moisture and airtight joint seals.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance to Sealant and Waterproofers Institute - Sealant and Caulking Guide Specification requirements for materials and installation.

B. Install in accordance with manufacturer's requirements for preparation of surfaces and materials installation instructions.

1.4 SUBMITTALS

A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, limitations, color availability, and where each type will be installed.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.6 WARRANTY

A. Furnish written warranty that sealant will remain in serviceable, watertight, elastic, adhesive condition for two (2) years from date of final acceptance and will not stain or otherwise injure adjacent materials within this period at no expense to the Owner. Repair any defects appearing due to material or workmanship.

2.0 PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Colors: Manufacturer's standard high performance color, as selected by Architect/Engineer.

B. Compatibility: Provide materials, including primers where required, selected for compatibility with each other and with substrates in each joint system; confirm requirements with manufacturer.

C. General Characteristics: Provide type, grade, class, hardness and similar characteristics of material as indicated or, where not indicated, to comply with manufacturer's recommendations relative to exposure, traffic, weather conditions, and other factors of the joint system for best possible overall performance. Except as otherwise indicated, joint

sealers are required to permanently maintain airtight and waterproof seals, without failures in joint movement accommodation, cohesion, adhesion (where applicable), migration, staining, and other performance as specified.

D. Provide fire-rated caulking at control joints located in fire-rated walls.

2.2 SEALANTS **(See Product Schedule 079201, at end of this section)**

2.3 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

3.0 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that surfaces and joint openings are ready to receive work, and that joint measurements and surface conditions are as recommended by the sealant manufacturer.

B. Remove loose materials and foreign matter which may impair adhesion of sealant.

C. Verify that joint backing and release tapes are compatible with sealant.

D. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants.

3.2 INSTALLATION

A. Clean and prime seal joints in accordance with manufacturer's instructions.

B. Perform installation in accordance with ASTM C804 for solvent release or C790 for latex base sealants and in accordance with manufacturer's instructions.

C. Measure joint dimensions and size materials to achieve required width/depth ratios.

D. Install joint backing to achieve a neck thickness dimension no greater than 1/3 the joint width.

E. Install bond breaker where joint backing is not used.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave or as detailed. Control joints shall be tooled to match the masonry joints adjacent; special attention at raked joints required.

3.3 SCHEDULE **(See Usage Schedule 079202, at end of this Section)**

END OF SECTION 079200

SECTION 079201 - JOINT SEALANT PRODUCTS SCHEDULE

								EXPOSURE			USES				JOINT SIZE	
MANUFACTURER	PRODUCT	CHEMISTRY	CURE	MODULUS	TYPE	GRADE	CLASS	T	NT	I	M	G	A	O	MIN	MAX
Pecora	AC-20 FTR Acoustical and Insulation Sealant	Acoustical Latex	---	---	S	NS	Min	--	NT	--	--	--	--	--	--	--
Specified Technologies	SpecSeal Smoke and Sound Sealant	Acoustical Latex	---	---	S	NS	Min	--	NT	--	--	--	--	--	--	--
USG	SHEETROCK Acoustical Sealant	Acoustical Latex	---	---	S	NS	Min	--	NT	--	--	--	--	--	--	--
Tremco	Tremco Acoustical Sealant	Acoustical Rubber	---	---	S	NS	Min	--	NT	--	--	--	--	--	--	--
Tremco	Mono 555	Acrylic	Solvent	---	S	NS	7 ½	--	NT	--	--	--	--	--	--	--
Pecora	BC-158	Butyl	Solvent	---	S	NS	7 ½	--	NT	--	--	--	--	--	--	--
Sonneborn	Multi-Purpose	Butyl	Solvent	---	S	NS	7 ½	--	NT	--	--	--	--	--	--	--
Tremco	Tremco Butyl	Butyl	Solvent	---	S	NS	7 ½	--	NT	--	--	--	--	--	--	--
Pecora	AC-20+	Latex	---	---	S	NS	0	--	NT	--	--	--	--	--	--	--
Sonneborn	Sonolac	Latex	---	---	S	NS	0	--	NT	--	--	--	--	--	--	--
Tremco	Tremflex 834	Latex	---	---	S	NS	0	--	NT	--	--	--	--	--	--	--
Dow Corning	786 Mildew Resistant	MR Silicone	Acid	High	S	NS	25	--	NT	--	--	G	A	O	1/8 x 1/8	1
GE Silicones	Sanitary SCS1700	MR Silicone	Acid	High	S	NS	25	--	NT	--	--	G	A	O	¼ x ¼	1 x 3/8
Pecora	898	MR Silicone	Neutral	Medium	S	NS	50	--	NT	--	M	G	A	O	1/8 x 1/8	1 x 3/8
Tremco	Tremsil 200	MR Silicone	Acid	Medium	S	NS	25	--	NT	--	--	G	A	--	¼ x ¼	1 x ½
Crafco	34902 RoadSaver Silicone	Silicone	Neutral	Low	S	NS	100/50	T	--	--	--	--	--	O	¼ x ¼	1½ x ½
Dow Corning	790	Silicone	Neutral	Low	S	NS	100/50	--	NT	--	M	G	A	O	¼ x 1/8	3 x ½
Dow Corning	791	Silicone	Neutral	Medium	S	NS	50	--	NT	--	M	G	A	O	¼ x 1/8	3 x 3/8
Dow Corning	795	Silicone	Neutral	Medium	S	NS	50	--	NT	--	M	G	A	O	¼ x 1/8	3 x ½
Dow Corning	995	Silicone	Neutral	Medium	S	NS	50	--	NT	--	--	G	A	O	¼ x ¼	1 x 3/8
Dow Corning	756 SMS	Silicone	Neutral	Medium	S	NS	100/50	--	NT	--	M	G	A	O	¼ x 1/8	2 x ½
Dow Corning	890-SL	Silicone	Neutral	Ultralow	S	P	100/50	T	--	--	M	--	A	O	¼ x ¼	3 x ½
Dow Corning	FC Parking Structure	Silicone	Neutral	Ultralow	M	P	100/50	T	NT	--	M	--	A	O	¼ x ¼	3 x ½

	Sealant															
								EXPOSURE			USES				JOINT SIZE	
MANUFACTURER	PRODUCT	CHEMISTRY	CURE	MODULUS	TYPE	GRADE	CLASS	T	NT	I	M	G	A	O	MIN	MAX
Dow Corning	NS Parking Structure Sealant	Silicone	Neutral	Low	S	NS	100/50	T	NT	--	M	G	A	O	¼ x 1/8	3 x ½
GE Silicones	SilPruf LM SCS2700	Silicone	Neutral	Low	S	NS	100/50	--	NT	--	M	G	A	O	¼ x ¼	2 x 3/8
GE Silicones	SilPruf NB SCS9000	Silicone	Neutral	Medium	S	NS	50	--	NT	--	M	G	A	O	¼ x ¼	2 x 3/8
GE Silicones	SilPruf SCS2000	Silicone	Neutral	Low	S	NS	50	--	NT	--	M	G	A	O	¼ x ¼	2 x 3/8
Pecora	864NST	Silicone	Neutral	Low	S	NS	50	--	NT	--	M	G	A	O	1/8 x 3/8	--
Pecora	890NST	Silicone	Neutral	Ultralow	S	NS	100/50	--	NT	--	M	G	A	O	1/8 x 3/8	--
Tremco	Spectrem 1	Silicone	Basic	Low	S	NS	100/50	--	NT	--	M	G	A	O	¼ x ¼	1 x ½
Tremco	Spectrem 4TS	Silicone	Neutral	Low	M	NS	50	--	NT	--	M	G	A	O	¼ x ¼	--
Pecora	Dynatrol II	Urethane	---	---	M	NS	50	--	NT	--	M	G	A	O	¼ x ¼	2 x ½
Pecora	Dynatrol I-XL	Urethane	---	---	S	NS	25	--	NT	--	M	G	A	O	¼ x ¼	1½ x ½
Pecora	Urexpan NR-201	Urethane	---	---	S	P	25	T	--	--	M	--	A	O	¼ x ¼	1 x ½
Pecora	Urexpan NR-300, Type H	Urethane	---	---	M	P	12 ½	T	--	--	M	--	A	O	¼ x ¼	--
Sika	Sikaflex – 1A	Urethane	---	---	S	NS	25	T	NT	--	M	G	A	O	¼ x ¼	2 x ½
Sika	Sikaflex – 1CSL	Urethane	---	---	S	P	25	T	NT	--	M	--	--	O	¼ x ¼	2 x ½
Sonneborn	NP 1	Urethane	---	---	S	NS	25	T	NT	--	M	G	A	O	¼ x ¼	2 x ½
Sonneborn	SL 1	Urethane	---	---	S	P	25	T	NT	--	M	G	A	O	¼ x 5/8	2 x ½
Sonneborn	Ultra	Urethane	---	---	S	NS	25	T	NT	--	M	G	A	O	¼ x ¼	1 x ½
Tremco	DyMonic 100	Urethane	---	---	S	NS	50	--	NT	--	M	G	A	O	¼ x ¼	1 x ½
Tremco	Vulkem Nova 300 SSL	Urethane	---	---	S	P	50	T	NT	I	M	--	A	O	¼ x ¼	2 x ½

DEFINITIONS
Type: S = Single Component; M = Multiple Component
Grade: NS = Non-Sag; P = Pourable or Self-Leveling
Class: Numerical values represent percent elongation/compression capability; "Min" implies "minimal"
Exposure: T = Traffic; NT = Non-Traffic; I = Immersion Service
Uses: M = Mortar; G = Glass; A = Aluminum; O = Other

END OF SCHEDULE 079201

SECTION 079202 - JOINT SEALANT USAGE SCHEDULE

ID No.	Exterior Traffic Joints	Sealant Chemistry	Class	Color
E-1	Control and expansion joints in concrete, cast-in-place	Silicone	50	Standard
E-2	Control and expansion joints in concrete, cast-in-place	Silicone	50	Custom
E-3	Control and expansion joints in concrete, cast-in-place, with snow melt system	Silicone	100/50	Custom
E-5	Joints between asphalt paving & walls & other vertical surfaces	Silicone	50	Standard
E-6	Joints between concrete paving & walls & other vertical surfaces	Silicone	50	Standard
E-7	Joints between decorative concrete paving & walls & other vertical surfaces	Silicone	50	Custom
E-8	Joints between structural precast concrete units (parking structure slabs)	Silicone	100/50	Standard
E-9	Joints between architectural precast concrete units	Silicone	100/50	Custom
ID No.	Exterior Non-Traffic Joints	Sealant Chemistry	Class	Color
E-20	Building expansion joints in unit masonry	Preformed foam with silicone cover	50	Custom
E-22	Control and expansion joints in concrete, cast-in-place	Silicone	50	Standard
E-23	Control and expansion joints in EIFS systems	Silicone	50	Custom
E-24	Control and expansion joints in stone; cast, cut and dimension	Silicone	50	Custom
E-26	Control and expansion joints in unit masonry, clay	Silicone	50	Custom
E-28	Control and expansion joints in unit masonry, concrete, painted	Urethane	25	Standard
E-29	Control and expansion joints in unit masonry, concrete, unfinished	Silicone	50	Standard
E-31	Joints between metal flashings, concealed, prefinished	Butyl	7 ½	Standard
E-32	Joints between metal flashings, exposed, prefinished	Silicone	50	Custom
E-33	Joints between metal flashings, exposed, unfinished	Silicone	50	Standard
E-34	Joints between metal panels, prefinished	Silicone	50	Custom
E-35	Joints between metal panels, natural finish	Silicone	50	Custom
E-36	Joints between precast architectural concrete units	Silicone	50	Custom
E-37	Perimeter joints around frames, metal, field painted	Urethane	25	Standard
E-39	Perimeter joints around frames, metal, prefinished	Silicone	50	Custom
E-40	Setting bed for flashing receivers	Butyl	7 ½	Standard
E-41	Setting bed for thresholds & sills	Butyl	7 ½	Standard
E-42	Setting bed for metal flashing, metal frames, and wood frames	Butyl	7 ½	Standard

ID No.	Interior Traffic Joints	Sealant Chemistry	Class	Color
I-2	Control and expansion joints in concrete slabs, concealed	None required	N/A	N/A
I-3	Control and expansion joints in concrete slabs, exposed	Urethane	25	Standard
I-5	Control and expansion joints in decorative concrete slabs, exposed	Urethane	25	Custom
I-6	Control and expansion joints in resinous flooring	Urethane	25	Custom
I-9	Control and expansion joints in tile in toilet rooms and kitchens	MR silicone	25	Custom
I-10	Control and expansion joints in tile not in toilet rooms and kitchens	Urethane	25	Custom
ID No.	Interior Non-Traffic Joints	Sealant Chemistry	Class	Color
I-20	Control and expansion joints in cast-in-place concrete	Urethane	25	Standard
I-22	Control and expansion joints in tile in toilet rooms and kitchens	MR silicone	25	Custom
I-23	Control and expansion joints in tile not in toilet rooms and kitchens	Urethane	25	Custom
I-24	Control and expansion joints in unit masonry, clay	Urethane	25	Custom
I-26	Control and expansion joints in unit masonry, painted	Urethane	25	Standard
I-27	Control and expansion joints in unit masonry, unfinished	Urethane	25	Standard
I-29	Control joints in acoustical walls and partitions including gaps	Acoustic latex or rubber	Min	Standard
I-30	Control joints in gypsum board ceilings and partitions	Acrylic	7 ½	Standard
I-32	Joints between gypsum shaftwall panels and penetrations and adjacent surfaces	Acoustic latex or rubber	Min	Standard
I-33	Joints between tile backing panels and penetrations	MR silicone	25	White
I-34	Joints between woodwork, painted and adjacent surfaces	Acrylic or latex	0	Standard
I-35	Joints between woodwork, transparent finished and adjacent surfaces	Silicone	50	Custom
I-36	Joints between plumbing fixtures & adjacent walls, floors, & counters	MR silicone	25	White
I-37	Joints in and between FRP panels and adjacent surfaces	Silicone	50	Custom
I-38	Joints in and between plastic laminate and adjacent surfaces	Silicone	50	Custom
I-39	Joints in and between synthetic countertops and adjacent surfaces	Silicone	50	Custom
I-41	Perimeter joints around frames, metal, field painted	Latex	0	Standard
I-42	Perimeter joints around frames, metal, prefinished	Silicone	50	Custom
I-44	Perimeter joints around frames, wood, transparent finish	Silicone	50	Custom
ID No.	Glazing Sealants	Sealant Chemistry	Class	Color
G-4	Hollow metal frames to glass, cap bead	Silicone – neutral	50	Custom
G-5	Wood frames to glass, heel bead	Butyl	7 ½	Standard
G-6	Butt joints between unframed glass edges	Silicone – neutral	50	Clear

Colors of Exposed Joint Sealants:
Standard Color: As selected by Architect from manufacturer's full range for this characteristic.
Custom Color: Provide a custom color matching Architect's sample that complies with requirements.

END OF SCHEDULE 079202

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-framed entrance and storefront systems.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Aluminum-framed entrance and storefront systems.

B. Shop Drawings:

1. Plans, elevations, sections, full-size details, and attachments to other work.
2. Details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
3. Full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrance and storefront systems, showing the following:

    a. Joinery, including concealed welds.
    b. Anchorage.
    c. Expansion provisions.
    d. Glazing.
    e. Flashing and drainage.

4. Connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
5. Point-to-point wiring diagrams showing the following:

    a. Power requirements for each electrically operated door hardware.
    b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

6. Signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

D. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.3 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: For aluminum-framed entrance and storefront systems, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront system.

B. Product Test Reports: For aluminum-framed entrance and storefront systems, for tests performed by a qualified testing agency.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

1. Entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

C. Structural-Sealant Glazing: Comply with ASTM C1401 for design and installation of storefront systems that include structural glazing.

1.5 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.

c. Deterioration of framing and associated components, doors and associated components, glazing and associated components.
d. Faulty operation of doors and hardware.

2. Warranty Period: 10 years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain all components of aluminum-framed entrance and storefront system, including framing spandrel panels and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrance and storefront systems.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrance and storefront systems representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrance and storefront systems to withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches.
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.

    a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.

3. Cantilever Deflection: Limited to 2L/175 at unsupported cantilevers.

E. Structural: Test in accordance with ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..

G. Water Penetration under Dynamic Pressure: Test in accordance with AAMA 501.1 as follows:

1. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

H. Seismic Performance: Aluminum-framed entrance and storefront systems to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.

1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.6 at design displacement and 1.5 times the design displacement.

I. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.41 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.
b. Entrance Doors: U-factor of not more than 0.77 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined in accordance with NFRC 200.
b. Entrance Doors: SHGC of not more than 0.40 as determined in accordance with NFRC 200.

3. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft. when tested in accordance with ASTM E283.
b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than 55 as determined in accordance with AAMA 1503.
b. Entrance Doors: CRF of not less than 57 as determined in accordance with AAMA 1503.

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

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

2.3 ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Basis of Design: Trifab “Versaglaze” 451T Framing System Kawneer Company, Inc.; Arconic Corporation.

2. EFCO Corporation.
3. Tubelite Inc.
4. U.S. Aluminum; C.R. Laurence Co., Inc.; CRH Americas, Inc.
5. YKK AP America Inc.

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Interior Vestibule Framing Construction: Nonthermal.
3. Glazing System: Retained mechanically with gaskets on four sides.
4. Glazing Plane: Front.
5. Finish: Clear anodic finish.
6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

C. Insulated Spandrel Panels:

1. Laminated, metal-faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length.

a. Overall Panel Thickness: 1 inch.
b. Exterior Skin: Aluminum.

1) Thickness: Manufacturer's standard for finish and texture indicated.
2) Finish: Match framing system.
3) Texture: Smooth.

4) Backing Sheet: 0.157-inch- thick cement board.

c. Interior Skin: Aluminum.

1) Thickness: Manufacturer's standard for finish and texture indicated.
2) Finish: Matching storefront framing.
3) Texture: Smooth.
4) Backing Sheet: 1/8-inch- thick tempered hardboard.

d. Thermal Insulation Core: Manufacturer's standard rigid, closed-cell, polyisocyanurate board.
e. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1) Flame-Spread Index: 25 or less.
2) Smoke-Developed Index: 450 or less.

D. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Door Design: Wide stile; 5-inch nominal width to match existing.
3. Glazing Stops and Gaskets: Beveled Square, snap-on, extruded-aluminum stops and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

4. Finish: Match adjacent storefront framing finish.

2.4 ENTRANCE DOOR HARDWARE

Entrance Door Hardware: Hardware not specified in this Section is specified in GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Comply with Section 088000 "Glazing."

C. Glazing Sealants: As recommended by manufacturer. Comply with Section 088000 "Glazing."

D. Structural Glazing Sealants: ASTM C1184 chemically curing silicone formulation that is compatible with system components with which it comes in contact; specifically formulated and tested for use as structural sealant and approved by structural-sealant manufacturer for use in storefront system indicated.

1. Color: As selected by Architect from manufacturer's full range of colors.

E. Weatherseal Sealants: ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

1. Color: Match structural sealant.

2.6 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.7 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inchthat accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Subsill profile manufactured with end dams.

E. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.

F. Storefront Framing: Fabricate components for assembly using shear-block system.

G. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

H. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

I. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

J. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.9 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm.

1. Color: White to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

K. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

L. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

M. Install glazing as specified in Section 088000 "Glazing."

N. Install structural glazing as follows:

1. Prepare surfaces that will contact structural sealant in accordance with sealant manufacturer's written instructions, to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
2. Set glazing into framing in accordance with sealant manufacturer and framing manufacturer's written instructions and standard practice. Use a spacer or backer as recommended by manufacturer.
3. Set glazing with proper orientation so that coatings face exterior or interior as specified.
4. Hold glazing in place using temporary retainers of type and spacing recommended by manufacturer, until structural sealant joint has cured.

5. Apply structural sealant to completely fill cavity, in accordance with sealant manufacturer and framing manufacturer's written instructions and in compliance with local codes.
6. Apply structural sealant at temperatures indicated by sealant manufacturer for type of sealant.
7. Allow structural sealant to cure in accordance with manufacturer's written instructions.
8. Clean and protect glass as indicated in Section 088000 "Glazing."
9. After structural sealant has completely cured, remove temporary retainers and insert backer rod between lites of glass as recommended by sealant manufacturer.
10. Install weatherseal sealant to completely fill cavity, in accordance with sealant manufacturer's written instructions, to produce weatherproof joints.

3.3 ERECTION TOLERANCES

A. Install aluminum-framed entrance and storefront systems to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
    b. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

END OF SECTION 084113

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 Refer to "General and Special Conditions", and "Instructions to Bidders", Division 1 of Specifications. Requirements of these Sections and the project drawings shall govern work in this section.

1.2 Work Included:

A. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.

B. Related work:

1. Division 1 – General Requirements
2. Division 8 – Aluminum Entrance Doors and Frames

1.3 Quality Assurance

A. Requirements of Regulatory Agencies:

1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
2. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.
3. Provide hardware for fire-rated openings in compliance with NFPA 80 and state and local building code requirements. Provide only hardware that has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.

B. Hardware Supplier:

1. Shall be an established firm dealing in contract builders' hardware. He must have adequate inventory, qualified personnel on staff and be located within 100 miles of the project. The distributor must be a factory-authorized dealer for all materials required. The supplier shall be or have in employment an Architectural Hardware Consultant (AHC).

C. Electrified Door Hardware Supplier:

1. Shall be an experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials.
2. Shall prepare data for electrified door hardware, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.
3. Shall have experience in providing consulting services for electrified door hardware installations.

D. Pre-installation Meeting:

1. Before hardware installation, General Contractor/Construction Manager will request a hardware installation meeting be conducted on the installation of hardware; specifically that of locksets, closers, exit devices, overhead stops and coordinators. The hardware supplier for the project, shall conduct the meeting. Meeting to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Meeting to address proper coordination and installation of hardware, per finish hardware schedule for this specific project, by using installation manuals, hardware schedule, templates, physical product samples and installation videos.
2. When any electrical or pneumatic hardware is specified this meeting shall also include the following trades/installers: Electrical, Security, Alarm systems and Architect.
3. Convene one week or more prior to commencing work of this Section.
4. The Hardware Supplier shall include the cost of this meeting in his proposal.

E. Manufacturer:

1. Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
2. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.

1.4 Submittals:

A. Hardware Schedule

1. Submit number of Hardware Schedules as directed in Division 1.
2. Follow guidelines established in Door & Hardware Institute Handbook (DHI) Sequence and Format for the Hardware Schedule unless noted otherwise.
3. Schedule will include the following:
   a. Door Index including opening numbers and the assigned Finish Hardware set.
   b. Preface sheet listing category only and manufacturer's names of items being furnished as follows:

CATEGORY	SPECIFIED	SCHEDULED
Hinges	Manufacturer A	Manufacturer B

Lock sets	Manufacturer X	Manufacturer X
Kick Plates	Open	Manufacturer Z

c. Hardware Locations: Refer to Article 3.1 B.2 Locations.
d. Opening Description: Single or pair, number, room locations, hand, active leaf, degree of swing, size, door material, frame material, and UL listing.
e. Hardware Description: Quantity, category, product number, fasteners, and finish.
f. Headings that refer to the specified Hardware Set Numbers.
g. Scheduling Sequence shown in Hardware Sets.
h. Product data of each hardware item, and shop drawings where required, for special conditions and specialty hardware.
i. Electrified Hardware system operation description.
j. "Vertical" scheduling format only. "Horizontal" schedules will be returned "Not Approved."
k. Typed Copy.
l. Double-Spacing.
m. 8-1/2 x 11 inch sheets
n. U.S. Standard Finish symbols or BHMA Finish symbols.

B. Product Data:

1. Submit, in booklet form Manufacturers Catalog cut sheets of scheduled hardware.
2. Submit product data with hardware schedule.

C. Samples:

1. Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample, if required, of each type of exposed hardware unit, finished as required and tagged with full description for coordination with schedule.
2. Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

D. Key Schedule:

1. Submit detailed schedule indicating clearly how the Owner's final keying instructions have been followed.
2. Submit as a separate schedule.

E. Electrified Hardware Drawings:

1. Submit elevation drawings showing relationship of all electrical and pneumatic hardware components to door and frame. Indicate number and gage of wires required.
   a. Include wiring drawing showing point to point wire hook up for all components.
   b. Include system operations descriptions for each type of opening; describe each possible condition.

F. Submit to General Contractor/Construction Manager, the factory order acknowledgement numbers for the various hardware items to be used on the project. The factory order-acknowledgement numbers shall help to facilitate and expedite any service that may be required on a particular hardware item. General Contractor/Construction Manager shall keep these order acknowledgement numbers on file in the construction trailer.

1.5 Product Delivery, Storage, and Handling:

A. Label each item of hardware with the appropriate door number and Hardware Schedule heading number, and deliver to the installer so designated by the contractor.

1.6 Warranties:

A. Refer to Division 1 for warranty requirements.

B. During the warranty period, replace defective work, including labor, materials and other costs incidental to the work. Replace work found to be defective as defined in the General Conditions.

PART 2 - PRODUCT

2.1 Furnish each category with the products of only one manufacturer unless specified otherwise; this requirement is mandatory whether various manufacturers are listed or not.

2.2 Provide the products of manufacturer designated or if more than one manufacturer is listed, the comparable product of one of the other manufacturers listed. Where only one manufacturer or product is listed, it is understood that this is the owner's Building Standard and **"no substitution"** is allowed.

2.3 Door Hardware shall be provided by Ponder Industrial "Ponder Door", 287 S. River Road, Bay City, MI 48708, (989) 684-9841, Mark Misiak, Manager.

A. After project is awarded there will be a meeting to confirm the door hardware and an actual door hardware schedule will need to be developed by the hardware supplier. The following is the basis of the door hardware with the allowance for each building:

B. Door Schedule**: (to be submitted later via Addendum)**

Door #100A - Exterior Door into Vestibule #100
a.

Door #100B – Between Vestibule #100 & Lobby #102
a.

Door #101A – Exterior door into Vestibule #101
a.

Door #101B – Between Vestibule #101 & Lobby #103
a.

PART 3 - EXECUTION

3.1 Installation

A. General:

1. Install hardware according to manufacturers' installations and template dimensions. Attach all items of finish hardware to doors, frames, walls, etc. with fasteners furnished and required by the manufacture of the item.
2. Provide blocking/reinforcement for all wall mounted Hardware.
3. Reinforced hollow metal doors and frames and reinforced aluminum door and frames will be drilled and tapped for machine screws.
4. Solid wood doors and frames: full thread wood screws. Drill pilot holes before inserting screws. **Door closers installed on wood doors shall be supplied with through-bolts and machine screws.**
5. Continuous gear hinges attached to hollow metal doors and frames and aluminum doors and frames: 12-24 x 1/2" #3 Phillips Keenform self-tapping. Use #13 or 3/16 drill for pilot.
6. Continuous Gear Hinges require continuous mortar guards of foam or cardboard 1/2" thick x frame height, applied with construction adhesive.
7. Install weather-strip gasket prior to parallel arm closer bracket, rim exit device or any stop mounted hardware. Gasket to provide a continuous seal around perimeter of door opening. Allow for gasket when installing finish hardware. Door closers will require special templating. Exit devices will require adjustment in backset.

B. Electrified Door Hardware Installation Responsibility
1. General Responsibility
a. Electrified Hardware Installers shall be factory trained and certified.
b. Hardware Supplier shall install and terminate all low-voltage wiring from the electronic hardware components to power supplies.
c. Electrical contractor shall provide and connect 120VAC power to the power supplies, provide and install all necessary junction boxes, electrical boxes and conduit required for low voltage wiring.

C. Locations:

1. Dimensions are from finish floor to center line of items.
2. Include this list in Hardware Schedule.

CATEGORY	DIMENSION
Hinges	Door Manufacturer's Standard
Flush Bolt Levers	72" and 12"

Levers	Door Manufacturer's Standard
Exit Device Touchbar	Per Template
Deadlatch Cylinder	43" unless conflicting with push-pull.
Deadlock MS Cylinder	43" unless conflicting with push-pull.
Hospital Push-Pull	Manufacturer's Template
Roller Latch	At Head
Push-Pull Units	42" to centerline of Pull
Offset Pulls	Suitable for Exit Devices
Pulls - Flush Cup	46"
Pulls (BTB)	46"
Push-Pulls	46"
Push Plates	50" Centerline of Plate
Pull Plates	50" Centerline of Pull
Wire Pulls	42"
Wall Stops/Holders	At Head
Astragals	Pull side of active leaf
Trim Protector Bars	Push side of door below lever handle
Lock Protectors	Pull side of door

D. Final Adjustment:
   1. The general contractor shall provide the services of a representative to inspect material furnished and its installation and adjustment, and to instruct the Owner's personnel in adjustment, care and maintenance of hardware.
   2. Locksets, closers and exit devices shall be inspected by the factory representative to insure correct installation and proper adjustment in operation. The manufacturer's representative shall prepare a written report stating compliance, and also recording locations and kinds of non-compliance. The original report shall be forwarded to the Architect with copies to the Contractor, hardware supplier, hardware installer and building owner.

E. Technical and Warranty Information:

   1. At the completion of the project, the technical and warranty information coalesced and kept on file by the General Contractor/Construction Manager shall be given to the Owner or Owner’s Agent. In addition to both the technical and warranty information, all factory order acknowledgement numbers supplied to the General Contractor/Construction Manager during the construction period shall be given to the Owner or Owner’s Agent. The warranty information and factory order acknowledgement numbers shall serve to both expedite and properly execute any warranty work that may be required on the various hardware items supplied on the project.
   2. Submit to General Contractor/Construction Manager, two copies each of parts and service manuals and two each of any special installation or adjustment tools. Include for locksets, exit devices, door closers and any electrical products.

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.00 RELATED DOCUMENTS

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification.

1.01 SECTION INCLUDES

A. Work included in this Section consists of furnishing all labor, materials, equipment and incidentals required for complete installation of all glass mentioned or scheduled on the drawings (excluding wood clad windows) and/or herein including entrances and storefronts, interior partitions, wood and metal doors and frames, etc.; and all accessories.

B. Glass and glazing materials of this Section shall provide continuity of building enclosure vapor and air barrier.

C. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass.

1.03 SUBMITTALS

A. Product Data on Glass Types Specified: Provide physical and environmental characteristics, size limitations, and special installation requirements.

B. Product Data on Glazing Compounds: Provide chemical characteristics, limitations, special application requirements. Identify available colors.

C. Samples: Submit two samples, 8 x 8 inch in size, illustrating glass units, coloration and design.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with FGMA Glazing Manual, FGMA Sealant Manual, SIGMA and Laminators Safety Glass Association - Standards Manual for glazing installation methods.

B. Glazing for this section shall be of same manufacturer as for Section 08 52 00; Low-E coatings shall match in color.

1.05 WARRANTY

A. Provide ten (10) year warranty under provisions of Division 1, including coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

PART 2 - PRODUCTS

2.01 FLAT GLASS MATERIALS

A. Manufacturers:
1. AGC Industries, Inc.
2. PPG Industries, Inc.
3. Guardian Industries Corp
4. Pilkington Building Products, North America.
5. Or Equal.

B. Float Glass (Type FG-A): Clear, 1/4 inch thick minimum. (Not Used)

C. Tempered Glass (Type FG-C): Float type, fully tempered, conforming to ANSI Z97.1, 1/4 inch thick minimum.

D. Wire Glass (Type FG-G): Clear, polished both sides, diagonal mesh of woven stainless steel wire of ½ inch grid size; 1/4 inch thick. Meeting all shatterproof ratings for use in Schools per NFPA. (Not used)

E. Fire Rated Glass: As produced by FireLite or Safti-First – Clear fire rated glass, in thickness required to meet the specified or noted fire ratings. Must meet all the requirements of NFPA for use in schools.

2.02 SEALED INSULATING GLASS MATERIALS (Not Used)

A. Manufacturers:
1. AGC Industries, Inc.
2. PPG Industries, Inc.
3. Guardian Industries Corp
4. Pilkington Building Products, North America.
5. Or Equal.

B. Insulated Glass Units (Type SG-A): Double pane with silicone sealant edge seal; "Low E", interpane space purged dry hermetic air; total unit thickness of 1 inch minimum. Provide tempered units in exterior doors, sidelights and where noted on plans, door schedule, and required by code. Typical safety unit: 1/4" tempered inner panel, 1/4" tempered outer panel.

2.03 PLASTIC SHEET MATERIALS (NOT USED)

2.04 MANUFACTURERS - PLASTIC FILMS (NOT USED)

2.05 GLAZING COMPOUNDS

A. Manufacturers:
1. Tremco, Inc.
2. Morton Thiokol, Inc.
3. Or Equal.

B. Modified Oil (Type GC-A): Non-hardening, knife grade consistency; grey color.

C. Butyl Sealant (Type GC-B): Single Component; Shore A hardness of 10-20 black color; non-skinning.

D. Acrylic Sealant (Type GC-C): Single Component, solvent curing, cured Shore A hardness of 15-25; non-bleeding.

E. Polysulphide Sealant (Type GC-D): Two component, chemical curing, non-sagging type; cured Shore A hardness of 15-25.

F. Polyurethane Sealant (Type GC-E): Single component, chemical or solvent curing, non-staining, non-bleeding, non-sagging type, Shore A Hardness Range 20 to 35.

G. Silicone Sealant (Type GC-F): Single component, solvent curing; capable of water immersion without loss of properties; non-bleeding and non-staining; cured Shore A hardness of 15-25.

2.06 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene or EPDM; 80 - 90 Shore A Durometer hardness.

B. Spacer Shims: Neoprene; 50 - 60 Shore A durometer hardness, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device, Closed cell polyvinyl chloride foam, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air and vapor seal.

D. Glazing Splines: Resilient polyvinyl chloride extruded shape to suit glazing channel retaining slot.

E. Glazing Clips: Manufacturer's standard type.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Verify that openings for glazing are correctly sized, within tolerance, and glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

3.02 EXTERIOR - DRY METHOD (PREFORMED GLAZING) (NOT USED)

3.03 EXTERIOR - WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

A. Cut glazing tape to length and set against permanent stops. Seal corners with butyl sealant.

B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.

C. Place setting blocks at 1/4 points.

D. Rest glazing on setting blocks and push against tape and heel bead of sealant to attain full contact at perimeter of pane or glass unit.

E. Install removable stops, with spacer strips inserted between glazing and applied stops. Place glazing tape on glazing pane or unit with tape flush with, 1/4 inch below sight line.

F. Fill gap between glazing and stop with sealant type recommended under Section 07 92 00 to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.

G. Apply cap bead of sealant type recommended under Section 07 92 00 along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.04 EXTERIOR - WET METHOD (SEALANT AND SEALANT) (NOT USED)

3.05 INTERIOR - DRY METHOD (TAPE AND TAPE) (NOT USED)

3.06 INTERIOR - WET/DRY METHOD (TAPE AND SEALANT)

A. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.

D. Install removable stops, spacer shims inserted between glazing and applied stops at 24 inch intervals, 1/4 inch below sight line.

E. Fill gaps between pane and applied stop with sealant type recommended under Section 07 92 00 to depth equal to bite on glazing, to uniform and level line.

F. Trim protruding tape edge.

3.07 INTERIOR - WET METHOD (COMPOUND AND COMPOUND) (NOT USED)

3.08 INSTALLATION - MIRRORS (NOT USED)

3.09 INSTALLATION - PLASTIC FILM (NOT USED)

3.10 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass.

3.11 SCHEDULE

A. See drawings (Elevations & Schedules) for glass types and locations.

END OF SECTION 088000

SECTION 092600 - GYPSUM BOARD SYSTEMS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Attention is directed to Division 0, Bidding and Contract Requirements, and to Division 1, General Requirements, which are hereby made a part of this specification.

1.1 SECTION INCLUDES

A. Work included in this Section consists of furnishing all labor, material, equipment, and incidentals required for complete installation of wood or metal stud wall framing, metal channel ceiling framing, acoustic insulation, gypsum board, and textured surfacing.

B. Other sections with related work:

1. Section 054000 – cold-formed metal framing.
2. Section 061000 – rough carpentry.
3.

1.2 SYSTEM DESCRIPTION

A. Acoustic Attenuation for Identified Interior Partitions: STC (see drawings) in accordance with ANSI/ASTM E90.

B. Conform to applicable Underwriter Laboratories requirements for fire rated assemblies in conjunction with Section 05400 as follows:

1. Fire Rated Partitions: Listed assembly by UL No. (see drawings).
2. Fire Rated Ceiling and Soffits: Listed assembly by UL No. (see drawings).
3. Fire Rated Structural Column Framing: Listed assembly by UL No. (see drawings).
4. Fire Rated Structural Beam Framing: Listed assembly by UL No. (see drawings).

1.3 SUBMITTALS

A. Submit materials resume showing compatible system to accomplish required finish.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with GA201 - Gypsum Board for Walls and Ceilings and GA216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD SYSTEM

A. Manufacturers:
1. United States Gypsum.
2. Gold Bond Building Products.
3. Or equal manufacturers offering total systems.

B. Studs and Tracks: Refer to Section 054000 - Cold Formed Metal Framing & 061000 – Rough Carpentry.

C. Furring, Framing, and Accessories: ANSI/ASTM C645, galvanized sheet steel, 25 gage, min. Profiles as indicated on drawings.

D. Fasteners: ANSI/ASTM C646 hard screws, comply with additional requirements of GA201 and GA216.

E. All Gypsum Board Types: 5/8 inch thick, maximum permissible length; ends square cut, tapered edges; unless noted otherwise in the following Paragraphs.

F. Standard Type: ANSI/ASTM C36. Foil backed at furred exterior walls, paper backed elsewhere.

G. Fire Rated Type: ANSI/ASTM C36; fire resistive, UL rated, Type `X'.

H. Moisture Resistant Type: ANSI/ASTM C630; Use at all "damp" areas.

I. Gypsum Backing Type: ANSI/ASTM C442; square edges.

J. Exterior Soffit or Ceiling Board: ANSI/ASTM C931; Use at exterior & toilet room ceilings.

K. Cement Board: ASTM C948; square edge; as indicated on drawings.

L. Exterior Gypsum Sheathing: ASTM C-1177, use at exterior walls/fascia as backup for coated insulation system; Georgia-Pacific "Dens-Glass Gold" or other Architect approved equal.

M. High Impact Gypsum Board: (NOT USED).

2.2 ACCESSORIES

A. Acoustical Insulation: Refer to Section 072100, Building Insulation.

B. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Corner Beads: Metal, dimension required.

D. Edge Trim: GA 201 and GA 216, Type L bead, U-shape exposed reveal bead, as required.

E. Joint Materials: ANSI/ASTM C475 or GA 201 and GA 216; reinforcing tape, joint compound, adhesive, and water.

F. Adhesive: ANSI/ASTM C557 or GA 201 and GA 216.

G. Textured Surfacing: "Spray Quick" manufactured by Gold Bond; or equal, aggregate only. (Not Used)

H. Water: Potable.

I. Staples: 16 gage flattened 7/16 crown for first ply of two ply wallboard.

J. Hanger Wire: #8 gage, galvanized.

K. Tie Wire: #16 gage, galvanized.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Examine and inspect all surfaces and supports where wallboard will be applied. Remedy all conditions to insure satisfactory wall finish prior to installation.

B. Stock pile wallboard at project within floor load limits.

C. Commencement of work constitutes acceptance of responsibility for correction of any defects in finish work due to faulty sub-surface conditions.

D. It is expected that individual manufacturers will have variations in methods of installation which are mandatory in order that fitness of product for the particular location is effective. Furnish specific application instructions where different from those specified hereafter together with approved test results demonstrating that it satisfies code or regulatory body.

3.2 INSTALLATION – WOOD or METAL STUDS

A. Install studding in accordance with ANSI/ASTM C754 or GA 201 and GA 216 and manufacturer's instructions.

B. Stud Spacing: See drawings for stud size & spacing.

C. Partition Heights: Full height to floor or roof construction above. Install additional bracing for partitions extending above ceiling, as required.

3.3 INSTALLATION - WALL FURRING

A. Erect wall furring channels for direct attachment to concrete masonry and concrete walls. Erect vertically.

B. Space Furring: As indicated on drawings and not more than 4 inches from floor and ceiling lines and abutting walls.

C. Install insulation between furring attached to concrete masonry and concrete walls in accordance with manufacturer's instructions.

D. Install furring as required for fire resistance ratings indicated.

3.4 INSTALLATION - CEILING FRAMING

A. Install in accordance with ANSI/ASTM C754 or GA 201 and GA 216 and manufacturer's instructions.

B. Coordinate location of hangers with other work. Install ceiling framing independent of walls, columns, and above ceiling work.

C. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring, with lateral bracing.

D. Laterally brace entire suspension system.

3.5 INSTALLATION - ACOUSTICAL ACCESSORIES

A. Place acoustical insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.

B. Install acoustical sealant within partitions in accordance with manufacturer's instructions.

3.7 INSTALLATION - GYPSUM BOARD

A. Install gypsum board in accordance with GA 201 and GA 216 and manufacturer's instructions.

B. Fasten gypsum board to furring or framing with screws. Staples may only be used when securing the first layer of double layer applications.

C. Place control joints consistent with lines of building spaces as indicated or as directed by Architect/Engineer.

D. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.8 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.

C. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.

D. Drywall finisher shall review painting specification. If glossy, egg-shell or semi-gloss is specified to be used. The following procedures shall be initiated: After all irregularities have been eliminated and the joint treatment surface sanded or sponged as required, a thin skim coat of joint compound shall be applied to the entire surface of the board to minimize suction, porosity, or other surface variations between the joint compound and the face paper surfaces. Apply with caution such that no lap or tool marks exist in skim coat. Lightly sand entire wall or sponge as required assuring a smooth and even surface.

3.9 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 ft. in any direction.

END OF SECTION 092600

SECTION 096816 - CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Walk-Off Carpet Tile.

1.2 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For carpet installation, showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Locations where dye lot changes occur.
4. Seam locations, types, and methods.
5. Type of subfloor.
6. Type of installation.
7. Pattern type, repeat size, location, direction, and starting point.
8. Pile direction.
9. Types, colors, and locations of insets and borders.
10. Types, colors, and locations of edge, transition, and other accessory strips.
11. Transition details to other flooring materials.
12. Type of carpet cushion.

C. Samples: For each exposed product and for each color and texture required.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Provide 2% or one full box whichever is greater of extra carpet.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1.7 WARRANTY

A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Lifetime Commercial from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS – Carpet Tile (CPT)

A. CPT: Provide the following Carpet Tile, Shaw Contract, All Access.
1. Style Name: Path
2. Style Number: 5T034
3. Color: As selected by Owner from manufacturer’s full line of colors.
4. Size: 24” x 24”
5. Product Construction: Multi-Level Pattern Loop
6. Dye Method: 100% Solution Dyed.
7. Fiber: Eco-Solution Q Nylon
8. Tufted Weight: 28 oz./sq. yd.
9. Gauge: 1/12
10. Stiches Per Inch: 9
11. Finished Pile Thickness: 0.115”
12. Average Density: 8,765 oz./cu. yd
13. Secondary Backing: Eco-Worx Tile
14. Protective Treatments: SSP Shaw Soil Protection
15. Radiant Panel: (STM E 648) Class 1
16. NBS Smoke: (ASTM E 662) Less Than 450
17. Electrostatic Propensity: (AATCC 134) Less Than 3.5 kv, built-in permanent conductive fiber
18. Warranty: Lifetime Commercial Limited
19. Installation Method: Direct Glue, Quarter Turn.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet manufacturer.

B. Adhesives and Seam Sealer:

1. As recommended & approved by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Concrete Slabs:

1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
c. Perform additional moisture tests recommended in writing by carpet manufacturers. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

A. General: Comply with CRI's "CRI Carpet Installation Standard" and with carpet manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 CARPET INSTALLATION

A. Comply with CRI's "CRI Carpet Installation Standard" and carpet manufacturer's written installation instructions for the following:

1. Direct-glue-down installation.

B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.

C. Install pattern parallel to walls and borders.

D. Install borders with mitered corner seams.

E. Do not bridge building expansion joints with carpet.

F. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

G. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet as marked on subfloor. Use nonpermanent, nonstaining marking device.

I. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods recommended in writing by carpet manufacturer.

END OF SECTION 096816

SECTION 099000 - PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY:

A. Section includes:
   1. This Section includes, but is not necessarily limited to, the furnishing and application of paint, stain and labeling products as indicated on the Drawings, as specified herein, and as necessary for the proper and complete performance of the Work.
   2. Surfaces to be painted or finished include, but are not necessarily limited to, the following interior and exterior surfaces for all items furnished or installed under this Work, except as otherwise indicated on the Drawings or herein specified.
      a. Steel doors and frames.
      b. All other exterior surfaces not prefinished or specifically excluded in the following paragraph. A completely finished exterior job is required, regardless of whether every individual item is mentioned herein or not.
   3. Surfaces not to be painted or finished include the following unless otherwise indicated on the Drawings.
      a. Interior surfaces except for the surfaces noted above
      b. Manufacturer's name and identification plates.
      c. Electrical switches, outlets and box covers.
      d. Galvanized, aluminum or fiberglass grating.
      e. Prefinished electrical and control panels with factory applied final finish.
      f. Aluminum (unless indicated in the surfaces to be painted).
      g. Door and window hardware.
      h. Stainless steel (unless indicated in the surfaces to be painted).
      i. Prefinished wall, ceiling and floor coverings.
      j. Items with factory applied final finish, such as cabinets, anodized door and window frames, and the like, but excluding machinery and equipment.
      k. Items indicated on the Drawings as not to be painted.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to:
      a. General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 DEFINITIONS:

A. Terms:
   1. Exposure: Environmental conditions to which different surfaces may be exposed as follows:
      a. Interior: All surfaces within the confines of a building or other enclosure not constantly exposed to weather, trapped moisture, high heat or other deteriorating conditions, and exposed to view.

b. Concealed: All surfaces within the confines of a building or other enclosure not constantly exposed to weather, trapped moisture, high heat or other deteriorating conditions, and normally concealed from view.
c. Immersed: Immersed surfaces include all surfaces below a water surface or exposed to spray. Surfaces exposed to spray include all areas to 8 inches above maximum water surface in quiescent tanks and to 18 inches above maximum water surface in mixed or agitated tanks. Also included as immersed surfaces are all floors, walls and the bottom side of the roof of an enclosed tank.
d. Exterior:
    1) Above grade: All surfaces above finished grade and not included in a., b. or c. above.
    2) Below grade: All surfaces below finished grade and not included in a., b. or c. above.

1.3 SUBMITTALS:

A. Submit in accordance with Section 01 - Submittals.

B. Manufacturer's literature:
    1. Submit specification data sheets and color charts for all materials proposed for use on the Work.

C. Manufacturer's certificates:
    1. Submit signed affidavit from coatings Manufacturer that submitted coatings are of same or better quality than those specified.

1.4 QUALITY ASSURANCE:

A. General:
    1. Acceptability of materials and performance shall be determined by ENGINEER.
    2. Testing or certifications may be required to aid ENGINEER's determination.
    3. Expense of testing and certifications when required and, unless noted otherwise in the Contract Documents, shall be borne by CONTRACTOR.
    4. If destructive testing is required, CONTRACTOR shall repair damaged area. Expense of repair shall be borne by CONTRACTOR,
    5. Request, in writing, a review of each coat by ENGINEER of first finished surface of each type for color, texture and workmanship. First accepted surface of each type and color shall be visibly labeled by ENGINEER with removable label as Project standard for that type and color of item. Labels shall remain in place until job is finished. For spray application, paint a surface of 100 square feet as Project standard.
    6. All work may be inspected as to proper surface preparation, pretreatment, priming, dry film thickness, curing, color and workmanship. Applicable standards, test methods and inspection equipment includes, but is not necessarily limited to the following:
        a. SSPC-VIS-1 photographic blast cleaning standards (latest revision).

b. Inspector's wet film and dry film thickness gages.
c. Zorelco 369/PHD pin hole detector.
d. Mark II Tooke Gage.

B. Labeling:
1. Include the following on a label on each container:
a. Manufacturer's name.
b. Type of coating.
c. Manufacturer's stock number.
d. Manufacturer's batch identification.
e. Color.
f. Instructions for mixing and reducing, where applicable.
g. Percent total solids by volume.
h. Identification of toxic substances and special instructions.

C. It shall be CONTRACTOR's responsibility to ensure the compatibility of painting materials proposed for this Contract. CONTRACTOR shall coordinate this work with other trades to ensure compliance with these Specifications.

D. Prior to ordering any of the materials of this Section, CONTRACTOR, ENGINEER, painting Subcontractor, and paint Manufacturer's representative shall review the work to be performed under this Section and identify any issues with the proposed finishes.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Delivery:
1. Deliver materials in original sealed containers of the Manufacturer with labels legible and intact.

B. Storage:
1. Store only acceptable Project materials on Project Site.
2. Store material in a suitable location and in such a manner as to comply with all safety requirements including any applicable federal, state, and local rules and requirements. Storage shall also be in accordance with instructions of the paint Manufacturer and requirements of insurance underwriters.
3. Restrict storage area to paint materials and related equipment.

1.6 PROJECT CONDITIONS:

A. Environmental requirements:
1. Comply with Manufacturer's recommendations regarding environmental conditions under which coatings may be applied.
2. Environmental conditions which affect coating application include but are not necessarily limited to: ambient air temperature, surface temperature, humidity, dew point and environmental cleanliness.

3. Do not expose epoxies during application and cure to sunlight and heaters that emit carbon dioxide and-carbon monoxide.
4. CONTRACTOR shall demonstrate acceptability of environmental conditions as required by ENGINEER.

1.7 MAINTENANCE:

A. Leave with OWNER at least one gallon of each type and color of paint used for finish coats and one gallon of each type of thinner required. Containers shall be tightly sealed and clearly labeled.

1.8 WARRANTY

A. Furnish in approved written form, a warranty for all work under this Section against cracking, crazing, peeling, blistering, burning through, alligatoring, chalking, and other defects for a period of two (2) years from date of final acceptance. Contractor shall make good without expense to Owner any defects appearing within this period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Acceptable Manufacturers:
   1. Except as otherwise specified, materials shall be the products of the following Manufacturers, or equal:
      a. Sherwin Williams Company (specified products are based on this manufacturer)
      b. Pratt & Lambert, Inc.
      c. ICI Dulux
      d. PPG Pittsburg Paints
      e. Benjamin Moore & Company
      f. Devoe Paint Company

B. Single Manufacturer:
   1. Materials selected for coating systems for each type of surface shall be the product of a single Manufacturer.

2.2 MATERIALS:

A. Material types:
   1. Paint, primer and related materials are included by Manufacturer's product numbers in the Schedules in this Section. Match Existing.

B. Colors:
   1. Colors of all finish coats shall be as selected by Owner. Match Existing.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Inspection:
1. Prior to the commencement of surface preparation or other coating activities, thoroughly inspect the surfaces to determine if the Work is ready to be prepared and painted.
2. Report in writing to Architect, all conditions that may potentially affect proper application.
3. Do not commence surface preparation or other coating activities until such defects have been corrected.
4. Ensure that pipe joints have been sealed in accordance with Section 079200 - Joint Sealants.

B. Correction of defects:
1. Correct defects and deficiencies in surfaces which may adversely affect work of this Section.

3.2 SURFACE PREPARATION:

A. General:
1. Prepare surfaces in accordance with this article, the paint Manufacturer's recommendations and as specified in the painting schedule of this Section.
2. All motors, bearings, chain drives and other moving parts shall be protected by wrapping with plastic and sealing with tape. Protective covers shall be maintained in dust tight condition.
3. Steel and fabrication defects revealed by surface preparation, such as weld imperfections, delaminations, scabs and slivers shall be properly cleaned by appropriate trade before proceeding further with surface preparation. Fabricators shall verify that compatible primer materials are used for the specified finish materials.
4. Surfaces shall be inspected after all surface preparation is complete and prior to application of any coatings.

B. Ferrous metals:
1. Nonimmersed ferrous metals:
a. Surface preparation - shop:
1) Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
2) Cleaned surfaces shall be coated before any visible rust forms on the surface. No cleaned surfaces shall be left uncoated for more than 24 hours.
a) Apply coating as specified under this Section.
b. Surface preparation - field:
1) Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
2) Prepare field welds by grinding to remove sharp edges, undercuts, recesses and pin holes. All weld slag and spatter shall be completely removed.

3) All damages, scratches or abraded areas of shop primers and all field welds and all areas within 4 inches of field welds shall be cleaned before painting using surface prepay methods at least as effective as those specified for the structure itself.
4) Feather out edges to make touch-up patches inconspicuous.
5) Clean surfaces with solvent.
6) CONTRACTOR may, at his option, clean and apply one overall coat of primer for each specified shop coat in place of touch-up or spot priming. CONTRACTOR shall meet all applicable surface preparation and application specifications herein.

C. Nonferrous metals and galvanized steel:
1. Remove dirt, oil, grease and other foreign matter in accordance with SSPC-SP1 Solvent Cleaning.
2. Remove white rust by hand or power brushing being careful not to damage or remove the galvanizing.
3. Remove rust in accordance with SSPC-SP2 or SP3.
4. On galvanized steel, touch-up exposed metal areas with one-package epoxy zinc-rich primer.

D. Gypsum Drywall walls & bulkheads:
a. Surface preparation - field:
1) Remove dirt, oil, grease and other foreign.
2) Sand patch & prime all surfaces.
3) Feather out edges to make touch-up patches inconspicuous.
4) Clean surfaces.
5) Contractor shall meet all applicable surface preparation and application specifications per manufacturer.

E. Wood:
1. Wipe off dust and grit from wood items and millwork prior to priming.
2. Spot coat knots, pitch streaks, and sappy sections with sealer.
3. Fill nail holes and cracks after primer has dried and sand between coats.
4. Back prime interior and exterior woodwork.

3.3 APPLICATION:

A. General:
1. All necessary safety precautions shall be taken in accordance with this Article, SSPC-PA Guide 3, Manufacturer's recommendations, federal, state, and local rules and requirements, and insurance underwriters.
2. All coatings shall be applied in accordance with this Article, SSPC-PA1, and the Manufacturer's recommendations.
3. Do not apply initial coating until moisture content of surface is within limitations recommended by paint Manufacturer. Moisture content shall be determined by one of the following methods.

a. As specified in 3.02 B.2. of this Specification.
b. By use of moisture meter approved by Architect.

4. Mil thickness:
   a. Coats shall be applied in a uniform manner and of the minimum mil thickness as called for in painting schedule.
   b. Maximum mil thickness shall be as recommended by coating Manufacturer.
   c. Where the mil thickness is omitted, it shall be as recommended by coating Manufacturer.
5. Sand and dust between each coat to remove defects visible from a distance of 5 feet.
6. Following coats to be applied within recoat recommendation of the Manufacturer. Schedule inspection so as not to interfere with recoat time.
7. All coats shall be smooth, free of brush marks, streaks, laps or pile-up of paints and skipped or missed areas.
8. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.
9. Coatings on all hollow metal units to be spray applied.
10. Finish door tops, edges and bottoms the same as exposed surfaces.
11. Except for contact surfaces, surfaces of fabricated assemblies that are inaccessible after erection shall receive all field coats of paint before erection.
12. All cracks and crevices shall be filled with paint if practical.
13. Wet paint shall be protected against damage from dust or other detrimental foreign matter as much as is practical.
14. Remove grills, covers, and access panels from mechanical and electrical systems from location and paint separately:
15. The interior surface of all ducts shall be painted black in the immediate area of all supply and exhaust grilles.
16. Coat masonry walls prior to mounting equipment.

3.5 FIELD QUALITY CONTROL:

A. Inspection:
   1. To facilitate painting and inspection, each coat of paint shall be of a different color or tint.
   2. Finished metal surfaces shall be free of skips, voids or pinholes in any coat when tested with a low voltage detector.
   3. Do not apply additional coats until completed coat has been inspected and acknowledged in writing by engineer.
   4. Only coats of paint acknowledged in writing will be considered in determining number of coats applied.

B. Final touch-up:
   1. Any surface damage shall be repaired with touch-up paint matching material used for original coating.
   2. All repaired areas shall be rubbed out and polished to match surrounding finish. Finish repair shall be of the quality typically found within the auto body industry.

3.6 CLEANING:

A. Remove spilled, splashed or spattered paint from all surfaces.

B. Do not mar surface finish of item being cleaned.

C. Prior to acceptance of the Work of this Section, thoroughly clean all painted surfaces and related areas in accordance with Section 01 – Cleaning and Waste Management.

3.7 PROTECTION:

A. General:
1. Adequately protect other surfaces from paint and damage.
2. Repair damage as a result of inadequate or unsuitable protection.

B. Protective materials:
1. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.

C. Fire hazards:
1. Place cotton waste, cloths, and materials which may constitute a fire hazard in closed metal containers and remove daily from site.

D. Electrical plates and hardware:
1. Remove electrical plates, surface hardware, fittings and fastenings prior to painting operations.
2. These items are to be carefully stored, cleaned and replaced upon completion of work in each area.
3. Do not use solvent to clean hardware that may remove permanent lacquer finish.

3.8 PAINTING SCHEDULE:

A. General Painting.
1. Interior and Exterior Ferrous Metals:
(Field) One Coat: Primer
(Field) Two Coats: Finish Coat
2. Gypsum Drywall:
(Field) One Coat: Primer
(Field) Two Coats: Finish Coat
3. Wood - interior:
(Field) One Coat: Transparent Stain/Sealer
(Field) Two Coats: Clear Satin Finish Coat
4. Verify with Owner brand, type and color of existing paint used in room receiving work.

END OF SECTION 099000