PROJECT MANUAL

Dining Room Addition
and Interior Renovations:
Bay Arenac ISD
4155 Monitor Rd Bay City
Bay City, MI 48706.

Prepared For: **Bay Arenac ISD**
4155 Monitor Rd Bay City
Bay City, MI 48706.

Prepared By:

TSSF ARCHITECTS, INC.
ARCHITECTS PLANNERS
122 N. WASHINGTON AVENUE SAGINAW, MICHIGAN

Project Number: **2538**

Date: **BID SET MARCH 18, 2024**

DOCUMENT 00010

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NOT USED

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END OF SECTION

SECTION 00010
PROJECT INFORMATION

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. Project Name: Bay Arenac ISD Dining Addition, located at: 4155 Monitor Rd Bay City, MI 48706 .

B. Architect's Project Number: 2511

C. The Owner, hereinafter referred to as Owner: Bay Arenac ISD

D. Owner's Project Manager: Ken Kerr.
   1. Department: Supervisor, Building Operations.
   2. Address: 4155 Monitor Rd..
   3. City, State, Zip: Bay City, MI 48706.
   4. Phone/Fax: 989-667-3619.
   5. E-mail: kerrk@baisd.net.

1.02 PROJECT DESCRIPTION

A. Summary Project Description: Dining room addition and interior renovations.

B. Contract Scope: Construction and demolition.

C. Contract Terms: Lump sum (fixed price, stipulated sum).

1.03 PROJECT CONSULTANTS

A. The Architect, hereinafter referred to as Architect: TSSF Architects Inc..
   1. Address: 122 N. Washington Ave.
   2. City, State, Zip: Saginaw, MI 48607.
   3. Phone/Fax: 989-752-7311.
   4. E-mail: chris@tssfinc.com.

1.04 PROCUREMENT TIMETABLE

A. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

1.05 PROCUREMENT DOCUMENTS

A. Availability of Documents: Complete sets of procurement documents may be obtained:
   1. From Owner at the Project Manager's address listed above.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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END OF SECTION

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ADVERTISEMENT FOR BIDS

FROM:

1.01 THE OWNER (HEREINAFTER REFERRED TO AS OWNER):

A. Bay Arenac ISD

B. Address:
4155 Monitor Rd
Bay City, MI, 48706

1.02 AND THE ARCHITECT (HEREINAFTER REFERRED TO AS ARCHITECT):

A. TSSF Architects Inc.

B. Address:
122 N. Washington Ave.
Saginaw, MI 48607

1.03 DATE: MARCH 18, 2026

1.04 TO: POTENTIAL BIDDERS

A. Your firm is invited to submit an offer under seal to Owner for the Dining Room Addition and Interior Renovations in a facility located at the above address before 1:00 pm local standard time on the 1st day of April, 2026, for:

B. Project: Bay Arenac ISD Dining Room Addition and Interior Renovations

C. Architect's Project Number: 2538.

D. All bidders are required to prequalify to the requirements described in Document 00300 - Instructions to Bidders.

E. Documents may be obtained only by General Contract. Others may view the Bid Documents at the office of the Architect.

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

G. Refer to other bidding requirements described in Document 00300 - Instructions to Bidders.

H. Submit your offer on the Bid Form provided. Bidders may supplement this form as appropriate.

I. Your offer will be required to be submitted under a condition of irrevocability for a period of 30 days after submission.

J. The Owner reserves the right to accept or reject any or all offers.

END OF SECTION

SECTION 00300
INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 SEE AIA A701, INSTRUCTIONS TO BIDDERS AVAILABLE AT THE OFFICE OF THE ARCHITECT.

1.02 RELATED DOCUMENTS

A. Document 00150 - Advertisement for Bids.

B. Document 00400 - Bid Form.

INVITATION

2.01 BID SUBMISSION

A. Bids signed and under seal, executed, and dated will be received at the office of the Owner at 4228 Bay-Arenac Dr. Bay City, MI 48706 at the shipping and receiving doors before 1:00 p.m. local standard time on 04/01/2025.

B. Offers submitted after the above time will be returned to the bidder unopened.

C. Along with the Bids, the Familiar Disclosure Form, Assurances and Certifications, and Affidavit of Compliance – Iran Economic Sanctions Act should be signed and completed with the submittal. These formas are behind the Bid Form section 00500 in the specifications.

2.02 WAGE RATES

A. Davis-Bacon prevailing wage requirements are required on this project. Submission of weekly payroll with statement of compliance with original signature during the project are encouraged.

2.03 CONTRACT TIME

A. Identify Contract Time in the Bid Form. The completion date in the Agreement shall be the Contract Time added to the commencement date.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 INQUIRIES/ADDENDA

A. Direct questions to Chris Bohinski, email; chris@tssfinc.com.

B. Addenda may be issued during the bidding period. All Addenda become part of Contract Documents. Include resultant costs in the Bid Amount.

C. Verbal answers are not binding on any party.

SITE ASSESSMENT

4.01 SITE EXAMINATION

A. Examine the project site before submitting a bid.

4.02 PREBID CONFERENCE

A. A mandatory bidders conference has been scheduled for 10:00 a.m. on 03/20/2026 at the location of 4155 Monitor Rd. Bay City, MI 48706.

BID ENCLOSURES/REQUIREMENTS

5.01 SECURITY DEPOSIT

A. Bids shall be accompanied by a security deposit as follows:
   1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form.

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

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

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

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

OFFER ACCEPTANCE/REJECTION

6.01 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of sixty (60) days after the bid closing date.

6.02 ACCEPTANCE OF OFFER

A. Owner reserves the right to accept or reject any or all offers.

B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Bid Acceptance.

END OF SECTION

SECTION 00400
BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. Bay Arenac ISD
Ken Kerr
4228 Bay-Arenac Dr.
Bay City, Michigan 48706

1.02 FOR:

A. Project: Bay Arenac ISD Dining Room Addition and Interior Renovations

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____
1. Address _____
2. City, State, Zip_____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bid Documents prepared by _____ for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

_____ dollars
($_____), in lawful money of the United States of America.

B. We have included the required security deposit as required by the Instruction to Bidders.

C. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.

D. All applicable federal taxes are included and State of _____ taxes are included in the Bid Sum.

E. All Cash and Contingency Allowances described in Section 01210 - Allowances are included in the Bid Sum.

F. Alternate No. 1 Dining Room 1115, Serving Area 116 and Cafeteria 117 Flooring and Ceiling
_____Dollars

(Bid in Words)

$_____

(Bid in Figures)

G. Alternate No. 2 Eco Grip Flooring in Kitchen Area

_____Dollars

(Bid in Words)

$_____

(Bid in Figures)

1.06 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:
1. Execute the Agreement within seven days of receipt of Notice of Award.

1.07 CONTRACT TIME

A. If this Bid is accepted, we will:

B. Complete the Work in _____ calendar weeks from Notice to Proceed. (Bidder to enter number of weeks.)

1.08 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:
   1. _____ percent on the cost of work done by any Subcontractor.

B. On work deleted from the Contract, our credit to Owner shall be Architect-approved net cost plus _____ of the overhead and profit percentage noted above.

1.09 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
   1. Addendum # _____ Dated _____.
   2. Addendum # _____ Dated _____.

1.10 BID FORM SIGNATURE(S)

A. The Corporate Seal of

B. _____

(Bidder - print the full name of your firm)

C. was hereunto affixed in the presence of:

D. _____

(Authorized signing officer, Title)

E. (Seal)

_____

F. (Authorized signing officer, Title)

END OF SECTION

Familial Disclosure Form

The undersigned, the owner or authorized officer of _____ (the "Proposer"), pursuant to the familial disclosure requirement provided in the Bay-Arenac Intermediate School District Request of Proposals and Specifications, hereby represent and warrant, except as provided below, that no familial relationship exist between bidder(s) or any employee of BAISD, and any member of the Board of Education of the School District or the Superintendent of the Schools or the LEAs listed in the Request for Proposal.

List any Familial Relationships:

_____

_____

_____

Dated: _____ PROPOSER: _____

By: _____

Its: _____

State of Michigan)
County of _____)ss:

This instrument was acknowledged before me on the _____ day of _____, 20__, by _____.

_____(Signature)
_____(Printed)
Notary Public, _____ County, Michigan
My Commission Expires: _____
Acting in the County of _____

Assurances and Certifications

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

The prospective contractor certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded for from participating in this transaction by any Federal department of agency. Where the prospective contractor is unable to certify to any of the statements in this certification, such prospective contractor shall attach an explanation to this proposal.

Certification Regarding Nondiscrimination Under Federally and State Assisted Programs

The applicant herby agrees that it will comply with all federal and Michigan laws and regulations prohibiting discrimination and, in accordance therewith, no person, on the basis of race, color, religion, national origin or ancestry, age, sex, marital status or handicap, shall be discriminated against, excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination in any program or activity for which it is responsible or for which it receives financial assistance from the U.S. Department of Education or the MDE.

Assurance Regarding Access to Records and Financial Statements

The applicant hereby assures that it will provide the pass-through entity, i.e., Bay-Arenac ISD, and auditors with access to the records and financial statements as necessary for the pass-through entity to comply with Section 400 (d) (4) of the U.S. Department of Education Compliance Supplement for A-133.

Iran Economic Sanctions Act

The prospective contractor certifies that its organization, by submission of this proposal, is not an Iran Linked Business. Please refer to the "Iran Economic Sanction Act" Public Act 517 for clarifications or questions. Bay-Arenac ISD as a Michigan public entity is required to follow Public Act 517 of 2012.

Dated: _____ PROPOSER: _____

By: _____

Its: _____

State of Michigan)
County of _____)ss:

This instrument was acknowledged before me on the _____ day of _____, 20__, by _____.

_____(Signature)
_____(Printed)
Notary Public, _____ County, Michigan
My Commission Expires: _____
Acting in the County of _____

Affidavit of Compliance – Iran Economic Sanctions Act

All Bids shall be accompanied by a sworn statement disclosing any Iran Linked Business relationship that exists within the owners, including its officers, director, and employees.

The undersigned, the owner or authorized officer of _____ (the "Bidder"), pursuant to Michigan Public Act No . 517 of 2012, the "Iran Linked Business" requirement provided in the BAISD Consortium Universal Service Fund Request for Proposals hereby represents and warrants that the bidder, including its officers, directors and employees, is not and " Iran Linked Business" within the meaning of the applicable Public Act, and that in the event bidder is awarded a contract as a result of this RFP, the contract. The bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the District investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on future Requests for Proposals (RFPs) for three (3) years from the date that it is determined that the person has submitted the false certification.

There is not an "Iran Linked Business" that exists within the bidder and/or owner, officers, directors and employees.

Bidder: _____
(Company Name)

By: _____
(Signature)

Its: _____
(Title)

This instrument was acknowledged before me, a Notary Public, in and for

_____ County, on this _____ day of _____ 20_____

_____ SS:
(Notary Public Signature)

My commission Expires: _____

Acting in the County of: _____

SECTION 00610

PERFORMANCE, LABOR, AND MATERIAL BONDS

PART 1 GENERAL

1.1 BONDS REQUIRED

A. The successful Contractor, shall within fifteen (15) days after acceptance of his proposal, furnish a Performance Bond, in an amount equal to one hundred percent (100%) of the contract sum as security for the faithful performance of this contract and also a Labor and Material Payment Bond in an amount not less than one hundred percent (100%) of the contract sum as security for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract.

B. Cost of said bonds shall be included as a part of the Base Bid.

C. The Contractor shall obtain such bonds in a manner consistent with Michigan law.

D. Bonds signed by Attorney-In-Fact must be accompanied by a certified and effectively dated copy of their Power of Attorney.

1.2 RELATED SECTIONS

A. Section 00500 - Agreement Between Owner and Contractor

B. Section 00700 - General Conditions of the Contract

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 00720

GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

2.01 THE 2017 EDITION OF THE AIA GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION (AIA DOCUMENT A-201), IS HEREBY MADE A PART OF THIS CONTRACT AND SHALL BE AS FULLY BINDING ON ALL CONTRACTORS AND SUBCONTRACTORS AS IF BOUND HEREIN.

2.02 THIS DOCUMENT MAY BE INSPECTED AT THE OFFICE OF THE ARCHITECT.

CONTRACTOR RESPONSIBILITY

4.01 PRIOR TO THE BEGINNING OF CONSTRUCTION, THE GENERAL CONTRACTOR SHALL ACQUAINT EACH CONTRACTOR, SUBCONTRACTOR, SUPERINTENDENT OF CONSTRUCTION, FOREMAN, WORKMAN, SUPPLIER, OR OTHERS WHO ARE OR WILL BE RESPONSIBLE FOR THE EXECUTION OF ANY TRADE UNDER THIS CONTRACT WITH ALL PROVISIONS OF THE CONDITIONS OF THE CONTRACT (GENERAL, AND OTHER CONDITIONS), THE DRAWINGS, THE SPECIFICATIONS, ALL ADDENDA ISSUED PRIOR TO BID, AND ALL MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT.

END OF SECTION

SECTION 01200
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 SCHEDULE OF VALUES

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

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

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

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

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

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

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

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

E. For each item, provide a column for listing each of the following:

1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Authorized Change Orders.
7. Total Completed and Stored to Date of Application.
8. Balance to Finish.
9. Retainage.

F. Execute certification by signature of authorized officer.

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

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

I. Submit one electronic copy of the Application for Payment.

1.04 MODIFICATION PROCEDURES

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

B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.

2. Promptly execute the change.

C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 5 days.

D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation.

E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

F. Substantiation of Costs: Provide full information required for evaluation.

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

1.05 APPLICATION FOR FINAL PAYMENT

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

B. Application for Final Payment will not be considered until the following have been accomplished:

1. All closeout procedures specified in Section 01700.

END OF SECTION

SECTION 01210
ALLOWANCES AND ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contingency allowance.
B. Landscaping allowance.
C. Testing allowance.
D. Specialty Light Fixture allowance.

1.02 CONTINGENCY ALLOWANCE

A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.

B. Funds will be drawn from the Contingency Allowance only by Change Order.

C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.03 ALLOWANCES SCHEDULE

A. Contingency Allowance: Include the stipulated sum/price of $25,000.00 for use upon Owner's instructions.
B. Landscaping Allowance: Include the stipulated sum/price of $7000.00 for landscaping material and installation.
C. Testing Allowance: Include the stipulated sum/price of $5000.00 for testing related services.
D. Specialty Light Fixture Allowance: Include the stipulated sum/price of $4500.00 to be used for (4) pendant lights and (2) sconces in Dining Room 103.

1.04 ALTERNATES

A. ADD ALTERNATE NO. 1: This alternate contemplates the demolition and installation of new ceilings and flooring materials in Dining Room 115, Serving 116 and Cafeteria 117. Also included are electrical and mechanical related items for these rooms.

B. ALTERNATE NO. 2: This alternate contemplates deletion of base bid quarry tile and installation of new Eco Grip Resilient Flooring as shown on drawings. Also included in this is the concrete infill of the existing recessed floor areas to level the floor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01700
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Surveying for laying out the work.

D. Cleaning and protection.

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

F. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.

1.03 QUALIFICATIONS

A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.04 PROJECT CONDITIONS

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

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

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

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

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

C. Product Substitution: For any proposed change in materials, submit request for substitution.

PART 3 EXECUTION

3.01 EXAMINATION

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

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

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

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

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

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

3.02 PREPARATION

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

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

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

3.03 LAYING OUT THE WORK

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

B. Promptly notify Architect of any discrepancies discovered.

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

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

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

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.

2. Grid or axis for structures.

3. Building foundation, column locations, ground floor elevations.

H. Periodically verify layouts by same means.

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

3.04 GENERAL INSTALLATION REQUIREMENTS

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

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

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

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

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

3.05 CUTTING AND PATCHING

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

B. Perform whatever cutting and patching is necessary to:

1. Complete the work.

2. Fit products together to integrate with other work.

3. Provide openings for penetration of mechanical, electrical, and other services.

4. Match work that has been cut to adjacent work.

5. Repair areas adjacent to cuts to required condition.

6. Repair new work damaged by subsequent work.

7. Remove samples of installed work for testing when requested.

8. Remove and replace defective and non-complying work.

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

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

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

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

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

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 078400, to full thickness of the penetrated element.

I. Patching:

1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

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

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

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

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

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

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

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

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

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

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

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

3.08 ADJUSTING

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

3.09 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

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

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

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

E. Clean filters of operating equipment.

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

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

3.10 CLOSEOUT PROCEDURES

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

1. Provide copies to Architect and Owner.

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

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

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

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

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

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

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

3.11 MAINTENANCE

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

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

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

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

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

END OF SECTION

SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Remove surface debris.

B. Remove paving, curbs, sidewalks.

C. Clear site of plant life and grass.

D. Remove trees and shrubs.

E. Remove root system of trees and shrubs.

F. Topsoil excavation.

1.2 REGULATORY REQUIREMENTS

A. Conform to applicable code for disposal of debris.

B. Coordinate clearing Work with utility companies.

PART 2 EXECUTION

2.1 PREPARATION

A. Verify that existing plant life designated to remain, is tagged or identified.

2.2 PROTECTION

A. Locate, identify, and protect utilities that remain, from damage.

B. Protect survey stakes.

C. Protect trees, plant growth, and features designated to remain, as final landscaping.

D. Protect benchmarks and existing structures from damage or displacement.

E. All trees, shrubs, and bushes which are too large to be replaced in kind, shall be left undisturbed, with the utility being installed in a boring and/or tunneling operation, unless written consent from the property owner to remove the tree is obtained.

F. The boring or tunneling operation shall be constructed in accordance with these specifications.

G. The Contractor shall locate the boring or tunneling pit at a sufficient distance to ensure no damage will occur to the tree.

2.3 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove paving, curbs, sidewalks.

C. Remove trees as specified on drawing. Remove tree stumps.

D. Clear undergrowth and deadwood, without disturbing subsoil.

2.4 REMOVAL

A. Remove debris, rock, and extracted plant life from site.

B. Trees, shrubs, and bushes which are removed, and which are to be replaced, shall be done so by an established nursery.

C. This work shall be included in the unit price for cleanup of the project.

D. Trees, shrubs, and bushes to be removed shall be done by falling the tree in sections, beginning from the top down and removing the stump and debris from the site.

E. The property owner, at his option, may elect to claim the usable timber.

F. If so, the Contractor shall be responsible for cutting the tree into manageable lengths and stockpiling same along the line of the work.

G. If the property owner does not want the timer, it shall become the property of the Contractor.

H. The cost of removing trees, brush, and bushes and the cutting of timber and removing debris from the site shall be included in the unit price for cleanup of the project.

2.5 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated, re-landscaped, marked areas. Farm areas in the project route are to have topsoil windrowed and protected from contamination from sub soil excavation, so it may be replaced and used for farming operations. This is considered part of utility installation.

B. Stockpile in area designated on site as approved by the Engineer. Protect from erosion.

END OF SECTION

SECTION 02274

SOIL EROSION PREVENTION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. System Description.

B. Quality Assurance.

C. Regulatory Requirements.

D. Method of Payment.

1.2 SYSTEM DESCRIPTION

A. Methods of control are identified on Drawings by numbers corresponding to the Michigan Unified Keying System for soil erosion and sedimentation control.

B. The notation "T" or "P" following the number (as shown on the Drawings) indicates whether the control measure is temporary or permanent.

C. Additional control measures shall be employed as required by site conditions and applicable enforcing agency having project jurisdiction.

1.3 UNIT PRICE - BASIS OF MEASUREMENT

A. Soil Erosion and Sedimentation Control:
   1. Basis of Measurement: Included in the unit price for utility installation and cleanup.
   2. Basis of Payment: Includes all labor, material, and equipment required for soil erosion prevention and sedimentation control required for this project.

1.4 QUALITY ASSURANCE

A. Perform and maintain work in accordance with the Soil Erosion and Sedimentation Control, Part 91 of Act 451 of 1994, and corresponding rules of the Michigan Department of Environmental Quality.

1.5 REGULATORY REQUIREMENTS

A. Contractor shall obtain all permits and pay all fees for plan review and inspection as required by applicable enforcing agency having jurisdiction.

B. Submit installation time schedule for temporary and permanent soil erosion and sedimentation control measures to applicable enforcing agency having jurisdiction, as well as to Engineer. Make submittals prior to start of construction.

C. If the site disturbs more than 5.0 acres during the construction project, the Contractor shall obtain a NPDES storm water construction permit and abide by all the rules associated to such a permit.

1.6 METHOD OF PAYMENT

A. All fees required by applicable enforcing agency shall be paid as stated in Proposal.

PART 2 PRODUCTS

2.1 MATERIALS

A. Permanent Measures: In accordance with applicable Section for specified materials.

B. Temporary Measures: In accordance with standards and specifications for soil erosion and sediment control with approved plans and requirements of applicable enforcing agency.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Identify required lines, levels, contours and datum.

B. Field locate known utility locations. Notify Engineer of conflicts and attain removal or relocation instructions prior to continuing installation activities.

C. Maintain and protect existing utilities to remain.

3.2 PROTECTION OF ADJACENT WORK

A. Protect adjacent structures and property which may be damaged by execution of work.

B. Protect existing trees, shrubs, landscaping and lawn areas designated to remain.

3.3 INSTALLATION AND MAINTENANCE

A. Construct soil erosion and sedimentation control measures in accordance with approved plans and requirements of applicable enforcing agency.

B. Schedule planned control measures with construction operations to limit the area of any disturbed land to the shortest possible period of exposure.

C. Conduct all earth changes so as to effectively reduce accelerated soil erosion and resulting sedimentation.

D. Remove all sediment from runoff water before it leaves the site.

E. Inspect, maintain and repair temporary control measures until permanent control measures are implemented.

F. Maintain permanent control measures until final acceptance by Owner.

G. Install silt fences around all catch-basin inlets, to be removed after final inspection of the project.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes site grading, removal of topsoil and subsoil, building excavating and trenching, backfilling, and compacting.

1.2 QUALITY ASSURANCE

A. Perform Work in accordance with State of Michigan Department of Transportation standards.

PART 2 – PRODUCTS

1.3 SOIL MATERIALS

A. Topsoil: Reusable excavated friable loam; free of subsoil, roots, grass, weeds, free of stone larger than 1/4-inch, foreign matter and capable of supporting, sustaining and rigorous growth of plant life and grass.

B. Subsoil: Excavated material, graded free of lumps larger than 6 inches, rocks larger than 3 inches, organic material, and debris.

1.4 FILL MATERIALS

A. Type A - Select Granular Material: Coarse select granular: Coarse stone washed natural stone; free of shale, clay, friable material, sand, debris, equal to “stonemix”.
   1. Grading:
      a. Minimum Size: 1/2 inch.
      b. Maximum Size: 2 inch.

B. Type B - Pea Gravel: Natural stone; washed, free of clay, shale and organic matter.
   1. Minimum Size: ¼ inch.
   2. Maximum Size: 5/8 inch.

C. Type C - Sand: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter meeting the requirements of MDOT granular material Class II.

D. Type D – Subsoil: Reused, free of rock larger than 3 inch size, and debris.

PART 3 -- EXECUTION

1.5 EXAMINATION AND PREPARATION

A. Call Miss Dig at 1-800-482-7171 not less than 3 working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours and datum.

C. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

D. The Various construction operations shall be restricted to the existing right-of-way or the areas indicated on the Plans. If the CONTRACTOR requires additional area, the CONTRACTOR shall furnish the ENGINEER with written permission obtained from the property owner for any part of the operations he conducts outside of the right-of-way or limits indicated.

E. Existing Improvements. The CONTRACTOR shall expose existing sewers and structures to which the new Work is to be connected and notify the ENGINEER of same. The ENGINEER will verify the vertical and horizontal locations of the existing system and shall inform the CONTRACTOR as to the necessary adjustments required to align the new Work with the existing system.

F. Existing Utilities. When existing utilities are shown on the Plans, their locations are approximate only, as secured in the field investigation and/or from available public records. The CONTRACTOR, prior to the start of construction, shall contact Miss Dig and the public agency or utility having jurisdiction to request the verification of all utilities within the construction area.

   When existing utility lines, structures or utility poles are encountered during the performance of the Work, the CONTRACTOR, at his expense, shall perform his operations in such a manner that the service will be uninterrupted.
   The CONTRACTOR shall expose all existing utility lines prior to any excavation operation, to determine any conflict with the proposed improvement. The CONTRACTOR shall be responsible for any relocation required as a result of any conflict of existing utilities shown on the plans, with the proposed improvement.
   Should it become necessary to move any utility structure, line or pole shown on the Plans or otherwise found necessary to be moved, the CONTRACTOR shall make all arrangements with the OWNER of the utility for the moving. All costs incurred for such moving shall be at the CONTRACTOR's expense unless indicated otherwise. However, before disturbing a utility line, structure or pole, the CONTRACTOR shall furnish the ENGINEER with satisfactory evidence, in writing, that proper arrangements have been made with the Owner of the utility.

G. Utility Poles. The CONTRACTOR shall be responsible for any removal or relocation required as a result of any conflict of existing utility poles (including street light poles, guy poles, telephone poles, etc.) with proposed improvements.

   The CONTRACTOR shall make all arrangements for removing or relocating utility poles with the owner of the utility pole.

   Prior to disturbing any utility pole, the CONTRACTOR shall provide the ENGINEER with written evidence that proper arrangements have been made with the owner of the utility pole.

When required by the Work, CONTRACTOR shall temporarily support poles in the vicinity of the Work at no additional cost to the OWNER. Support shall be in accordance with and to the satisfaction of the utility company.

H. Existing Sewers, Tile, and Mains. Existing sanitary sewers, storm sewer, drain tile, septic tank bed tiles, water mains or building services or leads, that are encountered during the performance of the Work that require relocation or are damaged, shall be restored with new materials equal in quality and type to the materials encountered.

The new material shall be installed as specified in the Contract Documents and per the requirements of the local agencies. The bedding and backfill material, unless otherwise specified, shall be an approved Class II granular material, compacted to 95% of its maximum unit weight.

Seepage bed tile and water mains shall be replaced in accordance with the requirement of the agency having jurisdiction.

The relocation or protection of existing sewers, tiles, tile field, water mains or building services and leads shall be at the CONTRACTOR's expense, unless otherwise indicated in the Contract Documents.

I. Existing Structures. Existing surface and subsurface structures may be shown on the Plans, in locations considered most probable from information secured in the field investigation or from available public records. Neither the correctness nor completeness of such information is guaranteed or implied. All structures shall be protected, preserved or restored by the CONTRACTOR, to the satisfaction of the structure owner, at no additional cost to the Project.

1.6 PROTECTION OF ADJACENT WORK

A. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.

B. Grade excavation top perimeter to prevent surface water run-off into excavation or to adjacent properties.

1.7 TOPSOIL EXCAVATING

A. Do not excavate wet topsoil.

B. Excavate topsoil and stockpile in area designated on site.

1.8 SUBSOIL EXCAVATING

A. Do not remove wet subsoil.

B. Remove groundwater by pumping to keep excavations dry.

C. Excavate subsoil required for building foundations, construction operations, and other Work.

D. Slope banks to angle of repose or less, until shored.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Proof roll bearing surfaces. Fill soft spots with Type “C” fill and compact uniformly to 95 percent of maximum density.

G. Correct unauthorized excavation at no cost to Owner.

H. Fill over-excavated areas under structure bearing surfaces in accordance with direction by Architect/Engineer.

I. Stockpile subsoil in area designated on site.

1.9 TRENCHING

A. Excavate for storms sewer, sanitary sewer, water and gas piping to municipal utilities.

B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.

C. Hand trim excavation and leave free of loose matter.

D. Support pipe and conduit during placement and compaction of bedding fill.

E. Backfill trenches to required contours and elevations.

F. Place and compact fill materials as for Backfilling.

1.10 BACKFILLING

A. Backfill areas to contours and elevations. Use unfrozen and unsaturated materials.

B. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place geotextile fabric over unstable subsoil.

D. Place material in continuous layers as follows:
1. Soil Materials: Maximum 12 inches compacted depth.
2. Fill Materials: Maximum 8 inches compacted depth.

E. Employ placement method so not to disturb or damage foundations, foundation perimeter drainage, foundation waterproofing and protective cover, or utilities in trenches.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Backfill against supported foundation walls. Backfill simultaneously on each side of unsupported foundation walls.

H. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.

1.11 PLACING TOPSOIL

A. Place topsoil in areas where seeding & planting is scheduled.

B. Fine grade topsoil eliminating rough or low areas. Maintain levels, profiles, and contours of subgrade.

C. Remove large stone, roots, grass, weeds, debris, and foreign material while spreading.

D. Lightly compact placed topsoil.

E. Leave stockpile area and site clean and raked, ready to receive landscaping.

1.12 TESTS

A. Perform laboratory material tests in accordance with ASTM D698.

B. Perform in place compaction tests in accordance with the following:
1. Density Tests: ASTM D2922.

C. Frequency of Tests: Six.

1.13 TOLERANCES

A. Top Surface of Exposed Subgrade: Plus or minus one inch.

B. Top of Topsoil: Plus or minus ½ inch.

1.14 SCHEDULE

A. Interior Slab-On-Grade: Type A fill, 4 inches thick, compact uniformly to 95 percent of maximum density; with cover of Type C fill, 4 inches thick, compact uniformly to 95 percent of maximum density.

B. Exterior Side of Foundation Walls and Retaining Walls over Granular Filter Material and Foundation Perimeter Drainage: Type C fill to subgrade elevation, compact uniformly to 90 percent. Provide Type B fill at foundation drainage 18” minimum compacted depth.

C. Fill Under Landscaped Areas: Type D fill, to 12 inches below finish grade, compact uniformly to 90 percent of maximum density. Topsoil fill to grade compacted to 90 percent.

D. Fill Under Concrete Paving: Type C fill, to 4 inches below finish paving elevation, compact uniformly to 95 percent of maximum density.

E. Fill under Flexible Pavement: by Pavement Contractor.

END OF SECTION

SECTION 02410
MINOR DEMOLITION FOR REMODELING

PART 1 GENERAL

1.1 SUMMARY

A. This work includes the demolition and removal of building and structures, site improvements adjacent to a building or structure to be demolished, removal of below-grade improvements, and disconnection, capping or sealing, and removal of utilities and equipment adjacent to building.

Work includes, but is not limited to, furnishing all labor, materials, appliances, equipment, and incidentals necessary to complete the following:

* Complete demolition and removal of existing building(s), foundations, pads, and sidewalks adjacent to building.
* Disconnection of utility services in accordance with requirements of agency having jurisdiction of each utility.
* Other demolition, excavation and removals as required to accommodate the Work.

1.2 DEFINITIONS

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

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

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

1.3 SUBMITTALS

A. Qualification Data: For demolition firm.

B. Proposed Environmental Protection, Dust Control, and Noise Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate. Control the spread of dust and avoid the creation of a nuisance in the surrounding area. Do not use water if it results in hazardous or objectionable conditions, such as ice, flooding, or pollution. Comply with all dust regulations imposed by local air pollution agencies.

C. Submit proposed salvage, demolition, and removal procedures to the Owner and Owner's Representative before Work is started. Comply with the requirements of Section 017419 – Construction Waste Management and Disposal. Procedures will provide for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utilities, a detailed description of methods and equipment to be used for each operation, and of the sequence of operations.

D. Schedule of Building Demolition Activities: Indicate the following:
   1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
   2. Interruption of utility services.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Locations of temporary protection and means of egress.

E. Inventory: After building demolition is complete, submit a list of items that have been removed or salved.

F. Pre-demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by building demolition operations. Submit before Work begins.

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

1.5 QUALITY ASSURANCE

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

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

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

D. Pre-demolition Conference: Conduct conference at Project site. Review methods and procedures related to building demolition, including, but not limited to, the following:
   1. Inspect and discuss condition of construction to be demolished.
   2. Review structural load limitations of existing structures.
   3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities to make progress and avoid delays.
   4. Review and finalize protection requirements.

1.6 PROJECT CONDITIONS

A. Provide Owner not less than 3 days' notice prior to demolition activities.

B. Furniture and other unattached portable equipment to be salvaged will be removed by the Owner

C. Maintain across to existing walkways and other adjacent occupied or used facilities. Do not close or obstruct walkways, exits, or other occupied or used facilities without written permission from authorities having jurisdiction.

D. Owner assumes no responsibility for buildings and structures to be demolished.
   1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner as far as practical.

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

PART 2 – PRODUCTS

2.1 SOILS MATERIALS

A. Satisfactory soils: ASTM D 2487 soil classification groups, GW, GP, GM, CL, SW, SP, ML and SM, or a combination of these group symbols; free of organic matter, ash, cinders, debris, waste, frozen materials, vegetation, and other deleterious matter; and with plasticity index less than 10, and containing less than 15 percent by weight rock fragments larger than 3 inches, less than 30 percent by weight larger than 3/4-inch and less than 30 percent by weight smaller than No. 200; or on of the following:

1. Clean well graded soils acceptable to Owner's Representative and contractor's Civil Engineer, if required by Owner's Representative, with good strength characteristics with a maximum particle size of 3 inches and containing not more than 20 percent silt/clay by weight. On-site shot-rock meeting this requirement will be considered satisfactory.

2. On-site soils identified in Report of Geologic Exploration as Stratum I, II, and III if maintained at optimum moisture content.

3. Crushed and processed asphalt and masonry rubble from demolition activities may be used for infill of below grade voids once building has been demolished only where approved by the Owner's Representative.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Survey existing conditions and correlate with requirements indicated to determine extent of building demolition required.

B. Inventory and record the condition of items to be removed and salvaged.

C. When unanticipated mechanical, electrical, or structural elements are encountered, investigate, and measure the nature and extent of the element. Promptly submit a report to the Owner and Owner's Representative.

D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

A. Existing utilities remaining on site: Locate, identify, disconnect, and seal or cap off indicated utilities serving building to be demolished in accordance with respective utility requirements.

1. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

2. Arrange to shut off indicated utilities with respective utility companies.

3. If utility services are required to be removed, relocated, or abandoned, before proceeding with building demolition provide temporary utilities that bypass building and structures to be demolished and that maintain continuity of service to other buildings and structures, if applicable.

4. Cut off pipe or conduit a minimum of 24 inches below grade. Cap, valve, or plug and seal.

5. Remove refrigerant from air conditioning equipment before starting demolition.

B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of demolition.

3.3 DEMOLITION GENERAL

A. General: Demolish indicated existing building completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

2. Maintain adequate ventilation when using cutting torches.

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

B. Engineering surveys: Perform surveys as the Work progresses to detect hazards that may result from building demolition activities.

C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from the Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

2. Use water mist or other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

3.4 MECHANICAL DEMOLITION

A. Remove buildings, structures, and other improvements intact when permitted by authorities having jurisdiction.

B. Remove debris from elevated portions by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact or dust generation.

C. Below-Grade Construction: Remove below-grade construction, including foundation walls and footings, completely unless otherwise indicated.

D. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures to a point a minimum of 5 feet beyond the building or to practical point as determined by the Owner's Representative.

E. Mechanical Equipment: Remove and dispose of mechanical equipment off-site in accordance with all local, county, state, and federal lows, ordinances, and codes.

3.5 EXPLOSIVE DEMOLITION

A. Explosives: Use of explosives is not permitted.

3.6 SITE RESTORATION

A. Below-Grade Areas: Completely fill below-grade areas and voids or depressions resulting from building demolition operations with satisfactory materials and compacted to 90% minimum dry density according to ASTM D698. Areas shall be flush with existing grade and provide positive drainage. Stabilize area with annual ryegrass.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished material from Project site, and legally dispose of them in an EPA-approved landfill. Comply with federal, state, and local hauling and disposal regulations.
   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.

B. Burning: Do not set fire to structures. Burning of burn demolished materials and debris will not be permitted.

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

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

END OF SECTION

SECTION 02722

STORM SEWERAGE SYSTEM

PART GENERAL

1.1 SECTION INCLUDES

A. Storm sewerage drainage piping, fittings and accessories, excavation and bedding.

B. Connection of drainage system to municipal sewers.

C. Manholes and Catch basins.

D. Detention/Retention basins.

1.2 REFERENCES

A. AASHTO M36 - Metallic (Zinc or Aluminum) Coated Corrugated Steel Culverts and Underdrains.

B. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18-in. (457 mm) Drop.

C. ASTM A74 - Cast Iron Soil Pipe and Fittings.

D. ASTM C12 - Practice for Installing Vitrified Clay Pipelines.

E. ASTM C14 - Concrete Sewer, Storm Drain, and Culvert Pipe.

F. ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

G. ASTM C425 - Compression Joints for Vitrified Clay Pipe and Fittings.

H. ASTM C443 - Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

I. ASTM C564 - Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

J. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12-inch (304.8 mm) Drop.

K. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18-inch (457 mm) Drop.

L. ASTM D2321 - Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

M. ASTM D2729 - Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

N. ASTM D2751 - Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.

O. ASTM D3033 - Type PSP Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

P. ASTM D3034 - Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

Q. ASTM C700 - Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated.

R. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

S. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

1.3 SUBMITTALS FOR REVIEW

A. Product Data: Provide data indicating pipe, pipe accessories, and manhole and catch-basins castings.

1.4 SUBMITTALS FOR INFORMATION

A. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

B. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

A. Accurately record actual locations of pipe runs, connections, catch basins and invert elevations.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable code for materials and installation of the Work of this section.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

A. Vitrified Clay Pipe: ASTM C700, Extra strength.

B. Concrete Pipe: ASTM C14, Class 1, 2 and 3; unreinforced; inside nominal diameter of 8-15 inches tongue and groove end joints.

C. Reinforced Concrete Pipe: ASTM C76, Class I, II, III, IV and V as called for on the plans; inside nominal diameter of 18-84 inches tongue and groove end joints.

D. Plastic Pipe: ASTM D3024, SDR-35, polyvinyl chloride (PVC) material; inside nominal diameter of 10 inches rubber gasketed joint end.

E. Plastic Pipe: ASTM D3350 and AASHTO M294 as supplied by ADS or Hancor Inc.

2.2 ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

B. Filter Fabric: Non-biodegradable, woven, manufactured by Mirafi, Amaoco, or approved equal.

C. Grout: Specified in Section 04065.

2.3 CATCH BASINS & ACCESSORIES

A. Lid and Frame: Cast iron construction, manufactured by EJIW or approved equal.
1. Lid Design: As specified on the plans.

B. Shaft Construction and Concentric Cone Top Section: Reinforced precast concrete pipe sections, lipped male/female dry joints, nominal shaft diameter of 36 inches.

C. Base Pad: Precast concrete of type specified in Section 03300.

2.4 BEDDING AND COVER MATERIALS

A. Bedding: In accordance with Standard Details Plan. B. Cover: In accordance with Standard Details Plan.

2.5 MANHOLES AND ACCESSORIES

A. Barrell and conical top section.
1. Reinforced, precast concrete pipe section conforming to ASTM C-478.
2. Nominal diameter of 48 inches or as indicated on the drawings.
3. Pre-cast reinforced concrete base.
4. Plastic coated steel steps at 15 inches on center.

2.6 MANHOLE COVERS AND FRAMES

A. Or indicated on the plans.

B. Or equal.

C. Manhole frame shall have 4 holes in the base flange for bolting to cone section.

D. Furnish 4 inch by 5.8-inch cadmium coated threaded studs with nuts and washers for bolting frame to cone section.

E. Manholes shall be adjusted to grade using grade rings with rubber gaskets.

2.7 MORTAR FOR MANHOLES

A. Mix mortar per ASTM C270, utilizing the Proporpion Method to achieve 2,500 psi 28-day strength.

B. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.

C. Add admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and coloration.

D. Do not use anti-freeze compounds to lower the freezing point of the mortar.

E. If water is lost by evaporation, retemper only within two hours of mixing.

F. Use mortar within two hours after mixing at temperatures of 80 degrees F, or two-and-one-half hours at temperatures under 50 degrees F.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on the drawings.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with sand or aggregate.

B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

A. Excavate pipe trench for work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches compacted depth.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with ASTM D2321.

B. Place pipe on minimum 4-inch-deep bed of filter aggregate.

C. Lay pipe to slope gradients noted on drawings.

D. Install aggregate at sides and over top of pipe. Provide top cover to minimum compacted thickness of 12 inches, compact to 95 percent.

E. Refer to Section 02300 for trenching requirements. Do not displace or damage pipe when compacting.

3.5 INSTALLATION - CATCH BASINS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for storm sewer pipe.

C. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated.

E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.6 FIELD QUALITY CONTROL

A. Section 01400 - Quality Assurance: Field inspection and testing.

B. Request inspection prior to placing any storm sewer or structure.

C. Compaction testing will be performed in accordance with ASTM D1557.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

E. Frequency of Tests: Per 12” lift per 250 LF minimum.

3.7 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

3.8 INSTALLATION - MANHOLES

A. Install according to manufacturer’s instructions.

B. Trim bottom of excavation clean and smooth to correct elevation.

C. Install precast bases on 6 inches of Type A fill.

D. Form and place reinforced concrete base to correct elevation.

E. Install stubs and branch connections as indicated.

F. Bed stubs and branch connections with Type A fill.

G. Install barrel sections, cone section, and frame and cover to required grade.

H. Maximum height from top of cone to bottom of frame shall be 18 inches.

I. Bolt frames to cones.

J. Cover frame with mortar from cone to within 1-1/2 inches of top of frame.

END OF SECTION

SECTION 02740

FLEXIBLE PAVEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aggregate subbase.
   2. Asphalt paving base course, leveling course, and wearing course.
   3. Pavement markings.

1.2 PERFORMANCE REQUIREMENTS

A. Paving: Designed for parking and light duty commercial vehicles.

1.3 SUBMITTALS

A. Product Data:
   1. Submit product information for asphalt and aggregate materials.
   2. Submit mix design with laboratory test results supporting design.

1.4 QUALITY ASSURANCE

A. Mixing Plant: Conform to State of Michigan Department of Transportation standards.

B. Obtain materials from same source throughout.

C. Perform Work in accordance with State of Michigan Department of Transportation standards.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

B. Place bitumen mixture when temperature is not more than 15 degrees F below bitumen suppliers bill of lading and not more than maximum specified temperature.

C. Pavement Marking Paint: Clean and dry surfaces, cured 21 days minimum, at a minimum ambient surface temperature of 40 degrees F for oil based and not exceeding 95 degrees F.

PART 2 – PRODUCTS

2.1 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M320; performance grade PG 64-22.

B. Asphalt Cement: ASTM D946; penetration grade 40-50.

C. Oil: In accordance with State of Michigan Department of Transportation standards.

D. Coarse Aggregate: ASTM D692.
   1. Course Stone, 100% crushed limestone meeting 22A and free of shale, frost susceptibility, clay, friable material, sand and debris, equal to Stonemix.

E. Base Course Mix: In accordance with State of Michigan Department of Transportation, 2012 Edition Standards, Bituminous 3C performance, Grade 64-22.

F. Leveling Course Mix: In accordance with State of Michigan Department of Transportation, 2012 Edition Standards. Bituminous 13A performance, Grade 64-22.

G. Wearing Course Mix: In accordance with State of Michigan Department of Transportation, 2012 Edition Standards, Bituminous 13A performance, Grade 64-22.

H. Reclaimed Asphalt Pavement (RAP): Processed material obtained by milling full depth removal of existing asphalt paving, limited to 30 percent of asphalt base course and 17 percent of asphalt wearing course.

I. Fine Aggregate: ASTM D1073; natural sand or sand manufactured from stone or gravel.

J. Primer: Homogeneous, medium curing liquid asphalt in accordance with State Standards.

K. Mineral Filler: ASTM D242; finely ground mineral particles, free of foreign matter.

2.2 ACCESSORIES

A. Sealant: ASTM D6690, Type II or Type III; hot applied type.

B. Pavement Marking Paint: Alkyd resin type, ready mixed, complying with PS-TT-P-115 Type I or equal.

C. Surface Sealer: Pre-approved product shall be Seal Master Coal Tar Concentrate Pavement Sealer and Master Seal Concentrate asphalt-based pavement sealer at a one-to-one mixture or as approved by Engineer/Architect.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify gradients and elevations of base.

B. Verify compacted subgrade subbase is dry and ready to support paving and imposed loads.

3.2 SUBBASE

A. Aggregate Subbase: Install as specified in Section 02300.

B. Prepare subbase in accordance with State of Michigan Department of Transportation standards.

3.3 PRIMER

A. Apply primer on aggregate subbase at uniform rate of 1/3-gal/sq. yd.

B. Use clean sand to blot excess primer.

3.4 TACK COAT

A. Apply tack coat on asphalt and concrete surfaces over subgrade surface at uniform rate.
   1. New Surfaces: 1/3-gal/sq. yd.
   2. Existing Surfaces: 1/2-gal/sq. yd.

B. Apply tack coat to contact surfaces of curbs and gutters.

C. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

3.5 DOUBLE COURSE ASPHALT PAVING

A. Place asphalt binder course within 24 hours of applying primer or tack coat.

B. Place binder course to thickness identified in schedule at end of section.

C. Place wearing course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.

D. Place wearing course to thickness indicated on Drawings.

E. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.

F. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

G. Paint 4” wide pavement markings: Allow pavement to cure 30 days before marking, sweep clean to eliminate loose material and dust, apply at a uniform rate with straight edges to a uniform thickness, minimum 15 mils.
   1. Caution Yellow at standard parking stalls.
   2. Blue at Barrier Free parking stalls.

3.6 ERECTION TOLERANCES

A. Flatness: Maximum variation of 1/4-inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4-inch.

C. Variation from Indicated Elevation: Within 1/2-inch.

3.7 FIELD QUALITY CONTROL

A. Take samples and perform tests in accordance with AI MS-2.

B. Take samples and perform tests including mat density tests.

C. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

D. Asphalt Paving Thickness: ASTM D3549; test one core sample from every 1000 square yards compacted paving.

E. Asphalt Paving Density: ASTM D2950 nuclear method; test one location for every 1000 square yards compacted paving.

END OF SECTION

SECTION 02750

RIGID PAVEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

Driveways, Roadways and Pavements.
2. Parking lots.
3. Curbs and gutters.
4. Walkways.
5. Equipment pads.
6. Dumpster pads.

1.2 SUBMITTALS

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

B. Design Mixtures: For each concrete pavement mixture.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

D. Plain Steel Wire: ASTM A 82, as drawn.

E. Deformed-Steel Wire: ASTM A 496.

F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."

2.2 CONCRETE MATERIALS

Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

Portland Cement: ASTM C 150, Type I or II.
Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

Normal-Weight Aggregates: ASTM C 33, Class 4M coarse aggregate, uniformly graded. Provide aggregates from a single source. Use only non-reactive aggregate. Maximum Aggregate Particle Size: 1 inch nominal.

C. Water: ASTM C 94.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: ASTM C 494, of type suitable for application, certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

2.3 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

E. Clear BASF Sonneborn, “Kure-N-Seal” Curing Compound: Apply 2 coats. ASTM C 309, Type 1, Class B, dissipating.

2.4 RELATED MATERIALS

A. Expansion-Joint Filler Strips: Polyethylene closed-cell backing for Sonolastic Sealants.

B. Isolation- and Control -Joint Filler Strips: Closed –cell Backer-Rod and Soft Backer-Rod. ASTM C 1330, Type B and C.

Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

CONCRETE MIXTURES

A. Prepare and Submit design mixtures, proportioned according to ACI 301, with the following properties:

1. Compressive Strength (28 Days): 4000 psi.
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches.
4. Air Content: 6 percent plus or minus 1.5 percent.

B. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd.

C. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions.

2.6 CONCRETE MIXING

Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94 and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.

B. The Owner will employ qualified testing lab to take and test, concrete cylinder samples.

C. Any concrete failing the compressive strength tests will be removed and replaced at the Contractor’s expense.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Chairs are required for support of all reinforcing steel. Manual pull up and positioning of reinforcing steel during concrete pouring is unacceptable.

3.4 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a ¼ inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.7 CONCRETE PROTECTION AND CURING

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

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

Curing Methods: Cure concrete by curing compound.

3.8 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

Elevation: ¼ inch.

2. Thickness: Plus 3/8 inch, minus ¼ inch.
3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed ¼ inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus ¼ inch, no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.9 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 03050

BASIC CONCRETE MATERIALS AND METHODS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Formwork.
   2. Reinforcement.
   3. Accessories.
   4. Cast-in place concrete.
   5. Finishing and curing.

1.2 SYSTEM DESCRIPTION

A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 301, ACI 318 to conform to design and applicable code requirements to achieve concrete shape, line and dimension.

B. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96, Procedure A.

1.3 SUBMITTALS

A. Shop Drawings:
   1. Indicate pertinent dimensioning, form materials, arrangement of joints and ties, location of bracing and temporary supports, schedule of erection and stripping.
   2. Indicate reinforcement sizes, spacings, locations, and quantities, bending and cutting schedules, supporting and spacing devices.
   3. Indicate sidewalks and slabs-on-grade.

B. Product Data: Indicate admixtures and anchors.

C. Design Data: Submit mix designs.

1.4 QUALITY ASSURANCE

A. Construct and erect concrete formwork in accordance with ACI 301 and ACI 318.

B. Perform concrete reinforcing work in accordance with ACI 301, ACI 315, ACI 318 and CRSI Manual of Practice.

C. Perform cast-in-place concrete work in accordance with ACI 301, ACI 318 and ACI 305.

D. Design Work under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

PART 2 PRODUCTS

2.1 FORM MATERIALS AND ACCESSORIES

A. Plywood: PS 1, C Grade, any species; sound undamaged sheets with clean true edges.

B. Lumber: any species.

C. Prefabricated Steel Type: Minimum 16 gage, matched, tight fitting, stiffened to support weight of concrete.

D. Form Release Agent: Colorless mineral oil not capable of staining concrete or impairing natural bonding characteristics of coating intended for use on concrete.

E. Formed Construction Joints for Slab-on-Grade: Galvanized steel, tongue and groove type profile, knockout holes to receive doweling.

F. Slab Edge Joint Filler: ASTM D1751, Pre-molded asphaltic board, ½ inch thick.

G. Vapor Retarder: ASTM E1745 Class A; 6 mil thick clear polyethylene film; type recommended for below grade application. Furnish joint tape recommended by manufacturer.

2.2 REINFORCEMENT MATERIALS

A. Deformed Reinforcement: ASTM A615/A615M; 60 ksi yield strength, steel bars, unfinished.

B. Welded Plain Wire Fabric: ASTM A185; in flat sheets; unfinished.

C. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for support of reinforcing; plastic tipped or non-corroding for supports in slabs forming finished ceilings or where supports are exposed to weather.

D. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice, ACI 301 and ACI 318 code.

E. Weld reinforcement in accordance with AWS D1.4.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150, Normal-Type I, Portland type.

B. Fine and Coarse Aggregates: ASTM C33.

C. Water: Clean and not detrimental to concrete.

D. Air Entrainment Admixture: ASTM C260.

E. Bonding Agent: Latex emulsion.

F. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

2.4 COMPOUNDS, HARDENERS AND SEALERS

A. Chemical Hardener/Sealer: Lapidolith manufactured by Sonneborn Building Products.

2.5 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94/C94M, Option A.

B. Furnish concrete of the following strength:
   1. Footings
      a. Compressive strength 3,000 psi at 28 days.
      b. Slump: 3 inches maximum
   2. Interior slabs
      a. Compressive strength: 3500 psi at 28 days
      b. Slump: 4 inches maximum
   3. Exterior slabs, After Hours Night Deposit
      a. Compressive strength: 4500 psi at 28 days
      b. Slump: 4 inches maximum

C. Select admixture proportions for normal weight concrete in accordance with ACI 318.

D. Add air entraining agent to concrete mix for concrete work exposed to exterior.

PART 3 EXECUTION

3.1 FORMWORK ERECTION

A. Erect formwork, shoring and bracing to achieve design requirements.

B. Camber slabs and framing to achieve ACI 301 tolerances.

C. Provide bracing to ensure stability of formwork.

D. Apply form release agent to formwork prior to placing form accessories and reinforcement.

E. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings affected by agent.

F. Clean forms as erection proceeds, to remove foreign matter.

3.2 INSERTS, EMBEDDED COMPONENTS, AND OPENINGS

A. Provide formed openings where required for work to be embedded in and passing through concrete members.

B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

C. Install concrete accessories straight, level, and plumb.

D. Place formed construction joint device in floor slab pattern pouring sequence.

E. Place joint filler at perimeter of floor slab, penetrations and isolation joints.

3.3 REINFORCEMENT PLACEMENT

A. Place reinforcement, supported and secured against displacement.

B. Ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings.

C. Weld reinforcement in accordance with AWS D1.4.
   1. Do not weld crossing reinforcement bars for assembly.

D. Space reinforcement bars with minimum clear spacing in accordance with ACI 301 and ACI 318.
   1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

E. Maintain concrete cover around reinforcement in accordance with ACI 301 and ACI 318.

3.4 PLACING CONCRETE

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.

B. Install vapor retarder under interior slabs on grade in accordance with ASTM E1643. Lap joints minimum 6 inches and seal watertight.

C. Repair damaged vapor retarder with vapor retarder material, lap over damaged areas minimum 6 inches and seal watertight.

D. Separate slabs-on-grade from vertical surfaces with ½ inch thick joint filler, extended from bottom of slab to within ¼ inch of finished slab surface.

E. Place concrete continuously between predetermined expansion, control and construction joints.

F. Screed slabs-on-grade level.

3.5 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Remove formwork progressively and in accordance with code requirements.

3.6 FLOOR FINISHING

A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.

B. Uniformly spread, screed, and float concrete.

C. Steel trowel surfaces receiving carpeting, resilient flooring, thin set quarry tile, thin set ceramic tile or remaining exposed to view in finished construction.

D. Maintain surface flatness, with maximum variation of 1/8 inch in 10ft.

E. In areas with floor drains, maintain floor level at walls and slope surfaces uniformly to drains.

F. Apply concrete hardener/sealer on floor surfaces as scheduled.

3.7 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
   1. Protect concrete footings from freezing for minimum 5 days.

B. Apply sealer on floor surfaces.

C. Immediately after placement, protect concrete from premature drying.

D. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete for not less than 7 days.

3.8 FORMED SURFACES

A. Provide concrete surfaces to be left exposed.

3.9 ERECTION TOLERANCES

A. Install reinforcement within tolerances required by ACI 301 and ACI 318 code.

3.10 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with ACI 301 and ACI 318.

B. Reinforcement Inspection:
   1. Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.

C. Strength Test Samples:
   1. Sample concrete and make one set of three cylinders for every 75 cu yds or less of each class of concrete placed each day.

D. Field Testing:
   1. Measure slump and temperature for each compressive strength concrete sample.
   2. Measure air content in air entrained concrete for each compressive strength concrete sample.

E. Cylinder Compressive Strength Testing:
   1. Test Method: ASTM C39.
   2. Test Acceptance: In accordance with ACI 301 and ACI 318.
   3. Test two cylinders at 28 days.
   4. Retain one cylinder for testing when requested by Architect/Engineer.
   5. Dispose remaining cylinders when testing is not required.

3.11 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required lines, details and elevations, as directed by Architect/Engineer.

END OF SECTION

SECTION 04065

MASONRY MORTAR AND GROUT

PART 1 GENERAL

1.1 SUMMARY

A. Section includes mortar and grout for masonry.

1.2 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 Building Code Requirements for Masonry Structures and ACI 530.1 Specification for Masonry Structures.

1.3 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

B. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Portland Cement: ASTM C150, Type I, gray color.

B. Mortar Aggregate: ASTM C144, standard masonry type.

C. Hydrated Lime: ASTM C206, Type N.

D. Grout Aggregate: ASTM C404, fine and coarse.

E. Water: Clean and potable.

F. Bonding Agent: Latex type.

G. Calcium chloride is not permitted.

2.2 MIXES

A. Mortar Mixes:
   1. Mortar for Structural Masonry: ASTM C270, Type M using Property specification.
   2. Mortar for Non-Structural Masonry: ASTM C270, Type S using Property specification.
   3. Pointing Mortar: ASTM C270, Type N, using Property specification.
   4. Stain Resistant Pointing Mortar: One-part Portland cement, 1/8 part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2 percent of Portland cement by weight.

B. Mortar Mixing:
   1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.

C. Grout Mixes:
   1. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; mixed in accordance with ASTM C476 Fine grout.

D. Grout Mixing:
   1. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476.
   2. Do not use anti-freeze compounds to lower freezing point of grout.

PART 3 EXECUTION

3.1 PREPARATION

A. Apply bonding agent to existing concrete surfaces.

3.2 INSTALLATION

A. Install mortar and grout in accordance with ACI 530.1 Specification for Masonry Structures.

3.3 FIELD QUALITY CONTROL

A. Testing Frequency: One set of specified tests for every 5,000 sf of completed wall area.

B. Testing of Mortar Mix: In accordance with ASTM C780.

C. Testing of Grout Mix: In accordance with ASTM C1019.

END OF SECTION

SECTION 04810

UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes brick, concrete masonry units, reinforcement, anchorage, and accessories.

1.2 SUBMITTALS

A. Product Data:
1. Submit data for brick masonry units and fabricated wire reinforcement wall ties, anchors, and other accessories.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 Building Code Requirements for Masonry Structures and ACI 530.1 Specification for Masonry Structures.

B. Fire Rated Wall Construction: Rating as indicated on Drawings.
1. Tested Rating: Determined in accordance with ASTM E119.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

B. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

PART 2 PRODUCTS

2.1 UNIT MASONRY ASSEMBLIES

A. Manufacturers:
1. The Belden Brick Co.

2.2 COMPONENTS

A. Facing Brick: ASTM C216, Type FBX, Grade SW. Belden Modular Patina Blend.

B. Brick Size and Shape: Nominal size of 4 x 8 x 2 1/3-inches. Furnish special units for 90-degree corners, lintels, and solid sill units.

C. Hollow Load Bearing Concrete Masonry Units: ASTM C90; normal weight.

D. Solid Load-Bearing Concrete Masonry Units: ASTM; normal weight.

E. Hollow, Solid Non-Load Bearing Concrete Masonry Units: ASTM C1 normal weight.

F. Concrete Brick Units: ASTM C55, same weight as block units.

G. Concrete Masonry Unit Size and Shape: Nominal modular size of 8 x 16 x 8 inches. Furnish special units for 90-degree corners, bond beams and lintels.

2.3 ACCESSORIES

A. Single Wythe Joint Reinforcement: ASTM A951; ladder type; steel: 0.188-inch diameter side rods with 0.148-inch diameter cross ties; hot dip galvanized.

B. Multiple Wythe Joint Reinforcement: ASTM A951; ladder type; steel with moisture drip; adjustable type; 0.188-inch diameter side rods with 0.148-inch diameter cross ties; hot dip galvanized.

C. Reinforcing Steel: ASTM A615/A615M, ksi yield grade, deformed billet bars, galvanized.

D. Strap Anchors: bent steel shape, 2 x 12-inch, 1/4-inch thick: ASTM A153/A153M hot dip galvanized.

E. Wall Ties: ASTM A82; steel wire diameter, adjustable eye and pintle type; ASTM A153/A153M hot dip galvanized.

F. Anchor Rods: ASTM A307; Grade C; J-shaped or L-shaped; complete with washers and heavy hex nuts; sized for minimum 15-inch embedment; galvanized finish.
1. Hot-Dipped Galvanizing: ASTM A153/A153M.
2. Mechanical Galvanizing: ASTM B695; Class 55.

G. Mortar and Grout: As specified in Section 04065.

H. Self-stick SBS type flashing.

I. Lap Sealant Butyl type as specified in Section 07900.

J. Preformed Control Joints: Rubber Polyvinyl chloride material. Furnish with corner and tee accessories.

K. Joint Filler: Closed cell polyvinyl chloride oversized 50 percent to joint width; self-expanding.

L. Building Paper: ASTM D226; Type I, No. 15 unperforated asphalt felt.

M. Weeps: Preformed plastic tubes, size 3/8-inch x 1 ½ inch x 3 ½ inches with stainless steel insect screen insert.

N. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials, recommended by masonry unit manufacturer.

O. Thin Brick Panel Adhesive: ASTM C-557, ANSI A1316 with sheer bond strength between the total surface area of veneer and the panel will not be less than 50 PSI.

P. Thin Brick Panel: Tabs II thin veneer tie and support panel, structural grade steel, coated with hot dip zinc G-90 with support tabs for veneer thickness.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive Work.

3.2 PREPARATION

A. Coordinate placement of anchors supplied by other sections.

B. Wet clay and shale brick before laying when initial rate of absorption is greater than 30 grams when tested in accordance with ASTM C67.

3.3 INSTALLATION

A. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

B. Coursing of Concrete Masonry Units:
1. Bond: Running.
2. Coursing: One unit and one mortar joint to equal 8 inches.
3. Mortar Joints: Concave. Raked at interior exposed single score units, concave at exposed exterior split units, flush at non-exposed locations.

C. Coursing of Brick Units:
1. Bond: Running.
2. Coursing: Three units and three mortar joints to equal 8 inches.
3. Mortar Joints: Concave.

D. Cut mortar joints flush where ceramic or quarry wall tile is scheduled, resilient base is scheduled, cavity insulation vapor retarder adhesive is applied, or bituminous damp proofing is applied.

E. Placing and Bonding:
1. Isolate masonry partitions from vertical structural framing members with movement joint as indicated on Drawings.
2. Isolate top of masonry from horizontal structural framing members and slabs or decks with compressible joint filler.

F. Weeps and Vents: Install weeps and vents in outer wythe at 32 inches oc horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

G. Cavity Wall: Do not permit mortar to drop or accumulate into cavity air space or to plug weep holes. Build inner wythe ahead of outer wythe to receive cavity insulation air/vapor retarder adhesive.

H. Joint Reinforcement and Anchorage - Single Wythe Masonry:
1. Install horizontal joint reinforcement 16 inches oc. Place joint reinforcement continuous in first [and second] joint below top of walls.
2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
3. Reinforce joint corners and intersections with strap anchors 16 inches oc.

I. Joint Reinforcement and Anchorage - Masonry Veneer:
   1. Install horizontal joint reinforcement 16 inches oc. Place joint reinforcement continuous in first and second joint below top of walls.
   2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   3. Embed wall ties in masonry backing to bond veneer at maximum 16 inches oc vertically and 16 inches oc horizontally. Place wall ties at maximum 8 inches oc vertically within 8 inches of jamb of wall openings.
   4. Secure wall ties to stud framed backing and embed into masonry veneer at maximum 6 inches oc vertically and 16 inches oc horizontally.
   5. Place wall ties at maximum 8 inches oc vertically within 8 inches of jamb or wall openings.
   6. Place wall ties at maximum 8 inches on center horizontally within 8 inches of head and sill of wall openings.
   7. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.

J. Joint Reinforcement and Anchorages - Cavity Wall Masonry:
   1. Install horizontal joint reinforcement 16 inches oc. Place joint reinforcement continuous in first and second joint below top of walls.
   2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   3. Embed anchors in concrete. Attach anchors to structural steel members. Embed anchorages in every second block or sixth brick joint.
   4. Reinforce joint corners and intersections with strap anchors 16 inches oc.

K. Joint Reinforcement and Anchorages - Multiple Wythe Unit Masonry:
   1. Install horizontal joint reinforcement 16 inches oc. Place joint reinforcement continuous in first and second joint below top of walls.
   2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   3. Support and secure reinforcing bars from displacement. Maintain position within ½ inch of dimensioned position.
   4. Embed anchors in concrete. Attach anchors to structural steel members. Embed anchorages in every second block or sixth brick joint.
   5. Reinforce joint corners and intersections with strap anchors 16 inches oc.

L. Masonry Flashings:
   1. Extend flashings horizontally through outer wythe at foundation walls, above ledge or shelf angles and lintels, under parapet caps, at bottom of walls, and turn down on outside face to form drip.
   2. Turn flashing up minimum 8 inches and bed into mortar joint of masonry or seal to concrete or seal to sheathing over steel stud framed back-up.
   3. Lap end joints and seal watertight.
   4. Turn flashing, fold, and seal at corners, bends, and interruptions.

M. Lintels:
   1. Install loose steel, lintels over openings.
   2. Maintain minimum 6-inch bearing on each side of opening.

N. Grouted Components:
1. Reinforce bond beam and pilasters as detailed.
2. Support and secure reinforcing bars from displacement.
3. Place and consolidate grout fill without displacing reinforcing.
4. At bearing locations, fill masonry cores with grout for minimum 12 inches both sides of opening.

O. Control and Expansion Joints:
1. Install control and expansion joints at the following maximum spacings, unless otherwise indicated on Drawings:
   a. Exterior Walls: 20 feet on center and within 24 inches on one side of each interior and exterior corner.
   b. Interior Walls: 30 feet on center.
   c. At changes in wall height.
2. Do not continue horizontal joint reinforcement through control and expansion joints.
3. Form control joint with sheet building paper bond breaker fitted to one side of hollow contour end of block unit. Fill resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
4. Install preformed control joint device in continuous lengths. Seal butt and corner joints.
5. Size control joint in accordance with Section 07900 for sealant performance.
6. Form expansion joint as detailed.

P. Built-In Work:
1. As work progresses, install built-in metal door and glazed frames, fabricated metal frames, window frames, anchor bolts, plates, and other items to be built in the work furnished by other sections.
2. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout or mortar. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

Q. Cutting and Fitting:
1. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.

R. Cleaning:
1. Remove excess mortar and mortar smears as work progresses.
2. Clean soiled surfaces with cleaning solution.

S. Tolerances:
1. Maximum Variation from Plumb: 1/4-inch per story non-cumulative; 1/2-inch in two stories or more.
2. Maximum Variation from Level Coursing: 1/8-inch in 3 ft. and 1/4-inch in 10 ft 1/2” in 30 ft.

T. Thin Brick Panel Installation: Install panels, thin brick, mortar as per Tab II Installation Guide.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Structural shapes.
   2. Channels and angles.
   3. Hollow structural sections.
   4. Structural pipe.
   5. Structural plates and bars.
   6. Fasteners, connectors, and anchors.
   7. Grout.

1.2 SUBMITTALS

A. Shop Drawings: Indicate sizes, spacing, and locations of structural members, openings, connections, cambers, loads and welded connections.

B. Connections: Provide details of steel connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering design by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. AISC Code of Standard Practice for Steel Buildings and Bridges.
   2. AISC Seismic Provisions for Structural Steel Buildings.
   3. RCSC Specification for Structural Joints Using ASTM A 325 or A 490 Bolts.

1.4 QUALIFICATIONS

A. Fabricator: Company specializing in performing Work of this section with minimum three years' experience with the following current AISC Certification:
   1. Standard Steel Building Structures (STD).
   2. Conventional Steel Building Structures (SBD).

B. Erector: Company specializing in performing Work of this section with minimum three years' experience with the following current AISC Certification:
   1. Certified Steel Erector (CSE).

C. Shop Painter: Company specializing in performing Work of this section with minimum three years' experience.

D. Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

A. Structural W-Shapes: ASTM A992/A992M. Grade 50.

B. Channels and Angles: ASTM A36/A36M.

C. Square and Rectangular Hollow Structural Sections: ASTM A500, Grade B.

D. Structural Pipe: ASTM A53/A53M, Grade B.

E. Structural Plates: ASTM A36/A36M

2.2 FASTENERS, CONNECTORS, AND ANCHORS

A. High Strength Bolts: ASTM A325; Type 1.
   1. Finish: Unfinished.

B. Nuts: ASTM A563 heavy hex type.
   1. Finish: Unfinished.

C. Washers: ASTM F436; Type 1, circular.
   1. Finish: Unfinished.

D. Tension Control Assemblies: ASTM F1852; Type 1, heavy hex or round head, twist off type; complete with washers and heavy hex nuts.
   1. Finish: Finish: Unfinished.

E. Shear Connectors: ASTM A108; Grade 1015-1020, headed, unfinished and in accordance with AWS D1.1; Type B.

F. Anchor Rods: ASTM F1554; Grade 36.
   1. Shape: Hooked or Straight.

G. Threaded Rods: ASTM A36/A36M.
   1. Finish: Unfinished.

2.3 WELDING MATERIALS

A. Welding Materials: AWS D1.1; type required for materials being welded.

2.4 ACCESSORIES

A. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing minimum compressive strength of 7,000 psi at 28 days.

B. Shop Primer: SSPC Paint 15, Type 1.

C. Touch-Up Primer: Match shop primer.
   1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.

D. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type I Inorganic.

1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.

2.5 FABRICATION

A. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

B. Fabricate connections for bolt, nut, and washer connectors.

C. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
   1. Cut, drill holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge by burning.
   2. Base plate holes: Cut, drill, punch holes perpendicular to steel surfaces.

2.6 FINISH

A. Prepare structural component surfaces in accordance with SSPC SP 3.

B. Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete or high strength bolted.

C. Galvanizing for Structural Steel Members: ASTM A123/A123M; minimum 1.2 oz/sq ft coating thickness; galvanize after fabrication.

D. Galvanizing for Fasteners, Connectors, and Anchors:
   1. Hot-Dipped Galvanizing: ASTM A153/A153M.
   2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

2.7 SOURCE QUALITY CONTROL AND TESTS

A. Shop test bolted and welded connections as specified for field quality control tests.

B. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
   1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify bearing surfaces are at correct elevation.

B. Verify anchors rods are set in correct locations and arrangements with correct exposure for steel attachment.

3.2 PREPARATION

A. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

3.3 ERECTION

A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.

B. Field weld components indicated on Drawings and/or shop drawings.

C. Do not field cut or alter structural members without approval of Architect/Engineer.

D. After erection, touch up welds and abrasions to match shop finishes.

3.4 GROUT INSTALLATION

A. Shim bearing plates and equipment supports to proper elevation, snug tighten anchor bolts.

B. Fill void under bearing surface with grout. Install and pack grout to remove air pockets.

C. Moist cure grout.

D. Remove forms after grout is set. Trim grout edges to from smooth surface, splayed 45 degrees.

E. Tighten anchor bolts after grout has cured for a minimum of 3 days.

3.5 FIELD QUALITY CONTROL

A. Bolted Connections: Inspect in accordance with AISC specifications.
   1. Visually inspect all bolted connections.
   2. For Direct Tension Indicators, comply with requirements of ASTM F959. Verify that gaps are less than gaps specified in Table 2.

B. Welding:
   1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
   2. Visually inspect all welds.
   3. Ultrasonic Inspection: ASTM E164; perform on all full penetration welds.

C. Correct defective bolted connections and welds.

END OF SECTION

SECTION 05210

STEEL JOISTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes open web steel joists with bridging, attached seats and anchors.

1.2 SUBMITTALS

A. Shop Drawings: Indicate configuration, sizes, spacing, locations of joists, joist leg extensions, bridging, connections and attachments.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. SJI K, including headers and other supplementary framing.
   2. AISC Seismic Provisions for Structural Steel Buildings.

B. Use Load Tables, and Weight Tables, including headers and other supplementary framing.

C. Design steel joists under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Michigan.

PART 2 PRODUCTS

2.1 STEEL JOISTS

A. Open Web Joists Members: SJI Type K Open Web.

B. Nuts: ASTM A563 heavy hex type.
   1. Finish: Unfinished.

C. Washers: ASTM F436; Type 1.
   1. Finish: Unfinished.

D. Shop Primer: SSPC Paint 15, Type 1, red oxide.

E. Touch-Up Primer: Match shop primer.
   1. Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.

F. Supplementary Framing: ASTM A36/A36M.

G. Welding Materials: AWS D1.1; type required for materials being welded.

2.2 FABRICATION

A. Furnish top chord extensions as indicated on Drawings.

B. Drill holes in chords necessary for attachment of wood nailers.

2.3 FINISH

A. Prepare joist component surfaces in accordance with SSPC SP 2.

B. Shop prime joists. Do not prime surfaces being field welded or in contact with concrete.

C. Galvanizing for Ledge Angles: ASTM A123/A123M; minimum 1.2 oz/sq. ft coating thickness; galvanize after fabrication.

D. Galvanizing for Fasteners, Connectors, and Anchors:
1. Hot-Dipped Galvanizing: ASTM A153/A153M.
2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

3.2 ERECTION

A. Erect and bear joists on supports.

B. Allow for erection loads. Install temporary bracing to maintain framing in alignment until completion of erection and installation of permanent bridging and bracing.

C. After joist alignment, field weld joist seat to bearing surfaces.

D. Position and field weld joist chord extensions and wall attachments as detailed.

E. Frame roof openings greater than 12 inches with supplementary framing.

F. After erection, prime welds, abrasions, and surfaces not shop primed except surfaces to be in contact with concrete.

3.3 ERECTION TOLERANCES

A. Maximum Variation from Plumb: ¼ inch.

B. Maximum Offset from Alignment: ¼ inch.

3.4 FIELD QUALITY CONTROL

A. Field inspection of members, connections, welds, and tightening of high strength bolts in slip-critical connections.

END OF SECTION

SECTION 05310

STEEL DECK

PART 1 GENERAL

1.1 SUMMARY

A. Section includes steel deck and accessories; framing for openings up to and including 12 inches; bearing plates and angles.

1.2 SYSTEM DESCRIPTION

A. Design metal decking in accordance with SDI 29 Design Manual for Composite Decks, Form Decks and Roof Decks.

B. Calculate to structural working stress design and maximum vertical deck deflection of 1/240.

C. Lateral Deflection of Diaphragm: Maximum 1/500 of height of wall.

1.3 SUBMITTALS

A. Shop Drawings: Indicate decking plan, support locations, projections, openings and reinforcement, pertinent details, and accessories.

B. Product Data: Deck profile characteristics and dimensions, structural properties and finishes.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASCE 3 for composite decks.

B. Design deck layout, spans, fastening, and joints under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Michigan.

PART 2 PRODUCTS

2.1 STEEL DECK

A. Manufacturers:
   1. Vulcraft Steel Deck.
   2. Substitutions: Permitted.

B. Sheet Steel: ASTM A653/A653M, Grade 33 Structural Quality; with G60galvanized coating.

C. Bearing Plates and Angles: ASTM A36/A36M steel, unfinished.

D. Welding Materials: AWS D1.1.

E. Touch-Up Primer: Zinc chromate type.
   1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.

F. Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to decking.

2.2 FABRICATION

A. Non-cellular Decking: Sheet steel, configured as follows:
   1. Span Design: multiple.
   2. Minimum Metal Thickness Excluding Finish: 22 gage.
   3. Nominal Height: 1 ½ inch, 3-inch fluted profile.
   4. Formed Sheet Width: 36 inches.
   5. Side Joints: lapped.
   6. Flute Sides: Plain vertical face.
   7. Type: B (wide rib); Type NA Acoustical @ Auditorium; Type N @ Auditorium Outriggers

B. Sump Pan: 14 gage sheet steel.

C. Fasteners: Hardened steel, galvanized, self-tapping.

D. Weld Washers: Mild steel, uncoated.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

3.2 INSTALLATION

A. Erect metal decking in accordance with Steel Deck Institute Design Manual for Composite Decks, Form Decks and Roof Decks.

B. Bear decking on steel supports with 1-1/2-inch minimum bearing. Align and level.

C. Fasten deck to steel support members at ends and intermediate supports with fusion welds through weld washers at 12 inches oc maximum, parallel with deck flute and at each transverse flute.

D. Weld in accordance with AWS D1.1.

E. Mechanically fasten male/female side laps at 12 inches o.c. maximum.

F. Reinforce steel deck openings from 6 to 18 inches in size with 2 x 2 x ¼ inch steel angles. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and fusion weld to deck at each flute.

G. Install 6-inch minimum wide sheet steel cover plates, of same thickness as decking, where deck changes direction. Mechanically attach 12 inches o.c. maximum.

H. Install sheet steel closures and angle flashings to close openings between deck and walls, columns, and openings.

I. Install single row of foam flute closures above walls and partitions perpendicular to deck flutes.

J. Position roof sump pans with flange bearing on top surface of deck. Attach at each deck flute.

K. Immediately after welding deck and other metal components in position, coat welds, weld blooms, burned areas, and damaged surface coating, with touch-up prime paint.

3.3 FIELD QUALITY CONTROL

A. Welding: Inspect welds in accordance with AWS D1.1.

END OF SECTION

SECTION 05400

COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes load bearing formed steel stud exterior wall and exterior soffit/fascia framing and formed steel framing and bridging.

1.2 SYSTEM DESCRIPTION

A. Size components to withstand design loads as follows as indicated on drawings.

B. Maximum Allowable Deflection: 1: 240 of span.

C. Wall System:
1. Design to AISI NASPEC, AISC General, and AISC Header.
2. Design to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.

D. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

E. Seismic Design: Design and detail elements and connections to resist seismic force in accordance with 2015 Michigan Building Code requirements and ACI 318 for Seismic Zone 0 and Seismic Importance Factor 1.

1.3 SUBMITTALS

A. Shop Drawings:
1. Indicate component details, framed openings, bearing, anchorage, loading, type and location of fasteners and accessories or items required of related work.
2. Indicate stud and soffit/fascia layout.
3. Provide calculations for loadings and stresses of framing sealed by Professional Structural Engineer registered in State of Michigan.

B. Product Data: Describe materials and finish, product criteria and limitations.

1.4 QUALITY ASSURANCE

A. Calculate structural properties of framing members in accordance with AISI NASPEC.

B. Furnish framing materials in accordance with SSMA - Product Technical Information.

C. Design framing under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Michigan.

PART 2 PRODUCTS

2.1 COLD FORMED METAL FRAMING

2.2 FRAMING COMPONENTS

A. Steel Sheet: ASTM A1003/A1003M; Structural Grade, Type H, metallic coated:
   1. Grade: As required by performance requirements.
   2. Coating: G60 (Z180).

B. Studs: Steel sheet, formed to channel shape, punched web; 0.048-inch-thick and size as indicated on drawings.

C. Track: Steel sheet, formed to channel shape; same width as studs, tight fit; 0.048-inch-thick, solid web.

2.3 ACCESSORIES

A. Bracing, Furring, Bridging, Plates, Gussets and Clips: Formed sheet steel, thickness determined by performance requirements specified; same finish as framing members.

B. Screws: Self drilling, self-tapping.

C. Anchorage Devices: Power actuated.

D. Welding: In accordance with AWS D1.1 and AWS D1.3.

E. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type I Inorganic.
   1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.

2.4 FABRICATION

A. Fabricate assemblies of sizes and profiles required; with framing members fitted, reinforced and braced.

B. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify building framing components are ready to receive work.

3.2 ERECTION OF STUDS

A. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches oc. Coordinate installation of sealant with floor tracks.

B. Place studs at 16 inches oc; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method.

C. Construct corners using minimum three studs. Double stud wall openings, door and window jambs.

D. Erect load bearing studs one-piece full length. Splicing of studs is not permitted.

E. Allow for deflection, directly below horizontal building framing for non-load bearing framing.

F. Attach furring channels to studs for attachment of fixtures anchored to walls and for attachment of mechanical and electrical items within walls.

G. Touch-up field welds and damaged primed surfaces with primer to match shop coating.

3.3 TOLERANCES

A. Maximum Variation from Indicated Position: 1/4-inch.

B. Maximum Variation of Member from Plane: 1/4-inch.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes wall sheathing; and roof curbs; blocking in wall and roof openings; wood furring and grounds; electrical panel back boards, concealed wood blocking.

1.2 SUBMITTALS

A. Shop Drawings: Indicate framing system, loads and cambers, bearing details, framed openings.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. Lumber Grading Agency: Certified by DOC PS 20.
   2. Lumber: DOC PS 20.
   3. Wood Structural Panels: DOC PS 1 or DOC PS 2.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

A. Lumber Grading Rules: WWPA G-5.

2.2 SHEATHING MATERIALS

A. Wall Sheathing: Rated sheathing structural I plywood or oriented strand board, span rating 40/20 exposable durability I, sanded.

B. Telephone and Electrical Panel Boards: Plywood.

2.3 SHEATHING AND UNDERLAYMENT LOCATIONS

A. Above Grade Wall Sheathing: 5/8-inch-thick, 48 x 96-inch sized sheets, square edges.

2.4 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
   2. Nails and Staples: ASTM F1667.

B. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

PART 3 EXECUTION

3.1 FRAMING

A. Set structural members level and plumb, in correct position.

B. Fasten framing in accordance with applicable code.

C. Place horizontal members crown side up.

D. Curb roof openings except where curbs are provided. Construct curb members of single pieces for each side.

3.2 SHEATHING

A. Install wall sheathing in accordance with ASTM C1280.

B. Fasten sheathing in accordance with applicable code.

C. Install sheathing to two span continuous.

D. Secure wall sheathing with ends staggered, over firm bearing.

E. Install telephone and electrical panel back boards with plywood sheathing material where required. Size back board by 12 inches beyond size of electrical panel.

END OF SECTION

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes finish carpentry items, other than shop prefabricated casework; hardware and attachment accessories.

1.2 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, finishes, and accessories.

B. Samples: Submit two, 2 x 3-inch size samples illustrating wood grain and specified finish.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with AWI Quality Standards, Custom Grade. WI Manual of Millwork, Custom Grade.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Softwood Lumber: PS 20; Graded in accordance with AWI Custom; Pine species, maximum moisture content of 6 percent; with grain, of quality suitable for transparent finish.

B. Softwood Plywood: PS 1 Grade AB; Graded in accordance with AWI Custom core; Douglass Fir face species.

C. Wood Particleboard: ANSI A208.1 Type 1 standard, composed of wood chips, sawdust, or flakes of medium density, made with high waterproof resin binders; of grade to suit application; sanded faces.

D. Plastic Laminate: NEMA LD 3 AWI; 0.050-inch General Purpose Premium quality; color, pattern, and gloss, matte, textured surface texture as indicated on drawings.

E. Laminate Backing Sheet: 0.020-inch Backing Sheet grade, undecorated plastic laminate.

2.2 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
   2. Nails and Staples: ASTM F1667.

B. Contact Adhesives: Water Base type.
   1. Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
   2. Aerosol Adhesives: Maximum volatile organic compound content in accordance with GS-36.

C. Wall Adhesive: Cartridge type, compatible with wall substrate, capable of achieving durable bond.
   1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

D. Primer: Alkyd primer sealer type.
   1. Interior Flat and Non-Flat Paints: Maximum volatile organic compound content in accordance with GS-11.

2.3 FABRICATION

A. Fabricate to AWI Custom standards.

2.4 SOURCE QUALITY CONTROL

A. Inspect Work performed at fabricator's facility to verify conformance to Contract Documents.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

A. Prime paint surfaces of items or assemblies in contact with cementitious materials, before installation.

3.3 INSTALLATION

A. Install work in accordance with AWI Custom quality standard.

B. Set and secure materials and components in place, plumb and level.

C. Install trim by nails.

D. Apply plastic laminate finishes with adhesive over entire surface. Apply laminate backing sheet on reverse side of plastic laminate finished surfaces.

E. Install hardware supplied by Section 08710.

END OF SECTION

SECTION 06410

CUSTOM CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Special fabricated cabinet units, wall and base cabinets.

B. Countertops.

C. Cabinet hardware.

D. Prefinished surfaces.

E. Preparation for installing utilities.

1.2 SUBMITTALS FOR REVIEW

A. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.

B. Product Data: Provide data for hardware accessories.

C. Samples: Submit two samples of drawer pulls and hinges, illustrating hardware finish.

1.3 QUALITY ASSURANCE

A. Perform work in accordance with AWI Custom quality.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.4 PRE-INSTALLATION MEETING

A. Convene one week before starting work of this section.

1.5 DELIVERY, STORAGE, AND PROTECTION

A. Protect units from moisture damage.

1.6 ENVIRONMENTAL REQUIREMENTS

A. During and after installation of work of this section, maintain the same temperature and humidity conditions in building spaces as will occur after occupancy.

PART 2 PRODUCTS

2.1 WOOD MATERIALS

A. Hardware Lumber: PS 20; graded in accordance with AWI Custom and Premium; average moisture content of 6 percent; Any species with vertical grain of quality capable of accepting transparent finish. Species to match existing casework.

2.2 PANEL MATERIALS

A. Wood Particle board: PS1; ANSI A208.1; AWI standard, composed of wood chips, medium density, made with water resistant adhesive; of grade to suit application; sanded faces.

2.3 LAMINATE MATERIALS

A. Plastic Laminate: See schedule of finishes.

B. Laminate Backing Sheet: 0.020-inch Backing Sheet grade, undecorated plastic laminate.

C. Plastic Laminate Colors: See Schedule of Finishes.

2.4 SOLID SURFACE

A. Quartz Solid Surface Shall be Polished, Honed with Standard Edge eased profile. See Schedule of Finishes for manufacturer.

2.5 ACCESSORIES

A. Adhesive: FS MMM-A-130 contact adhesive. Type recommended by AWI laminate manufacturer to suit application.

B. Fasteners: Size and type to suit application.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; plain finish in concealed locations and plain finish in exposed locations.

D. Concealed Joint Fasteners: Threaded steel, or type to best suit application.

E. Shelves: Melamine, color as selected, thickness as detailed on drawings.

2.6 HARDWARE

A. Hardware: ANSI A156.9, as follows:
   1. Shelf Standards and Rests: Polycarbonite double pin with tab restraints to accommodate ¾” and 1” shelves, clear 500-pound capacity.
   2. Drawer and Door Pulls: Amerock Blackrock BP55276PN, 3-3/4” CTC pull, polished nickel.
   3. Cabinet Locks: Comp X Timberline dead bolt flat strike, seven-disc tumbler, master keyed.
   4. Catches: Magnetic.
   5. Grommets: 80 mm diameter, plastic, color: white, gray, black or almond. As selected to match surface.
   6. Hinges: Concealed self-closing for frameless cabinets, Blum 73T5580.
   7. Slides: AccuRide 3832, full extension with ball bearings, zinc plated, 100-pound capacity.

8. Countertop Brackets: A&M Hardware ADA vanity brackets, 12 gage steel, 23-inch top with spring clips easy on/off front skirt attachment. Prefinished.
9. Concealed Countertop Brackets: A & M Hardware brackets concealed model C-24, 12 gage steel, 24-inch top prefinished.

2.7 FABRICATION

A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

B. Fit shelves, doors, and exposed edges with matching hardwood or veneer edging. Use one piece for full length only.

C. Door and Drawer Fronts: 3/4-inch thick; reveal overlay style.

D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

E. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.

F. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

G. Provide cutouts for plumbing fixtures, inserts, outlet boxes, fixtures and fittings, and grommets. Verify locations of cutouts from on-site dimensions. Seal cut edges.

2.8 FINISHING

A. Prime paint cementitions surfaces when coming in contact with casework.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

A. Set and secure casework in place; rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units, counter tops.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/32-inch. Do not use additional overlay trim for this purpose.

E. Secure cabinet and counter bases to floor using appropriate angles and anchorages.

F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.3 ADJUSTING

A. Adjust moving or operating parts to function smoothly and correctly.

3.4 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 07210

BUILDING INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes board thermal insulation and adhesive vapor retarder at exterior wall construction.

1.2 SYSTEM DESCRIPTION

A. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96, Procedure A.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data including thermal performance of materials.

1.4 QUALITY ASSURANCE

A. Insulation Installed in Concealed Locations Surface Burning Characteristics:
   1. Foam Plastic Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84, NFPA 255.

B. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

PART 2 PRODUCTS

2.1 BUILDING INSULATION

A. Manufacturers:
   1. Dow Chemical - Extruded-Polystyrene Insulation.
   2. Johns Manville - Polyisocyanurate Insulation.
   3. Substitutions: Permitted.

2.2 COMPONENTS

A. Extruded Polystyrene Insulation: ASTM C578 Type VI, cellular type, with the following characteristics:
   1. Board Thickness: one inch thick.
   2. Thermal Resistance: R of 5.0.
   3. Water Absorption: In accordance with ASTM D2842 0.3 percent by volume maximum.
   4. Compressive Strength: Minimum 25 psi.
   5. Board Edges: Square edges.

2.3 ACCESSORIES

A. Adhesive: Type recommended by insulation manufacturer for application.
   1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

B. Tape: Polyethylene self-adhering type, mesh reinforced, 2-inch wide.

C. Insulation Fasteners: Impaling clip of galvanized steel with washer retainer, to be mechanically fastened to surface to receive board insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.

B. Exterior Walls - Board Insulation:
   1. Adhere strip of polyethylene sheet over substrate joints with beads of adhesive. Tape seal joints.
   2. Apply same adhesive in to full bed 1/8 inch thick.
   3. Install boards on wall surface. Place skin surface of insulation against adhesive.
   4. Stagger joints. Butt edges and ends tight to adjacent board and to protrusions.
   5. Place strip of polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frame. Tape seal in place to ensure continuity of vapor retarder.
   6. Tape insulation board joints.

END OF SECTION

SECTION 07214

FOAMED IN PLACE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Polyicynene spray insulation at wall and junctures of roof and dissimilar materials.

1.2 SUBMITTALS

A. Product Data: Provide data on materials, describing insulation properties, surface burning characteristics.

B. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special treatment.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.3 QUALIFICATIONS

A. Manufacturer Company specializing in manufacturing the products specified in this section with minimum three (3) years' experience.

B. Applicator: Company specializing in performing the work of this section with minimum three (3) years' experience and certified by the manufacturer.

1.4 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke ratings, non-combustibility.

B. Surface-Burning- Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings od applicable testing agency.

C. Fire Resistance Characteristics: As determined by testing identical products (based on a 4-inch minimum thickness) according to ASTM E 199 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

D. Fire Resistance: Characteristics: As determined by testing identical products according to NFPA 285 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Toxicity/Hazardous Materials:
   1. Outgassing/Reactivity:
      a. Formaldehyde: Products containing urea-formaldehyde will not be permitted.
      b. Chlorofluorocarbons (CFCs)/HCFCs: Products and equipment requiring or using CFCs or HCFCs during the manufacturing process will not be permitted.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.

B. Store materials in an area protected from freezing and overheating damage and in accordance with manufacturer's instructions.

C. Protect spray polyhedrane foam components as follows:
   1. Component A and B: Store between 60 degrees F and 90 degrees F.
   2. Component B can be frozen but must be protected from overheating over 120 degree F and prolonged storage over 100-degree F.
   3. Component B: Mix thoroughly prior to use.
   4. Components should be a matched set (system) as supplied by the manufacturer.
   5. Use components within their labeled shelf-life.
   6. Use components as supplied with no site alterations or additions.

1.7 PERFROMANCE CHARACTERISTICS

A. Air Material Air Leakage Rate: Maximum material air leakage rate of less than 0.0004 cfm/ft2 under a pressure differential of 0.3 in w.g. (1.6 psf) (0.02 L/m2 at 75 Pa) per ASTM E 2178 or E 282.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Icynene, Inc., 5805 Whittle Road, Suite 110, Mississauga, Ontario L4Z2J1, Canada. Telephone: 888-946-7325 Fax: 905-890-7784 Web Site: www.icynene.com

B. Substitutions: Permitted.

2.2 MATERIALS

A. Polyicynene Spray Insulation: Icynene; Proseal Eco (MD-R-210) is 100 percent water-blown closed cell spray foam product with an R-value of 4.9 per inch. Proseal Eco is a Class II vapor Diffusion retarder at 2.4 inches. SATM C 1029, Type II, minimum density of 2.2 Ib/cu.ft. and minimum aged R-value at 1-inch thickness of 4.9 deg F x hx sq. ft./Btu at 75 deg F.

B. Prime: Material: recommended by insulation manufacturer where required for adhesion of insulation to substrates.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that substrate is free of any foreign material that will impede application.

C. Verify that other work on and within space to be insulated is complete prior to application.

D. Notify Architect of conditions that would adversely affect the application.

E. Beginning of installation means applicator accepts existing conditions.

3.2 PREPARATION

A. Comply with manufacturer's written installation instructions for preparing substrates indicated to receive insulation.

B. Mask and protect adjacent surfaces from overspray or damage.

C. Remove foreign materials, dirt, grease, oil, paint, laitance, efflorescence and other substrates that will affect application.

3.3 APPLICATION

A. Apply insulation in accordance with manufacturer's written application instructions.

B. Apply insulation to a reasonably uniform monolithic density without voids.

C. Apply to minimum cured thickness as scheduled.

D. Apply insulation to fill voids around doors and windows.

E. Apply insulation to fill voids around accessible service and equipment penetrations.

F. Apply insulation to seal voids at truss ends.

G. Seal plumbing stacks, electrical wiring and other penetrations to control air leakage.

3.4 FIELD QUALITY CONTROL

A. Inspect application for insulation thickness and density.

3.5 PROTECTION OF FINISHED WORK

A. Do not permit subsequent work to disturb applied insulation.

END OF SECTION

SECTION 07250

WEATHER BARRIERS (ZIP SYSTEM SHEATHING – WALL USE)

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wall sheathing with integral water-resistive barrier and air barrier.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of sheathing product specified.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: From ICC-ES, for wood sheathing and seam tape.

B. Product Certifications: From manufacturer, indicating that sheathing products comply with ICC-ES AC310.

C. Certified Wood Certificates: Certificates indicating that manufacturer is currently certified by an SFI- or FSC- accredited certification body, and chain-of-custody certificates, indicating that sheathing products comply with forest certification requirements.

1.4 CLOSEOUT SUBMITTALS

A. Warranty: Executed copy of manufacturer special warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide wood products from manufacturer certified by SFI, FSC, or comparable, sustainable forestry program acceptable to Architect.

B. Provide wall sheathing products meeting requirements for water-resistive barrier in accordance with ICC-ES AC310.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions for protection of sheathing products from weather prior to installation.

1.7 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which sheathing manufacturer agrees to repair or replace sheathing products that demonstrate deterioration or failure under normal use due to manufacturing defects within warranty period specified, when installed according to manufacturer's instructions.
   1. Warranty Period for Sheathing Products: Thirty (30) years following date of Substantial Completion.
   2. Warranty Conditions: Special warranties exclude deterioration or failure due to structural movement, resulting in stresses on sheathing products exceeding manufacturer's written specifications, or due t air or moisture infiltration resulting from cladding failure or mechanical damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Provide weather barrier sheathing products manufactured by Huber Engineered Woods, LLC, Charlotte, NC
Phone: (800) 933-9220; Website: www.huberwood.com

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:
   1. Fire-Resistance Ratings: Where indicated, provide assemblies tested for fire resistance per ASTM E119.

B. Air-Barrier Assembly Air Leakage: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft., per ASTM E2357.

C. Air-Barrier Material: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft., per ASTM E2178.

D. Water-Vapor Permeance, Facer: Minimum 12 perms, ASTM E96/E96M.

E. Weather Exposure: Manufacturer warranty applies for maximum allowable exposure period of 180 days.

2.3 WOOD PANEL PRODUCTS

A. Single Source Limitations: Provide wall sheathing/weather barrier by a single manufacturer.

B. Oriented Strand Board: DOC PS 2, made with binder containing no added urea formaldehyde.

2.4 WALL SHEATHING WITH INTEGRAL WATER-RESISTIVE BARRIER AND AIR BARRIER

A. Oriented-Strand-Board Wall Sheathing: Exposure 1 sheathing with factory-laminated water-resistive barrier facer with printed fastener location symbols.
   1. Basis-of-Design Product: Provide **Huber Engineered Woods, LLC; Zip System Wall Sheathing.**
   2. Span Rating, Panel Grade and Performance Category: Not less than 24/16; Structural 1; 7/16 Performance Category.
   3. Edge Profile: Square edge.

4. Weather Barrier Facer: Medium-density, phenolic-impregnated sheet material qualifying as a Grade D weather-resistive barrier in accordance with ICC-ES AC38.
   a. Provide fastener spacing symbols on facer for 16-inch and 24-inch on center spacing.

2.5 FASTENERS

A. Fasteners, General: Size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
   1. Corrosion Resistance: Hot-dip zinc coating, ASTM A153/A153M or Type 304 Stainless Steel.

B. Nails, Brads, and Staples: ICC AC116 and ICC AC201

C. Power-Driven Fasteners: ICC-ES-1539 or NER-272.

2.6 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIAL

A. Self-Adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape, consisting of polyolefin film with acrylic adhesive, meeting ICC-ES AC148, and tested as part of an assembly meeting performance requirements.
   1. Basis-of-Design Product: Provide **Huber Engineered Woods; Zip System Tape.**
   2. Thickness: 0.012-inch.

B. Liquid-Applied Flashing Membrane: Gun-grade, cold-applied, silyl-terminated polyester (STPE) liquid flashing membrane compatible with sheathing/weather barrier and self-adhering seam and flashing tape and tested as part of an assembly meeting performance requirements. Follow manufacturer's recommendation for integration with ZIP System Tape.
   1. Basis-of-Design Product: Provide **Huber Engineered Woods; Zip System Liquid Flash.**
   2. Hardness, Shore A, ASTM C 661; 40 to 45.

C. Self-Adhering Flexible Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape, consisting of polyolefin film with acrylic adhesive, meeting ICC-ES AC148 and tested as part of an assembly meeting performance requirements.
   1. Basis-of-Design Product: Provide **Huber Engineered Woods; Zip System Stretch Tape.**
   2. Thickness: 0.042-inch.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.

3.2 SHEATHING INSTALLATION

A. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.

B. Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant sequencing and installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture-barrier.

C. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.

D. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs. Support all panel edges.
   1. Space square-edged panels 0.125-inch.
   2. Butt edges of self-spacing edge panels.

E. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:
   1. ICC-ES ESR-1539 or ICC-NES NER-272 for power-driven fasteners.
   2. IBC: Table 2304.9.1 Fastening Schedule.

F. Apply ZIP System tape at all panel seams, penetrations, and facer defects or cracks to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.

G. Apply liquid-applied flashing membrane at penetrations, gaps, and cracks to form continuous weathertight surface. Apply liquid membrane according to manufacturer's written instructions. Follow manufacturer's recommendation for integration with ZIP System Tape.

H. Apply ZIP System Stretch Tape around window and window frames, door frames, radius fenestrations and wall penetrations to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of IAPMO ER 365 applicable to tape application.

END OF SECTION

SECTION 07468

METAL SIDING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes preformed metal siding system for walls, and soffits, with related flashings and accessory components.
   1. Provide building paper back-up over sheathed walls.

1.2 REFERENCES

A. ASTM International:
   1. ASTM A606 - Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
   2. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
   3. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
   4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
   5. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

1.3 PERFORMANCE REQUIREMENTS

A. Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with applicable code.

B. Maximum Allowable Deflection of Panel: 1/180 of span.

C. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

D. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

E. Products: Provide continuity of thermal barrier at building enclosure elements in conjunction with thermal insulating materials.

F. Vapor Retarder: Provide continuity of vapor retarder at building enclosure elements in conjunction with vapor retarders.

G. Air Seal: Provide continuity of air barrier seal at building enclosure elements in conjunction with air seal materials.

1.4 SUBMITTALS

A. Shop Drawings: Indicate dimensions, layout, joints, expansion joints, construction details, methods of anchorage, and interface with adjacent materials.

B. Product Data: Submit data on panels.

C. Samples: Submit two samples of siding, siding finish, 6 x 6-inch in size illustrating finish color, sheen, and texture.

D. Manufacturer's Installation Instructions: Submit special procedures.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing Work of this section with minimum three years' experience and approved by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials capable of causing discoloration or staining.

1.7 COORDINATION

A. Coordinate Work for installation of vapor retarder and air barrier seals.

B. Coordinate Work with installation of windows adjacent components or materials.

PART 2 PRODUCTS

2.1 METAL SIDING

A. Manufacturers:
   1. Pac Clad, Inc.
   2. Metal Sales, Inc.
   3. A.W.P. Hickman Company
   4. Substitutions: Permitted

2.1 COMPONENTS

A. Exterior Wall/Soffit Panel: Match existing profile, reveal and color.

B. Miscellaneous Sheet Materials: Minimum 20 gage thick steel stock or 0.040-inch-thick aluminum stock
   1. Galvanized Steel: ASTM A924/A924M, Grade D, Coating Designation G90. Precoated Surfaces: Color as selected from manufacturer's standard range.

A. Sub-girts: Steel, manufacturer’s standard profile as indicated on Drawings; to attach panel system to building and/or structural frame. Thickness as required to support specified loads within specified deflection limitations.

B. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; brake formed to required angles. Mitered internal corners to be back braced with 22 gage thick pre-coated sheet stock to maintain continuity of profile.

C. Expansion Joints: Same material, thickness and finish as exterior sheets; manufacturer's standard brake formed type, of profile to suit system. Exposed fasteners same finish as panel system.

D. Trim, Closure Pieces, Caps, Flashings, Fascias: Same material, thickness and finish as exterior sheets; brake formed to required profiles. Coping: ATAS Rapid-LokUltra.

E. Anchors: Type as recommended by panel manufacturer.

2.2 ACCESSORIES

A. Sealants: Specified in Section 07900. Color to match siding.

B. Fasteners: Manufacturer's standard type to suit application; fastener cap same color as exterior panel. Exposed fasteners same finish as panel system.

C. Power Actuated Fasteners: Steel, hot dip galvanized; fastener cap same color as exterior panel.

D. Field Touch-up Paint: As recommended by panel manufacturer.

E. Bituminous Paint: Asphalt base.

F. Ice and Water Shield: 18-inch-wide roll, self-adhering sheet comprised of rubberized asphalt adhesive backed by a layer of high density cross laminated polyethylene and a foldless release paper. Equal to Grace Ice and Water Shield.

2.3 FABRICATION

A. Form sections to shape indicated on Drawings, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest practicable lengths.

C. Panel Profile: Manufacturer’s standard profile for specified system.

D. Fabricate corners in one continuous piece with minimum 18-inch returns.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify building framing members are ready to receive panel system.

3.2 INSTALLATION - ICE AND WATER SHIELD

A. Install 1-layer building paper horizontally on walls to receive metal siding.

B. Weather lap edges 6 inches and ends minimum 6 inches, minimum.

C. Stagger vertical joints of each layer.

D. Secure in place.

3.3 INSTALLATION

A. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

B. Fasten siding to structural supports; aligned, level, and plumb.

C. Locate joints over supports. Lap panel ends minimum 2 inches.

D. Install expansion joints.

E. Use concealed fasteners unless otherwise approved by Architect/Engineer.

F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.4 ERECTION TOLERANCES

A. Maximum Offset from Indicated Alignment between Adjacent Members Butting or In Line: 1/16 inch.

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/8 inch.

3.5 CLEANING

A. Remove site cuttings from finish surfaces.

B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

SECTION 07530

ELASTOMERIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Elastomeric Sheet Membrane Conventional Roofing System with vapor retarder, insulation, roofing membrane expansion joints, mechanically attached.

1.2 SUBMITTALS

A. Prior to starting work, the roofing contractor shall submit the following:
1. Setting plan for tapered insulation layout, and conditions of interface with other materials.
2. Indicate membrane layout and seam locations.
3. Submit a letter of certification from roofing manufacture which certifies the contractor is authorized to install the roofing system and list the foreman who received training from the manufacturer along with the dates the training was received.
4. Certification that the membrane thickness is as specified and has a minimum of 15 Mil to ply membrane over reinforcing.

B. Product Data: Submit characteristics on membrane materials, flashing materials and insulation.

C. Upon completion of work submit copies of the manufactures final inspection indicating to many defencies have been corrected list of maintenance items and recommended period dates to per and manufacture warranty.

1.3 QUALITY ASSURANCE

A. The Membrane Roofing System must achieve a UL Class A UL 790. Foam insulation & roof assembly shall pass UL1256.

B. The specified roofing assembly must be rated by Factory Mutual Global (FMG) to meet exceed the factored uplift pressures outlined in FMG Property Loss Prevention Data Sheet 1-28 and complies with FMG Property Loss Prevention Data Sheet 1-29 for enhancements at the perimeter and corners.

C. The membrane must be manufactured by the material supplier. Manufacturers supplying membrane made by others are acceptable.

D. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturers current specifications and details.

E. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able t provide evidence of having a least five (5) years successful experience installing single-ply TPO roofing systems and having installed at least one (1) roofing application or several similar systems of equal or greater size within one year.

F. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experiences superintendent in the job at all times roofing work is in progress.

G. There shall be no deviations made from this specification or the approved shop drawings without the prior written approval of the specifier. Any deviation from the manufacturer's installation procedures must be supported by a written certification on the manufacturers letterhead and presented for the specifiers consideration.

H. The TPO White membrane meets CRRC (Cool Roof Rating Council) for reflectance and emittance. When tested in accordance with ASTM C15549, the Sure-Weld White material has an initial solar reflectance of 0.79 and a 3-year aged reflectance of 0.70. The material has also been tested for emittance in accordance with SATM C1371I an initial emittance of 0.90 and a 3-year aged emittance of 0.86 were achieved.

I. Roof Assembly Fire Classification: Minimum Class A when tested in accordance with ASTM E108 or UL 790.
   1. Roof Assembly with Foam Insulation: Passes FM 4450 or UL 1256.

J. Surface Burning Characteristics:
   1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84 and NFPA 255.

K. Apply label from agency approved by authority having jurisdiction to identify each roof assembly component.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in the manufacturers original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

B. Comply with the manufacturer's written instructions for proper material storage.
   1. Store membrane in the original undisturbed plastic wrap in a cool, shaded area. Membrane that has been exposed to the elements for approximately 7 days must be prepared with Weathered Membrane Cleaner prior to hot air welding.
   2. Store curable materials (adhesives and sealants) between 60 F and 80 F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60 F minimum temperature before using.
   3. Store materials containing solvents in dry, well ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.

C. Insulation must be on pallets, off the ground and tightly covered with waterproof materials.

D. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

1.5 WARRANTY

A. Provide manufacturers 20-year total system warranty covering both labor and material with no dollar limitation. The maximum wind speed coverage shall be 110 mph measured at 30 feet above ground level.

B. Pro-rated warranties shall not be accepted.

C. Warranty shall also cover leaks caused by hail up to 1-inch diameter and is installed over a recovery board or dens deck prime.

D. Evidence of the manufacturer's warranty reserve shall be included as part of project submittals.

PART 2 PRODUCTS

2.1 ELASTOMERIC ROOF MEMBRANES

A. Manufacturers:
   1. Carlisle SynTec Systems.
   2. Firestone Building Products Co.
   3. Johns Manville.
   4. Silka Sarnafil, Inc.

2.2 COMPONENTS

A. Membrane: ASTM D4434; Type IV TPO (thermoplastic Polyolefin) reinforced, 0.60 mil thick, 8ft wide roll; white color; membrane thickness over the reinforcing scrim (top-ply thickness) nominal 15 mil thick or greater.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Insulation Materials:
   1. Insulation: ASTM C1289 type II, class, faced rigid cellular polyisocyanurate roof insulation, with the following characteristics:
      a. Board Density: 25 lb./cu ft.
      b. Board Size: 48 x 96-inch, 48 x 48-inch tapered
      c. Board Thickness: Tapered and 1-1/2-inch
      d. Board Edges: square.

D. Dens Deck Prime: Gypsum core that incorporates glass-mat facing on the top and bottom side. The top surface is pre-primed and provides excellent bond strength for adhered membrane for use as a cover board, thickness 1/2-inch 48 x 96-inch size square edge.

2.3 ACCESSORIES

A. Membrane Fastening:
   1. Membrane Adhesive: As recommended by membrane manufacturer.
   2. Insulation Adhesive: As recommended by insulation manufacturer.
   3. Disc Washers and Screws: Manufacturer Recommendation.
   4. Partial Adhesive Washer Disc: Membrane material.

B. Insulation Adhesive: As recommended by insulation manufacturer.

C. Insulation Joint Tape: As recommended by Insulation Manufacturer.

D. Dry Sheathing Paper: Clean, white cellulose paper.

E. Flexible Flashings: Same material as membrane; white color.

F. Roofing Nails: Galvanized, hot dipped type.

G. Sealants: As recommended by membrane manufacturer.

H. Walkway Pads: 24 x 24-inches.

I. Termination Bars: A 1-inch-wide x 0.98-inch-thick extruded aluminum bar pre punched 6” on center with a sealant ledge to support lap sealant.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify surfaces and site conditions are ready to receive Work; deck is clean and smooth, free of snow or ice; properly sloped to drains.

B. Verify roof openings, curbs, and protrusions through roof are solidly set; and reglets are in place.

3.2 INSULATION APPLICATION

A. Insulation Application:
   1. Embed into insulation adhesive and mechanically fasten insulation to deck.
   2. Mechanically fasten first layer of insulation to deck. Embed into insulation adhesive, second layer of insulation. Lay second layer of insulation with joints staggered from first layer. Both horizontally and vertically.
   3. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
   4. Tape joints of insulation.

B. Cover Board application: Adherer
   1. Mechanically fasten cover board to deck per manufacturer’s instructions lay cover boards with edge in moderate contact without forcing cut cover boards to perimeter blocking and around penetrations.
   2. Tape Joints

3.3 MEMBRANE INSTALLATION

A. Position membrane over cover board. Fold membrane sheet back onto itself so half the underside is exposed.

B. Apply bonding adhesive in accordance with manufacturer’s published instructions to the exposed underside of the membrane and the corresponding substrate area. Do not apply bonding adhesive along the splice edge of the membrane to hot air welded owner the adjoining sheet. Allow adhesive to dry until it is tacky but will not string to a dry touch finger.
   1. Roll the coated membrane into the coated substrate free from air pockets, wrinkles, and tears.
   2. Fold back the unbounded half of the sheet and repeat the bonding procedures.

C. Continue to install adjoining membrane sheets in same manor, overlapping edges a minimum of 2 inches.

D. Hot -air weld membrane seams in accordance with the manufacturer's specifications using either hot air welding machine or hot air hand welder. At all splice intersections, roll the seam with a silicone roller immediately welder crossed the membrane step off to ensure a continuous hot air welded seam.
   1. All splice intersections shall be overlaid with joint covers or non-reinforced flashing.

E. Probe all seams once the air welds have thoroughly cooled. Repair deficiencies the same day the are discovered.

F. Apply cut edge sealant on all cut edge of reinforced membrane where the scrim reinforcement is exposed.

G. Flashing of parapets, curbs, expansion joints and other parts of the roof must be performed using reinforced membrane. Non-reinforced membrane may be used for the flashing pipe penetration sealant pockets.
   1. Use prefabrication accessories at all areas except when their use is not feasible.
   2. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edge coping and roof drain.

H. Install walkway pads at all locations indicated on drawings.
   1. Hot air weld walkway pad to the membrane in accordance with the 4 manufacturer's instructions.

3.4 DAILY SEAL

A. Provide temporary seal when the completion of flashings and terminations are not achieved by the end of the workday, the seal must be prepared to temporarily close the membrane to prevent water infliction.

3.5 CLEAN UP

A. Perform daily clean to collect all wrappings, empty containers, and debris form project site, dispose of all debris.

B. Perform pre-inspection to review all work and to verify flashings have been installed with all caulking, and provide to manufacturer's warranty inspector, correct any deficiencies.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section includes flashings and counter flashings downspouts and fabricated sheet metal items.

1.2 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, termination, and installation details.

1.3 WARRANTY

A. Furnish five-year manufacturer warranty for finishes.

PART 2 PRODUCTS

2.1 ROOF EDGING SYSTEM

A. Econosnap: Decorative metal fascia with continuous galvanized steel spring cant to terminate single-ply roofing at perimeter. They system shall be watertight with concealed splice plates and no exposed fasteners.

B. Performance characteristics:
1. Roof edging shall lock membranes, preventing wind pullback.
2. Fascia shall freely thermal cycle on spring ant substrate, preventing periodic maintenance.
3. Fascia may be factory modified for true radius application.

C. Fascia metal gauge: .050”, thick formed aluminum; with Kynar 500 finish.

D. Fascia: Std. 10’-0” lengths with matching concealed joint splice plates.

E. Spring cant: Shall be continuous 24 gauge commercial type G90 galvanized steel at 10’-0” standard lengths.

F. Fasteners: Stainless steel 1-1/2-inch ring shank nails as provided by the manufacturer. No exposed fasteners permitted.

G. Exterior Fascia Finishes: Kynar-500 from manufacturer’s standard colors.

H. Corners, fascia sumps, spill outs, etc. shall be fabricated by the gravel stop manufacturer. Factory fabricated, mitered corners shall have 12” nominal leg lengths.

2.2 PARAPET COPING SYSTEM

A. Permasnap Coping: Metal coping cap with galvanized steel anchor cleats and gutter support chairs for capping any parapet wall. The system shall be watertight, maintenance free, and not require exposed fasteners or sealant. Joints shall be butt type with concealed splice plates.

B. Performance characteristics:
   1. Coping sections shall expand and contract freely while mechanically locked in place on anchor cleats.
   2. Coping sections shall lock to anchor cleats by mechanical pressure from support chairs.
   3. All coping cover joints shall be underplayed with gutter/support chairs capable of draining water.

C. Metal: 24-gauge galvanized steel with Kynar coating.

D. Coping cap: Length of 10’-0”; custom widths as indicated on drawings.

E. Coping vertical face and back leg: standard 4” nominal.

F. Internal splice plates: Shall be concealed with matching finish to maintain outside face continuity.

G. Coping Cleat: 20-gauge galvanized steel anchor cleat; normally 12” wide at 5’-0” on center to be mechanically fastened as indicated and detailed.

H. Gutter/support chair: Metal Gutter Chair in color and finish to match coping cap.

I. Fasteners: Shall be stainless steel screw type with a minimum pull-out resistance of 240# as supplied by the manufacturer per substrate supplication. No exposed fasteners shall be permitted.

J. Finishes: Shall be standard post coated Kynar-500 from industry standard two coat colors. Color shall be as selected.

K. Corners, end caps, pier caps, etc. shall be fabricated by the coping manufacturer.

L. Welded or METAL-LOCK R assembly shall be used to maintain watertight integrity.

2.3 COMPONENTS

A. Pre-Finished Galvanized Steel Sheet: ASTM A755/A755M; structural steel sheet, G90 zinc coating; 0.024-inch-thick core steel, shop pre-coated with polyester acrylic two coat fluoropolymer topcoat; color as selected from manufacturer’s standard color.

2.4 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

B. Downspout and Downspout Anchorage Devices: Formed prefinished galvanized steel. Shape as indicated on drawings recommended by fabricator.

C. Downspout Supports: Brackets or straps.

D. Underlayment: ASTM D226; Type II, No. 30 unperforated asphalt felt.

E. Protective Backing Paint: Zinc molybdate alkyd.

F. Slip Sheet: Rosin sized building paper.

G. Sealant: Exterior metal lap joint butyl or polyisobutylene sealant as specified in Section 07900.

H. Plastic Cement: ASTM D4586, Type I.

I. Reglets: Recessed galvanized steel face and ends covered with plastic tape.

2.5 FABRICATION

A. Downspout Boots: Plastic.

B. Form components to shape indicated on Drawings, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.

C. Fabricate cleats and starter strips of same material as sheet, to interlock with sheet.

D. Hem exposed edges on underside 1/2 inch; miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

E. Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

F. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

G. Fabricate corners in one piece, 18-inch-long legs; seam for rigidity, seal with sealant.

H. Form sheet metal pans with upstand, and flanges.

2.6 SHOP FINISHING

A. Polyester coating: Baked enamel system conforming to AAMA 2603.

B. Fluoropolymer Coating: Multiple coat as specified for sheet metal system, thermally cured, conforming to AAMA 2604.

C. Washcoat: Finish concealed side of metal sheets with washcoat compatible with finish system, as recommended by finish system manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

B. Verify membrane termination and base flashings are in place, sealed, and secure.

C. Verify that the roof edging installation will not disrupt other trades. Verify that the substrate is dry, clean and free of foreign matter. Report and correct defects prior to any installation.

3.2 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mil.

3.3 INSTALLATION

A. Install starter and edge strips, and cleats.

B. Install surface mounted reglets. Seal top of reglets with sealant. Insert flashings to form tight fit. Seal flashings into reglets with sealant.

C. Secure flashings, gutters and downspouts in place using [concealed] fasteners.

D. Apply plastic cement compound between metal work and felt flashings.

E. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

F. Connect downspouts to downspout boots storm sewer system. Seal connection watertight.

G. Set splash pads under downspouts.

H. Seal joints watertight.

3.4 INSTALLATION ECONOSNAP ROOF EDGING SYSTEM

A. Submit product design drawings for review and approval to Architect or Specifier before fabrication.

B. Installing contractor shall check as-built conditions and verify the manufacturer's gravel stop details for accuracy to fit the wall assembly prior to fabrication. The installer shall comply with the roof edging manufacturer's installation guide when setting edging.

C. Roofing membrane must be single ply; not to exceed 60 mils thick.

D. Installer shall use stainless steel fasteners as supplied by manufacturer minimum length 1 ½" suitable for the substrate to which being installed.

3.5 INSTALLATION

A. Submit product design drawings for review and approval to Architect or Specifier before fabrication.

B. Installing contractor shall check as-built conditions and verify the manufacturer's coping details for accuracy to fit the wall assembly prior to fabrication. The installer shall comply with the coping manufacturer's installation guide when setting coping.

C. Installer shall use mechanical fasteners with minimum 240# pull-out resistance suitable for parapet substrates.

END OF SECTION

SECTION 07710

ROOF EDGING/FASCIA

PART 1 – GENERAL

1.1 SUMMARY

A. Work included: Furnishing and installing factory fabricated and finished roof edging.

1.1 SUBMITTALS

A. Product Data: Provide manufacturer's product and complete installation data for all materials in this specification.

B. Shop drawings: Show profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.

C. Samples: Available on request; sized to adequately represent material.

D. Contract Closeout: Submit Special Warranty and Manufacturer's performance certifications.

E. Installation Guide: The product manufacturer shall provide a written installation guide.

1.4 QUALITY ASSURANCE:

A. High performance roof edge shall be CERTIFIED by the manufacturer to comply with ANSI/SPRI Standard ES-1. Roof edge/gravelstop shall meet performance design criteria according to the following test standards:
   1. ANSI/SPRI ES-1 Test Method RE-1 Test for Roof Edge Termination of Single-ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum 100 lbs/ft in accord with the ANSI/SPRI ES-1 Test Method RE-1. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
   2. ANSI/SPRI ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1 Test Method RE-2. Use the current edition of ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
   3. The roof edge product shall be UL Classified by Underwriters Laboratories, Inc.® or other 3rd party verification of compliance with the ANSI/SPRI ES-1 Wind Design Standard.

1.5 PRODUCT HANDLING:

A. All materials shall be delivered in the manufacturer's original sealed, labeled containers.

B. Store materials in a dry, protected, well-vented area. The contractor shall report damaged material immediately to the delivering carrier and note such damage on the carrier's freight bill of lading.

C. Remove protective plastic surface film after installation.

1.6 JOB CONDITIONS

A. Verify that other trades are complete before installing the roof edging.

B. Mounting surfaces shall be straight and secure; substrates shall be of proper width.

C. Refer to the construction documents, shop drawings and manufacturer's installation instructions.

D. Coordinate installation with roof membrane manufacturer's installation instructions.

E. Observe all appropriate OSHA safety guidelines for this work.

1.7 WARRANTY/GUARANTEE

A. Manufacturer's Standard Warranty: Warranted materials shall be free of defects in material and workmanship for five years after shipment. If, after inspection, the manufacturer agrees that materials are defective, the manufacturer shall at their option repair or replace them. For decorative finish warranty, consult manufacturer.

B. Special 25-Year Category5^{SM} Warranty: Manufacturer shall guarantee that a standard size roof edge system, when installed per manufacturer's instructions, will not blow off, leak, or cause membrane failure, even in wind conditions up to 155 mph, or the manufacturer shall replace or repair its materials.

PART 2 – PRODUCTS

2.1 MANUFACTURER:

A. W. P. Hickman Company
P.O. Box 15005
Asheville, NC 28813-0005
Phone: 828-676-1700
Toll Free: 800-892-9173
Fax: 828-676-2330
Internet address - http://www.wph.com

2.2 ROOF EDGING

A. TerminEdge Roof Edging: A two-part assembly with a rigid terminator base plate, and a decorative snap-on fascia cover for single-ply roofs with raised perimeter edges. The system shall have all concealed fasteners with no penetration on horizontal roof surface. Model shall be tex 825 with retainer clip.

B. Retainer Base Plate: Shall be 20 gauge galvanized steel with 9/32” pre-punched holes for fasteners @ 12” on center in 10'-0” standard lengths.
   1. Install with field-applied waterproof sealant by roofing membrane manufacturer.

C. Exterior Fascia Covers:
   1. Standard: 24 gauge galvanized steel in 10'-0” lengths for all sizes; concealed, matching 4” wide 24ga joint splice plates.

D. Fasteners: Stainless steel hex head screw type provided by the manufacturer.

E. Exterior fascia finishes: For 24 gauge galvanized steel choose] Kynar-500 standard color from manufacturer’s standard colors.

2.3 ACCESSORIES

A. Corners, end caps, fascia sumps, or spillouts, etc. shall be fabricated by the roof edging manufacturer. Factory fabricated mitered corners shall have 12-inch nominal (305 mm) leg lengths.

B. Provide matching ledgecaps, downspouts, or other special fabrications as detailed.

PART 3 – EXECUTION

3.1 INSPECTION

A. Verify that the roof edging installation will not disrupt other trades. Verify that the substrate is dry, clean and free of foreign matter. Report and correct defects prior to any installation.

3.2 INSTALLATION - ROOF EDGING

A. Submit design drawings for review and approval to Architect or Specifier before fabrication.

B. Installing contractor shall check as-built conditions and verify the manufacturer’s roof edging details for accuracy to fit the wall assembly prior to fabrication. The installer shall comply with the roof edging manufacturer’s installation guide when setting edging.

C. Installer shall use stainless steel screw type fasteners as provided by manufacturer, nominal 1-1/4-inch (32 mm) length, with minimum 240# (109 kg) pull-out resistance; suitable for the substrates to which being installed.

D. Install waterproof sealant to underside of retainer base plate as recommended and suppled by the roofing membrane manufacturer.

END OF SECTION

SECTION 07840

FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes firestopping and through-penetration protection systems materials and accessories.

1.2 SUBMITTALS

A. Product Data: Submit data on product characteristics, performance and limitation criteria.

B. Design Data: Provide schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: ASTM E814 with 0.10-inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
   1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.
   2. Floor and Roof Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
      a. Floor Penetrations Within Wall Cavities: T-Rating is not required.

B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.
   1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.
   2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: ASTM E1966 or UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10-inch water gage minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84 and NFPA 255.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when temperature of substrate material and ambient air is below 60 degrees F.

B. Maintain this minimum temperature before, during, and minimum 3 days after installation of materials.

C. Provide ventilation in areas to receive solvent cured materials.

PART 2 PRODUCTS

2.1 FIRESTOPPING

A. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
   1. Silicone Firestopping Elastomeric Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.
      a. Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
   2. Foam Firestopping Compounds: Single component foam compound.
   3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
   4. Fiber Stuffing and Sealant Firestopping: Composite of mineral fiber stuffing insulation with silicone elastomer for smoke stopping.
   5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
   6. Firestop Pillows: Formed mineral fiber pillows.
   7. Mortar as specified in Section 04065 where permitted by applicable code.

2.2 ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.

B. Dam Material: Permanent:
   1. Mineral fiberboard.
   2. Mineral fiber matting.
   3. Sheet metal.
      a. Composite Wood Products: Contain no added urea-formaldehyde resins.
   4. Alumina silicate fire board.

C. Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive work of this section.

3.2 PREPARATION

A. Clean substrate surfaces of matter effecting bond of firestopping material.

B. Install backing materials to arrest liquid material leakage.

3.3 APPLICATION

A. Apply primer where recommended by manufacturer for specific material and substrate.

B. Apply firestopping material in sufficient thickness to achieve required fire rating, to uniform density and texture.

C. Install material at walls or partition openings containing penetrating sleeves, piping, duct work, conduit and other items, requiring firestopping.

END OF SECTION

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes sealants and joint backing.

B. Refer to Division 0 and Division 1 requirements. Requirements of these divisions and project drawings shall govern work of this section.

1.2 SUBMITTALS

A. Product Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

1.3 ENVIRONMENTAL REQUIREMENTS

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

PART 2 PRODUCTS

2.1 JOINT SEALERS

A. Manufacturers:
   1. Dow Corning Corp.
   2. GE Silicones.
   3. Pecora Corp.
   4. Sika Corp.
   5. Substitutions: Permitted.

B. Product Description:
   1. High Performance General Purpose Exterior (Nontraffic) Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; single component.
      a. Type: A.
      b. Color: Standard colors matching finished surfaces.
      c. Applications: Use for:
         1) Control, expansion, and soft joints in masonry.
         2) Joints between concrete and other materials.
         3) Joints between metal frames and other materials.
         4) Other exterior nontraffic joints for which no other sealant is indicated.
   2. General Purpose Traffic Bearing Sealant: Polyurethane; ASTM C920, Grade P, Class 25, Use T; single component.
      a. Type: B.
      b. Color: Standard colors matching finished surfaces.
      c. Applications: Use for exterior vehicular traffic bearing joints.
   3. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, non-drying, non-skinning, non-curing.
      a. Type: C.

b. Applications: Use for concealed sealant bead in sheet metal work and concealed sealant bead in siding overlaps.

4. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
   a. Type: D.
   b. Color: Standard colors matching finished surfaces.
   c. Applications: Use for interior wall and ceiling control joints, joints between door and window frames and wall surfaces, and other interior joints for which no other type of sealant is indicated.
5. Acoustical Sealant: Butyl or acrylic sealant; ASTM C920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
   a. Type: F.
   b. Applications: Use for concealed locations only at acoustically rated construction.
      1) Provide sealant bead between top stud runner and structure and between bottom stud track and floor.
6. Sealant - Butyl Sealant: ASTM C920, Grade NS, Class 12-1/2, Use NT; single component, solvent release, non-skinning, non-sagging.
   a. Type: G.
   b. Color: Black.
   c. Movement Capability: Plus and minus 12-1/2 percent.
   d. Service Temperature Range: -13 to 180 degrees F.
   e. Shore A Hardness Range: 10 to 30.
7. Sealant - Non-sag Polyurethane Sealant: ASTM C920, Grade NS, Class 25, Uses NT, M; single component, chemical curing, non-staining, non-bleeding, non-sagging type.
   a. Type: H.
   b. Color: Standard colors matching finished surfaces.
   c. Movement Capability: Plus and minus 25 percent.
   d. Service Temperature Range: -40 to 180 degrees F.
   e. Shore A Hardness Range: 20 to 35.
8. Sealant - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Class 25, Uses T, M, A; single component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, self-leveling type.
   a. Type: I.
   b. Color: Standard color matching finished surfaces.
   c. Movement Capability: Plus and minus 25 percent.
   d. Service Temperature Range: -40 to 180 degrees F.
   e. Shore A Hardness Range: 20 to 35.

2.2 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: Round foam rod compatible with sealant; ASTM D1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

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

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces and joint openings are ready to receive work.

B. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter impairing adhesion of sealant.

B. Clean and prime joints.

C. Perform preparation in accordance with ASTM C1193.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Perform acoustical sealant application work in accordance with ASTM C919.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

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

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

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

G. Tool joints concave.

3.4 SCHEDULE

A. Exterior Joints for Which No Other Sealant Type is Indicated: Type A.

B. Control and Expansion Joints in Paving: Type B.

C. Exterior Wall Expansion Joints: Type A.

D. Control, Expansion, and Soft Joints in Masonry, and Between Masonry and Adjacent Work: Type A.

E. Lap Joints in Exterior Sheet Metal Work: Type C.

F. Butt Joints in Exterior Metal Work and Siding: Type C.

G. Joints between Exterior Metal Frames and Adjacent Work (except masonry): Type H.

H. Under Exterior Door Thresholds: Type G.

I. Interior Joints for Which No Other Sealant is Indicated: Type D.

J. Control and Expansion Joints in Interior Concrete Slabs and Floors: Type I.

K. Joints Between Plumbing Fixtures and Walls and Floors, and Between Counter tops and Walls: Type E.

L. In STC-Rated Walls, Between Metal Stud Track/Runner and Adjacent Construction, Between Outlet Boxes and Gypsum Board: Type F.

END OF SECTION

SECTION 08110

STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes steel doors and frames; non-rated and fire rated, interior borrowed light frames.

1.2 SUBMITTALS

A. Shop Drawings: Indicate door and frame elevations, internal reinforcement, cut-outs for glazing.

B. Product Data: Submit door and frame configurations, location of cut-outs for hardware reinforcement.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
1. ANSI 250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
3. NFPA-101 - Life Safety Code.
4. Michigan Building Code 2009.
5. ANSI A117.1 - Accessible and Useable Buildings and Facilities.
6. ADA - Americans with Disabilities Act.
7. NFPA 80 - Fire Doors and Windows.
8. SDI-107 - Hardware on Steel Doors.
9. ANSI A250.4 - Steel Doors and Frames Physical Endurance.
10. SDI-105 - Recommended Erection for Steel Doors and Frames.

B. Fire Rated Door Construction: Conform to one of the following:
1. NFPA 252; with neutral pressure level at 40 inches maximum above sill at 5 minutes into test.
2. UL 10C - Standard for Positive Pressure Fire Test for Door Assembly.
3. 20-Minute Fire Rated Corridor Doors: Fire tested without hose stream test.
4. NFPA 80 - Fire Doors and Windows.

C. Fire Rated Door Construction: Conform to UBC Standard 7-2.

D. Fire Rated Stair Doors: Rate of rise of 450 degrees F across door thickness.

E. Installed Fire Rated Door Assembly: Conform to NFPA 80 for fire rated class as indicated on Drawings.

F. Attach label from agency approved by authority having jurisdiction to identify each fire rated door.
1. Indicate temperature rise rating for stair doors.

G. Surface Burning Characteristics:
   1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84, NFPA 255, UL 723.

H. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation material.

PART 2 PRODUCTS

2.1 STEEL DOORS AND FRAMES

A. Manufacturers:
   1. Ceco Door Products.
   2. Republic Doors.
   3. Steelcraft.
   4. Curries Manufacturing, Inc.

B. Product Description: Standard shop fabricated steel doors and frames; fire rated and non-rated types; flush face or stile and rail design.

2.2 COMPONENTS

A. All doors and frames shall be manufactured of commercial quality cold rolled steel per ASTM A366 and A568 general requirements; galvanized to A60 or G60 or galvanized to A40 minimum coating weight standard per ASTM A924. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM A569.

B. Supports and anchors shall be fabricated of not less than 18-gauge sheet steel, galvanized where galvanized frames are used.

C. Where items are to be built into exterior walls, inserts bolts and fasteners shall be hot dipped galvanized in compliance with ASTM A153, Class C or D as applicable.

D. Rust inhibitive enamel or paint primer shall be used, baked on and suitable as a base for specified finish paints complying with ANSI A224.1, “Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces on Steel Doors and Frame.”

E. Provide all hollow metal doors and frames receiving electrified hardware with Molex wiring harness and concealed plug connectors on one end to accommodate up to twelve wires. Coordinate Molex connectors on end of the wiring harness to plug directly into the electrified hardware and the electric hinge.

2.3 DOORS

1. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level, and HMMA 867 for door construction.
   a. Design: Flush panel.
   b. Core Construction: Face sheets are supported by a steel stiffened core with polyurethane filler. 22-gauge stiffeners are placed no more than 6” apart and welded no more than 5” along their length. The core fills the entire door cavity and is chemically bonded to all interior surfaces.

Density of foam exceeds 1.8 pcf and has a crush strength of 3600 psf. No stiffener face welding is permitted. Thermal properties for insulating foam core shall be a minimum R factor of 11.01, as calculated per ASTM C518.

c. Level/Model: Level 2 and Physical Performance Level A (Extra Heavy Duty), minimum 16 gauge (0.042 inch - 1.1 mm) thick steel, Model 2.

d. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam continuously welded, filled and ground smooth the full height of door.
   1) Vertical Edges for Single-Acting Doors: Beveled Edge, 1/8 inch in 2 inches.

e. To and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16-gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel welded in place with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.

f. Hinge Reinforcement: Minimum 7-gauge (3/16") plate 1 ¼" x 9."

g. Acceptable Manufacturers:
   1) CECO Door Products - Trio-E Series.
   2) Curries Company - Trio-E Series.

B. All doors shall be reinforced for hardware as shown below where necessary to preclude the use of thru-bolts.
   1. Exit Devices: 14-gauge.
   2. Door Closers: 12-gauge.

C. All doors shall be beveled 1/8" in 2" and shall have top and bottom channels of not less than 16-gauge, flush or inverted, welded to the face sheets. Doors shall have a full height 14-gauge hinge rail reinforcement channel or individual 10-gauge hinge reinforcements.

D. All doors to conform to ANSI A250.4 Level "A" criteria and shall be tested to 1,000,000 operating cycles and 23 twist tests. Certification of Level "A" doors is to be submitted with approval drawings by supplier upon request. Do not bid or supply any type or gauge of door not having been tested and passed these criteria.

2.4 FRAMES

A. Provide hollow metal frames for doors, transoms, sidelights, borrowed lights and other openings, of types and styles as shown on the drawings and schedules. Conceal fastenings unless otherwise indicated.
   1. Exterior Frames: Level 2, 16-gauge, galvanized or galvanealed.
      a. Ceco: SU Series.
      b. Curries: M Series.

B. Fabricate frames with mitered and faces only welded corners, re-prime at the welded areas. All welds to be flush with neatly mitered or butted material cuts.

C. All frames shall have minimum 7-gauge hinge reinforcements, 14 gauge lock strike reinforcing and 12 gauge closer reinforcing.

D. Provide temporary shipping bars to be removed before setting frames.

E. Except on weather stripped or thermally broken frames, drill stops to receive three (3) silencers on strike jambs of single frames and two (2) silencers on heads of double frames.

F. Provide minimum 0.0179" thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.5 ACCESSORIES

A. Bituminous Coating: Fibered asphalt emulsion.

B. Primer: ANSI A250.10 rust inhibitive type.

C. Weatherstripping: Specified in Section 08710.

2.6 FABRICATION

A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project Site. Comply with ANSI/SDI 100 requirements.
   1. Clearances shall be no more than 1/8" at jambs and heads except between non-fire rated pairs of doors which may be no more than ¼." Not more than ¾" at the bottom of the doors.

B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, from only cold-rolled steel sheet.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Fabricate concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold- or hot-rolled steel sheet.

E. Unless otherwise indicated, provide exposed fasteners with countersunk flat or oval heads for exposed screws and bolts.

F. At exterior locations and elsewhere as shown or scheduled, assemblies fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C236 or ASTM C976 on fully operable door assemblies.
   1. Unless otherwise indicated, provide thermal-rated assemblies with a minimum U-value rating of 0.41 Btu/sq. ft. x h x deg. F.

G. Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI-107 and ANSI A115 Series specifications for door and frame preparation for hardware.

H. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project Site. Provide internal reinforcements for all doors to receive door closers and exit devices.

I. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

J. Provide glazing stops with minimum 0.0359-inch-thick steel or 0.040 inch thick aluminum.

K. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers and other panels in doors.

L. Provide screw-applied, removable, glazing beads on inside of glass and other panels in doors.

M. Attach fire rating label to each door and frame that is fire rated. Indicate temperature rise rating for stair doors.

2.7 SHOP FINISHING

A. Steel Sheet: Galvanized to ASTM A653/A653M G90.

B. Primer: Baked.

C. Coat inside of frame profile with bituminous coating.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install steel doors, frames and accessories according to shop drawings, manufacturer's data and as specified.

B. Comply with provisions of SDI-105, "Recommended Erection Instructions for Steel Door Frames," unless otherwise indicated. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
   1. Except for frames located in existing concrete, masonry or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.
   2. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on stride jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
   3. At existing concrete or masonry construction, install at least 3 completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure to adjacent construction with bolts and masonry anchorage devices.
   4. In metal-stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In steel-stud partitions, attach wall anchors to studs with screws.
   5. Install fire-rated frames according to NFPA 80.

C. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100. Install fire rated doors with clearances specified in NFPA 80.

3.3 ADJUSTING AND CLEANING

A. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

B. Immediately before final inspection, remove protective wrappings from doors and frames.

C. Tolerances:
1. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

END OF SECTION

SECTION 08431
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum doors and frames.

C. Weatherstripping.

D. Door hardware.

1.02 RELATED REQUIREMENTS

A. Section 088000 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.

B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum; 2025.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

G. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.04 SUBMITTALS

A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

C. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum-Framed Storefronts:

1. Tubelite, Inc: www.tubeliteinc.com/#sle.

2. Substitutions: Not permitted.

2.02 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

A. Center-Set Style, Thermally Broken

2.03 BASIS OF DESIGN -- SWINGING DOORS

A. Entrance Doors, Various Stile Widths:

2.04 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.

1. Finish: Superior performing organic coatings.

a. Factory finish all surfaces that will be exposed in completed assemblies.

b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

2. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.

3. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.

4. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

5. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F (95 degrees C) over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

6. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.

7. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Performance Requirements

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.

a. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.

2. Air Leakage: 0.06 cfm/sq ft (0.3 L/sec sq m) maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf (75 Pa) pressure difference.

2.05 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.

1. Glazing Stops: Flush.

B. Glazing: See Section 08800.

2.06 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Fasteners: Stainless steel.

C. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.07 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

2.08 HARDWARE

A. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

B. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

C. Door Closers: Concealed overhead.

D. Handle Latch: See Sheet A3.0.

E. Locks: See Sheet A3.0 ; keyed cylinder outside.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Install hardware using templates provided.

J. Install glass and infill panels using glazing method required to achieve performance criteria; see Section 088000.

K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.04 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.05 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08710
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood, aluminum, and hollow metal doors.

B. Electrically operated and controlled hardware.

1.02 REFERENCE STANDARDS

A. BHMA A156.1 - Standard for Butts and Hinges; 2021.

B. BHMA A156.4 - Door Closers and Pivots; 2024.

C. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.

D. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.

E. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

F. BHMA A156.18 - Standard for Materials and Finishes; 2020.

G. BHMA A156.26 - Standard for Continuous Hinges; 2021.

H. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators; 2024.

I. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

A. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

B. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.

1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).

2. Provide complete description for each door listed.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:

1. Applicable provisions of federal, state, and local codes.

2.02 HINGES

A. Manufacturers:

1. Basis of Design: Match existing hardware,.

B. Hinges: Comply with BHMA A156.1, Grade 1.

1. Continuous Hinges: Comply with BHMA A156.26.

2. Provide hinges on every swinging door.

3. Provide following quantity of butt hinges for each door:

2.03 ELECTRIC STRIKES

A. Manufacturers:

1. Basis of Design: Match owner's existing hardware.

B. Electric Strikes: Comply with BHMA A156.31, Grade 1.

1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.

2. Provide non-handed 24 VDC electric strike suitable for door frame material and scheduled lock configuration.

2.04 LOCK CYLINDERS

A. Manufacturers:

1. Basis of Design: Match owner's existing hardware.

B. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.

1. Provide cylinders from same manufacturer as locking device.

2. Provide cams and/or tailpieces as required for locking devices.

2.05 MORTISE LOCKS

A. Manufacturers:

B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.

1. Latchbolt Throw: 3/4 inch (19 mm), minimum.

2. Deadbolt Throw: 1 inch (25.4 mm), minimum.

3. Backset: 2-3/4 inch (70 mm) unless otherwise indicated.

4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.

    a. Finish: To match lock or latch.

2.06 CLOSERS

A. Manufacturers; Surface Mounted:

1. Basis of Design: Match Owner's existing hardware.

B. Manufacturers; Concealed - Overhead:

C. Closers: Comply with BHMA A156.4, Grade 1.

1. Type: Surface mounted to door.

2. Provide door closer on each exterior door.

2.07 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.

1. Provide stop for every swinging door, unless otherwise indicated.

2.08 WALL STOPS

A. Manufacturers:

1. Basis of Design: Match Owner's existing hardware.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.

1. Type: Bumper, concave, wall stop.

2. Material: Aluminum housing with rubber insert.

2.09 SILENCERS

A. Manufacturers:

1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.

B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.

1. Single Door: Provide three on strike jamb of frame.

2. Pair of Doors: Provide two on head of frame, one for each door at latch side.

3. Material: Rubber, gray color.

2.10 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.

1. Primary Finish: 625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26); BHMA A156.18.

2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.

a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.

D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

END OF SECTION

SECTION 08800

GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Glass glazing for metal frames, doors, windows, and glazed walls.
2. Glass and plastic glazing materials and installation requirements are included in this section for other sections referencing this section.

1.2 SYSTEM DESCRIPTION

A. System performance to achieve continuity of building enclosure air barrier and vapor retarder with glass and glazing materials of this section.

B. Glass Thickness: Select minimum thickness in accordance with ASTM E1300 to resist specified design loads.

C. Structural Design: Design in accordance with 2024 Michigan Building code for most critical combination of wind, snow, seismic, and dead loads.

D. Thermal and Solar Optical Performance: Measured or calculated in accordance with the following:
1. U-Values: NFRC 100.
2. Solar Heat Gain Coefficients: NFRC 200.
3. Solar Optical Properties: NFRC 300.

1.3 SUBMITTALS

A. Shop Drawings: Signed and sealed by professional engineer.
1. Indicate sizes, layout, thicknesses, and loading conditions for glass.

B. Product Data:
1. Glass: Provide structural, physical, and thermal and solar optical performance characteristics, size limitations, special handling, or installation requirements.
2. Glazing Sealants, Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors where exposed.

C. Design Data: Signed and sealed by professional engineer.
1. Submit design calculations for glass thicknesses.

D. Samples: Submit two samples 12 x 12 inch in size, illustrating glass coloration.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, GANA FGMA Sealant Manual, GANA Laminated Glass Design Guide for glazing installation methods.

B. Fire Rated Wall Glazing: Rating as indicated on Drawings hour rating.
   1. Tested Rating: Determined in accordance with ASTM E119.

C. Fire Rated Window Glazing: Tested in accordance with NFPA 257 and complying with NFPA 80.
   1. NFPA 257; adjusted so two-thirds of test specimen is above neutral pressure plane at 10 minutes into test.

D. Apply label from agency approved by authority having jurisdiction to identify each fire rated glass lite.

1.5 WARRANTY

A. Furnish ten-year manufacturer warranty including coverage for sealed glass units from seal failure, interpane dusting, misting, and replacement of defective glass.

PART 2 PRODUCTS

2.1 FLOAT GLASS MATERIALS

A. Annealed Glass: ASTM C1036, Type 1 transparent flat, Quality Q3, float glass.
   1. Furnish annealed glass except where heat-strengthened or tempered glass is required to meet specified performance requirements.

B. Tempered Glass: ASTM C1048, Type 1 transparent flat, Quality Q3, Kind FT fully tempered, Condition A uncoated, float glass with horizontal tempering.
   1. Furnish tempered glass where heat strengthened glass cannot meet specified performance requirements.

   2. Furnish tempered glass conforming to CPSC 16 CFR 1201 Category 1 at locations where safety glass is required by applicable code.

2.2 FLOAT GLASS PRODUCTS

A. Float Glass Manufacturers:
   1. Guardian Industries Corp.
   2. Vitro Architectural Glass (PPG)
   3. Pilkington
   4. Substitutions: Permitted

B. Clear Glass: Annealed, and Tempered float glass as specified; Class 1 clear
   1. Clear annealed glass (FG-CA)
   2. Clear tempered glass (FG-CT)
   3. Minimum Thickness: 1/4-inch, unless otherwise indicated
   4. Safety Glass, conform to CPSC 16 CFT

2.3 FIRE RESISTIVE GLASS PRODUCTS

A. Fire Resistive Glass Manufacturers:
   1. Pilkington
   2. Technical Glass Products
   3. SAFTI First
   4. Substitutions: Permitted

B. Fire Resistive Film Faced Ceramic Safety Glass (FRG-FC): Transparent polished both surfaces, faced one side with clear plastic glazing film.
   1. Thickness: Manufacturer's standard 3/16 inch.
   2. Product: Pyran-Platinum F manufactured by Safety First.
   3. Fire Rating: 60-minute rating as listed in UL Building Materials Directory and approved by authority having jurisdiction for applications indicated.
   4. Safety Glazing: Comply with CPSC 16 CFR 1201 Category II.

2.4 GLAZING SEALANTS

A. Elastomeric Glazing Sealants: Materials compatible with adjacent materials including glass, insulating glass seals, and glazing channels.
   1. Silicone Glazing Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component; solvent curing; capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25.
      a. Color: As selected.
      b. Structural Silicone: Furnish high-modulus structural silicone glazing materials where sealant bonds glass to substrate.
      c. Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
   2. Polyurethane Glazing Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component, chemical curing, non-staining, non-bleeding, Shore A Hardness Range 20 to 35.
      a. Color: As selected
      b. Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

B. Dense Gaskets: Resilient extruded shape to suit glazing channel retaining slot; color as selected.
   1. Neoprene: ASTM C864.
   2. EPDM: ASTM C864.
   3. Silicone: ASTM C1115.

C. Soft Gaskets: ASTM C509 Type II; resilient extruded shape to suit glazing channel retaining slot; color as selected.
   1. Neoprene.
   2. EPDM.
   3. Silicone.

D. Pre-Formed Glazing Tape: Size to suit application.
   1. Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.

a. Butyl Corner Sealant: ASTM C920 single component non-skinning butyl compatible with glazing tape; color to match tape.
b. Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

2. Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect air barrier and vapor retarder seal.
a. Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

2.5 GLAZING ACCESSORIES

A. Setting Blocks: Elastomeric material recommended by glass manufacturer, 80 to 90 Shore A durometer hardness.

B. Spacer Shims: Elastomeric material recommended by glass manufacturer, 50 to 60 Shore A durometer hardness.

C. Glazing Clips: Manufacturer's standard type.

D. Fire-Resistant Glazing Materials: Materials used to obtain required fire-resistant rating.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

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

B. Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION

A. Perform installation in accordance with GANA Glazing Manual.
1. Glazing Sealants: Comply with ASTM C1193.
2. Fire Rated Openings: Comply with NFPA 80.

B. Interior Dry Method (Tape and Tape) Installation:
1. Cu glazing tape to length and set against permanent stops, projecting 1/16-inch above sight line.
2. Place setting blocks at (1/4) (1/3) points.
3. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

4. Place glazing tape on free perimeter of glazing in same manner described above.
5, Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
6. Knife trim protruding tape.

G. Interior Wet/Dry Method (Tape and Sealant) Installation:
1. Cut glazing tape to length and install against permanent stops, projecting 1/16-inch above sight line.
2. Place setting blocks at 1/3 points
3. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
4. Install removable stops, spacer shims inserted between glazing and applied stops at 24-inch intervals, 1/4-inch below sight line.
5. Fill gaps between pane and applied stop with elastomeric glazing sealant to depth equal to bite on glazing, to uniform and level line.
6. Trim protruding tape edge.

H. Interior Wet Method (Compound and Compound) Installation:
1. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24-inch centers, kept 1/4-inch below sigh line.
2. Locate and secure glazing pane using (spring wire clips) (Glazers' clips).
3. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.4 SCHEDULE

A. Interior Non-Fire Rated Doors: Type SG-CT, interior wet method with paintable polyurethane glazing sealant.

B. Interior Fire Rated Doors and Windows: Type FRG-FC, with fire rated glazing system.

C. Interior Non Fire rated Windows: FG-CA, FG-CT and FG-TT, as shown on drawings, interior dry method.

END OF SECTION

SECTION 092116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Acoustic insulation.

D. Gypsum wallboard.

E. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 072100 - Thermal Insulation: Acoustic insulation.

1.03 REFERENCE STANDARDS

A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

B. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

C. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

D. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

E. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

F. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

G. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

H. ASTM E413 - Classification for Rating Sound Insulation; 2022.

I. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:

1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:

1. ClarkDietrich; ____: www.clarkdietrich.com/#sle.

2. Jaimes Industries; ____: www.jaimesind.com/#sle.

3. Steel Construction Systems; _____: www.steelconsystems.com/#sle.

4. Substitutions: Permitted.

B. Non-structural Steel Framing for Application of Gypsum Board: See Section 092216.

C. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:

1. American Gypsum Company: www.americangypsum.com/#sle.

2. CertainTeed Corporation: www.certainteed.com/#sle.

3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.

4. USG Corporation: www.usg.com/#sle.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.

2. Thickness:

a. Vertical Surfaces: 5/8 inch (16 mm).

b. Ceilings: 5/8 inch (16 mm).

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: See Section 072100.

B. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.

1. Corner Beads: Low profile, for 90 degree outside corners.

C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

D. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches (0.84 mm) in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

E. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch (0.84 to 2.84 mm) in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Studs: Space studs at 16 inches on center (at 406 mm on center).

1. Extend partition framing to structure in all locations.

2. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

1. Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.06 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:

1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.

2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes gypsum board with joint treatment; metal stud wall framing; metal channel ceiling framing; and acoustic insulation.

1.2 SUBMITTALS

A. Product Data: Submit data on metal framing, gypsum board, joint tape; acoustic accessories.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840. GA-201 - Gypsum Board for Walls and Ceilings. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board. GA-600 - Fire Resistance Design Manual.

B. Furnish framing materials in accordance with SSMA - Product Technical Information.

C. Fire Rated Wall Construction: Rating as indicated on Drawings in conjunction with Section 05400, 06100.
   1. Tested Rating: Determined in accordance with ASTM E119.
   2. Fire Rated Partitions: Listed assembly by UL.

D. Surface Burning Characteristics:
   1. Textile Wall Coverings: Comply with one of the following:
      a. Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84, NFPA 255, UL 723.
      b. Comply with requirements of applicable code when tested in accordance with NFPA 265 Method A or Method B test protocols.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturers:
   1. G-P Gypsum Corp.
   2. National Gypsum Co.
   3. United States Gypsum Co.

2.2 COMPONENTS

A. Studs and Tracks: ASTM C645; GA-216 and GA-600; galvanized sheet steel, 0.030-inch-thick, C shape, C-H shape.

B. Furring, Framing, and Accessories: ASTM C645, GA-216 and GA-600.

C. Gypsum Board Materials: ASTM C1396/C1396M; Type X fire resistant where indicated on Drawings.

1. Standard Gypsum Board: 5/8-inch-thick, maximum available length in place; ends square cut, tapered edges. Light-weight gypsum board not allowed
2. Moisture Resistant Gypsum Board: 5/8-inch-thick, maximum available length in place; ends square cut, tapered edges.
3. Exterior Gypsum Soffit Board: 1/2-inch-thick, maximum available length in place; ends square cut, square edges, dens glas gold.
4. Gypsum Sheathing Board: 1/2-inch-thick, maximum available size in place; ends square cut, square edges; water repellent paper faces, dens glass gold.

D. Tile Backer Boards:
1. Tile Backer Board: ASTM C1178; 5/8-inch-thick, maximum available length in place; ends square cut, tapered edges.

2.3 ACCESSORIES

A. Acoustic Insulation: ASTM C665, preformed glass fiber, friction fit type, unfaced, 3 inch thick.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Gypsum Board Accessories: ASTM C1047; metal; corner beads, edge trim, and expansion joints.
1. Metal Accessories: Galvanized steel.
2. Edge Trim: Type LC, L, U bead.

D. Joint Materials: ASTM C475, GA-201 and GA-216, reinforcing tape, joint compound, and water. Light weight joint compound not allowed.

E. Fasteners: ASTM C1002; Type S, GA-216; length to suit application.

F. Adhesive: ASTM C557. GA-216.
1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

G. Gypsum Board Screws: ASTM C954, ASTM C1002; length to suit application.
1. Screws for Steel Framing: Type S.
2. Screws for Wood Framing: Type W.

H.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work.

3.2 INSTALLATION

A. Metal Studs:
1. Install studs in accordance with ASTM C754, GA-216 and GA-600.
2. Metal Stud Spacing: 16 inches oc.
3. Partition Heights: Full height to structure above. Install additional bracing for partitions extending above ceiling.

B. Wall Furring:
   1. Erect free-standing metal stud framing tight to concrete, concrete masonry walls; attached by adjustable furring brackets. Erect horizontally.
   2. Space furring channels maximum 16 inches o.c., not more than 4 inches from floor and ceiling lines, abutting walls.
   3. Install furring as required for fire resistance ratings indicated.

C. Ceiling Framing:
   1. Install in accordance with ASTM C754 and GA-216.
   2. Coordinate location of hangers with other work. Install ceiling framing independent of walls, columns, and above ceiling work.
   3. Reinforce openings in ceiling suspension system interrupting main carrying channels or furring channels, with lateral channel bracing.
   4. Laterally brace entire suspension system.

D. Acoustic Accessories:
   1. Place acoustic 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.
   2. Install acoustic sealant within partitions.

E. Gypsum Board:
   1. Install gypsum board in accordance with GA-216 and GA-600.
   2. Fasten gypsum board to furring or framing with screws.
   3. Place control joints consistent with lines of building spaces as directed by Architect/Engineer.
   4. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
   5. Seal cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

F. Joint Treatment:
   1. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   2. Feather coats onto adjoining surfaces so camber is maximum 1/32 inch.
   3. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.

G. Tolerances: Maximum Variation from Flat Surface: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09300

TILE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes ceramic, tile for interior floor and wall applications; cementitious backer board as tile substrate.

1.2 SUBMITTALS

A. Shop Drawings: Indicate patterned applications and thresholds.

B. Product Data: Submit instructions for using grouts and adhesives.

C. Samples: Submit mounted tile and grout on two plywood panels, 12 x 12 inch in size illustrating pattern, color variations, and grout joint size variations. Submit profile trim in color indicated in drawings.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with TCA Handbook and ANSI A108.1 Series/A118.1 Series.

B. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.

C. Installer: Company specializing in performing Work of this section with minimum three documented experience approved by manufacturer.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in unventilated environment.

B. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials.

PART 2 PRODUCTS

2.1 TILE

A. Manufacturers: See schedule of finishes, Sheet A3.0

2.2 COMPONENTS

A. See Schedule of Finishes, Sheet A3.0.

B. Mortar Materials:
   1. Mortar Bed Materials: Tile Laticrete ANSI A108.1A or ANSI A108.1B; Portland cement, sand, latex additive, and water; proportioned in accordance with applicable code.
   2. Mortar Bond Coat Materials:
      a. Dry-Set Portland Cement type: ANSI A118.1.
      b. Latex-Portland Cement type: ANSI A118.4.

C. Grout Materials:
   1. Grout: Laticrete Permacolor, color as selected.
   2. Substitutions: Architect approved equal.

D. Cementitious Backer Board: ANSI A118.9; High density, glass fiber reinforced, 5/8-inch-thick; 2-inch-wide coated glass fiber tape for joints and corners.

E. Tile Floor Wall/Edging: Schlueter:
   1. Toilet Room Tile Edge: Jolly-Trendline, A100TSG
   2. Toilet Room Tile Cove: Dilex-AHK, AHK1S100TSC
   3. Tile to Carpet Transition: RENO TK

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify surfaces are ready to receive work.

3.2 PREPARATION

A. Install cementitious backer board. Tape joints and corners, cover with skim coat of mortar to feather edge.

3.3 INSTALLATION

A. Install tile, thresholds, and grout in accordance with applicable requirements of ANSI A108.1 through A108.10, and TCA Handbook recommendations.

B. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly.

C. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

D. Grout tile joints. Use standard grout unless otherwise indicated.

E. Floors:

1. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-Portland cement bond coat with premium grout, unless otherwise indicated.

F. Wall Tile:

1. Over cementitious backer units install in accordance with TCA Handbook Method W244, using membrane at toilet rooms.

END OF SECTION

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SECTION 09510

ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes suspended metal grid ceiling system; and acoustic tile.

1.2 SYSTEM DESCRIPTION

A. Provide system capable of supporting imposed loads with deflection limited to.

1.3 SUBMITTALS

A. Shop Drawings: Indicate ceiling layout.

B. Product Data: Submit manufacturer's product data.

C. Samples: Submit ceiling tile and suspension system.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Acoustical Tile: Full-size units equal to 3 percent of amount installed for each type indicated, but not less than 10 sq. yd (8.3 sq. m).

1.5 QUALITY ASSURANCE

A. Conform to CISCA requirements.

B. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84 and NFPA 255 UL 723.

C. Surface Burning Characteristics: Comply with the following when tested in accordance with NFPA 286.
1. During 40 kW Exposure: No flame spread to ceiling.
2. During 160 kW Exposure: No flame spread to perimeter of tested sample and no flashover.
3. Total Smoke Release: Maximum 1,000 cu m.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity acoustic unit installation.

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PART 2 PRODUCTS

2.1 SUSPENDED ACOUSTICAL CEILINGS

A. Manufacturers:
1. United States Gypsum Company
2. Armstrong
3. Substitutions: Not Permitted.

2.2 COMPONENTS

A. Grid:
1. Non-Fire Rated Grid: ASTM C635, intermediate duty, non-fire rated, exposed configuration; components die cut and interlocking.
2. Accessories: Stabilizer bars, clips, splices, edge moldings, hold down clips, required for suspended grid system.
3. Grid Materials: Commercial quality cold rolled steel with galvanized coating.
4. Exposed grid surface width: 15/16 inch.
5. Grid Finish: White color.
6. Support Channels and Hangers: Galvanized steel, size and type to suit application and ceiling system flatness requirements specified.
7. Seismic Hangers: Galvanized steel compression struts: Donn Corporation Series VSA or equal, size and type to suit seismic requirements.

B. Acoustic Ceiling (ACT-1):
1. See schedule of finishes.
2. Substitutions: Architect approved equal.

C. Acoustic Ceiling (ACT-2):
1. See schedule of finishes.
2. Architect approved equal.

2.3 ACCESSORIES

A. Acoustic Batt Insulation: ASTM C665, friction fit type, unfaced; 2-inch thick.

B. Acoustic Sealant for Perimeter Moldings: Specified in Section 07900.

C. Touch-up Paint: Type and color to match acoustic and grid units.
1. Interior Flat and Non-Flat Paints: Maximum volatile organic compound content in accordance with GS-11.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify layout of hangers does not interfere with other work.

3.2 INSTALLATION

A. Suspension System:
1. Install system in accordance with ASTM C636, ASTM E580.

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2. Coordinate location of hangers with other work. Where components prevent regular spacing of hangers, reinforce system to span extra distance.
3. Hang system independent of walls, columns, ducts, pipes and conduit.
4. Locate system on room axis [leaving equal border units according to reflected plan.
5. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths.

B. Acoustic Units:
1. Install acoustic units level, free from damage, twist, warp or dents.
2. Lay acoustic insulation above acoustic units for distance of 48 inches on both sides of acoustic partitions.
3. Install hold down clips to retain panels tight to grid system within 20 ft of exterior doors.

C. Tolerances: Variation from Flat and Level Surface: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09650

RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes rubber stair risers, stair grit tape, vinyl plank flooring, and resilient base.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer’s product data.

B. Samples:
1. Submit manufacturer's complete set of color samples for initial selection.
2. Submit two samples, 3 x 3 inch in size illustrating color and pattern for each resilient flooring product specified.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance instruction and data.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Stair Risers, grit tape and resilient base: Full-size units’ equal 3 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.5 QUALITY ASSURANCE

B. Surface Burning Characteristics:
1. Floor Finishes: Class I, minimum 0.45 watts/sq cm when tested in accordance with NFPA 253.
2. Base Material: Class I, minimum 0.45 watts/sq cm when tested in accordance with NFPA 253.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.1 LUXURY VINYL PLANK FLOORING:

A. Vinyl Plank Flooring (LVT-1) See Schedule of Finishes

B. Luxury Vinyl Plank Floor (LVT-2): See Schedule of Finishes

C. Luxury Vinyl Plank Flooring (LVT-2): See Schedule of Finishes

2.2 RESILIENT BASE

A. Vinyl Top Set Coved (V-1): See Schedule of Finishes

B. Vinyl Top Set Coved (V-2): See Schedule of Finishes

2.3 SHEET FLOORING

D. Sheet Flooring: Alternate No. 2: Equal to eco grip strip resistant safety flooring, fabric strand reinforcement ¼ inch thick recycled poly vinyl chloride material capable of withstanding high impact superior shock absorbency.
   1. Size: 60 x 96 inches
   2. Surface Finish: Aggressive textured, slip resistant
   3. Color to be selected by Architect.

2.4 ACCESSORIES

A. Subfloor Filler: Premix latex; type recommended by floor material manufacturer.

B. Primers and Adhesives: Waterproof, types recommended by floor material manufacturer.
   1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

E. Sealer and Wax: Types recommended by floor material manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify concrete floors are dry to maximum moisture content as recommended by manufacturer, and exhibit negative alkalinity, carbonization, and dusting.

3.2 PREPARATION

A. Clean substrate.

B. Fill minor low spots and other defects with sub-floor filler.

C. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION

A. Spread adhesive and set flooring in place. Press sheet flooring with 150-pound roller and tile flooring to attain full adhesion.

B. Install tile flooring with joints and seams parallel to building lines. Allow minimum 1/2 full size tile width at room or area perimeter.

C. Scribe flooring to produce tight joints at items penetrating flooring.

D. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

F. Adhere base tight to wall and floor surfaces.

G. Fit joints tightly and make vertical. Miter internal corners. At external corners, use pre-molded units.

1.4 CLEANING

A. Remove excess adhesive from surfaces without damage.

END OF SECTION

SECTION 09681

TILE CARPETING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Removal of existing carpet tile.

1.2 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

B. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

C. Concrete subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

PART 2 PRODUCTS

2.1 MATERIALS

A. Tile Carpeting: Tufted, manufactured in one color dye lot.
1. Product: CPT-1: See Schedule of Finishes
a. CPT-1: See Schedule of Finishes
b. CPT-2: See Schedule of Finishes

2.2 ACCESSORIES

A. Subfloor Filler: White Premix Latex; type recommended by floor material manufacturer.

B. Transition Edge Strips: See FF2.0 Sheet

C. Adhesives.

D. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free and are ready to receive carpet tile.

C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces. Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Obtain instructions if test results are not within limits recommended by floor material manufacturer and adhesive materials manufacturer.

3.2 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer’s instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

END OF SECTION

SECTION 09681

TILE CARPETING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Removal of existing carpet tile.

1.2 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

B. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

C. Concrete subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

PART 2 PRODUCTS

2.1 MATERIALS

A. Tile Carpeting: Tufted, manufactured in one color dye lot.
1. Product: CPT-1: See Schedule of Finishes
a. CPT-1: See Schedule of Finishes
b. CPT-2: See Schedule of Finishes

2.2 ACCESSORIES

A. Subfloor Filler: White Premix Latex; type recommended by floor material manufacturer.

B. Transition Edge Strips: See FF2.0 Sheet

C. Adhesives.

D. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free and are ready to receive carpet tile.

C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces. Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Obtain instructions if test results are not within limits recommended by floor material manufacturer and adhesive materials manufacturer.

3.2 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer’s instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

END OF SECTION

.

SECTION 09770

SPECIAL WALL SURFACING
FIBERGLASS REINFORCED PLASTIC

PART 1 GENERAL

1.1 SUMMARY

A. Provide fiberglass reinforced plastic (FRP) panels for wall (and ceiling) applications.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's literature, including product characteristics, accessories, and limitations.

B. Selection Samples: Submit samples of colors and finishes if requested by architect.

C. Verification Samples: Submit samples of selected materials specified to verify color and finish.

D. Industry Certifications and Standards: Submit copy of documentation, indicating compliance.

1.3 QUALITY ASSURANCE

A. Manufacturer: Minimum of 5 years' experience manufacturing similar products.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in unopened factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations.

1.5 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty against defects in manufacturing.

PART 2 PRODUCTS

2.1 FIBERGLASS REINFORCED PLASTIC PANELS

A. Manufacturer: Panolam FRP by Panolam Industries International, Inc., 1 Corporate Drive, Suite 725, Shelton CT 06484. Tel: 877-726-6526, Fax: 203-225-0050.
Web: www.panolam.com
Panels shall comply with the following:
1. Classic Collection: White color
2. Surface Texture: Embossed
3. Fire Rating ASTM E 84: Class A
4. Sustainability, Indoor Air Quality: GREENGUARD Gold Certification.

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5. Thickness: 0.090 inches.
6. Barcol Hardness ASTM D2583: 35 typical
7. Water Absorption ASTM D570: 0.2 percent typical
8. Accessories: Color matched dividers, outside corners, inside corners, end caps and fastening rivets.
9. Adhesive: As recommended by manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

A. Install products in strict accordance with manufacturer's instructions and approved submittals.
   1. Clean substrate of dirt, dust, waxes, and other bond breaking substances prior to beginning installation.
   2. Install panels with bottom edge located to clear top of resilient base.
   3. Apply adhesive uniformly using adhesive manufacturer’s recommended trowel to the entire back of panels completely to the edge (100% coverage).
   4. La FRP panels in place, leaving approximately 1/8-inch between panels and 1/4-inch space top and bottom.
   5. Follow adhesive manufacturer’s recommendations for set and application times.
   6. Apply pressure to entire panel face with laminate type roller, removing trapped air and ensure proper adhesive between surfaces.

3.3 ADJUSTING AND CLEANING

A. Replace installations out of plumb and not aligned with adjacent panels and construction.

B. Clean panel face to remove soiling, stains, dust, and dirt using clean rags and cleaning agents, as instructed by manufacturer.

C. Leave installation clean, free of residue and debris, resulting from work of this section.

B. 0 feet.

END OF SECTION

SECTION 09780

ACOUSTICAL WALL PANELS

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the following:

1. Acoustical Wall Panel

1.2 SUBMITTALS

A. Shop Drawings: Show fabrication and installation details for acoustical wall panels, including plans, elevations, sections, details and attachment to other work.

B. Submittals: Furnish 12” x 12” samples, showing manufacturer full range of colors, texture and patterns available for each type of acoustical product specified.

C. Product Test Report: From a qualified testing agency indicating wall panels comply with requirements.

D. Qualification Data: For firms specified in “Quality Assurance” Article to demonstrate their capabilities and experience.

E. Product Certificates: Signed by manufacturer certifying that the products furnished comply with requirements.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualification: Manufacturer shall have a minimum of 5 years experience in production of specified products and shall furnish supporting documentation showing completed jobs of approximately the same size and scope.

B. Fire Test Reports: Provide acoustical wall panels with the following surface- burning characteristics as per ASTM E 84.

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

C. Acoustical Test Report: Provide acoustical test report from a qualified testing agency indicating acoustical wall panels meets 0.25-0.65 NRC per ASTM C-423.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect Acoustical Wall Panels from excessive moisture when shipping, storing, and handling. Deliver in unopened skids and store in a dry place with adequate air circulation. Do not deliver material until all wet-work has been completed.

PART 2 – PRODUCTS

2.1 WALL PANELS, GENERAL

A. Acoustical Wall Panels shall be Acoufelt Wall Tiles per cubic foot mineral fiber core. Manufacturers standard panel construction, fully wrapped edges, with panel manufacturers standard full colors.

1. Products
2. Facing Material: Guilford of Maine FR 701 – Style 2100 – 100% polyester
3. Panel Thickness: nominal 24mm thick
4. Noise Reduction Coefficient: NRC 0.25-0.60
5. Panel Width: As Indicated
6. Panel Length: As Indicated

2.2 CONSTRUCTION

A. The acoustical wall panel product shall be supplied in sizes as indicated on drawings.

2.3 MOUNTING

A. Back-Mounting Accessories: Manufacturers standard accessories for securely mounting panels, of type and size indicated and complying with the following requirements:

1. Construction adhesive and finish nails through face of panel. (When fabric permits)

2. Construction adhesive and contact cement.

2.5 FLAMMABILITY RATING

A. All components shall have a Class A Flammability rating per ASTM E- 84: Surface Burning Characteristics of Building Materials, with a Flame Spread of 25 or less and Smoke Developed of 450 or less

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install Acoustical Wall panels in locations indicated, top edges level and in alignment with other panels. Comply with manufacturers written instructions for installation of panels using type of mounting accessories indicated or, if not indicated, as recommended by manufacturer.

3.2 CLEANING

A. After completion of installation of panels, remove dust and other foreign material according to manufacturers written instructions.

B. Remove surplus material, rubbish, and debris resulting from panel installation, on completion of the work, and leave areas of installation in a neat and clean condition.

END OF SECTION

SECTION 09900

PAINTS AND COATINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes surface preparation and field application of paints and other coatings.

1.2 SUBMITTALS

A. Product Data: Submit data on finishing products.

B. Samples: Submit paper chip samples, 3 x 5 inch in size illustrating range of colors available for each surface finishing product scheduled.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit coating maintenance manual including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

1.4 QUALITY ASSURANCE

A. Surface Burning Characteristics:
   1. Fire Retardant Finishes: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84 and NFPA 255.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Store and apply materials in environmental conditions required by manufacturer's instructions.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

A. Approved Manufacturers:
   1. Coronado Paints.
   2. The Glidden Company.
   3. Sherwin Williams.
   4. Benjamin Moore.

2.2 COMPONENTS

A. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.
   1. Interior Flat and Non-Flat Paints: Maximum volatile organic compound content in accordance with GS-11.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve finishes specified.

2.3 EXTERIOR FINISHES

A. Steel - Shop Primed, Galvanized:
1. First Coat: Rust inhibiting primer.
a. Sherwin-Williams: Pro Industrial Pro Cryl Universal Primer, B66 Series
2. Second and Third Coats: Acrylic enamel, semi-gloss.
a. Sherwin-Williams: Pro Industrial Acrylic Semi-Gloss, B66 Series

2.4 INTERIOR FINISHES

A. Steel – Unprimed, shop primed, galvanized.
1. First Coat: Rust inhibiting primer.
a. Sherwin-Williams: Pro Industrial Pro Cryl Universal Primer, B66 Series
2. Second and Third Coats: Acrylic enamel, semi-gloss.
a. Sherwin-Williams: Pro Industrial Acrylic Semi-Gloss, B66 Series

B. Steel – Unprimed, shop primed, galvanized: Doors, handrails.
1. First Coat: Rust inhibiting primer.
a. Sherwin-Williams: Pro Industrial Pro Cryl Universal Primer, B66 Series
2. Second and Third Coats: Acrylic enamel, semi-gloss.
a. Sherwin-Williams: Pro Industrial Waterbased Alkyd Urethane Semi-Gloss, B53 Series

C. Plaster, Gypsum Board: Walls.
1. First Coat: Latex primer sealer.
a. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Primer, B28
2. Second and Third Coats: Latex acrylic enamel, eggshell.
a. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Eg-shel, B20 Series

D. Plaster, Gypsum Board: High Performance Walls.
Note: For walls in high traffic, moisture or cleaning areas.
1. First Coat: Latex primer sealer.
a. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Primer, B28
2. Second and Third Coats: Latex acrylic enamel, eggshell.
a. Sherwin-Williams: Pro Industrial Pre Catalyzed Waterbased Epoxy Eg-shel, K45 Series

E. Plaster, Gypsum Board: Ceilings.
1. First Coat: Latex primer sealer
a. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Primer, B28
2. Second and Third Coats: Latex acrylic enamel, flat.
a. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Flat, B30 Series

F. CMU.
1. First Coat: Block filler
a. Sherwin-Williams: PrepRite Block Filler, B25 Series
2. Second and Third Coats: Latex acrylic enamel, eggshell.
a. Sherwin-Williams: ProMar 200 Zero VOC Interior Latex Eg-shel, B20 Series

G. CMU: High Performance. (Kitchen, Dishware, Serving, J.C.)
1. First Coat: Block filler
a. Sherwin-Williams: PrepRite Block Filler, B25 Series
2. Second and Third Coats: Latex acrylic enamel, eggshell.
a. Sherwin-Williams: Pro Industrial Pre Catalyzed Waterbased Epoxy, Eg-shel, K45 Series

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate conditions are ready to receive Work.

B. Measure moisture content of porous surfaces using electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

3.2 PREPARATION

A. Correct minor defects and clean surfaces affecting work of this section.

B. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or applying finishes.

C. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

E. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with solution of tri-sodium phosphate, rinse well and allow to dry.

F. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Clean surfaces with solvent. Prime bare steel surfaces.

G. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

3.3 APPLICATION

A. Sand wood and metal surfaces lightly between coats to achieve required finish.

B. Where clear finishes are required, tint fillers to match wood.

C. Prime concealed surfaces of interior woodwork with primer paint.

D. Prime concealed surfaces of interior wood surfaces scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with thinner.

E. Finishing Mechanical And Electrical Equipment:
   1. Refer to Mechanical and Electrical Sections for schedule of color coding, identification banding of equipment, duct work piping, and conduit.
   2. Color code items in accordance with color schedule. Color band and identify with flow arrows and names.
   3. Paint shop primed equipment.
   4. Remove unfinished louvers, grilles, covers, and access panels and paint separately. Paint dampers exposed behind louvers, grilles, convector and baseboard cabinets to match face panels.
   5. Prime and paint insulated and exposed pipes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
   6. Paint interior surfaces of air ducts visible through grilles and louvers with one coat of flat black paint to visible surfaces.
   7. Paint exposed conduit and electrical equipment occurring in finished areas.
   8. Paint both sides and edges of plywood backboards.
   9. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

F. Cleaning: As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

3.4 SCHEDULE - OF COLORS

A. Refer to schedule of finishes, Sheet A3.0.

END OF SECTION

SECTION 10100

VISUAL DISPLAY BOARDS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes markerboards.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI A135.4 - Basic Hardboard.
2. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. ASTM International:
1. ASTM A424 - Standard Specification for Steel, Sheet, for Porcelain Enameling.
2. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
5. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
6. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
7. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board.
8. ASTM C1396/C1396M - Standard Specification for Gypsum Wallboard.
9. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. Federal Specification Unit:
1. FS CCC-W-408 - Wall Covering, Vinyl-Coated.
2. FS L-P-1040 - Plastic Sheets and Strips (Polyvinyl Fluoride).

D. Forest Stewardship Council:
1. FSC Guidelines - Forest Stewardship Council Guidelines.

E. National Fire Protection Association:
1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.
2. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

F. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

G. Underwriters Laboratories Inc.:
1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Shop Drawings: Indicate wall elevations, dimensions, and joint locations, and special anchor details.

B. Product Data: Submit data on chalkboards, markerboards, tackboards, tackboard surface covering, and trim and accessories.

C. Samples: Submit two sets of sample materials illustrating the finish, color and texture of markerboard, tackboard, and tackboard surfacing.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit Operation and Maintenance Data.

1.5 QUALITY ASSURANCE

A. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84 and NFPA 255.

B. Flame Resistant Fabric: Passes when tested in accordance with NFPA 701, Test 1 or Test 2.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.7 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.8 WARRANTY

A. Furnish five year manufacturer warranty for visual display boards.

B. Warranty: Include coverage of markerboard surface from discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.1 VISUAL DISPLAY BOARDS

A. Manufacturers:
   1. Alliance America.
   2. Best-Rite Chalkboard Co. Inc. Protection Plus.
   3. Claridge Products and Equipment.

2.2 COMPONENTS

A. Sheet Steel: ASTM A424, Type I, commercial quality.

B. Fiber Board: ASTM C208, cellulosic, dry type.

C. Hardboard: ANSI A135.4, tempered face.

D. Foil Backing: Aluminum foil sheet, .005 mil thick.

E. Frame and Chalkrail: Aluminum extrusions, ASTM B221, 6061 alloy.

2.3 ACCESSORIES

A. Adhesives: Type used by manufacturer.

1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

B. Temporary Protective Cover: Sheet polyethylene, 8 mil thick.

C. Cleaning Instruction Plate: Provide instructions for chalkboard cleaning on plastic plate fastened to perimeter frame near chalkrail.

2.4 FABRICATION

A. Marker Board Outer Face Sheet: Steel, 24 gage thick.

B. Core: Hardboard 1/2 inch thick.

C. Backing Surface: Aluminum sheet, 0.015 inch thick.

D. Splice Joint: Concealed spline of sheet steel.

E. Aluminum Frame: Of 5/8 inch profile; concealed fasteners, over markerboard.

F. Aluminum Chalkrail: Of standard profile, one piece full length of chalkboard, molded ends; concealed fasteners.

2.5 FACTORY FINISHING

A. Porcelain Enamel: Glass fibered enamel, baked to vitreous surfaces; Porcelain Enamel Institute Type A color as selected.

B. Aluminum Frame, Chalkrail: Mill finish natural aluminum.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify internal wall blocking is ready to receive Work and positioning dimensions are as indicated on shop drawings and instructed by manufacturer.

3.2 INSTALLATION

A. Establish top of chalk rail as indicated on drawings.

B. Secure units level and plumb.

C. Markerboards: Butt panels tight with concealed spline to hairline joint.

3.3 CLEANING

A. Cover chalkboard surfaces with protective cover, taped to frame.

B. Remove temporary protective cover at date of Substantial Completion.

END OF SECTION

SECTION 10800

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes toilet washroom accessories.

1.2 SUBMITTALS

A. Product Data: Submit data on accessories describing size, finish, details of function, attachment methods.

PART 2 PRODUCTS

2.1 TOILET, BATH AND LAUNDRY ACCESSORIES

A. Manufacturers:
1. American Specialties, Inc.
2. Bobrick.
3. Bradley Corp.

2.2 COMPONENTS

A. Products listed in Schedule are made by American Specialties, Inc., unless noted otherwise.

B. Furnish two keys for each accessory to Owner. Master key accessories.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify exact location of accessories for installation.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to site. Provide templates and rough-in measurements.

B. See Section 06100 for installation of blocking in walls and ceilings.

3.3 INSTALLATION

A. Install plumb and level, securely and rigidly anchored to substrate.

B. Mounting Heights and Locations: As required by accessibility regulations and as indicated on Drawings.

3.4 SCHEDULES

A. Grab Bars: Satin stainless steel, concealed mounting, 3011 series, 42” long, 36” long and 18” long, One each in Womens 101 and Mens 102.

B. Mirrors: Satin stainless steel, 0600 series, 24”x36”, locate one above each lavatory wash basin in Womens 101 and Mens 102.

C. Barrier Free Lavatory Shield: Size 20” High X 16” Wide X 6-10” Deep, PVC material nominal wall thickness 3/32”, white color, meeting ADA Standards to conceal faucet plumbing and drain connections. Install at each lavatory in Womens 101 and Mens 102. Equal to Truebro model 2018.

D. Soap Dispenser to be provided by owner.

E. Toilet Paper Dispenser to be provided by owner.

END OF SECTION