

August 2023

Washington

Court House

City School District

Restrooms

400 S. Elm Street

Washington C.H., Ohio 43160

Owner

Washington

Court House

City School District

306 Highland Ave.

Washington C.H., Ohio 43160

Architect's Project No. 23019

MARK HEINY – ARCHITECT

Registered Architect * 211 S. Fayette Street * Washington C.H., Ohio 43160 * Telephone (740) 333-0820 * Fax (740) 333-8220

ADVERTISEMENT FOR BIDS

Sealed bids will be received by the Washington Court House City School District, Attn: Becky Mullins, Treasurer/CFO located at 306 Highland Ave., Washington C.H., Ohio 43160 until 1:00 p.m. local time, on Monday, November 27th, 2023 and opened immediately thereafter, for furnishing the necessary labor and materials, tools, machinery and appliances required for A LUMP SUM BID for all trades for

Project No. 23019
Restroom Building for
Washington Court House City School District
400 S. Elm St.
Washington C.H., Ohio 43160

According to the drawings and specifications, the project includes a single story building at existing baseball, softball and soccer fields. This includes new electrical, HVAC, and finishes. The work also includes work to install exterior concrete walks and other flatwork around the building. Copies of said drawings and specifications may be obtained by bidders from the office of Washington Court House City School District by emailing their request to becky.mullins@wchcs.org. The request shall include the following:

Company Name, Contact Name, Company Mailing Address, Contact Phone Number, Contact Email

One set of Bidding Documents can be obtained upon receipt of a non-refundable payment, in the amount of \$75.00 plus postage. Checks should be made payable to Mark Heiny - Architect. PDF sets of the drawings and specifications can be obtained free of charge electronically by registering as indicated above.

Bids for the above-described work must be made on the blank forms to be furnished. The Washington Court House City School District reserves the right to reject any incomplete or altered bids.

Estimates for project costs: \$200,000.00

A pre-bid meeting shall take place on Friday, November 10, 2023 at 10:00 a.m. at the project site. Entry to the project site will be limited to this scheduled time unless approval is given by Owner.

Bids must be submitted in a closed opaque envelope, clearly identified with bidder's name, project name and owner's name on the outside.

Each bid must contain the full name of every person or company interested in the same, shall state the price for labor and materials, and must be accompanied by a BID GUARANTY meeting the requirements of Section 153.54 of the Ohio Revised Code.

All contractors are required to submit a Certificate of Contractors Insurance in an amount of \$1,000,000.00. Failure to do so may result in rejection of bid.

THE WASHINGTON SCHOOLS RESERVE THE RIGHT TO REJECT ANY OR ALL BIDS SUBMITTED.

By order of the Washington Court House City School District

DOCUMENT 00010

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END OF DOCUMENT

DOCUMENT 00200

INSTRUCTIONS TO BIDDERS

1.1 SUMMARY

- A. Document Includes:
 - 1. Bid Submission.
 - 2. Intent.
 - 3. Contract Time.
 - 4. Definitions.
 - 5. Contract Documents Identification.
 - 6. Availability of Documents.
 - 7. Examination of Documents.
 - 8. Inquiries and Addenda.
 - 9. Product Substitutions.
 - 10. Site Examination.
 - 11. Bidder Qualifications.
 - 12. Submission Procedure.
 - 13. Bid Ineligibility.
 - 14. Performance Assurance.
 - 15. Bid Form Signature.
 - 16. Additional Bid Information.
 - 17. Selection and Award of Alternates.
 - 18. Bid Opening.
 - 19. Duration of Offer.
 - 20. Acceptance of Offer.

1.2 BID SUBMISSION

- A. Bids signed, executed, and dated will be received by the Owner located at 306 Highland Ave., Washington C.H., Ohio 43160 until 1:00 PM on Monday, November 27th, 2023.
- B. Amendments to submitted Bids will be permitted when received in writing prior to bid closing and when endorsed by the same party or parties who signed and sealed the Bid.
- C. Bidders may withdraw their Bid by written request at any time before bid closing.

1.3 INTENT

- A. The intent of this Bid request is to obtain an offer to perform work to make construct a new building for the Washington Court House City School District, 400 S. Elm St., Washington C.H., Ohio 43160 for a Stipulated Sum contract, in accordance with Contract Documents. Bids shall include all trades as required to complete work described in drawings and specifications.

1.4 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.
- B. The Owner requires the work of this contract be completed as quickly as possible. Consideration will be given to time of completion when reviewing submitted Bids.

1.5 DEFINITIONS

- A. Bidding Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Information Available to Bidders, Bid Form and Appendices, and bid securities, identified.
- B. Contract Documents: Defined in AIA Document A201-2017 Article 1, including issued Addenda.
- C. Bid: Executed Bid Form and required attachments submitted in accordance with these Instructions to Bidders.
- D. Bid Sum: Monetary sum identified by the Bidder in the Bid Form.

1.6 CONTRACT DOCUMENTS IDENTIFICATION

- A. The Contract Documents are identified as Project Number 23019 as prepared by Architect, Mark Heiny – Architect located at 211 S. Fayette St., Washington C.H., Ohio 43160 and identified in the Project Manual.

1.7 AVAILABILITY OF DOCUMENTS

- A. Bidding Documents may be obtained as stated in Advertisement for Bids.
- B. Bidders will have access to set of PDF file drawings. Bidders must register with Owner in order to be given access to pdf documents. Cost for hard copies bid documents will be \$75 and will be non-refundable.
- C. Partial sets of Bidding Documents will not be issued.
- D. Bidding Documents are made available only for the purpose of obtaining offers for this Project. Their use does not grant a license for other purposes.

1.8 EXAMINATION OF DOCUMENTS

- A. Upon receipt of Bidding Documents verify documents are complete. Notify Architect/Engineer if documents are incomplete.
- B. Immediately notify Architect/Engineer upon finding discrepancies or omissions in Bidding Documents.

1.9 INQUIRIES AND ADDENDA

- A. Direct questions in writing to Mark Heiny, at the office of the Architect. Questions will only be accepted via email sent to markheiny@att.net
- B. Verbal answers are not binding on any party.
- C. Submit questions not less than 7 days before date set for receipt of Bids. Replies will be made by Addenda via email only to the email given for registration.
- D. Addenda may be issued during bidding period. Addenda will be sent to known Bidders registered with owner via listed email. Addenda become part of the Contract Documents. Include resultant costs in the Bid Sum.
- E. If questions are not addressed by Addenda prior to bid date the bidder should include an attachment specifying items that they feel were in question and what was reflected in the bid.

1.10 PRODUCT SUBSTITUTIONS

- A. Where Bidding Documents stipulate particular Products, substitution requests will be considered by Architect/Engineer up to 10 days before receipt of Bids. Approved substitutions will be identified by Addenda. Bidders shall include in their Bid, changes required in the Work to accommodate such approved substitutions.
- B. Substitute Products will be considered when request is submitted as an attachment to the Bid Form. Provide complete information on required revisions to other Work to accommodate each substitution, the value of additions to or reductions from the Bid Sum, including revisions to other Work.

1.11 SITE EXAMINATION

- A. Examine Project site before submitting a Bid.

1.12 BIDDER QUALIFICATIONS

- A. To demonstrate qualification for performing the Work of this Contract, Bidders may be requested to submit written evidence of financial position, previous experience, current commitments, license to perform work in the State of Ohio and the City of Washington Court House.

1.13 SUBMISSION PROCEDURE

- A. Submit one copy of executed offer on Bid Forms provided, signed with required security deposit in a closed opaque envelope, clearly identified with Bidder's name, Project name, Project Number and Owner's name on the outside.

1.14 BID INELIGIBILITY

- A. Bids that contain irregularities of any kind may be declared unacceptable at Owner's discretion.

1.15 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Will be required to provide a Performance and Payment bond as described in Document 00811 - Supplementary Conditions - AIA.
- B. Provide the cost of performance assurance bonds in the cost of the submitted bid.

1.16 BID FORM SIGNATURE

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

1.17 ADDITIONAL BID INFORMATION

- A. Lowest Bidder is required to complete the following Bid Form Appendices and submit with Bid.
 - 1. Appendix A - List of Subcontractors: Include names of all major Subcontractors and portions of the Work each Subcontractor will perform.
 - 2. Appendix B - List of Alternates: Include cost variation to Bid Sum.

1.18 SELECTION AND AWARD OF ALTERNATES

- A. Indicate variation of Bid Sum for alternates listed in Document 00410 - Bid Form Appendix B. This form requests a "difference" in Bid Sum by adding to or deducting from base Bid Sum.
- B. Indicate the variation of Contract Time for alternates listed in Document 00410-Bid Form Appendix B. This form requests a "difference" in Contract Time by adding to or deducting from base bid Contract Time.
- C. Bids will be evaluated on total of base Bid Sum with full consideration of alternates.

1.19 BID OPENING

- A. Bids will be opened and read publicly immediately after time for receipt of Bids.

1.20 DURATION OF OFFER

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

1.21 ACCEPTANCE OF OFFER

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

END OF DOCUMENT

DOCUMENT 00410

BID FORM

To: Washington Court House City School District
400 S. Elm St.
Washington C.H., Ohio 43160

Project: NEW RESTROOM FACILITY
400 S. ELM ST.
WASHINGTON C.H., OHIO 43160
Architect's Project No. 23019

Date:

Submitted by:
(full name)

(full address)

1.1 OFFER

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

\$.....dollars, in lawful money
of the United States of America.

Owner is tax exempt.

All Cash Allowances described in Section 01001 - Basic Requirements are included in the Bid Sum.

1.2 ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for 60 days from the bid closing date.

If this bid is accepted by the Owner within the time period stated above, we will:

- Execute the Agreement within seven days of receipt of acceptance of this bid.
- Furnish the required bonds, if Alternate is accepted, within seven days of receipt of acceptance of this bid in the form described in Supplementary Conditions.

- Commence work within fourteen days after written acceptance of this bid.

1.3 CONTRACT TIME

If this bid is accepted, we will:

Complete the Work in..... (.....) Calendar Weeks from the acceptance of this bid subject to liquidated damages of \$100 per calendar day.

1.4 ADDENDA

The following Addenda have been received. The modifications to the Contract Documents noted therein have been considered and all costs thereto are included in the Bid Sum.

Addendum # 1.....

Addendum # 2.....

1.5 APPENDICES

A List of Subcontractors is appended hereto and identified as Appendix A.

1.6 BID FORM SIGNATURES

.....
Signature

.....
Title

If the bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

APPENDIX A - LIST OF SUBCONTRACTORS

The following is the list of Subcontractors referenced in the Bid Form submitted by:

(Bidder)

(Owner) Washington Court House City School District
Attn: Becky Mullins, Treasurer/CFO
400 S. Elm St.
Washington C.H., Ohio 43160

Dated and which is an integral part of the Bid Form.

The following work will be performed (or provided) by Subcontractors and coordinated by us:

WORK SUBJECT	NAME
Electrical.....
Plumbing.....

END OF DOCUMENT

DOCUMENT 00501

AGREEMENT AND GENERAL CONDITIONS - AIA

1.1 AGREEMENT

- A. AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum, forms the basis of Agreement between the Owner and Contractor.

1.2 GENERAL CONDITIONS

- A. AIA Document A201-2017, General Conditions of the Contract for Construction, is the General Conditions of the Contract.

1.3 SUPPLEMENTARY CONDITIONS

- A. Refer to Document 00811 for modifications to General Conditions.

END OF DOCUMENT

DOCUMENT 00811

SUPPLEMENTARY CONDITIONS - AIA

1.1 SUPPLEMENTARY CONDITIONS

- A. These Supplementary Conditions modify the General Conditions of the Contract for Construction, AIA Document A201-2017, and other provisions of the Contract Documents as indicated below. All provisions which are not so modified remain in full force and effect.
- B. The terms used in these Supplementary Conditions which are defined in the General Conditions of the Contract for Construction, AIA Document A201-2017, have the meanings assigned to them in the General Conditions.

ARTICLE 1.1 - BASIC DEFINITIONS

Add the following subparagraphs:

- 1.1.8 Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- 1.1.9 Furnish: To supply and deliver, unload, inspect for damage.
- 1.1.10 Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.
- 1.1.11 Provide: To furnish and install.

ARTICLE 1.2 - CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following subparagraph:

- 1.2.4 Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications.

ARTICLE 8 - TIME

Add the following subparagraph:

- 8.1.5 Contract Time is identified in Document 00410 - Bid Form.

ARTICLE 11.1 - CONTRACTOR'S LIABILITY INSURANCE/BONDING

- A. General Contractor to provide proof of comprehensive general liability with policy limits of \$1,000,000.00.
- B. Any Sub-Contractors to provide proof of liability coverage at a minimum of \$1,000,000.00.
- C. The Contractor will be responsible for and provide builders risk insurance on this project.
- D. General Contractor to provide a Bid Guaranty meeting the requirements of Section 153.54 of the Ohio Revised Code.

END OF DOCUMENT

SECTION 01001
BASIC REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Summary:
 - 1. Contract description.
 - 2. Work by Owner.
 - 3. Contractor's use of premises.
 - 4. Future work.
 - 5. Specification conventions.

- B. Price and Payment Procedures:
 - 1. Schedule of values.
 - 2. Applications for payment.
 - 3. Change procedures.
 - 4. Unit prices.
 - 5. Allowances.

- C. Administrative Requirements:
 - 1. Coordination.
 - 2. Field engineering.
 - 3. Meetings.
 - 4. Progress meetings.
 - 5. Equipment electrical characteristics and components.
 - 6. Cutting and patching.

- D. Submittals:
 - 1. Submittal procedures.
 - 2. Construction progress schedules.
 - 3. Proposed products list.
 - 4. Product data.
 - 5. Shop drawings.
 - 6. Samples.
 - 7. Manufacturer's instructions.
 - 8. Manufacturer's certificates.

- E. Quality Requirements:
 - 1. Quality control.
 - 2. Tolerances.
 - 3. References.
 - 4. Manufacturer's field services and reports.
 - 5. Examination.
 - 6. Preparation.

- F. Temporary Facilities and Controls:
 1. Temporary electricity.
 2. Temporary lighting for construction purposes.
 3. Temporary heating and cooling.
 4. Temporary ventilation.
 5. Telephone and facsimile service.
 6. Temporary water service.
 7. Temporary sanitary facilities.
 8. Parking.
 9. Progress cleaning and waste removal.
 10. Fire prevention facilities.
 11. Barriers and fencing.
 12. Enclosures.
 13. Protection of installed work.
 14. Security.
 15. Pollution and environmental control.
 16. Removal of utilities, facilities, and controls.

- G. Product Requirements:
 1. Products.
 2. Delivery, handling, storage, and protection.
 3. Product options.
 4. Substitutions.

- H. Execution Requirements:
 1. Closeout procedures.
 2. Final cleaning.
 3. Starting of systems.
 4. Demonstration and instructions.
 5. Testing, adjusting and balancing.
 6. Protecting installed construction.
 7. Project record documents.
 8. Operation and maintenance data.
 9. Spare parts and maintenance materials.
 10. Warranties.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes single story Restroom facility. Work shall include all indicated concrete in area of building.
- B. Perform Work of Contract under a stipulated sum contract with Owner in accordance with Conditions of Contract.

1.3 CONTRACTOR'S USE OF PREMISES

- A. Limit use of premises to allow:
 1. Work by others and work by Owner.

1.4 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words “shall be” are included by inference where a colon (:) is used within sentences or phrases.

1.5 SCHEDULE OF VALUES

- A. Submit schedule on AIA Form G703. Contractor's standard form or electronic media printout will be considered.
- B. Submit Schedule of Values for approval in duplicate within 10 days after date of Owner-Contractor Agreement.

1.6 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on AIA Form G702 and G703.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Monthly.
- D. Retainage: Ten percent retainage will be withheld on the first fifty percent of the work. Retainage will be released upon substantial completion less the amount required to complete the outstanding work.

1.7 CHANGE PROCEDURES

- A. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Architect/Engineer.
- B. Change Order Forms: AIA G701.

1.8 UNIT PRICES

- A. Unit Prices: Based on quantities purchased for installation into project. Contractor shall document all items purchased for these portions of the project including any materials returned for credit. Unit price will cover only the cost of the item not including any delivery, labor, accessories or miscellaneous materials required for final installation. The unit price will not include overhead and profit. Base bid shall include all listed additional costs.

1.9 Any work to be performed on a cost-plus basis will be under the following guidelines:

- A. Documented Contractor's payroll costs including unemployment, worker's compensation and payroll taxes

- B. Fifteen percent (15%) of documented costs listed in item 'A' for payroll overhead costs
- C. Documented subcontractor costs related to specific work
- D. Documented material costs related to specific work
- E. Fifteen percent of total of items 'A' through 'D' for overhead and profit

1.10 COORDINATION

- A. Coordinate scheduling, submittals, and Work of various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
- C. Coordinate space requirements and installation of mechanical and electrical work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable.
- D. In finished areas, conceal pipes, ducts, and wiring within construction.

1.11 PRECONSTRUCTION MEETINGS

- A. Owner will schedule preconstruction meeting after signing of Owner/Contractor Agreement for affected parties.
- B. When required in individual specification section, convene pre-installation meeting at Project site prior to commencing work of section.

1.12 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Preside at meetings, record minutes, and distribute copies within two days to those affected by decisions made.

1.13 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Motors: NEMA MG1 Type; specific motor type is specified in individual specification sections.
- B. Wiring Terminations: Terminal lugs to match branch circuit conductor; size terminal lugs to NFPA 70.
- C. Cord and Plug: Minimum 6 foot cord and plug including grounding connector; cord of longer length is specified in individual sections.

1.14 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products.
- B. Submit written request in advance of cutting or altering structural or building enclosure elements.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Cut masonry and concrete materials using masonry saw or core drill. Restore Work with new Products in accordance with requirements of Contract Documents.
- E. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- F. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Refinish surfaces to match adjacent finishes.

1.15 SUBMITTAL PROCEDURES

- A. Submittal form (pdf format) to identify Project, Contractor, subcontractor or supplier; and pertinent Contract Document references.
- B. Apply Contractor's confirmation, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- C. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.
- D. Revise and resubmit submittals as required; identify changes made since previous submittal.

1.16 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 20 days after date of Owner-Contractor Agreement for Architect/Engineer review.

- B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission.
- C. Submit horizontal bar chart with separate line for each major section of Work or operation, identifying first workday of each week.

1.17 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Owner-Contractor Agreement, submit list of major Products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.18 PRODUCT DATA

- A. Product Data:
 - 1. Submitted to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- B. Submit all information in pdf format
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this project.

1.19 SHOP DRAWINGS

- A. Shop Drawings:
 - 1. Submitted to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- B. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- C. Submit information in pdf format plus any signed and stamped copies as required by inspecting authorities.

1.20 SAMPLES

- A. Samples for Review:
 - 1. Submitted to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- B. Samples for Selection:
 - 1. Submitted to Architect/Engineer for aesthetic, color, or finish selection.
 - 2. Submit samples of finishes from full range of manufacturer's standard colors, textures and patterns for Architect/Engineer selection.
 - 3. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- C. Submit samples to illustrate functional and aesthetic characteristics of Product.
- D. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns for Architect/Engineer's selection.

1.21 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit manufacturer instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in pdf format.

1.22 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification sections, submit certifications by manufacturer to Architect/Engineer, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.23 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturer's instructions.
- C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.24 TOLERANCES

- A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply fully with manufacturer's tolerances.

1.25 REFERENCES

- A. Conform to reference standards by date of issue current as of date for receiving bids.
- B. When specified reference standard conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

1.26 MOCK-UPS

- A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.
- B. Accepted mock-ups are representative of quality required for the Work.
- C. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.27 TESTING AND INSPECTION LABORATORY SERVICES

- A. Owner will appoint and employ services of independent firm to perform testing and inspection as owner deems necessary.
- B. Independent firm will perform tests, inspections, and other services as required.
- C. Cooperate with independent firm; furnish samples as requested.
- D. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

1.28 MANUFACTURER'S FIELD SERVICES AND REPORTS

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to furnish qualified staff personnel to observe site conditions and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions that are supplemental or contrary to manufacturer's written instructions.

1.29 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify utility services are available, of correct characteristics, and in correct location.

1.30 PREPARATION

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

1.31 TEMPORARY ELECTRICITY

- A. Owner will provide and pay cost of electricity used. Existing electric service will be used for construction. Contractor shall provide temporary connections to existing electric service
- B. Provide temporary electricity and power outlets for construction operations, connections, branch wiring, distribution boxes, and flexible power cords as required.

1.32 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain temporary lighting for construction operations.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- C. Permanent building lighting may be utilized during construction. Repair, clean, and replace failed fixtures at end of construction.

1.33 TEMPORARY HEATING AND COOLING

- A. Provide heating and cooling devices and heat and cool as needed to maintain specified conditions for construction operations.
- B. Owner will provide and pay cost of energy used if connected to permanent building utility system.
- C. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- D. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.34 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.35 TELEPHONE AND FACSIMILE SERVICE

- A. Provide telephone service to field office at time of project mobilization. On site representative's cell phone is acceptable.

1.36 TEMPORARY WATER SERVICE

- A. Provide, maintain and pay for suitable quality water service required or connect to existing water source for construction operations.

1.37 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facilities may not be used.
- B. Maintain in clean and sanitary condition.

1.38 FIELD OFFICES AND SHEDS

- A. Office: Provide a mobile on-site field office for meetings. Provide adequate lighting and space conditioning using existing systems or contractor's supplemental systems. Locate as directed.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

1.39 PARKING

- A. Use parking areas as directed to accommodate construction personnel. Do not park construction or storage vehicles on adjacent to building. Obtain permission from the Owner and any other applicable authorities before using exterior spaces for parking, storage or deliveries.

1.40 PROGRESS CLEANING AND WASTE REMOVAL

- A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition. Locate dumpster as directed.

1.41 FIRE PREVENTION FACILITIES

- A. Prohibit smoking on construction site including entire school property.

- B. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B; C UL rating.
 - 1. Provide minimum one fire extinguisher in every construction trailer and storage shed.
 - 2. Provide one fire extinguisher within building during construction.

1.42 BARRIERS AND FENCING

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage. Locate barriers as directed and in coordination with Contractor's approved access plan.
- B. Construction: Contractor's option.

1.43 ENCLOSURES

- A. Provide temporary weather tight closures to exterior openings to permit acceptable working conditions and protection of the Work.

1.44 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.

1.45 SECURITY

- A. Provide security and facilities to protect Work and Owner's operations from unauthorized entry, vandalism, or theft.

1.46 POLLUTION AND ENVIRONMENTAL CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Provide dust control, erosion and sediment control, noise control, pest control and rodent control to allow for proper execution of the Work.
- C. Comply with pollution and environmental control requirements.

1.47 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion review.
- B. Clean and repair damage caused by installation or use of temporary work.

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

1.48 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.
- B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.
- C. Provide interchangeable components of same manufacture for components being replaced.

1.49 DELIVERY, HANDLING, STORAGE, AND PROTECTION

- A. Deliver, handle, store, and protect Products in accordance with manufacturer's instructions.

1.50 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for manufacturers not named.

1.51 SUBSTITUTIONS

- A. Instructions to Bidders specify time for submitting requests for Substitutions during bidding period to requirements specified in this section.
- B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- C. Submit electronic copies (pdf format) of request for Substitution for consideration. Limit each request to one proposed Substitution.

1.52 CLOSEOUT PROCEDURES

- A. Submit written certification Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection.

- B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.53 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces.
- C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.
- D. Replace filters of operating equipment.
- E. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.54 STARTING OF SYSTEMS

- A. Provide seven days notification prior to start-up of each item.
- B. Ensure each piece of equipment or system is ready for operation.
- C. Execute start-up under supervision of responsible persons in accordance with manufacturer's instructions.
- D. Submit written report stating equipment or system has been properly installed and is functioning correctly.

1.55 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of final review.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.

1.56 TESTING, ADJUSTING, AND BALANCING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Owner may appoint and employ services of independent firm to perform testing, adjusting, and balancing. Owner will pay for services.
- C. Reports will be submitted by independent firm to Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with requirements of Contract Documents.

- D. Cooperate with independent firm; furnish assistance as requested.
- E. Re-testing required because of non-conformance to specified requirements will be back charged to Contractor.

1.57 PROTECTING INSTALLED CONSTRUCTION

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- B. Protect finished floors and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

1.58 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of Contract Documents to be utilized for record documents.
- B. Record actual revisions to the Work. Record information concurrent with construction progress.
- C. Specifications: Legibly mark and record at each Product section description of actual Products installed.
- D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.
- E. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.59 OPERATION AND MAINTENANCE DATA

- A. Submit electronic sets (pdf format) prior to final inspection.
- B. Contents:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system.
 - 3. Part 3: Project documents and certificates.
 - 4. Part 4: List of finishes, materials and colors selected for entire project.

1.60 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Architect/Engineer; obtain receipt prior to final payment.

1.61 WARRANTIES

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.
- C. Submit prior to final Application for Payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

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.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Topsoil: Imported friable loam; free of subsoil, roots, grass, weeds, large stone, and foreign matter.
- B. Subsoil: Imported material, graded free of lumps larger than 6 inches , rocks larger than 3 inches, organic material, and debris.

2.2 FILL MATERIALS

- A. Type A - Select Granular Material: Coarse gravel, ODOT item #304 natural stone; free of shale, clay, friable material, sand, debris.
 - 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, organic matter.
 - 1. Minimum Size: 1/4 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.
- D. Type D - Subsoil: Imported, free of rock larger than 3 inch size, and debris.
- E. Type E - Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, free of subsoil, clay or impurities, plants, weeds and roots

2.3 ACCESSORIES

- A. Geotextile Fabric: US80NW by US Fabrics, Inc.
- B. Substitutions: Permitted.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Call Local Utility Line Information services not less than seven 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. Maintain and protect existing utilities to remain.
- E. Verify foundation or basement walls are braced to support surcharge forces imposed by backfilling operations.

3.2 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.

3.3 TOPSOIL EXCAVATING

- A. Do not excavate wet topsoil.
- B. Excavate topsoil and remove from site.

3.4 SUBSOIL EXCAVATING

- A. Do not remove wet subsoil.
- B. Remove groundwater by pumping to keep excavations dry.
- C. Excavate subsoil from marked areas 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 A 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. Remove subsoil from site.

3.5 TRENCHING

- A. Excavate for utilities as indicated.
- 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.

3.6 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 fill material in continuous layers and compact in accordance with schedule at end of this section.
- E. Employ placement method so not to disturb or damage foundations, foundation perimeter drainage, 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 until supports are in place.
- H. Slope grade away from building minimum 2 inches in 10 ft , unless noted otherwise.

3.7 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding and 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.

3.8 TESTS

- A. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556 or ASTM D2922.
- B. Frequency of Tests: As recommended by Geotechnical Engineer.

3.9 TOLERANCES

- A. Top Surface of Exposed Subgrade: Plus or minus one inch.
- B. Top of Topsoil: Plus or minus ½ inch.

3.10 SCHEDULE

- A. Interior Slab-On-Grade: Type A fill, 6 inches thick, compact uniformly to 98 percent Standard Proctor.
- B. Exterior Side of Foundation Walls and Foundation Perimeter Drainage: Type A fill, to subgrade elevation, compact uniformly to 90 percent Standard Proctor.
- C. Fill Under Landscaped Areas: Type D fill, to 12 inches below finish grade, compact uniformly to 90 percent Standard Proctor.
- D. Fill Under Asphalt or Concrete Paving: Type A fill minimum 8 inches thick to bottom of finish paving elevation, compact uniformly to 95 percent Standard Proctor.
- E. Exterior Areas on site not scheduled for building or hard surfaces: Type E Topsoil minimum 8 inches from grade down.

END OF SECTION

SECTION 02750
RIGID PAVEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete sidewalks and patios.

1.2 SYSTEM DESCRIPTION

- A. Paving and Base: Designed for parking, light duty commercial vehicles and movement of trucks up to 30,000 lbs.

1.3 SUBMITTALS

- A. Product Data: Submit product information.
- B. Design Data: Submit mix design of each class of mix.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Section 03050.

PART 2 PRODUCTS

2.1 REINFORCED CEMENT CONCRETE PAVEMENT

- A. Concrete Materials: As specified in Section 03050.

2.2 CONCRETE MIX

- A. Mix and deliver concrete in accordance with Section 03050.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Verify gradients and elevations of base.
- B. Verify compacted subgrade and granular base is ready to support paving and imposed loads.
- C. Moisten substrate to minimize absorption of water from fresh concrete.

3.2 FORMING

- A. Place and secure forms to correct location, dimension, and profile.
- B. Place joint filler in joints, vertical in position, in straight lines. Secure to formwork.
- C. Place expansion joints at 20-foot intervals. Align joints.
- D. Place joint filler between paving components and other appurtenances.

3.3 REINFORCEMENT

- A. Place reinforcement at mid-height of slabs-on-grade.
- B. Interrupt reinforcement at expansion joints. Lubricate one-half of dowel to prevent bond to concrete on one side of joint.
- C. Place dowels to achieve pavement and curb alignment.

3.4 PLACING CONCRETE

- A. Place concrete in accordance with Section 03050. Do not disturb reinforcement or formwork components during concrete placement.
- B. Place concrete continuously between predetermined joints.

3.5 FINISHING

- A. Sidewalk Surfaces: Light broom, radiused and trowel joint edges.
- B. Apply curing compound on exposed concrete surfaces immediately after finishing.

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 to conform to design and applicable code requirements to achieve concrete shape, line and dimension as indicated on Drawings.
- B. Vapor Retarder Permeance: Maximum 0.3 perms when tested in accordance with ASTM E96. Griffolyn Type – 65 reinforced polyethylene.

1.3 QUALITY ASSURANCE

- A. Construct and erect concrete formwork in accordance with ACI 301.
- B. Perform concrete reinforcing work in accordance with ACI 301.
- C. Perform cast-in-place concrete work in accordance with ACI 301.

PART 2 PRODUCTS

2.1 FORM MATERIALS AND ACCESSORIES

- A. Form Materials: At discretion of Contractor.
- B. Plywood: BC Grade Douglas Fir or Spruce species; sound undamaged sheets with clean true edges.
- C. Lumber: SPF species; No. 2 grade.
- D. Prefabricated Steel Type: matched, tight fitting, stiffened to support weight of concrete.
- E. Form Release Agent: Colorless mineral oil not capable of staining concrete or impairing natural bonding characteristics of coating intended for use on concrete.
- F. Slab Edge Joint Filler: ASTM D1751, Pre-molded asphaltic board, ½ inch thick.

- G. Vapor Retarder: ASTM E1745 Class C; Griffolyn Type-65 reinforced polyethelene or equal. Furnish joint tape recommended by manufacturer.

2.2 REINFORCEMENT MATERIALS

- A. Deformed and Plain 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.
- D. Fabricate concrete reinforcement in accordance with ACI 301.

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

2.4 COMPOUNDS, HARDENERS AND SEALERS

- A. Curing Compound: ASTM C309, Class B; Acrylic type; clear Rez-Seal manufactured by Euclid Chemical. Two coats on exterior concrete flatwork.

2.5 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ASTM C94/C94M.
- B. Furnish concrete of the following strength:

		PSI COMPRESSIVE STRENGTH		
<u>LOCATION</u>	<u>7 DAYS</u>	<u>28 DAYS</u>	<u>SLUMP</u>	<u>MIX</u>
EXTERIOR	3375	4500	3"- 5"	520# / C. YD.
INTERIOR	3000	4000	3"- 5"	480# / C. YD.
COLUMNS	3000	4000	3"- 5"	480# / C. YD.
FOUNDATIONS	2250	3000	3"- 5"	430# / C. YD.

- C. Select admixture proportions for normal weight concrete in accordance with ACI 301. Use water reducer 220-N by Master Builders.
- D. Add air entraining agent to concrete mix for all concrete work. 5% - 7% Micro-Air by Master Builders.

PART 3 EXECUTION

3.1 FORMWORK ERECTION

- A. Erect formwork, shoring and bracing to achieve design requirements.
- B. Provide bracing to ensure stability of formwork.
- C. Apply form release agent to formwork prior to placing form accessories and reinforcement.
- D. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings affected by agent.
- E. 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 joint filler at perimeter of floor slab.

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

3.4 PLACING CONCRETE

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

- B. Repair damaged vapor retarder with vapor retarder material, lap over damaged areas minimum 6 inches and seal watertight.
- C. Separate exterior 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.
- D. Place concrete continuously between predetermined expansion, control and construction joints. Do not break or interrupt successive pours creating cold joints.
- E. Where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack with non-shrink grout.
- F. Screed exterior walks and landings at slopes indicated.

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.
- B. Uniformly spread, screed, and float concrete.
- C. Steel trowel surfaces receiving resilient flooring or remaining exposed to view in finished construction.
- D. Broom finish exterior walking surfaces for non-slip finish
- E. Maintain surface flatness, with maximum variation of 1/8 inch in 10 ft.

3.7 EXTERIOR EXPOSED VERTICAL SURFACES

- A. Rubbed Finish: Immediately after removing the forms, form ties shall be broken back a minimum of three-quarters (¾) inch from the surface, honeycomb, voids, and other surface defects grouted. The surfaces shall then be thoroughly dampened and rubbed with a No. 16 carborundum stone or equal abrasive to create a uniform surface paste. The rubbing shall be continued to remove all form marks and surface irregularities producing a smooth, dense surface. After setting, the surface shall then be rubbed with a No. 30 carborundum stone until the surface is smooth in texture and uniform in color. Unless otherwise shown in the DRAWINGS only exposed surfaces shall have a rubbed finish.

3.8 CURING

- A. Apply sealer on floor surfaces unless flooring specified prohibits sealer application.
- B. Immediately after placement, protect concrete from premature drying.

- C. 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.

3.9 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 TMS MSJC Code and TMS MSJC Specification.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Hot and Cold Weather Requirements: MSJC Specification.

PART 2 PRODUCTS

2.1 MORTAR AND MASONRY GROUT

- A. Manufacturers:
 - 1. Cemex Rich Color, choice of available colors.
 - 2. Substitutions: Permitted.

2.2 COMPONENTS

- A. Premix Mortar: ASTM C387, Type S or N.
- B. Mortar Aggregate: ASTM C144, standard masonry type.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Mortar Color: Mineral oxide pigment color as selected.
- E. Grout Aggregate: ASTM C404, fine and coarse.
- F. Water: Clean and potable.
- G. Calcium chloride is not permitted.

2.3 MIXES

- A. Mortar Mixes:
 - 1. Mortar for Structural Masonry: ASTM C270, Type S using Property specification.

2. Mortar for Non-Structural Masonry: ASTM C270, Type N using Property specification.
- B. Mortar Mixing:
1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.
 2. Add mortar admixtures.
- C. Grout Mixes:
1. Bond Beams and Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; premixed type in accordance with ASTM C94/C94M:
 2. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476.
 3. 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 TMS MSJC Specification.

3.3 SCHEDULES

- A. Brick Veneer: Brick masonry with Type N mortar with Type N pointing mortar.
- B. Exterior foundations: CMU with Type S mortar
- C. Above grade bearing walls: CMU with Type S mortar
- D. Above grade non-bearing walls: CMU with Type N mortar

END OF SECTION

SECTION 04810

UNIT MASONRY ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

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

1.2 SUBMITTALS

- A. Samples: Submit two samples of face brick and glass masonry units to illustrate color, texture and extremes of color range.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with MSJC Code (ACI 530/ASCE 5/TMS 402) and MSJC Specification (ACI 530.1/ASCE 6/TMS 602).
- B. Fire Rated Wall Construction: Rating as indicated on Drawings.
 - 1. Tested Rating: Determined in accordance with ASTM E119.
- C. Surface Burning Characteristics:
 - 1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Hot and Cold Weather Requirements: MSJC Specification.

PART 2 PRODUCTS

2.1 UNIT MASONRY ASSEMBLIES

- A. Manufacturers:
 - 1. The Belden Brick Co.
 - 2. Substitutions: Not Permitted.

2.2 COMPONENTS

- A. Face Brick: ASTM C216, Type FBX, Grade SW, Modular Commodore Full Range Velour A
- B. Hollow Load Bearing Concrete Masonry Units: ASTM C90; normal weight.

- C. Solid Load-Bearing Concrete Masonry Units: ASTM; normal weight.
- D. Hollow Non-Load Bearing Concrete Masonry Units: ASTM C129; light weight
- E. Concrete Brick Units: ASTM C55, Grade S; normal weight.
- F. Concrete Masonry Unit Size and Shape: Nominal modular size of 8 x 16 x 8 inches or 6 x 16 x 8 inches as indicated on plans. Furnish special units for 90-degree corners, bond beams and lintels.

2.3 ACCESSORIES

- A. Single Wythe Joint Reinforcement: ASTM A951; truss or ladder type; steel; 0.148-inch diameter side rods with 0.148-inch diameter cross ties; hot dip galvanized.
- B. Multiple Wythe Joint Reinforcement: ASTM A951; truss or ladder type; steel; with moisture drip; adjustable type; 0.148-inch diameter side rods with 0.148-inch diameter cross ties; hot dip galvanized.
- C. Reinforcing Steel: ASTM A615/A615M, 60-ksi yield grade, plain billet bars, uncoated finish.
- D. Adjustable Wall Ties: Pintles and Eyes with 2X hook, 4-inch tie with 2 3/4" hook; ASTM A153/A153M hot dip galvanized.
- E. 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.
- F. Mortar and Grout: As specified in Section 04065.
- G. Masonry Flashings: Hohmann & Barnard Textroflash flashing, 40 mil composite membrane, adhesive backing, 12 inches wide, use with manufacturer's recommended non-corrosive drip plate, sealant and termination bar.
 - 1. Substitutions: Permitted.
- H. Joint Sealant: Butyl type as specified in Section 07900.
- I. Joint Filler: Closed cell polyethylene; oversized 50 percent to joint width; self expanding; size as required for application.
- J. Weeps: Preformed plastic tubes.
- K. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials, recommended by masonry unit manufacturer.

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.

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: Flush.
- C. Coursing of Brick Units:
 - 1. Bond: Running.
 - 2. Mortar Joints: Raked.
- D. Cut mortar joints flush where ceramic or quarry wall tile is scheduled, resilient base is scheduled or bituminous damp-proofing is applied.
- E. Placing and Bonding:
 - 1. Isolate masonry partitions from vertical structural framing members with movement joint.
 - 2. Isolate top of masonry from horizontal structural framing members and slabs or decks with compressible joint filler.
- F. Weeps: Install weeps in outer wythe at 24 inches on center 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 joint below top of walls.
 - 2. Place masonry joint reinforcement in first horizontal joints above and below openings.
 - 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 joint below top of walls.
 2. Place masonry joint reinforcement in first horizontal joints above and below openings.
 3. Embed wall ties in masonry backing to bond veneer at maximum 16 inches on center vertically and 16 inches on center horizontally. Place wall ties at maximum 8 inches on center vertically within 8 inches of jamb of wall openings.
 4. Place wall ties at maximum 8 inches on center vertically within 8 inches of jamb of wall openings.
 5. Place wall ties at maximum 8 inches on center horizontally within 8 inches of head and sill of wall openings.
 6. Reinforce 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 joint below top of walls.
 2. Embed anchorages in every second block joint.
 3. 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 joint below top of walls.
 2. Place masonry joint reinforcement in first horizontal joints above and below openings.
 3. Embed anchorages in every second block joint.
 4. 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 and 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 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 or precast concrete, lintels over openings.
 2. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled or indicated.
 3. Maintain minimum 8-inch bearing on each side of opening.
- N. Grouted Components:
1. Reinforce bond beams 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. Size control joint in accordance with Section 07900 for sealant performance.
- P. Built-In Work:
1. As work progresses, install built-in metal door frames anchor bolts, plates and other items to be built in the work furnished by other sections.
 2. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout or mortar. Fill adjacent masonry cores with grout minimum 8 inches from framed openings.
- Q. Cutting and Fitting:
1. Cut and fit for chases, pipes, conduit, sleeves, grounds, and] other items. 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 inch in 30 ft.

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. Fasteners, connectors, and anchors.
 - 6. Grout.

1.2 SUBMITTALS

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

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
 - 1. AISC Code of Standard Practice for Steel Buildings and Bridges.
 - 2. 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 ten years experience.
- B. Shop Painter: Company specializing in performing Work of this section with minimum ten years experience.
- C. Welders and Welding Procedures: AWS D.1 qualified within previous 12 months.

PART 2 PRODUCTS

2.1 STRUCTURAL STEEL

- A. Structural W-Shapes: ASTM A992/A992M.; Grade 50.
- B. Structural M-Shapes: ASTM A529/A529M; Grade 50.
- C. Structural S-Shapes: ASTM A529/A529M; Grade 50.

- D. Structural T-Shapes: Cut from structural W-shapes.
- E. Channels and Angles: ASTM A529/A529M; Grade 50.
- F. Round Hollow Structural Sections: ASTM A500, Grade B.
- G. Square and Rectangular Hollow Structural Sections: ASTM A500, Grade B.
- H. Structural Pipe: ASTM A53/A53M, Grade B.

2.2 FASTENERS, CONNECTORS, AND ANCHORS

- A. Bolts: ASTM A307; Grade A or B.
 - 1. Finish: Hot dipped galvanized.
- B. Nuts: ASTM A563 heavy hex type.
 - 1. Finish: Hot dipped galvanized.
- C. Washers: ASTM F436; Type 1, circular.
 - 1. Finish: Hot dipped galvanized.
- D. Anchor Rods: ASTM F1554; Grade 55, weldable where indicated on Drawings.
 - 1. Shape: Hooked.
- E. Threaded Rods: ASTM A307; Grade A.
 - 1. Finish: Hot dipped galvanized.

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 and Touch-Up Primer: SSPC Paint 15, Type 1, red oxide.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20, Type I Inorganic.

2.5 FABRICATION

- A. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- B. Fabricate connections for bolt, nut, and washer connectors.

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 or in contact with concrete.

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 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 form 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.
- 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.
- C. Correct defective bolted connections and welds.

END OF SECTION

SECTION 06200
FINISH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes shop fabricated casework, countertops, hardware and attachment accessories. See drawings for cabinetry details and additional specifications.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate cabinetry layout including elevations.
- B. Samples: Submit two samples illustrating laminate finish.

PART 2 PRODUCTS

2.1 COMPONENTS

- A. Plastic Laminate: AWI 0.050-inch custom grade, choice of color, pattern and surface textures, manufactured by Wilsonart or Formica.
- B. Laminate Backing Sheet: 0.020-inch Backing Sheet grade, undecorated plastic laminate.

2.2 ACCESSORIES

- A. Fasteners: Size and type to suit application.
- B. Contact Adhesives: As recommended by Manufacturer.

2.3 FABRICATION

- A. See Sheet A5 for Cabinetry and Countertop specifications.

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.

END OF SECTION

SECTION 06650
SOLID SURFACING

PART 1 - GENERAL

1.1 SUMMARY

1. Section Includes:
 - a. Earthstone™ Solid Surface Material.
2. Related Sections:
 - a. Finish Carpentry: Section 06200.
 - b. Sealants: as recommended by solid surface manufacturer.
 - d. Plumbing: Division 15.

1.2 SYSTEM DESCRIPTION

1. Earthstone™ Solid Surface Sheet: Homogenous sheet material composed of acrylic resins, fire-retardant filler materials, and coloring agents.

1.3 SUBMITTALS

1. Comply with Section 01001, unless otherwise indicated.
2. Product Data:
 - a. Detailed specification of construction and fabrication.
 - b. Manufacturer's installation instructions.
 - c. Manufacturer's detailed recommendations for handling, storage, installation, protection, and maintenance.
3. Shop Drawings: Installation details including location and layout of each type of fabrication and accessory.
4. Samples: Full range of colors and patterns.

1.4 QUALITY ASSURANCE

1. Fabricator Qualifications: Wilsonart® certified solid surface fabricator/installer.
2. Installer Qualifications: Firm experienced in installation or application of systems similar in complexity to those required for this Project, including specific requirements indicated.
 - a. Acceptable to or licensed by manufacturer.
3. Source Limitations: Obtain materials and products from single source.

1.5 DELIVERY, STORAGE, AND HANDLING

1. Deliver fabrications appropriately wrapped in protective materials.
2. Protect fabrications from damage.

1.6 PROJECT CONDITIONS

1. Maintain relative humidity planned for building occupants and an ambient temperature

between 65 and 75 F for 48 hours prior to and during installation. After installation, maintain relative humidity and ambient temperature planned for building occupants.

1.7 WARRANTY

1. Furnish manufacturer's limited 10-year warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURER

1. Wilsonart International, (800) 433-3222, www.wilsonart.com.
 - a. Earthstone™ Solid Surface, Type 051.

2.2 EARTHSTONE™ SOLID SURFACE SHEET

1. Nominal sheet thickness: 0.50 inch (13 mm).
2. Surface burning characteristics in accordance with ASTM E 84: Class II or B, and as follows:
 - a. Flame spread: < 26.
 - b. Smoke developed: < 35.
3. Liquid Absorption, ISO 4586-2, for ½-inch material thickness: 0.4 percent after 2-hour period.
4. Izod Impact, ASTM D 256, Method A: 0.3-foot pounds per inch.
5. Tensile Modulus, ASTM D 638 Nominal: 1.1 million pounds per square inch.
6. Thermal Expansion, ASTM D 696: 0.00002 inch per inch per degree F, maximum.
7. Hardness, ASTM D 2583, Barcol Impressor: 57.
8. Flexural Toughness, ASTM D 790: 5 (in.-lb/in³).
9. Deflection Temperature under load, ASTM D 648: 90 degrees C.
10. Stain Resistance, ANSI Z-124.3 Modified; 3.4: No effect.
11. Boiling Water Resistance, NEMA LD 3-3.05: No effect.
12. High Temperature Resistance, NEMA LD 3-3.06: No effect.
13. Radiant Heat Resistance, NEMA LD 3-3.10: No effect.
14. Light Resistance, NEMA LD 3-3.03: No effect.
15. Ball Impact Resistance, NEMA LD 3-3.08, one half pound ball, unsupported: 125 inches.
16. Specific Gravity (Density ASTM D792): 1.56 grams per cubic centimeter.
17. Approximate weight: 4.10 pounds per square foot.
18. Fungus Resistance, ASTM G 21: Pass.
19. Bacterial Resistance, ASTM G 22: Pass.
20. Pittsburgh Protocol Toxicity: 65.4 grams.
21. Patterns and Finishes: Selected from manufacturer's full range of available selections.

2.3 ACCESSORY MATERIALS

1. Joint adhesive: Manufacturer's standard adhesive to create inconspicuous, nonporous joints, with a chemical bond (WA8215).

2.4 FABRICATION

1. Fabrication to be performed by a Wilsonart® certified solid surface fabricator/installer.
2. Fabricate components in shop to greatest extent practical to size and shape indicated, in accordance with approved shop drawing and Wilsonart® published requirements.
3. Wilsonart® Solid Surface Fabrication Manual (SS0319)
4. Form joints between components using manufacture's standard joint adhesive. Joints shall be inconspicuous in appearance and without voids. Attach 4" (100mm) wide Gibraltar®/Earthstone™ reinforcing strip under joints required by Deck Seam Section of the Wilsonart® Solid Surface Fabrication Manual (SS0319).
5. Provide holes and cutouts for plumbing and bath accessories as indicated on shop drawings.
6. Provide 4 inch high by ½" thick backsplash at all vertical intersections.
7. Rout and finish component edges to a smooth, uniform finish. Rout all cutouts then sand all edges smooth. Repair or reject defective or inaccurate work. Use ¼" top and bottom round over profile on all edges.
8. Finish: Surfaces shall have a uniform finish.
 - a. Satin: Standard finish for darker Gibraltar® and Earthstone™ patterns, requires minimal maintenance.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Examine substrates to receive solid surfacing. Identify conditions detrimental to proper or timely installation. Do not commence installation until conditions have been corrected.

3.2 PREPARATION

1. Precondition Wilsonart® Solid Surfacing in accordance with manufacturer's printed installation instructions.

3.3 INSTALLATION

1. Install components plumb and level, in accordance with approved shop drawings, project installation details and manufacturer's printed instructions.
2. Form joints using manufacturer's approved adhesive, with joints inconspicuous in finished work.
3. Adhere undermount sinks/bowls to countertop using manufacturer's recommended joint adhesive.
4. Provide backsplashes and end-splashes as indicated on the drawings. Adhere to countertops using manufacturer's recommended silicone sealant.
5. Remove excessive adhesive and sealants. Components shall be clean on Date of Substantial Completion.
6. Coordinate plumbing installation with Division 15.

3.4 INSTALLATION OF VANITIES

1. Install plumb, level, true and straight. Shim as necessary using concealed shims.

2. Attach top securely to base unit or support brackets in accordance with manufacturer's printed instructions.
3. Seal between wall and component with manufacturer's recommended silicone sealant.
4. Attach backsplashes and end-splashes to countertops using manufacturer's recommended silicone sealant.

3.5 PROTECTION

1. Protect surfaces from damage until Date of Substantial Completion. Repair or replace damaged components that cannot be repaired to architect's satisfaction.
2. Fabricator/Installer to provide the Wilsonart® Care and Maintenance kit, review maintenance procedures and the Wilsonart® warranty to Owner upon completion of project.

END OF SECTION 06650

SECTION 07210
BUILDING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes board thermal insulation at exterior walls.

1.2 SYSTEM DESCRIPTION

- A. System performance to provide continuity of thermal barrier and vapor retarder at building enclosure elements in conjunction with air barrier materials in Section 07272.
- B. .

1.3 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.
 - 2. Other Insulation: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- B. Insulation Installed in Exposed Locations Surface Burning Characteristics:
 - 1. Insulation Materials: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

PART 2 PRODUCTS

2.1 COMPONENTS

- A. Extruded Polystyrene Insulation: (Exterior of CMU in cavity) ASTM C578, cellular type, manufactured by Dow, with the following characteristics:
 - 1. Board Thickness: 1 1/2 inch thick.
 - 2. Thermal Resistance: R of 7.5.
 - 3. Water Absorption: In accordance with ASTM D2842 0.3 percent by volume maximum.
 - 4. Compressive Strength: Minimum 30 psi.
 - 5. Board Edges: Square edges.

2.2 ACCESSORIES

- A. Air Barrier: As specified in Section 07272.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.

3.2 INSTALLATION

- A. Exterior Walls- Board Insulation:
 - 1. Apply adhesive and install boards on exterior of perimeter CMU walls. Butt edges and ends tight to adjacent board and to protrusions.
 - 2. Seal joints between insulation between adjacent boards with tape as recommended by board manufacturer.

END OF SECTION

SECTION 07212
SPRAY FOAM INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Spray-in-place, medium-density, semi-rigid, closed-cell polyurethane foam insulation in assemblies indicated on the Drawings, to provide an air barrier and insulation. ThermoSeal 2100

1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

- A. ASTM International (ASTM):
 1. ASTM C 423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
 2. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 3. ASTM D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 4. ASTM D 1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
 5. ASTM D 1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
 6. ASTM D 2126 - Standard Test Method for Response of Rigid Cellular Plastic to Thermal and Humid Aging.
 7. ASTM D 2842 - Standard Test Method for Water Absorption of Rigid Plastics.
 8. ASTM D 6226 - Standard Test Method for Open Cell Content of Rigid Cellular Plastics.
 9. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 10. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
 11. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 12. ASTM E 413 - Classification for Rating Sound Insulation.
- B. Greenguard Certification from UL Environment.
- C. International Code Council - International Building Code.
- D. ICC Evaluation Service.
- E. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Before commencing work, submit in accordance with local code:
 - 1. Technical data sheet from the manufacturer showing the test results from the ASTM E84 (Surface Burning Characteristics).
 - 2. Other technical data sheets and samples as required by local code officials.
- C. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Contractor performing work under this section shall be trained and certified by ThermoSeal, LLC in the art of application of spray polyurethane foam insulation.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be delivered in manufacturer's original containers clearly labeled with manufacturer's name, product identification, safety information, net weight of contents and expiration date.
- B. Material shall be stored in a safe manner and where the temperatures are in the limits specified by the material manufacturer.
- C. Empty containers shall be removed from site on a daily basis.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
- B. Ventilate insulation application area in accordance with the Spray Foam Coalition's Guidance on best practices for the installation of Spray Polyurethane Foam.
- C. Protect workers as recommended by the standards of the Spray Foam Coalition's Guidance on best practices for the installation of Spray Polyurethane Foam.
- D. Protect adjacent surfaces, windows, equipment and site areas from damage of overspray.

1.8 WARRANTY

- A. Manufacturer's Warranty: ThermoSeal, LLC warrants spray-in-place urethane foam

insulation, when installed by authorized contractors using factory-trained applicators and applied in accordance to the Installation Instructions, will perform as stated in the Product Technical Data Sheet.

1. This warranty is in effect throughout the life of the building provided the original purchaser registers with the Warranty Department of the Manufacturer within thirty days of occupancy.
2. Manufacturer's sole responsibility under this Limited Lifetime Warranty shall be to repair or replace any defective Product at the cost of the material only.
3. Manufacturer shall not be responsible for labor cost or any other costs whatsoever related to, or in connection with the removal or installation of either the original or replacement product.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: ThermoSeal, LLC , which is located at: P. O. Box 32; New Canaan, CT 06840 ; Toll Free Tel: 800-853-1577; Email: [request info \(info@thermosealusa.com\)](mailto:info@thermosealusa.com); Web: www.thermosealusa.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 6000 - Product Requirements.

2.2 SPRAY FOAM INSULATION

- A. Spray Applied Semi Rigid Polyurethane Closed Cell Foam Insulation System: Twocomponent, high density insulation.
 1. Product: ThermoSeal 2100 manufactured by ThermoSeal, LLC.
 2. Contains zero ozone depleting agents, catalysts, polyols, and fire retarding materials.
 3. Fills cracks, crevices, and voids to form air seal and thermal insulation.
 4. Evaluation Report: ICC ESR-3225.
 5. Physical Properties:
 - a. Density (ASTM D 1622): 2.4 lb/cf (0.038 gm/cu. cm).
 - b. Thermal Resistance (ASTM C 518): R-5.89 (sf.h degree F/BTU) at 1 inch at 90 days at 76 degree F (24.4 degree C)
 - c. Closed Cell Content (ASTM D 6226): Minimum 92 percent.
 - d. Water Vapor Transmission - Permeance (ASTM E 96): 0.8 perms at 1 inch, 0.23 at 3.5 inches.
 - e. Air Leakage (ASTM E 283): Zero at 75 Pa.
 - f. Compressive Strength (ASTM D 1621): 20 psi.
 - g. Tensile Strength (ASTM D 1623): 60 lbf/sq. inch (414 kPa).
 - h. Dimensional Stability (ASTM D 2126): Less than 5 percent.
 - i. Fungi Resistance (ASTM G 21): Zero rating.
 - j. Surface Burning Characteristics (ASTM E 84): Class 1 Pass, Flame Spread Index less than 25, Smoke Developed Index less than 450.
 6. Equipment used to apply the foam insulation shall have fixed ratio positive displacement pumps and approved by ThermoSeal, LLC.
 7. Equipment used to apply the water based intumescent coating shall be an airless sprayer approved by ThermoSeal, LLC.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Commencement of work outlined in this section shall be deemed as acceptance of existing work and conditions.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Apply only when surfaces and environmental conditions are within limits prescribed by the material manufacturer.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved submittals. Apply as recommended by manufacturer to thickness as indicated on drawings.
- B. Apply thermal barrier as required by applicable codes noting the following:
 - 1. Except as provided in Section 314.5 and Section 314.6 of the 2006 International Residential Code, Section 316.5 and Section 316.6 of the 2009 International Residential Code and Section 2603.4.1 and Section 2603.9 of the International Building Code, all plastic insulation shall be separated from the interior of the building by an approved thermal barrier of 1/2 inch (13 mm) gypsum wallboard or equivalent thermal barrier material. Code compliant intumescent coating in lieu of a thermal barrier may be achieved with the use of DC 315. For more information contact ThermoSeal, LLC for assistance, (800) 853-1577.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07214
FOAMED-IN-PLACE MASONRY WALL INSULATION

PART 1 -GENERAL

1.01 SUMMARY

- A. Extent of insulation work is shown on drawings and indicated by provisions of this section.
- B. Applications of insulation specified in this section include the following:
 - 1. Foamed-in-Place masonry insulation for thermal, sound and fire resistance values

1.02 SUBMITTALS

- A. Product and technical presentation as provided by the manufacturer.
- B. Certified Test Reports: With product data, submit copies of certified test reports showing compliance with specified performance values, including R-values, fire performance and sound abatement characteristics.
- C. Material Safety Data Sheet: Submit Material Safety Data Sheet complying with OSHA Hazard Communication Standard, 29 CFR 1910 1200.

1.03 QUALITY ASSURANCE

- A. Manufacturing Standards: Provide insulation produced by a single and approved manufacturer. The product must come from the manufacturer pre-mixed to ensure consistency.
- B. Installer Qualifications for Foamed-In-Place Masonry Insulation: Engage an experienced dealer/applicator who has been trained and licensed by the product manufacturer and which has not less than ten years direct experience in the installation of the product used.
- C. Warranty: Upon request, a one year product and installation warranty will be issued by both the manufacturer and installer.
- D. Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by a testing agency acceptable to authorities having jurisdiction.

Product must be classified by Underwriters Laboratory ® ("UL") as to Surface Burning Characteristics

Fire Resistance Ratings:	ASTM E-119
Surface Burning Characteristics:	ASTM E-84
Combustion Characteristics:	ASTM E-136

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturers of Foamed-in-Place Masonry Insulation: Subject to compliance with requirements, provide products from the following:
- a. **"Core-Fill 500™"**- Tailored Chemical Products, P.O. Drawer
4186,Hickory, N.C. 28663, (800) 627-1687
 1. Florida & Georgia Distributor
Tailored Foam of Florida,
Inc.3900 Saint Johns
Parkway Sanford, FL 32771
Telephone: 407-332-0333 Fax: 407-830-9174
 - b. Air Krete, Inc
P.O. Box 380
Weedsport, NY 13166
 - c. CP Chemical Co.
(Tripolymer)White Plains,
NY.

2.02 INSULATING MATERIALS

A. General: Provide insulating materials which comply with requirements indicated for materials,compliance with referenced standards, and other characteristics. I

B. Foamed-in-Place Masonry Insulation: Two component thermal insulation produced by combininga plastic resin and catalyst foaming agent surfactant which, when properly ratioed and mixed, together with compressed air produce a cold-setting foam insulation in the hollow cores of hollow unit masonry walls.

1. Fire-Resistance Ratings: Core-Fill 500™ masonry insulation is a thermal foam insulation product. It is not intended and should never be used to increase the fire rating of a concrete masonry unit.
2. Surface Burning Characteristics: Maximum flame spread, smoke developed and fuel contributed of 0, 5 and 0 respectively.
3. Combustion Characteristics: Must be noncombustible, Class A building material.
4. Thermal Values: "R" Value of 4.91/inch @ 32 degrees F mean; ASTM C-177
5. Sound Abatement: Minimum Sound Transmission Class ("STC") rating of 53 and a minimum Outdoor Indoor Transmission Class ("OITC") rating of 44 for 8" wall assembly (ASTM E 90-90)

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

A. Application Assemblies:

Block Walls: 6" or 8" concrete masonry units

Cavity Walls: 2" cavity or greater

3.02 INSTALLATION OF FOAMED-IN-PLACE INSULATION

A. General: Install foamed-in-place insulation from interior, or as specified, prior to installation of interior finish work and after all masonry and structural concrete work is in place; comply with manufacturer's instructions.

B. Installation: Fill all open cells and voids in hollow concrete masonry walls where shown on drawings. The foam insulation shall be pressure injected through a series of 5/8" to 7/8" holes drilled into every vertical column of block cells (every 8" on center) beginning at an approximate height of four (4) feet from finished floor level. Repeat this procedure at an approximate height of ten (10) feet above the first horizontal row of holes (or as needed) until the void is completely filled. Patch holes with mortar and score to resemble existing surface.

END OF SECTION
07214

SECTION 07272

FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of liquid-applied asphalt emulsion air/vapor barrier.
- C. Application of materials to provide bridge and seal air leakage pathways in:
 - 1. Wall and roof connections and penetrations.
 - 2. Connections to foundation walls.
 - 3. Walls, windows, curtain walls, storefronts, louvers or doors
 - 4. Expansion and control joints.
 - 5. Masonry ties.
 - 6. All other penetrations through the wall assembly.

1.02 RELATED SECTIONS

- A. Section 04810 - Unit Masonry Assemblies.
- B. Section 07210 - Thermal Insulation.
- C. Section 07900 - Joint Sealants.

1.03 REFERENCES

- A. ASTM E96-00e1 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.
- B. ASTM E2178-01 - Standard Test Method for Air Permeance of Building Materials.
- C. ASTM E2357 - 05 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.04 SUBMITTALS

- A. Submit manufacturer's product data and application instructions.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.

- B. Obtain air/vapor barrier materials from a single manufacturer regularly engaged in manufacturing the product.
- C. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Store at temperatures above 32° F (0° C), free from contact with cold or frozen surfaces.
- D. Protect materials during handling and application to prevent damage or contamination.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Do not proceed with product application during rain or inclement weather.
- C. Do not apply membrane when air or surface temperatures are below 30° F (-1° C).
- D. Do not apply to frozen substrate.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. W. R. MEADOWS®, INC., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Website www.wrmeadows.com.

2.02 MATERIALS

- A. Liquid Air Vapor Barrier System: One-component, polymer-modified, cold-applied, liquid air/vapor barrier membrane.
 - 1. Performance Based Specification: Air/vapor barrier membrane shall be an elastomeric asphalt emulsion having the following characteristics:
 - a. Air Leakage ASTM E2357: 0.04 cfm / ft.² @ 75 Pa (1.57 lb./ft.²).
 - b. Air Permeability ASTM E2178: 0.004 cfm /ft.² @ 75 Pa (1.57 lb./ft.²).
 - c. Water Vapor Permeance ASTM E96 (Method B): ≤0.1 perms.
 - d. Elongation ASTM D412: 1500 %.
 - e. Tensile Strength ASTM D412: 15 psi.
 - 2. Proprietary Based Specification: AIR-SHIELD LM by W. R. MEADOWS.

2.03 ACCESSORIES

- A. Flashing and Transition Membrane: Self-adhesive polymeric sheet membrane having a thickness of 40 mils (1 mm).
 - 1. AIR-SHIELD THRU-WALL FLASHING by W. R. MEADOWS.

- B. Liquid Flashing and Joint Sealant for exterior sheathing panels: Fluid -applied, single-component, flashing membrane for rough openings and detailing.
 - 1. AIR-SHIELD LIQUID FLASHING by W. R. MEADOWS.
- C. Joint Tape: Self-adhesive polymeric membrane for joints of plywood and oriented strand board (OSB).
 - 1. AIR-SHIELD by W. R. MEADOWS.
- D. Membrane Adhesive:
 - 1. Temperatures above 40° F (4° C): Water-Based Adhesive
 - a. MEL-PRIME™ W/B Water-Based Adhesive by W. R. MEADOWS.
 - 2. Temperatures below 30° F (-1° C): Solvent-Based Adhesive.
 - a. MEL-PRIME Solvent-Based Adhesive by W. R. MEADOWS.
- E. Pointing Mastic: mastic for sealing penetrations and terminations of membrane.
 - 1. POINTING MASTIC by W.R. MEADOWS.
- F. Detailing Membrane: non-slump waterproofing material for joint detailing.
 - 1. BEM by W. R. MEADOWS.
- G. Concrete Repair Materials: general purpose patching materials.
 - .1 MEADOW-PATCH™ 5 and 20 Concrete Repair Mortars by W. R. MEADOWS.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive air/vapor barrier.
- B. Clean and prepare surfaces to receive air/vapor barrier membrane in accordance with manufacturer's instructions.
- C. Do not apply membrane to surfaces unacceptable to manufacturer.
- D. Concrete surfaces must be clean, free of standing water, ice, snow, frost, dust, dirt, oil, curing compounds or any other foreign material that could prevent proper adhesion of the membrane.
- E. Patch all holes and voids and smooth out any surface misalignments.
- F. Patch all cracks, protrusions, small voids, offsets, details, irregularities, and small deformities with cementitious patching mortar at least two hours before application.
- G. Ensure joints between dissimilar building materials are sealed with a strip of self-adhesive membrane 6" (150 mm) wide, centered over the joint.
- H. Exterior Sheathing Panels:

1. Install and fasten exterior sheathing panels according to the sheathing manufacturer's instructions.
2. Treat all countersunk and removed fasteners with joint filler or liquid flashing material.
3. Inspect the joint to ensure that all areas to receive joint treatment are clean, dry, smooth, and free from all bond-breaking contaminants.
4. Remove and replace any damaged structural wall components.
5. Joint Treatment with self-adhesive membrane
 - a. Prime either side of the joint extending 3" from the center with adhesive recommended by the manufacturer.
 - b. Install a 4" (25.4 mm) strip of self-adhesive membrane centered over the joint and roll press firmly into place.
 - c. Fill all joints wider than 1/4" (6.4 mm) with detailing membrane prior to application of self-adhesive membrane.
6. Joint Treatment using liquid flashing
 - a. Fill joint with liquid flashing creating a 1" band over the joint area.
 - b. Do not strike flush with the sheathing surface.
 - c. Run the spreader tool over the liquid flashing to remove any inconsistencies.
7. Joint Treatment with fluid applied membrane
 - a. Fill joint area with fluid applied membrane using a spreader tool or putty knife.
 - b. Apply fluid applied membrane extending beyond the joint line 3" onto face of exterior sheathing.
 - c. Fully embed the reinforcing fabric 3" wide into the wet fluid applied membrane centered over the joint.
 - d. Run the spreader tool or putty knife over the embedded reinforcing fabric to remove any air bubbles.

I. Plywood and Oriented Strand Board (OSB):

1. Install and fasten boards according to board manufacturer.
2. Apply membrane adhesive on either side of the joint extending 3" from the center.
3. Install a 4" (25.4 mm) strip of self-adhesive membrane centered over the joint and roll press firmly into place.
4. For joints width more than 1/4" (6.4 mm), fill with detailing membrane prior to application of self-adhesive membrane.

3.03 APPLICATION OF AIR BARRIER SYSTEM

A. TRANSITION MEMBRANE

1. Condition surfaces to be covered in one working day with applicable adhesive.
2. Apply transition membrane with a minimum overlap of 3" onto primed surface at all joints, columns, beams, and dissimilar materials.
3. Roll membrane firmly into place.
4. Ensure membrane is fully adhered and remove all wrinkles and fish mouths.
5. Overlap subsequent courses of membrane a minimum of 2" and ensure joints are fully adhered.
6. Seal top edge of transition membrane with pointing mastic.

B. ROUGH OPENING TRANSITION MEMBRANE

1. Self-Adhesive Transition Membrane.
 - a. Condition the area to be detailed using adhesive recommended by the membrane manufacturer according to the substrate.
 - b. Pre-cut the self-adhesive membrane for each area of the rough opening to ensure ease of handling.
 - c. Apply the first pre-cut strip at the base of the rough opening by removing the release paper and rolling firmly into place, ensuring that there is a minimum of 3" (75 mm) of membrane extending onto the wall and a minimum of 3" (75 mm) of membrane extending into the rough opening.
 - d. Repeat this procedure for the vertical areas of the rough opening and the header portion of the opening.
 - e. Ensure all edge overlaps are a minimum of 2" (50 mm) and end to end overlaps are 4" (100 mm).
 - f. Seal all terminations with mastic recommended by membrane manufacturer.
2. Fluid-Applied Transition Membrane using liquid flashing membrane
 - a. Apply a coat of membrane adhesive on the raw edges of exterior gypsum board.
 - b. Treatment of joints or cracks larger than ¼" (6.35 mm) and less than ½" (12.7mm).
 - i. Prefill any joints or cracks with the liquid flashing material.
 - ii. Apply a generous bead of material over the joint.
 - iii. Press and spread liquid flashing into the joint.
 - iv. Allow material to skin over prior to full application of liquid flashing into the rough opening.
 - c. Treatment of joints or cracks larger than ½" (12.7 mm)
 - i. Install backer rod into the joint to control depth of liquid flashing material.
 - ii. Apply a generous bead of material over and into the joint.
 - iii. Press and spread liquid flashing into the joint.
 - iv. Smooth out using a spreader tool or putty knife
 - v. Allow material to cure prior to full application of liquid flashing into the rough opening.
 - .4 Apply a bead of liquid flashing in the rough opening starting at the top and continuing around the rough opening.
 - .5 Spread the material using a spreader tool or putty knife across the rough opening surface.
 - .6 Test the material thickness using a wet mil gauge to ensure that it has a thickness of 12-15 mils.
 - .7 Apply a generous bead of liquid flashing material to the vertical surface around the rough opening and spread this material 4" – 6" (100 – 152 mm) onto the vertical surface with a spreader tool or putty knife.
 - .8 Test the thickness to ensure the material has a thickness of 12-15 mils.
 - .9 Allow liquid flashing material to dry before installing any windows, doors, wall assembly, and full air barrier material.

B. THROUGH WALL FLASHING

1. Condition surfaces to be covered in one working day with applicable adhesive.
2. Remove release paper prior to application.
3. Apply through wall flashing at based of masonry walls as indicated on drawings.

4. Recess through wall flashing 1/2" (13 mm) from the face of the masonry.
5. Apply a bead of pointing mastic if through wall flashing is not embedded into masonry.

C. AIR BARRIER MEMBRANE

1. Apply air/vapor barrier membrane in accordance with manufacturer's instructions.
2. Thoroughly mechanically mix membrane prior to application.
3. Apply membrane by spray or roller at a minimum coverage rate of 20-25 ft.²/gal. (60 mils wet, 45 mils dry). Two coats (30 mils wet) may be necessary.
4. Frequently inspect surface area with a wet mil gauge to ensure consistent thickness.
5. Work material into any fluted rib forming indentations.
6. Cured thickness of membrane should be 45 mils dry.
7. Avoid use of products which contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with air/vapor barrier system.

3.04 PROTECTION

- .1 Cover air/vapor barrier membrane as soon as possible, since it is not designed for permanent exposure.

END OF SECTION

SECTION 07307

METAL ROOF UNDERLAYMENT

Part 1 – General

1.01 Summary

A. Section Includes:

1. Mechanically fastened roof underlayment system.
2. Provide and install underlayment in compliance with manufacturer's specified installation requirements.

B. Related Sections

1. Section 06100: Rough Carpentry
2. Section 07220: Ventilated Nailbase Insulation Panels
3. Section: 07411: Metal Roof Panels
4. Section 07725: Snow Guards

C. References

1. ICC/ES ESR 1708 - ACC188, Roof Underlayment, and AC 48Roof Underlayment for Use in Severe Climate Areas
2. 2006 International Building Code (IBC)
3. National Roofing Contractors Association
4. Western States Roofing Contractors Association

1.02 Performance Requirements

- A. Provide and install a roof underlayment and roof flashing system that does not permit the passage of water and will withstand 12-month UVresistance to sun light.
- B. Install roof underlayment that has passed the testing requirements setforth in both ICC-ES AC188 and AC48 per third party independent testing.
- C. Provide a roof underlayment that has service temperatures between -50 degrees F and 280 degrees F (-45.55 – 137.77 degrees C).

- D. Provide and install a roof underlayment that has passed the testing requirements set forth per FBC Code Version 2017 per independent testing.
- E. Provide a roof underlayment that has passed testing requirements per ICC/ES AC 152 Adhesive Attachment of Concrete or Clay Roofing Tiles per ASTM 1623 per independent testing from a Miami-Dade accredited lab.
- F. Provide and install a roof underlayment that contains no VOC's.
- G. Provide and install a roof underlayment that is slip-resistant to work over even in wet conditions.
- H. Provide and install roof underlayment that can be installed over spaced wood sheathing, metal fluted deck and counter batten systems.
- I. Provide a roof underlayment that carries a 50-year limited warranty.

1.03 Submittals – must comply with Division 1

- A. Product Data: Provide product data sheets for each type of product indicated in this section, including certified product test results.
- B. Shop Drawings: Provide manufacturers standard installation details, certified product test results as applicable to materials, installation instructions and approved shop drawings for the roof system specified.
- C. Provide samples of roof underlayment and associated fasteners for verification of quality.
- D. Sample Warranty

1.04 Quality Assurance

- A. Manufacturer Qualifications: Manufacturer to have current ICC/ES, FBC and Miami-Dade listed reports, and provide data from independent testing per Slip Resistance; Test Method National Standard of Canada CAN GSB-75.1-M88 or equivalent ASTM test per an approved ICC/ES independent testing company.

Average Coefficient of Friction

Rubber – dry: 0.63
Rubber – wet: 0.51
Leather – dry: 0.48
Leather – wet: 0.50

- B. The formation or presence of mold or fungi in a building is dependent upon a number of factors including, but not limited to, the presence of spores and nutrient sources, moisture, temperatures, climatic conditions, relative humidity, and heating/ventilating systems and their maintenance and operating capabilities. These factors are beyond the control of Kirsch Building Products LLC (Kirsch) and Kirsch shall not be responsible for any claims, repairs, restoration, or damages relating to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in any building or in the air, land, or water serving the building.

1.05 Delivery, Storage and Handling

- A. Packing, Shipping, Handling and Unloading: Deliver materials with identification labels intact. Schedule deliveries to avoid construction delays but minimize jobsite storage.
- B. Storage and protection: Store materials protected from exposure to harmful weather conditions and direct sunlight. As recommended by manufacturer, store materials at a temperature between 40 degrees F and 100 degrees (4.4 – 38 degrees C). If exposed to lower temperatures restore materials to 40-degree F (4.44 C) minimum temperature before application.

1.06 Warranty

- A. Upon original pre-installation of final roof system, specified underlayment will not materially deteriorate from exposure to sunlight for 12 months.
- B. Upon installation of final roof system, specified underlayment will not allow water to penetrate the roofing substrate due to decomposition beneath the primary roof covering. And provide a 50 year limited warranty per Kirsch Building Products – Sharkskin Ultra® Limited Warranty.

Part 2 – Products

2.01 Materials

- A. Acceptable Product: Sharkskin Ultra™ as manufactured by: Kirsch Building Products LLC, 1464 Madera Road, Suite 387, Simi Valley, CA93065
Tel: 877-742-7507 Fax: 805-526-1116
www.sharkskinroof.com
- B. Substitutions:
 - a. Substitutions must fully comply with specified requirements
- C. Physical Properties of Roof Underlayment membrane:
High tensile strength polypropylene woven core fabric, coated on both sides with UV resistant polypropylene coating containing antioxidant additive, with slip-resistant polypropylene non-woven fiber surface embedded in top coating layer.

2.02 Materials

- A. Polypropylene based polymer blend

Part 3 Execution

3.01 Examination

- A. Verify that a roof slope of 3:12 or greater exists for proper watershedding.
- B. Determine, with the presence of the installer, that conditions are satisfactory. (i.e. remove sharp objects and debris on roof deck, etc.)
- C. Conflicts resulting from inspection should be resolved prior to underlayment installation.

3.02 Installation

Roof underlayment shall be installed per printed installation instructions from the manufacturer on every roll or per local building code. Overlaps run with the flow of water in a shingle-like manner slip-resistant printed side up. Install using 3/8" standard galvanized, copper and or stainless-steel roofing nails, 1" round plastic cap nails, or as per local code. Fastener spacing may vary based on local building code.

- A. Nail upper flange of underlayment using corrosion resistant 3/8" roofing nails, plastic caps or per local code, start 2" down from top edge of underlayment and run 12" to 16" O.C. (depending on roof pitch, weather conditions and exposure time).
- B. Nail lower flange/bottom edge of underlayment 2" from the fascia board at 12" to 24" O.C. (depending on roof pitch, weather conditions and exposure time).
- C. Underlayment must turn down rake edge a minimum of 1" and be nailed every 12" to 24" O.C. (depending on weather conditions and exposure time).
- D. Nail 24" O.C. in field or as needed based upon weather and safety conditions.
- E. Overlap underlayment from 2"-4" at all horizontal laps with fasteners spacing of 12" to 24" O.C.
- F. Overlap underlayment by a minimum of 6"-12" at all vertical laps with fasteners at 6"-12" O.C, depending on pitch

3.03 Cleaning and Protection

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- B. Protection: Protect installed product's finished surfaces from damage during construction.

SECTION 07411 - METAL ROOF PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Snap joint-seamed, standing seam metal roof panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

- A. Division 06 Section "Sheathing" for sheathing substrate for metal roof panels.
- B. Division 07 Section Roof Insulation for thermal insulation installed under metal panels.
- C. Division 07 Section "Air Barriers" for air barriers within roof assembly and adjacent to roof assembly.
- D. Division 07 Section "Sheet Metal Flashing and Trim" for formed sheet metal copings, flashings, reglets, and roof drainage items in addition to items specified in this Section.
- E. Division 07 Section "Joint Sealants" for field-applied joint sealants.

1.3 REFERENCES

- A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:
 - 1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
 - 2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.
- B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM): www.astm.org:
 - 1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - 3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 4. ASTM A 980 - Standard Specification for Steel, Sheet, Carbon, Ultra High Strength Cold Rolled.
 - 5. ASTM C 920 - Specification for Elastomeric Joint Sealants.
 - 6. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 - 7. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

8. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
9. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.

D. International Accreditation Service (IAS):

1. IAS AC 472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems, Part B.

E. Underwriters Laboratories, Inc. (UL): www.ul.com:

1. UL 580 - Tests for Uplift Resistance of Roof Assemblies

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, manufacturer's technical representative, inspection agency and related trade contractors.

1. Coordinate building framing in relation to metal panel system.
2. Coordinate openings and penetrations of metal panel system.
3. Coordinate work of Division 07 Sections "Roof Specialties" and "Roof Accessories" and openings and penetrations and manufacturer's accessories with installation of metal panels.

1.5 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal roof panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
 - a. Product data, including certified independent test data indicating compliance with requirements.
 - b. Samples of each component.
 - c. Sample submittal from similar project.
 - d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
 - e. Sample warranty.
 - f. IAS AC 472 certificate.
2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
3. Approved manufacturers must meet separate requirements of Submittals Article.

- C. Installer Qualifications: Experienced Installer with minimum of five years experience with successfully completed projects of a similar nature and scope.
 - 1. Installer's Field Supervisor: Experienced mechanic supervising work on site whenever work is underway.

1.6 ACTION SUBMITTALS

- A. Product Data: Manufacturer's data sheets for specified products.
- B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot showing edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, roof accessories, lightning arresting equipment, and special details. Make distinctions between factory and field assembled work.
 - 1. Indicate points of supporting structure that must coordinate with metal panel system installation.
 - 2. Include data indicating compliance with performance requirements.
 - 3. Include structural data indicating compliance with requirements of authorities having jurisdiction.
- C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.
- D. Samples for Verification: Provide 12-inch long section of each metal panel profile. Provide color chip verifying color selection.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Indicating compliance of products with requirements, witnessed by a professional engineer.
- B. Qualification Information: For Installer firm and Installer's field supervisor.
- C. IAS Accreditation Certificate: Indicating that manufacturer is accredited under provisions of IAS AC 472.
- D. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.

1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.10 COORDINATION

- A. Coordinate sizes, profiles, and locations of roof curbs and other roof-mounted equipment and roof penetrations, based upon sizes of actual selected equipment.

1.11 WARRANTY

- A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail in materials and workmanship within one year from date of Substantial Completion.
- B. Special Weathertightness Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail to remain weathertight, including leaks, without monetary limitation within 10 years from date of Substantial Completion.
- C. Special Panel Finish Warranty: On Manufacturer's standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion, including:
 1. Fluoropolymer Two- Coat System:
 - a. Color fading in excess of 5 Hunter units per ASTM D 2244.
 - b. Chalking in excess of No. 8 rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer: MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.; Houston TX. Tel: (877) 713-6224; Email: info@mbci.com; Web: www.mbci.com.
 1. Provide basis of design product or comparable product approved by Architect prior to bid.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide metal roof panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.
- B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:

1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
 - a. Wind Uplift Testing: Certify capacity of metal panels by actual testing of proposed assembly per ASTM E 1592.
 2. Snow Loads: 20 lbf/sq. ft.
 3. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of 1/240 of the span with no evidence of failure.
 4. Seismic Performance: Comply with ASCE 7, Section 9, "Earthquake Loads."
- C. Wind Uplift Resistance: Comply with UL 580 for wind-uplift class UL-90.
- D. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.
- E. Self-Adhering, High-Temperature Underlayment: Cold-applied sheet underlayment minimum 30 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer for substrate.

2.3 METAL ROOF PANELS

- A. Mechanically-seamed, Concealed Fastener, Metal Roof Panels: Structural metal roof panel consisting of formed metal sheet with vertical ribs at panel edges, installed by lapping and mechanically interlocking edges of adjacent panels, and attaching panels to supports using concealed clips and fasteners in a weathertight installation.

1. Basis of Design: MBCI, LokSeam, www.mbc.com/lokseam.html.

Second paragraph below describes Galvalume Plus with clear acrylic coating for use as exposed metallic finish.

2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ50, prepainted by the coil-coating process per ASTM A 755/A 755M.
 - a. Nominal Coated Thickness: 26 gage.
 - b. Panel Surface: Smooth with striations in pan.
 - c. Exterior Finish: Fluoropolymer two-coat system
 - d. Color: As selected by Architect from manufacturer's standard colors
3. Panel Width: 18 inches
4. Panel Seam Height: 1.75 inch
5. Joint Type: Snap joint-seamed.

2.4 METAL ROOF PANEL ACCESSORIES

- A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in manufacturer's standard profiles.

Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.

- B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.
- C. Panel Clips: ASTM C 645, with ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.
- D. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by roof panel manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.
- E. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
 - 1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
 - 2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
 - 3. Concealed Joint Sealant: Non-curing butyl, AAMA 809.2.
- F. Snow Guards: Approved by metal roof panel manufacturer. Refer to Section 07725 "Snow Guards" for requirements for snow guards attached to metal roof panels.

2.5 FABRICATION

- A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.
- B. Fabricate metal panel joints configured to accept factory-applied sealant providing weathertight seal and preventing metal-to-metal contact and minimizing noise resulting from thermal movement.
- C. Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.6 FINISHES

- A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- A. Fluoropolymer Two-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621. Interior Finish: 0.5 mil total dry film thickness consisting of primer coat and wash coat of manufacturer's standard light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.
 - 1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
 - 2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:
 - a. 1/4 inch in 20 foot in any direction.
 - b. 3/8 inch over any single roof plane.
- B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with insulated metal roof panel system installation.

3.2 PREPARATION

- A. Self-Adhering Sheet Underlayment: Apply in accordance with underlayment manufacturer's written instructions; apply primer if required. Apply at locations indicated below. Roll laps with roller.
 - 1. Apply over the entire roof surface.
- B. Flashings: Provide flashings as required to complete metal roof panel system. Install in accordance with approved shop drawings.

3.3 METAL PANEL INSTALLATION

- A. Snap-Joint-Seamed, Standing Seam Metal Roof Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal roof panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.
- B. Attach panels to supports using clips, screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.
 - 1. Fasten metal panels to supports with concealed clips at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
 - 2. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 3. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.
 - 4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

- A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
 - 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
 - 3. Provide concealed fasteners except where noted on approved shop drawings.
 - 4. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
- B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.
 - 1. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.5 CLEANING AND PROTECTION

- A. Remove temporary protective films immediately in accordance with metal roof panel manufacturer's instructions. Clean finished surfaces as recommended by metal roof panel manufacturer.
- B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes flashings and counter-flashing, gutters and downspouts, and fabricated sheet metal items.
 - 1. Provide cast iron downspout boots at each downspout
 - a. JR Hoe Inc. O-Series ASTM A-48 Class 30 Gray Iron
 - b. Top Bell 3 inch by 4 inch, Outlet 4 ¼ inch, Length 24 inches
 - c. Provide mounting hardware and rubber coupling

1.2 SYSTEM DESCRIPTION

- A. Sheet Metal System: Conform to criteria of SMACNA "Architectural Sheet Metal Manual."
 - 1. Gutters: 24 gauge steel 5-inch K-Style
 - 2. Downspouts: 24-gauge steel smooth box 3 inch by 4 inch
 - 3. Downspout Brackets: 24 gauge steel-U-shaped profile as required
 - 4. Flashings: 24-gauge steel-profiles as required

1.3 SUBMITTALS

- A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, termination, and installation details.
- B. Samples: Submit two samples, 4x4 inch in size of metal illustrating material, color, and finish.

1.4 WARRANTY

- A. Furnish five year manufacturer warranty for finishes.

PART 2 PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM

- A. Fabricators:
 - 1. Coordinated by roofing installer.

- B. Product Description: Flashing and sheet metal; prefinished, including gutters, downspouts and accessories.

2.2 COMPONENTS

- A. Pre-Finished Galvanized Steel Sheet: ASTM A755/A755M; structural steel sheet, G90 (Z275) zinc coating; [0.024] inch (0.6 mm) thick core steel, shop pre-coated with finish to match roofing

2.3 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal.
- B. Gutter and Downspout Anchorage Devices: Type recommended by fabricator.
- C. Gutter Supports: Brackets.
- D. Downspout Supports: Brackets.
- E. Sealant: Exterior metal lap joint butyl or polyisobutylene sealant as specified in Section 07900.
- F. Plastic Cement: ASTM D4586, Type I.
- G. Reglets: Surface mounted

2.4 FABRICATION

- A. Gutter Accessories: Profiled to suit gutters and downspouts.
 - 1. Manufacturer: Provided by roof installer.
- B. Downspout Boots: Cast iron – see Section 1.1.
- C. Form components to shape indicated on Drawings, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.
- D. Fabricate cleats and starter strips of same material as sheet, to interlock with sheet.
- E. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.
- F. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

2.5 SHOP FINISHING

- A. Same finish as specified for steel roofing in Section 07411

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.

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 (0.4 mm).

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 flashings of dissimilar materials.
- E. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- F. Install sheet metal pans surrounding roof penetrations. Fill pans watertight with plastic cement.
- G. Slope gutters 1/4 inch per foot (20 mm/m) minimum.
- H. Connect downspouts to downspout boots system. Seal connection watertight.
- I. Seal joints watertight.
- J. Install snow guards as indicated in Section 07725.

END OF SECTION

SECTION 07725

SNOW GUARDS

PART 1 – GENERAL

1.1 SUMMARY

A. WORK INCLUDES

1. ASG4000G snow guard that does not penetrate the roof using clamp to seam.
2. Coordinate with the installation of the roof to assure proper placement of the snow guards.
3. Provide appropriate snow guard and fasteners for the roof system.

B. RELATED SECTIONS

1. Section 07411: Metal Roof Panels.
2. Section 07725: Snow Guards.
3. Division 7: Thermal and Moisture Protection.

1.2 SYSTEM DESCRIPTION

A. COMPONENTS:

Bracket: Snow guard bracket assembly that consists of clamp, flag and (3) set screws.

1. ASG4000G

B. ACCESSORIES:

1. Tubing (PP75)
2. Couplings
 - a. External (PP84)
 - b. Internal (PP86)
3. End Caps (PP56)
4. End Collars (PP65)
5. Ice Flags (PP95)

C. DESIGN REQUIREMENTS:

1. Spacing to be recommended by manufacturer or building engineer.
2. Install a minimum of (3) set screws per snow guard.
3. It is important to design new structures or assess existing structures to make sure they can withstand retained snow loads.

1.3 SUBMITTAL

- A. Submit manufacturer's specifications, standard detail drawings, installation instructions, and recommended layout.

1.4 QUALITY ASSURANCE

- A. Installer to be experienced in the installation of specified roofing material and snowguards for not less than 5 years in the area of the project.

1.5 DELIVERY / STORAGE / HANDLING

- A. Inspect material upon delivery and order replacements for any missing or defective items. Keep material dry, covered and off the ground until installed.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Alpine SnowGuards. A division of Vermont Slate & Copper Services Inc. 289 Harrel St. Morrisville, VT 05661, (888) 766-4273 www.alpinesnowguards.com.

2.2 MATERIALS

- A. ASG4000G
 - 1. 6000 Series Aluminum
 - 2. 260 HH Brass (Flags) + 360 Brass (Block)

2.3 ACCESSORY MATERIALS

- A. Tubing (PP75):
 - 1. 6000 Series Aluminum
- B. Coupling:
 - 1. Internal (PP86)
 - a. 6000 Series Aluminum
- C. End Caps (PP56):
 - 1. 304 Stainless Steel
- D. End Collars (PP65):
 - 1. 6000 Series Aluminum
- E. Ice Flags (PP95) 3" wide x length as needed:
 - 1. 6000 Series Aluminum

2.4 FINISH:

- A. Powder Coated in choice of all available TIGER Drylac ral colors

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Substrate
 - 1. Inspect structure on which snow guard system is to be installed and verify that it will withstand any additional loading that it may incur. Notify general contractor of any deficiencies before installing Alpine SnowGuards.
 - 2. Verify that roofing material has been installed correctly prior to installing snow guards.

3.2 INSTALLATION

- A. Comply with architectural drawings and snow guard manufacturer's recommendations for location of system. Comply with manufacturer's written installation instructions for installation and layout.

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes sealants and joint backing.

1.2 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

PART 2 PRODUCTS

2.1 JOINT SEALERS

- A. Acrylic Sealant – Tremco Mono by Tremco Sealants and Coatings. Non-standing, movement capability + 12 ½%, supply in choice of colors, consult with architect for selections.
- B. Dow Corning Silicone 790. Movement capability – 100% or +50% of original joint width, supply in choice of colors, consult with architect for selections.
- C. Novaflex Silicone – by Novagard, supply in choice of colors. Consult with architect for selections.

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 D1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width; recommended by sealant manufacturer to suit application.
- 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 sealant manufacturer's instructions.

3.3 INSTALLATION

- A. Perform installation in accordance with sealant manufacturer's instructions.
- B. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
- C. Install bond breaker where joint backing is not used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Tool joints concave.

3.4 SCHEDULE

- A. Window perimeter – either type of silicone sealant.
- B. Door frame/walls – either type of silicone sealant.
- C. Under thresholds – either type of silicone sealant.
- D. Masonry/Masonry – acrylic sealant.
- E. Metal Flashings – acrylic sealant.

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, and 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 Steel Frames and Builder's Hardware.
- B. 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.
- C. 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. Republic Builders Products
 - 2. Substitutions: Permitted.
- B. Product Description: Standard shop fabricated steel doors, and frames; non-rated types; flush design.

2.2 COMPONENTS

- A. Steel Doors (Insulated): ANSI A250.8, SDI 108, 1-3/4 inch thick.
 - 1. SDI 100 Grade 3, 16 ga. face, Extra heavy Duty, Model DE-4 Insulated.
- B. Exterior Frames:
 - 1. ME Series/Mitered, nominal 14 gage/0.067 inch thick material, base metal thickness.
- C. Insulated Door Core: polyurethane.
- D. Thermal Insulated Door: Total insulation R-Value of 10.11, measured in accordance with ASTM C1363.

2.3 ACCESSORIES

- A. Silencers: Resilient rubber fitted into drilled hole.
- B. Bituminous Coating: Fibered asphalt emulsion.
- C. Primer: ANSI A250.10 rust inhibitive type.
- D. Weatherstripping: Specified in Section 08710.

2.4 FABRICATION

- A. Fabricate doors and frames with hardware reinforcement welded in place.
- B. Configure exterior frames and doors with profile to receive weatherstripping.
- C. Prepare interior frames for silencers.

2.5 SHOP FINISHING

- A. Steel Sheet: Galvanized to ASTM A653/A653M A40.
- 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 doors and frames in accordance with ANSI A250.8.

- B. Coordinate installation of doors and frames with installation of hardware specified in Section 08710.
- C. Adjust door for smooth and balanced door movement.
- D. Tolerances:
 - 1. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

END OF SECTION

SECTION 08710
DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes hardware for wood and hollow steel doors, thresholds, weatherstripping, and seals.

1.2 SYSTEM DESCRIPTION

- A. Fire Rated Openings: Provide door hardware listed by UL or Warnock Hersey, or other testing laboratory approved by applicable authorities.
 - 1. Hardware: Tested in accordance with NFPA 252.

1.3 SUBMITTALS

- A. Shop Drawings: Indicate locations and mounting heights of each type of hardware, electrical characteristics and connection requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the following requirements:
 - 1. ANSI A156 series.
 - 2. NFPA 80 - Fire Doors and Windows.
 - 3. NFPA 101 - Life Safety Code.
- B. Furnish hardware marked and listed in BHMA Directory of Certified Products.
- C. Coordination: Coordinate work of this section with other directly affected sections requiring integral reinforcement for door hardware.
- D. Supplier: Company specializing in supplying commercial door hardware with minimum three years documented experience, approved by primary hardware manufacturers.

1.6 WARRANTY

- A. Furnish five-year manufacturer warranty for door hardware.

1.7 MAINTENANCE SERVICE

- A. Provide service and maintenance services of door closers for one year from Date of Substantial Completion.
- B. Provide special wrenches and tools applicable to each different or special hardware component.

PART 2 PRODUCTS

2.1 DOOR HARDWARE

- A. Hinges: Continuous Geared Aluminum, Pemko Model DFS83HD
- B. Lockset: Schlage ND Series, Grade 1, Lever lockset, Small Format Interchangeable Core, 7-pin Falcon/Best keyway, Athens Design, 626 finish, Cores provided and installed by owner
- C. Door Closer: LCN Model 4010, powder coated, metal cover
- D. Door Stops: Rockwood No. 409 concave wall stop, finish to be choice of all available.
- E. Thresholds: National Guard Products, Inc. Model 425, ADA Compliant Saddle Threshold.
- F. Weatherstripping: National Guard Products, Inc. Model 152DkB, Perimeter Seals.
- G. Door Sweeps: National Guard Products, Inc. Model 211 DPK, Door Bottom Sweep.
- H. Deadbolts: Schlage, B Series, Grade 1, ADA compliant thumb-turn interior, Model L583-363, 626 finish
- I. Strikes: ANSI Strike-Standard

2.2 COMPONENTS

- A. General Hardware Requirements: Where not specifically indicated, comply with applicable ANSI A156 standard for type of hardware required. Furnish each type of hardware with accessories as required for applications indicated and for complete, finished, operational doors.
 - 1. Templates: Furnish templates or physical hardware items to door and frame manufacturers sufficiently in advance to avoid delay in Work.
 - 2. Reinforcing Units: Furnished by door and frame manufacturers; coordinated by hardware supplier or hardware manufacturer.
 - 3. Fasteners: Furnish as recommended by hardware manufacturer and as required to secure hardware.
 - a. Finish: Match hardware item being fastened.

2.3 ACCESSORIES

- A. Lock Trim: Furnish levers with escutcheon plate.
- B. Through Bolts: Through bolts and grommet nuts are not permitted on door faces in occupied areas unless no alternative is possible.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify doors and frames are ready to receive work and dimensions are as instructed by manufacturer.

3.2 INSTALLATION

- A. Coordinate mounting heights with door and frame manufacturers. Use templates provided by hardware item manufacturer.
- B. Mounting Heights from Finished Floor to Center Line of Hardware Item: Comply with manufacturer recommendations and applicable codes.

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes gypsum board with joint treatment.

1.2 QUALITY ASSURANCE

- A. Perform Work in accordance with GA-201 - Gypsum Board for Walls and Ceilings. GA-214 - Recommended Specification: Levels of Gypsum Board Finish and GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board. Finish to be in accordance with level five.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Manufacturers:
 - 1. Celotex Building Products.
 - 2. G-P Gypsum Corp.
 - 3. National Gypsum Co.
 - 4. United States Gypsum Co.
 - 5. Substitutions: Permitted.

2.2 COMPONENTS

- A. Gypsum Board Types: maximum available length in place; ends square cut, tapered edges; unless noted otherwise as follows:
 - 1. Moisture Resistant Type: 5/8" thick ASTM C36
 - 2. Exterior Type: 5/8" thick ASTM C1396

2.3 ACCESSORIES

- A. Corner Beads: Metal.
- B. Edge Trim: GA-216, Type L bead (tear away bead).
- C. Joint Materials: GA-201 and GA-216, reinforcing tape, joint compound, adhesive, and water (interior applications).
- D. Fasteners: Type S12 hardened screws GA-216.
- E. Adhesive: GA-216.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions are ready to receive work.

3.2 INSTALLATION

- A. Gypsum Board (Interior Applications):
 1. Install gypsum board in accordance with GA-216 and GA-600.
 2. Fasten gypsum board to furring or framing with screws.
 3. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
 4. Seal cut edges and holes in moisture resistant gypsum board with sealant.
 5. Install moisture resistant gypsum board on all interior ceilings
- B. Gypsum Board (Exterior Applications)
 1. Install gypsum board in accordance with GA-253
 2. Fasten gypsum board to furring or framing with screws.
 3. Seal cut edges and holes in exterior gypsum soffit board with sealant.
 4. Install exterior gypsum board on exterior porch ceiling
- C. 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.
- D. Tolerances: Maximum Variation from Flat Surface: 1/8 inch in 10 feet in any direction.

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. Samples: Submit two paper chip samples, 2 x 2 inch in size illustrating range of colors available for each surface finishing product scheduled.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Store and apply materials in environmental conditions required by manufacturer's instructions.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

- A. Manufacturers:
 - 1. Sherwin Williams.
 - 2. Substitutions permitted

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.
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve finishes specified.

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. Uncoated Steel and Iron Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.
- 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 and exterior 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. Paint shop primed equipment.
 - 2. Remove unfinished louvers, grilles, covers, and access panels and paint separately. Paint dampers exposed behind louvers, grilles, convactor and baseboard cabinets to match face panels.
 - 3. Prime and paint insulated and exposed pipes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
 - 4. Paint interior surfaces of air ducts and convactor and baseboard heating cabinets visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 - 5. Paint exposed conduit and electrical equipment occurring in finished areas.
 - 6. Paint both sides and edges of plywood backboards.

7. 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.
- G. Coat thicknesses to be as recommended by paint manufacturer.

3.4 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

- A. Metal Fabrications:
 1. Exposed surfaces of lintels
 2. Steel door jambs

3.5 SCHEDULE - EXTERIOR SURFACES

- A. Steel - Shop Primed-Semi-Gloss Finish:
 1. One coat of Sherwin Williams Multipurpose Primer B51 W450.
 2. Two coats of Sherwin Williams DTM B66 W1151 Semi-Gloss
- B. Steel - Galvanized:
 1. One coat of Sherwin Williams Multipurpose Primer B51 W450.
 2. Two coats of Sherwin Williams DTM B66 W1151 Semi-Gloss

3.6 SCHEDULE - INTERIOR SURFACES

- A. Concrete Masonry Units-Gloss Finish:
 1. One coat of Sherwin Williams Loxon Block Surfacer A24W200.
 2. Two coats of Sherwin Williams Loxon XP LX14 W51
- B. Gypsum Board Ceilings:
 1. One coat of Sherwin Williams Multipurpose Primer B51 W450.
 2. Two coats Sherwin Williams Duration Exterior Satin K33 W251.
- C. Wood – Painted Semi_gloss Finish: (Trim)
 1. One coat of Sherwin Williams Multipurpose Primer B51 W450.
 2. Two coats Sherwin Williams Duration Exterior Satin K33 W251.
- D. Steel - Shop Primed:
 1. One coat of Sherwin Williams Multipurpose Primer B51 W450.
 2. Two coats of Sherwin Williams DTM B66 W1151 Semi-Gloss

END OF SECTION

SECTION 10005

MISCELLANEOUS SPECIALTIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes fire extinguishers, fire extinguisher cabinets, signage, changing station and ceiling access doors.

1.2 SUBMITTALS

- A. Product Data: Submit data on Product, accessories, and finishes.

1.3 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Data: Submit instructions for recharging fire extinguishers.

1.4 QUALITY ASSURANCE

- A. Fire Extinguishers: Conform to NFPA 10.

PART 2 PRODUCTS

2.1 MISCELLANEOUS SPECIALTIES

- A. Signage
 1. Gemini
 2. See sheet A1 for restroom sign specification
 3. Substitutions: Permitted
- B. Ceiling Access Door
 1. Best Access Doors BA-AHD 22x30 inch hinged access panel with flange.

2.2 COMPONENTS

- A. Exterior Restroom Signage:
 1. Gemini Cast Aluminum Standard ADA Plaque Signs
 2. Panel signs with ADA compliant tactile symbols
 3. Install signage at entrance to three public restrooms in accordance with ADA size and mounting height standards.
 4. Provide in choice of available colors.

PART 3

3.1 EXAMINATION

- A. Verify surfaces and internal wall opening for fire extinguisher cabinet is ready to receive work and opening dimensions are as instructed by manufacturer. Confirm location with building official prior to installation of concrete block walls.
- B. Locate ceiling access door per plans between two trusses with cross blocking to create proper sized rough opening.

3.2 INSTALLATION

- A. Install all items plumb and level in wall openings or surface mounted on walls as specified by manufacturer's instructions, Mount all items in compliance with applicable codes and ADA regulations. Verify locations of fire extinguishers with local fire and building department officials prior to installation. Provide items located as indicated on plan.
- B. Secure units level and plumb. Verify proper blocking to support units prior to proceeding with installation.

END OF SECTION

SECTION 10155

TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes solid plastic toilet compartments and urinal screens.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate partition plan and elevation views, dimensions, details of wall and floor supports, and door swings.
- B. Samples: Submit two samples 6 x 6 inches in size illustrating panel finish, color, and sheen.

PART 2 PRODUCTS

2.1 TOILET COMPARTMENTS

- A. Manufacturers:
 - 1. Comtec Industries
 - 2. Substitutions: Permitted.

2.2 COMPONENTS

- A. Door, Panel, and Pilaster Construction: Solid HDPE Resin selected from Comtec's Standard Series S200 Colors.
- B. Doors and Panels: 1 inch thick.
- C. Pilasters: 1 inch thick.

2.3 ACCESSORIES

- A. Head Rails: Made of heavy-duty extruded aluminum 6463-T5 Alloy, Anti-grip profile, tamper resistant screws, stainless steel headrail bracket.
- B. Pilaster Shoes: 3" High and made of one-piece molded HDPE. Choice of Standard Colors.
- C. Internal reinforcement: Provide for attached hardware and fittings.

- D. Attachments and Bolts: Plastic wall brackets made of heavy-duty extruded PVC Resin, mounted using tamper-resistant stainless steel screws and bolts. Choice of standard colors.
- E. Hardware:
 - 1. Hinges: Integral hinges with no exposed metal parts.
 - 2. Latch and Keeper: Sliding type latch, door strike and keeper with rubber bumper; for each door. ADA latch for wheelchair compatible toilet compartments.
 - 3. Pull: Provide pull for out-swinging doors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that opening dimensions and plumbing fixture and rough-in locations are as indicated on shop drawings.
- B. Verify correct location of built-in framing, anchorage, bracing, and blocking.

3.2 INSTALLATION

- A. Install partition components secure, plumb, and level.
- B. Attached panel brackets securely using anchor devices.
- C. Adjust and align door hardware so that free movement is attained.

END OF SECTION

SECTION 10800

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes toilet and 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. Bobrick Washroom Accessories.
 - 2. Substitutions: Permitted.

2.2 COMPONENTS

- A. Products listed in Schedule are made by Bobrick Washroom Accessories.
- B. Furnish two keys for each accessory to Owner.

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. Attach accessories to concrete masonry with expansion bolts compatible with accessories or to solid blocking in framed partitions.

3.3 INSTALLATION

- A. Install plumb and level, securely and rigidly anchored to substrate.

B. Mounting Heights and Locations: As required by accessibility regulations.

3.4 SCHEDULES

- A. Item No. 1 - 36 inch Grab Bar: Bobrick Model No. B-6806-36, 1 ½” diameter, satin finish with snap flange concealed mounting. Mount as indicated on drawings.
- B. Item No. 2 - 42 inch Grab Bar: Bobrick Model No. B-6806-42, 1 ½” diameter, satin finish with snap flange concealed mounting. Mount as indicated on drawings.
- C. Item No. 3 – 18 inch Grab Bar: Bobrick Model No. B-6806-18, 1 ½” diameter, satin finish with snap flange concealed mounting. Mount as indicated on drawings.
- D. Item No. 3 – Toilet Tissue Dispenser: Bobrick Model No. B-4288, two roll surface mounted dispenser, satin finish with stainless steel hoods. Mount as indicated on drawings.
- E. Item No. 4 – Mirror: Bobrick B165 channel frame mirror, 18x36 inch size, including back mirror brackets and back plate wall hangers.

END OF SECTION

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes grounding electrodes and conductors; bonding methods and materials; conduit and equipment supports, anchors and fasteners; and nameplates and wire markers.

1.2 SYSTEM DESCRIPTION

- A. Grounding system: Provide grounding system per latest edition of NEC.
- B. Select materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and raceway, including weight of wire and cable in raceway. Anchor and fasten electrical products to building elements and finishes as follows:
 - 1. Concrete Structural Elements: Expansion anchors and preset inserts.
 - 2. Steel Structural Elements: Beam clamps, and spring steel clips.
 - 3. Concrete Surfaces: Self-drilling anchors and expansion anchors.
 - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Toggle bolts and hollow wall fasteners.
 - 5. Solid Masonry Walls: Expansion anchors and preset inserts.
- C. Identify Electrical components as follows:
 - 1. Nameplate for each electrical distribution and control equipment enclosure.
 - 2. Wire marker for each conductor at panelboard gutters, pull boxes, and outlet and junction boxes.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog data for grounding electrodes and connections; for fastening components; and nameplates, labels, and markers.

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Product Description: Embossed adhesive tape, with letters on contrasting background.
- B. Letter Size: 1/8-inch letters for identifying individual equipment and loads .

2.2 WIRE MARKERS

- A. Product Description: split sleeve or tubing type wire markers with circuit or control wire number permanently stamped or printed.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install rod electrodes at locations indicated.
- B. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- C. Fabricate supports from structural steel or formed steel members.
- D. Install nameplate parallel to equipment lines. Secure nameplate to equipment front using screws or rivets.

END OF SECTION

SECTION 16100

WIRING METHODS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes building wire and cable, conduit and tubing, surface raceway, boxes, wiring devices, wiring connectors, and connections.

1.2 SYSTEM DESCRIPTION

- A. Wiring Products:
1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 2. Stranded conductors for control circuits.
 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 4. Conductor not smaller than 16 AWG for control circuits.
 5. 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- B. Wiring Methods:
1. Concealed Dry Interior Locations: MC Cable.
 2. Exposed Wet or Dry Interior Locations: Building wire, Type THHN/THWN insulation, in raceway.
 3. Above Accessible Ceilings: MC Cable.
 4. Wet or Damp Interior Locations: MC Cable where permitted by 330.10 NEC.
 5. Exterior Locations: Building wire, Type THHN/THWN insulation, in raceway.
 6. Underground Locations: Building wire, Type THHN/THWN insulation, in raceway.
- C. Conductor sizes are based on copper unless indicated as aluminum or "AL". When aluminum conductor is substituted for copper conductor, size to match circuit requirements for conductor ampacity and voltage drop.
- D. Raceway and boxes are located as indicated on Drawings, and at other locations where required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.
- E. Raceway Products:
1. Underground More than 5 feet outside Foundation Wall: Use thick-wall nonmetallic conduit.
 2. Underground Within 5 feet outside Foundation Wall: Use thick-wall nonmetallic conduit.
 3. In or Under Slab on Grade: Use rigid steel conduit. Use cast metal boxes.
 4. Outdoor Locations, Above Grade: Use rigid steel. Use cast metal outlet, pull, and junction boxes.
 5. In Slab Above Grade: Use rigid steel conduit. Use cast boxes.
 6. Wet and Damp Locations: Use MC Cable. Use cast metal or nonmetallic outlet, junction, and pull boxes. Use flush mounting outlet box in finished areas.
 7. Concealed Dry Locations: Use MC cable. Use sheet-metal boxes. Use flush

- 8. mounting outlet box in finished areas. Use hinged enclosure for large pull boxes. Exposed Dry Locations: Use rigid steel or electrical metallic tubing. Use sheet-metal boxes. Use flush mounting outlet box in finished areas. Use hinged enclosure for large pull boxes.

- F. Minimum Raceway Size: ½ inch unless otherwise specified.

1.3 WALL SWITCHES

- A. Specification grade- White

- B. Provide dimmer switches compatible with specified light fixtures

1.4 RECEPTACLES

- A. Specification Grade- White

1.5 WALL PLATES

- A. Jumbo cover plate-smooth stainless steel.

- B. Weatherproof Cover Plate: Stainless steel plate with threaded and gasketed device cover.

PART 2 EXECUTION

2.1 INSTALLATION

- A. Install raceway, boxes, wiring devices, wire, and cable in accordance with NECA "Standard of Installation."

- B. Route raceway and cable to meet Project conditions.

- C. Set wall mounted boxes at elevations to accommodate mounting heights indicated.

- D. Adjust box location up to 10 feet prior to rough-in when required to accommodate intended purpose.

- E. Do not install flush mounting box back-to-back in walls; install boxes with minimum 24 inches separation.

- F. Install conduit and boxes concealed within walls.

END OF SECTION

SECTION 16500

LIGHTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes interior luminaires, lamps, ballasts, and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit dimensions, ratings, and performance data.

PART 2 PRODUCTS

2.1 LUMINAIRES

- A. Product Description: Complete luminaire assemblies, with features, options, and accessories as scheduled.

2.2 EMERGENCY LIGHTING UNITS – See Legend on Electrical Drawings

2.3 EXIT SIGNS – See Legend on Electrical Drawings

2.4 INTERIOR LIGHT FIXTURES – See Legend on Electrical Drawings

PART 3 EXECUTION

3.1 INSTALLATION

- A. Locate recessed ceiling luminaires as indicated on electrical plan. Confirm exact spacing of fixtures prior to framing of ceiling. Coordinate with framer to accommodate layout.
- B. Install surface mounted ceiling luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- C. Provide lamps for all luminaires.

3.2 ADJUSTING

- A. Aim and adjust luminaires as directed.
- B. Relamp luminaires, lighting units, and exit signs that have failed lamps at Substantial Completion.

END OF SECTION