HAGERSTOWN REGIONAL AIRPORT
- TERMINAL BUILDING ROOF REPAIRS

BFM PROJECT NO. 22078

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DIVISION 01

GENERAL REQUIREMENTS

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contract Description.

B. Contractor use of site and premises.

C. Owner occupancy.

D. Work by Contractor.

E. Regulatory requirements.

F. Disposal of materials.

G. Unit prices.

H. Alternates.

I. Warranty.

J. Manufacturer's inspection.

1.02 CONTRACT DESCRIPTION

A. Contract Type: Stipulated Sum Price and Unit Prices.
   1. INTENTION OF PLANS AND SPECIFICATIONS: The intent of the Drawings and Specifications is to describe the Work that the Contractor undertakes, in full compliance with the Contract, and it is understood that the Contractor will furnish all materials, machinery, equipment, tools, supplies, transportation, labor, permits and all other incidentals necessary to the satisfactory execution and completion of the work. The plans and specifications are complementary, and what is called for by either is as binding as if called for by both.
   2. Attendance at the Pre-Bid Meeting is MANDATORY.

B. Plans and Specifications:
   1. Contractor must notify architect of any omissions, contradictions, or conflicts. Architect will provide necessary corrections or additions to plans and specifications by addendum. If Contractor does not so notify Architect of any such condition, it will be assumed that the contractor has included the necessary items in his proposal to complete this specification.
   2. It is the intent that this be a completed project as far as the contract documents set forth. It is not the intent that different phases of work on this project be delegated to various trades and subcontractors by the contract documents. The roofing contractor must make their own contracts with various subcontractors, setting forth the work these subcontractors will be held responsible for. The roofing contractor alone will be held responsible for the work of his / her subcontractor for the completed project. The roofing contractor is required to have his subcontractor comply with all Owner and OSHA safety and security requirements.
   3. If the contractor feels a conflict exists between what is considered good construction/ roofing practice and these specifications the contractor shall state in writing all objections 7 days prior to submitting quotations.
   4. Contractor shall have his own supervision on site at all times when his subcontractors are present.

1.03 CONTRACTOR USE OF SITE AND PREMISES

A. Limit use of site and premises to allow normal daily business operations.

B. Construction Operations: Limited to areas noted on Drawings and as stated in the Pre-Proposal Meeting.

C. Existing Emergency Building Exits shall be usable at all times during Construction.

D. Time Restrictions for Performing Exterior Work: 6:00 AM to 8:00 PM Monday thru Saturday. Sunday only upon approval by Owner. Weekend work must be approved by Owner prior to work, minimum 48 hours' notice.

E. Airport terminal hours are 24 hours per day each day.

F. Construction operations cannot block deliveries or other access to the terminal.

G. Construct Work in phases to accommodate Owner's occupancy requirements during the construction period, coordinate construction schedule and operations with project superintendent, Owner, onsite representative.

H. At no time will use of tobacco or alcohol be permitted on site. In addition, no "statement" clothing will be permitted to be worn on site. If the Owner or Architect discovers the Contractor, employee of Contractor or subcontractor in violation of these items, immediate expulsion from job site will be enforced.

I. No firearms will be permitted on site.

J. Contractor to submit list of all personnel that will be on site. Background checks required, including OSHA Safety Record for minimum 3 years.

K. Criminal Record: The Contractor shall be responsible to notify the Owner's representative and security of any employee having a criminal record. Such information shall be kept confidential.

L. All products must be low or no VOC due to potential contamination of water. No epoxy paint allowed.

1.04 OWNER OCCUPANCY

A. The Owner will occupy the premises during construction for their normal business operation activities.

B. The Owner may contract for work independent of the specified scope of work. The Contractor shall cooperate and coordinate with the Owner and other Contractors.

C. Cooperate with Owner to minimize conflict, and to facilitate Owner's usage and operations.

D. Schedule the Work to accommodate this requirement and not interfere with Owner's operations.

E. Protect interior areas as necessary; maintain existing exits unless otherwise indicated.

F. Provide not less than 72 hrs notice to Owner of activities that will affect Owner's operations.

1.05 WORK SEQUENCE

A. Construct Work in phases to accommodate Owner's occupancy requirements during the construction period, coordinate construction schedule and operations with project superintendent, Owner, and Facility's onsite representative.

B. Roof repair work to occur during normal work hours during normal facility hours.

1.06 WORK BY CONTRACTOR.

A. Work under this contract includes:
   1. Furnish and install specified repairs to roof areas and related components at 18434 Showalter Road, Hagerstown, (Washington County), Maryland.
   2. Disconnection and re-connection of mechanical equipment by a licensed mechanical subcontractor or removal of equipment as identified. All mechanical work shall be performed by qualified personnel licensed to perform such work.
   3. Removal and reinstallation of all electrical fixtures mounted on metal fascia that will be removed and replaced by qualified personnel licensed to perform such work.

B. Protection:
   1. Contractor shall be responsible for the full and adequate protection of the Owner's facilities, existing roof systems, personnel, equipment, products, and materials, as well as protection of its own employees and equipment. Contractor shall comply with all applicable federal, state, and local OSHA, EPA, and NIOSH requirements. Lawns, shrubbery, paved areas, and buildings shall be protected from damage. Repair damage at no extra cost to Owner.
   2. Daily Housekeeping:
      a. Prior to leaving the site daily the Contractor shall remove all trash from the roof area and grounds such as paper, insulation or pieces and all other trash/scrap generated by the work crew. All subcontractors shall remove all trash generated by their respective work daily.
      b. The site will be acceptable to the project superintendent prior to the crew departing the site, the project superintendent and the subcontractor foreman shall conduct a daily walk to make sure the roof and grounds are left in a satisfactory condition.
      c. Contractor shall protect existing roof systems by placing temporary plywood walkways in areas of access.
      d. The contractor will provide interior protection and dust control means to areas that are open to the existing structural deck or areas where dust mitigation is required.
   3. The Contractor shall perform appropriate inspections, surveys including Pre-Job photo/video documentation, and file timely notifications to proper authorities prior to starting roof renovation or demolition activities. Inspectors, project planners, project managers, sub-contractors and workers involved in the roof project shall have no less than 5 years of training, licenses, and registrations.
   4. Contractor will provide a full-time superintendent employed by the prime contractor for not less than 10 years. Superintendent will be the first person on the project and the last one to leave each day.
   5. For single ply membrane roofing, the roofing system manufacturer shall provide a final inspection.

C. Scope of Work: Single Ply Membrane.
   1. Roof Repair Areas:
      a. The building will be occupied during the roof replacement. Coordinate with the Owner for limited access of areas during roof work above.
   2. Contractor shall supply all labor, transportation, material, apparatus, tools, and permits necessary for modification and repair of the existing roof systems.
      a. All roofing applications shall be in accordance with specifications and details.
      b. Contractor shall verify existing roof construction work.
      c. Provide manufacturer's product data and material safety data sheets for all materials used including metal work, ladders, etc... All product and

material safety data sheets shall show the same product name as it appears on the materials that are installed.

d. No materials containing asbestos shall be provided to the job or the site.

3. The Contractor is responsible for ensuring all existing roof drains, scuppers and downspouts included in the specified work area are free flowing. The Contractor shall flush drains to verify they are free flowing prior to the project start and at project completion. The contractor shall notify Owner if any roof drains / downspouts are found slow flowing or inoperative prior to the project start.
4. Contractor shall verify all vent pipes being flashed are in working order. Contractor shall notify the Owner if any vents are clogged.
5. Prepare the roof substrate prior to installing the new roof system.
   a. Install pressure treated wood blocking as required to match existing insulation heights as indicated on detail drawings.
   b. Extend existing plumbing vent stacks out to new enclosures above the highest contiguous point of the new roof surface.
6. Single-Ply Membrane Repair Flashing and Ties: Install 60 mil single ply, PVC to match existing membrane fully adhered. Heat weld seams.
7. Install all sheet metal details per specifications SMACNA requirements and standards.
   a. Install new minimum 24-gauge stainless steel metal flashings at all metal flashing locations unless specified otherwise.
   b. Edge metal to be .050 aluminum. Color to be selected (match original material).
   c. Install new .040 Aluminum metal counterflashings. Cut-in new reglet joints.
   d. Install new slip metal counter flashing detail at non-removable unit locations.
   e. Install miscellaneous metal flashings and related accessories.
8. Install the following new details where applicable:
   a. Wall Flashing
   b. Gutter and Downspout
   c. Plumbing Vent Flashing
9. Install metal roofing system at two (2) new enclosures and modified the existing hidden gutter.
10. Gutters and downspouts: Match existing material, 24 ga, steel, color to match existing. Provide all end caps, support straps and hangers as required.
11. Construct two (2) metal framed enclosures where shown with metal roofing (match existing) panels on vertical and sloped surfaces.
12. Infill hidden gutter at front entry with sheet metal and provide new gutter with downspouts to grade. Remove concrete sidewalk to install trench drains out to face of curb.
13. Install new gutters along metal roof to membrane roof.
14. Cover existing window along low slope roof areas, infill as shown, and extend PVC membrane flashing up to underside of metal roof.

1.07 REGULATORY REQUIREMENTS

A. Regulatory requirements: By reference of the following standards the contractor shall install the roof system in accordance to the following standards:
   1. Underwriters Laboratories (UL)
      a. UL Classified Fire Rating – UL 790, Class A
   2. Factory Mutual – FM 4470 Class I Standards with
      a. FM 1-90 Insulation and Base Sheet Attachment requirements.
      b. FM 1-90 Wind Loading – wind loading requirements.
   3. Single Ply Membrane - PVC System – ASTM 4434.
   4. Metal Roofing – ASTM **A653-15**

1.08 DISPOSAL OF MATERIALS

A. The contractor shall be responsible for the removal and disposal of roofing materials at no additional cost to the Owner.

B. During the construction period, the Contractor shall, on a daily basis, place all of his waste materials and "non-broomable" debris into containers.

C. Provide magnetic sweep to the ground area adjacent to the building and on all parking lot and asphalt areas including walkways and all areas where roofing activities occurred from ground including but not limited too the access path to get to the building / work area. Provide magnetic sweep of the roof area as well.

D. Upon completion of the Work and before acceptance and final payment is made, the Work shall be cleaned of all rubbish, excess materials, false work, temporary structures, and equipment; and all parts of the Work shall be left in a neat, presentable condition, satisfactory to the Owner. This Work shall be considered incidental to the overall project and no additional compensation will be allowed.

1.09 UNIT PRICES

A. Refer to Section 01 20 00 – Price and Payment Procedures.

1.10 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work as required for a complete and total installation.

C. Indicate variation of Bid Price for Alternates described below and list in Bid Form Document or any supplement to it which requests a difference in Bid price by adding to the Base Bid Price.

D. Bids will be evaluated on Base Bid Price and any of the alternates that the Owner chooses based on the available funds.

E. Cost as indicated shall include all material, labor, equipment, and all other costs need to perform the work and install in accordance with the drawings, specifications, and manufacturer’s instructions.

F. Alternates: Refer to Section 01 20 00.

1.11 WARRANTY

A. Upon project completion and Owner acceptant, effective upon complete payment the Contractor shall issue a guarantee against defective workmanship and materials for a period of two (2) years.

B. Maintain the existing manufacturer’s warranties in effect.

PART 2 PRODUCTS Not Used

PART 3 EXECUTION Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Schedule of Values.

B. Extra Work

C. Unauthorized Work

1.02 RELATED SECTIONS

A. Section 01 20 00 – Price and Payment Procedures.

B. Section 01 30 00 - Submittals: Schedule of Values.

C. Section 01 60 00 - Material and Equipment: Product substitutions.

1.03 SCHEDULE OF VALUES

A. Submit typed schedule on Owner's form for Application and Certification for Payment, and Continuation Sheet. Contractor's electronic media printout will be considered.

B. Submit Schedule of Values in triplicate within 15 days after date established in Notice to Proceed.

C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization, bonds, and insurance.

D. Revise schedule to list approved Change Orders, with each Application for Payment.

E. Include, as a separate line item, the amount of allowance included in the Contract for Unit Cost Allowances. Identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.

1.04 EXTRA WORK

A. Change orders will not be approved for any reason other than items that were totally unforeseen. Any unforeseen items should be immediately brought to the attention of the project superintendent. No extra work can be performed unless authorized by Owner.

1.05 UNAUTHORIZED WORK

A. Work performed which is not provided for in the Contract, and Work done beyond limits shown on the Plans or as directed, or Extra Work done without written authorization will be considered unauthorized, shall be at the expense of the roofing contractor, and will not be measured or paid for by the Owner. Work so done maybe ordered, removed, and replaced at the roofing contractor's expense.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of Applications for Payment.

1.02 RELATED SECTIONS

A. Section 01 01 90 - Contract Considerations: Schedule of Values.

B. Section 01 02 80 - Change Order Procedures: Procedures for changes to the Work.

C. Section 01 20 00 - Price and Payment Procedures.

D. Section 01 30 00 - Submittals: Submittal procedures.

E. Section 01 70 00 - Contract Closeout: Final Payment.

1.03 FORMAT

A. Owner's form for Application and Certification for Payment and Continuation Sheet.

B. For each item, provide a column for listing: Item Number; Description of work; Scheduled Value, Previous Applications: Work in Place and Site Stored Materials under this Application: Authorized Change Orders; Total Completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage.

C. Utilize Table of Contents to identify each line item with number and title of the major specification section.

1.04 PREPARATION OF APPLICATIONS

A. Present required information in typewritten form or on approved electronic media printout.

B. Execute certification by signature of authorized officer.

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

D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.

E. Prepare Application for Final Payment as specified in Section 01 70 00.

1.05 SUBMITTAL PROCEDURES

A. Submit five (5) hard copies of each Application for Payment. (4 copies to Owner, 1 copy to BFM)

B. Submit an updated construction schedule with each Application for Payment.

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

D. Submit under transmittal letter specified in Section 01 30 00.

1.06 SUBSTANTIATING DATA

A. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question.

B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Documentation of change in Contract Sum/Price and Contract Time.

C. Change procedures.

D. Construction Change Authorization Directive.

E. Stipulated Sum change order.

F. Unit price change order.

G. Time and material change order.

H. Execution of change orders.

I. Correlation of Contractor submittals.

1.02 RELATED SECTIONS

A. Section 01 01 90 - Contract Considerations: Schedule of Values.

B. Section 01 02 70 - Applications for Payment: Payment applications.

C. Section 01 60 00 - Material and Equipment: Product options and substitutions.

D. Section 01 70 00 - Contract Closeout: Project Record Documents.

1.03 SUBMITTALS

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

B. Change Order Forms: Owner’s Change Order form.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

A. Maintain detailed records of work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.

B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.

C. On request, provide additional data to support computations:
   1. Quantities of products, labor, and equipment.
   2. Taxes, insurance, and bonds.
   3. Overhead and profit.
   4. Justification for any change in Contract Time.
   5. Credit for deletions from Contract, similarly documented.

D. Support each claim for additional costs, and for work done on a time and material basis, with additional information:
   1. Origin and date of claim.
   2. Dates and times work was performed, and by whom.
   3. Time records and wage rates paid.

4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.05 EXTRA WORK

A. Change orders will not be approved for any reason other than items that were totally unforeseen. Any unforeseen items should be immediately brought to the attention of the project superintendent. No extra work can be performed unless authorized by Owner.

1.06 UNAUTHORIZED WORK

A. Work performed which is not provided for in the Contract, and Work done beyond limits shown on the Plans or as directed, or Extra Work done without written authorization will be considered unauthorized, shall be at the expense of the roofing contractor, and will not be measured or paid for by the Owner. Work so done maybe ordered, removed, and replaced at the roofing contractor's expense.

1.07 CHANGE PROCEDURES

A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by Owner's General Conditions and any supplemental instructions.

B. The Architect/Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate within seven (7) working days.

C. The Contractor may propose a change by submitting a request for change to the Architect/ Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.

1.08 CONSTRUCTION CHANGE AUTHORIZATION

A. Architect/Engineer may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

B. The document will describe changes in the Work and will designate method of determining any change in Contract Sum/Price or Contract Time.

C. Promptly execute the change in Work.

1.09 STIPULATED SUM CHANGE ORDER

A. Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer.

1.10 UNIT PRICE CHANGE ORDER

A. For predetermined unit prices and quantities, the Change Order will be executed on a fixed unit price basis.

B. For unit costs or quantities of units of work which are not predetermined, execute Work under a Construction Change Authorization.

C. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.11 TIME AND MATERIAL CHANGE ORDER

A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

B. Architect/Engineer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.

C. Maintain detailed records of work done on Time and Material basis.

D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.12 EXECUTION OF CHANGE ORDERS

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

1.13 CORRELATION OF CONTRACTOR SUBMITTALS

A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.

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

C. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coordination.

B. Cutting and Patching.

C. Preconstruction and Site Mobilization Conference.

D. Progress Meetings.

E. Construction mobilization.

F. Schedules.

G. Final Inspection.

H. Closeout procedures.

1.02 RELATED SECTIONS

A. Section 01 70 00 - Contract Closeout.

1.03 PROJECT COORDINATION ADMINISTRATOR

A. Project Coordination Administrator: Owner.

1.04 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

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

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owners partial occupancy.

F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.05 PRECONSTRUCTION AND SITE MOBILIZATION CONFERENCE

A. Architect/Engineer will schedule a conference after Notice of Award.

B. Attendance Required: Owner, Architect/Engineer, Contractor, Contractor’s Superintendent, and major subcontractors.

C. Agenda:
1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, and Schedule of Values.
5. Designation of personnel representing the parties in Contract, and in field, and the Architect/Engineer.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
7. Scheduling and Progress Schedule.
8. Submittals in accordance with paragraphs 1.06.D & E in Section 01 30 00.
9. Safety Plan
10. Walkover Inspection
11. Pre-Condition Survey: To be provided to Owner with photographs to note pre-existing leaks condition.

1.06 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at bi-weekly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
1. Architect will record minutes and distribute within seven (7) working days after the progress meeting to the Owner, Consultants, and General Contractor.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.

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

1.07 CONSTRUCTION MOBILIZATION

A. Cooperate with the Administrator in allocation of mobilization areas of site, for access, traffic, and parking facilities.

B. During construction, coordinate use of site and facilities through the Administrator.

C. Comply with Administrator's procedures for intra project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

D. Comply with instructions of the Administrator for use of temporary utilities and construction facilities.

E. Coordinate filed engineering and layout work under instructions of the Administrator.

1.08 SCHEDULES

A. Submit bar chart preliminary progress schedule. During project provide a roof plan marked with day to day synopsis of areas projected to be roofed for the 2 week period between Progress Meetings. Provide at Pre-Construction Meeting and at each Progress Meeting updated accordingly.

B. After review, revise and resubmit schedule to comply with revised Project schedule.

C. During progress of Work, revise and resubmit with Applications for Payment.

D. At each meeting provide roof plan with marked day to day activities.

1.09 FINAL INSPECTION

A. Schedule and administer meetings throughout progress of the Work at bi-weekly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
   1. Architect will record minutes and distribute within seven (7) working days after the progress meeting to the Owner, Consultants, and General Contractor.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.
   1. Final Inspection:
      a. Will be scheduled by upon job completion.
      b. Attendance:
         1) Project Superintendent.
         2) Roofing Contractor / other subcontractors.
         3) Representative of Owner
         4) Architect
      c. Minimum agenda:
         1) Walkover inspection.
         2) Identification of problems, which may impede issuance of warranty.

1.10 CLOSEOUT PROCEDURES

A. Notify Administrator when Work is considered ready for Substantial Completion. Accompany Architect on preliminary inspection to determine items to be listed for completion or correction in Contractor's notice of Substantial Completion.

B. Comply with Architect's instructions to correct items of Work listed in executed Certificates of Substantial Completion and for access to Owner occupied areas.

C. Notify Architect and Owner when Work is considered finally complete.

D. Comply with Administrator's instructions for completion of items of Work determined by the Architect/Engineer's final inspection.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Schedule of values.

B. Applications for payment.

C. Change procedures.

D. Defect assessment.

1.02 SCHEDULE OF VALUES

A. Refer to Section 01 01 90 - Contract Considerations.

1.03 APPLICATIONS FOR PAYMENT

A. Refer to Section 01 02 70 – Applications for Payment.

1.04 CHANGE PROCEDURES

A. Refer to Section 01 02 80 – Change Order Procedures.

B. Field Directive: Architect/Engineer may issue directive, signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

1.05 DEFECT ASSESSMENT

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

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

C. The defective Work may remain (at the Owner's Option), but unit sum/price will be adjusted to new sum/price at discretion of Owner/Architect/Engineer.

D. Defective Work (at the Owner's Option) will be partially repaired to instructions of Architect/Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Owner/Architect/Engineer.

E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.

F. Authority of Owner/Architect/Engineer to assess defects and identify payment adjustments is final.

G. Non-Payment for Rejected Products: Payment will not be made for rejected products for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from transporting vehicle.
   4. Products placed beyond lines and levels of required Work.
   5. Products remaining on hand after completion of the Work.

6. Loading, hauling, and disposing of rejected products.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittal procedures.

B. Proposed products list.

C. Shop drawings.

D. Product data.

E. Samples.

F. Manufacturers' instructions.

G. Manufacturers' certificates.

1.02 RELATED SECTIONS

A. Section 01 01 90 - Contract Considerations: Schedule of Values.

B. Section 01 40 00 - Quality Requirements: Manufacturers' field services and reports.

C. Section 01 70 00 - Contract Closeout: Contract warranty and manufacturer's certificates closeout submittals.

1.03 SUBMITTAL PROCEDURES

A. Transmit each submittal with Architect/Engineer accepted form. Provide one copy to Owner at time of submission to Architect/Engineer.

B. Sequentially number the transmittal forms in accordance with Architect's submittal schedule. Re-submittals to have original number with an alphabetic suffix.

C. Identify Project, Contractor, Subcontractor, or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project and deliver to Architect/Engineer at business address. Coordinate submission of related items.

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

G. Provide space for Contractor and Architect/Engineer review stamps.

H. Revise and resubmit submittals as required, identify all changes made since previous submittal.

I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.04 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Owner-Contractor Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.05 SHOP DRAWINGS

A. Submit in the form of one reproducible transparency and three opaque reproductions.

B. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01 70 00 - Contract Closeout.

1.06 PRODUCT DATA, MSDS SHEETS AND OTHER DATA

A. Submit electronically in pdf. format. All submittals shall bear the **contractor's review stamp** that indicates the submitted material complies with specification. Refer to submittal list at the end of the section.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

C. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01 70 00 - Contract Closeout.

D. The Contractor shall provide at Pre-Construction meeting approved insulation samples, product data sheets shall accompany samples and be transmitted to the Architect's office. As required per the individual specification sections.
   1. Emergency Contact List.
   2. Superintendent's credentials for approval.
   3. Schedule of Values – line item per specification and subsequent materials within spec section.
   4. Pre-Job Survey video/photo documentation (minimum of 3 copies)

E. The Contractor shall provide prior to Pre-Construction meeting to the Owner / Architect:
   1. Their Site Specific Safety Plan.
   2. OSHA 300 logs.
   3. Sub-contractor Roles and Responsibilities signed.
   4. Payment and performance bonds for 100% of the Contract Price. The contract price is defined as proposal price of the contract. The penal amount of the performance bonds shall be 100% of the proposal price including all labor and all material. Performance Bond will be provided by the contractor that is awarded the contract.
   5. Insurance certificate with Owner named as the additionally insured.
   6. Properly executed Contractor Agreement.

1.07 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect/Engineer's selection.

C. Include identification on each sample, with full Project information.

D. Submit the number or samples specified in individual specification Sections; one of which will be retained by Architect/Engineer.

1.08 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.09 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Architect/Engineer for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product but must be acceptable to Architect/Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General Requirements.

B. Quality control and control of installation.

C. Tolerances

D. References.

E. Mock-up requirements.

F. Testing and inspection services.

G. Manufacturers' field services.

H. Examination.

I. Preparation.

1.02 GENERAL REQUIREMENTS

A. Contractor shall:

1. Submit an affidavit attesting the subcontractor has in place and fully implemented a written Health, Safety and Environmental plan and the plan is compliant with all applicable Federal, State, and local regulations.
2. Be experienced in single ply membrane heat welded roofing and metal panel systems for a 5-Years minimum.
3. Be acceptable to Owner.
4. Be manufacturer certified or an approved Subcontractor to install manufacturer’s products.
5. Has not been in Chapter 7 bankruptcy during the last ten (10) years.
6. Provide list of at least 5 projects available for inspection employing the same roof system within a 100 mile radius.

1.03 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.04 TOLERANCES

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

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

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

1.05 REFERENCES

A. For products or workmanship specified by association, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date for receiving bids, except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

1.06 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be comparison standard for remaining Work.

D. 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 by Architect/Engineer.

1.07 TESTING AND INSPECTION SERVICES

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

B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Architect/Engineer.
   1. Laboratory: Authorized to operate at Project location.
   2. Laboratory Staff: Maintain full time registered Engineer, specialist on staff to review services.
   3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

C. Testing, inspections, and source quality control may occur on or off project site. Perform off-site testing as required by Architect/Engineer or Owner.

D. Reports will be submitted by independent firm to Owner/Contractor/Architect and Engineer indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Notify Architect/Engineer and independent firm 24 hours prior to expected time for operations requiring services.
   2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Owner/Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

H. Agency Responsibilities:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.
   6. Perform additional tests required by Architect/Engineer.
   7. Attend preconstruction meetings and progress meetings.

I. Agency Reports: After each test, promptly submit copies of report to Owner/Construction Manager/Architect/Engineer and to Contractor. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
   1. Date issued.
   2. Project title and number.
   3. Name of inspector.
   4. Date and time of sampling or inspection.
   5. Identification of product and specifications section.
   6. Location in Project.
   7. Type of inspection or test.
   8. Date of test.
   9. Results of tests.
   10. Conformance with Contract Documents.

J. Limits On Testing Authority:
   1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency or laboratory may not approve or accept any portion of the Work.
   3. Agency or laboratory may not assume duties of Contractor.
   4. Agency or laboratory has no authority to stop the Work.

1.08 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Owner/General Contractor/Architect/Engineer 30 days in advance of required observations. Observer subject to approval of Owner.

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

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

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

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.02 PREPARATION

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

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

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

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Controls:
   1. COVID-19 Procedures
   2. Barriers,
   3. Protection of Installed Work.
   4. Interior Protection
   5. Security

B. Construction Facilities:
   1. Progress cleaning.
   2. Site Conditions
   3. Restoration and Cleaning
   4. Removal of Utilities, Facilities, and Controls

1.02 RELATED SECTIONS

A. Section 01 01 00 – Summary of Work

B. Section 01 70 00 – Contract Closeout: Final cleaning.

1.03 COVID-19 PROCEDURES

A. Follow established CDC, OSHA, and Owner’s standards. Refer to Owner’s Guidelines in Section 00 20 00.

B. Maintain a daily log of all construction personnel on site.

C. No construction personnel to be permitted on site if sick or showing signs/symptoms of the COVID-19 virus. Recommend daily temperature of employees and record on log.

D. Employees shall NOT congregate at one location on breaks/lunch time. Maintain social distancing.

E. If the performance of work requires close working areas where social distancing cannot be maintained all personnel shall have mask covering mouth and nose.

F. Clean all tools, equipment and ladders on a daily basis with disinfectant.

1.04 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Provide protection for plant life designated to remain. Replace damaged plant life.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.05 PROTECTION OF INSTALLED WORK

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

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.

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

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

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

F. Prohibit traffic from landscaped areas.

G. Contractor shall repair all damages caused by roofing operations or other work per this contract to existing building/grounds or newly installed work, including damage to paving and exterior grounds. Provide like materials.

1.06 INTERIOR PROTECTION AND RESTORATION

A. Protect and cover fixed items, furniture, equipment, appliances, fixtures, bookcases, etc. within the building below the work areas.

B. At the Owner’s direction, remove portable furniture, equipment, appliances, fixtures, materials, stock, etc. within the building below the work area to an adjacent area for protection.

C. Consult Pre-Job Survey if any questions arise due to previous conditions or claims of damage by re-roofing operations upon completion of the work to compare the current condition to the original condition.

1.07 SECURITY

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

B. Coordinate with Owner's security program.

C. Provide Owner with current list of accredited persons.

1.08 PROGRESS CLEANING

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

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

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

D. Remove waste materials, debris, and rubbish from site weekly and dispose off-site.

1.09 SITE CONDITIONS

A. Field Measurements and Material Quantities:

1. Contractor shall have SOLE responsibility for accuracy of all measurements, estimates of material quantities and sizes, and site conditions that will affect work including but not limited to: Field measurements and material quantities.

B. Existing Conditions:
   1. Building space directly under roof area covered by this specification will be utilized by on-going operations.
   2. Access to roof shall be as outlined in pre-construction meeting.
   3. All work shall be the responsibility of the roofing contractor unless otherwise noted. All work shall be considered that of what is necessary to complete the Scope of Work as noted in the bid documents.
   4. Existing roof top equipment shall NOT be set upon, used as a work bench or shelf for of storage materials. Clean adhesives from units upon completion of work. Replace all damage to units.

C. Waste Disposal:
   1. Do not re-use, re-cycle or dispose of material manufacturer's product containers except in accordance with all applicable regulations. The user of manufactured products is responsible for proper use and disposal of product containers.
   2. Use of dumpster and set up shall be as approved by Owner. Protect sidewalks, paving and adjacent landscaping and building.

D. Safety Requirements:
   1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements. Contractor and subcontractors shall follow OSHA and Owner safety programs.
   2. Comply with federal, state, local and Owner fire and safety requirements.
   3. Advise project superintendent whenever work is expected to be hazardous to Owner, employees, and/or operators.
   4. A crewman with two-way communication (i.e., radio, mobile phone) shall be maintained by the contractor as a floor area guard whenever tear-off work is being conducted and when roof decking is being repaired or replaced. Aisle ways shall have traffic cones and safety tape put up to warn and/or divert personnel from walking beneath areas under construction. Floor guard shall be maintained until base ply is completely installed.
   5. The contractor, whenever power tools, roofing kettles, fuels, solvents, torches, and open flames are being used shall maintain fire extinguishers within easy access.
   6. Roofing contractor is required to have an OSHA approved fall protection plan in place prior to the start of work. The roofing contractor shall include in his proposal all safety railing and barricades to protect his crews. The roofing contractor shall present a safety plan prior to the pre-construction meeting. All fall protection shall conform to state and federal regulations as outlined in OSHA CODE OF FEDERAL REGULATION 29 PART 1926.500 SUB PART M. The awarded roofing subcontractor shall submit a safety plan to the Contractor for submittal to the Owner containing to each item listed below as it pertains to the specific project.

E. Fall Protection: Fall protection is required whenever subcontractors are working on a surface that has an unprotected side or edge that is six (6) feet or more above a lower level. An unprotected edge is one that has a parapet wall that is less than 39 inches in height. The slope of the roof dictates which fall protection system or systems may be used.
   1. Low Slope Roofs - (Slope is less than or equal to 4 in 12.) On low slope roofs, employees shall be protected from falling by guardrail systems, personal fall arrest systems, or a combination of warning line system and guardrail system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system. On roofs 50 feet or less in width, the use of a safety monitoring system alone is permitted.

2. Steep Roofs - (Slope is greater than 4 in 12.) On steep roofs, employees shall be protected from falling by guardrail systems with toe boards or personal fall arrest systems.
3. Warning Line System
    a. When mechanical equipment (mechanical equipment meaning all motor or human-propelled, wheeled equipment used for roofing work except wheelbarrows and mop carts) is not being used, the warning line shall be erected no less than six (6) feet from the roof edge.
    b. When mechanical equipment is being used, the warning line shall be erected not less than six (6) feet from the roof edge that is parallel to the direction of mechanical equipment operation and not less than ten (10) feet from the roof edge, perpendicular to the direction of the mechanical equipment operation.
    c. Stanchions shall be set not further than 12 feet apart.
    d. Warning lines shall be a height of 39 inches at the highest point and 34 inches at the lowest point, including sag. They shall be flagged at not more than six (6) foot intervals with high visibility material.
    e. All employees working outside the warning line and within six (6) feet of the roof edge must wear a full safety harness with the "0" ring located in the rear. A six (6) foot shock-absorbing lanyard with rollout protection also must be used. This lanyard is to be located between the lifeline and the harness. In cases where work outside the warning line is to be performed, a Safety Monitoring System or an approved OSHA fall protection system may be used. (See section below).

F. Safety Monitoring System
1. A documented competent person monitors the safety of all employees on a roofing or sheet metal crew and warns them when it appears to the monitor that they are unaware of a hazard or are acting in an unsafe manner. The competent person must be on the same roof as, and within visual sighting distance of, the employees and must be close enough to verbally communicate with the employees.
2. Only used on low slope roofs that are 50 feet or less in width if no other fall prevention system is installed. Can be used on low slope roofs of any width if combined with a warning line system.
3. No mechanical equipment shall be used with this system.
4. Parapet Wall Clamp-On Guardrail System
    a. Used on roofs where the parapet wall is less than 39 inches.
    b. Clamp-on posts must be spaced eight (8) feet or less apart.
    c. Top rail positions 42 inch plus or minus 3 inches high.
    d. Mid-rail between the top rail and top of the parapet wall at 21 inches.
    e. If a section of the railing has to be removed to perform work, lifelines, and safety harnesses with six (6) foot lanyards must be used while working in the unprotected area.
    f. If 1/4 inch steel cable is used at the top and mid-rail, the top cable must be flagged at no more than six (6) foot intervals with a highly visible material.

G. Guardrail Systems
1. Top edge of top rail shall be 42 inches plus or minus 3 inches above the working surface.
2. Mid-rails are required if there is no wall or parapet wall at least 21 inches higher. When used, mid-rails shall be installed at a height midway between the top edge of the guardrail and the working level.

3. Guardrail posts shall be at least two (2) inch by four (4) inch lumber spaced not more than eight (8) feet apart on centers.
4. The top rail shall be at least two (2) by four (4) inch lumber. The intermediate rail shall be at least one (1) inch by six (6) inch lumber.
5. Toe boards shall be a minimum of 3-1/2 inches in vertical heights.
6. When guardrail systems are used at hoisting areas, a chain, gate, or removable guardrail section shall be placed across the access opening between guardrail sections when hoisting operations are not taking place. When guardrail systems are used at holes or skylights, they shall be erected on all unprotected sides or edges of the hole.
7. When guardrail systems are used at holes or skylights, they shall be erected on all unprotected sides or edges of the hole.
8. When guardrail systems are used around holes used for ladder access, they shall be provided with a gate or be so offset that a person cannot walk directly into the hole.
9. Manila, plastic or synthetic rope used for top rails or mid-rails shall be inspected as frequently as necessary to ensure that it continues to meet OSHA strength requirements.

H. Catch Platforms
1. Catch platforms consist of ladder jack scaffolding with guardrails, mid-rails and toe boards or welded tube scaffolding with guardrails, mid-rails and toe boards.
2. Both of the above scaffolds must have platform that extend two (2) feet wide or better beyond the eave with no gap.

I. Personal Fall Arrest System
1. Only full body harnesses with either shock-absorbing lanyard or lifelines, or a combination thereof, shall be used when required. All snap hooks shall be of the locking variety.
2. Personal fall arrest systems shall be rigged such that employees can neither free-fall more than six (6) feet or contact any lower level.
3. Self-retracting lifelines shall automatically limit free-fall distance to two feet or less.

J. Covers
1. Cover for holes in floors, roofs, and other surfaces shall be capable of supporting, without failure, at least twice the weight of employees, equipment and materials that may be imposed on the cover at any one time.
2. Covers shall be secured when installed to prevent accidental displacement by the wind, equipment or employees.
3. All covers shall be color-coded or marked with the work "HOLE" or "COVER".
4. Covers shall not be stood on, sat on, nor have any materials placed upon them.

K. Environmental Requirements:
1. Do not work in rain, snow, or in presence of water.
2. Do not work in temperatures below 40 degrees F.
3. Do not install materials marked "KEEP FROM FREEZING" when daily temperatures are scheduled to fall below 40 degrees F.
4. Do not perform masonry work below 40 degrees F.
5. Remove any work exposed to freezing.
6. The roofing contractor will use some or all of the following methods to minimize disruptions to building occupants and operations due to odor and will be performed at no additional cost to the Owner.
    a. Divert air intake from work area by attaching scoops or temporary ductwork.

b. Temporarily shut down or block air intakes.
c. Install temporary charcoal filters.

L. Temporary Sanitary Facilities:
1. The roofing contractor shall furnish, install, and maintain temporary sanitary facilities for employee use during project construction. The suitable location will be determined at the pre-construction meeting. Remove on project completion.
2. Place portable toilets in conformance with applicable laws, codes, and regulations.

M. Odors:
1. Contractor shall mitigate all odors from roofing operations from penetrating the building including, but not limited to the following:
a. Keep building doors and windows closed at all times, coordinate with Owner's Facility Representative.
b. The use of adhesive and other liquid roof components shall be down wind of any air intakes.
c. Shut down of all adjacent HVAC/RTU's units; cover or seal all intakes and exhaust air opening; and provide charcoal filters secured to vent openings.
d. Pay attention to wind direction and working accordingly to prevent odors from entering building.

N. Provide exhaust fans on interior to push/pull fumes out of building.

1.10 RESTORATION AND CLEAN-UP

A. During the construction period, the Contractor shall, on a daily basis, place all his waste materials and "non-broom-able" debris into containers.

B. Provide magnetic sweep to the ground area adjacent to the building and on all parking lot and asphalt areas including walkways and all areas where roofing activities occurred from ground including but not limited to the access path to get to the building / work area. Provide magnetic sweep of the roof area as well.

C. Upon completion of the Work and before acceptance and final payment is made, the Work shall be cleaned of all rubbish, excess materials, false work, temporary structures, and equipment; and all parts of the Work shall be left in a neat, presentable condition, satisfactory to the Owner. This Work shall be considered incidental to the overall project and no additional compensation will be allowed.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

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

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

PART 2 PRODUCTS Not Used

PART 2 EXECUTION Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Products.

B. Transportation and handling.

C. Storage and protection.

D. Product options.

E. Substitutions.

1.02 RELATED SECTIONS

A. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.03 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. 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.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

C. Provide interchangeable components of the same manufacturer, for similar components.

1.04 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's instructions.

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

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

D. Delivery of Materials:
   1. Deliver materials to jobsite in new, dry, unopened, and well-marked containers showing product and manufacturers name.
   2. Deliver materials in sufficient quantity to allow continuity of work.
   3. Coordinate delivery with Owner.
   4. Do not order project materials or start work before receiving written notice to proceed.

E. Material Handling:
   1. Handle materials to avoid bending, tearing, or other damage during transportation and installation.
   2. Material handling equipment shall be selected and operated so as not to damage existing construction or applied roofing. Do not operate or locate material handling equipment in areas that will hinder smooth flow of vehicular or pedestrian traffic

1.05 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protection.

D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

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

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

G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

H. Contractor shall assume full responsibility for the protection and safekeeping of products stored on premises.

I. Storage of Materials:
   1. Store rolled goods on ends only.
   2. Discard rolls, which have been flattened, creased, or otherwise damaged. Place materials on pallets. Store rolled goods on level pallets. Do not stack pallets.
   3. Store materials marked "KEEP FROM FREEZING" in areas where temperatures will remain above 40 degrees F.
   4. For insulation, remove plastic packaging shrouds. For felt rolls, slit the top of the plastic shrink-wrap only. Cover top and sides of all stored materials with tarpaulin (not polyethylene). Secure tarpaulin. Canvas tarpaulin only to be used for material protection.
   5. Rooftop storage: Disperse material to avoid concentrated loading, verify exiting structural member location and loading requirements.
   6. Do not store materials in open or in contact with ground or roof surface.
   7. Store all materials on a raised platform covered with secured canvas tarpaulin (not polyethylene), top to bottom. Cover all materials when project is not in progress and maintain the ability at all times to cover the materials when required, such as during an unanticipated rain shower.

1.06 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 a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.07 SUBSTITUTIONS

A. The Instructions to Bidders, General Conditions to the Contract, and Supplemental Conditions to the General Conditions specify restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this Section.

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

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents and submit with the attached Request Form.

D. A request constitutes a representation that the Bidder:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the Substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.

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

F. Substitution Submittal Procedure:
   1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
   3. The Architect/Engineer will notify Contractor, in writing, of decision to accept or reject request.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

REQUEST FOR SUBSTITUTION

DATE OF REQUEST: _____

PROJECT: Hagerstown Regional Airport – Terminal Building Roof Repairs
BFM Project No. 22073

CONTRACTOR: _____

TELEPHONE NO: _____

FACSIMILE NO: _____

CONTACT: _____

1. Item for which substitution is being requested:

   _____

2. Reference Specification Section:_____

3. Reference Drawing:_____

4. Reason for Substitution Request:_____

   _____

5. Product Comparison:

   Submit three copies of shop drawing, product data, color samples, utility requirements and certified test results attesting to the proposed product equivalence.

   a. ____ Data substantiating compliance of proposed substitution with contract documents.

   b. ____ Product identification, manufacturer's name, address, and telephone number.

   c. ____ Manufacturer's literature, warranty.

   d. ____ Full color selection, showing colors Architect may select without additional cost.

   e. ____ Samples

   f. ____ Warranty

   g. ____ References of product in use.

   h. ____ Itemized comparison of proposed substitution with product or method specified. Highlight all differences from specified item.

   i. ____ All items listed Section 01 60 00-1.07.

   j. ____ Cover letter stating benefits or equality of substitution and reason for substitution request.

6. If request is being submitted after the receipt of bids, attach price quotations of specified product and substituted products.

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Project record documents.

1.02 RELATED SECTIONS

A. Section 01 50 00 - Construction Facilities and Temporary Controls: Progress cleaning.

B. Section 01 74 00 - Warranties and Bonds.

1.03 CLOSEOUT PROCEDURES

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

B. Provide submittals to Architect/Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

D. Owner will occupy portions of the building as specified in Section 01 01 00.

1.04 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean equipment and fixtures to a sanitary condition.

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

D. Clean site; sweep paved areas, rake clean landscaped surfaces disturbed by construction.

E. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.05 ADJUSTING

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

1.06 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
   1. Contract Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other Modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Material Safety Data sheets for each material used.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and Modifications.

E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction:
   1. Field changes of dimension and detail.
   2. Details not on original Contract Drawings.

F. Delete Architect/Engineer title block and seal from all documents.

G. Submit documents and bond material safety data sheets to Architect/Engineer with claim for final Application for Payment.

1.07 OPERATION AND MAINTENANCE DATA

A. Provide data for roofing system.

B. Submit one (1) set electronically in pdf. format (smallest file size) for review prior to final inspection,

C. For final submit (2) sets bound in 8-1/2" x 11", three-ring binders with durable plastic covers. Provide electronic copy of as-builts drawings in both .pdf and .dwg formats, O&M Manuals, and all other closeout submittals on a CD or thumbdrive.

D. Each binder shall be labeled with the project name and the title, "Record Information Booklet."

E. Make-up of the booklet:
   1. Part 1: Directory, listing names, addresses, and telephone number of Consultant and Contractor.
   2. Part 2: Maintenance instruction arranged by system. For each system, give names, addresses, and telephone numbers of subcontractors and suppliers. List:
      a. Appropriate design criteria.
      b. Maintenance instructions, equipment.
   3. Shop drawings and product data.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation and submittal.

B. Time and schedule of submittals.

C. Warranty.

1.02 RELATED SECTIONS

A. Section 01 70 00 - Contract Closeout: Contract closeout procedures.

B. Individual Specifications Sections: Warranties required for specific products or Work.

1.03 FORM OF SUBMITTALS

A. Bind in commercial quality, 8-1/2 x 11 inch three “D”-ring ‘clear-vue’ binders with hardback, cleanable, and transparent plastic covers and side binder.

B. Label cover and side of each binder with typed or printed title WARRANTIES, with title and date of Project; name, project number; address and telephone number of Contractor; and name of Architect.

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

D. Directory: Provide a directory which indicates names, addresses and telephone/fax numbers of Owners, Consultants, General Contractors, Subcontractors, and Major Suppliers. Include name of contact person for each entry.

E. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Include information regarding maintenance and operations of equipment and or materials as may be required by the specifications or manufacturer.

1.04 PREPARATION OF SUBMITTALS

A. Obtain warranties, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item or work. Except for items put into use with Owner's permission, the date of beginning of time of warranty shall be the Date of Substantial Completion.

B. Verify that documents are in proper form, contain full information.

1.05 TIME OF SUBMITTALS

A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

B. Provide draft copy of warranties and bonds for review by consultant no later then time of 50% project completion.

C. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.

D. For items of Work when acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.06 WARRANTY

A. Guarantee:
   1. Upon project completion and Owner acceptance, effective upon complete payment the Subcontractor shall issue a guarantee against defective workmanship and materials for a period of two (2) years.
   2. The existing manufacturer's warranty shall remain in effect.
   3. Other warranties as noted per specification section.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

DIVISION 02

EXISTING CONDITIONS

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Demolition and removal of selected building elements.
   2. Demolition and removal of selected site elements.

B. Related Requirements:
   1. Section 01 10 00 - Summary for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.

1.3 DEFINITIONS

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

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

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

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

1.4 MATERIALS OWNERSHIP

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

1.5 PREINSTALLATION MEETINGS

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

1.6 INFORMATIONAL SUBMITTALS

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

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

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

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

E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.7 CLOSEOUT SUBMITTALS

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

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

1.8 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

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

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

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

F. Utility Service: Maintain existing utilities.

1.9 WARRANTY

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

B. Notify warrantor on completion of selective demolition and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

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

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

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

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

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

E. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs or preconstruction videotapes.
   1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
   2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
   1. Comply with requirements for existing services/systems interruptions specified in Section 01 01 00.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. Arrange to shut off indicated utilities with utility companies.
   3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Section 01 50 00.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.
   5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated on demolition drawings. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
   8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 50 00.

B. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.

4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

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

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

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

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

B. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing so that building interior remains watertight and weathertight.
1. Remove existing roof membrane, flashings, copings, and roof accessories.
2. Remove existing roofing system down to substrate.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 01 50 00.

B. Burning: Do not burn demolished materials.

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

3.7 CLEANING

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

END OF SECTION

DIVISION 05

METALS

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Load bearing formed steel stud exterior wall framing.

1.2 RELATED SECTIONS

A. Section 06 11 40 - Wood Blocking and Curbing: Rough wood blocking.

B. Section 07 90 00 - Joint Protection.

1.3 REFERENCES

A. AISI - American Iron and Steel Institute - Cold-Formed Steel Design Manual.

B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A653 – Sheet Steel, Zinc-coated (Galvanized) by Hot Dip Process.

D. ASTM A1011 – Hot-Rolled Carbon Steel Sheet and Strip.

E. ASTM A1008 – Steel, Cold-Rolled Sheet carbon, Structural.

F. ASTM C955 - Load-Bearing (Transverse and Axial) Steel Studs, Runners (Track), and Bracing or Bridging, for Screw Application of Gypsum Board and Metal Plaster Bases.

G. AWCI (Association of Wall and Ceiling Industries) - Specifications Guide for Cold Formed Steel Structural Members.

H. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

I. MFMA (Metal Framing Manufacturers Association) - Guidelines for the Use of Metal Framing.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and accessories or items required of related work.

C. Indicate stud and roof joist layout sealed and signed by a qualified registered professional structural engineer licensed in the State of Maryland.
   1. Indicated description of design criteria
   2. Engineering analysis depicting member stresses and deflection.
   3. Member sizes, gauges, and connections.
   4. Member truss support reactions.
   5. Top chord, bottom chord, and web tracing requirements.

D. Describe method for securing studs to tracks and for bolted or welded framing connections.

E. Product Data: Provide data on standard framing members; describe materials and finish, product criteria and limitations.

F. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

G. Delegated Design Submittal: For cold formed metal framing indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   1. Show cold formed metal framing types, connections, types of bracing including special reinforcement. Indicate location, type, magnitude, and direction of loads imposed on the building structural frame from cold formed metal framing.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

B. Installer: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by manufacturer.

1.6 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.7 COORDINATION

A. Coordinate work under provisions of Section 01 03 90.

B. Coordinate with the placement of components within the stud framing system.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Marino Industries Corp of South Plainfield, NJ

B. ClarkDietrich Building Systems of Baltimore, MD

C. Substitutions: Under provisions of the General Conditions to the Contract for Construction.

2.2 FRAMING MATERIALS

A. Studs: ASTM C955, formed to channel shape, solid web, knurled faces; 18 gage thick minimum, 1 5/8 inch face and 6 inch depth. Final gage to be determined through Delegated Design. Submit engineering stamped drawings for any substitution.

B. Joists: Grade sheet steel, formed to channel shape, punched web; 18 gage thick, 1 1/2 inch face, 10 inch depth.

C. Track: Formed steel; channel shaped; same width as studs, tight fit; 18 gage thick, solid web.

2.3 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered.

C. Touch-Up Primer for Galvanized Surfaces: SSPC - Paint 20 Type I Inorganic zinc rich.

2.4 FASTENERS

A. Self-drilling, Self-tapping Screws, Bolts, Nuts and Washers: ASTM A123, hot dip galvanized to 1.25 oz/sq ft.

B. Anchorage Devices: Drilled expansion bolts.

C. Welding: In conformance with AWS D1.1 and AWS D1.3.

2.5 FABRICATION

A. Fabricate assemblies of framed sections of sizes and profiles required; with framing members fitted, reinforced, and braced to suit design requirements.

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

2.6 FINISHES

A. Studs: Galvanize to CP 60 coating class.

B. Tracks and Headers: Galvanize to CP 60 coating class.

C. Joists: Galvanize to CP 60 coating class.

D. Bracing, Furring, Bridging: Same finish as framing members.

E. Plates, Gussets, Clips: Same finish as framing members.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions under provisions of Section 01 50 00.

B. Verify that building framing components are ready to receive work.

3.2 ERECTION OF STUDDING

A. Install components in accordance with manufacturer's instructions.

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

C. Place studs at 16 inches o.c. or 12" o.c. within 6'-0" of corners; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method.

D. Construct corners using minimum three studs.

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

F. Erect load bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.

g. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

3.3 ERECTION OF JOISTS

A. Install framing components in accordance with manufacturer's instructions.

B. Make provisions for erection stresses. Provide temporary alignment and bracing.

C. Place joists as indicated at 16 inches o.c.; not more than 2 inches from abutting walls. Connect joists to supports using fastener method.

D. Locate joist end bearing directly over load bearing studs or provide load distributing member to top of stud track.

E. Provide web stiffeners at reaction points.

F. Touch-up field welds and damaged galvanized surfaces with zinc rich primer.

3.4 ERECTION TOLERANCES

A. Maximum Variation from True Position: 1/4 inch in ten (10') feet.

B. Maximum Variation of any Member from Plane: 1/8 inch.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Shop fabricated ferrous metal items, galvanized and prime painted.

1.3 RELATED SECTIONS

A. Section 09 90 00 - Painting: Paint finish.

1.4 REFERENCES

A. ASTM A36 - Structural Steel.

B. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.

C. ASTM A123 - Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars, and Strip.

D. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM A283 - Carbon Steel Plates, Shapes, and Bars.

F. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.

G. ASTM A325 - High Strength Bolts for Structural Steel Joints.

H. ASTM A386 - Zinc-Coating (Hot-Dip) on Assembled Steel Products.

I. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.

J. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

K. ASTM B177 - Chromium Electroplating on Steel for Engineering Use.

L. AWS A2.0 - Standard Welding Symbols.

M. AWS D1.1 - Structural Welding Code.

N. SSPC - Steel Structures Painting Council.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1.6 QUALIFICATIONS

A. Welders' Certificates: Submit under provisions of Section 01 30 00, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.7 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on Drawings and shop drawings.

PART 2 PRODUCTS

2.1 MATERIALS

A. Steel Sections: ASTM A36.

B. Steel Tubing: ASTM A500, Grade B.

C. Plates: ASTM A283.

D. Pipe: ASTM A53, Grade B Schedule 40.

E. Fasteners: As detailed.

F. Bolts, Nuts, and Washers: ASTM A325 galvanized to ASTM A153 for galvanized components.

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

H. Shop and Touch-Up Primer: SSPC 6 - SP6 Commercial Blast Cleaning and Prime.

I. Touch-Up Primer for Galvanized Surfaces: PPG Zinc rich type 6-209 galvanized steel primer.

2.2 FABRICATION

A. Fit and shop assemble in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.3 FINISHES

A. Prepare surfaces to be primed in accordance with SSPC SP 6- Commercial Blast Cleaning.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime paint items with PPG Water Base Inhibitive Metal Primer 90-712 at 4.8 mils MWF.

D. Galvanize in accordance with ASTM A123, structural steel members. Provide minimum 1.25 oz/sq ft galvanized coating.

PART 3 EXECUTION

3.1 EXAMINATION

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

B. Beginning of installation means erector accepts existing conditions.

3.2 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate sections.

3.3 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components indicated on Drawings and shop drawings.

D. Perform field welding in accordance with AWS D1.1.

E. Obtain Architect/Engineer approval prior to site cutting or making adjustments not scheduled.

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

3.4 ERECTION TOLERANCES

A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset from True Alignment: 1/4 inch.

3.5 SCHEDULE

A. The Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

1. Trench Drain: See drawings.

2. Ledge and Shelf Angles, Channels and Plates Not Attached to Structural Framing: For support of metal decking joists masonry; prime paint finish.

3. Lintels: As detailed; Interior: prime paint finish;
Exterior: galvanized finish.

END OF SECTION

DIVISION 06

WOOD, PLASTIC AND COMPONENTS

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Roof curbs and cants.

B. Blocking for roof work.

C. Sheathing – Wall and Roof.

D. Telephone and electrical panel boards.

E. Preservative treatment of wood.

1.2 RELATED SECTIONS

A. Section 07 54 19 – Polyvinyl-Chloride PVC Roofing.

B. Section 07 61 03 – Manufactured Sheet Metal Roofing.

1.3 REFERENCES

A. ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.

B. APA (American Plywood Association).

C. AWPA (American Wood Preservers Association) C1 - All Timber Products Preservative Treatment by Pressure Process.

D. AWPA (American Wood Preservers Association) C20 - Structural Lumber Fire Retardant Treatment by Pressure Process.

E. NFPA (National Forest Products Association).

F. RIS (Redwood Inspection Service).

G. SPIB (Southern Pine Inspection Bureau).

H. WCLIB (West Coast Lumber Inspection Bureau).

I. WWPA (Western Wood Products Association).

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:
   1. Lumber Grading Agency: Certified by ALSC.
   2. Plywood Grading Agency: Certified by APA.

1.5 SUBMITTALS

A. Product Data: In accordance with Section 01 30 00, submit manufacturer's certification for pressure-treated and fire-treated lumber.

PART 2 PRODUCTS

2.1 MATERIALS

A. Lumber Grading Rules: WCLIB and WWPA.

B. Miscellaneous Framing: Stress Group D, S.P.F. species, 19 percent maximum moisture content, pressure preservative treat when wood is in contact with concrete, masonry or metal.

C. Plywood: APA Grade C-C-X; unsanded.
   1. Fire Retardant Treated: Locations as indicated in Drawings or as listed below.
   2. Tongue and Groove: As indicated in Drawings.

D. Particle board: Will not be acceptable.

2.2 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
   2. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

2.3 INTERIOR FACTORY WOOD TREATMENT

A. Wood Preservative (Pressure Treatment) EPA Approved: AWPA Treatment C1 using water borne preservative with 0.060 L.I.S. CF retainage.
   1. Products treated with “CCA” (chromated copper arsenate) will not be permitted.
   2. “ACQ” (amine copper qust) or “CBA” (copper baron azole) treated products will be acceptable.

B. Fire Treatment: Shall be equal to Hoover Treated Wood Products, Inc. of Milford, VA (804) 633-5021 Pyro-Guard Complying with AWPA Type A fire retardant treatment and shall have a flame spread rating of 25 or less when tested in accordance with ASTM E-84.
   1. Interior Fire-retardant treated lumber and plywood shall have an equilibrium moisture content of not over 19% for lumber and 15% for plywood when tested in accordance with ASTM D-3201 at 92% relative humidity.
   2. Each piece of fire retardant treated lumber and plywood shall be manufactured under Underwriters Laboratories and shall bear the UL Qualification label for surface burning characteristics in the 30 minute E-84 flame test and also indicate kiln drying after treatment (KDAT).
   3. Other Acceptable Manufacturers:
      a. Dricon Fire Retardant Treated Wood.

PART 3 EXECUTION

3.1 INSTALLATION

A. Fire retardant treated wood used in structural applications shall be installed in accordance with the conditions and limitations listed in ESR-1791 as issued by the ICC Evaluation Service Inc.

B. Fire retardant treated wood shall be installed in compliance with the requirements of the applicable building codes and product recommendations.

C. Fire retardant treated wood shall not be installed in areas where in service it is exposed to precipitation, direct weeing, or condensation.

D. As with untreated wood, avoid exposure to precipitation during shipping, storage, or installation. Apply a water resistive barrier or underlayment over dry sheathing as soon as practical to avoid precipitation on the panel. Panels that get wet should be allowed to dry before covering or be replaced.

3.2 SCHEDULE

A. 2x wood blocking as detailed.

B. 3/4” plywood for roof and wall sheathing.

END OF SECTION

DIVISION 07

THERMAL AND MOISTURE PROTECTION

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Adhered polyvinyl-chloride (PVC) roof membrane flashing to match existing system
   2. Roof insulation.

B. Related Sections:
   1. Section 06 11 40 - Wood Blocking and Curbing for wood nailers, curbs, and blocking.
   2. Section 07 71 00 - Manufactured Roof Specialties for metal roof penetration flashings, flashings, and counterflashings.
   3. Section 07 90 00 - Joint Protection for joint sealants, joint fillers, and joint preparation.

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.4 SUBMITTALS

A. Product Data: For each type of product needed to complete work.

B. Shop Drawings: For repairs to roofing system to flashing new enclosures.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Product Certificate: Submit notarized certificate, indicating products intended for Work of this Section, including product names and numbers and manufacturers' names, with statement indicating that products to be provided meet the requirements of the Contract Documents.

B. Qualification Data: For Installer, Manufacturer, and Roofing Inspector.
   1. Include letter from Manufacturer written for this Project indicating approval of Installer.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
   1. Submit evidence of compliance with performance requirements.
   2. Product Compatibility: Indicate manufacturer has verified compatibility of roofing system components, including but not limited to: Roofing membrane, flashing sheets, adhesives, and sealants.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.

E. Research/Evaluation Reports: For components of membrane roofing system, from ICC-ES.

F. Warranties: Maintain the existing Sarnafil PVC membrane warranty.

G. Inspection Reports: Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years' experience installing existing manufacturer's system – Sarnafil PVC membrane, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to install manufacturer's product and furnish warranty of type specified.

B. Manufacturer Qualifications: UL listed and FM Approvals approved for roofing systems identical to those specified for this Project and listed in this Section, with minimum five years' experience in manufacture of comparable products in successful use in similar applications, and able to furnish warranty with provisions matching specified requirements.
1. Match existing roof system.

C. Roofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be one of the following:
1. An authorized full-time technical employee of the manufacturer.

D. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review base flashings, special roofing details, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
6. Review governing regulations and requirements for insurance and certificates if applicable.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Daily Protection: Coordinate installation of roofing so insulation and other components of roofing system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1.9 WARRANTY

A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Manufacturer's Warranty: Existing manufacturer's warranty shall remain in effect.

C. Extended Roof System Warranty: Warranties specified in this Section include the following components and systems specified in other sections supplied by the roofing system Manufacturer , and installed by the roofing system Installer:
   1. Sheet metal flashing and trim, including roof penetration flashings.
   2. Manufactured counterflashings, reglets, and penetration flashings.
   3. Metal wall, soffit panels, and trim.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Existing Manufacturer/Product: Sarnafil G459.

B. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
   1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
1. Corner, Perimeter, and Field-of-Roof Uplift Pressures: As indicated on Drawings.

D. SPRI Wind Design Standard: Manufacture and install copings and roof-edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressures:
1. Design Pressure: As indicated on Drawings.

E. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system.
1. Fire/Windstorm Classification: Class 1-90.
2. Hail Resistance: MH.

F. Flashings: Comply with requirements of Section 07 71 00. Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations of the following:
1. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.
2. FM Global 1-29: Loss Prevention Data Sheet for Above Deck Roof Components.
3. NRCA Roofing Manual (Sixth Edition) for construction details and recommendations.
4. SMACNA Architectural Sheet Metal Manual (Seventh Edition) for construction details.

G. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

H. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

I. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

J. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

K. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 PVC MEMBRANE ROOFING

A. Thermoplastic (PVC) Sheet: ASTM D 4434, Type II, internally fabric reinforced, uniform, flexible TPA sheet; Energy Star qualified, CRRC listed and California Title 24 Energy Code compliant.
1. Basis of design product: Tremco, TPA Roof Membrane.
2. Tensile Strength at 0 deg. F (-18 deg. C), minimum, ASTM D 751: 300 lbf/in (52 kN/m).

3. Tear Strength at 77 deg. F (25 deg. C), minimum, ASTM D 751: 100 lbf (440 N).
4. Elongation at 0 deg. F (-18 deg. C), minimum at fabric break, ASTM D 751: machine direction, 25 percent; cross machine direction, 25 percent.
5. Minimum Thickness, ASTM D 751: 60 mils (1.5 mm), nominal.
6. Exposed Face Color: White.
7. Reflectance, ASTM C 1549: 86 percent.
8. Thermal Emittance, ASTM C 1371: .86.
9. Solar Reflectance Index (SRI), ASTM E 1980: 108
10. Recycled Content, Minimum: 25 percent preconsumer.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet membrane.

2.4 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.
1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
a. Plastic Foam Adhesives: 50 g/L.
b. Gypsum Board and Panel Adhesives: 50 g/L.
c. Multipurpose Construction Adhesives: 70 g/L.
d. Fiberglass Adhesives: 80 g/L.
e. Contact Adhesive: 80 g/L.
f. Other Adhesives: 250 g/L.
g. PVC Welding Compounds: 510 g/L.
h. Adhesive Primer for Plastic: 650 g/L
i. Single-Ply Roof Membrane Sealants: 450 g/L.
j. Nonmembrane Roof Sealants: 300 g/L.
k. Sealant Primers for Nonporous Substrates: 250 g/L.
l. Sealant Primers for Porous Substrates: 775 g/L.
3. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Single Ply Membrane Bonding Adhesive, Low VOC: Elastomeric, low-VOC solvent-based contact-type adhesive for bonding TPA non-fleece-backed single ply membranes and flashings to substrates.
1. Basis of design product: Tremco, TPA/LV Single Ply Bonding Adhesive.
2. Asbestos Content, EPA/600/R-93/116: None.
3. VOC, maximum, ASTM D 3960: 200 g/L.

C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

D. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch (25 mm wide by 1.3 mm) thick, prepunched.

E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

F. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by PVC membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, approved and listed by FM Global for windstorm and fire characteristics specified, CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces. CCMC listed.
   1. Compressive Strength, ASTM C1621: Grade 2: 20 psi (138 kPa).
   2. Conditioned Thermal Resistance at 75 deg. F (24 deg. C): 14.4 at 2.5 inches (50.8 mm) thick.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.6 INSULATION ACCESSORIES

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation] to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Two-component, solvent-free, low odor, elastomeric urethane adhesive formulated to adhere roof insulation to substrate.
   1. Basis of design product: Tremco, Low Rise Foam Insulation Adhesive.
   2. Flame Spread Index, ASTM E 84: 10.
   3. Smoke Developed Index, ASTM E 84: 30.
   4. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 0 g/L.
   5. Tensile Strength, minimum, ASTM D 412: 250 psi (1724 kPa).
   6. Peel Adhesion, minimum, ASTM D 903: 17 lbf/in (2.98 kN/m).
   7. Flexibility, 70 deg. F (39 deg. C), ASTM D 816: Pass.

D. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

2.7 ASPHALT MATERIALS

A. Asphalt Primer, Water-Based: Water-based, polymer modified, asphalt primer.
   1. Asbestos Content, EPA 600/R13/116: None.
   2. Volatile Organic Compounds (VOC), maximum, ASTM D 3960: 2 g/L.

2.8 WALKWAYS

A. TPA Walkway Roll: Thermoplastic tri-polymer alloy reinforced elastomeric membrane roll, ASTM D 4434, with serrated, slip-resistant surface fabricated for heat welding to TPA tri-polymer alloy membrane surface.
   1. Roll Size: 36 inches by 60 foot (914 mm by 18.3 m).
   2. Thickness: 0.08 inch (2 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
   1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
   2. Verify that existing insulation and substrate is sound and dry.

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

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

D. Prime surface of concrete deck with asphalt primer at a rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m) and allow primer to dry.

3.3 INSTALLATION, GENERAL

A. Install roofing system in accordance with manufacturer’s recommendations.

B. Install wood cants, blocking, curbs, and nailers in accordance with requirements of Section 06 11 40.

C. Install roofing membrane, base flashings, and component materials in compliance with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system as listed in FMG’s “Approval Guide” for fire/windstorm classification indicated. Comply with recommendations in FMG Loss Prevention Data Sheet 1-49.

D. NRCA Installation Details: Install roofing system in accordance with the following NRCA Manual Plates and NRCA recommendations; modify as required to comply with requirements of FMG references above:
   1. Base Flashing and Counterflashing at Parapet Wall: Plates TP-5 and TP-5S.
   2. Base Flashing and Counterflashing at Parapet Wall, Movement Joint: Plates TP-6 and TP-6S.
   3. Base and Surface-mounted Counterflashing: Plates TP-4 and TP-4S.

4. Options for Perimeter Base Securement (Roof-to-Wall and Roof-to-Curb Intersections) – Single Ply Table 7.1
5. Options for Perimeter Base Securement (Roof-to-Wall and Roof-to-Curb Intersections) – Single Ply Table 7.2
6. Penetration, Sheet Metal Enclosure: Plates TP-16 and TP-16S.
7. Penetration, Plumbing Vent, Manufactured Boot: Plates TP-18A and TP-18AS.
8. Penetration, Pocket: Plates TP-19 and TP-19S.

3.4 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
1. Install insulation at average overall thickness of minimum 6 inches.

E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

F. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
1. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 ADHERED MEMBRANE ROOFING INSTALLATION

A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.
1. Install sheet according to ASTM D 5036.

B. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

C. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.

D. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

F. Welded Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.
1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars 6” o.c. with gasketed tape.

3.7 FIELD QUALITY CONTROL

A. Inspection: Contractor must have a full time inspector on site for nine hours each per every five days worked. Technical Inspector must have been employed by the manufacturer for a five year period. Technical Inspector must provide daily reports with photographs. Submittal paperwork must be provided showing the onsite technical inspector of the manufacturer has built-up roofing inspection experience of a minimum of 5 years.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Structural standing seam metal roofing.
2. Underlayment.
3. Eave protection.
4. Metal facias, flashings, and trim.
5. Metal gutters and downspouts.
6. Snow guards.

B. Related Sections:
1. Section 05 40 00 - Cold-Formed Metal Framing: Structural framing supporting metal roofing.

1.2 REFERENCES

A. American Architectural Manufacturers Association:
1. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
2. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
3. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. American Iron and Steel Institute:
1. AISI General - Standard for Cold-Formed Steel Framing - General Provisions.
2. AISI Header - Standard for Cold-Formed Steel Framing - Header Design.
3. AISI NASPEC - North American Specification for Design of Cold-Formed Steel Structural Members.

C. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International:
1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A755/A755M - Standard 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 A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
6. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
7. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

8. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
9. ASTM D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
10. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
11. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
12. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
13. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
14. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
15. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
16. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
17. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

E. Federal Specification Unit:
1. FS TT-C-494 - Coating Compound, Bituminous, Solvent Type, Acid Resistant.

F. National Roofing Contractors Association:
1. NRCA - The NRCA Roofing and Waterproofing Manual.

G. Sheet Metal and Air Conditioning Contractors:
1. SMACNA - Architectural Sheet Metal Manual.

H. Underwriters Laboratories Inc.:
1. UL 580 - Tests for Uplift Resistance of Roof Assemblies.

I. U.S. Environmental Protection Agency:
1. ENERGY STAR - ENERGY STAR Voluntary Labeling Program.

1.3 DESIGN REQUIREMENTS

A. Roof Loads
1. Roof Live Loads: Minimum 30psf.
2. Roof Snow Loads: As calculated in accordance with applicable 2018 IBC with 40 psf ground snow load and exposure C.
3. Dead Loads: Actual weight of materials incorporated into Work.

B. Wind Loads: Design and size components to withstand positive and negative wind loads, including increased loads at building corners.
1. Design Wind Load: As calculated in accordance with 90 mph basic wind speed, exposure C.
2. Design Wind Load: To design pressure of 20 psf.

C. Wind Uplift Resistance: UL 580; Class 90.

D. Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with 2006 IBC (International Building Code).

E. Air Infiltration: Limit air leakage through roof assembly to 0.03 cfm/sq ft of wall area, measured at reference differential pressure across assembly of 6.24 psf as measured in accordance with ASTM E283.

F. Water Leakage: None, when measured in accordance with ASTM E331 with test pressure of 6.24 psf.

G. Gutter and Downspout Components: Conform to SMACNA Architectural Sheet Metal Manual and The NRCA Roofing and Waterproofing Manual for sizing components for rainfall intensity determined by storm occurrence of 1 in 10 years.

1.4 SUBMITTALS

A. Section 01 30 00 - Submittal: Submittal procedures.

B. Shop Drawings:
1. Indicate metal roofing and wall panel profiles, jointing patterns, jointing details, fastening methods, flashings, terminations, and installation details.

C. Product Data:
1. Submit data on metal types, finishes, and characteristics.
2. Submit color charts for finish selection.

D. Samples:
1. Submit sample 16 x 16 inch in size to match existing panel.

E. Manufacturer's Installation Instructions: Submit instructions including special procedures for roofing penetrations, flashings, and perimeter conditions requiring special attention.

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

1.5 QUALITY ASSURANCE

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

B. Perform Work in accordance with SMACNA Architectural Sheet Metal Manual and The NRCA Roofing and Waterproofing Manual.

1.6 QUALIFICATIONS

A. Manufacturer: Maintain existing metal roof panel. Products specified in this section with minimum 10 years documented experience.

B. Installer: Company specializing in performing work of this section with minimum 5 years documented experience approved by manufacturer.

C. Design sheet metal roofing and structural supports under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Maryland.

1.7 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials causing discoloration or staining.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.10 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

1.11 WARRANTY

A. Section 01 70 00 – Contract Closeout: Requirements for warranties.

B. Furnish 20 year manufacturer warranty for sheet metal roofing against structural failure, corrosion, and water penetration.

C. Furnish 20 year manufacturer warranty for metal finish against fading, chipping, chalking, and blistering.

PART 2 PRODUCTS

2.1 MANUFACTURED SHEET METAL ROOFING

A. Manufacturers:
1. Fabral Model Prestige. (Basis of Design)
2. MBCI Model Battenlok.
3. Metal Fab Manufacturing, LLC Model METFAB III.
4. American Buildings Company Model LOC-SEAM.
5. Substitutions: Section 01 60 00 - Product Requirements.

B. Architectural Standing Seam Metal Roofing: Factory formed metal roofing panel system with concealed fasteners.
1. Panel Materials: Pre-finished galvalume steel sheet 24 gauge base metal thickness.
2. Panel Width: Nominal 16 inches. (Match existing)
3. Panel Profile: Flat.
4. Seam Type: Standing seam mechanically seamed, double locked.
5. Seam Height: 1-1/2 inches. (Match existing)
6. Color: Match existing.

2.2 SHEET METAL MATERIALS

A. Pre-Finished Galvalume Steel Sheet: ASTM A755/A755M coil coated.
1. Base Metal: ASTM A792/A792M; Grade 50 aluminum-zinc alloy coating.
2. Exposed Finish: Minimum two coat fluoropolymer coating with minimum 70 percent polyvinylidene fluoride resin.
3. Unexposed Finish: Manufacturer’s standard coating.

2.3 ACCESSORIES

A. Fasteners: Galvanized steel, Stainless steel. Same material and finish as roofing.

B. Underlayment: ASTM D226; High temperature ice and water shield.

C. Slip Sheet: Rosin sized building paper.

D. Ice Dam Membrane: ASTM D1970; self adhering polymer modified bituminous sheet material, slip resistant surface, 40 mils thick, 36 inches wide, with strippable release paper to expose adhesive surface high temperature rated as manufactured by Tamco.

E. Reglets: Recessed type, galvanized steel manufactured by Hickman.

F. Snow Rails: Equal to Metal Roof Innovation Ltd. Color Guard S5 snow retention system.

2.4 FABRICATION

A. Form sections shape as indicated on Drawings, accurate in size, square, and free from distortion or defects.

B. Fabricate facia, trim, flashing, and other metal components from same material as metal roof panels. Provide exposed metal surfaces with same finish as exposed face of metal roof panels.

C. Fabricate cleats of same material as sheet, to interlock with sheet.

D. Fabricate starter strips of same material as sheet, continuous, to interlock with sheet.

E. Form pieces in longest practical lengths.

F. Hem exposed edges on underside 1/2 inch; miter and seam corners.

G. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

H. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

I. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

J. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

K. Fabricate gutters to profile and size conforming to specified design requirements.

L. Fabricate downspouts to rectangular size 3 x 5 diameter.

M. Fabricate accessories in profile and size to suit gutters and downspouts.
1. Anchorage Devices: In accordance with SMACNA.
2. Gutter Supports: Brackets.
3. Downspout Supports: Brackets.

N. Fabricate snow guards in accordance with SMACNA Plate.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Structural Framing Substrate:
1. Verify primary and secondary framing members are installed and fastened, properly aligned, and sloped to valley and eaves.
2. Verify damaged shop coatings are repaired with touch up paint.

C. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets are in place, and nailing strips located.

D. Verify roofing termination and base flashings are in place, sealed, and secure.

E. Verify insulation is installed and ready for roof application.

3.2 PREPARATION

A. Wood and Metal Deck Substrate:

1. Fill knot holes and surface cracks with latex filler at areas of bonded eave protection.
2. Broom clean deck surfaces under eave protection and underlayment.

B. Back paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mil.

3.3 INSTALLATION - ICE DAM MEMBRANE

A. Install ice dam membrane parallel with eave edge, flush with face of eave edge flashing with edges lapped shingle style and ends lapped and staggered between rows. Install high temperature ice and water shield over entire surface.

B. Place single width eave protection sheet centered over valley, hips and ridges.

C. Place single width eave protection sheet along gable, parallel to gable edge.

3.4 INSTALLATION - UNDERLAYMENT

A. Apply underlayment over entire roof area in single layer fastened to substrate.
1. Install underlayment laid perpendicular to slope.
2. Weather lap edges 2 inches and nail in place.
3. Stagger end joints minimum 24 inches.

3.5 INSTALLATION - STANDING SEAM METAL ROOFING

A. Conform to SMACNA and NRCA details.

3.6 INSTALLATION - FLASHING

A. Conform to SMACNA and NRCA details.

3.7 INSTALLATION - GUTTERS AND DOWNSPOUTS

A. Conform to SMACNA and NRCA details.

3.8 INSTALLATION - SNOW RAILS

A. Install snow rails in accordance with manufacturer’s instructions.

B. Install snow rails in continuous line, 12 inches up slope of exterior wall.

C. Install one additional line of rails continue along roof edge 4’-0” from gutter.

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Contract Closeout: Protecting installed construction.

B. Do not permit traffic over unprotected roof surface.

END OF SECTION

PART 1 GENERAL

1.1 WORK INCLUDED

A. Gutters and Downspouts

1.2 RELATED WORK

A. Section 07 54 19 - Polyvinyl-Chloride PVC-TPA Roofing

B. Section 07 61 03 - Manufactured Sheet Metal Roofing

1.3 REFERENCES

A. ASTM D2822 - Asphalt Roof Cement

B. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.

C. SMACNA - Architectural Sheet Metal Manual.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

C. Product Data: Provide product data on shape of components, materials and finishes, anchor types and locations.

D. Samples: Submit two (2) samples, 12 x 12 inches in size illustrating component shape, finish, and color.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with NRCA details or as detailed within the documents.

B. All components shall be from one manufacturing source.

1.6 WARRANTY

A. Copings, fascia, fascia extenders, closures and reglets shall be covered by the roofing warranty specified in Section 07 61 03

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Maintain same manufacturer per Section 07 61 03.

2.2 COMPONENTS

A. Fascias, Roof Edge, Fascia Extenders, Extruded Closures: Equal to Fabral flashing trim and edge metals 0.04 aluminum, shaped as indicated, with continuous cleat and splice plates. Include cover plates to conceal and weather seal joints and attachment flanges.

Provide extruded closure plates as required and mitered, welded corners. Color shall be pre-finished Kynar 20 year finish as selected by the Architect from the manufacturer's full Kynar color range.

C. Gutters and Downspouts: Formed 24 ga. minimum, 6" x 6" gutter, 5" x 4" downspout. See drawings for profile.

2.3 ACCESSORIES

A. Sealant: Roofing Manufacturer's standard type suitable for use with installation of system; non-staining, skinning, non-skinning, non-shrinking, and non-sagging; ultra-violet and ozone resistant; color as selected.

2.4 FINISHES

A. Provide color to match existing.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.2 INSTALLATION

A. Install components in accordance with manufacturer's instructions.

B. Conform to NRCA - Waterproofing Manual drawing details.

C. Coordinate installation of components of the section with installation of roofing membrane and base flashings.

D. Coordinate installation of flashing flanges into reglets.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preparing substrate surfaces.

B. Sealant and joint backing.

C. Security Sealants (Detention Areas).

1.2 RELATED SECTIONS

A. Section 07 54 19 – Polyvinyl-Chloride (PVC) Roofing.

B. Section 07 61 03 – Manufactured Sheet Metal Roofing.

1.3 REFERENCES

A. ASTM C790 - Use of Latex Sealing Compounds.

B. ASTM C804 - Use of Solvent-Release Type Sealants.

C. ASTM C834 - Latex Sealing Compounds.

D. ASTM C919 - Use of Sealants in Acoustical Applications.

E. ASTM C920 - Elastomeric Joint Sealants.

F. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

G. ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).

H. SWRI (Sealant, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.
   1. Written certification from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated as verified through manufacturers in-house testing laboratory.

C. Samples: Submit two samples, 1 x 4 inch in size illustrating sealant colors for selection.

D. Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, and perimeter conditions requiring special attention.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

1.6 QUALIFICATIONS

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

B. Applicator: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by manufacturer.

1.7 ENVIRONMENTAL REQUIREMENTS

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

1.8 COORDINATION

A. Coordinate work with other trades.

B. Coordinate the work with all sections referencing this section.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high and low temperatures, contaminants, or other causes.

1.10 WARRANTY

A. Special Installer Warranty: Submit a written, labor and material warranty agreeing to repair or replace sealants which fail to provide airtight and/or watertight joints, or fail in adhesion, cohesion abrasion-resistance, stain-resistance, weather resistance, or general durability or appear to deteriorate in any other manner not clearly specified in the manufacturer

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Pecora

B. Tremco

C. Bostik

D. Sika

E. Substitutions shall be submitted in accordance with General Conditions to the Construction Contract.

2.2 SEALANTS

A. Polyurethane Traffic Grade Sealant (Type A): ASTM C920, Two Part, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, self-leveling type; color as selected; Urexpan NR-200 manufactured by Pecora.
   1. Elongation Capability 25 percent
   2. Service Temperature Range -40 to 180 degrees F
   3. Shore A Hardness Range 20 to 35

B. Polyurethane Sealant (Type B): ASTM C920, Grade NS, Class A, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging type; color as selected; Dynatrol II manufactured by Pecora.
   1. Elongation Capability 50 percent
   2. Service Temperature Range -20 to 180 degrees F
   3. Shore A Hardness Range 20 to 35

C. Silicone Sealant (Type C): ASTM C920, Grade NS, Class 25, Use NT; single component, fungus resistant, chemical curing, non-sagging, non-staining, non-bleeding; color as selected; 860 manufactured by Pecora.
   1. Elongation Capability 25 percent
   2. Service Temperature Range -75 to +400 degrees F

3. Shore A Hardness Range 15 to 50

D. Elastomeric Polyurethane Sealant (Type D): Two component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging, self-leveling type; color as selected; manufactured by Pecora-Dynaflex:
1. Elongation Capability 175-200 percent
2. Service Temperature Range -40 to 180 degrees F
3. Shore A Hardness Range 55
4. Tensile Strength 375-40 psi

E. Elastomeric Silicone Sealant (Type E): One part, low modulus neutral-coring, high performance silicone sealant curing via atmospheric moisture to form a durable flexible seal; color as selected; manufactured by Pecora
1. Pecora 864
   a. Elongation Capability 900 percent
   b. Service Temperature Range -60 to +300 degrees F
   c. Shore A Hardness Range 25
2. Pecora 890 FTS
   a. Elongation Capability 1,00 percent
   b. Service Temperature Range -60 to +300 degrees F
   c. Shore A Hardness Range 20

2.3 ACCESSORIES

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

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

C. Joint Backings: Provide sealant backings of material and type that are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
Select shape and size of joint filler in consultation with the manufacturer for proper performance in the specified condition of use in each case.
1. Joint Backing: ASTM D1565; round, open cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.
2. Joint Backing (For use with Type E Sealant): One of the following preformed, compressible, resilient, non-staining, non-waxing, non-extruding strips of flexible plastic foam for material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance, on the following:
   a. HBR Backer Rod; Applied Extrusion Technologies
   b. Soneborn Sonofoam Closed Cell Backer Road; ChemRex, Inc.
   c. Expand-o-Foam; Williams Products, Inc.

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

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

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

3.2 PREPARATION

A. Remove loose materials and foreign matter which might impair adhesion of sealant.

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

C. Perform preparation in accordance with manufacturer's instructions.

D. Protect elements surrounding the work of this section from damage or disfiguration.

3.3 INSTALLATION

A. Install sealant in accordance with manufacturer's instructions.

B. Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.

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

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

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

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

G. Tool joints concave.

3.4 CLEANING

A. Clean work under provisions of 01 70 00.

B. Clean adjacent soiled surfaces.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Section 01 50 00.

B. Protect sealants until cured.

3.6 SCHEDULE

General: The following sealants shall be installed throughout the construction where construction materials intersect or abut creating a joint which requires closure for appearance, weather, or as may be required by the Owner and Architect.

	Location	**Type**
A.	Exterior horizontal concrete paving & sidewalk expansion joints (Type A)	Two part polyurethane Traffic Grade Type II
B.	Exterior vertical joints (Type B)	Two part polyurethane Type II
C.	Metal Roofing (Type C)	One part

END OF SECTION

DIVISION 09

FINISHES

BUSHEY FEIGHT MORIN ARCHITECTS INC.
473 NORTH POTOMAC STREET
HAGERSTOWN, MARYLAND 21740
301-733-5600

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation and field application of paints and coatings.

B. Clean, prep, and provide prime and finish coats to exterior steel and hollow metal components with color as selected by Owner.

1.2 RELATED SECTIONS

A. Section 05 50 00 - Metal Fabrications: Shop primed items.

1.3 REFERENCES

A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

B. ASTM D2016 - Test Method for Moisture Content of Wood.

C. AWWA (American Water Works Association) - C204 - Chlorinated Rubber-Alkyd Paint Systems for the Exterior of Above Ground Steel Water Piping.

D. AWWA (American Water Works Association) - D102 - Painting Steel Water Storage Tanks.

E. NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.

F. NPCA (National Paint and Coatings Association) - Guide to U.S. Government Paint Specifications.

G. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual.

H. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

1.4 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Provide data on all finishing products.

C. Samples: Submit two color chip selection catalogs illustrating range of colors available for each surface finishing product scheduled.

D. Manufacturer's Instructions: Indicate special surface preparation procedures, substrate conditions requiring special attention.

E. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/ color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples for each color and finish used.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten (10) years documented experience.

B. Applicator: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by manufacturer.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for finishes.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior, unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish and Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA MATERIALS

B. Provide 1 gallon of each color, and type to Owner.

C. Label each container with color, type, texture, room locations, and in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers - Paint
   1. PPG.
   2. Sherwin-Williams.
   3. Benjamin Moore.

B. Manufacturers - Primer Sealers
   1. PPG - 6 Line.
   2. Benjamin Moore.
   3. Sherwin-Williams.
   4. Duron

C. Substitutions: Under provisions of Section 01 60 00.

2.2 MATERIALS

A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; 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 not specifically indicated but required to achieve the finishes specified, of commercial quality.

C. Patching Materials: Latex filler.

D. Fastener Head Cover Materials: Latex filler.

2.3 FINISHES

A. Refer to schedule at end of section for surface finish schedule. Colors will be selected during construction.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions under provisions of Section 01 50 00.

B. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

3.2 PREPARATION

A. Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

B. Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.

C. Seal with shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

F. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

G. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool, wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

H. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

I. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand wood and metal lightly between coats to achieve required finish.

F. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.

G. Allow applied coat to dry before next coat is applied.

H. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

I. Prime concealed surfaces of interior woodwork with primer paint.

J. Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.4 CLEANING

A. Clean work under provisions of 01 70 00.

B. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 INTERIOR PAINT SYSTEMS

A. FERROUS METALS:
1. 1st Coat: Primer S-W Pro Industrial Pro-Cryl Primer, B66-310 Series.
2. 2nd & 3rd Coat: Semi-Gloss: S-W Pro Industrial Pre-Catalyzed Water based Epoxy, K45 Series.

B. METAL DOORS, TRIM & EXPOSED STRUCTURAL STEEL
1. Touch-up existing primer. S-W Pro Industrial Pro-Cryl Primer, B66-310 Series.
2. 2nd & 3rd Coats: Semi-Gloss: S-W Pro Industrial Pre-Catalyzed Water based Epoxy, K45.

3.6 EXTERIOR PAINT SYSTEMS

A. Ferrous metals (normal use and atmosphere).
1. Location: All structural and miscellaneous steel, hollow metal doors and frames and fire hydrants.
2. System: Oil Alkyd (gloss).

a. First Coat: Touch-up Primer: S-W Pro Industrial Pro-Cryl Primer, B66-310 Series.
b. Second and Third Coat: S-W Pro Industrial Urethane Alkyd Enamel, B54-100 Series.

B. Fiber Cement Siding & Trim (Acrylic Latex System)
1. 1st Coat (primer): S-W Loxon Concrete Masonry Primer Sealer, A24W8300.
2. 2nd Coat: Exterior Flat: S-W A-100 Exterior Latex Flat, A6 Series.

C. Glazing
1. 1st & 2nd Coats: Exterior Flat: S-W A-100 Exterior Latex Flat, A6 Series (Black color).

3.7 SCHEDULE

A. Existing steel tube trusses and purlins, hollow metal doors and frames.
1. Touch up exposed areas damaged during construction.
2. Clean, prep, prime and finish coat.

B. New steel tubes trusses and purlins
1. Shop primed and field painted per Article 3.5. Color to match existing Blue.

END OF SECTION