

ADDENDUM NUMBER TWO

**FLEET BUILDING ROOF REPLACEMENT AT 12TH STREET
CONTRACT NO. M-17-003-201**

CITY OF CHATTANOOGA, TENNESSEE

A question was received about the wind speed listed on the specifications being 90 mph.

That specification has been revised. The Wind Speed specified for the manufacturer's warranty for the roofing system is 55 mph.

The following changes shall be made to the Contract Documents, Specifications, and Drawings:

Replace Original Section 06100 Rough Carpentry with the attached revised Section 06100 Rough Carpentry R1.

Replace Original Section 07540 TPO Mechanically Attached with the attached revised Section 07540 TPO Mechanically Attached R1.

Replace Original Section 07620 Sheet Metal Trim and Accessories with the attached revised Section 07620 Sheet Metal Trim and Accessories.

August 25, 2016

/s/Justin C Holland, Administrator

SECTION 06100 ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Replacement roof nailers, plywood backing, and related blocking.

1.2 GENERAL

- A. The work included under this section shall consist of furnishing all labor, materials, equipment, services and supervision necessary to complete all carpentry work as specified herein or otherwise required for the completion of the project.
- B. New perimeter nailers, plywood backing boards, blocking, and shall be provided as shown on the drawings.
- C. The Contractor shall verify all locations, sizes, elevations, and dimensions of existing construction which will interface with the new work and shall note all conditions that will affect the specified work. Any interference shall be brought to the attention of the Engineer prior to commencing work.
- D. All work shall be performed in accordance with the applicable codes and standards and this specification.
- E. The Contractor shall review all specifications included in the Contract Documents for related work referenced in but not covered by this section.

1.3 REFERENCES, CODES AND STANDARDS

The editions in effect as of the date of this agreement of the following publications, codes, and standards shall be deemed part of this specification as applicable:

U.S. Department of Commerce, Simplified Practice Recommendation R16-53 American Lumber Standards for Softwood Lumber

2012 International Building Code (IBC)

Occupational Safety and Health Administration (OSHA)

American Society of Testing and Materials (ASTM)

All Applicable Federal, State, Local and Owner Regulations

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Provide all materials, equipment, tools, facilities, and services as required to

complete the work.

- B. Grading and marking - Lumber shall bear the grade, mark, or stamp or other identifying marks indicating grades of material and rules or standards under which they are produced. Such identifying marks on a material shall be in accordance with the rule or standard under which such material is produced.
- C. Sizes and surfacing - Size references are the nominal sizes and surfacing of lumber shall be S4S.
- D. Moisture content - Moisture content at the time of delivery and when installed in the work shall not exceed 19%.
- E. All wood for nailers and blocking shall be #2 SBX (Borate) Treated Southern Pine.
- F. All plywood for nailers, blocking, and sheathing shall be 4-ply CDX material.
- G. Screws to fasten lumber to lumber shall be stainless steel screws and be long enough to penetrate 1 1/4" into the receiving board.
- H. Screws to fasten the wood blocking and plywood to the steel members shall be self-tapping stainless steel screws with sufficient length to penetrate the steel a minimum of 3/4"
- I. Fasteners for wood blocking and plywood to concrete or masonry shall be Hilti or eq. 1/4 inch min. diameter wedge anchors, minimum 1-1/2 inch embedment.

2.2 DELIVERY AND STORAGE

- A. All materials shall be delivered to the site in their original, undamaged containers.
- B. The Contractor shall verify all items delivered comply with this specification.
- C. The Contractor shall inspect each item for damage and replace any deficiencies, errors, or damaged items in a timely fashion so as not to delay construction.
- D. All items shall be stored and protected from weather and damage during storage period.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Installation shall be in accordance with building code requirements and industry standards.
- B. See the construction drawings for required locations and fastening criteria of the nailers and blocking.

-- END OF SECTION --

SECTION 07540

THERMOPLASTIC POLYOLEFIN ROOFING (TPO) MECHANICALLY ATTACHED

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Mechanically attached thermoplastic (TPO) roof membrane system
- B. Vapor Retarder
- C. Roof Insulation
- D. Roof edge, flashings and accessories
- E. Walking Pads

1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: For nailers and roof assembly support.
- B. Section 07620 - Sheet Metal and Trim.

1.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM C 578 - Standard Specification for Rigid Cellular Polystyrene Thermal Insulation.
 - 2. ASTM C 1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - 3. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 4. ASTM D 6878 - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
- B. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. Underwriters Laboratory UL 790 - Standard Test Methods for Fire Tests of Roof Coverings.
- D. International Code Council (ICC):
 - 1. International Building Code (IBC).

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and flashings that remain watertight;

do not permit the passage of water; and resist specified uplift pressures, thermally induced movement and exposure to weather without failure.

- B. Material Compatibility: Provide roofing materials that are compatible with one another under service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Thermal Performance:
 - 1. Roof system will achieve a minimum R value not less than 15.
- D. Wind Uplift Performance:
 - 1. Roof System designed to meet manufacturer's warranty issuance requirements for 55mph warranty.
 - 2. Roof system designed and successfully tested by a qualified testing and inspecting agency to withstand uplift forces as calculated using the current version of ASCE 7.
 - 3. Roof system designed and successfully tested to FM Global (FMG) 4470 Approval Standard for Class 1 Roof Covers, which meet the calculated design pressure requirements of the roofing system as stipulated in FM Global Property Loss Prevention Data Sheets 1-28.
- E. Energy Performance:
 - 1. Provide roofing system with initial Solar Reflectance Index not less than 175 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
 - 2. Provide roofing system that is listed on the DOE's Energy Star "Roof Products Qualified Products List" for low slope roof products.
 - 3. Provide roofing system with initial Solar Reflectance Index not less than **0.70** and emissivity not less than **0.75** when tested according to CCRC-1.
- F. Drainage: Provide a roof system with positive drainage where all standing water dissipates within 48 hours after precipitation ends.
- G. Building Codes: Roof system shall meet the requirements of all federal, state and local code bodies having jurisdiction.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data:, including:
 - 1. Manufacturer's data sheets on each product to be used.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.
- C. Samples for Verification for the following products:
 - 1. Manufacturer's standard sample size of sheet roofing of color specified.
 - 2. Manufacturer's standard sample size of roof insulation.

3. Manufacturer's standard sample size of walkway pads or rolls.
 4. Fasteners of each type and finish used for complete roofing installation.
- D. Shop Drawings:
1. For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 2. Base flashings, membrane terminations, cap flashing.
 3. Insulation, including crickets and slopes.
 4. Roof plan showing orientation of steel roof deck and orientation of membrane roofing and fastening spacing's and patterns for corner, perimeter, and field-of-roof locations.
 5. Location and type of penetrations, perimeter and penetration flashing detail references to manufacture's standard. Details which do not conform to roofing manufacturer's standards shall be identified with separate approval from roofing manufacturer. Details to be employed on the project shall be approved by roofing manufacturer.
- E. *Worker Protection Plan*
- F. *Building Protection and Foul Weather Plan*
- G. Warranty Certification:
1. Submit warranty certification from manufacturer of approval of project design and intent to issue warranty.
- H. Qualification Data: For qualified manufacturer, installation company, and job foreman.
- I. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements".
1. Submit evidence of compliance with performance requirements.
- J. 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.
- K. Field quality control reports. Provide a quality control plan as recommended by the manufacturer. Include, as a minimum, weather conditions, materials used, installation sequences and destructive test results.
- L. Maintenance Data: For roofing system to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with a minimum of ten years' experience in the manufacturing of single-ply heat weldable membranes.
- B. Installer Qualifications: Roofing contractor shall be authorized by roofing system manufacturer to install assembly. Provide letter on manufacturer's letterhead of

authorized status of Contractor.

- C. Applicator Foreman: Individual experienced in the installation of horizontal single-ply roofing membrane system of type specified herein with minimum two years cumulative documented experience.
- D. Source Limitations: Obtain components including roof insulation and fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- E. Exterior Fire-Test Exposure: ASTM E108, 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.

1.7 PRE-ROOFING CONFERENCE

- A. Before mobilizing and starting roofing activities, convene for a pre-roofing conference at the site or at a location agreeable to the contractor and the owner.
- B. Attendees shall be at a minimum: Owner, Owner's Engineer, Roofing Subcontractor, Installation Foreman, manufacturer's representative, installers of items interfacing with roofing materials and installation.
- C. Agenda:
 - 1. Worker Protection Plan / Safety Requirements
 - 2. Scope of Work / review technical requirements
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation procedures; manufacturer's published instructions.
 - 5. Construction Schedules.
 - 6. Protection of Building Interior and Foul Weather Plan.
 - 7. Roof structural loading limitations during and after roofing operations.
 - 8. Installation Drawings and Details.
 - 9. Repair procedures.
 - 10. Quality Assurance.
 - 11. Closeout procedures.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Pallets may be stored on the ground in a secure area. If placed on the roof, the load shall not exceed the structural capacity of the deck or crushing resistance of the insulation.
- B. Packaging shall bear the UL and FM labels.
- C. Store products in manufacturer's unopened packaging until ready for installation.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.9 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 WARRANTY

- A. A manufacturer's representative shall inspect the installation for compliance with manufacturer's standards upon completion of the roofing system.
 - 1. Deviations or changes from the contract specification shall have written approval from the roofing manufacturer, for presentation to Owner's Engineer at completion of roofing system.
- B. Standard Material and Labor Warranty: Shall be issued upon acceptance of the roofing system installation.
 - 1. *Twenty (20) year period that covers waterproof condition and wind damage up to 55 mph.*

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers
 - 1. Firestone Building Products Company
 - 2. Carlisle Syn Tec Incorporated
 - 3. GAF Materials Corporation
 - 4. GenFlex Roofing Systems
 - 5. Versico Incorporated
- B. Cap Flashing: Hickman or approved equal.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600. All substitutions must meet the quality assurance requirements as specified in sections 1.4 and 1.6 above.

2.2 MATERIALS

- A. Roofing Membrane shall be manufactured with the following properties:
 - a. Membrane Thickness: 60 mils.
 - b. Energy Efficient White meeting Energy Performance requirements stated above.
- B. Flashings Membrane:
 - 1. Shall be 0.045 inch (1.14 mm) or 0.060 inch (1.52mm) thick reinforced membrane for walls and curbs regardless of roof cover sheet thickness.
 - 2. Shall be .060 inch (1.52 mm)-thick unsupported membrane for field-fabricated details used for making field flashings that require higher extensibility than is allowed with scrim-reinforced membrane. Typical application examples include inside and outside corners, vent stacks, and other penetrations.

- C. Insulation shall be selected manufacturer's proprietary or approved as follows:
 - 1. Closed-cell HCFC Free polyisocyanurate foam core and integrally laminated to heavy non-asphaltic fiber-reinforced felt facers.
 - a. Compressive strength: 25 psi (172 kPa).
- D. Vapor Retarder Membrane
 - 1. 10 mil Visqueen or approved equal.
- E. Auxiliary Membrane Roofing Materials
 - 1. Mechanical Fasteners for fastening insulation to deck: manufacturer's standard for required performance.
 - 2. Bead-applied and Full-spread adhesive: low-rise, two component urethane adhesive for attaching of membrane and cover board to substrates: manufacturer's standard for required performance.
- F. Cover Board:
 - 1. DensDeck® Roof Boards: G-P Gypsum Corporation 5/8 inch (16 mm) DensDeck® Roof Board. Glass mat faced gypsum with specially treated gypsum core that resists moisture or equivalent.
- G. Cap Flashing: Hickman, with concealed fastenings, min. .063 anodized aluminum, or equivalent.
- H. Walkways
 - 1. Factory formed, non-porous, heavy duty, slip resisting, surface textured walkway pads, approximately 5/32 inch thick, and acceptable to membrane roofing system manufacturer.
 - 2. Size: 24 inch x 24 inch.
 - 3. Colors and Textures: White

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Nailers and blocking shall be installed level, true to line and elevation, secured to roof structure to resist roof installation and service conditions. Refer to Section 06100.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Adhesives, solvents, and caulks as indicated are potentially flammable and/or toxic. Follow precautions indicated on container or packaging labels.
- B. Surfaces to be bonded shall be dry, clean and free of debris. Suitable surfaces are

usually considered to be smooth: solid masonry, wood and metal, plus insulation boards fastened per the specific manufacturer's recommendations for receiving adhered roofing membranes.

- C. All fasteners should be installed with a depth-sensing screw gun to prevent over driving or under driving.
- D. Block off or shut down positive pressure building ventilation systems during application to prevent sheet from billowing during application.
- E. Verify all rooftop mechanical units are to have their condensation lines piped to drains, or off the roof.
- F. Grease shall not be allowed to accumulate on the roof. If rooftop grease units do not receive continual maintenance they are to have an approved grease contaminant system specified.
- G. Steel Deck:
 - 1. Shall be covered with a polyisocyanurate insulation board mechanically fastened to the deck.
- H. Ponding at the membrane level shall be corrected by improved drainage design as required to eliminate "birdbathing" to less than 4 square feet (.37 square meters), less than 1/2 inch (13 mm) deep areas.
- I. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Provide temporary ballast in partially completed sections to control wind effects during construction.
- B. Vapor Retarder – install sheet over metal deck, covering all edge and field joints.
- C. Insulation Installation:
 - 1. Mechanical Attachment: Insulation boards shall be attached with manufacturer approved insulation plates and fasteners.
 - 2. Perimeter/Corner Enhancement: Perimeter sheets shall be installed at all exposed building perimeters. Perimeter sheets shall be laid out in a pattern approved by membrane manufacturer. Provide fasteners at spacing required by roofing membrane manufacturer to comply with wind uplift requirements. Appropriate fastener and plate combination shall be installed along the edge of the membrane through the insulation and into the roof deck.
 - 3. Field sheets: Fasten field sheets with approved fasteners which meet the wind

uplift requirements of the roofing system as specified above. Ensure that the deck materials and grade have been identified and that the proper fastener and plate are installed at the manufacturer specified spacing to achieve the design as specified. Fastener and plate combination shall be installed along the leading edge of the membrane through the insulation and roof metal into the structural decking. Adjacent rolls of membrane shall overlap the fastened edge of the installed membrane.

4. Lap Splice: Membrane shall be overlapped and hot-air welded without any contaminants (adhesive, dirt, debris, etc.) in the seam.
 - a. The entire lap edge shall be probed with an approved seam probing tool after the seam has cooled completely to verify seam consistency.
 - b. Cut edges shall be caulked by applying sealant.
 5. Perimeter fastening: At perimeters that are to receive a gravel stop or metal edging, membrane shall be brought over the outside edge and terminated 12 inches (610 mm) o.c to wood nailers. Membrane shall be fastened at other terminations by using fasteners and seam plates.
- D. Flashing Installation: Perimeters, curbs, vents, expansion joints, drains, and other details shall be flashed. Under no circumstances shall flashings cover weep holes or any form of through-wall drainage.
1. Pipe flashings shall be installed in accordance with manufacturer's detail. Do not flash to lead.
 2. Expansion joints shall be installed according to manufacturer's detail.
 3. Roof drains shall be installed in accordance with manufacturer's detail.
- E. Metal Work Installation:
1. Metal work shall be installed in a manner that prevents damage from buckling or wind.
 2. Metal work shall be sealed and waterproofed.
- F. Overnight Seal/Temporary Water Stop Installation:
1. Water stop shall be made by a sealant method approved by manufacturer.
 2. Roofing contractor shall coordinate installation to ensure the system is made watertight at the end of each work day.
- G. Roof Walkways Installation:
1. Membrane shall be clean and dry. Remove any visible dirt and debris.

2. Position walkway pads as shown on roof plan.
3. Fully weld perimeter of walkway roll to the membrane following standard welding procedures.

3.4 INSPECTION

- A. Destructive tests shall be performed daily on a 3 inches (76 mm) wide area of seam weld to verify sufficient peel strength. Verify seam strength and correct procedures and seams that do not provide watertight durable construction.
 1. A properly welded seam will have membrane delamination from scrim prior to weld failure.
 2. Additional destructive tests on welds shall be conducted for the first seam of the day, the first seam after the robot welder has been allowed to cool down, and after any extreme changes in weather conditions.
- B. Upon completion of the installation, an inspection shall be performed by a representative of the roofing manufacturer to ascertain that the roofing membrane system has been installed according to approved specifications and details. Upon approval of the project, a Warranty shall be written.
- C. Complete quality control log and submit to Owner.

3.5 PROTECTION

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

END OF SECTION

SECTION 07620

PART ONE – GENERAL MANUFACTURED SHEET METAL TRIM AND ACCESSORIES

1.01 SCOPE:

A. Furnish and install manufactured or custom formed sheet metal gutters, downspouts, eave and rake trim, flashings, counter-flashings, receivers, closures, and miscellaneous trim items, along with fasteners, clips and other related items and accessories which adjoin wall panel systems that are necessary or required to achieve a weather tight building enclosure. The finish color of the new sheet metal trim and accessories shall be selected by the Engineer. Water-tight and weather- tight systems are required.

B. The completed installation must withstand wind speeds equivalent to or greater than the wind speed specified in the roofing warranty, 20 psf wind uplift pressure, and otherwise comply with 2012 International Building Code requirements.

1.02 RELATED DOCUMENTS:

Applicable provisions of the Contract, the General Conditions, the Supplementary Conditions and Division 01, General Requirements, apply to the work under this section.

1.03 REFERENCE STANDARDS:

Where "SMACNA Manual" is referenced, it shall mean the "Architectural Sheet Metal Manual" issued by Sheet Metal and Air Conditioning Contractor's National Association, Seventh Edition, 2012.

1.04 QUALIFICATIONS: Manufacturer and erector shall demonstrate experience of a minimum of five (5) years of related industry experience. Erector must be certified by the manufacturer.

1.05 SUBMITTALS:

A. Comply with provisions of Section 01 33 00. Furnish color and finish samples for color selections by the Architect, and for Architect's review and confirmation of the finishes. Multiple colors may be required for entire project. Furnish samples and descriptive data as follows:

Fasteners: Two of each type to be used, with a statement regarding intended use.

B. Any proposed substitution shall meet the requirements for appearance and product integrity. Each request for substitution shall include the name of the materials and equipment to be used, complete product description, detailed drawings clearly identifying proposed deviations from the

Contract Documents, and any other information necessary for the Engineer's evaluation, including samples and mock-ups.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instruction and lead time requirements to avoid construction delays.
- B. Schedule delivery in such a manner as to minimize the necessity for extended storage on site or storage outside in the elements.
- C. Deliver components, sheets, metal roof/wall panels and other manufactured items so as not to be damaged or deformed. Package metal roof/wall panels for protection during transportation and handling.
- D. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

1.07 JOB CONDITIONS:

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit work to be performed.
- B. Field Measurements: Verify actual dimensions of construction by field measurements before fabrication.

1.08 WARRANTIES:

- A. FINISH WARRANTY: Provide manufacturer's 20-year non-prorated finish warranty for new gutters, downspouts, trim, and flashings, and for other new items fabricated from coil-stock material.
- B. WEATHER-TIGHTNESS WARRANTY: Installer shall furnish written warranty for a twenty (20) year period from date of substantial completion of building covering repairs required to maintain roof and flashings in watertight condition.

PART TWO – PRODUCTS

2.01 MATERIALS AND DESIGN: The Drawings and Specifications are based on the products of various manufacturing companies as noted. Equal products of other manufacturers meeting or exceeding the manufacturer's published characteristics of the specified products are acceptable as approved by the Architect.

2.02 MANUFACTURED OR CUSTOM-FORMED GUTTERS, DOWNSPOUTS AND TRIM: Gutters, downspouts, fascia and rake trim, corner trim, and other trim shall be fabricated of minimum 24 gauge metal. All formed items shall comply with SMACNA standards. Form all items weather-tight.

- A. Finish: Kynar 500 or Hylar 5000 coating.

B. Colors: Colors shall be selected by the Engineer from the Manufacturers' standard colors. More than one color may be selected by the Engineer.

C. Fabricate gutters, downspouts, rake trim, fascias and other trim with expansion joints as required.

D. Provide and install hangers on downspouts (of same material as downspouts) near top, near bottom, and at intervals not exceeding ten feet, using appropriate type anchors.

E. Carefully coordinate locations of downspouts hangers so that hangers are in alignment horizontally.

F. Provide and install straps and brackets on gutters in accordance with SMACNA recommendations for size and style of gutter indicated, but no less than the following:

1. Fabricate one-inch wide by length required brackets and straps for support of gutters, using same material as gutters. Install brackets and straps alternating at 18" on center, along top and bottom of gutters, 36" between brackets and 36" between straps. Fastening shall be with appropriate screws.
2. Gutters shall be formed and sized to comply with SMACNA.
3. Gutters, rake trim and head trim shall be manufacturers' standard profiles, with rake trim and gutters having matching profiles so as to form smooth transitions at corners.
4. Downspouts shall be rectangular or corrugated rectangular, formed to comply with SMACNA.

2.03 FABRICATION:

Manufactured and Custom-Formed sheet metal items shall be fabricated of coil stock of minimum 24 gauge metal. Form all items to the profiles shown on Drawings or specified herein, and comply with SMACNA standards and form all items weather-tight.

A. Comply with dimension, profile limitations, and fabrication details shown on Approved Shop Drawings. If not shown, provide manufacturer's standard product fabrications.

B. Hem all exposed edges of flashing on underside, 1/2 inch

C. Where sheet metal flashing adjoins aluminum or other dissimilar metals, such flashing shall be 24 gauge stainless steel Type 302/304 with 2B finish.

D. All other adjacent channel closures, head flashings, jamb closures, sill flashings, corner flashings and other metal items shall be of the same material and finish as the wall panels.

E. Drip Edge/Eave Strips/Rake Strips: Comply with SMACNA and match profiles shown on

Drawings.

F. Flashings and Counter Flashing: Two-piece counter flashing are required. Comply with SMACNA and match profiles shown on Drawings.

G. Strippable film shall be applied to the top side of the painted panels and coil material to protect the finish during fabrication, shipping and field handling. This strippable film must be removed before installation.

2.04 ACCESSORY MATERIALS

A. Fasteners: Unless otherwise required by shop or installation drawings, provide the following:

1. Attachment of metal trim to metal supports shall be with #10 x 1/2" TEKS screws at maximum spacing of 5'-0" on center or per local code, whichever is greater.
2. At other locations, provide corrosion resistant coated steel or stainless steel self-drilling mechanical fasteners for attachment of all components other sheet metal components, to metal subgirt framing and to masonry substrates.
3. Provide manufacturer's recommended corrosion resistant coated steel or stainless steel self-drilling mechanical fasteners for attachment of framing members to existing masonry and steel substrates.

2.05 SEALANTS:

Provide seam sealant to comply with wall panel manufacturer's requirements. Other required or necessary sealant is included in Section 07 92 00.

3.01 GENERAL:

Examine all surfaces to be covered by sheet metal fabrications; do not commence work until defective surfaces are corrected. All workmanship shall conform to best standards of practice.

3.02 FASTENING AND JOINTING:

Fasteners are to be placed as indicated in manufacturer's standards/approved drawings. Fasteners must penetrate the framing as required by manufacturer.

3.04 FABRICATION AND INSTALLATION OF METAL PANELS AND OTHER FABRICATIONS AND TRIM:

Accurately form metal to sizes, slopes, and dimensions indicated and detailed, with all angles and lines in true alignment. Erect all work straight, sharp, plumb and level, and in proper plane without bulges or waves. Fabricate all items in maximum lengths and hold joints to a minimum. Exercise extreme care when making laps in continuous members so that water cannot leak thru

the joints. Provide adequately overlapped and mechanically formed joints to prevent undue stresses on sheet metal members due to expansion and contractions. Secure sheet metal items using continuous cleats, clips and fasteners.

1. Fabricate sheet metal work in accordance with the Engineer's Drawings, approved shop drawings, SMACNA recommendations and applicable standards. Form sheet metal work with clear, sharp and uniform arises. Hem exposed edges. Use methods of forming, seaming and installation to comply with SMACNA recommendations.
2. Form metal work expansion joints completely watertight, to comply with standard SMACNA details.
3. Provide cleats of same material for installation of flashings as necessary to accomplish the work shown and to achieve a watertight installation.
4. Install work in accordance with approved shop drawings and applicable standards. Sheet metal items shall be true to line, without buckling, creasing, or warp in finished surfaces.
5. Isolate dissimilar materials to prevent electrolysis. Separate using bituminous paint.
6. Install metal panels, fasteners, trim and other related custom formed sheet metal items in conformance with approved drawings and manufacturer's specifications.
7. Repair or replace all damaged material. Wipe down each area after erection is complete for final acceptance.

3.05 CLEAN-UP: Comply with the requirements of Section 02 41 21 – Cleaning, Waste Management and Disposal.

1. Remove all metal cuttings and fasteners. Remove all scaffolding and barricades.
2. It is the intent that the Work of this Section be accomplished with a minimum of waste. Transport all metal waste products to a location designated by the Owner for recycling.