

**Material Specifications**  
**Town Hall Re-Roofing Project**

**Greenfield Town Hall**  
**14 Court Square**  
**Greenfield, MA**

Prepared for:

**Town of Greenfield**  
**14 Court Square**  
**Greenfield, MA**

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# Table of Contents

SECTION 1 Submittal Administration Requirements.....	2
SECTION 2 Product Requirements.....	5
SECTION 3 Construction Waste management and disposal.....	7
2 41 19 Selective Demolition.....	8
06 20 01 Vinyl Siding.....	9
07 15 50 Preparation for Re-Roofing.....	13
07 31 13 Asphalt Shingles.....	15
07 53 23 Ethylene Propylene Diene Monomer Roofing.....	17
07 62 00 Sheet Metal Flashing and Trim.....	20
07 71 00 Roof Specialties.....	23
07 72 00 Roof Accessories.....	25
07 92 00 Joint Sealants.....	26

## SECTION 1. SUBMITTAL ADMINISTRATIVE REQUIREMENTS

### PART 1 – GENERAL SUBMITTAL REQUIREMENTS

- A. Owner's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Owner for Contractor's use in preparing submittals.
  - 1. Owner will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
    - a. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
- B. Contractor shall coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 1. Contractor shall provide material and product submittals as soon as possible after signing contract. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 2. Contractor is to review all submittals for compliance with project drawings and specifications prior to submitting for review. Contractor's signature confirming compliance shall be affixed to each transmittal page.
  - 3. Owner will discard submittals received from sources other than Contractor.
- C. Paper Submittals: Submit three copies of each submittal. Owner will return one annotated copy. Place a permanent label or title block on each submittal for identification. Provide a space approximately 6 by 8 inches on cover sheet or beside title block to record Contractor's review and approval markings and action taken by Owner. Include the following information on the cover sheet:
  - 1. Project name.
  - 2. Date.
  - 3. Product description.
  - 4. Name and address of Contractor.
  - 5. Name and address of subcontractor or supplier.
  - 6. Number and title of appropriate Specification Section.
- D. Electronic Submittals: Provide PDF copies of each submittal. Owner will return annotated file. Identify and incorporate information in each electronic submittal file as follows:
  - 1. For each product provide a transmittal cover sheet and a PDF file of the material submittal.
    - 1. Project name.
    - 2. Date.
    - 3. Product description.
    - 4. Name and address of Contractor.
    - 5. Name and address of subcontractor or supplier.
    - 6. Number and title of appropriate Specification Section
  - 2. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Owner.

- E. Identify options requiring selection by Owner.
- F. Identify deviations from the Contract Documents on submittals.
- G. Contractor's Construction Schedule Submittal Procedure:
  - 1. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
  - 2. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections and as directed in Part I, Items C and/or D.

### 2.2 INFORMATIONAL SUBMITTALS

- A. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated.
- B. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- D. Contractor's Certification. Prepare written statements from material supplier stating the contractor is certified by the manufacturer to install the product.

### 2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type schedule within 30 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
- C. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- D. Recovery Schedule: When periodic update indicates the Work is seven or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working

hours, working days, crew sizes, and equipment required to achieve compliance, and indicate date by which recovery will be accomplished.

### PART 3 - EXECUTION

#### 3.1 SUBMITTAL REVIEW

- A. Contractor shall Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner.
- B. Allow 7 business days for Owner to review submittals.
- C. Owner will return reviewed submittals with annotations as required.

#### 3.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
  - 1. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribute copies of approved schedule to Owner, subcontractors, testing and inspecting agencies, and parties identified by Contractor with a need-to-know schedule responsibility. When revisions are made, distribute updated schedules to the same parties.

END OF SECTION 1

## SECTION 2 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced.
  - 1. Show compliance with requirements for comparable product requests.
  - 2. Owner will review the proposed product and notify Contractor of its acceptance or rejection.
- C. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Deliver products to Project site in manufacturer's original sealed container or packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
  - 4. Store materials in a manner that will not endanger Project structure.
  - 5. Store products that are subject to damage by the elements, under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation.
- D. Warranties specified in other Sections 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.

### PART 2 - PRODUCTS

#### 2.1 PRODUCT SELECTION PROCEDURES

- A. Provide products that comply with the Contract Documents, are undamaged, and, unless otherwise indicated, are new at the time of installation.
  - 1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
  - 2. Where products are accompanied by the term "as selected," Owner will make selection.

B. Where the following headings are used to list products or manufacturers, the Contractor's options for product selection are as follows:

1. Products:

- a. Where requirements include "one of the following," provide one of the products listed that complies with requirements.
- b. Where requirements do not include "one of the following," provide one of the products listed that complies with requirements or a comparable product.

2. Manufacturers:

- a. Where requirements include "one of the following," provide a product that complies with requirements by one of the listed manufacturers.
- b. Where requirements do not include "one of the following," provide a product that complies with requirements by one of the listed manufacturers or another manufacturer.

## 2.2 COMPARABLE PRODUCTS

A. Owner will consider Contractor's request for comparable product when the following conditions are satisfied:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications.
3. List of similar installations for completed projects, if requested.
4. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 2

## SECTION 3- CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Dispose of all demolition and waste materials per Federal, State, and Local regulations.
- B. Waste Management Plan: Submit plan at least seven days prior to date established for commencement of the Work.

### PART 2 – PRODUCTS

- A. Not used.

### PART 3 - EXECUTION

#### 3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

#### 3.2 RECYCLING WASTE

- A. General: Recycle paper and beverage containers used by on-site workers.

#### 3.3 DISPOSAL OF WASTE

- A. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
- B. Do not burn waste materials.

END OF SECTION 3

## SECTION 02 41 19 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- 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. It is not expected that hazardous materials will be encountered in the Work. If hazardous materials are encountered, do not disturb; immediately notify Engineer and Owner. Hazardous materials will be removed by Owner under a separate contract.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with EPA regulations and with hauling and disposal regulations of authorities having jurisdiction.

### PART 3 - EXECUTION

#### 3.1 DEMOLITION

- A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Before proceeding with demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the building.
- B. Locate, identify, shut off, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
- C. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- D. Protect walls, ceilings, floors, and other existing finish work that are to remain.
- E. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas.
- F. Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill. Do not burn demolished materials.

END OF SECTION 02 41 19

## SECTION 06 20 01 – VINYL SIDING

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Vinyl siding.
- B. Vinyl trim and accessories.

#### 1.2 REFERENCES

- A. ASTM D 635 - Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supported Plastics in a Horizontal Position.
- B. ASTM D 638 - Test Method for Tensile Properties of Plastics.
- C. ASTM D 648 - Test Method for Deflection Temperature of Plastics Under Flexural Load.
- D. ASTM D 696 - Test Method for Coefficient of Linear Expansion of Plastics.
- E. ASTM D 1929 - Test Method for Ignition Properties of Plastics.
- F. ASTM D 2843 - Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
- G. ASTM D 3679 - Specification for Rigid Poly Vinyl Chloride (PVC) Siding.
- H. ASTM D 4226 - Test Methods for Impact Resistance of Rigid Poly Vinyl Chloride (PVC) Building Products.
- I. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

#### 1.3 SUBMITTALS

- A. Submit under provisions of Section 1.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
  - 4. Type, spacing, and method of fastening siding to brick wall.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

#### 1.4 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** Maintain rigorous production quality control standards to ensure that vinyl siding will perform as expected for its intended use. Products meet or exceed the requirements of ICC and VSI and listed by ICC International Code Council and VSI Vinyl Siding Certification Programs.
- B. **Installer Qualifications:** Installer with not less than three years documented experience with products specified or who has passed the Vinyl Siding Institute's (VSI) Certified Installer Program.
- C. **Regulatory Compliance:**
  - 1. 2009 International Building Code (IBC) with Massachusetts amendments.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store vinyl siding, soffits, and accessories in clean, dry area, where temperatures do not exceed 130 degrees F.
- C. Handle material to prevent damage. Do not allow cartons to crease.

#### 1.6 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.

#### 1.7 WARRANTY

- A. Provide manufacturer's Transferable, Limited Lifetime Warranty.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- B. **Acceptable Manufacturer:** any manufacturer that can provide a suitable product to match the existing siding.

#### 2.2 MATERIALS

## 2.3 VINYL SIDING

1. 4" clapboard, style to match existing.

## 2.4 ACCESSORIES

- A. Trim to match existing.

1. All corner Posts, J Channel, and Finish Trim to match existing.

## PART 3 EXECUTION

### 2.5 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.

### 2.6 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. If necessary, use pressure treated furring on brick surface to create an even plane free from obstructions before application.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 2.7 INSTALLATION

- A. Install vinyl siding, soffits, and accessories siding in accordance with the latest edition of the manufacturer's Installation Instructions.
- B. Securely attach siding using methods and materials recommended by siding/soffit manufacturer for wind load conditions at project site.
- C. Install vinyl siding and accessories with all joint members plumb and true.

### 2.8 FIELD QUALITY CONTROL

- A. After installation of siding and soffits, check entire surface for obvious flaws or defects.
- B. Replace and repair any problem areas, paying close attention to the substrate for causes of the problem.

## 2.9 CLEANING

- A. After application of siding and soffits, clean as necessary to remove all fingerprints and soiled areas.
- B. Upon completion of siding application, clean entire area, removing all scrap, packaging, and unused materials related to this work.

## 2.10 PROTECTION

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

END OF SECTION 06 20 00

## SECTION 07 01 50.19 - PREPARATION FOR RE-ROOFING

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.
- B. Field Conditions: Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 48 hours' notice of activities that may affect Owner's operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Use infill materials matching existing roofing system materials unless otherwise indicated.
- B. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect existing roofing system that is not to be reroofed.
- B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.
- C. Maintain roof drains in functioning condition. Prevent debris from entering or blocking roof drains. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday.

#### 3.2 ROOF TEAR-OFF

- A. Full Roof Tear-Off: Sloped Roof - Shingled Areas: remove existing roofing and other roofing system components down to the deck.
- B. Full Roof Tear-Off: Flat Roof – Membrane Areas: remove existing membrane, insulation, and gravel and tar roof down to wood deck.

### 3.3 DECK PREPARATION

- A. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Owner. Do not proceed with installation until directed by Owner.
- B. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner. Do not proceed with installation until directed by Owner.

### 3.4 INFILL MATERIALS INSTALLATION

- A. Immediately after roof tear-off and, if needed, inspection and repair of deck, fill in tear-off areas to match existing roofing system construction.
- B. Install new roofing patch over roof infill area. If new roofing is installed the same day tear-off is made, roofing patch is not required.

### 3.5 BASE FLASHING REMOVAL

- A. Where indicated in the drawings, remove existing base flashings. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish.

END OF SECTION

## SECTION 07 31 13 - ASPHALT SHINGLES

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data on all roofing materials, Samples, and ICC-ES evaluation reports.
- B. Warranties: Manufacturer's standard written warranty, signed by manufacturer agreeing to promptly repair or replace asphalt shingles that fail in materials for a period of 25 years, prorated, with first five years non-prorated.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A. Identify products with appropriate markings of testing and inspecting agency acceptable to authorities having jurisdiction.

#### 2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Three-Tab-Strip Asphalt Shingles: ASTM D 3462/D 3462M, glass-fiber reinforced, mineral-granule surfaced, and self-sealing; with tabs regularly spaced.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equal:
    - a. Atlas Roofing Corporation.
    - b. CertainTeed Corporation.
    - c. GAF Materials Corporation.
    - d. Owens Corning.
- B. Felts: ASTM D 226/D 226M, Type I, No. 15 asphalt-saturated organic felt.
- C. Self-Adhering Sheet Underlayment: ASTM D 1970/D 1970M, SBS-modified asphalt; mineral-granule or slip-resisting-polyethylene surfaced; with release paper backing; cold applied.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equal:
    - a. Atlas Roofing Corporation.
    - b. Carlisle Residential; a division of Carlisle Construction Materials.
    - c. CertainTeed Corporation.
    - d. GAF Materials Corporation.
    - e. Grace Construction Products; W.R. Grace & Co. -- Conn.

f. Owens Corning.

- D. Asphalt Roofing Cement: ASTM D 4586/D 4586M, Type II, asbestos free.
- E. Roofing Nails: Stainless-steel, or hot-dip galvanized-steel shingle nails, minimum 0.120-inch diameter, of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- F. Felt-Underlayment Nails: hot-dip galvanized-steel wire with low-profile capped heads or disc caps, 1-inch minimum diameter.
- G. Sheet Metal Flashing and Trim: Comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."
  - 1. Sheet Metal: Match existing.
  - 2. Drip Edge: Formed sheet metal to match existing.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Comply with asphalt shingle recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems."
- B. Apply self-adhering sheet underlayment at eaves and rakes from edges of roof to at least 36 inches inside exterior wall line.
- C. Apply self-adhering sheet underlayment at valleys extending 18 inches on each side.
- D. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment.
- E. Install valleys complying with NRCA instructions. Construct sheet metal open valleys.
- F. Install metal flashings to comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."
- G. Install first and remaining courses of asphalt shingles, stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses and maintaining uniform exposure.

END OF SECTION 07 31 13

## SECTION 07 53 23 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

##### A. Required Submittals:

1. All roofing materials, including membrane roofing, poliso insulation board, adhesives, solvents, flashing materials, sealants, etc.

2. Shop Drawings of tapered insulation, method of attachment to roof deck, and ICC-ES evaluation reports for components of membrane roofing system. Provide fastening schedule indicating the method of attachment of the insulation board to the existing deck complying with Massachusetts State Building Code requirements for wind uplift:

Field of Roof Uplift Pressure: 15.3 psf.

Perimeter and Corner Uplift Pressure: 22 psf.

3. Detail Drawings: roofing system plans, sections, and details of attachment to existing structure work.

B. Warranties: Manufacturer's standard form or customized, without monetary limitation, signed by roofing manufacturer agreeing to repair leaks due to defects in materials or workmanship for period of 10 years.

##### C. Delivery, Storage, and Handling

1. Deliver roofing materials in original containers with seals unbroken and labeled with manufacturer's name, product name and type, date of manufacture, and directions for storage.

2. Store liquids and adhesives in their original containers in a clean, dry, protected location and within the temperature range required by the roofing system manufacturer.

3. Comply with insulation manufacturer's written instructions for handling, storing, and protection during installation.

4. Load roofing materials on roof in a manner that distributes the load on the structure in such a way as to minimize the stress on building elements.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

- B. Exterior Fire-Test Exposure: ASTM E 108, Class B.

## 2.2 ROOFING MATERIALS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - 1. Carlisle SynTec Incorporated.
  - 2. ERSystems.
  - 3. Firestone Building Products.
  - 4. GAF Materials Corporation.
  - 5. Johns Manville; a Berkshire Hathaway company.
- B. EPDM Sheet: ASTM D 4637, Type I, non-reinforced; 60 mils thick; black.
- C. Auxiliary Materials: Recommended by roofing system manufacturer for intended use and as follows:
  - 1. Sheet Flashing: 60-mils thick EPDM.
  - 2. Seaming Material: Single-component, butyl splicing adhesive and splice cleaner.
  - 3. Coating: Acrylic emulsion, specifically formulated for coating EPDM membrane roofing.

## 2.3 TAPERED ROOF INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2 or 3.
- B. Fabricate tapered insulation with minimum thickness of 3 ½ inches at the drains and minimum slope of 1/4 inch per 12 inches unless otherwise indicated.
- C. Provide factory pre-formed saddles, crickets, tapered edge strips, and other insulation shapes to insure surface slopes toward drains.
- D. Fasteners: Factory coated steel fasteners and metal or plastic plates meeting corrosion resistance provisions of FMG 4470, designed for fastening roof insulation to substrate, and furnished by roofing system manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas and conditions for compliance with the requirements affecting performance of the roof system.
- B. Proceed with installation only after unsatisfactory conditions have been corrected and approved by the owner's representative.

### 3.2 Re-Roof Preparation

- A. Remove all existing roofing materials, insulation, tar and gravel roof, and underlayment to expose the wood deck.
- B. Demolished material may not be stored on the roof.
- C. Clean the surface of dust and debris and prepare surface per roofing system manufacturer's instructions.
- D. Prevent loose materials from blocking drains.

### 3.3 INSTALLATION

- A. Mechanically fasten each layer of insulation to deck per fastening schedule.
- B. Install EPDM sheet according to roofing system manufacturer's written instructions and as follows:
  - 1. Adhered Sheet Installation: Apply bonding adhesive to substrate and underside of sheet and allow to partially dry. Do not apply bonding adhesive to splice area of sheet.
- C. Seams: Clean splices, apply splicing cement, and firmly roll side and end laps of overlapping sheets. Seal exposed edges of sheet terminations.
- D. Install sheet flashings and preformed flashing accessories and adhere to substrates.
- E. Apply coatings to base flashings, according to manufacturer's written recommendations, by spray, roller, or other suitable application method.

END OF SECTION 07 53 23

## SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data on all materials, Shop Drawings, and color Samples.
- B. Coordinate installation of sheet metal flashing and trim with adjoining roofing and wall materials, joints, and seams to provide a leak-proof, secure, and noncorrosive installation.
- C. Fabricator Qualifications: For copings and low-slope roof edge flashings that are FM Approvals approved, shop shall be listed as able to fabricate required details as tested and approved.
- D. Warranty on Finishes: Manufacturer agrees to repair or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within 10 years.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Standard: Comply with NRCA's "The NRCA Roofing Manual" SMACNA's "Architectural Sheet Metal Manual" and CDA's "Copper in Architecture Handbook" unless otherwise indicated. Conform to dimensions and profiles shown unless more stringent requirements are indicated.

#### 2.2 SHEET METAL

- A. Copper: ASTM B 370; Temper H00 or H01, cold rolled, not less than 16 oz./sq. ft.
- B. Metallic-Coated Steel Sheet: Galvanized steel sheet, ASTM A 653, G90, Class AZ50 coating designation, Grade 40; 0.022-inch nominal thickness.
  - 1. Finish: Manufacturer's standard two-coat fluoropolymer system with color coat containing not less than 70 percent PVDF resin by weight.
  - 2. Concealed Finish: Manufacturer's standard white or light-colored acrylic or polyester backer finish.

#### 2.3 ACCESSORIES

- A. Felt Underlayment: ASTM D 226, Type I (No. 15), asphalt-saturated organic felts.
- B. Self-Adhering, High-Temperature Sheet Underlayment: Butyl or SBS-modified asphalt; slip-resisting-polyethylene surfaced; with release paper backing; cold applied. Stable after testing at 240 deg F and passes after testing at minus 20 deg F; ASTM D 1970.

- C. Fasteners: Wood screws, annular-threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners.
  - 1. Exposed Fasteners: Heads matching color of sheet metal roofing using plastic caps or factory-applied coating.
  - 2. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  - 3. Fasteners for Copper: Copper, hardware bronze, or Series 300 stainless steel.
  - 4. Fasteners for Zinc-Tin Alloy-Coated Stainless-Steel Sheet: Series 300 stainless steel.
  - 5. Fasteners for Metallic-Coated Steel Sheet: Hot-dip galvanized steel or Series 300 stainless steel.
- D. Solder for Copper: ASTM B 32, Grade Sn50.
- E. Butyl Sealant: ASTM C 1311, solvent-release butyl rubber sealant.

## 2.4 FABRICATION

- A. Fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to the design, dimensions, geometry, metal thickness, and other characteristics of item indicated.
- B. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that are capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with cited sheet metal standards. Allow for thermal expansion; set true to line and level. Install Work with laps, joints, and seams permanently watertight and weatherproof; conceal fasteners where possible.
- B. Seams: Fabricate nonmoving seams with flat-lock seams.
- C. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to a width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
  - 1. Do not solder metallic-coated steel sheets.
  - 2. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
- D. Metal Protection: Where dissimilar metals contact each other, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating.

1. Coat concealed side of aluminum with bituminous coating where it contacts wood, ferrous metal, or cementitious construction.

END OF SECTION 07 62 00

## SECTION 07 71 00 - ROOF SPECIALTIES

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data on all materials, Shop Drawings, and color Samples.
- B. Warranties: Provide manufacturer's standard written warranty, without monetary limitation, signed by manufacturer agreeing to promptly repair or replace roof specialties that show evidence of deterioration of factory-applied finishes for the period of 10 years.

### PART 2 - PRODUCTS

#### 2.1 ROOF SPECIALTIES

- A. Gutters and Downspouts:
  - 1. Downspouts: Plain rectangular with mitered elbows. Furnish wall brackets of same material and finish as downspouts, with anchors.
    - a. Copper: 16 oz./sq. ft.
- B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches designed to snap into through-wall-flashing receiver and compress against base flashings with joints lapped.
  - 1. Copper: 16 oz./sq. ft..

#### 2.2 MATERIALS

- A. Copper Sheet: ASTM B 370, Temper H00 or H01, cold rolled, mill finish.
- B. Felt Underlayment: ASTM D 226, Type I (No. 15), asphalt-saturated organic felts.
- C. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements.
  - 1. Exposed Penetrating Fasteners: Gasketed screws with heads matching color of metal.
  - 2. Fasteners for Copper Sheet: Copper, hardware bronze, or Series 300 stainless steel.
- D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant.
- E. Butyl Sealant: ASTM C 1311, solvent-release butyl rubber sealant.
- F. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement.
- B. Separate dissimilar metals with a bituminous coating or polymer-modified, bituminous sheet underlayment.
- C. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c.

END OF SECTION 07 71 00

## SECTION 07 72 00 - ROOF ACCESSORIES

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data on all materials, Shop Drawings, and color Samples.
- B. Sheet Metal Standard: Comply with SMACNA's "Architectural Sheet Metal Manual."

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Metallic-Coated Steel Sheet: Galvanized steel, ASTM A 653/A 653M, G90, or aluminum-zinc alloy-coated steel, ASTM A 792/A 792M, AZ50.
  - 1. Prepainted, Metallic-Coated Steel Sheet: Coil-coated with manufacturer's standard two-coat, thermocured system consisting of inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.

#### 2.2 ROOF ACCESSORIES

- B. Roof Hatches: Bilco model Type L-50T, or approved equal.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. **The Bilco Company**
  - 2. Provide units with cant strips and base profile coordinated with roof insulation thickness and roof deck slope. Equip units for sloping decks with water diverter.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Installation: Unless otherwise indicated, install roof accessory items according to construction details of NRCA's "Roofing and Waterproofing Manual." Coordinate with installation of roof deck, vapor barriers, roof insulation, roofing, and flashing to ensure combined elements are secure, waterproof, and watertight.
- B. Remove existing hatch, re-frame opening, install new hatch, and seal roof at perimeter.

### PART 2 - END OF SECTION 07 72 00

## SECTION 07 92 00 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data on all materials and color Samples.
- B. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg. F.

### PART 2 - PRODUCTS

#### 2.1 JOINT SEALANTS

- A. Low-Emitting Materials: Sealants shall comply with the following limits for VOC content:
  - 1. Architectural Sealants: 250 g/L.
  - 2. Non-membrane Roof Sealants: 300 g/L.
  - 3. Other Sealants: 420 g/L.
  - 4. Sealant Primers for Nonporous Substrates: 250 g/L.
  - 5. Sealant Primers for Porous Substrates: 775 g/L.
  - 6. Modified Bituminous Sealant Primers: 500 g/L.
  - 7. Other Sealant Primers: 750 g/L.
- B. Low-Emitting Materials:
  - 1. Exterior reactive sealants shall have a VOC content of not more than 50 g/L or 4 percent by weight, whichever is greater.
  - 2. Other exterior caulks and sealants shall have a VOC content of not more than 30 g/L or 2 percent by weight, whichever is greater.
- C. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.
- D. Sealant for General Exterior Use Where Another Type Is Not Specified, One of the Following:
  - 1. Single-component, non-sag urethane sealant, ASTM C 920, Type S; Grade NS; Class 25

#### 2.2 MISCELLANEOUS MATERIALS

- A. Provide sealant backings of materials that are non-staining; 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.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with ASTM C 1193.
- B. Install sealant backings to support sealants during application and to produce cross-sectional shapes and depths of installed sealants that allow optimum sealant movement capability.

END OF SECTION 07 92 00