

Invitation to Bid
Roof Replacement
Canoe Brook Senior Center
11 Cherry Hill Road, Branford, CT 06405

The Town of Branford is requesting bid proposals for the replacement of the roof at the Canoe Brook Senior Center.

Bid packets are available online at www.branford-ct.gov and from the Purchasing Department, 1019 Main Street, Branford, CT. Bids will be received until 3:00 pm, Wednesday, July 8, 2009. No bids will be accepted after that time and date. Bids will be publicly opened at 3:30 pm, Wednesday, July 8, 2009.

The Town of Branford has the right to accept or reject any and all bids. Any contract awarded pursuant to this request will be subject to the approval of the Board of Selectmen of the Town of Branford.

Nancy Porto
Purchasing Agent

Town of Branford
Invitation to Bid
Roof Replacement
Canoe Brook Senior Center
11 Cherry Hill Road
Branford, CT 06405

GENERAL: Removal and replacement of asphalt shingle roof and small flat roof

SUMMARY:

The purpose of this project is to replace the existing roof, repair damaged wood, replace and add flashings around roof penetrations and behind the gutters and re-hang the copper gutters to drain. The roof has been consistently leaking on the south side of the building. Interior repairs are not part of this scope of work.

GENERAL SCOPE OF WORK:

1. Remove and properly dispose of existing shingles and underlayment down to sheathing so as to not cause damage to the building.
2. Properly protect the roof and building during demolition and construction from damage due to weather and construction activities.
3. Repair or replace sheathing as necessary.
4. Install ice and watershield around perimeter of roof and in all valleys.
5. Remove decorative chimney at rear of building and repair roof.
6. Install new flashing around chimney and skylight and other roof penetrations. Install new flashing around perimeter of roof behind gutters. Repair/replace rotted wood as necessary.
7. The existing skylight will remain and is not to be replaced.
8. Install felt underlayment and interlayment as specified.
9. Install Architectural Shingles as specified with warranties as specified.
10. Re-hang existing gutters pitched to drain.
11. Provide all labor and materials to complete the job as specified
12. Obtain required building permits before commencing work (fees are waived for Town projects)
13. All materials and methods of construction must be in compliance of all state and local building codes
14. The Town is testing the roof materials for asbestos and the results will be provided
15. Provide a safe and secure construction site
16. Maintain safe access into the building during construction
17. This work must be completed by August 31, 2009.

PROJECT CONTACT:

Janice A. Plaziak, Town Engineer
(203)315-0606
jplaziak@branford-ct.gov



**Town of Branford
General Requirements for Bidding
and
Instructions to Bidders**

NOTICE

Information provided in these specifications is to be used only for the purpose of preparing a proposal. It is further expected that each bidder will read these specifications with care, for failure to meet every one or a combination of specified conditions may invalidate the proposal.

The Town reserves the right to reject any or all bids or any portion thereof and to accept the bid deemed to be in the best interest of the Town of Branford.

Bidders are requested to submit quotations on the basis of these specifications. Alternate quotations will receive consideration providing such alternatives are clearly explained.

The information contained herein is believed to be accurate and is based upon the latest available information but is not to be considered in any way as a warranty.

Revised 5/09

Standard Form

SECTION I - General Terms and Conditions

A. Compliance with Laws

The bidder shall at all times observe and comply with all laws, ordinances and regulations of the federal, state and local governments, which may in any way affect the preparation or the performance of the contract.

B. Timetable

Price quoted must be valid for **60** days. Delivery and installation completion dates must be included in the bid proposal.

C. Consideration of Proposals

The Board of Selectmen, or a majority of them, reserve the right to select or reject alternate proposals; to waive informality in proposals; and to reject any and all bids, or accept such bid as shall in its judgement be to the best interest of the Town of Branford.

D. Bid Bond **See Bid Proposal Sheet – Not required*

1. A certified check or bank draft made payable to the “Treasurer, Town of Branford”, or a satisfactory bid executed by the bidder and a surety company in an amount specified, are required with each proposal.
2. Checks or drafts will be returned to unsuccessful bidders within ten (10) business days of the bid opening.

E. Performance Bond **See Bid Proposal Sheet – Not required*

Successful bidders may be required to furnish a Performance and Payment Bond in the amount of 100% of the contract sum.

F. Protection of Work and Property

Successful bidders shall be responsible for protection of their equipment and materials against theft, damage or deterioration on the site.

G. Competency of Bidders

1. Bidders shall have had proven experience in the field of work.
2. Bidders shall submit with their bid a listing of recent work performed within the State of Connecticut of the size equal to or greater than the work being bid.

H. Alternates

1. Any alternates to specified materials or workmanship must be separately listed and described in detail.
2. Alternates will be considered in awarding the contract only if they provide, as a minimum requirement, all features contained in the specifications.
3. The Town of Branford reserves the sole right to determine through its agents the equality of alternate products and/or installation procedures.

I. Bid Requirements

1. Each bidder shall return two (2) copies of the proposal sheet entitled "Bid Proposal".
2. Each bid proposal must be signed by an authorized agent of the bidder.
3. Successful bidders must obtain any required governmental approvals.

J. Specifications – General

The contract shall include all labor and materials, tools and equipment and services required for proper performance of the work as specified hereinafter and as may be required for proper completion of the work in accordance with the highest standards of the trades involved.

K. Examination of Site

Prior to submission of the bid, contractor shall visit the site, consult with the supervisor, and become thoroughly familiar with all conditions under which the work will be installed. The contractor will be responsible for any assumptions made regarding the site for the work to be performed.

SECTION II - Insurance Requirements

The contractor, following award of the contract, may be required to furnish to the Town of Branford a Certificate of Insurance for the following coverage:

1. Comprehensive General Liability
2. Property Liability Insurance
3. Automobile Liability **
4. Workmen's Compensation and Employees Liability**
5. Professional Liability

In addition to the coverage delineated above, Builders Risk Insurance may be required for construction contracts. The limits of insurance unless otherwise specified shall be as follows:

A. General Liability

Combined single limit of \$1,000,000; Bodily Injury \$500,000 per occurrence; Property Damage \$500,000 per occurrence. The insurance carried by the bidder shall include the following coverage:

1. Comprehensive Form
2. Premises Operations
3. Products Completed Operations
4. Contractual – Hold Harmless Requirements**
5. Independent Contractors
6. Broad Form Property Damage
7. Personal Injury

B. Hold Harmless Requirements

The contractor shall, at all times, indemnify and save harmless the Town of Branford, its officers, agents, and servants on account of any and all claims, damages, losses, litigation expense, counsel fees and compensation

arising out of injuries (including death) sustained by or alleged to have been sustained by the public, any or all persons affected by the contractor's work, or by the contractor, any subcontractor, material, men or anyone directly or indirectly employed by them or any one of them while engaged in the performance of this contract. The Town of Branford shall be named as an additional insured on said policy of public liability insurance to cover all claims against the Town arising out of said contract.

C. Automobile Liability

Combined single limit of \$1,000,000; Bodily Injury \$500,000 per person/accident; Property Damage \$500,000 per accident.

Comprehensive automobile policy to cover all automobile or vehicles owned, hired or owned by contractor's employees and used on business.

D. Workers' Compensation

The contractor must have workers' compensation and liability insurance as provided by Connecticut and federal law with statutory limits of \$100,000 per accident, \$100,000 disease each employee and \$500,000 disease policy limit

The contract shall procure and pay for the insurance coverage described above with the minimum limits of liability as stated. The Certification of Insurance shall certify that said coverage shall be in effect for the term of the contract.

The Town of Branford shall be named as an additional insured on the General Liability Insurance Policy. All policies shall provide for sixty (60) days written notice prior to cancellation, substantial change or non-renewal.

The contractor must be in compliance with the State of Connecticut Public Act Section 86-87, "An Act Concerning Workers' Compensation Insurance Requirements For Contractors, On Public Works Projects and State Licenses".

TOWN OF BRANFORD
Bid Proposal Sheet

Bid Proposal for: Senior Center Roof Replacement

We hereby propose to furnish all labor and materials required for the Senior Center Roof Replacement in accordance with the instructions to bidders and specifications.

We have visited the site and examined all conditions affecting the work.

We hereby propose to furnish all labor and materials required by the contract documents as follows:

Total Proposed Price: _____

Date(s) of Delivery / Installation: _____

Company Name: _____

Company Address: _____

Signature of Authorized Representative

Date

Title

References:

TOWN OF BRANFORD
Bid Proposal Sheet

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Date

Title

References:



**Town of Branford
Technical Specifications
Senior Center Roof Replacement
11 Cherry Hill Road, Branford, CT**

REMOVAL OF ASBESTOS-CONTAINING ROOFING

1 PART 1 – GENERAL

1.1 DESCRIPTION

A. The removal of the following asbestos-containing roofing materials from Indian Neck Building, 12 Melrose Road, Branford, Connecticut:

1. Bituminous roofing under rubber sheet roofing on flat section.
2. Flashing around chimney.

B. The removal of the following asbestos-containing roofing materials from Pine Orchard Building, 16 Birch Lane, Branford, Connecticut:

1. Bituminous roofing in main roof field.
2. Perimeter flashing, vent flashing, drain flashing, and chimney flashing.
3. Bituminous roofing and flashing on entry overhang.

1.2 RELATED DOCUMENTS

A. The conditions of Disposal of Asbestos-Containing Roofing – apply to this Section.

1.3 SUBMITTALS AND NOTICES

A. Before beginning work:

Submit planned work schedule to the Owner which includes a specific start date and an estimated completion date. Submission must be made at least one week before the work commences.

B. After completion of work:

Submit a list of workers with name, social security number, and employer.

2 PART 2 – PRODUCTS

2.1 MATERIALS

A. Plastic sheeting shall be 6-mil thick polyethylene.

- B. Duct tape shall be 2 inches in width with an adhesive which is formulated to aggressively stick to sheet polyethylene and to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions.

2.2 EQUIPMENT

- A. Provide all equipment and tools needed to carry out the specified work.
- B. Rotating blade saws, if any, shall be equipped with:
 - 1. A blade guard that completely encloses the blade and extends down close to the roof surface.
 - 2. A device for spraying a fine mist of water inside the blade guard in order to keep the point of cutting wet.

3 PART 3 – EXECUTION

3.1 REMOVAL OF MATERIAL

- A. Other material may have to be removed before this material can be removed.
- B. Establish a regulated area. Shut down and seal roof level ventilation and air intake sources using plastic sheeting and duct tape.
- C. Cut roofing material with knives, hatchets, or rotating blade saws equipped as described above in order to not discharge visible emissions into the air. **DO NOT SAND, DRILL, OR DRY CUT.** Remove materials in an intact state to the extent feasible.
- D. HEPA vacuum any loose dust created by the removal as soon as possible.
- E. Do not throw material onto ground. Place directly into disposal bags or lower to ground via covered, dust-tight chutes and place immediately into disposal.

END OF SECTION

DISPOSAL OF ASBESTOS-CONTAINING ROOFING

4 PART 1 – GENERAL

4.1 DESCRIPTION

C. This Section covers disposal of asbestos-containing roofing materials and asbestos-contaminated waste.

4.2 RELATED DOCUMENTS

B. The conditions of Removal of Asbestos-Containing Roofing – apply to this Section.

4.3 GENERAL CONDITIONS

C. Additional regulatory requirements pertaining to the work of this Section include:

1. US Department of Transportation (DOT)
Hazardous Materials Regulations
49 CFR 171-177 (Subchapter C)

1.4 SUBMITTALS AND NOTICES

A. Before beginning work:

If the disposal site is located in Connecticut, submit notification to the following agency at least 25 days before work commences:

1. Bureau of Waste Management
Department of Environmental Protection
79 Elm Street
Hartford, Ct. 06106-5127

If the disposal site is located outside Connecticut, notification and other requirements of the State in which the disposal site is located must be submitted.

B. After completion of work:

Submit executed chain-of-custody transport and disposal documents.

5 PART 2 – PRODUCTS

5.1 MATERIALS

- C. Provide all materials needed to transport and dispose of removed asbestos-containing materials and asbestos-contaminated waste.
- D. Open top waste transport containers shall be lined with a bladder bag installed by the waste transport container company. Bladder bag shall be the equivalent of two outer layers of 6-mil polyethylene and one inner layer of 22-mil woven polypropylene. Bladder bag shall be sealed and transport container wet wiped before waste transport.
- E. Polyethylene bags shall be six (6) mil thick with leak-tight seams.
- F. 50-gallon or 55-gallon fiber drums shall have air-tight sealable tops.
- G. Polyethylene sheeting shall be at least six (6) mil thick.
- H. Plastic bags, fiber drums, and sheet wrapped materials shall be labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
RQ, Asbestos Waste, 9
Mixture, NA-2212, PG III
Pine Orchard Building – Indian Neck Building
16 Birch Lane – 12 Melrose Avenue
Branford, Connecticut

- I. Duct tape shall be 2 inch width with an adhesive which is formulated to aggressively stick to sheet polyethylene.

6 PART 3 – EXECUTION

6.1 PACKAGING OF MATERIALS

- F. If transport container is a sealed truck or front loading, roofed dumpster, place material into disposal bag, twist neck of bag, bend over and seal with minimum three wraps of duct tape. Place sealed

bag into a second bag or fiber drum. More than one bag may be placed into each drum. Seal bags or drums.

- G. If transport container is a lined open-top dumpster, place materials into container. Do not throw materials.

6.2 DISPOSAL OF MATERIALS

- A. Do not store material outside of the work area. Take packaged material from the work area directly to the transport container.
- B. Transport material to authorized dump site for disposal.
- C. Generate chain-of-custody disposal documents and shipping papers in compliance with EPA and DOT regulations.

END OF SECTION

ROUGH CARPENTRY

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Roof curbs
- B. Blocking in roof openings
- C. Preservative treatment of wood

1.2 RELATED SECTIONS

- A. Asphalt Shingles
- B. Elastomeric Sheet Roofing
- C. Flashing and Sheet Metal
- D. Roof Hatches
- E. Skylights

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Lumber Standards Committee (ALSC)

- Softwood Lumber Standards

- 2. American Wood Preservers Association (AWPA)

- C1 All Timber Products Preservative Treatment by Pressure Process

- 3. American Plywood Association (APA)

- 4. National Forest Products Association (NFPA)

- 5. Southern Pine Inspection Bureau (SPIB)

- 6. American Society for Testing and Materials (ASTM) Publications:

- A 687-93 High Strength Non-Headed Steel Bolts and Studs

1.4 SUBMITTALS

- A. Product Data: Provide technical data on wood preservative materials and application instructions.
- B. Certificates of Grade: Attesting that products meet the grade requirements specified in lieu of grade markings where appearance is important and grade marks will deface material.

1.5 DELIVERY AND STORAGE

- A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper ventilation, drainage, and protection against dampness. Remove defective and damaged materials and provide new materials.

1.6 GRADING AND MARKING

- A. Lumber: Mark each piece of framing and board lumber or each bundle of small pieces of lumber with the grade mark of a recognized association or independent inspection agency. Such association or agency shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used.
- B. Preservative-Treated Lumber: The Contractor shall be responsible for the quality of treated wood products. Each treated piece shall be permanently marked or branded, by the producer, in accordance with AWWA M6. The Contractor shall provide the Owner with the inspection report of an independent inspection agency, approved by the Owner, that offered products comply with applicable AWWA Standards. The AWPB Quality Mark "LP-22" on each piece will be accepted, in lieu of inspection reports, as evidence of compliance with applicable AWWA treatment standards.

1.7 SIZES AND SURFACING

- A. PS 20 for dressed sizes of yard and structural lumber. Lumber shall be surfaced four sides. Size reference, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

1.8 MOISTURE CONTENT: Air dry or kiln-dry lumber. Kiln-dry treated lumber

after treatment. Maximum moisture content of wood products shall be as follows at the time of delivery to the job site:

- A. Framing lumber and boards – 19 percent maximum

1.9 PRESERVATIVE TREATMENT

- A. Lumber and plywood shall be treated in accordance with AWPAC1 and C2, and plywood in accordance with AWPAC1 and C9. All wood shall be air or kiln dried after treatment. Specific treatments shall be verified by the report of an approved independent inspection agency, or the AWPB Quality Mark on each piece. Do not incise surfaces of lumber that will be exposed. Brush coat areas that are cut or drilled after treatment with either the same preservative used in the treatment or with a 2 percent copper naphthenate solution. The following items shall be preservative treated:

- 1. Nailers, edge strips, crickets, curbs, and cants for roof decks.

1.10 QUALITY ASSURANCE

- A. Perform Work in accordance with the following agencies:

- 1. Lumber Grading Agency: Certified by ALSC.

2 PART 2 – PRODUCTS

2.1 ROUGH LUMBER

- A. Framing Lumber: Preservative treated framing lumber such as studs, plates, caps, collar beams, cant strips, bucks, sleepers, nailing strips, and nailers and board lumber shall be one of the species listed in the table below. Minimum grade of species shall be as listed. Finger-jointed lumber may be used in the same applications as solid lumber of an equivalent species and grade, provided the finger-jointed lumber meets all the requirements of the certification and the quality control programs of the rules writing agency having jurisdiction and all applicable requirements of PS 56.

Table of Grades for Framing and Board Lumber

<u>Grading Rules</u>	<u>Species</u>	<u>Framing/Board Lumber</u>
WWPA standard 1 grading rules No. 3 Common	Mountain Hemlock Douglas Fir-Larch Douglas Fir South	All Species: Standard Light Framing or No. 3 Structural Light framing (Stud Grade for 2 x 4 size, 10 feet and shorter)
WCLIB standard grading rules Standard	Douglas Fir-Larch Hem-Fir	All Species: Standard Light

2.2 PLYWOOD: Plywood: C-D Grade, Exposure 1, pressure treated, with an Identification Index of not less than 32/16 and have a minimum thickness of ¼ inch for shims but of thickness elsewhere to match existing.

2.3 ROUGH HARDWARE

- A. Unless otherwise indicated or specified, rough hardware shall be of the type and size necessary for the project requirements. Sizes, types, and spacing of fastenings of manufactured building materials shall be as recommended by the product manufacturer unless otherwise indicated or specified. Rough hardware exposed to the weather or embedded in or in contact with preservative treated wood, exterior masonry, or concrete slabs shall be zinc-coated.
- B. Bolts, Nuts, Studs, and Rivets: ANSI B18.2.1, ANSI B18.5, ANSI B18.2.2, and ASTM A 687.
- C. Expansion Shields: Fed. Spec. FF-S-325. Except as shown otherwise, maximum size of devices in Groups IV, V, VI, and VII shall be 3/8 inch.
- D. Lag Screws and Lag Bolts: ANSI B18.2.1.
- E. Toggle Bolts: Fed. Spec. FF-B-588.
- F. Wood Screws: ANSI B18.6.1.
- G. Wire Nails: Fed. Spec. FF-N-105.
- H. Powder-Actuated Fasteners: CID A-A-442, A-A-444, or A-A-445.

3 PART 3 – EXECUTION

3.1 FRAMING

- A. Set members level and plumb, in correct position.
- B. Place horizontal members flat, crown side up.
- C. Construct curb members of single pieces.
- D. Curb roof openings except where prefabricated curbs exist. Form corners by alternating lapping side members.

E. INSTALLATION

1. Fit framing lumber and other rough carpentry, set accurately to the required lines and levels, and secure in place in a rigid manner. Do not splice framing members between bearing points. Provide as necessary for the proper completion of the work all framing members not indicated or specified. Spiking and nailing not indicated or specified otherwise shall be in accordance with the Nailing Schedule contained in UBC; perform bolting in an approved manner. Utilize existing anchor bolts to concrete deck if in sound condition. Otherwise, expansion bolt blocking to concrete and metal roof decks. Spikes, nails, and bolts shall be drawn up tight.
2. Anchors in Concrete: Powder-actuated fasteners spaced 3 feet o.c. may be provided in lieu of bolts for single thickness plates on concrete.
3. Anchors in Masonry: Except where indicated otherwise, embed anchor bolts not less than 15 inches in masonry unit walls and provide each with a nut and a 2-inch-diameter washer at bottom end. Fully grout bolts with mortar.

F. MISCELLANEOUS

1. Wood Roof Nailers, Edge Strips, Crickets, Curbs, and Cants: Provide sizes and configurations indicated or specified and anchored securely to continuous construction.
2. Roof Edge Strips and Nailers: Provide at perimeter of roof, around openings through roof, and where roofs abut walls, curbs, and other vertical surfaces. Except where indicated otherwise, nailers shall be 6 inches wide and the same thickness as the insulation. Strips shall be

grooved for edge venting ; install at walls, curbs, and other vertical surfaces with a ¼ to ½ inch air space. Where applicable , utilize existing anchor bolts that are firmly welded or attached to roof structural elements to anchor the base members before applying additional blocking. Provide additional galvanized nuts and washers as required to complement the existing anchor bolts. In the event that the perimeter wood blocking on the roof cannot be fastened to the structure utilizing existing anchor bolts or fasteners, the fastening schedule and details shall be completed in accordance with NRCA standards, which incorporates the Factory Mutual Loss Prevention Data Sheet 1-49 (1985) for perimeter flashing. This reference recommends an alternative method as follows:

Secure the wood blocking to the metal deck, (or through the tectum deck to the blocking to remain below in applicable locations) with two rows of No. 10 galvanized steel metal screws at 24 inches on center or equivalent. A galvanized steel washer 5/8 inch outside diameter should be used under the screw heads. If the wood blocking is 90 degrees to the ribs, the blocking can be fastened to the deck with two rows of No. 10 galvanized sheet metal screws at 24 inches on center or equivalent. Similarly, the contractor can choose to use a “Hilti” or other powder actuated fastener of similar size and similar fastening schedule into the steel angles if the blocking is to be cut to fit the terminating metal deck condition, depending on the direction of the flutes. Unless field conditions dictate otherwise, the blocking should not be attached to the exterior brick masonry or pre-cast copings.

2. Crickets, Cants, and Curbs: Provide wood saddles or crickets, cant strips, curbs for scuttles and ventilators, and wood nailers bolted to tops of concrete or masonry curbs and at expansion joints, as indicated.

3.2 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment in accordance with manufacturer’s instructions.
- B. Brush apply one coat of preservative treatment on wood in contact with cementitious materials, roofing and related metal flashing. Treat site-sawn cuts.
- C. Allow preservative to dry prior to erecting members.

END OF SECTION

RIGID INSULATION BOARD

1 PART 1 – GENERAL

1.1 RELATED SECTIONS

- A. Asphalt Shingles
- B. Elastomeric Sheet Roofing
- C. Flashing and Sheet Metal
- D. Sealants

REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM)
Publications:

- D 226-97 Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

- D 2626-04 Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing

- E 84-04 Surface Burning Characteristics of Building Materials

- 2. Factory Mutual Engineering Corporation (FM) Publications:
Approval Guide, 2004
Loss Prevention Data Sheet 1-28, 1998

- 3. Underwriters' Laboratories, Inc. (UL) Publication:

- Building Materials Directory, 2004

QUALIFICATION OF INSTALLER: Certified by the manufacturer as qualified to install tapered roof insulation systems.

SUBMITTALS

- A. Samples: One not larger than 12 inches square of each type of proposed insulating material and two each of nails and mechanical fasteners, when used to install insulations.
- B. Shop Drawings: Show complete description of the procedures for the installation of each phase of the tapered roof insulation system indicating

the type of materials, thickness, identity codes, sequence of laying insulation, location of ridges and valleys, special methods for cutting and fitting of insulation, and special precautions. Manufacturers' drawings based on field measurements may be submitted to supplement the information shown on the shop drawings. Provide calculations verifying the total "U" value of the insulation assembly.

- C. Certified Test Reports: Flame spread and smoke developed rating for insulation in accordance with ASTM E 84.
- D. Manufacturer's Recommendations: Two current copies of insulation manufacturer's recommendations for the following:
 - 1. Location and spacing of wood nailers
 - 2. Minimum thickness and fastener pattern for insulation
 - 3. Type of insulation material(s) and sequence of laying

E. DELIVERY AND STORAGE

- 1. Delivery: Deliver materials to the site in original sealed containers or packages bearing manufacturer's name and brand designation. Where materials are covered by a referee

END OF SECTION

ASPHALT SHINGLES

1 PART 1 – GENERAL

SECTION INCLUDES

- A. Granular surfaced fiberglass shingle roofing (architectural grade)
- B. Eave (Ice and Watershield) Protection

RELATED SECTIONS

- E. Rough Carpentry
- F. Flashing and Sheet Metal
- G. Gutters and Downspouts

REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society for Testing and Materials (ASTM)
Publications:
 - B 370-03 Copper Sheet and Strip for Building Construction
 - D 226-94 Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
 - D 249-89 Asphalt Roll Roofing (Organic Felt) Surfaced with Mineral Granules
 - D 3462-93 Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
 - D 4586-93 Asphalt Roof Cement, Asbestos Free
2. National Roofing Contractors Association (NRCA) – Steep Roofing Manual
3. Copper Development Association (CDA) Publications:
 - Contemporary Copper, A Handbook of Sheet Copper Fundamentals, Design, Details and Specifications.
 - Copper Roofing – A Practical Handbook

SUBMITTALS

- A. Submit sample for color and type of shingle for approval
- B. Product Data: Provide data indicating material characteristics, performance, criteria, and limitations.
- C. Manufacturer's Installation Instructions: Indicate preparation required and installation procedures.

QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Steep Roofing Manual.
- B. Maintain one copy of document on site.

REGULATORY REQUIREMENTS

- A. Conform to applicable code for UL Class C rating for shingle types specified.

ENVIRONMENTAL REQUIREMENTS

- A. Do not install eave edge protection and shingles when wind chill temperatures are below 50 degrees F.

EXTRA MATERIALS

- A. Provide 100 sq. ft. of extra shingles of the color specified and selected.

GUARANTEE

- A. Guarantee all work against defects in materials and workmanship for a minimum of twenty (20) years following final acceptance.
- B. Additionally, provide written manufacturer's standard thirty (30) year warranty.

2 PART 2 – PRODUCTS

MANUFACTURERS- 30 YEAR ARCHITECTURAL ASPHALT SHINGLES

A. ASPHALT SINGLES

1. Asphalt Shingles: ASTM D 3462, “Architectural Style”, Class A with Type I – Self Sealing; UL Rating of A and Wind Resistance Label, glass fiber mat base, mineral granule surface type; weight no less than 260 lb/square; self sealing type; color as selected from manufacturer’s standard range of colors.
 - a. Owens Corning, Toledo, OH (800.438.7465); Duration Shingles
 - b. Certainteed Corp., Valley Forge, PA (800.233.8990); Landmark
 - c. GAF Materials Corp., Wayne, NY (800.766.3411); TimberlineSubstitutions: equivalent to above subject to approval.

SHEET MATERIALS

- A. Starter Course: Either of the following:
 1. Roll Roofing: (Starter course, contractor’s option) ASTM D 249; asphalt saturated roll roofing; 75-90 lb/square surfaced on weather side with mineral granules of color; or
 2. Butt end of shingles.
- B. Underlayment: ASTM D 226, No. 15 unperforated asphalt saturated felts as recommended for use in waterproofing.
- C. Eave (Ice and Watershield) Protection: Sheet barrier of rubberized asphalt bonded to sheet polyethylene, 40 mil total thickness, with strippable treated release paper; manufactured by W.R. Grace and Company, Columbia, MD (410.531.4000), Nord Bitumi U.S., Inc. Madison, CT (800.521.4382), by manufacturer of shingle, or approved equal.

FLASHING AND EDGE MATERIALS:

- A. Sheet Flashing: Copper; ASTM B 370, Type 1, soft temper; 20 oz/sq ft. natural finish unless otherwise noted.

ACCESSORIES

- A. Non-corrodible nails; Pneumatically applied, zinc coated of manufacturer's recommended minimum gauge and sufficient in length to penetrate $\frac{3}{4}$ inch into roof decking.
- B. Nails: Standard round wire shingle type, hot dipped zinc coated steel Minimum $\frac{13}{64}$ inch head diameter and 0.080 inch shank diameter, of sufficient length to penetrate through roof sheathing $\frac{3}{4}$ inch into roof decking.
- C. Plastic Cement: ASTM D 4586, asphalt type with mineral fiber Components, free of toxic solvents, capable of setting within 24 hours at temperatures of 75 degrees F (24 degrees C) and 50 percent RH.
- D. Lap Cement: Fibrated cutback asphalt type, for use in application of underlayment, free of toxic solvents.
- E. Ridge Vents: Continuous ridge vent, (shingle over design) of formed plastic, 1 to 1-1/2" thick, of watertight construction to permit attic space below to freely vent to the atmosphere. Similar to Cora-vent or Easy-up Ridge Vent, by Ampcor Corporation. Provide with plastic or similar material terminating end caps for finished appearance.
- F. Non-corrodible shingle staples: Pneumatically applied, zinc coated 16 gauge minimum and sufficient in length to penetrate $\frac{3}{4}$ inch into roof decking.

3 PART 3 – EXECUTION

EXAMINATION

- A. Verify existing site conditions, dimensions and all other unique conditions that may affect the installation of the work in accordance with the manufacturers' installation instructions.
- B. Verify roof openings are correctly framed prior to installing work of this Section.
- C. Verify deck surfaces are dry, free of ridges, warps, or voids.

PREPARATION

- A. Broom clean deck surfaces under eave protection and underlayment.

INSTALLATION – EAVE PROTECTION

- A. Install membrane waterproofing in accordance with manufacturer's instructions.
- B. Roll out membrane. Minimize wrinkles and bubbles.
- C. Remove release paper layer. Roll out on deck surface and in valleys with roller to encourage full contact bond.
- D. Overlap edges and ends minimum 3 inches. Apply uniform bead of sealant to joint edge.
- E. Seal to adjoining surfaces.
- F. Seal items penetrating membrane with counter flashing membrane material.
- G. Install flashing. Seal watertight to membrane.
- H. Apply 1 layer of rubberized asphalt/polyethylene sheet eave protection in accordance with manufacturer's instructions.
- I. Apply lap cement at rate of approximately 1-1/4 gal/100 sq ft over underlayment overlap strip.
- J. Extend eave protection membrane a minimum 3 feet up the slope to the distance indicated in the construction documents.

INSTALLATION – PROTECTIVE UNDERLAYMENT

- A. Place one ply of underlayment over entire area with ends and edges weather lapped minimum 6 inches. Stagger end laps of each consecutive layer. Nail in place.
- B. Install protective underlayment perpendicular to slope of roof and weather lap minimum 12 inches over eave protection, set in a full bed of asphalt cement.
- C. Weather lap and seal watertight with plastic cement, items projecting through or mounted on roof.

INSTALLATION – SHINGLES

- A. Install shingles in accordance with manufacturer's instructions.
- B. Place shingles in straight coursing pattern with weather exposure to match existing, but as a minimum to produce double thickness over full roof area. Provide double course of shingles or rolled roofing at the eaves as indicated in Section 2.3.
- C. Project first course of shingles ½ inch beyond the up slope line of the gutters.
- D. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of counter flashings.
- E. Complete installation to provide weather tight service.

FIELD QUALITY CONTROL

- A. Visual inspection of the Work will be provided by Owner.

PROTECTION OF FINISHED WORK

- A. Do not permit traffic over finished roof surface.

END OF SECTION

ELASTOMERIC SHEET ROOFING – FULLY ADHERED

1 PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Membrane roofing related flashings

1.2 RELATED SECTIONS

- A. Rough Carpentry
- B. Rigid Insulation Board
- C. Flashing and Sheet Metal
- D. Gutters and Downspouts

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society for Testing and Materials (ASTM)
Publications:

D 412-98 Vulcanized Rubber and Thermoplastic Elastomers –
(R 2002) Tension

D 624-00 Tear Strength of Conventional Vulcanized Rubber
and Thermoplastic Elastomers

D 746-98 Brittleness Temperature of Plastics and Elastomers
by Impact

E 96-00 Water Vapor Transmission of Materials

2. Factory Mutual Engineering & Research Corporation (FM)-
Roof Assembly Classifications

3. National Roofing Contractors Association (NRCA)
Publications:
Roofing and Waterproofing Manual

4. Underwriters Laboratories (UL) Publications:
Fire Hazard Classifications

1.4 SYSTEM DESCRIPTION

- A. Elastomeric Sheet Membrane Conventional Roofing System: One ply membrane system, insulation and adhesive applied membrane.

1.5 SUBMITTALS

- A. Shop Drawings: Indicate setting plan for insulation, joint or termination detail conditions, conditions of interface with other materials.
- B. Product Data: Provide characteristics on membrane, insulation and flashing materials.
- C. Samples: Submit two 4 x 4 inch in size illustrating membrane and accessories.
- D. Manufacturer's Installation Instructions: Indicate special precautions required for seaming the membrane.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with five years experience.
- B. Applicator: Company specializing in performing the work of this section with three years documented experience and approved by system manufacturer.
- C. Work of this section to conform to NRCA Roofing and Waterproofing Manual and the manufacturer's instructions.

1.7 REGULATORY REQUIREMENTS

- A. Conform to the Connecticut State Building and Fire Safety codes for roof assembly fire hazard requirements.
- B. Underwriters Laboratories, Inc. (UL): Class C Fire Hazard Classification.
- C. Factory Mutual Engineering & Research Corporation (FM): Roof Assembly Classification, of Class 1 Construction, wind uplift requirement of 190, in Accordance with FM Construction Bulletin 1-28.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.
- B. Store products in weather protected environment, clear of ground and moisture.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing membrane during inclement weather, ambient temperatures below 40 degrees F degrees or above 95 degrees F.
- B. Do not apply roofing membrane to damp or frozen deck surface.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.10 COORDINATION

- A. Coordinate the work with the installation of associated metal flashings, as the work of this section proceeds.

1.11 WARRANTY

- A. Upon completion of the work, provide the manufacturers' non-prorated, no dollar limit twenty (20) year system warranty for materials, labor and workmanship (membrane, insulation and metal flashings) insuring a weather and watertight roofing system. This warranty will not contain a pre-determined dollar limitation.

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS – MEMBRANE MATERIAL

- A. Firestone Building Products, Indianapolis, IN (800.428.4442); Product: RubberGard
- B. John Manville, Denver, CO (800.654.3103): Product: UltraGard
- C. Celotex Roofing Products, Wayne, PA (800.235.6839); Product: Celo-1 Fabric Reinforced Sheet
- D. Substitutions: Equivalent to above subject to approval

2.2 MEMBRANE AND ASSOCIATED MATERIALS

- A. Membrane: EPDM; Reinforced 60 mil thick, 10 foot wide roll; black color; conforming to the following criteria:

<u>Properties:</u>	<u>Test:</u>	<u>Results:</u>
Tensile Strength:	ANSI/ASTM D 412	1305 Min.
Elongation:	ANSI/ASTM D 412	300% Min.
Tear Resistance:	ASTM D 624	150 ibf/in
Moisture Vapor Perms:	ASTM E 96	2.0
Low Temperature Brittleness:	ANSI/ASTM D 746	-49

- B. Seaming Materials: Quick Seam Splice Tape (or other manufacturer's equivalent), with primer and cleaning agents as recommended by membrane manufacturer.
- C. Washer Disc: Membrane material with adhesive backing.

2.3 ADHESIVE MATERIALS

- A. Surface Conditioner: Solvent type, compatible with membrane.
- B. Supplemental Membrane Adhesives: As recommended by membrane manufacturer to supplement seaming tape specified.
- C. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

2.4 FLASHINGS

- A. Flexible Flashings: Quick Seam Flashings or flashings of same material as membrane; black color.

2.5 ACCESSORIES

- A. Insulation Fasteners: Appropriate for purpose intended and approved by Factory Mutual and system manufacturer; length required for thickness of material with metal washers.
- B. Vent Stack Boots: Provide manufacturer's standard rubber boots and flashing collars appropriate for purpose intended.
- C. Sealants: As recommended by membrane manufacturer.

D. Walkway Pads: Selected system's walkway pads, cut in sizes recommended and as indicated in the documents, in contrasting color selected by Architect. EPDM material laid as a continuous strip material is not acceptable.

E. Other Counter Flashings: Lead coated copper as specified in Section 07600.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.
- C. Verify deck surfaces are dry and free of snow or ice. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.2 INSULATION APPLICATION

- A. Mechanically fasten insulation to deck in accordance with insulation manufacturer's instructions.
- B. Place the second layer of insulation with joints staggered minimum 6 inches from joints of first layer.
- C. Place a minimum 8 fasteners per insulation board or as required by the manufacturer to meet 190 uplift criteria.
- D. Place the constant thickness first layer and the flat or tapered thickness insulation second layer to the required slope pattern in accordance with manufacturer's instructions.
- E. Minimum Total Insulation Thickness: As required to achieve an insulation R value as listed in the construction documents.
- F. Place boards perpendicular to decking with edges over the board field for bearing support.
- G. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- H. Apply no more insulation than can be covered with membrane in same day.

3.3 MEMBRANE APPLICATION

- A. Apply membrane and primer in accordance with manufacturer's instructions.
- B. Roll out membrane, free from air pockets, wrinkles, or tears. Lax material in accordance with manufacturer's recommendations. Apply bonding adhesive with roller to provide an even and uniform film thickness. Firmly press sheet into place without stretching.
- C. Bond sheet to substrate.
- D. Overlap edges and ends and seal by QuickSeam Tape as recommended by manufacturer. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. Shingle joints on sloped substrate in direction of drainage.
- F. Extend membrane up minimum of 6 inches and as indicated in the construction documents onto vertical surfaces.
- G. Seal membrane around roof penetrations.

3.4 FLASHING AND ACCESSORIES

- A. Apply flexible flashings to seal membrane to vertical elements. Provide flexible boot flashings around vent stacks.
- B. Secure to nailing strips at 4 inches.
- C. Seal flashings and flanges of items penetrating membrane.
- D. Provide strip flashing and lap edge sealant at wall termination in accordance with NRCA Detail "EPDM Single Ply 1989-E".
- E. Install walkway pads as recommended by manufacturer and place as indicated in the construction documents.

3.5 METAL FLASHINGS AND GRAVEL STOPS

- A. Apply water dams in accordance with manufacturer's instructions.
- B. Install membrane over water dam to a point just below the holes in the face. Attach membrane through extruded holes.
- C. Install joint covers or flashing over all field seams as required by the

manufacturer.

- D. Install all miters, installing a reinforcing clip halfway down each leg of the miter. Crimp miters to water dam at each clip.
- E. Install reinforcing clips, splice plates and fascia panels as recommended by manufacturer. Crimp the fascia panels to the water dams at each clip and on either side of the splice plates. Remove protective films from the metal after crimping.

3.6 FIELD QUALITY CONTROL

- A. Correct identified defects or irregularities.
- B. Require site attendance of roofing materials manufacturers once during installation of the Work.

3.7 CLEANING

- A. In areas where finished surfaces are soiled by Work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.
- B. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.8 PROTECTION

- A. Protect building surfaces against damage from roofing work.
- B. Where traffic must continue over finished roof membrane, protect surfaces.

END OF SECTION

ROOFING REMOVALS AND PREPARATIONS

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Removal of existing roofing and insulation covering in preparation for a new roof membrane system. This will include the removal of existing single-ply roofing, insulation, asphalt shingles, blocking, copings, disposal of removed materials, protection of areas over which work traffic will move, work called for in the Drawings and other work necessitated by their operation.
- B. Protection and cleanup of interior spaces and finishes that are exposed to wood and metal deck roofing structures.

1.2 RELATED SECTIONS

- A. Rigid Insulation Board
- B. Asphalt Shingles
- C. Elastomeric Sheet Roofing
- D. Flashing and Sheet Metal

1.3 SYSTEM DESCRIPTION

- A. Roof areas as indicated in the drawings: Remove existing perimeter flashings, base flashings, counter flashings, vent stack flashings, roofing membrane, insulation, asphalt shingles, underlayment, reglets and blocking.

1.4 QUALIFICATIONS

- A. Materials Removal Firm: Company specializing in performing the work of this Section with minimum ten years documented experience. The foreman of the crew performing roofing removals shall be a qualified roofing or waterproofing journeyman with at least 5 years experience in roofing removals.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.
- B. Maintain continuous temporary protection during and prior to installation of new roofing system.
- C. Coordinate the Work so that removal of roofing and insulation, and the

installation of the new roofing system proceed in an orderly and timely manner.

- D. Roof cuts have been performed on the existing roofs by the Owner. Existing material condition thickness and type shall be verified by the Contractor.

1.6 SCHEDULING

- A. Schedule of work shall be coordinated with the Town. Work must be completed by August 31, 2009.
- B. Schedule work to coincide with commencement of installation of new roofing system.
- C. Remove only existing roofing materials that can be replaced with new materials the same day and as the weather will permit.

1.7 COORDINATION

- A. Coordinate work with other affected mechanical and electrical work associated with roof penetrations.

2 PART 2 – PRODUCTS

2.1 MATERIALS

- A. Temporary Protection: Sheet polyethylene. Provide weights to retain sheeting in position.

3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions under provisions of the general conditions of this contract.

- A. Verify that existing roof surface is clear and ready for work of this Section.

3.2 PREPARATION

- A. Sweep roof surface clean of loose matter. Remove loose refuse and dispose off site.
- B. Control dust, noise and debris to the satisfaction of the Owner.

3.3 MATERIALS REMOVAL

- A. Remove metal counter flashings. At the existing reglets scheduled to remain, fold up metal counter flashings to permit access to top edge of base flashings.
- B. Remove roofing membrane, perimeter base flashings, and flashings around roof protrusions, pitch pans and pockets.
- C. Remove insulation and fasteners, cant strips blocking, and related material.
- D. Repair existing wood and metal deck surfaces to provide smooth working surface for new roof system.

3.4 TEMPORARY PROTECTION

- A. Provide temporary protective sheeting over uncovered deck surfaces.
- B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
- C. Provide for surface drainage from sheeting to existing drainage facilities.
- D. Do not permit traffic over unprotected or repaired deck surface.
- E. Provide temporary protective sheeting on furniture, equipment, flooring and other interior finishes in areas that will be subject to falling debris and underdeck materials. Professionally clean the interior spaces soiled by roofing removal and replacement operations before classes begin each day.

3.5 FIELD QUALITY CONTROL

- A. Inspection will identify the exact limits of material removal.

END OF SECTION

FLASHING AND SHEET METAL

1 PART 1 – GENERAL

WORK INCLUDED

- A. Gravel stops and step flashings
- B. Roof Flashings
- C. Counter flashings at roof mounted equipment and vent stacks
- D. Scuppers and related counter flashings

RELATED SECTIONS

- A. Rough Carpentry
- B. Elastomeric Sheet Roofing
- C. Gutters and Downspouts
- D. Sealants

REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. Federal Specification (FS) Publications:

- UU-B-790 Building Paper, Vegetable Fiber

- 2. American Society for Testing and Materials (ASTM) Publications:

- B 101-02 Lead-Coated Copper Sheet and Strip for Building Construction

- D 41-94 Asphalt Primer Used in Roofing,
(R 2000) Dampproofing, and Waterproofing

- D 2822-91 Asphalt Roof Cement
(R 1997)

- D 5643-94 Coal Tar Roof Cement,
(R 2000) Asbestos Free

3. National Roofing Contractors Association (NRCA)
Publication

Roofing Manual

4. Sheet Metal and Air Conditioning Contractors National
Association, Incorporated (SMACNA) Publication:

Architectural Sheet Metal Manual (2003)

SUBMITTALS

A. Samples:

1. Sheet Metal Materials: Two pieces, 6 by 10 inches, of each type
2. Gravel Stop and Fascia: One piece, 6 inches long, and one sample
3. Nails and Other Fastenings: Two each

B. Shop Drawings: Indicate thicknesses, dimensions, fastenings and anchoring methods, expansion joints, and other provisions necessary for thermal expansion and contraction. Scaled catalog cuts may be submitted for factory fabricated items.

1. Gravel stops and fascias
2. Base and cap flashing (counter flashing)
3. Flashing at roof penetrations
4. Copings

C. Certificates of Compliance: Manufacturer's certificates attesting that Materials meet specified requirements.

DELIVERY, HANDLING, AND STORAGE: Package and protect materials during shipment. Uncrate and inspect materials for damage, dampness, and wet-storage stains upon delivery to the job site. Remove from the site and replace damaged materials that cannot be restored to like-new condition. Handle sheet metal items to avoid damage to surfaces, edges, and ends. Store materials in dry, weather-tight, ventilated areas until immediately before installation.

GUARANTEE

- A. Guarantee all work against defects in materials and workmanship for three (3) years following substantial completion.
 1. Provide duplicate original guarantees in writing on Contractor's letterhead.

2 PART 2 – PRODUCTS

2.1 MATERIALS

- A. Furnish sheet metal items in 8 to 10 foot lengths. Single pieces less than 8 feet long may be used to connect to factory-fabricated inside and outside corners, and at ends of runs. Provide accessories and other items essential to complete the sheet metal installation. These accessories shall be made of the same materials as the items to which they are applied. Fabricate sheet metal items of the materials specified below and to the gauge, thickness, or weight specified. Sheet metal items shall have manufacturer's durinodic coating finish unless specified otherwise.
- B. Exposed Sheet Metal Items: Shall be of the same material. The following items shall be considered as exposed sheet metal: Gravel stops and fascias; cap, steeped, base, and eave flashings; scuppers and all associated accessories.
- C. Combination Copings, Cap Flashings, Fascias, Gravel Stops, Scuppers and other exposed flashings: ASTM B 101, Type 1, soft temper 20 oz/sq ft, natural finish with lead coating to yield a total weight no less than 21.2 oz/sq ft for 1 step gravel stops and flashings in the dimensions as detailed in the drawings. Provide for expansion and contraction, as well as cleats and other related items as recommended by the manufacturer.
 1. Approved manufacturers:
 - a. Architectural Products by Outwater LLC, Wood-Ridge, NJ (800.631.8375)
 - b. Cheney Flashing Company, Trenton, NJ (800.322.2873)
 - c. Approved equal
- D. Bituminous Plastic Cement: ASTM D 2822, Type I; ASTM D 5643
- E. Building Paper: Fed. Spec. UU-B-790, Style 4, Grade B

- F. Asphalt Primer: ASTM D 41
- G. Fastener: Use the same metal or a metal compatible with the item fastened. Use stainless steel fasteners to fasten dissimilar materials.
- H. Reglets: Recessed, .032 inch soft temper lead coated copper, formed as indicated in NRCA and SMACNA manuals

3 PART – EXECUTION

3.1 INSTALLATION

- A. Requirements: Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry, and free of defects and projections which might affect the application. For installation of items not shown in detail or not covered by specifications, conform to the applicable requirements of the SMACNA Architectural Sheet Metal Manual. Provide sheet metal flashing in the angles formed where roof decks abut walls, curbs, ventilators, pipes, or other vertical surfaces and wherever indicated and necessary to make the work watertight. Join sheet metal together as recommended by the manufacturer or by the SMACNA manual.
- B. Workmanship: Make lines, arises, and angles sharp and true. Free exposed surfaces from visible wave, warp, and buckle, and tool marks. Fold back exposed edges neatly to form a ½ inch hem on the concealed side. Make sheet metal exposed to the weather watertight with provisions for expansion and contraction.
- C. Nailing: Confine nailing of sheet metal generally to sheet metal having a maximum width of 18 inches. Confine nailing or flashing to one edge only. Space nails evenly not over 3 inches on centers and approximately ½ inch from edge unless otherwise specified or indicated. Face nailing will not be permitted. Where sheet metal is applied to other than wood surfaces, include in shop drawings, the locations for sleepers and nailing strips required to secure the work. Sleepers and nailing strips are specified in Section 06100, “Rough Carpentry.”
- D. Cleats: Provide cleats for sheet metal 18 inches and over in width. Space cleats evenly not over 12 inches on centers unless otherwise specified or indicated. Unless otherwise specified, cleats shall be not less than 2 inches wide by 3 inches long and of the same material and thickness as the sheet metal being installed. Secure one end of the cleat with two nails and the cleat folded back over the nail heads.

Lock the other end into the seam. Pre-tin cleats for soldered seams.

- E. Bolts, Rivets, and Screws: Install bolts, rivets, and screws where indicated or required. Provide compatible washers where required to protect surface of sheet metal and to provide a watertight connection.
- F. Flat-lock Seams: Finish not less than $\frac{3}{4}$ inch wide.
- G. Lap Seams: Finish soldered seams not less than one-inch wide. Overlap seams not soldered, not less than 3 inches.
- H. Loose-lock Expansion Seams: Not less than 3 inches wide; provide minimum one inch movement within the joint. Completely fill the joints with the specified sealant, applied at not less than $\frac{1}{8}$ inch thick bed. Sealants are specified in Section 07900, "Sealants."
- I. Protection from Contact with Dissimilar Materials:
 - 1. Metal Surfaces: Paint surfaces in contact with mortar, concrete, or other masonry materials with alkali-resistant coatings such as heavy-bodied bituminous paint.
 - 2. Wood or Other Absorptive Materials: Paint surfaces that may become repeatedly wet and in contact with metal with two coats of aluminum paint or a coat of heavy-bodied bituminous paint.
- J. Expansion and Contraction: Provide expansion and contraction joints at not more than 40 foot intervals. Where the distance between the last expansion joint and the end of the continuous run is more than half the required interval, an additional joint shall be provided. Space joints evenly.
- K. Base Flashing: Extend up vertical surfaces of the flashing not less than 8 inches and not less than 4 inches under the roof covering. Where finish wall coverings form a counter flashing, extend the vertical leg of the flashing up behind the applied wall covering not less than 6 inches. Overlap the flashing strips with the previously laid flashing not less than 3 inches. Fasten the strips at their upper edge to the deck, with compatible, large-head roofing nails. Extend the metal flashing over crickets at the up-slope side of curbs, and similar vertical surfaces extending through sloping roofs, the metal flashings. Install and fit the flashings so as to be completely weathertight. Base flashing for interior and exterior corners shall be factory-fabricated.

- L. Counter flashing: Except where indicated or specified otherwise, insert counter flashing in new cut-out reglets located from 9 to 10 inches above the new roof deck in the existing masonry walls, extend down vertical surfaces over upturned vertical leg of base flashings not less than 3 inches. Fold the exposed edges of counter flashing $\frac{1}{2}$ inch. Where stepped counter flashings are required, they may be installed in short lengths or may be of the preformed one-piece type. Provide end laps in counter flashings not less than 3 inches and make it weather-tight with plastic cement. Do not make lengths of metal counter flashings exceed 10 feet. Form the flashings to the required shapes before installation. Factory-form the corners not less than 12 inches from the angle. Secure the flashings in the reglets with lead wedges and space not more than 18 inches apart; on short runs, place wedges closer together. Fill caulked-type reglets or raked joints which receive counter flashing with caulking compound. Caulking is covered in Section 07900, "Sealants." Turn up the concealed edge of counter flashings built into masonry or concrete walls not less than $\frac{1}{4}$ inch and extend not less than 2 inches into the walls. Install counter flashing to provide a spring action against base flashing.
- M. Gravel Stops and Roof Edge Fascias: Prefabricate in the shapes and sizes indicated and in lengths not less than 8 feet. Extend flange at least 4 inches onto roofing. Provide prefabricated, mitered corners internal and external corners. Install gravel stops and fascias after all piles of the roofing membrane have been applied, but before the flood coat of bitumen is applied. Prime roof flange of gravel stops and fascias on both sides with an asphalt primer. After primer has dried, set flange on roofing membrane and strip-in as specified in Section 07531. Nail flange securely to wood nailer with large-head, barbed-shank roofing nails 1.5 inches long spaced not more than 3 inches on centers.
1. Edge Strip: Hook the lower edge of fascias at least $\frac{3}{4}$ inch over a continuous strip of the same material bent outward at an angle not more than 45 degrees to form a drip. Nail hook strip to a wood nailer at 6 inches maximum on centers. Where fastening is made to concrete or masonry, use screws spaced 12 inches on centers driven in expansion shields set in the concrete or masonry. Where horizontal wood nailers are slotted to provide for insulation venting, install strips to prevent obstruction of vent slots. Where necessary, install strips over $\frac{1}{16}$ inch thick compatible spacer or washers.

2. Joints: Leave open the section ends of gravel stops and fascias $\frac{1}{4}$ inch and backed with a formed flashing plate, mechanically fastened in place and lapping each section end a minimum of 4 inches set laps in plastic cement. Face nailing will not be permitted.

N. Flashing at Roof Penetrations and Equipment Supports: Provide metal flashing for all pipes, ducts, and conduits projecting through the roof surface and for equipment supports, guy wire anchors, and similar items supported by or attached to the roof deck. Provide new or salvage existing rain hoods, ventilator shields, etc.

1. Single Pipe Vents” Set flange of sleeve in cement and nail 3 inches on centers. Bend the top of sleeve over and extend down into the vent pipe a minimum of 2 inches. For long runs or long rises above the deck, where it is impractical to cover the vent pipe with lead, use a two-piece formed metal housing. Set metal housing with a metal sleeve having a 4 inch roof sleeve a minimum of 8 inches above the roof deck and lapped a minimum of 3 inches by a metal hood secured to the vent pipe by a draw band. Seal the area of hood in contact with vent pipe with an approved sealant. Sealants are covered under Section 07900, “Sealants.”

3.2 PAINTING: Field-paint sheet metal for separation of dissimilar materials.

3.3 CLEANING

- A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, handling marks, contamination from steel wool, fittings and drilling debris, and scrub-clean. Free the exposed metal surfaces of dents, creases, waves, scratch marks, and solder or weld marks.

3.4 REPAIRS TO FINISH

- A. Scratches, abrasions, and minor surface defects of finish may be repaired in accordance with the manufacturer’s printed instructions and as approved. repair damaged surfaces caused by scratches, blemishes, and variations of color and surface texture. Replace items which cannot be repaired.

3.5 FIELD QUALITY CONTROL

- A. Establish and maintain a quality control procedure for sheet metal used in conjunction with roofing to assure compliance of the installed sheet metalwork with the contract requirements. Work not in compliance with the contract shall be promptly removed and replaced or corrected. Quality control shall include, but not be limited to, the following:
1. Observation of environmental conditions; number and skill level of sheet metal workers; condition of substrate.
 2. Verification of compliance before, during, and after installation.
 3. Inspection of sheet metalwork, for proper size and thickness, fastening and joining, and proper installation.
- B. Procedure: Submit for approval prior to start of roofing work. Include a checklist of points to be observed. Document the actual quality control observations and inspections.

END OF SECTION

GUTTERS AND DOWNSPOUTS

1 PART 1 GENERAL

The existing gutters are to be reused.

1.1 SECTION INCLUDES

- A. Lead coated copper gutters and downspouts
- B. Concrete splash block

1.2 RELATED SECTIONS

- A. Flashing and Sheet Metal

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- B 32-03 Solder Metal

- B 101-02 Lead-Coated Copper Sheet and Strip for Building Construction

- 2. Federal Specification (FS) Publications:

- A-A-51145D-01 Flux, Soldering, Non-Electric, Paste and Liquid

- 3. Architectural Sheet Metal Manual (SMACNA)

1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.
- B. Indicate on shop drawings, general construction, configurations, jointing methods and locations, fastening methods, locations, and installation details.

- C. Provide product data on prefabricated components.
- D. Submit samples.
- E. Submit two samples 6 inches in size illustrating component design, finish, color, and configuration.
- F. Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- A. Conform to SMACNA Manual Drawings for nominal sizing of components for rainfall intensity determined by a storm occurrence of 1 in 10 years.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01600.
- B. Store and protect products under provisions of Section 01600.
- C. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to aid ventilation. Slope to drain.
- D. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

2 PART 2 – PRODUCTS

2.1 MATERIALS

- A. Lead Coated Copper: ASTM B 101, Type 1, soft temper; 18 oz/sq ft, natural finish with lead coating to yield a total weight no less than 19.2 oz/sq ft; unless otherwise noted. Provide for expansion and contraction, as well as cleats and other related items as recommended by the manufacturer.

2.2 COMPONENTS

- A. Gutters: SMACNA standards, custom profile.

- B. Downspouts: Round profile.
- C. Downspout Boots: Of material and profile to align with and connect to storm water pipe riser.
- D. End Caps, Downspout Header, Support Brackets, Joint Fasteners: Profiled to suit gutters and downspouts.

2.3 ACCESSORIES

- A. Anchorage Devices: SMACNA requirements; type recommended by fabricator.
- B. Gutter Supports: Brackets.
- C. Downspout Supports: Brackets.
- D. Solder: ANSI/ASTM B 32; 50/50 type.
- E. Flux: FS A-A-51145D.
- F. Concrete Splashblocks: 2' long x 1' wide flared concrete splashblock pitched to drain away from the downspout boot, with side walls and textured finish.

2.4 FABRICATION

- A. Form gutters and downspouts of profiles and size indicated.
- B. Field measure site conditions prior to fabricating work to match existing profiles.
- C. Fabricate with required connection pieces.
- D. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- E. Hem exposed edges of metal.
- F. Solder metal joints. After soldering, remove flux.
- G. Fabricate gutter and downspout accessories; solder watertight.

3 PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work and conditions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION

- A. Install gutters, downspouts and accessories in accordance with manufacturer's instructions.
- B. Join lengths with formed seams soldered watertight. Flash and solder gutters to downspouts and accessories.
- C. Apply bituminous protective backing on surfaces in contact with dissimilar materials.
- D. Slope gutters 1/16 inch per foot minimum.
- E. Solder metal joints watertight for full metal surface contact. After soldering, wash metal clean with neutralizer solution and rinse with water.
- F. Seal around downspout intersections with underground leaders, forming a watertight and rain shedding sealant barrier.

END OF SECTION

SKYLIGHTS

1 PART 1 – GENERAL

Reuse existing skylight.

1.1 SECTION INCLUDES

- A. Skylight with integral insulated curb
- B. Counter flashings

1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Rough Carpentry: Installation of roof opening curbs and flashings

1.3 RELATED SECTIONS

- A. Rough Carpentry: Wood support curbs
- B. Elastomeric Sheet Roofing: Roofing system and base flashing at skylight curb
- C. Roofing Removals and Preparation
- D. Flashing and Sheet Metal: Counter flashing

1.4 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publication

- D 635-03 Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position

- 2. American Architectural Manufacturers Association (AAMA) Publications:

- 1606-82 Voluntary Uniform Load Structural Standard for Plastic Domed Skylights

1.5 PERFORMANCE REQUIREMENTS

- A. System to provide for expansion and contraction within system components caused by a cycling temperature range of 170 F degrees without causing detrimental effects to system or components. The light-transmitting plastic materials shall have combustibility classification of C1 in accordance with ASTM D 635.
- B. Design and size members to withstand dead loads and live loads caused by Snow, hail, and pressure or suction of wind acting vertically as calculated in accordance with the State of Connecticut Building Code. Plastic skylights must meet the requirements of AAMA 1606-82, which requires acrylic thickness adequate to withstand a positive and negative test pressure of 60 PSF.

1.6 SUBMITTALS

- A. Provide configurations, dimensions, locations, fastening methods, and installation details.
- B. Include characteristics of light admitted, transparency and insulation value of unit.
- C. Submit manufacturer's installation instructions
- D. Submit manufacturer's details to the FM Global office for review.

1.7 SEQUENCING AND SCHEDULING

- A. Coordinate work of this Section with the installation of wood curbs and roofing system.

1.8 WARRANTY

- A. Provide five-year manufacturer's warranty
- B. Warranty: Include coverage of weather and water tightness of skylight assembly and seal with roofing system.

2 PART 2 –PRODUCTS

2.1 MANUFACTURER

- A. Wasco Products, Sanford, ME (800.338.0293); Product CS1
- B. Naturalite, (800.527.4018); Product NTL
- C. American Skylights, Inc., Arlington, TX (800.772.7401); Product TCM
- D. Substitutions: Equivalent to above subject to approval

2.2 MATERIALS

- A. Nominal Size: Single units to adapt to curbs and openings matching those existing (verify in field).
- B. Configuration: Single units.
- C. Shape: Curvilinear outlet plastic dome form.
- D. Double Dome: Polycarbonate plastic, 1/8 inch thick; clear outer dome, white translucent inner dome; air sealed.
- E. Unit Frame: Extruded aluminum, thermally broken, reinforced and welded corner joints, integral curb frame mounting flange and counter flashing to receive roof flashing system, with integral condensation drainage gutter.

2.3 ACCESSORIES

- A. Anchorage Devices: Type recommended by manufacturer, concealed.
- B. Counter flashings: Same metal type and finish as roof flashing metal.
- C. Sealant: As specified under Sealant section

2.4 FABRICATION

- A. Fabricate free of visual distortion and defects.
- B. Provide for removal of condensation.
- C. Provide weathertight assembly.
- D. Fabricate to drain water entering joints, or migrating moisture occurring within unit, to exterior.

2.5 FACTORY FINISHING

- A. Aluminum: Clear anodized.

3 PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Coordinate with installation of roofing system and related flashings.
- C. Apply bituminous paint on aluminum surfaces of units in contact with cementitious materials or dissimilar metals.
- D. Provide weathertight installation.

END OF SECTION

SEALANTS

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Building and site sealants

1.2 RELATED SECTIONS

- A. Rigid Insulation Board
- B. Elastomeric Sheet Roofing
- C. Flashing and Sheet Metal

1.3 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- C 920-92 Elastomeric Joint Sealants

1.4 SUBMITTALS

- A. Certificates of Conformance: Submit certificates from the manufacturers attesting that materials meet the specified requirements.

- B. Manufacturers' Data: Clearly mark data to identify material type to be provided.

- C. Sealants: Data for sealant shall include:

- 1. Application instructions and precautions
 - 2. Shelf life
 - 3. Mixing instructions for multicomponent sealants
 - 4. Recommended cleaning solvents

- D. Primer(s)

- E. Backstop Material(s)

F. Colors: Submit one sample of each color for each sealant type to verify that products match the colors indicated. Where colors are not indicated, submit not less than 3 different samples of manufacturers' standard colors for selection by the Owner.

G. Manufacturer's Test Report: Indicate sealant compatibility with commonly used substrates.

1.5 SAMPLE JOINTS: Before sealant work is started, provide a sample of each type of finished joint where directed. Sample shall show the workmanship, bond, and color of sealant. The workmanship, bond, and color of sealant throughout the project shall match the approved sample joints.

1.6 ENVIRONMENTAL CONDITIONS: The ambient temperature shall be within the limits of 40 and 100 degrees F when sealant is applied.

1.7 DELIVERY AND STORAGE: Deliver materials to the job site in unopened manufacturers' external shipping containers, with brand names, date of manufacture, color, and material designation clearly marked thereon. Elastomeric sealant containers shall be labeled to identify type, class, grade, and use. Carefully handle and store materials to prevent inclusion of foreign materials or subjection to sustained temperatures exceeding 100 degrees F or less than 40 degrees F.

2 PART 2 – PRODUCTS

2.1 SEALANTS: Provide one part polysulfide sealants that have been tested and found Suitable for the substrates to which it will be applied.

A. Exterior Sealant: For joints in vertical surfaces, provide ASTM C 920, Type S, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C 920, Type S, Class 25, Use T. Location(s) and color(s) of sealant shall be as follows:

<u>LOCATION</u>	<u>COLOR</u>
1. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels.	Match adjacent
2. Metal-to-metal joints where sealant is indicated or specified	Gray
3. Joints between ends of gravel stops, fascias, copings, and adjacent walls	Gray

B. Manufacturers: The following manufacturers are approved for use:

1. Tremco Incorporated, Ashland, OH (800.321.7906) or;
2. Pecora Corporation, Harleysville, PA (800.523.6688) or;
3. Sika Corporation, Lyndhurst, NJ (800.933.7452) or;
4. Substitutions: Equivalent to above subject to Town approval

2.2 PRIMER FOR SEALANT: Provide a nonstaining, quick-drying type of consistency recommended by the sealant manufacturer for the particular application.

2.3 BOND BREAKERS: Provide the type and consistency recommended by the sealant manufacturer for the particular application.

2.4 BACKSTOPS: Provide glass fiber roving or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Backstop material shall be compatible with sealant.

2.5 CLEANING SOLVENTS: Provide type(s) recommended by the sealant manufacturer.

3 PART 3 – EXECUTION

3.1 SURFACE PREPARATION: Surfaces shall be clean, dry to the touch, and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint, and other foreign matter that would tend to destroy or impair adhesion. When resealing an existing joint, remove existing caulk or sealant prior to applying new sealant.

- A. Steel Surfaces: Remove loose mill scale by sandblasting or, if sandblasting is impractical or would damage finish work, scraping and wire brushing. Remove protective coatings by sandblasting or using a residue-free solvent.

3.2 SEALANT PREPARATION: Do not add liquids, solvents, or powders to the sealant. Mix multicomponent elastomeric sealants in accordance with manufacturer's instructions.

3.3 APPLICATION

A. Joint Width-To-Depth Ratios:

1. Acceptable Ratios:

JOINT WIDTH

JOINT DEPTH

Minimum Maximum

For metal, glass, or other nonporous surfaces:

¼ inch (minimum)
Over ¼ inch

¼ inch ¼ inch
½ of width Equal to width

For wood:

¼ inch (minimum)
Over ¼ inch to ½ inch
Over ½ inch to 2 inches
Over 2 inches

¼ inch ¼ inch
¼ inch width Equal to width
½ inch 5/8 inch
(As recommended by sealant manufacturer)

2. Unacceptable Ratios: Where joints of acceptable width-to-depth ratios have not been provided, clean out joints to acceptable depths and grind or cut to acceptable widths without damage to the adjoining work. Grinding shall not be required on metal surfaces.

B. Backstops: Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified. Install backstops in the following locations.

1. Where indicated.
2. Where backstop is not indicated but joint cavities exceed the acceptable maximum depths specified in paragraph entitled, "Joint Width-to-Depth Ratios."

C. Primer: Immediately prior to application of sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.

- D. Bond Breaker: Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.
- E. Sealants: Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and can not be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant, and tool smooth as specified.

3.4 PROTECTION AND CLEANING

- A. Protection: Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.
- B. Final Cleaning: Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.
 - 1. Masonry and Other Porous Surfaces: Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for 24 hours then remove by wire brushing and sanding.
 - 2. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent-moistened cloth.

END OF SECTION

PAINTING

1 PART 1 – GENERAL

1.1 SECTION INCLUDES

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

1.2 REFERENCES

- A. Reference Standards: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- 1. American Society for Testing and Materials (ASTM) Publications:

- D 16-03 Standard Terminology for Paint, Related Coatings, Materials, and Applications

- 2. National Paint and Coatings Association (NPCA)

- Guide to U.S. Government Paint Specifications

- 3. Painting and Decorating Contractors of America (PDCA)

- Painting – Architectural Specifications Manual

- 4. Steel Structures Painting Council (SSPC)

- Steel Structures Painting Manual

1.3 DEFINITIONS

- A. Conform to ASTM D 16 for interpretation of terms used in this Section.

1.4 SUBMITTALS

- A. Submit sample as needed or match existing.
- B. Product Data: Provide data on all finishing products.
- C. Samples: Submit two sample sleeves, illustrating range of colors available for each surface finishing product scheduled. Architect will select colors from manufacturer's standard and custom color lines.

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

1.5 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 five years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to Connecticut Building Code for flame and smoke rating requirements for finishes.

1.7 DELIVERY, STORAGE, and HANDLING

- A. Deliver, store, protect and handle products appropriately.
- 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.

1.8 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: 50 degrees F for Exterior; unless required otherwise by manufacturer's instructions

2 PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers – Paint

1. Hunting Specialty Products; Product: Hammerite
2. Benjamin Moore Paints Product: Eggshell Finish House Paint with IronClad Galvanized Metal Latex Primer

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. Fastener Head Cover Materials: Latex filler.

3.3 PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

- A. Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.
- B. Seal with shellac and seal marks which may bleed through surface finishes.
- C. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-

sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

- D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- E. 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.
- F. 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. Prime metal items including shop primed items with incompatible surfaces to the finished coating system.
- G. Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

3.3 APPLICATION

- A. 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.

3.4 CLEANING

- A. Clean work as required
- B. Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.5 SCHEDULE – EXTERIOR SURFACES

- A. Steel – Unprimed:
 - 1. One coat of latex primer.
 - 2. Two coats of latex enamel, gloss.
- B. Steel – Shop Primed:
 - 1. Touch-up with zinc chromate primer.
 - 2. Two coats of alkyd enamel, gloss.
- C. Steel – Galvanized:
 - 1. One coat galvanize primer.
 - 2. Two coats of alkyd enamel, gloss.
- D. Wood – Painted (Opaque):
 - 1. One coat of latex primer sealer.
 - 2. Two coats of latex enamel, semi-gloss.
- E. Gypsum Board:
 - 1. One coat of latex primer sealer.
 - 2. Two coats of latex enamel, eggshell.

END OF SECTION