SECTION 07720

ROOF ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide the roof hatch system shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work of this Section include, but are not limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

C. Codes: Materials and work shall conform to the governing Building Code. In case of conflict between these specifications, the standard specifications, and the Building Code, the more stringent shall govern.

1.02 SUBMITTALS

A. Comply with pertinent provisions of Section 01300.

B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
   1. Manufacturer's data, catalog cuts, dimensioned drawings, and other data needed to prove compliance with the specified requirements and to enable proper preparation of the roof opening.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01600.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Vertical walls of roof hatch to be wrapped with plywood or dens deck for base flashing securement and should be counterflashed with 4" skirt flashing. Additional waterproofing measures shall be implemented per specifications Section 07511 – Built-Up Bituminous Roofing.

B. Provide galvanized sheet metal roof hatch, factory prime-coated and pre-finished, with ladder extension safety post.

C. Roof Hatch:
   1. Bilco, type F, 48" x 48" with Bil-Guard Hatch Railings System.
   2. Equal products of other manufacturers when approved in advance by the Architect.

D. Roof Ladders:
   1. Pre-fabricated fixed ladder by Alaco, or equal.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install the work of this Section in strict accordance with the manufacturer's recommendations as approved by the Architect, anchoring all items firmly into position for long life under hard use.

C. Put operating components through at least five complete operating cycles, adjusting as required, and achieving optimum ease of operation.

END OF SECTION - 07720

SECTION 07610

PREFORMED METAL STANDING SEAM ROOFING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes:
   1. Prefinished, prefabricated standing seam roof system with continuous interlocking seams.
   2. Coordinate with installation of roofing substructure.
   3. Provide color coordinated hip, gable, and valley flashings, ridge and peak caps, eave and shelf drips, and counterflashings.
   4. Provide clips, fasteners, closures, and sealants as necessary to meet design criteria and ensure weathertight installation.

B. Related Sections:
   1. Section 05500: Metal Fabrications.
   2. Section 06100: Rough Carpentry.
   3. Section 07600: Flashing and other sheet metal.

C. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

D. Codes: Materials and work shall conform to the governing Building Code. In case of conflict between these specifications, the standard specifications, and the Building Code, the more stringent shall govern.

1.02 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Provide UL 90 rated roofing system that has been tested in accordance with UL 580 test procedures.
   2. Provide factory preformed panel system that has been pretested and certified by manufacturer to comply with specified requirements under installed conditions.
   3. Provide one-piece, single length roof panel where possible.
   4. Provide continuous interlocking standing seam that inherently increases load span capability, stiffness, and flexural stress handling.
   5. Continuous factory installed hot-melt sealant on bottom edge of female seam leg.

B. Structural Requirements:
   1. Engineer panels for structural properties in accordance with latest edition of American Iron and Steel Institute "cold formed Steel Design Manual", using "effective width" concepts.
   2. Provide confirmation of positive and negative buckling moments and uplift capacity determined by full-scale test in accordance with ASTM E72-80 (Chamber Method).

C. Substrate Criteria:
   1. Maximum deflection: L/240.

D. Environmental Requirements: (Actual independent laboratory certified test results must be submitted)
   1. Resistance to air infiltration: 0.059 cfm per lineal foot of joint when tested in accordance with ASTM E 283 at static test pressure differential of 6.24 psf.
   2. Resistance to water infiltration: No leakage through panel joints when tested in accordance with ASTM E331 at static test pressure differential of 6.24 psf.

1.03 SUBMITTALS

A. Comply with pertinent provisions of Section 01300.

B. Product data: Submit manufacturer's specifications, standard detail drawings and installation instructions.

C. Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
   1. Shop Drawings indicating thickness and dimensions of parts, fastenings and anchoring methods, details and locations of seams, transitions and other provisions necessary for thermal expansion and contraction.
   2. Indicate roof terminations, clearly showing flashings and change of direction caps.
   3. Clearly indicate locations of field and factory applied sealant.
   4. Show locations and types of hold-down clips and fasteners.
   5. Provide plan showing layout of entire extent of all roof areas.

D. Samples:
   1. Submit two samples, 12" long x full panel width, showing proposed metal gage, seam profile and required finish.
   2. Submit specified color samples on metal for Architect's review.

E. Test reports:
   1. Submit test reports prepared by UL Laboratory indicating wind uplift rating of proposed roof system.

F. Certification: Submit manufacturer's certification that materials and finishes meet specification requirements.

G. Applicator's and Manufacturer's experience records: Submit list of completed projects and names of Architects.

1.04 QUALITY ASSURANCE

A. Manufacturer's qualifications:
   1. Manufacturer shall have a minimum of 10 years experience supplying metal roofing to the region where the work is to be done.
   2. Comply with current independent testing and certification as specified.
   3. Manufacturer shall provide proof of $2,000,000 liability insurance for their metal roof system.

4. The roof panel manufacturer must also subscribe to Underwriters Laboratories' "Follow Up Service" assuring continuing product compliance with UL requirements. Shipment packaging of panels and attachment clips must bear UL classification markings.
5. Panel manufacturers without full supporting product literature; Flashings & Details Guides, Guide Specifications, and Technical Support shall not be considered equal to the specified product.

B. Applicator qualifications:
1. Three years minimum experience in application of standing seam roofs.
2. Minimum of five satisfactory roofs on similar type of project.

C. Regulatory requirements: Comply with requirements of applicable building codes and other agencies having jurisdiction of wind uplift rating of standing seam roofs.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect products and accessories from damage and discoloration during transit and at project site. Store sheets and components in dry storage area to prevent condensation.

B. Do not overload roof structure with stored materials. Do not permit material storage or traffic on completed roof surfaces.

1.06 STORAGE

A. Store materials out of the weather, in a clean, dry place. One end of each container should be slightly elevated to allow any moisture to run off.

B. Panels and/or finishings with strippable film must not be stored in areas exposed to sunlight.

C. Care should be taken to prevent contact with any substance which may cause a discoloration in the finish during storage.

D. Store materials to provide ventilation and prevent bending, abrasion, or twisting.

1.07 HANDLING

A. Care should be taken to avoid gouging, scratching or denting.

B. Do not allow traffic on completed roof. If required, provide cushioned walk boards.

C. Protect installed products from damage caused by foreign objects and adjacent construction until completion of project.

1.08 WARRANTY

A. Furnish manufacturer's standard 20-year warranty stating architectural fluorocarbon finish will be:
1. Free of fading or color change in excess of 5 NBS units as measured per ASTM D2244-68;
2. Will not chalk in excess of numerical rating of 7 when measured in accordance with standard procedures specified in ASTM D659-74;

3. Will not peel, crack, chip, or delaminate.

B. Contractor's Warranty.
1. Warrant panels, flashings, sealants, fasteners and accessories against defective materials and/or workmanship, to remain watertight and weatherproof with normal usage for two (2) years following Product Substantial Completion date.

C. Furnish manufacturer's 10-year Weathertight Side Joint Warranty.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Acceptable Product: 17" wide Snap Seam HP panels as manufactured by AEP-SPAN, 10905 Beech Avenue, Fontana, CA 92337.

B. Panel Designation:
1. Snap Seam HP.

C. Alternates: Approval of substitute systems is required prior to bid. The Architect will be the sole judge of what qualifies as an "equal" system. To be approved as an equal system, submit or respond to all items in "Quality Assurance Warranty" and "Submittal" sections of this specification. All submittals must be received in the Architect's office a minimum of ten (10) working days prior to bid.

2.02 MATERIALS

A. Panels
1. Base Metal:
a. Material:
1) Steel conforming to ASTM A924/A792 (formerly ASTM A792) Zincalume, minimum yield 40,000 psi, thickness 24 gauge.
b. Protective Coating:
1) Conform to ASTM A924/A792 (formerly ASTM A792), AZ50 (Zincalume).
2. Finish:
a. DuraTech 5000 (Polyvinylidene Fluoride), full 70% Kynar 500/Hylar 5000 for a total of 1.0 mil dry film thickness, with a specular gloss of 10-15 when tested in accordance with ASTM D-523-89 at 60 degrees.
3. Color:
a. As indicated on Drawings, and shall have a minimum SRI value of 29.
4. Configuration:
a. Batten: Roof panels shall consist of snap-on batten caps 3/8" wide and 1-7/8" high spaced, 17" on center and a nominal panel width of the same. Panels shall be factory corrective leveled.

B. Accessories
1. Fastener Clip:
a. UL-90 assembly rated clip: 24 gauge coated with minimum G-60 galvanized per ASTM A924 (formerly ASTM A525).

2. Fasteners:
   a. Per manufacturer's recommendation including attachment schedule.
3. Sealant:
   a. Gunnable Grade Caulking: Single component Urethane Caulk.
   b. Tape Sealant: Butyl.

C. Flashing
1. Protective metallic coating, material, gauge and finish to match panels. Do not use lead or copper. Remove any strippable film prior to installation.

D. Fabrication
1. Unless otherwise shown on the drawings or specified herein, fabricate panels in continuous one-piece lengths and fabricate flashings and accessories in longest practical lengths.
2. Roofing panels shall be factory formed. Field formed panels are not acceptable.
3. Roofing panels and/or battens shall be field curved, as required and where noted, to dimensions shown on the drawings.

E. Underlayment
1. Apply one (1) layer of red rosin paper over underlayment and under metal roofing.
2. Underlayment for use under standing seam metal roof and installed over plywood, OSB, Dens-Deck, or rigid insulation.
3. W.R. Grace – Vicor Ultra or approved equal 30 mil self adhering underlayment membrane produced for high temperatures under metal roofs.

Property	**Value**	**Test Method**
Thickness	.076 mm (30) mil)	ASTM D 3767 Method A
Tensile Strength	1720 kN/M/sq (250 psi)	ASTM D 412 (Die C Mod)
Elongation	250%	ASTM D 412 (Die C Mod)
Low Temperature Flex	Unaffected @ -32C	ASTM D 1970
Adhesion to Plywood	525 N/m (3.0 lb/in width)	ASTM D 903
Permeance (Max)	2.9 ng/m/sq Pa (0.05 Perms)	ASTM D 96
Material Weight Installed	1.2 kg/m/sq (0.22 lb/ft/sq)	ASTM D 461

PART 3 – EXECUTION

3.01 EXAMINATION

A. Existing Conditions:
1. Verify that members and/or substrate to receive panels are complete, accurately sized and located, in true plane, secure and otherwise properly prepared.
2. Prior to starting work, notify General Contractor about defects requiring correction.
3. Do not start work until conditions are satisfactory.

3.02 PREPARATION

A. Field Measurements:
   1. Verify prior to fabrication.
   2. If field measurements differ from drawing dimensions, notify Architect/Engineer prior to fabrication.

B. Protection:
   1. Treat, or isolate with protective material, any contacting surfaces of dissimilar materials to prevent electrolytic corrosion.
   2. Require workmen who will be walking on Roofing Panels to wear clean, soft-soled work shoes that will not pick up stones or other abrasive material which could damage and discoloration.
   3. Protect Work of other Trades against damage and discoloration.

C. Surface Preparation:
   1. Clean and dry surfaces prior to applying sealant.

3.03 INSTALLATION

A. Panels.
   1. Follow roof panel manufacturer's directions.
   2. Install panel seams vertically.
   3. Lap panels away from prevailing wind direction.
   4. Do not stretch or compress panel side-lap interlocks.
   5. Secure panels without warp or deflection.
   6. Fully engage battens.
   7. Remove strippable protective film, if used, immediately proceeding panel installation.

B. Allowable Erection Tolerance
   1. Maximum Alignment Variation: 1/4 inch in 40 feet.

C. Flashing
   1. Follow manufacturer's directions and Architect approved Shop Drawings.
   2. Openings 6 inches and larger in any direction: Shop fabricate and reinforce to maintain original load capacity.
   3. Where necessary to saw-cut panels, debur and treat with galvanic paint.

3.04 CLEAN UP AND CLOSE OUT

A. Panel damage and finish scratches.
   1. Do not apply touch-up paint to damaged paint areas that involve minor scratches.
   2. Panels or flashings that have severe paint and/or substrate damage shall be replaced as directed by the Architect or Owner's representative.

B. Cleaning and Repairing
   1. At completion of each day's work and at Work Completion, sweep Panels, Flashings and Gutters clean.
   2. Remove debris from Project Site upon work completion or sooner, if directed.

END OF SECTION - 07610

SECTION 07720

ROOF ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide the roof hatch system shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
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1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01600.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Vertical walls of roof hatch to be wrapped with plywood or dens deck for base flashing securement and should be counterflashed with 4" skirt flashing. Additional waterproofing measures shall be implemented per specifications Section 07511 – Built-Up Bituminous Roofing.

B. Provide galvanized sheet metal roof hatch, factory prime-coated and pre-finished, with ladder extension safety post.

C. Roof Hatch:
   1. Bilco, type F, 48" x 48" with Bil-Guard Hatch Railings System.
   2. Equal products of other manufacturers when approved in advance by the Architect.

D. Roof Ladders:
   1. Pre-fabricated fixed ladder by Alaco, or equal.

PART 3 - EXECUTION

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3.02 INSTALLATION

A. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install the work of this Section in strict accordance with the manufacturer's recommendations as approved by the Architect, anchoring all items firmly into position for long life under hard use.

C. Put operating components through at least five complete operating cycles, adjusting as required, and achieving optimum ease of operation.

END OF SECTION - 07720