

STEVENS ROOFING SYSTEMS

MECHANICALLY ATTACHED METAL RETROFIT

STEVENS EP™

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CSI Division 7 Guide Specifications

MECHANICALLY ATTACHED METAL RETROFIT-STEVEN'S EP™

PART 1 - GENERAL

1.01 Description

- A.** Furnish and install mechanically attached Stevens EP™ Metal Retrofit Roofing System in accordance with drawings and specifications approved by Stevens Roofing Systems (Stevens).

Special Conditions

1. This specification is intended for standing seam, flat seam or corrugated metal roofs that are supported on 18-12 gauge structural purlins, have deck structures meeting guidelines herein and have no abnormally severe or unknown environmental exposures (e.g. coastal winds or certain chemicals) except as specifically authorized herein.
2. Applications that involve severe exposures (ASCE Ground Roughness Category D) require review by Stevens Roofing Systems Technical Review Dept. before any specification is valid (*Reference Table 2, ASCE Exposure Classification Chart*).

WARNING: Buildings operating with interior positive pressure at the deck require review by Stevens Technical Review Dept. before any specification is valid.

- B. Related work:** Metal work other than Stevens Edge Metal Systems is not covered by Stevens for Warranty. Metal work must be secured in a manner approved by Stevens and/or in accordance with SMACNA guidelines to prevent damage from buckling, or wind exposure. All metal work that is part of the waterproofing envelope must be sealed, structurally sound, and appropriately anchored to prevent leakage.

1.02 Quality assurance

- A.** Apply roofing system using a roofing applicator authorized by Stevens.
- B.** Stevens EP membrane is classified by Underwriters Laboratories as a Class A sheathing material for use in construction of Class A

roofing assemblies. Reference UL's *Roofing Materials and Systems Directory* for specific assemblies. Meets all test requirements for Factory Mutual Global (FMG) Class 1A fire and wind resistance (Reference current edition of *FMG Approval Guide*).

- C. Inspection:** Upon completion of the installation, an inspection shall be performed by a representative of Stevens to ascertain that the roofing membrane system has been installed according to Stevens approved specifications and details. Upon approval of the project, a Warranty shall be written.
- D. Changes:** Should there be deviations or changes from this specification without written approval of Stevens, the project is not authorized for installation and is not eligible for Warranty coverage.
- E.** All Stevens EP membrane is manufactured in an ISO-9001:2000 facility.

1.03 Submittals

- A.** Minimum job file submittal information for consideration for labor and material warranty coverage shall be an accurately completed Request for Warranty form (www.StevensRFW.com) and the information discussed in paragraph B following.
- B.** Samples and data sheets of all materials not supplied or approved by Stevens shall be submitted to Stevens for written approval prior to the start of installation. Authorized applicators must submit a roof drawing indicating which details will be employed in the project. These drawings shall be approved by Stevens prior to the start of work. These must include: outline and size of the roof, location and type of penetrations, perimeter and penetration flashing detail references, and a copy of any non-SR details to be used. Details which do not conform to Stevens standard SR Detail Drawings must be shown as to their anticipated construction.
- C.** For a Limited Membrane Material-Only Warranty, the Request for Membrane Warranty form is the only submittal required.

1.04 Delivery and storage

- A. All materials provided by Stevens shall be delivered with appropriate packaging labels indicating warnings, storage conditions, lot numbers, and usage instructions.
- B. Materials shall be stored in their original undamaged packaging and storage conditions shall be maintained in accordance with the manufacturer's requirements.

1.05 Precautions

- A. Adhesives, solvents, and caulks as indicated are extremely flammable and/or toxic. Follow precautions indicated on container and packaging labels.
- B. Surfaces to be bonded shall be dry, clean and free of debris. Suitable surfaces are usually considered to be smooth; solid masonry, wood, and metal, plus insulation board fastened to the specific manufacturer's recommendations.
- C. All fasteners are recommended to be installed with a depth-sensing screw gun to prevent overdriving or under driving. The PIF adapter tool is recommended to be used for the installation of Stevens PIF Fasteners.
- D. Block off or shut down positive pressure building ventilation systems during application to prevent sheet from billowing during application.
- E. Consideration should be given in the project design to potential safety problems that can precipitate from the smooth surface characteristic of the Stevens EP sheet. The membrane surface becomes slippery when wet. If access to roof is required, walkway surfaces are recommended. In northern climates, snow sliding could create a hazard below and adjacent to the perimeter if a retarding system is not installed on roofs with slopes greater than two inches (2-in.) per foot (12-in.).
- F. Job specification and retrofit preparation should always include provision to ensure positive drainage in all areas. Good roofing practice does not permit uncontrolled, uncollected drainage over the edge of a roof.
- G. All rooftop mechanical units are to have their condensation lines piped to drains, or off the roof.
- H. Grease shall not be allowed to accumulate on the roof. If rooftop grease units are not to receive a continual maintenance program they are to have an approved grease containment system specified.

- I. At the discretion of Stevens, excessive patching as a result of damage to the Stevens EP membrane, or caused by faulty installation, may require total recover in those areas.
- J. For buildings with canopies or large wall openings, e.g. hangar doors and truck entrances or docks, which are subject to positive pressurization from wind or from air handling systems, consult Stevens for suitability of application and possible design enhancement requirements.

1.06 Warranty

- A. Stevens representative shall inspect the installation for compliance with applicable Stevens specifications upon completion of the roofing system.
- B. Upon acceptance of the roofing system installation, a Stevens Standard or Total System Warranty will be issued for a five (5), ten (10) or fifteen (15) year period that covers wind damage up to 60 mph. Refer to Appendix E, *Additional Requirements for Stevens 20-year Warranty Systems*.
- C. Reference General Warranty section of the Stevens Technical Manual CD-Rom for more information.

PART 2 - PRODUCTS

2.01 General

- A. All material shall be furnished, specified or approved in writing by Stevens. Samples of all materials used on the project that are not supplied by Stevens shall be furnished to Stevens for written approval prior to the start of work.

2.02 Membrane

- A. Membrane shall be .045-in., .060-in. or .080-in. (Stevens EP-XL) nominal thickness overall, scrim-reinforced, Ethylene Propylene-based sheet 64.5-in., 70.5-in. or 76.5 -in. wide by appropriate length conforming to the minimum physical properties in [Table 1, Physical Properties Chart](#). Stevens EP Membrane is available in White, Light Slate Gray, Pewter, Buckskin, Desert Brown, Terra Cotta, Patina, Dark Ivy Green and Neon Blue. Contact your Stevens Representative for color, thickness options, minimums and lead times. Stevens EP Membranes meet the ASTM 6878-03 specification for TPO-based roofing material. Packaging to bear the UL label.

Table 1 - Physical Properties - Stevens EP

Physical Property	Test Method	Typical Values 45 mil* (1.14 mm)	Typical Values 60 mil* (1.52 mm)	Typical Values 80 mil* (2.03 mm)
Breaking Strength	ASTMD-751	275 lbf.(1.2 kN)	320 lbf.(1.4 kN)	390 lbf. (1.7 kN)
Tear Strength	ASTMD-751 Procedure B, 8"x8" sample)	135 lbf.(.60 kN)	110 lbf.(.49 kN)	104 lbf. (.46 kN)
Dimensional Stability (% change max.)	ASTM D-6878 (white: 6 hrs. @ 158°F/70°C)	±0.3	±0.3	±0.2
Hydrostatic Resistance	ASTMD-751 (Method A)	400 psi (2.8 MPa)	425 psi (2.9 MPa)	510 psi (3.52 MPa)
Ozone Resistance**	ASTMD-1149 (70 hrs. @100°F/37.8°C)	Pass	Pass	Pass
Weather Resistance	Xenon Arc, ASTM D-6878 G-155; 5040 kJ/m ² 0.35w/m ² @ 340nm	No cracks, loss of breaking strength, or tear strength	No cracks, loss of breaking strength, or tear strength	No cracks, loss of breaking strength, or tear strength
	EMMAQUA (Concentrated Natural Sunlight) (ASTM G-90) 167 MJ/m ² total UV radiant exposure	Pass	Pass	Pass
Puncture Resistance	FTM 101B (Method 2031)	330 lbf. (1.5 kN)	400 lbf. (1.8 kN)	500 lbf. (2.2 kN)
Water Vapor Transmission	ASTM E-96 (Procedure B Condition BW @ 72°F/22.2°C)	0.035 Perms	0.035 Perms	0.035 Perms
Elongation (%) Ultimate**	ASTMD-412 (Die C)	700%	700%	700%
Brittleness	ASTMD-2137 @ -49°F/-45°C	Pass	Pass	Pass
Water Absorption (max. % weight change)**	ASTMD-6878 D-471, (158°F/70°C for 7 days) Testing only one side section	±3	±3	±3
Heat Aging	ASTMD-6878 D-573 (28 days @ 240°F/115°C)	Break: 275 lbf. (1.2 kN)	Break: 320 lbf. (1.4 kN)	Break: 350 lbf. (1.56 kN)
Solar Reflectance (initial)	ASTM E-903	>70%	>70%	>70%
Thermal Emittance	ASTME-408	>0.93	>0.93	>0.93

*Thickness (nominal) per ASTM D-751 test method.

**Test performed on non-reinforced Stevens EP membrane.

2.03 Related Materials

A. Insulation/underlayment/recover board:

Stevens supplies a wide range of insulations, underlayments and coverboards to satisfy a broad spectrum of design conditions. Only Stevens brand insulation products will be eligible for Total System Warranty coverage: products other than Stevens will incur a premium warranty fee. (*Reference Appendix MA-B, Stevens Approved insulation List and Fastening Rates for Mechanically Attached Systems*).

1. Stevens ISO 2000: Closed-cell HCFC FREE “Green” polyisocyanurate foam core manufactured using (HCFC) (ACUltra Hydrocarbon) blowing agent and integrally laminated to heavy non-asphaltic fiber-reinforced felt facers; compressive strength - (20 psi) (25 psi). Available in flat stock and tapered panels. (*Reference Stevens Product Specification Data Sheets for additional information*).

2. Stevens ISO 3000: Closed-cell HCFC FREE “Green” polyisocyanurate foam core manufactured using (HCFC) (ACUltra Hydrocarbon) blowing agent and integrally laminated to heavy coated-glass facers; compressive strength - (20 psi) (25 psi).

(*Reference Stevens Product Specification Data Sheets for additional information*).

- 3. Stevens ISO Recover Board:** Closed-cell HCFC FREE “Green” polyisocyanurate foam core manufactured using (HCFC) (ACUltra Hydrocarbon) blowing agent and integrally laminated to heavy coated-glass facers; compressive strength - (20 psi) (*Reference Stevens Product Specification Data Sheets for additional information*).
- 4. Stevens Extruded Polystyrene (XPS):** Extruded polystyrene closed-cell foam panel with continuous skin on face and back surface that meets ASTM C-578, Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. (*Reference Stevens Product Specification Data Sheets for additional information*).
- 5. Stevens Expanded Polystyrene (EPS):** ASTM C578-04a expanded polystyrene thermal rigid board insulation with a minimum density of 1.25 lbs./cu.ft.(ft3). (*Reference Stevens Product Specification Data Sheets for additional information*).
- 6. DensDeck® Roof Boards:** (*Reference Stevens Product Specification Data Sheets for additional information*).

- a. G-P Gypsum Corporation 1/4-in. DensDeck Roof Board, 1/2-in. DensDeck Roof Board and 5/8-in. Type X Roof Board. Nonstructural, glass mat faced gypsum panel with water-resistant core available in 4-ft.x8-ft. sizes and 4-ft.x4-ft.sizes
- b. G-P Gypsum Corporation 1/4-in. DensDeck Prime Roof Board, 1/2-in. DensDeck Prime Roof Board and 5/8-in. DensDeck Prime Roof Board (Type X). Glass mat faced gypsum with non-asphaltic, highly filled proprietary heat-cured coating on one side available in 4-ft.x8-ft. and 4-ft.x4-ft. sizes.
- c. G-P Gypsum Corporation 1/4-in. DensDeck DuraGuard, 1/2-in. Densdeck Duraguard and 5/8-in. DensDeck Duraguard. Glass mat faced gypsum panel with blue low-perm, durable, integrated-coating on one side and coated glass mat on the back available in 4-ft.x8-ft. and 4-ft.x4-ft. sizes.

B. Flashing: Flashing shall be .045-in. thick membrane for walls and curbs regardless of roof cover sheet thickness. Unsupported .055-in. thick, Ethylene Propylene-based membrane shall be supplied for field-fabricated vent stacks, pipes, drains and corners. Stevens EP membrane-clad metal is available for use in fabricating drip edges and gravel stops.

C. Adhesives, sealants, primers and caulks:

1. Stevens EP (TPO) Bonding Adhesive:

Stevens EP (TPO) Bonding Adhesive is designed for bonding all Stevens EP membranes to wood, metal, masonry, and approved roof insulation board surfaces. Stevens EP Bonding Adhesive **is not** approved for use with other roofing membrane types or Stevens EP-Fleece membrane.

2. Stevens All-Purpose Sealant: Stevens All-Purpose Sealant is designed to be used as a water cutoff mastic, sealant to top off pitch boxes, and an exterior grade caulk for metal work.

3. Stevens EP Cut-Edge Sealant: Stevens EP Cut-Edge Sealant is a solvent-based caulk developed to seal exposed cut edges of reinforced membrane.

4. Stevens Insulation Adhesives: Stevens offers multiple insulation adhesive options.

- a. Stevens Insulation Adhesive is a VOC-

free, one-part, rising, moisture-cure foam that is poured from 1 or 2.5 gallon cans on the substrate.

- b. Stevens-Olybond 500 is a two part, polyurethane low rise foam that is applied in ribbons with appropriate dispensing equipment.
- c. Stevens-Olybond Classic is a two part, polyurethane low rise foam that is spray applied to fully cover the substrate.

Stevens Insulation Adhesives are designed for bonding most insulation and recover boards to a wide range of substrates and other insulation boards. Please consult the appropriate Product Specification Data Sheet for detailed information.

5. Stevens EP Seam Cleaner: Stevens EP Seam Cleaner is a surface cleaner for use with Stevens EP membranes that have become dirty or contaminated prior to heat welding.

D. Mechanical fasteners: Shall be supplied by Stevens.

Membrane:

- a. Stevens #14-10 fastener with 2-in. or 2-5/8 in. barbed metal seam plate (for use at penetrations only).
- b. Stevens purlin fastener with 2-in. or 2 5/8-in. barbed metal seam plate.
- c. Refer to *Appendix A, Stevens Fastener Selection Guide* for additional information.

Insulation:

- a. Refer to *Appendix A, Stevens Fastener Selection Guide* and *Appendix MA-B, Approved Insulation List and Fastening Rates for Mechanically Attached Systems* to select appropriate fastener/plate combination and approved fastening requirements. Also, Product Data Sheets can be found on the Stevens Technical Manual CD-Rom.

E. Termination bar: Stevens Termination Bar fastened 6-in. o.c. is the only authorized product.

F. Stevens Edge Metal Systems: Stevens Edge Metal must be installed per standard SR Detail Drawings.

G. Roof walkways: When roof traffic is indicated (for example to service rooftop units), a walkway over the membrane shall be made. Stevens EP Walkway Roll heat welded to the membrane is recommended.

H. Prefabricated Stevens EP Pipe Boots:

Are provided as alternatives to .055-in. unsupported flashing for vent stacks and pipes 1-in. to 6-in. diameter.

I. Prefabricated Stevens EP Corners:

Are provided as an alternative to .055-in. unsupported flashing for use at outside and inside corners.

- J. Stevens Flashing Tape:** 6-in. wide x 70 mils thick, packaged in 100-ft. rolls. This product is made with unsupported membrane with a butyl tape backing (with a release paper) and is the preferred method for stripping-in non-Stevens gravel stop and drip edge metal (not for use on Stevens Clad-Metal). Flashing Tape eliminates the need for Stevens (TPO) Bonding Adhesive and Stevens All-Purpose Sealant when completing edge flashings. Surfaces must be prepared with Stevens Tape Primer prior to Flashing Tape application.

PART 3 - EXECUTION

3.01 Substrate preparation

- A.** The applicator shall be responsible for the suitability of the substrate surface to accept Stevens EP membrane. In reroofing, test cuts shall be made by the roofing applicator to determine existing condition and deck suitability. All noticeably damp, wet or deteriorated materials must be removed. In all cases, prior to the start of work, the substrate shall be smooth and free of debris, sharp edges, and other surface irregularities that will be detrimental to the installation. Any unevenness or joint gaps greater than 1/4-in. in the membrane substrate can cause inconsistent membrane welds and must be avoided. When such conditions occur fill with appropriate and properly secured insulation or material approved by Stevens Technical Review Dept.
- B. Steel deck:** Shall be covered with an approved insulation mechanically fastened to deck with Stevens approved fasteners. Polystyrene boards may require an overlayment when installed directly under Stevens Colors or Stevens EP Black membrane (*Reference Appendix MA-B, Approved Insulation List & Fastening Rates*) and may require a thermal barrier underlayment over steel decks. Consult manufacturer and local building codes.
- C. Reroofing over existing roof:** The specifier and/or applicator shall determine the condition of the existing roof. Significantly deteriorated decking must be repaired or re-

placed, as appropriate. Wet materials (containing free moisture that would evaporate if exposed to atmosphere) must be found and replaced. Existing surface shall be dry, reasonably smooth and even, blisters cut, and loose aggregate removed prior to installation of approved insulation board. Stevens fasteners shall be used in conjunction with 2 7/8-in. Stevens insulation plates or Stevens PIF (Preassembled Insulation Fastener) to anchor insulation board through the existing roof and into the deck. For non Total System warranty installations an alternative is to use a fastener and plate combination approved by both Factory Mutual and Stevens. Fasteners shall be used to anchor the membrane to the deck.

- D. Vapor retarder:** Is not required for protection of Stevens Roofing System membrane. As a guideline, the National Roofing Contractors Association states, "...vapor retarders should be considered for use when both of two conditions are anticipated: (1) the outside mean, average January temperature is below 40°F (4.4°C), and (2) the expected winter, interior relative humidity is 45 percent or greater."

NOTE: In all high humidity situations consult Stevens Technical Review Dept. and the insulation manufacturer for specific application requirements.

- E. Nailers:** Standing seam metal roofs require two layers of wood nailers at the building eaves (perpendicular to slope) and may require two at the rake ends. The first layer is installed between the raised standing seams, flush with the top surface of the standing seams. These nailers are fastened at a maximum of 12-in. o.c. to the structural purlins. In no cases shall less than 2 fasteners be installed per section of nailer. In all cases fasteners shall be installed within 3-in. from ends of nailers. The top wood nailer is then fastened to the bottom nailer with Stevens All-Purpose screws spaced at 12-in. o.c. penetrating bottom nailer a minimum of 1-in.

- 1. Reroofing:** Use #2 or better wood treated for rot resistance. Creosote and asphaltic preservatives are not acceptable.
- 2. New roofing:** A pressure preservative treated wood nailer is recommended. Effective perimeter attachment must be achieved per standard SR detail drawings and/or as specified by architect/consultant.
- 3. All construction:** Nailer thickness shall be chosen to match the top surface of adjacent construction $\pm 1/4$ -in. This permissible

variation shall not contribute to ponding.

4. **Nailers** are required at all building perimeter edges. Nailers around skylights, curbs, expansion joints, etc., are not required. Use of Stevens fasteners and plates anchored to deck 12-in. o.c. through membrane and insulation is acceptable.
- F. **Existing flashings:** Must be removed and completely cleaned off wherever new Stevens Roofing System terminations and water stops are to be installed. Existing flashings may be left in place up to Stevens termination areas when in good structural condition and solidly attached to the substrate.
- G. **New construction or reroof with complete tear-off of flashings:** The applicator shall be responsible for the suitability of the substrate surface to accept the Stevens EP membrane. The substrate shall be smooth and free of sharp edges and other surface irregularities that prevent the flashing membrane from being 100% adhered.

3.02 Application procedures

NOTE: For insulation application and suitability, refer to **Appendix MA-B, Stevens Approved Insulation List & Fastening Rates.**

A. Insulation or protection board:

1. **On standing seam metal roofs,** insulation must be installed in multiple layers. The base (or filler) layer is used to fill the area between standing seams. The top surface of the base layer should be flush with the top surface of the standing seams. A top layer of insulation is then installed over the base layer with the board edges butted as closely as possible with no gaps over 1/4-in. All end joints shall be staggered and boards shall be mechanically attached through the top layer onto the metal roof panels as per section 3.02.A.7. (Note: Since the insulation requirement for thermal value will vary for each project, the thickness of the insulation must be calculated for the desired results.)
2. For buildings with corrugated metal roofs, a compressible filler such as batt insulation must be installed beneath the perimeter wood nailers to minimize air infiltration beneath the roofing system.
3. **Compatibility:** Certain insulations such as polystyrene are not compatible with coal tar pitch. Contact manufacturer for recommendations. Certain polystyrene

insulation boards are not suitable for use directly under Stevens EP Colors or Stevens EP Black membrane and require an overlayment (*Reference Appendix MA-B, Approved Insulation List and Fastening Rates*).

4. **Manufacturers' instructions:** In regard to attachment, compatibility, and spanning of metal flutes, the manufacturers' specifications shall determine the suitability for an application, subject to acceptance by Stevens.
 5. **Precautions:** Care must be taken in handling insulation boards, as well as in their mechanical attachment, so as to not damage or rupture the facer and surface. All damaged areas must be cut out and replaced with structurally sound insulation, properly secured in place.
 6. **Expanded polystyrene:** Must be 1.25 pcf minimum density and must be covered with an insulation board or slip sheet specifically accepted by Stevens and by local building codes.
 7. **Attachment:** Insulation must be recommended by its manufacturer for mechanical attachment. Insulation for Total System Warranties must be approved for Stevens Total System applications. All boards must be attached with 2 7/8-in or 3-in. Stevens insulation plates and Stevens fasteners (*Reference Appendix A, Stevens Fastener Selection Guide*) for Stevens Total System Warranty applications. For Standard Labor and Material Warranty applications it is acceptable to use 2 7/8-in or 3-in. plates and fasteners supplied by others provided that said parts are approved by both FMG and Stevens. Insulation boards must be secured sufficiently to conform to the substrate surface geometry using a minimum of six (6) fasteners per 4- x 8-ft. board or four (4) fasteners per 4- x 4-ft board. (*Note: This is a minimum fastening requirement. If this information differs from the insulation manufactures' or other published Stevens fastening requirements, the more stringent shall apply.*)
- #### B. Attachment of Stevens Membrane.
1. Stevens Purlin fastener with 2-in. or 2 5/8-in. barbed metal seam plate are to be used for the attachment of Stevens membrane into the metal roof purlins. Stevens Purlin fasteners are designed to engage purlins 18 to 12 gauge

without predrilling. Stevens Purlin fasteners may install in heavier gauge purlins, however test drilling to ensure installability is recommended. Refer to [Appendix A, Stevens Fastener Selection Guide](#) for additional information also, Stevens Product Data Sheets can be found on the Stevens Technical Manual CD-Rom.

C. Installation

1. Perimeter/corner fastening:

- a. Stevens published fastening rates and perimeter enhancement requirements are not necessarily consistent with the requirements of local building codes, FMG or similar agencies. Consult said agencies for their specific requirements when necessary or contact the Stevens Technical Review Dept.
- b. For Metal Roof Retrofit applications, perimeter and corner fastening enhancement is achieved by decreasing the distance between lap seam fasteners (along the purlin courses) rather than decreasing the distance between fastener rows (sheet width) as in a traditional mechanically attached installation. The purlin spacing (actual distance between purlins) determines the fastener spacing (distance between lap seam fasteners).

Perimeter/Corner fastening enhancement shall be installed at all exterior roof perimeters that are not bordered by a parapet wall or an adjoining building a minimum of 24-in. higher than roof level and is required at any adjoining roof level 2-ft. or greater above the main deck level.

For buildings less than 70-ft. tall located within ASCE Ground Roughness Categories A, B and C ([Reference Table 2, ASCE Exposure Classification Chart](#)) the increased fastening at the perimeter and corner areas shall extend from the building perimeter into the field of the roof a minimum 8-ft. for buildings with structural purlins spaced at 4-ft. o.c. and 10-ft. when structural purlins are spaced 5-ft. o.c. At the building eaves (perimeter edges parallel to purlin direction) this will include two purlin courses in from the perimeter eaves edge. Reference [section 3.03, Fastening Requirements](#) for guidelines addressing more severe exposures (ASCE Ground Roughness category D) and building greater than 70-

ft. high.

- c. At perimeters that are to receive a gravel stop or metal edging, Stevens EP membrane must be brought over the outside edge and terminated 12-in. o.c. unless otherwise stated in the appropriate detail.

2. **Field sheets:** Stevens EP membrane shall be unrolled perpendicular to the roof slope on the area to be covered. Stevens Purlin Fastener and 2-in. or 2-5/8 in. barbed metal seam plate ([2.03.D](#)) is installed along the leading edge of the membrane, through the insulation (through standing seam panel) and into the structural purlins. Adjoining rolls of Stevens EP membrane shall overlap the fastened edge of the installed membrane by 5-1/2-in. with use of 2-5/8-in. barbed metal seam plate, and 4-1/2-in. for use with 2-in. barbed metal seam plate.

- D. **Lap splice:** Membrane shall be overlapped and hot-air welded without any contaminants (adhesive, dirt, debris, etc.) in the seam.

1. **Hot-air welding:** An automatic hot-air welder and hand-held welder which are functionally in top condition are a necessity for Stevens applications. Small work and repairs can be done efficiently with the hand-held welders; however, hand-held welders are not a recommended means of field seaming.

2. **The entire lap edge must be probed** with an approved seam probing tool (Sears cotter pin extractor) after it has cooled completely to verify seam consistency. Probing before the seam area has cooled will damage the membrane. In addition there should be destructive tests performed daily on a 3-in. wide area of seam weld to verify sufficient peel strength. A properly welded seam will have membrane delamination from scrim prior to weld failure. Destructive tests on welds should be done for the first seam of the day, first seam after the robot welder has been allowed to cool down, and after any extreme changes in weather conditions. Cut edges shall be caulked by applying Stevens EP Cut-Edge Sealant from a squeeze bottle.

3. T-Seams.

- a. Definition: The point where two perpendicular lap seams intersect is called a "T-seam" and if T-seams are not properly welded, a seam void may result.

- b. For .045-in. and .060-in. membrane, T-seams should be properly creased in at the step-off area, using a hand roller. For T-seam locations that have not been welded properly, a patch is required. Patches shall be a minimum of 4-in. in diameter and can be either .045-in. reinforced Stevens EP membrane or .055-in. unsupported membrane.
- c. For Stevens EP-XL (.080-in. thick membrane), a patch is required on all T-seam locations.

4. Stevens EP membrane, as with any material after exposure, will require cleaning prior to seaming. The approved method for cleaning Stevens EP membrane prior to hot-air welding is as follows:

- a. Remove any visible dirt and debris with a clean rag and water. For heavily contaminated surfaces, scrubbing with a detergent cleaner (i.e. Fantastik® or 409®) followed by a water rinse may be necessary.
- b. With a clean scrub pad saturated with Stevens EP Seam Cleaner, aggressively agitate the seaming area. With a clean white rag, follow with a final one swipe pass over the seaming area, careful to not redeposit any contaminants back onto the cleansed sheet surface.
- c. Allow Stevens EP Seam Cleaner to completely flash off (i.e. membrane should be completely dry).
- d. Follow the standard hot-air welding procedures with an approximated 20% reduction in speed.
- e. Final weld strength may not be achieved for several days.

E. Perimeter fastening: Wood nailers are required for perimeter gravel stops or drip edges. Membrane may be fastened at other terminations by use of Stevens 2-in. or 2 5/8-in. Barbed Metal Seam Plates and Stevens Fasteners.

- 1. Wooden nailers:** Reference 3.01.E.
- 2. Base of parapet or curb:** Membrane shall be mechanically fastened 9-in. o.c. through insulation (and existing roof in reroofing) into deck. Fastening shall occur at parapet wall, curbs, skylights, expansion joints, and any other roof penetrations that exceed 24-in. in any dimension (*Reference*

specific standard SR Detail Drawing for fastener locations).

F. Flashing: Perimeters, curbs, vents, expansion joints, drains, and other details shall be flashed as shown in standard SR Detail Drawings. Under no condition shall flashings cover weep holes or any form of through-wall drainage.

- 1. Apply Stevens EP (TPO) Bonding Adhesive to both underside of flashing membrane and surface to which it is to be bonded, at a rate of approximately one gallon per 60 square feet (when applied to two surfaces) of surface coverage.

NOTE: Stevens EP (TPO) Bonding Adhesive shall not be applied to membrane surfaces that are to be hot-air welded. Hot-air welding shall be used throughout the system where Stevens Membrane overlaps itself.

- 2. Stevens EP (TPO) Bonding Adhesive shall be allowed to dry until it does not string or stick to a dry finger. Roll the flashing into the dry adhesive. Care must be taken to ensure that the flashing does not bridge where there is any elevation or directional change. Completely roll in the flashing membrane against the substrate using a hand roller, J-roller or similar device applying firm pressure to the entire surface area to promote full contact.
- 3. All flashing shall be mechanically fastened at the top, under or through appropriate counter flashing with approved fasteners and with an approved SR termination detail as shown in standard SR Detail Drawings.
- 4. Stevens EP Metal flashing at perimeter shall be made and installed as per standard SR Detail Drawings.
- 5. Pipe flashings shall be installed in accordance with standard SR Detail Drawings. Remove existing flashings and sleeves. Do not flash to lead.
- 6. Expansion joints shall be installed in accordance with standard SR Detail Drawings.
- 7. Roof drains shall be installed in accordance with standard SR Detail Drawings. In reroofing, old drains must be cleaned or replaced as needed for clamping detail. All bolts must be properly secured to supply 100% continuous compression of the clamping ring. Remove old leads and packings. Field seams shall not be run through drains. Drain sleeves are not

covered under Warranty. However, a prefabricated sleeve insert with clamping ring and backflow seal is acceptable.

G. Metal work: Metal work other than Stevens Edge Metal Systems is not covered by Stevens Warranty.

1. Metal work shall be installed in a manner that prevents damage from buckling or wind.
2. All metal work must be sealed and waterproofed in an acceptable manner.
3. Due to the wide variety of metal building edge conditions, edge details not meeting Stevens standard details shall be submitted to Stevens Technical Review Dept.

H. Overnight seal/temporary water stop:

Shall be made by a sealant method approved by Stevens. To protect the insulation from inclement weather at the end of a day's work, the membrane is extended beyond the insulation and set into the approved overnight seal material. Roofing applicator shall coordinate installation to ensure the system is made watertight at the end of each work day.

I. Roof walkways: When regular roof traffic is indicated (for example, to service rooftop units), Stevens EP Walkway Roll is recommended to be installed over the membrane. To install Stevens Walkway Roll:

For dirty and/or weathered membrane, start with #1 below. For clean fresh membrane, start with #4 below.

1. Stevens EP membrane must be clean and dry. Remove any visible dirt and debris with a clean rag and water. For heavily contaminated surface, scrubbing with a detergent cleaner (i.e. Fantastik® or 409®) followed by a water rinse may be necessary.
2. With a clean scrub pad saturated with Stevens EP Seam Cleaner, aggressively agitate the seaming area of the roof membrane surface. With a clean white rag, follow with a final one swipe pass being careful not to redeposit any contaminants back onto the cleansed sheet surface.
3. Allow Stevens EP Seam Cleaner to completely flash off (i.e. membrane should be completely dry).
4. Position walkway and cut to desired length. Whenever possible, walkway shall not cover seams. When installed adjacent to a seam, the walkway should be kept a minimum of 2-in. from the edge of the seam on the bottom

sheet of the completed lap and a minimum of 6-in. from the edge of the seam when located on the top sheet of a completed lap.

When covering seams is unavoidable, the lap seam should be completed per Stevens Specifications and thoroughly probed with any deficiencies repaired prior to walkway installation.

In circumstances where drainage around the walkway is a concern, shorter walkway lengths spaced with a 2-in. gap may be desired.

5. Weld perimeter of walkway to the membrane following standard welding procedures. Periodic breaks in the weld of 1 to 2-in. are required on the low slope edge of the pad to prevent the accumulation of water under the walkway.

3.03 Fastening requirements

NOTE: Fastening requirements are for standing seam, flat seam, or corrugated metal roofs that are supported on 18 - 12 gauge structural purlins on buildings less than 70-ft. high located within ASCE Ground Roughness Categories A, B and C ([Reference Table 2, ASCE Exposure Classification Chart](#)). For other types of deck construction, Ground Roughness Category D, buildings over 70-ft. high, seacoast application, canopies and buildings with large wall openings such as hangar doors or truck docks, or buildings with positive pressure, contact Stevens Technical Review Dept. for design acceptability.

A. Buildings up to 70 ft. high

1. Purlin Spacing of 48-in. (and less)

- a. Membrane lap seams within field areas are to be secured into the structural purlins at 18-in. o.c.
- b. Membrane lap seams within perimeter areas are to be secured into structural purlins at 12-in. o.c. ([Refer to Figure 1 at the end of this section](#)).
- c. Membrane lap seams within corner areas are to be secured into structural purlins at 9-in. o.c. ([Refer to Figure 1 at the end of this section](#)).

2. Purlin Spacing of 60-in.

- a. Membrane lap seams within field areas are to be secured into the structural purlins at 18-in. o.c.
- b. Membrane lap seams within perimeter

areas are to be secured into structural purlins at 9-in. o.c. (*Refer to Figure 1 at the end of this section*).

- c. Membrane lap seams within corner areas are to be secured into structural purlins at

6-in. o.c. (*Refer to Figure 1 at the end of this section*).

- 3. For applications with purlin spacing greater than 60-in. wide, contact Stevens Technical Review Dept. for fastening requirements.

Table 2 - ASCE Exposure Classification

ASCE Exposure Classifications Defined

ASCE (American Society of Civil Engineers) has defined the roughness of the terrain into four "ground roughness" categories, or "exposures".

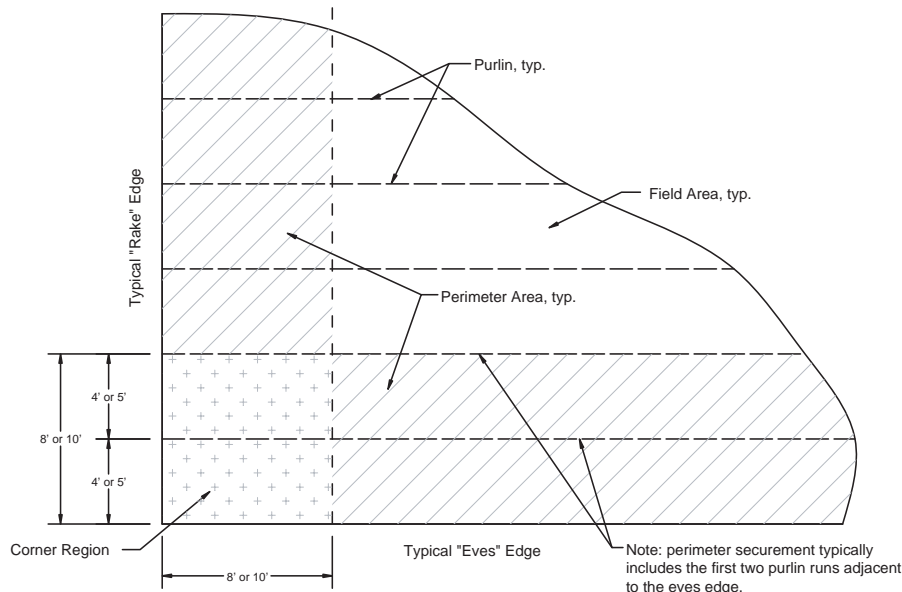
Exposure A This classification applies to large city centers with at least 50 percent of the buildings having a height in excess of 70 feet (21.3 m). Use of this exposure category shall be limited to those areas for which representative terrain prevails in the upwind direction for a distance of at least one-half mile (0.8 km) or 10 times the height of the building or structure, whichever is greater. Possible channeling effects or increased velocity pressures due to the building or structure being located in the wake of adjacent buildings shall be taken into account.

Exposure B Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of a single-family dwelling or larger. Use of this exposure category shall be limited to those areas for which representative terrain prevails in the upwind direction for a distance of at least 1,500 feet (460 m) or 10 times the height of the building or structure, whichever is greater.

Exposure C Open terrain with scattered obstructions having heights generally less than 30 feet (9.1 m). This category includes flat, open country and grasslands.

Exposure D Flat, unobstructed areas exposed to wind flowing over open water for a distance of at least one mile (1.61 km). This exposure shall apply only to those buildings and other structures exposed to the wind coming from over the water. Exposure D extends inland from the shoreline a distance of 1,500 feet (460 m) or 10 times the height of the building or structure, whichever is greater.

Figure 1 - Metal Roofing Retrofit Detail



**Metal Roofing Retrofit -
 Detail at Perimeter/Corner**

STEVENS ROOFING SYSTEMS FASTENER SELECTION GUIDE

APPENDIX A



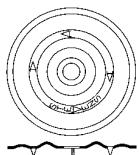
PRODUCT DESCRIPTION:
Stevens #14 All-Purpose Fastener

All-purpose fastener for membrane and insulation attachment. Use with 2-inch (50-mm) BMSP or Hex Insulation Plate.

SIZE AVAILABLE:
1¼, 2, 3, 4, 5-8-inch (30, 50, 75, 100, 125 - 200 - mm) in 1-inch (25-mm) increments and 10 and 12-inch (250 and 300-mm).

DECK TYPE:
Structural concrete (pre-drilling required), wood and 18 to 26 (1.3 - .55-mm) gauge steel.

PACKAGING:
1¼ - 6-inch (30 - 150-mm): 1000/bucket
7, 8, 10, 12-inch (175, 200, 250, 300-mm): 500/bucket



PRODUCT DESCRIPTION:
Stevens 2-in. (50 mm) Barbed Metal Seam Plates (for membrane attachment)

2-inch (50-mm) Galvalume® coated steel barbed seam plate for use with Stevens #14-10 fasteners or Stevens CD-10 concrete fasteners.

SIZE AVAILABLE:
2-inch (50-mm) round barbed

DECK TYPE:
NA

PACKAGING:
1,000/bucket



PRODUCT DESCRIPTION:
Stevens #12 Insulation Fastener

General purpose fastener for insulation attachment. Use with Hex Insulation Plate.

SIZE AVAILABLE:
1⁵/₈, 2¼, 2⁷/₈, 3¼, 3¾, 4½, (41, 57, 73, 85, 95, 114-mm) 5 - 8-inch (125 - 200-mm) in 1-inch (25-mm) increments

DECK TYPE:
Wood and 18 to 26 (1.3 - .55-mm) gauge steel

PACKAGING
1⁵/₈ - 6-inch (41 - 150-mm): 1000/bucket
7 and 8-inch (175 and 200-mm): 500/bucket



PRODUCT DESCRIPTION:
Stevens Hex Insulation

2⁷/₈-inch (73-mm) Hex-shaped Galvalume coated steel insulation plate for use with Stevens #12, #14 or Stevens CD-10 concrete fasteners.

SIZE AVAILABLE:
2⁷/₈-inch (73-mm) diameter

DECK TYPE:
NA

PACKAGING
1000/box



PRODUCT DESCRIPTION:
Stevens Maxfast Fasteners

A large diameter head fastener for membrane attachment. Use with Maxfast Plate only.

SIZE AVAILABLE:
2 - 8-inch(50 - 200-mm) in 1-inch (25-mm) increments

DECK TYPE:
FM approved minimum 22 gauge steel* [*Test drill to check for installability on 18 and 20 (1.3 - 2.5-mm) gauge steel decks prior to committing to a project].

PACKAGING:
2 and 3-inch (50 and 75-mm): 1000/bucket
4 - 6-inch (100 - 150-mm): 500/bucket
7 and 8-inch (175 and 200-mm): 250/bucket



PRODUCT DESCRIPTION:

Stevens Maxfast Plate

A 3-inch (76-mm) diameter plate for use only with the Stevens Maxfast Fastener for membrane attachment.

SIZE AVAILABLE:
3-inch (76-mm) diameter

DECK TYPE:
NA

PACKAGING:
500/bucket



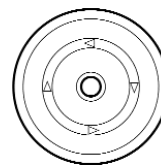
PRODUCT DESCRIPTION:
Stevens Purlin Fasteners

A roofing fastener for membrane attachment to structural steel purlins in standing seam metal roof retrofit applications.

SIZE AVAILABLE:
Overall Length: 3¾, 4¾, 5¾, 7 and 8-inch (95, 120, 146 , 178 and 200-mm)
Note: Usable length is ¾-inch (19-mm) less than overall length to allow the screw to quickly drill thru the purlin before the threads engage.

DECK TYPE:
18-12 (1.3 - 2.5-mm) gauge steel

PACKAGING:
500/box



PRODUCT DESCRIPTION:

Stevens 2" Purlin Plate

A 2-inch (50-mm)diameter barbed metal seam plate designed to accommodate the head of the Stevens Purlin fastener. Use of other Stevens Plates may be necessary depending on project requirements.**

SIZE AVAILABLE:
2-inches (50-mm)

DECK TYPE:
NA

PACKAGING:
1000/box



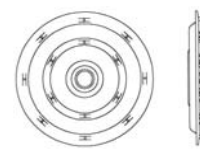
PRODUCT DESCRIPTION:
Stevens DeckGrip Fastener

#15 fastener for membrane and insulation attachment. Used for Stevens EP and EV membrane

SIZE AVAILABLE:
1¼, 2, -8, 10, 12, 14 and 16-inch (30, 50 - 200, 250, 300, 355 and 406-mm)

DECK TYPE:
Structural concrete (pre-drilling required), wood and 18 to 26 (1.3 - .55-mm) gauge steel.

PACKAGING:
1¼ (30-mm) 2, -5 -inch (50 -125-mm): 1000/box
6, 7, 8 , 10, 12, 14-inch (150, 175, 200 250, 300, 355-mm): 500/box and 16-inch (406-mm)250/box



PRODUCT DESCRIPTION:

Stevens DeckGrip Plate

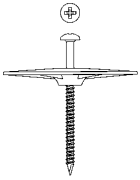
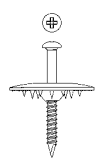
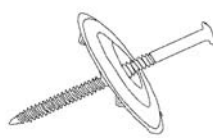
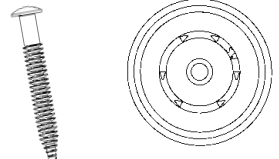



Galvalume steel seam plate featuring a unique patented "Eye Hook" design.

Stevens DeckGrip Reel-Fast Collated Seam Plates for easy installation. Spaced 6-in.(150 mm) or 12-in. (300 mm) o.c. (see separate datasheet)

SIZE AVAILABLE:
2 3/8-inch (60-mm)

DECK TYPE:
NA

PACKAGING:
1000/bucket

			
<p>PRODUCT DESCRIPTION: Stevens PIF (Preassembled insulation plate & fastener)</p> <p>Preassembled #12 (black) fastener with 3-inch (75-mm) (blue) locking plate for insulation attachment.</p> <p>SIZE AVAILABLE: 2¼, 2⅞, 4½, 5 - 8-inch (57, 73, 114, 127 - 200-mm) in 1-inch (25-mm) increments plus 10 and 12-inch (250 and 300 -mm). Other lengths available on special order.</p> <p>DECK TYPE: Wood and 18 to 26 (1.3 -.55 -mm) gauge steel.</p> <p>PACKAGING 2¼ - 8-inch (57 - 200-mm): 250/box 10-inch (250-mm) and longer: 200/box</p>	<p>PRODUCT DESCRIPTION: Stevens ASAP (Preassembled membrane seam plate & fastener)</p> <p>All-purpose #14 fastener pre-assembled with 2-inch (50-mm) (gray) nylon locking plate for membrane attachment.</p> <p>SIZE AVAILABLE: 2 - 8-inch (50 - 200-mm) in 1-inch (25 -mm) increments plus 10, 12, and 14-inch (250, 300, 355-mm) and other lengths available on special order.</p> <p>DECK TYPE: Structural concrete (pre-drilling required), wood and 18 to 26 gauge (1.3 - .55-mm) steel.</p> <p>PACKAGING: 2 and 3-inch (50 and 75-mm): 500/per box; 4-inch (100-mm): 450/box; 5-inch (125-mm) 400/box; 6-inch (150-mm): 350/box; 7 and 8-inch (175 and 200-mm): 300/box; 10 - 12-inch (250 and 300-mm): 200/box; 14-inch (355-mm): 150/box</p>	<p>PRODUCT DESCRIPTION: Stevens Preassembled DeckGrip</p> <p>Preassembled membrane seam plate & fastener</p> <p>SIZE AVAILABLE: 2 - 8, 10, and 12-inch (50 - 200, 250 and 300-mm)</p> <p>DECK TYPE: Structural concrete (pre-drilling required), wood and 18 to 26 gauge (1.3 - .55-mm) steel.</p> <p>PACKAGING: 2 and 3-inch (50 and 75-mm): 500/box 4 - 8-inch (100 - 200-mm) 250/box 10,12-inch (250, 300-mm) 125/box</p>	<p>PRODUCT DESCRIPTION: Stevens SW Fastener and Plate Kits</p> <p>A "Superior Withdrawal" fastener for membrane attachment with 23/8-inch (60-mm) SW Barbed Metal Seam Plate.</p> <p>SIZE AVAILABLE: 2 - 8-inch(50 - 200-mm) in 1-inch (25-mm) increments</p> <p>DECK TYPE: FM Approved minimum 22 (.85-mm) gauge steel* (*Test drill to check for installability on 20 (1.0-mm) gauge steel decks prior to committing to a project).</p> <p>PACKAGING: 2 - 8-inch (50 - 200-mm) 250 fasteners and plates/bucket</p>
			
<p>PRODUCT DESCRIPTION: Stevens CD-10 Concrete Fastener</p> <p>Non-threaded hammer-in (spike type) fastener for membrane and insulation attachment.</p> <p>SIZE AVAILABLE: 2 - 4-inch (50 - 100-mm) in ½-inch (13-mm) increments, 4 - 10-inch (100-250-mm) in 1-inch (25-mm) increments, and 12-inch (300 -mm)</p> <p>DECK TYPE: Structural concrete</p> <p>PACKAGING: 2 - 8-inch (50 - 200-mm): 500/box 9-inch (228-mm) and longer: 250/box</p>	<p>PRODUCT DESCRIPTION: Stevens Masonry Anchor</p> <p>Hammer-in-type fastener for securing termination bar.</p> <p>SIZE AVAILABLE: 1/4-inch (6-mm) diameter x 1¼-inch (30-mm) length</p> <p>FOR USE IN: Concrete and masonry</p> <p>PACKAGING: 1,000/box</p>	<p>PRODUCT DESCRIPTION: Stevens Termination Bar</p> <p>Aluminum bar for use in membrane termination. Refer to specific SR details.</p> <p>SIZE AVAILABLE: 1-inch (25-mm) wide, 10-ft. (3-m) long 6-inch (150-mm) o/c slotted, punched</p> <p>DECK TYPE: N/A</p> <p>PACKAGING: 500-ft. (152-m)/tube 50 pcs,10-ft. (3-m) long</p>	



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Appendix MA-B

(page 1 of 2)

STEVENS Approved Insulation List and Fastening Rates (Chart 5) for Mechanically Attached, Ballasted and VRS System Types

Introduction

This is a listing of insulation and cover board products acceptable for use with the Stevens Mechanically Attached Roofing System. Each listing shows specific manufacturer and product names, indicates which products are approved for retrofit applications and which are eligible for Stevens "Total System" Warranty coverage. In addition, fastening recommendations for each product type are shown. Please note the variations in required insulation pre-securement and/or cover board requirements as it relates to membrane color, insulation type and thickness.

It is not within the scope of this chart to provide information relating to building code compliance, or specific Factory Mutual Global or Underwriters Laboratories, Inc. approvals. FMG, UL and/or building code requirements for insulation type, thermal barrier requirements, minimum/maximum insulation thickness and product pre-securement rates may differ from the Stevens requirements shown herein. Refer to the current edition of the FMG Approval Guide, the UL Roofing Materials and Systems Directory and/or the UL Fire Resistance Directory for complete information, or contact the Stevens Technical Review Dept. Stevens recommends that the building dept. be consulted ensure compliance with local requirements.

General Recommendations

- 1) Refer to the product manufacturer's literature to confirm minimum allowable thickness required to span steel deck flutes, etc.
- 2) Adjacent insulation/cover boards shall be installed as closely as possible with no gaps or offsets greater than 1/4 inch.
- 3) Since many insulation systems provide taper to 1/2 inch thickness only, a tapered edging of Stevens approved insulation is recommended to be installed at all such transitions on Mechanically Attached, VRS (Vented Roofing System) and Ballasted Roofing Systems.
- 4) Approved insulation products shall be installed with the longest dimension of the board perpendicular to the direction of mechanically secured membrane lap seams whenever possible. Insulation end joints shall be staggered.
- 5) Insulation pre-securement fasteners/plates shall be installed at the rates shown herein and located on each board as shown in Stevens detail drawings SR-622A, 622B and 622C.
- 6) For applicable substrates, Stevens permits insulation boards to be adhered using a Stevens-supplied insulation adhesive, hot steep asphalt (ASTM D312, type III and IV) and some commercial insulation adhesive products. The insulation manufacturer, adhesive manufacturer and Stevens Technical Services must specifically approve such applications.
- 7) For Ballasted Systems (stone, paver), insulation boards shall be loose laid as outlined in the Stevens Guide Specifications. The insulation may be loose laid for VRS (Vented Roofing System) applications provided the boards are overlaid with a minimum 1/2 inch thick layer of moisture-resistant gypsum board.
- 8) Consult the Stevens Technical Review Department at (877)788-8324 if the insulation manufacturer's current installation/securement instructions conflict with information published herein.

For Products Not Listed Herein

In the event that you wish to use an insulation product that does not appear on the Stevens Approved Insulation list, please contact the Stevens Technical Review Dept. at (877)788-8324 for recommendations prior to commencement of the project.

STEVENS Approved Insulation List and Fastening Rates (Chart 5)
for Mechanically Attached, Ballasted and VRS System Types

Insulation Type	Approved Manufacturers	Approved Product Name	Approved for Retrofit Applications	Approved for Stevens "Total System" Warranty	Insulation Pre-Securement for Mechanically Attached Systems			
					Stevens EV colors, EP colors or black EP	Stevens white EV, EP and Hypalon		
Expanded Polystyrene (EPS)	Insulfoam (Premier Industries)	Type VIII (1.25 pcf)	Yes (see note 1)	Yes	Overlayment Required (see note 2)	Overlayment Required (see note 3) 6 per 4'x 8' bd.		
		Type VIII (1.25 pcf) with "Secure-Ply" overlay						
		Type II (1.50 pcf)						
	Generic	R-TECH (fanfold) 1/2-in., Type VIII (1.25 pcf)	Recover Only (see note 1)	N/A	Overlayment Required (see note 3)	15 per 4'x 50' area	15 per 4'x 50' area	
Type VIII (1.25 pcf)		Yes (see note 1)	Overlayment Required (see note 3)			6 per 4'x 8' bd.		
Extruded Polystyrene	Dow Chemical Company	Styrofoam™	Yes (see note 1)	Yes	26 per 4'x 50' area	26 per 4'x 50' area		
		Recovermate™ CR (fanfold)	Recover Only (see note 1)				8 per 4'x 8' bd. (see note 6)	6 per 4'x 8' bd.
		Recovermate™						
	Owens-Corning Building Products	Durapink®	Yes (see note 1)		Overlayment Required (see note 2)	6 per 4'x 8' bd.		
		Foamular® 250, 404						
	Paciv Building Products	PB-6® (fanfold)	Recover Only (see note 1)		26 per 4'x 50' area	26 per 4'x 50' area		
Gypsum Board	Georgia-Pacific Corp.	1/4" Dens-Deck®	(see note 4)	Yes	5 per 4'x 8' bd.	5 per 4'x 8' bd.		
		1/2" Dens-Deck®	Yes					
	Generic	Moisture Resistant	N/A	N/A	Overlayment Required for Mech. Attached systems (see note 5). Approved for VRS applications.			
	USG	1/4" Securock®	(see note 4)	Yes	5 per 4'x 8' bd.	5 per 4'x 8' bd.		
1/2" Securock®		Yes						
Perlite	Generic	Various	N/A	N/A	Overlayment Required (see note 5)			
Polyisocyanurate	STEVENS Roofing Systems	Iso 2000	Yes	Yes (see "Warranty Fee Table" for applicable fee discounts)	5 per 4'x 8' bd. 4 per 4'x4' bd.	5 per 4'x 8' bd. 4 per 4'x4' bd.		
		Iso 2000 Tapered						
		Iso 3000						
		Recover Board					Yes (recover only)	
	Atlas Roofing Corporation	AC Foam II®, AC Foam III®	Yes	Yes	5 per 4'x 8' bd. 4 per 4'x4' bd.	5 per 4'x 8' bd. 4 per 4'x4' bd.		
		Recover Board®	Yes (recover only)					
	Dow Chemical Company	Hy-Therm AP®	Yes	Yes	5 per 4'x 8' bd. 4 per 4'x4' bd.	5 per 4'x 8' bd. 4 per 4'x4' bd.		
		Hy-Therm Composite®						
	Dyplast Products, LLC	dpFOAM II, III™	Yes	N/A	5 per 4'x 8' bd. 4 per 4'x4' bd.	5 per 4'x 8' bd. 4 per 4'x4' bd.		
	Firestone Building Products	ISO 95+®, ISO 300						
Hunter Panels, LLC	H-Shield							
Johns Manville Corp.	ENRGY™ 3							
	JM ISO I®							
Rmax, Inc.	Multi-Max® FA	Yes (recover only)	Yes	6 per 4'x 8' bd.	6 per 4'x 8' bd.			
	Recover Board							
Wood Fiberboard	Georgia-Pacific Corp.	High Density Roof Fiberboard	Yes	N/A	6 per 4'x 8' bd. 4 per 4'x4' bd.	6 per 4'x 8' bd. 4 per 4'x4' bd.		
	IKO	Armourdeck						
	Knight-Celotex	Structodek™						
	Temple Inland	HD-1, HD-6					Yes	

Notes:

1. A separation sheet/layer may be required when using a polystyrene product directly over coal tar pitch B.U.R. or PVC-based roof systems. Consult the insulation manufacturer for specific requirements.
2. Stevens requires this product to be overlaid with an approved polyisocyanurate, wood fiberboard, or Dens-Deck™ insulation/cover board when using with black or colored Stevens Membrane.
3. Due to the lower compressive strength of Type II (1.25 pcf nominal density) expanded polystyrene (EPS), Stevens requires this product to be overlaid with an approved polyisocyanurate, wood fiberboard, or Dens-Deck™ insulation/cover board for Mechanically Attached, Fully Adhered and some VRS Roofing Systems. Type I (1.0 pcf nominal density) EPS is acceptable for use under ballasted systems only.
4. This product is not approved as a recovery layer directly over gravel-surfaced B.U.R. roof systems. It is approved for use over existing single-ply and smooth or mineral surfaced roof systems.
5. Stevens considers this product a "barrier board", used as an underlayment in insulation assemblies to meet specific fire ratings. Stevens requires barrier boards to be overlaid with an approved insulation or cover board.
6. Dow "Recovermate™" and Owens-Corning "Durapink®" products may have additional installation requirements/restrictions when used directly under black or dark colored membrane. Consult the product manufacturer and/or the Stevens Technical Department for specific requirements.

Fastening Requirements for Mechanically Attached EP Roofing Systems

The fastening rates shown in this chart are applicable for buildings with a height of 70' and less that are located in an ASCE exposure category "A", "B" or "C" (See Table 2, ASCE Exposure Classification in Stevens Guide Specifications).

* For fastening variations for buildings over 70' high, buildings in Exposure Category "D" and buildings with abnormal interior conditions, refer to section 3.03 of the Mechanically Attached Guide Specifications or contact the Stevens Technical Services Department.

* Refer to APPENDIX EP-D for Factory Mutual Global (FMG) Windstorm Resistance designs / fastening rates.

* For other deck types not shown on this chart, contact the Stevens Technical Services Department for fastening rates at (877)788-8324.

System Design	Acceptable Roof Decks	Acceptable Seam Fasteners <i>(see Notes 1, 2)</i>		Field Sheets		Perimeter Areas <i>(see Note 3)</i>		
		Fastener	Seam Plate <i>(see Note 5)</i>	Sheet Width	Fastening Rate	Sheet Width	Fastening Rate	
Fastening Requirements for Stevens Standard Warranty coverage with 76-1/2" (1.94M) Field Sheets	Min. 22 ga. Steel	#14 All-Purpose DeckGrip <i>(Note 4)</i> ASAP Preamsembled	2" (51mm)	76-1/2" (1.94M)	18" (457mm)	52-1/2" (1.33M) or 38-1/4" (972mm)	12" (305mm)	
	Structural Concrete (2500 psi [17.2 MPa])							CD-10 Anchor #14 All-Purpose DeckGrip <i>(Note 4)</i> ASAP Preamsembled
	3/4" Plywood	#14 All-Purpose DeckGrip <i>(Note 4)</i> ASAP Preamsembled						12" (305mm)
	Min. 3/4" Plank							
	5/8" Plywood							
	1/2" Plywood							
	3/4" OSB							
	5/8" OSB							
	7/16" OSB							
	24 ga. Steel	Stevens NTB with integral 2" (51mm) plate and anti-backout wires						Pull Tests Required - Contact Stevens Technical Services Dept.
	26 ga. Steel							
Cementitious Wood-fiber	Stevens NTB with integral 2" (51mm) plate and anti-backout wires	Pull Tests Required - Contact Stevens Technical Services Dept.						
Gypsum								
Fastening Requirements for Stevens Standard Warranty coverage with 8 ft. (2.44M) and 10 ft. (3.05M) Field Sheet Panels	Min. 22 ga. Steel	DeckGrip <i>(Note 4)</i>	2-3/8" (60mm) DeckGrip	101-1/2" (2.44M) to 125-1/2" (3.19M)	12" (305mm)	52-1/2" (1.33M) or 38-1/4" (972mm)	12" (305mm)	
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose DeckGrip <i>(Note 4)</i>						
	3/4" Plywood	#14 All-Purpose, DeckGrip <i>(Note 4)</i>						
	Min. 3/4" Plank							
	5/8" Plywood							
	1/2" Plywood							
	3/4" OSB							
	5/8" OSB							
24 ga. Steel								

Notes:

- Fasteners should be sized to project through steel decking 3/4-in. (19mm) [1-in. (25mm) for "SW" screws] and 1/2-in. (13mm) for wood decking less than 1-in. (25 mm) thickness. Fasteners should penetrate structural concrete 1-1/4-in. (32mm) for a pointed screw and 1-in. (25mm) for the CD-10 anchor.
- Preamsembled fastener combinations that utilize a plastic plate, may not seat properly on applications directly over hard cover boards or on uninsulated (direct to deck) applications.
- Stevens requires two (2) perimeter sheets to be installed at all exterior roof perimeters that are not bordered by a parapet wall or an adjoining building a minimum of 24-in. (610mm) higher than roof level. Perimeter sheet requirement pertains to any adjoining roof level two feet or greater above the main deck level. Additional perimeter sheets may be required for buildings affected by special conditions (see section 3.03 of the Mechanically Attached Guide Specifications). Corners shall be treated as shown in Stevens Details SR-601 or SR-602. Stevens perimeter sheet requirement does not necessarily meet the perimeter enhancement requirements of FMG. Consult FMG "Property Loss Prevention Data Sheets" for specific requirements or contact the Stevens Technical Dept.
- Stevens DeckGrip fasteners and 2-3/8-in. (60mm) Galvalume steel plates are available in a "loose" or preassembled format.
- Seam overlap shall be 4-1/2-in. (114mm) when using 2-in. (51mm) diameter seam plates and 5-1/2-in. (140mm) when using plates with a diameter larger than 2-in. (51mm).

Factory Mutual Global Windstorm Resistance Designs and Fastening Requirements for Mechanically Attached EP Roofing Systems

This chart outlines the basic fastening requirements for a number of Factory Mutual Global (FMG) approved windstorm resistance designs with the Stevens Mechanically Attached EP Roofing System. It is not intended to represent all possible Stevens or FMG requirements. For additional information, refer to Stevens Specifications, the FMG "Approval Guide" and FMG "Property Loss Prevention Data Sheets" or contact the Stevens Technical Services Department at (877) 788-8324.

System Design	Acceptable Roof Decks <i>(FMG Approved)</i>	Acceptable Seam Fasteners <i>(see Notes 1, 2)</i>		Field Sheets		Perimeter Areas <i>(see Note 3)</i>		
		Fastener	Seam Plate <i>(see Note 5)</i>	Sheet Width	Fastening Rate	Sheet Width	Fastening Rate	
FMG Class 1-60	22 ga. Steel	#14 All-Purpose ASAP Preassembled	2" (51mm)	76-1/2" (1.94M)	12" (305mm)	52-1/2" (1.33M) or 38-1/4" (972mm)	12" (305mm)	
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose ASAP Preassembled						
	22 ga. Steel	DeckGrip (Note 4)	2-3/8" (60mm) DeckGrip		18" (457mm)			
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose						
FMG Class 1-75	22 ga. Steel	DeckGrip (Note 4)	2-3/8" (60mm) DeckGrip	125-1/2" (3.19M)	12" (305mm)			
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose						
FMG Class 1-90	22 ga. Steel	#14 All-Purpose ASAP Preassembled	2" (51mm)	76-1/2" (1.94M)	6" (152mm)		52-1/2" (1.33M) or 38-1/4" (972mm)	6" (152mm)
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose						
	22 ga. Steel	DeckGrip (Note 4)	2-3/8" (60mm) DeckGrip		12" (305mm)			
		SW Screws	2-3/8" (60mm) SW Plate					
		MaxFast Screws	3" (76mm) MaxFast					
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose	2-3/8" (60mm) DeckGrip		125-1/2" (3.19M)	12" (305mm)		
	22 ga. Steel	SW Screws	2-3/8" (60mm) SW Plate					
	FMG Class 1-120	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose		2-3/8" (60mm) DeckGrip	52-1/2" (1.33M)		12" (305mm)
22 ga. Steel		DeckGrip (Note 4)						
FMG Class 1-135	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose	2-3/8" (60mm) DeckGrip	76-1/2" (1.94M)	6" (152mm)	38-1/4" (972mm)		
	22 ga. Steel	DeckGrip (Note 4)						
FMG Class 1-150	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose	2-3/8" (60mm) DeckGrip	64-1/2" (1.64M)	6" (152mm)	33-1/2" (851mm)		
	22 ga. Steel	DeckGrip (Note 4)						
FMG Class 1-195	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose	2-3/8" (60mm) DeckGrip	52-1/2" (1.33M)	6" (152mm)			
	22 ga. Steel	DeckGrip (Note 4)						

Notes:

- Screws should be sized to project through steel decking 3/4-in. (19mm) [1-in. (25mm) for "SW" screws], structural concrete 1-1/4-in. (32mm) for a pointed screw and 1-in. (25mm) for the CD-10 anchor.
- Preassembled fastener combinations that utilize a plastic plate, may not seat properly on applications directly over hard cover boards or on uninsulated (direct to deck) applications.
- The extent of perimeter/corner enhancement (number of perimeter sheets) is based on the smaller value of either 40% of building elevation or 10% of the least horizontal dimension. Per the FMG publication, the extent of perimeter/corner enhancement can never be less than 4% of the least horizontal dimension, or 3-ft. Consult FMG Property Loss Prevention Data Sheets for specific requirements or contact the Stevens Technical Services Department at (877)788-8324.
- Stevens DeckGrip fasteners and 2-3/8-in. (60mm) Galvalume steel plates are available in a "loose" or preassembled format.
- Seam overlap is 4-1/2-in. (114mm) when using 2-in. (51mm) dia. seam plates and 5-1/2-in. (140mm) when using plates larger than 2-in. (51mm).



Additional Requirements for Stevens 20-year Warranty Systems

General

This information shall be used in conjunction with published Stevens EP (TPO) and EV (Elvaloy) Roofing System Guide Specifications and Stevens Detail Drawings. 20-year Labor and Material and Total System warranty types (with or without the "NDL" option) are available from Stevens for Mechanically Attached and Fully Adhered Systems (not with **FastLine** Adhesive) that meet the criteria shown below. Note that the Vented Roofing System (VRS) is not eligible for 20-year coverage, however, some stone ballasted systems may be approved by Stevens based on job-specific conditions. Consult the Stevens Technical Review Dept. for approval prior to committing to such an application.

- a. **Membrane:** White 60-mil (minimum) Stevens EP and EV membrane (not including EP-Fleece or EV-Fleece)
- b. **Construction Type:** New Construction and complete tear-offs are eligible for a 20-year warranty. Some partial tear-offs and recover systems may also be eligible, however, it is required to consult the Stevens Technical Review Dept. for approval prior to committing to such an application. *[Note: In all cases, any wet existing insulation must be replaced].*
- c. **Approved Deck Types:** 22 gauge steel (or heavier), structural concrete or wood (plank or plywood) 3/4-in. min. thickness.
- d. **Acceptable Insulation/Substrate:**

Mechanically Attached System - Stevens-approved isocyanurate, Stevens EPS, extruded polystyrene or GP "Dens-Deck" gypsum board. Insulation/substrate is to be mechanically presecured to decking.

Fully Adhered System - Stevens-approved isocyanurate or GP "Dens-Deck" gypsum board. Insulation/substrate is to be mechanically presecured or adhered to roof deck using Stevens-supplied insulation adhesive (insulation adhesive application is approved for structural and cellular concrete only).
- e. **Positive Slope:** Drainage system must effectively prevent ponding water as defined by the NRCA (48-hr. ponding rule).
- f. **Warranty Request:** Request for Warranty forms must be submitted and approved by Stevens Technical Services prior to job start.
- g. **Applicator Qualifications:** First-time applicators must arrange for job start-up assistance from their Stevens Field Technical Representative (a min. two week lead time is required for scheduling).
- h. **Warranty Issuance:** 20-year warranty systems are not eligible for "Early Warranty" release and must be inspected by a Stevens Field Technical Representative prior to issuance.
- i. **Reinspection:** 20-year warranty projects which are rated as "good" (or lower) at job completion will be automatically re-inspected at 18 months.

Please contact the Stevens Technical Services Department at (877) 788-8324 or r fw@stvroof.com with any questions.