STEVENS ROOFING SYSTEMS
MECHANICALLY ATTACHED
STEVENS HYPALON

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MECHANICALLY ATTACHED STEVENS HYPALON

PART 1 - GENERAL

1.01 Description

A. Furnish and install mechanically attached Stevens Hypalon Roofing System in accordance with drawings and specifications approved by Stevens Roofing Systems (Stevens).

Special Conditions

1. This specification is intended for building roofs that 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 contractor authorized by Stevens.

B. Stevens Hypalon membrane is classified by Underwriters Laboratories as a Class A sheathing material for use in construction of Class A roofing assemblies. See UL's *Roofing Materials and Systems Directory* for specific assemblies. Meets all test requirements for FM Global (FMG) Class 1A fire and wind resistance (Reference current edition of *FMG Approval Guide*).

C. Inspection: Upon completion of the installation, an inspection will 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 from Stevens, the project is not authorized for installation and is not eligible for warranty coverage.

E. Stevens Hypalon membrane is manufactured in an ISO-9001:2000 facility.

1.03 Submittals

A. Minimum job file submittal information for warranty coverage consideration 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 appropriate 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, primer, solvents, and caulks as indicated are extremely flammable and/or toxic. Follow precautions indicated on container or packaging labels.

B. Surfaces to be bonded shall be dry, clean and free of debris. Suitable surfaces are usually considered to be smooth: solid masonry, wood, and metal, plus insulation board fastened per the specific manufacturer's recommendations for receiving adhered roofing membranes and accepted by Stevens for adhered applications of Stevens Hypalon membrane.

C. All fasteners should be installed with a depth-sensing screw gun to prevent overdriving or under driving. The ASAP and PIF adapter tool are recommended for installing Stevens ASAP and 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 Hypalon sheet. The membrane surface becomes slippery when wet. If access to roof is required, walkway surfaces are highly recommended. In northern climates, sliding snow could create a hazard below and adjacent to the perimeter if a retarding system is not installed on roofs with slopes greater than 2-in. per foot.

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 do not receive continual maintenance 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 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.

K. After exposure to sunlight for 24 hours or longer, Stevens Hypalon membrane may have achieved a "surface" curing. Prior to hot-air welding, an application of Stevens Solvent in conjunction with Stevens Primer is required to achieve a proper weld *(Reference Section 3.02.C.4, Welding of cured membrane)*.

1.06 Warranty

A. 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 at up to 60 mph for mechanically attached insulation, and gale force winds for adhered insulations.

C. See 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. nominal thickness overall, scrim-reinforced, uncured, Hypalon-based sheet 76.5-in. wide by appropriate length conforming to the minimum physical properties in Table 1, *Physical Properties Chart*. Stevens Hypalon membrane is available in White only. Packaging to bear the UL label.

Table 1 - Physical Properties - Stevens Hypalon

Physical Property	Test Method	Typical Values 45 mil* (1.14 mm)	Typical Values 60 mil* (1.52 mm)
Breaking Strength	ASTM D-751 Grab Method	290 lbf.(1.3 kN)	330 lbf.(1.5 kN)
Tear Strength	ASTM D-751, Procedure B, 8"x8" sample)	100 lbf.(.44 kN)	110 lbf.(.50 kN)
Hardness Shore A	ASTM D-2240	85	85
Dimensional Stability (% change)	ASTM D-6878 (white: 24 hrs. @ 129°F/54°C)	±0.1	±0.1
Hydrostatic Resistance**	ASTM D-751 (Method A)	400 psi (2.8 MPa)	440 psi (3.0 MPa)
Ozone Resistance**	ASTM D-1149, (70 hrs.@100°F/37.8°C)	Pass	Pass
Weather Resistance	Xenon Arc, ASTM D-5019 G-155; 2000 hrs. 0.35 Wm^2 @ 340nm	No cracks,no crazing	No cracks, no crazing
	EMMAQUA (Concentrated Natural Sunlight) (ASTM G-90) 4 million langleys total UV radiant exposure	Pass	Pass
Puncture Resistance	FTM 101B (Method 2031)	230 lbf. (1.0 kN)	290 lbf. (1.3 kN)
Water Vapor Transmission	ASTM E-96 (Procedure B, Condition BW @ 72°F/22.2°C)	0.049 Perms	0.049 Perms
SolarReflectance (initial)	ASTM E-903	0.85	0.85
Thermal Emmitance	ASTM E-408	0.87	0.87

*Thickness (nominal) per ASTM D-751 test method.
**Test performed on non-reinforced Stevens Hypalon 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 Hydrocarbond) 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 same membrane as in Section 2.02 except for perimeter use of Stevens Hypalon Metal for gravel stops or drip edges. Unreinforced .055-in. thick, uncured Hypalon-based membrane shall be supplied for field-fabricated flashings for vent stacks, pipes, drains and corners.

C. Adhesives, primers, caulks and sealants:

1. **Stevens Hypalon Bonding Adhesive:** Stevens Hypalon Bonding Adhesive is designed for bonding all Stevens Hypalon membranes to wood, metal, masonry, and approved roof insulation board surfaces. Stevens Hypalon Bonding Adhesive is **not** approved for use with other roofing membrane types.
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 Hypalon All-Weather Primer/Seam Caulk:** Stevens Hypalon All-Weather Primer/Seam Caulk is a solvent-based primer developed to reactivate cured Stevens Hypalon membranes (when used in conjunction with Stevens Hypalon Solvent) in preparation for hot-air welding. Stevens Hypalon All-Weather Primer/Seam Caulk is also used to seal exposed cut edges of reinforced membrane.
4. **Stevens Hypalon Solvent:** Stevens Hypalon Solvent has been developed for initial reactivation of partially cured Stevens Hypalon membranes in preparation for hot-air welding, and used in conjunction with Stevens Hypalon All-Weather Primer/Seam Caulk for rewelding cured Stevens Hypalon membrane.
5. **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.

D. Perimeter sheets:

1. Stevens published fastening rates and perimeter enchancement 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.
2. Perimeter Sheet specification is defined as Stevens Hypalon membrane with a width of 38.25-in.
3. **For buildings less than 70 ft. high in wind zones within ASCE Ground Roughness categories A, B and C *(Reference Table 2, ASCE Exposure Classification)*:** two perimeter sheets 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. Perimeter sheet requirement pertains to any adjoining roof level 2-ft. or greater above the main deck level. See special condition fastening variations (Section 3.03) for guidelines addressing more severe exposures (ASCE Ground Roughness category D) and buildings greater than 70-ft. high.

E. Mechanical fasteners: Shall be supplied by Stevens.

1. **Membrane:**

a. Refer to Appendix A, *Stevens Fastener Selection guide and* Appendix HY-C, *Fastening Requirements for Mechanically Attached Hypalon Roofing Systems* to select appropriate fastener/plate combination and approved fastening rates. Also, Stevens Product Datasheets can found on the Stevens Technical Manual CD-Rom.

b. For gypsum, cementitious woodfiber decks ("Tectum") and light-gauge metal panel roofs, fastener pull tests must be submitted to Stevens Technical Review Dept. with the project Request for Warranty form (RFW).

2. Insulation:

a. Refer to Appendix A, *Stevens Fastener Selection guide* and *Appendix MA-B, Stevens Approved Insulation List and Fastening Rates,* for approvals and fastening requirements. Also, Stevens Product datasheets can be found on the Stevens Technical Manual CD-Rom.

b. For gypsum, cementitious woodfiber decks ("Tectum") and light-gauge metal panel roofs, fastener pull tests must be submitted to Stevens Technical Review Dept. with the project Request for Warranty form (RFW).

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

G. Stevens Edge Metal Systems: Stevens Edge Metal must be installed per standard SR details.

H. Roof walkways: When roof traffic is indicated (for example to service rooftop units), a walkway over the membrane shall be made. Please contact Stevens Technical Review Dept. for walkway product recommendations.

I. Prefabricated Stevens Hypalon Pipe Boots: Are provided as an alternative to .055-in. unsupported flashing for vent stacks and pipes 1-in. to 6-in.

J. Prefabricated Stevens Hypalon Corners: Are provided as an alternative to .055-in. unsupported flashing for use at outside and inside corners.

K. 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 Hypalon 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 is responsible for ensuring the suitability of the substrate surface to accept the Stevens Hypalon 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 and replaced. 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-inch 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, wood plank and lightweight cementitious decks: *S*hall be covered with an approved insulation mechanically fastened to the deck with Stevens approved products (*Reference Appendix MA-B, Approved Insulation List and Fastening Rates for Mechanically Attached Systems).* Polystyrene boards may require a thermal barrier underlayment over steel decks. Consult manufacturer and local building codes.

C. Concrete, plywood, or flat sheet-metal surface: Shall be dry, level, clean, smooth, free of sharp edges, and suitable for acceptance of Stevens Hypalon membrane. Plywood must be exterior grade with an A or B finish side up and with no joints gapped greater than 1/4 inch. Consideration should be given to installing slip plates over all gapped or uneven joints where membrane seams will cross to minimize welding inconsistency. Thickness, structural grade, fastening, and fire resistance requirements should meet the requirements and recommendations of applicable building codes and the APA and are the responsibility of the owner and the

installer. Concrete must be dry, fully cured, and prepared smooth with dust removed. The membrane shall have a fastened expansion joint detail (as per standard SR Detail Drawings) where deck joints exceed 1/4-in. or when crossing a building expansion joint.

D. Reroofing over existing roof: The specifier and/or applicator shall determine the condition of the existing roof. Significantly deteriorated decking must be repaired or replaced, 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.

E. 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.**

F. Nailers: Pressure preservative treated wooden nailers shall be installed at gravel stops or drip edges.

1. **Reroofing:** Use #2 or better wood treated for rot resistance. Creosote and asphaltic preservatives are not acceptable.
2. **New roofing:** As specified by architect. A pressure preservative treated wood nailer is recommended. Effective perimeter attachment must be achieved per details.
3. **All construction:** Nailer shall be anchored with a suitable fastener for the application having a minimum withdrawal resistance of 100-lbs., staggered 6-in. o.c. within 8-ft. of an outside corner and 12-in. o.c. along other perimeter areas.
4. **All construction:** Nailer thickness shall be chosen to match the top surface of adjacent construction ±1/4-in. This permissible variation shall not contribute to ponding.
5. **Nailers:** Nailers around skylights, curbs, expansion joints, etc., are not required. Use of Stevens Plates and Screws anchored to deck 12-in. o.c. (except tall building applications, see 3.03.E) through membrane and insulation is acceptable.

G. 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.

H. New construction or reroof with complete tear-offs of flashings: The applicator is responsible for determining the suitability of the substrate for the Stevens Hypalon 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, *Approved Insulation List & Fastening Rates*.**

A. Insulation or protection board:

1. **Minimum thickness:** Shall be approved in writing by Stevens. 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. **Compatibility:** Certain insulation types such as polystyrene are not compatible with coal tar pitch. Contact insulation manufacturer for recommendations.
3. **Manufacturers' instructions:** In regard to attachment, compatibility, and spanning metal flutes, the manufacturers' instructions or specifications shall determine the suitability for an application, subject to acceptance by Stevens.
4. **Precautions:** Be careful when handling insulation to avoid damaging or rupturing the facer and/or surface. All damaged areas must be cut out and replaced with structurally sound insulation, and properly secured in place.
5. **Attachment:**

   Insulation boards must be secured sufficiently to conform to the substrate surface geometry.

   a. **Mechanical attachment:** All boards must be attached with FMG and Stevens-approved insulation plates and

appropriate fasteners. For Total System Warranty applications, insulation plates and fasteners must be supplied by Stevens (*Reference Appendix MA-B, Approved Insulation List & Fastening Rates for Mechanically Attached Systems*).

b. Adhered insulation with approved adhesive: As an alternative to mechanical attachment, Stevens permits adhering insulation with Stevens-supplied insulation adhesive. Stevens Insulation Adhesives are the only products eligible for Stevens warranty coverage. Insulation boards must be secured sufficiently to conform to the substrate surface geometry.

c. Adhered insulation with asphalt: As an alternative to mechanical attachment, Stevens permits adhering insulation with hot steep asphalt (ASTM D-312 Type III or IV). The specific application must be approved in writing from the insulation board manufacturer and be approved by Stevens Technical Review Dept. All temperature requirements and application procedures must be followed. Insulation boards must be secured sufficiently to conform to the substrate surface geometry.

6. Tapered insulation: Most tapered insulation systems taper down to a minimum 1/2-in. thickness only. Therefore, a tapered edge strip of high density fiber board should be used to provide a smooth transition to the flat areas.

7. Approved insulation boards shall be installed with the longest dimension perpendicular to the direction of the membrane seams whenever possible and installed with end joints staggered. Boards will be butted as closely as possible with no gaps over 1/4-in. and secured as specified in 3.02.A.5.

B. Membrane installation procedures:

1. Stevens perimeter sheets (Reference 2.03.C for perimeter sheet specifications): Two or more perimeter sheets shall be installed at exposed perimeter areas, except when the building is less than 70 ft. tall, and has a continuous 24-in. or higher parapet and located within ASCE Ground Roughness Categories A, B and C. Buildings located within ASCE Ground Roughness Category D may have increased perimeter sheet requirements *(Reference Table 2, ASCE Exposure Classification, and section 3.03)*. Stevens perimeter sheets shall be laid out in an approved pattern as shown in standard Detail SR-601 and SR-602. Appropriate Stevens fastener & plate combination *(Reference 2.03.E and Appendix A, Stevens Fastener Selection Guide)* is installed along the edge of the membrane through the insulation (through existing roof in reroofing), and into the roof deck. Adjacent rolls of Stevens Hypalon membrane shall overlap the fastened edge of the installed membrane by 4 1/2-in. *(Reference Stevens Technical Manual, standard Detail Drawings SR-623 and Appendix HY-C, Fastening Requirements for Mechanically Attached Hypalon Roofing Systems)*. At perimeters that are to receive a gravel stop or metal edging, Stevens Hypalon 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 Hypalon membrane shall be unrolled on the area to be covered. Appropriate Stevens fastener and plate combination (*2.03.E and Appendix A, Fastener Selection Guide*) should be installed along the leading edge of the membrane, as illustrated in standard SR Details, through the insulation (through existing roof in reroofing) and into the roof deck. Adjacent rolls of Stevens Hypalon membrane shall overlap the fastened edge of the installed membrane by 4 1/2-in. *(Reference Stevens Technical Manual, standard Detail Drawings SR-623 and Appendix HY-C, Fastening Requirements for Mechanically Attached Hypalon Roofing Systems)*.

C. 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 completed 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 (i.e.

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 conducted 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 All-Weather Primer/Caulk 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. 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 Hypalon membrane or .055-in. unsupported membrane.
4. **Hot-air welding of exposed and cured membrane:** Stevens Hypalon is manufactured as an uncured Hypalon-based sheet and by design will cure with extended exposure to sunlight and moisture. Poor storage conditions can also initiate the curing process. After one day of exposure the curing process begins, from the top surface down. Hot-air welding will be impossible after curing begins without first applying Stevens Solvent to the cured surface. After more than one day of surface cure Stevens Solvent *and* Stevens All-weather Primer/ Caulk must be applied to the cured surfaces. The following procedure must be followed.
   - **a.** Surfaces to be primed must be clean and free of debris. Remove all dirt by washing with a detergent cleanser (for example 409® or Fantastik®). Rinse thoroughly with water, allow to dry, and then wipe the cleaned surface with a white rag or natural bristle brush wet with Stevens Solvent (a soaking application is required). **DO NOT SCRUB.**
   - **b.** Brush or roller-apply a 100% even coverage of Stevens Primer/All Weather Caulk to both surfaces. Allow the primer to dry until tacky. Primer should not be allowed to become dry for more than 20 minutes. If this occurs, reapply primer.

NOTE: **Welding of cured membrane. After prolonged curing of the membrane (more than a three-day-cure), it is necessary to use a two-coat primer application procedure to ensure that the chemical bonding process between old and new Stevens Hypalon membrane is effective. Allow liberal first coat on cured sheet to thoroughly dry. Apply second coat to cured surface and first coat to uncured surface, then hot-air weld after five minutes.**

   - **c.** Position the membrane that is to be welded on the cured membrane for proper seam overlap.
   - **d.** Hot-air weld the two sheets of membrane together as if they were two uncured sheets.

NOTE: **In cold temperatures warming of the membrane with a hand welder is necessary prior to applications of primer and solvent.**

D. Perimeter fastening: Wood nailers are required for perimeter gravel stops or drip edges. Membrane may be fastened at other terminations by use of Stevens fasteners and plates.

1. **Wooden nailers:** See 3.01.F.
2. **Base of parapet or curb:** Membrane shall be mechanically fastened 12-in. o.c. (except as described in section 3.03.E) 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 SR Detail Drawing for fastener locations).*

E. 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 Hypalon 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 of surface coverage (when applied to two surfaces).

NOTE: **Stevens Hypalon 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 Hypalon Bonding Adhesive shall be allowed to dry until tacky and 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.
3. All flashing shall be terminated as shown in standard SR Detail Drawings.
4. Stevens Hypalon 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 Details.
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 are acceptable.

F. 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.

G. 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 contractor shall coordinate installation to ensure the system is made watertight at the end of each work day.

H. Roof walkways: When roof traffic is indicated (for example, to service rooftop units), a walkway over the membrane shall be made. Please contact Stevens Technical Review Dept. for walkway product recommendations.

NOTE: **Whenever possible, walkways shall not be installed over seams. When installed adjacent to a seam, the pad 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 6-in. from the edge of the seam when located on the top sheet of a completed lap.**

3.03 Fastening requirements

The following fastening rates apply to membrane with widths of 76.5-inches or less and applicable for minimum 3/4-in. plank/plywood, 22 gauge steel (or heavier) and minimum 2500 psi compressive strength structural concrete decks on buildings located within ASCE Ground Roughness Categories A, B and *C. (Reference Table 2, ASCE Exposure Classification Chart).*

For fastening rates and approved fastener and plate combinations for deck types not listed here refer to Appendix HY-C, *Fastening Requirements for Mechanically Attached Hypalon Roofing Systems.*

A. Buildings up to 70-ft. high:

1. Two 38.25-in. perimeter sheets, fastened 12-in. o.c., parallel to entire perimeter ("picture frame").
2. Field sheets 18-in. o.c.

B. Buildings over 70-ft. to 110-ft. high:

1. Perimeter sheets fastened at 12-in. o.c.*
2. Field sheets 18-in. o.c.

C. Buildings over 110-ft. to 200-ft. high:

1. Perimeter sheets fastened at 9-in. o.c.*
2. Field sheets fastened 12-in. o.c.

D. Buildings over 200-ft. to 350-ft. high:

1. Perimeter sheets fastened at 6-in. o.c.*
2. Field sheets fastened 6-in. o.c.

* Perimeter shall be defined as the smaller of:

- 0.1 times the building lesser plan dimension.
- 0.4 times the eaves height.

NOTE: **All perimeter sheets are to be in "picture frame" layout (intersected in corners, refer to detail SR-601 or SR-602).**

E. Tall building specification notes:

1. For buildings over 110-ft. high, fasten around all projections over 12 -inches in length or diameter at 9-in. o.c.
2. Buildings that are sited on a high elevation relative to the surrounding area *(Reference ASCE Ground Roughness Category D)* are subject to different fastening patterns *(contact Stevens Technical Review Dept.).*
3. Changes in parapet wall heights, fire walls, adjacent roof areas, and roof geometry affect wind exposure. Ensure that all such pertinent information is submitted to Stevens for review before committing to a fastening specification.

F. Restriction for coastal and abnormal wind uplift applications

Typical considerations:

1. ASCE Exposure D.
2. Buildings over 350-ft.
3. Buildings with positive pressure.
4. Canopy construction.
5. Hangar facilities and other buildings with wall openings greater than 10% of a side wall area.

General design recommendation:

Any one of the above factors is a valid reason to consider increased perimeter and field fastening. Stevens may require enhanced system design in the absence of significant compensating factors. Stevens should be consulted before committing to a design and/or cost.

1. Special perimeter requirements may be set unless minimum 84-in. high walls are continuous on at least three sides.
2. Field fastening will normally be 12-in. o.c. or tighter.
3. Air retarder system may be required for buildings with positive pressure or wall openings greater than 10%.

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.

STEVENS ROOFING SYSTEMS FASTENER SELECTION GUIDE

APPENDIX A

PRODUCT DESCRIPTION:

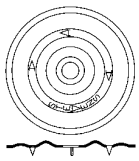
Stevens #14 All-Purpose Fastener

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:

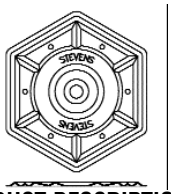
Stevens #12 Insulation Fastener

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

SIZE AVAILABLE:
$1^{5/8}$, 2¼, $2^{7/8}$, 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
$1^{5/8}$ - 6-inch (41 - 150-mm): 1000/bucket
7 and 8-inch (175 and 200-mm): 500/bucket



PRODUCT DESCRIPTION:

Stevens Hex Insulation

$2^{7/8}$-inch (73-mm) Hex-shaped Galvalume coated steel insulation plate for use with Stevens #12, #14 or Stevens CD-10 concrete fasteners.

SIZE AVAILABLE:
$2^{7/8}$-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:

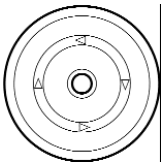
Stevens Purlin Fasteners

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:

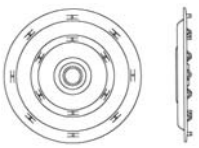
Stevens DeckGrip Fastener

#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.

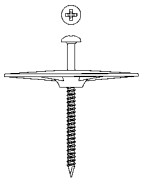
Stevens DeckGrip Reel-Fast Collated Seam Plates for easy installation. Spaced 6-in.(150 mm) or 12-in. (300 mm) o.c. (see separate datasheet)

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

DECK TYPE:
NA

PACKAGING:
1000/bucket

APPENDIX A



PRODUCT DESCRIPTION:

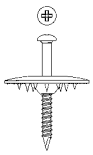
Stevens PIF (Preassembled insulation plate & fastener)

Preassembled #12 (black) fastener with 3-inch (75-mm) (blue) locking plate for insulation attachment.

SIZE AVAILABLE:
2¼, 2 7/8, 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.

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

PACKAGING
2¼ - 8-inch (57 - 200-mm): 250/box
10-inch (250-mm) and longer: 200/box



PRODUCT DESCRIPTION:

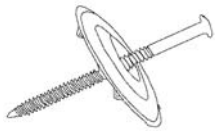
Stevens ASAP (Preassembled membrane seam plate & fastener)

All-purpose #14 fastener preassembled with 2-inch (50-mm) (gray) nylon locking plate for membrane attachment.

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.

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

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



PRODUCT DESCRIPTION:

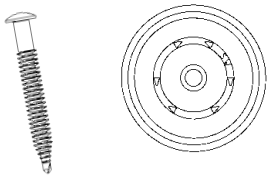
Stevens Preassembled DeckGrip

Preassembled membrane seam plate & fastener

SIZE AVAILABLE:
2 - 8, 10, and 12-inch (50 - 200, 250 and 300-mm)

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

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



PRODUCT DESCRIPTION:

Stevens SW Fastener and Plate Kits

A "Superior Withdrawal" fastener for membrane attachment with 2 3/8-inch (60-mm) SW Barbed Metal Seam Plate.

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

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).

PACKAGING:
2 - 8-inch (50 - 200-mm) 250 fasteners and plates/bucket

PRODUCT DESCRIPTION:

Stevens CD-10 Concrete Fastener

Non-threaded hammer-in (spike type) fastener for membrane and insulation attachment.

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)

DECK TYPE:
Structural concrete

PACKAGING:
2 - 8-inch (50 - 200-mm): 500/box
9-inch (228-mm) and longer: 250/box

PRODUCT DESCRIPTION:

Stevens Masonry Anchor

Hammer-in-type fastener for securing termination bar.

SIZE AVAILABLE:
1/4-inch (6-mm) diameter x 1¼-inch (30-mm) length

FOR USE IN:
Concrete and masonry

PACKAGING:
1,000/box

PRODUCT DESCRIPTION:

Stevens Termination Bar

Aluminum bar for use in membrane termination.
Refer to specific SR details.

SIZE AVAILABLE:
1-inch (25-mm) wide, 10-ft. (3-m) long
6-inch (150-mm)o/c slotted, punched

DECK TYPE:
N/A

PACKAGING:
500-ft. (152-m)/tube
50 pcs,10-ft. (3-m) long

STEVENS ROOFING SYSTEMS

Nine Sullivan Road, Holyoke, MA 01040 USA
Tel: 800/621-ROOF · Int'l: 1-413/552-1000 · Fax: 413/552-1070
www.stevensroofing.com

Appendix MA-B

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)
		Type VIII (1.25 pcf) with "Secure-Ply" overlay				6 per 4'x 8' bd.
		Type II (1.50 pcf)				
		R-TECH (fanfold) 1/2-in., Type VIII (1.25 pcf)	Recover Only (see note 1)		15 per 4'x 50' area	15 per 4'x 50' area
	Generic	Type VIII (1.25 pcf)	Yes (see note 1)	N/A	Overlayment Required (see note 3)	Overlayment Required (see note 3)
		Type II (1.50 pcf)				6 per 4'x 8' bd.
Extruded Polystyrene	Dow Chemical Company	Styrofoam™	Yes (see note 1)	Yes		4 per 4'x 8' bd.
		Recovermate™ CR (fanfold)	Recover Only (see note 1)		26 per 4'x 50' area	26 per 4'x 50' area
		Recovermate™			8 per 4'x 8' bd. (see note 6)	6 per 4'x 8' bd.
	Owens-Corning Building Products	Durapink®				4 per 4'x 8' bd.
		Foamular® 250, 404	Yes (see note 1)		Overlayment Required (see note 2)	6 per 4'x 8' bd.
	Pacitv 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)		6 per 4'x 8' bd.	6 per 4'x 8' bd.
	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)		6 per 4'x 8' bd.	6 per 4'x 8' bd.
	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™		N/A		
	Firestone Building Products	ISO 95+®, ISO 300				
	Hunter Panels, LLC	H-Shield		Yes		
	Johns Manville Corp.	ENRGY™ 3		N/A		
		JM ISO I®				
	Rmax, Inc.	Multi-Max® FA		Yes		
		Recover Board	Yes (recover only)		6 per 4'x 8' bd.	6 per 4'x 8' bd.
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™		Yes		
	Temple Inland	HD-1, HD-6				

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 Hypalon 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 HY-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.

<table>
<tr><th rowspan="2">System Design</th><th rowspan="2">Acceptable Roof Decks</th><th colspan="2">Acceptable Seam Fasteners
(see Notes 1, 2)</th><th colspan="2">Field Sheets</th><th colspan="2">Perimeter Areas
(see Note 3)</th></tr>
<tr><th>Fastener</th><th>Seam Plate</th><th>Sheet Width</th><th>Fastening Rate</th><th>Sheet Width</th><th>Fastening Rate</th></tr>
<tr><td rowspan="15">Fastening Requirements for Stevens Standard Warranty coverage with
76-1/2" (1.94M) Field Sheets</td><td>Min. 22 ga. Steel</td><td>#14 All-Purpose ASAP Preassembled</td><td rowspan="14">2"
(51mm)</td><td rowspan="14">76-1/2"
(1.94M)</td><td rowspan="3">18"
(457mm)</td><td rowspan="14">38-1/4"
(972mm)</td><td rowspan="11">12"
(305mm)</td></tr>
<tr><td>Structural Concrete (2500 psi [17.2 MPa])</td><td>CD-10 Anchor
#14 All-Purpose ASAP Preassembled</td></tr>
<tr><td>3/4" Plywood</td><td rowspan="11">#14 All-Purpose ASAP Preassembled</td></tr>
<tr><td>Min. 3/4" Plank</td></tr>
<tr><td>5/8" Plywood</td><td rowspan="8">12"
(305mm)</td></tr>
<tr><td>1/2" Plywood</td></tr>
<tr><td>3/4" OSB</td></tr>
<tr><td>5/8" OSB</td></tr>
<tr><td>7/16" OSB</td><td rowspan="2">9"
(229mm)</td></tr>
<tr><td>24 ga. Steel</td></tr>
<tr><td>26 ga. Steel</td><td>9"
(229mm)</td><td>6"
(152mm)</td></tr>
<tr><td>Cementitious Wood-fiber</td><td colspan="2" rowspan="2">Stevens NTB with integral 2" (51mm) plate and anti-backout wires</td><td colspan="3" rowspan="2">Pull Tests Required - Contact Stevens Technical Services Dept.</td></tr>
<tr><td>Gypsum</td></tr>
</table>

Notes:

1. 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.

2. Preassembled fastener combinations that utilize a plastic plate, may not seat properly on applications directly over hard coverboards or on uninsulated (direct to deck) applications.

3. 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.

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Factory Mutual Global Windstorm Resistance Designs and Fastening Requirements for Mechanically Attached Hypalon 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 Hypalon (CSPE) 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 *(FMG Approved)*	Acceptable Seam Fasteners *(see Notes 1, 2)*		Field Sheets		Perimeter Areas *(see Note 3)*	
		Fastener	Seam Plate	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)	38-1/4" (972mm)	12" (305mm)
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose ASAP Preassembled					
FMG **Class 1-90**	22 ga. Steel	#14 All-Purpose ASAP Preassembled			6" (152mm)		6" (152mm)
	Structural Concrete (2500 psi [17.2 MPa])	CD-10 Anchor #14 All-Purpose ASAP Preassembled					

Notes:

1. 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.

2. Preassembled fastener combinations that utilize a plastic plate, may not seat properly on applications directly over hard coverboards or on uninsulated (direct to deck) applications.

3. 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.

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