STEVENS ROOFING SYSTEMS
GARDENTOP™ ROOF - INTENSIVE

TABLE OF CONTENTS

CSI Division 7 Guide Specifications

STEVENS GARDENTOP™ INTENSIVE ROOF SYSTEM

PART 1 - GENERAL

1.01 Description

A. Furnish and install a Stevens Intensive Garden Roof System (medium to deep soil depth, 6-in. to 24-in.) in accordance with drawings and specifications approved by Stevens Roofing Systems (Stevens). The system described herein is intended to be loose-laid with the overburden components applied immediately after the completion of the waterproofing and all associated quality control procedures (i.e. final inspection, water test, etc). The weight of overburden must be a minimum of 10 lb/ft^2 (over the entire roof area). If the overburden will not be applied immediately and the waterproofing system is to be left exposed for a period of time, it will be necessary to use the Fully Adhered variation of this Specification. Contact the Stevens Technical Review Dept. for information.

Special Conditions

1. This specification is applicable for buildings with structural concrete roof deck that are capable of safely supporting the anticipated roof loads, that meet the guidelines herein and have no abnormally severe or unknown environmental exposures, except as specifically authorized herein. The Stevens GardenTop™ Intensive Roof System should only be applied on structures with a roof slope of 2-in. in 12-in.or less.
2. Applications that involve severe exposures (ASCE Ground Roughness Category D) must be reviewed by Stevens Roofing Systems Technical Review Dept., before any specification is valid (*Reference Table 3, 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 (TPO) and Stevens EV (Elvaloy®) membrane products are classified by Underwriters Laboratories as Class A sheathing materials for use in construction of Class A roofing assemblies. See UL's Fire Resistance Directory for specific assemblies. Stevens EP and Stevens EV membranes bear the FM Global mark and are approved for use in Class 1A fire and windstorm resistance rated constructions.

C. Substrate Acceptance: For projects requiring labor and material warranty, arrange with Stevens to have services of field representative at site to accept substrate surface before installation of waterproofing materials.

D. Water Test: For projects requiring labor and material warranty, water test completed waterproofing system for a minimum of 24 hours. Owner's representative and Stevens representative will witness water testing and confirm results in writing.

E. Inspection: Upon completion of the membrane installation and **before the installation of the overburden system**, an inspection will be performed by a representative of Stevens to ascertain that the roofing system has been installed according to Stevens approved specifications and details. The applicator shall provide temporary ballast and protection as necessary but maintain all seams uncovered until an

inspection by Stevens confirms the project is ready for installation of the overburden system. Upon approval of the project, a Warranty shall be written.

F. Lead time for inspections: A two-week lead time is typically required for scheduling in-progress or final inspections. Large projects should have in-progress inspections performed so that the overburden can be installed in stages to secure the membrane.

G. Stevens Authorized Applicator is responsible for monitoring the application of overburden and backfilling operations to prevent damage to the completed waterproofing system.

H. 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.

I. Stevens EP (60 mil, 80 mil) and Stevens EV (60 mil) membranes are 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 and SRP Detail Drawings must be shown as to their anticipated construction.

C. A structural engineer or owner's representative will verify in writing to Stevens Roofing Systems the structure's ability to safely support the membrane waterproofing system and overburden materials.

D. 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 all manufacturers' requirements.

1.05 Precautions

A. Adhesives, solvents, and caulks as indicated are extremely flammable and/or toxic. Follow precautions indicated on containers or carton 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.

C. All fasteners should be installed with a depth sensing screw gun to prevent overdriving or underdriving. The ASAP and PIF adapter tools are recommended to be used for the installation of Stevens ASAP and PIF fasteners. Insulations shall be loose laid. If the owner or specifier requires insulation fastening, a protection layer shall be required on top of the membrane, over fasteners and plates to prevent impingement on the membrane. Consult Stevens Technical Review Dept. for recommendation.

D. Block off or shut down positive pressure building ventilation systems during application to prevent sheet from billowing during application.

E. 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.

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 to the roof. If rooftop grease units are not to receive 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 membrane or caused by faulty installation may require total recover in those areas.

J. Roof surface shall be free of ponded water, snow, ice, and all debris in order to provide proper uniform surface for installation of overburden.

K. Provide temporary ballast in partially completed sections to control wind effects during construction. Temporary ballast shall have no sharp edges, protrusions, chemical contaminants, etc., which could damage the roof membrane. Install overburden system as soon as possible over completed membrane areas, after passing membrane system inspection.

L. Protect the waterproofing system as necessary to prevent damage during the application of overburden/backfilling operations, rooftop traffic and/or the activities of other trades.

1.06 Warranty

A. A Stevens representative shall inspect the installation for compliance with applicable Stevens specifications prior to the application of the overburden.

B. Upon acceptance through inspection, a Stevens Standard or Total System Warranty for a five (5), ten (10), fifteen (15) or, with prior written approval, twenty (20) year period that covers wind damage at up to 60 mph.

C. The cost of removal and/or replacement of the overburden components necessary for the investigation of leaks shall be borne by the Building Owner.

D. See General Warranty section of the Stevens CD-Rom for more information.

PART 2 - PRODUCTS

2.01 General

A. Stevens-supplied materials shall be used for the construction of the roof. In the event that a component of the roof system is not available from Stevens, alternate materials will be specified herein or approved in writing by Stevens. Samples of all materials to be used on the project that are not supplied by Stevens shall be furnished to the Stevens Technical Review Dept. for written approval prior to the start of work.

2.02 Membrane

A. Membrane shall be 0.060-in. or 0.080-in. nominal thickness overall, or 0.060-in. thick membrane with fleece backing, scrim-reinforced, hot-air weldable sheet material supplied to the job site in 76.5-in. wide rolls. Packaging to bear the UL label and exposed face color shall be standard white.

1. **Stevens EP (TPO):** Ethylene Propylene-based sheet roofing manufactured in accordance with ASTM D-6878 and conforming to the minimum physical properties stated herein *(see Table 1)*.
2. **Stevens EP-Fleece:** Ethylene Propylene-based sheet roofing with a factory laminated fleece backing, manufactured in accordance with ASTM D-6878 and conforming to the minimum physical properties stated in the Product Specification Data Sheet section of the Stevens Technical Manual.
3. **Stevens EV:** Elvaloy® (KEE)-based sheet roofing manufactured in accordance with ASTM D-4434 and conforming to the minimum physical properties stated herein *(see Table 2)*.
4. **Stevens EV-Fleece:** Elvaloy® (KEE)-based sheet roofing with a factory laminated fleece backing, manufactured in accordance with ASTM D-4434 and conforming to the minimum physical properties stated in the Product Specification Data Sheet section of the Stevens Technical Manual.

2.03 Related materials

A. Flashing: Flashing shall be made of the non-fleece backed Ethylene Propylene or Elvaloy® KEE-based membrane types described in Section 2.02. Unreinforced .055-in.-thick, Ethylene Propylene or Elvaloy® KEE-based membrane shall be supplied for field-fabricated flashings for vent stacks, pipes, drains and corners.

B. Adhesives, sealants, primers and caulks:

1. **Stevens EP Fastline Membrane Adhesive** by Ashland: A one-part, moisture curing urethane adhesive designed specifically for adhering TPO membrane to an isocyanurate insulation layer or DensDeck Prime® cover board in horizontal applications. The adhesive is

applied directly from its container in 1/2-in. to 3/4-in. inch wide beads. This adhesive **is not** approved for use with fleece-backed products or Stevens EV (Elvaloy®) membranes.

2. **Stevens Bonding Adhesive:** Stevens Bonding Adhesive is designed for bonding Stevens non-fleece backed membrane to wood, metal, masonry, and approved roof insulation board surfaces. Specifically formulated for Stevens EP membrane and **is not** approved for use with fleece-backed products or Stevens EV (Elvaloy®) membrane.
   a. **Stevens EP (TPO) Bonding Adhesive**: Specifically formulated for Stevens EP membrane and **is not** approved for use with fleece products or Stevens EV (Elvaloy®) membrane.
   b. **Stevens EV (Elvaloy®) Bonding Adhesive**: Specifically formulated for Stevens EV membrane and **is not** approved for use with fleece-backed products or Stevens EP (TPO) membrane.
3. **Stevens Water-based Fleece Adhesive** is a synthetic polymer-based adhesive that is designed for bonding fleece-backed Ethylene Propylene or Elvaloy® KEE-based Stevens membranes to an insulation layer, cover board or cellular lightweight concrete. This adhesive **is not** approved for use with non-fleece membranes.
4. **Stevens All-Purpose Sealant:** Stevens All-Purpose Sealant is designed to be used as a water cutoff mastic, sealant to top off pitch boxes, as an exterior grade caulk for metal work. Approved for use with both Stevens EP and Stevens EV membrane systems.
5. **Cut-Edge Sealant:** Cut-Edge Sealant is a solvent-based caulk developed to seal exposed cut edges of reinforced membrane.
   a. **Stevens EP (TPO) Cut-Edge Sealant**: Specifically formulated for Stevens EP membrane and **is not** approved for use with Stevens EV (Elvaloy®) membrane.
   b. **Stevens EV (Elvaloy®) Cut-Edge Sealant**: Specifically formulated for Stevens EV membrane and **is not** approved for use with Stevens EP (TPO) membrane.
6. **Seam Cleaner:** Used as a surface cleaner for membrane that has become dirty or contaminated prior to heat welding.
   a. **Stevens EP Seam Cleaner**: Specifically formulated for Stevens EP membrane and **is not** approved for use with Stevens EV (Elvaloy®) membrane.
   b. **Acetone**: (by others) Recommend for use as a seam cleaner on Stevens EV membrane and **is not** approved for use with Stevens EP (TPO) membrane.
6. **Stevens Insulation Adhesives:** Stevens offers multiple insulation adhesive options.

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.

   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.

C. Insulation: Rigid Insulation and/or cover board shall be provided by Stevens. Insulation boards shall be a minimum of 1.5-in. thick. A cover board of the type and thickness described below is required over any of the insulation products specified herein with a compressive strength less than 25 psi (170 kPa). This is necessary to resist the long term effects of the overburden loads associated with Intensive systems.

NOTE: Stevens Extruded Polystyrene with a minimum compressive strength of 40 psi (275 kPa) is the only insulation product approved for use in a protected membrane assembly (insulation installed above the waterproofing membrane).

1. Stevens ISO 2000 Closed-cell HCFC free "Green" polyisocyanurate foam core with integrally laminated heavy non-asphaltic,

fiber-reinforced felt facers meeting Federal Specification HH-I-1972/2, Class 1 and ASTM C1289-95, Type II. Available with a 20 psi (140 kPa) or 25 psi (170 kPa) compressive strength rating. Acceptable for systems with an overburden weight of 30 lb/ft^2 (145 kg/m^2) max. (Note: A cover board is required over this product.)

2. Stevens ISO 3000 Closed-cell HCFC free "Green" polyisocyanurate foam core with integrally laminated heavy coated-glass facers meeting Federal Specification HH-I-1972/2, Class 1 and ASTM C1289-95, Type II. Available with a 20 psi (140 kPa) or 25 psi (170 kPa) compressive strength rating. Acceptable for systems with an overburden weight of 30 lb/ft^2 (145 kg/m^2) max. (Note: A cover board is required over this product.)
3. Stevens extruded polystyrene (XPS) boards meeting ASTM C578-98
   a. 25 psi (170 kPa) compressive strength product . Acceptable for systems with an overburden weight of 55 lb/ft^2 (270 kg/m^2) max.
   b. 40 psi (275 kPa) compressive strength product for medium to heavy-weight systems.
   c. 60 psi (413 kPa) compressive strength product for heavy-weight systems.
4. Stevens Expanded Polystyrene (EPS) boards meeting ASTM C578-04a
   a. Type II, nominal density 1.5 pcf (24 kg/m^3) and a compressive strength of 18 psi (124 kPa). (Note: A cover board is required over this product.)
   b. Type IX, nominal density 2.0 pcf (32 kg/m^3) and a compressive strength of 25 psi (170 kPa). Acceptable for systems with an overburden weight of 55 lb/ft^2 (270 kg/m^2) max.
5. DensDeck® Cover board by Georgia Pacific: Water-resistant gypsum core with integrally laminated glass mat facers. A minimum 1/4-in. thick layer is required over polyisocyanurate, extruded polystyrene and expanded polystyrene insulation boards.
6. Cellular Insulating Concrete shall be composed of Type I Portland cement, a foaming agent and water with a minimum cast density of 30 lb/ft3 (480 kg/m3) and a minimum 200 psi (1.4 mPa) compressive strength.

D. Garden Roof Composite Drainage Panels: Used as a protection layer/water retainage layer and is composed of a molded polystyrene core with or without a factory laminated filter fabric layer.

1. **Stevens Garden Roof Drain 200H:** 0.25-in. thick, 10,800 psf compressive strength, core-only configuration specifically designed for horizontal applications.
2. **Stevens Garden Roof Drain 200V:** 0.25-in. thick core (10,800 psf compressive strength) and a needle-punched polypropylene fabric with a flow capacity of 9 gal/min/ft (per unit width). Specifically designed for vertical applications.
3. **Stevens Garden Roof Drain 650:** 7/16-in. thick core (21,000 psf compressive strength) and a needle-punched polypropylene fabric with a flow capacity of 18 gal/min/ft (per unit width).

E. Stevens Protection Fabric: 6 oz./yd2, 120 mil thickness, needle-punched polyester fabric used as a protection layer between structural and cellular concrete substrates and the Stevens waterproofing membrane.

F. Hardscape Items:

1. **Architectural Plaza Pavers:** Precast concrete plaza paver units nominal size 18-in.x 18-in. x 1.75-in. or 24-in.x 24-in. x 2-in., weighing a minimum of 20 psf with a minimum compressive strength of 6500 psi (per ASTM C 140).
2. **Paver Pedestal System:** Type and design as recommended by the plaza paver manufacturer. Pedestals serve to elevate the surface of the pavers above the roof membrane (and/or drainage composite, insulation, etc,) and to promote positive drainage for protection against the effects of freeze/thaw.
3. **Stone Ballast:** Nominal 3/4-in. to 1-1/2-in. diameter (ASTM D 448 #4 gradation) rounded washed stone applied at a minimum of 10 pounds per square foot.
4. **Growing medium:** Lightweight growing medium consisting of high-quality compost and recycled materials engineered to be water permeable; to retain water and air; to resist rot, heat, flying sparks, frost and shrinkage; to provide nutrients appropriate to the chosen plants; and to provide a

*RootShield™ - American Wick Drain, Monroe NC

rooting medium. Type and amounts as indicated by specifier.

5. **Additional Items:** Planters, trays, concrete curbs, landscape timber or other landscape products suitable for this application. Used to transition between growing media, roof top projections and other Garden Roof components. Type and amounts as indicated by specifier.

6. **Sedum:** Plant species used as for ground cover. Size, shapes, color and growth patterns as indicated by specifier/designer.

G. Mechanical fasteners: Shall be supplied by Stevens.

1. **Membrane:**

   a. Refer to Appendix A, *Stevens Fastener Selection Guide* to select appropriate fastener/plate combination and approved fastening rates. Also, Stevens Product Data sheets can be found on the Stevens Technical Manual CD-Rom.

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

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

J. Prefabricated Stevens EP and Stevens EV 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 Bonding Adhesive and Stevens All-Purpose Sealant when completing edge flashings. Surfaces must be prepared with Stevens Tape Primer prior to Flashing Tape application. Use of this product shall be limited to applications above the specified overburden components.

PART 3 - EXECUTION

3.01 Substrate Preparation

A. The applicator is responsible for ensuring the suitability of the substrate to accept the Stevens membrane. In all cases, prior to the start of work, the substrate shall be smooth and free of debris, sharp edges, and other surface irregularities. 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 as appropriate with materials approved by Stevens Technical Review Dept. Maximum slope allowed is two (2-in.) in twelve inches (12-in.).

B. Concrete: Concrete must be dry, fully cured, and prepared smooth with dust removed. An approved insulation or cover board (see Section 2.03.C) or a layer of Stevens Protection Fabric is required prior to installing membrane over concrete unless Stevens fleece-backed membrane is used (see Section 2.02). 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.

C. Reroofing: All existing materials must be removed to the decking prior to installing a Stevens GardenTop™ Roof. The specifier and/or applicator shall determine the condition of the existing roof. Significantly deteriorated decking must be repaired or replaced, as appropriate.

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

1. **New roofing:** As specified by architect. A pressure preservative treated wood nailer is recommended. Effective perimeter attachment must be achieved per standard SR Detail Drawings.

2. **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.

3. **All construction:** Nailer thickness shall be chosen to match the top surface of adjacent construction ±1/4 inch. This permissible variation shall not contribute to ponding.
4. **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.

G. New construction or reroof with complete tearoff of flashings: The applicator is responsible for the suitability of the substrate surface to accept the Stevens 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

A. Insulation or protection board:

1. **Minimum thickness:** Shall be approved in writing by Stevens. Since the insulations requirement for thermal value will vary for each project, the thickness of the insulation must be calculated for the desired results.
2. **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.
3. Approved insulation boards shall be installed end joints staggered. Boards will be butted as closely as possible with no gaps over 1/4-in.

B. Stevens Protection Fabric: After concrete substrate has been prepared as indicated, unroll protection fabric (without introducing wrinkles) over area where waterproofing is to be applied. Fold and/or cut fabric to conform to surface geometry and overlap adjacent sheets a minimum of 4-in. Fabric should be installed within ¼-in. of any roof top projection (pipes, curbs, etc.).

C. Membrane Installation Procedures:

1. Approved insulation shall be loose-laid with joints staggered over roof area to be covered. Boards will be butted as close as possible, and voids over 1/4-inch shall be filled.
2. Stevens Field Sheet Membrane shall be unrolled on the area to be covered, with a minimum 2-in. overlap from the edge of the previous roll of membrane.
3. Membrane must be mechanically attached 12-in. o.c. at all perimeters, and at any penetration that has a dimension of 24-in. or greater with Stevens fasteners and plates.

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 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 had been allowed to cool down, and after any extreme changes in weather conditions. Cut edges shall be caulked by applying Stevens 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 .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 membrane or .055-in. unsupported membrane.

c. For Stevens .080-in. thick membrane, a patch is required on all T-seam locations.

4. Stevens membrane, as with any material after exposure, will require cleaning prior to seaming. The approved method for cleaning Stevens EP membrane prior to 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, without redepositing any contaminants.

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.

f. For Stevens EV, follow the above procedure (3.02.E.3.a thru 3.02.E.3.e) using Acetone instead of Stevens EP Seam Cleaner (refer to Section 2.03.B.5).

D. Perimeter fastening: Wood nailers are required for perimeter gravel stops or drip edges. Membrane may be fastened at other terminations using Stevens fastener and seam plates (*Reference Appendix A, Stevens Fastener Selection Guide*).

1. Wooden nailers: See Section 3.01.E.

2. Base of parapet or curb: Membrane shall be mechanically fastened 12-in. o.c. through insulation (and existing roof in reroofing) into deck. Fastening shall occur at parapet walls, curbs, skylights, expansion joints, and any other roof penetrations that exceed 24 in. in any dimension.

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 flashing cover weep holes or any form of through-wall drainage. All membrane flashings must be terminated above the finished level of overburden.

Note: **Refer to membrane restrictions in Section 2.03A**

1. Apply Stevens 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 Bonding Adhesive shall not be applied to membrane surfaces that are to be hot-air welded. Hot-air welding shall be used anywhere throughout the system where Stevens membrane overlaps itself.**

2. Stevens Bonding Adhesive shall be allowed to dry until tacky and 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 the flashing membrane against the substrate using a hand roller, J-roller or similar device applying pressure to the entire surface area to promote full contact.

3. All flashing shall be terminated as shown in standard SR and SRP Detail Drawings.

4. Stevens Clad-Metal flashing at perimeter shall be made and installed as per standard SR and SRP Detail Drawings.

5. Pipe flashings shall be installed in accordance with standard SR and SRP Detail Drawings.

6. Expansion joints shall be installed in accordance with standard SR and SRP Detail Drawings.

7. Roof drains shall be installed in accordance with standard SR and SRP 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. Prefabricated sleeve insert with a clamping ring and backflow seal are acceptable.

8. In some applications for gravel stops, drip edges, and gutters, the standard SRP Detail

Drawings will establish the membrane perimeter flashing and termination specification as well as paver securement *(Reference specific SRP Detail Drawing).*

9. A protective medium weight nonwoven needle punched polyester slip sheet and/or piece of foam rod stock shall be set between paver units and membrane flashings wherever no other separator such as metal work prevents direct contact.

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 applicator shall coordinate installation to ensure the system is made watertight at the end of each workday.

3.03 Application of Overburden

Note: **The following description represents a typical Intensive Garden Roof System construction. Variations in the design, components or application should be reviewed with the Stevens Technical Review Dept. at (877) 788-8324 to ensure suitability.**

A. General: Prior to installing any overburden over the membrane:

1. All roofing and flashing work must be 100% complete.
2. The system has to have been inspected by Stevens and approved for application of overburden.
3. Water test and other specified quality control procedures must be verified as having been completed successfully.
4. The surface of the waterproofing membrane must be free of dirt and debris of any kind in preparation for the application of overburden layers.

B. Stevens Garden Roof Drain 200H and 200V Panels:

1. **Horizontal Surfaces 200H:** Drainage panel may be loosely laid directly over the waterproofing membrane and the edges of the core with the flange should be at the higher edge (away from the drains). Panels must be secured if high winds are expected prior to the placement of overburden system. Minimize direct traffic on surface of the panels until wearing surface is in place. If drainage panel is damaged, check membrane beneath panel and repair both membrane and drainage panel before proceeding.
2. **Vertical Surfaces 200V:** Drainage panel may be installed starting at the top or bottom of the wall. The roll may be installed either vertically (perpendicular to the wall) or horizontally (parallel to the wall). When installed vertically, the core flange should be at the upstream edge. This flange position minimizes seepage of water behind the panels. When installed horizontally, the edge of the core with the flange should be at the top.
3. **Corners:** Bend panel to make inside corners. For outside corners, cut drain core flush with corners leaving 3-in. of extra fabric. Wrap fabric around exposed edge of drain core, securing with tape to back side of core if necessary.

C. Stevens Extruded Polystyrene (XPS) (min. compressive strength is 40 psi [275 kPa])**:**

1. Boards shall be installed with staggered end joints should be butted as closely as possible with no gaps over 1/4-in.
2. **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.

D. Stevens Garden Roof Drain 650 Panels:

1. **Horizontal Surfaces:** Drainage panel is loosely laid (fabric side up) directly over the (XPS) insulation layer(s) with the edges of the core with the flange at the higher edge (away from the drains). Panels must be secured if high winds are expected prior to the placement of overburden system. Minimize direct traffic on surface of the panels until wearing surface is in place. If

drainage panel is damaged, check membrane beneath panel and repair both membrane and drainage panel before proceeding.

2. **Vertical Surfaces/Corners:** Refer to 3.03.B.2, 3.

E. Hardscape Items: Install growth medium and additional Hardscape items in strict accordance with the designers plans and instructions. Placement of overburden should proceed carefully so as to not damage previously installed layers.

3.05 Roof Walkways

A. Shall be incorporated into the overburden system and are typically made from a series of high density paver units or similar materials. An approved protection layer must be installed between the paver system and the roof cover membrane. Walkway system shall be installed in accordance with the project specifications and drawings.

3.06 Height/Exposure Limitations

A. This specification is valid for buildings meeting the criteria herein that are 70-ft. or less in height, which are located within ASCE Ground Roughness Categories A, B and C *(See Table 3)*. For other types of deck construction, seacoast applications, and buildings with large wall openings such as hangar doors or truck docks, contact Stevens Technical Review Dept. for requirements.

Table 1 - Physical Properties - Stevens EP

Physical Property	Test Method	Typical Values 60 mil* (1.52 mm)	Typical Values 80 mil* (2.03 mm)
Breaking Strength	ASTM D-751	320 lbf.(1.4 kN)	390 lbf. (1.7 kN)
Tear Strength	ASTM D-751 Procedure B, 8"x8" sample)	110 lbf.(.49 kN)	104 lbf. (.46 kN)
Dimensional Stability (% change max.)	ASTM D-6878 (white: 6 hrs. @ 158°F/70°C)	±0.3	±0.2
Hydrostatic Resistance	ASTM D-751 (Method A)	425 psi (2.9 MPa)	510 psi (3.52 MPa)
Ozone Resistance**	ASTM D-1149 (70 hrs.@100°F/37.8°C)	Pass	Pass
Weather Resistance	Xenon Arc, ASTM D-6878 G-155; 5040 kJ/m² 0.35w/m² @ 340nm	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/m² total UV radiant exposure	Pass	Pass
Puncture Resistance	FTM 101B (Method 2031)	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
Elongation (%) Ultimate**	ASTM D-412 (Die C)	700%	700%
Brittleness	ASTM D-2137 @ -49°F/-45°C	Pass	Pass
Water Absorption (max. % weight change)**	ASTM D-6878 D-471, (158°F/70°C for 7 days) Testing only one side section	±3	±3
Heat Aging	ASTM D-6878 D-573 (28 days @ 240°F/115°C)	Break: 320 lbf. (1.4 kN)	Break: 350 lbf. (1.56 kN)
Solar Reflectance (initial)	ASTM E-903	>70%	>70%
Thermal Emittance	ASTM E-408	>0.93	>0.93

*Thickness (nominal) per ASTM D-751 test method.
**Test performed on non-reinforced Stevens EP membrane.

Table 2 - Physical Properties - Stevens EV™

Physical Property	Test Method	Typical Values 60 mil* (1.52 mm)
Thickness over Scrim	ASTM D-751 Optical Method	0.020 in. (.508 mm)
Breaking Strength	ASTM D-751, Grab Method A	300 lbf. (1.3 kN)
Elongation @ Break min %	ASTM D-751 Method A	30
Seam Strength min % of Break	ASTM D-751 Grab Method A	90
Heat Aging min. % of Original	ASTM D-3045 (176°F/80°C for 56 days ASTM D-751 Grab Method A	90
Tear Strength min.	ASTM D-751 Tongue Tear Method B	60 lbf. (2.7 kN)
Low Temp. Bend	ASTM D-2136 -40°F/-40°C	Pass
Accelerated Weathering Test (5000 hrs. kJ/m^2)	ASTM 4434 G-155 6300 kJ/m^2	No cracks, no craze (7X magnification)
Linear Dimensional change % max.	ASTM D-1204 6 hrs. 176°F /80°C	±0.3
Static Puncture Resistance	ASTM D-5602 33 lbf. (15 kg) 73°F/23°C	Pass
Dynamic Puncture Resistance	ASTM D-5635 20J	Pass
Hemispherical Spectral Reflectance	ASTM E-903 Energy Star min. 65%	Pass

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

Table 3 - 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:

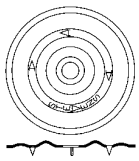
Stevens #14 All-Purpose Fastener

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:

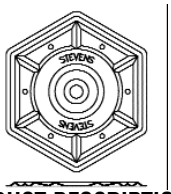
Stevens #12 Insulation Fastener

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:

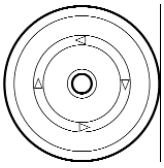
Stevens Purlin Fasteners

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:

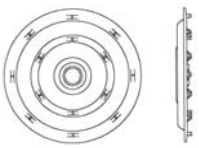
Stevens DeckGrip Fastener

#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.

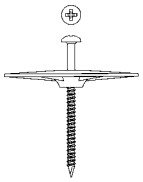
Stevens DeckGrip Reel-Fast Collated Seam Plates for easy installation. Spaced 6-in.(150 mm) or 12-in. (300 mm) o.c. (see separate datasheet)

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

DECK TYPE:
NA

PACKAGING:
1000/bucket

APPENDIX A



PRODUCT DESCRIPTION:

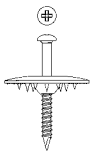
Stevens PIF (Preassembled insulation plate & fastener)

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:

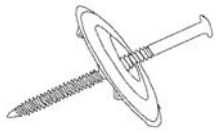
Stevens ASAP (Preassembled membrane seam plate & fastener)

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:

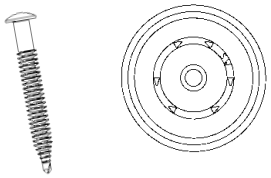
Stevens Preassembled DeckGrip

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.