



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION
NOTICE OF ACCEPTANCE (NOA)

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599
www.miamidade.gov/economy

Miami Echo Inc.
2755 NW 63rd Ct.
Fort Lauderdale, FL, 33309

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Miami Echo Waterproofing Systems – Terrace Plaza Deck, Garden Roof

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA revises NOA No. 24-0815.03 and consists of pages 1 through 72
The submitted documentation was reviewed by Jorge L. Acebo.

09/04/25



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 1 of 72

WATERPROOFING SYSTEM APPROVAL

Category:	Roofing
Sub-Category:	Waterproofing
Deck Type:	Concrete, Steel, Wood
Material:	SBS
Maximum Design Pressure:	-465 psf.

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
ECHO Block	24" W x 24" L Min Thick - 2"	Proprietary	Cementitious recycled shredded tire roof insulation block, which includes an 8,000-psi structural grout surface.
ECHO Flow	24" W x 24" L 24" W x 48" L Min Thick - 2"	Proprietary	Cementitious recycled shredded tire permeable top layer roof insulation.
ECHO Flow Wall	12" W x 18" L x 6" H 12" W x 9" L x 6" H 12" W x 6" L x 6" H	Proprietary	Cementitious recycled shredded tire permeable block used for building planter walls and borders (36" high max).
ECHO Bag	40 lbs. bag	Proprietary	Bagged, shredded tire to be mixed with Portland cement (compliant with ASTM C150) for onsite mixture.
ECHO Turf	Various	Proprietary	Artificial turf.
ECHO Bond	Various	Proprietary	Adhesive for artificial turf.
ECHO IPE Ironwood	Min Thick – ¾" Min Width – 5 ½" Various Length	Proprietary	IPE Ironwood for use as traffic surface on Rooftop Terrace.
ECHO IPE S.S – Z Clip	Width – 1" Height – ½" Length – 1 ½"	Proprietary	302 Annealed Spring Stainless Steel, 16 Gauge Z-Clip to attach ECHO IPE Ironwood to ECHO IPE S.S- high Hat channel with Stainless Steel Screw (#14 x 1 ½" Min).
ECHO IPE S.S-Washer	Width – 1"	Proprietary	302 Annealed Spring Stainless Steel, 16 Gauge Washer used as spacer under Echo IPE.
ECHO IPE S.S- U Clip	Length – 1" Width – 1" Height – ½"	Proprietary	302 Annealed Spring Stainless Steel, 16 Gauge starter clip to attach ECHO IPE High Hat Channel with Stainless screws (#14 x 1 ½" Min).
ECHO IPE S.S- High Hat	Width – 6 ¼" Max Height – 2 ¼" Various Length	Proprietary	304 S.S., 20 Gauge High Hat channel used under Echo IPE.



TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
ECHO S.S- Soil Bar	Min Thick – 1/8” Min Width – 1” Various Length	Proprietary	304 S.S., termination bar for Echo Soil retention screen with predrilled holes 9” O.C
ECHO S.S-Soil retention screen	1” Hex Mesh Max Width - 2’ Various Length	Proprietary	304 S.S., 22 GA wire screen with 1” Hex mesh. Required for less than 24” soil depth.
ECHO S.S Tie wire	16 GA Various Length	Proprietary	304 S.S., 16 GA Wire used to connect two Echo S.S Retention screen every 2’ maximum width.
ECHO S.S Root Barrier	Min Height – 4” Min Width – 5/8” Various Length	Proprietary	304 S.S., 22 GA root barrier and blue roof water retention and detention. (Adjustable by hole quantity and size)
ECHO 20 GA Flat Galvanized or SS Clip	Width - 2” Length - 8” Flat	Proprietary	Individual clip for drip edge and gravel stop spaced 9” O.C under ECHO block
ECHO EPS	Min Thick- ½”	Proprietary	Min. 60 PSI Expanded Polystyrene Insulation

TRADE NAMES OF PRODUCTS MANUFACTURED BY OTHERS:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>	<u>Manufacturer (With current NOA)</u>
Elastocol 500	Various	ASTM D41	Asphalt primer.	SOPREMA, Inc.
Soprema Sopralene Flam 180	39" x 33'	ASTM D6164	SBS modified bitumen base/ply sheet.	SOPREMA, Inc.
Soprema Sopralene Flam 180 FR GR	39" x 33'	ASTM D6164	SBS modified bitumen granulated fire rated cap sheet.	SOPREMA, Inc.
Colphene Flam 180 FR GR	39” x 33’	ASTM D6164	Non-woven polyester reinforced modified bitumen membrane with a plastic burn-off film on the bottom and mineral granules on top.	SOPREMA, Inc.
Colphene Flam 180	39” x 33’	ASTM D6164	Non-woven polyester reinforced modified bitumen membrane with a plastic burn-off film on the bottom used as a base/ply. Applied by heat welding or ribbon stripping (after removal of plastic burn-off film)	SOPREMA, Inc.



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<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>	<u>Manufacturer (With current NOA)</u>
Colphene 180 FR GR	39" x 33'	ASTM D6164	Non-woven polyester reinforced modified bitumen membrane with fire retardants and a sanded bottom and a mineral granules top. Applied in hot asphalt, cold applied adhesive or ribbon stripping (after removal of plastic burn off film)	SOPREMA, Inc.
Colphene 180 Sanded	39" x 49'	ASTM D6164	Non-woven polyester reinforced modified bitumen membrane sanded on both sides/ Applied in hot asphalt, cold adhesive or ribbon stripping.	SOPREMA, Inc.
Colply EF Adhesive	5 Gal pail	Proprietary	Solvent free, polymeric adhesive.	SOPREMA, Inc.
Sopralene 180 SP 3.0	39" x 33' (1 sq.)	Proprietary	Non-woven polyester reinforced modified bitumen membrane with a plastic burn-off film on the bottom and sanded on top	SOPREMA, Inc.
Styrofoam Highload XPS-60	Min Thick – 1"	ASTM C578	Min. 60 PSI Extruded Polystyrene Insulation	DuPont de Nemours Inc.
Sopra-XPS 60	Min Thick – 1"	ASTM C578	Min. 60 PSI Extruded Polystyrene Insulation.	SOPREMA, Inc.
APOC Polyset AH-160	Various	Proprietary	Two-component adhesive for XPS-60 Insulation, ECHO Block and ECHO Flow.	APOC ICP Adhesives & Sealants
APOC Polyset AH-160 HFO	Various	Proprietary	Two-component adhesive for XPS-60 Insulation, ECHO Block and ECHO Flow.	APOC ICP Adhesives & Sealants
APOC 705 Polyset RTA-1	Various	Proprietary	Two-component adhesive	APOC ICP Adhesive & Sealants
APOC Polyset Low slope commercial roof adhesive (HFO)	Various	Proprietary	Low slope commercial roof adhesive (HFO)	APOC ICP Adhesives & Sealants



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<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>	<u>Manufacturer (With current NOA)</u>
Polysset CR-20 HFO	Various	Proprietary	Two-component adhesive for Insulfoam EPS Type IX+ and Securerock cement roof board.	APOC ICP adhesives & Sealants
Paver Tile	Min Thick - 3/4" W 24" x L 24"	Proprietary	Minimum 1,500 PSI walking pavers.	Generic
8000 PSI Grout	Various	ASTM C1107 ASTM C1437 ASTM C1090	Non-shrink, high-strength construction grout.	Generic
Portland Cement	Various	ASTM C150	Fine powder cement for use with Echo Bag	Generic
Fiber reinforced stucco	Various	ASTM C926	One coat fiberglass reinforced stucco.	Generic
SECUREROCK Cement Roof Boards	4'x 8' x 1/2" 4'x 4' x 1/2"	ASTM C1325	A rigid gypsum based board stock for use as a coverboard, parapet, fire barrier, or thermal barrier roof board.	United States Gypsum Corporation
Tile Mortar	Various	ANSI A118.4/A118.11	Large format tile mortar.	Generic
Permascan-C	Various	Proprietary	Moisture detection system	Detec
Smartex DM	Various	Proprietary	Moisture detection system	International Leak Detection
EFVM (Electric field vector mapping)	Various	Proprietary	Electric field vector mapping	International Leak Detection
ALSAN RS 222 Primer	Various	Proprietary	Two component, rapid curing PMMA acrylic primer.	SOPREMA, Inc.
ALSAN RS 230 Field	Various	Proprietary	A two component, rapid curing, PMMA Liquid membrane	SOPREMA, Inc.
ALSAN RS Fleece	Various	Proprietary	Non-woven, needle-punched polyester fabric reinforcement used as a fabric reinforcement in Alsan RS system.	SOPREMA, Inc.
Alsan RS 230 Flash	Various	Proprietary	A two component, rapid curing, PMMA liquid membrane.	SOPREMA, Inc.
Alsan RS Quartz Aggregate	Various	Proprietary	Dry Quartz Aggregate	SOPREMA, Inc.



TRADE NAMES OF PRODUCTS MANUFACTURED BY OTHERS:

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>	<u>Manufacturer (With current NOA)</u>
Bostik 915	N/A	Proprietary	A Single Component adhesive used as an attachment surface over concrete deck for Moisture detection tape.	Bostik Inc.
S.S Ring Shank Nail	2" x 0.090"	Proprietary	Stainless steel ring shank nail	Generic
#14 Stainless Steel HD Fastener	Min Length – 1 ½"	Proprietary	#14, Stainless screw with #3 phillips drive	Generic
S.S Lag screw	3" x 5/16"	Proprietary	Hex head S.S lag screw for ECHO S.S soil bar attachment into ECHO Flow through stucco.	Generic
24 GA Galvanized or SS standard drip edge	Max. 5-1/2" outside face	TAS 111 (B)	Standard Metal drip edge with individual 9" o.c. clip.	Generic
24 GA Galvanized or SS standard gravel stop	Max: 5-1/2" outside face	TAS 111 (B)	Standard Metal drip edge with individual 9" o.c. clip.	Generic
Omg Headlok SP Fastener	Min Length – 1 5/8"	TAS 114 (E)	#14, Large head, Standard thread, pinch point screw with CR-10 coating	Generic

EVIDENCE SUBMITTED:

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Test Name/Report</u>	<u>Date</u>
PRI Construction Materials Technologies, LLC	Physical Properties	DKTT-002-02-01.1	05/14/18
	Physical Properties	DKTT-008-02-01.1	05/14/18
	Physical Properties	SHTI-002-02-01	06/19/18
	Physical Properties	SHTI-004-02-01.1	04/11/19
	Physical Properties	SHTI-003-02-01	06/19/18
	Physical Properties	SHTI-006-02-01.1	05/16/19
	Physical Properties	SHTI-005-02-01.1v	05/16/19
	Physical Properties	SOP-049-02-01	05/31/12
	TAS 111(B)	SHTI-001-02-01.1	05/31/17
Trinity ERD	ASTM D6164	S43400.08.14-7	08/26/14
	ASTM D6164	S44110.08.14-5	08/26/14
	ASTM D6164	S35860.05.12-2-R3	08/29/14
	ASTM D6164	S43400.08.14-6	08/26/14
UL LLC	UL 790	R38782	08/03/22
	UL 790	Project 4789853874	10/27/21
	Water Flow Rate	Project 4787705846	12/22/16



NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 6 of 72

EVIDENCE SUBMITTED:

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Test Name/Report</u>	<u>Date</u>
Quest Engineering Services	ASTM C495	J-16044.005	08/09/16
	ASTM C495	J-16044.006	08/09/16
	ASTM C495	J-19087.001	03/08/19
Atlantic & Caribbean Roof Consulting, LLC	TAS 114-D	ACRC# 18-001	02/27/18
	TAS 114-D	ACRC# 18-002	02/27/18
	TAS 114-D	ACRC# 18-003	05/21/18
	TAS 114-D	ACRC# 18-005	07/13/18
	TAS 114-D	ACRC# 18-010	08/07/18
	TAS 114-D	ACRC# 18-011 R1	05/22/19
	TAS 114-D	ACRC# 18-012	08/07/18
	TAS 114-D	ACRC# 19-018	12/11/19
	TAS 114-D	ACRC# 19-019	12/11/19
	TAS 114-D	ACRC# 19-020	12/09/19
	TAS 114-D	ACRC# 20-033	12/29/20
	TAS 114-D	ACRC# 20-034	12/29/20
	TAS 114-D	ACRC# 21-003	02/05/21
	TAS 114-D	ACRC# 21-004	02/05/21
	TAS 114-D	ACRC# 21-011	04/27/21
	TAS 114-D	ACRC# 24-040	11/23/24
	TAS 114-D	ACRC# 24-048	12/14/24
	TAS 114-D	ACRC# 25-014	04/18/25
TAS 114-D	ACRC# 25-016	05/09/25	
TAS 114-D	ACRC# 25-021	06/24/25	
Riverbank acoustical Laboratories	ASTM E90/E1332	RAL-TL 16-510	12/22/16
SCS Global Services	Recycled Content	SCS-RC-04309	03/31/17
	Recycled Content	SCS-RC-04428	03/03/17
	Recycled Content	SCS-RC-04454	04/25/17
	Recycled Content	SCS-RC-04430	04/01/19
	Recycled Content	SCS-RC-04429	04/01/19
QAI Laboratories (Freeze/Thaw)	ASTM C666-15	TJ8164	09/02/21
American Test Lab of South Florida R & D Services, Inc	Soil screen uplift	R0524.01-22 R1	06/23/22
	ASTM C578	RD20192-R2	09/08/20



APPROVED APPLICATIONS:

- Membrane Type:** SBS
- Deck Type 3I:** Concrete Decks, Insulated or non- insulated
- Deck Description:** Terrace/Plaza Deck, Garden Roof
- System Types A(1):** (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and SBS Membranes with **Surfacing as specified herein.**

All General and system Limitations Shall Apply

- Vapor Barrier:** (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer or Colphene 180 FR GR Sanded adhered with Colply EF Adhesive.
- Moisture detection:** (Optional) ILD Smartex DM monitoring strip system adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier or ILD stainless steel vector mapping grid sandwiched between the insulation and cement roof board (for insulated assemblies only).

One or more layers of the following insulations:

- (Optional) Base Layer Insulation:** Insulfoam EPS type IX+, 60 PSI insulation board min ½” thick. Optional 5” trough (see attached drawing)

Note: Base Layer of Insulation shall be splatter adhered to the deck with APOC Polyset Low slope commercial roof adhesive HFO (CR-20).Please refer to Roofing Application Standard RAS 117 for insulation attachment.

- (Optional) Mid Layers Insulation:** Insulfoam EPS type IX+, 60 PSI insulation board min ½” thick Optional 5” trough (see attached drawing)

- Top Layer Insulation:** 1/2” Securerock cement roof board. Optional 5” trough (see attached drawing)

Note: Additional layers of Insulation shall be splatter adhered onto the previous insulation layer with APOC Polyset Low slope commercial roof adhesive HFO (CR-20).Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of concrete deck, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed concrete deck. . Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply, or Colply EF applied to concrete slab followed by Colphene 180 Sanded and Colphene 180 FR GR Sanded adhered to base ply with Colply EF. For insulated assemblies only, the Colply EF is applied to the securerock roof cement board. Soprema Colphene 180 Sanded SBS modified bitumen base ply is adhered to the Colply EF. Colphene 180 FR GR Sanded SBS modified bitumen cap sheet is adhered to the base ply with Colply EF.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.



ECHO Flow:

Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 HFO adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Or, for the grout pedestal system use the following: 8000 PSI non-shrink high-strength construction grout is poured into 10" round by (1/4"- 4") tall forms on top of the Soprema Colphene 180 FR GR (Flam or sanded) cap sheet. Each pedestal is spaced 2" from each other and 1" from the perimeter (see attached drawings). Forms are left in place to semi dry the 8000 PSI non-shrink high-strength construction grout and removed to expose grout pedestals. A 1/4" square notched trowel is passed on top of each semi dry pedestal for improved bond. A 1/4" fresh layer of slurried grout is placed upon the pedestals. 8000 PSI structural slurried grout is back buttered to the bottom of a 24 inch x 24 inch x 2" minimum Echo Flow inside 4 circle patterns measuring 10" round and spaced 2" from each other to match grout pedestal spacing. Echo Flow is then pressed on top of the pedestal legs. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 HFO adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c

Surfacing:

The following options shall be applied as follows.

Artificial Turf

ECHO Bond is applied at a combined rate of 40 sqft per gallon with 1/4" nap adhesive roller; applied evenly onto both ECHO Flow and ECHO Turf. ECHO Turf is then adhered to ECHO FLOW.

Maximum Design Pressure:

-465 psf. (see general limitation #9)



(SLOPED SLAB) ECHO CONCRETE PEDESTAL SYSTEM WITH ECHO TURF
 MAXIMUM DESIGN PRESSURE: -465 PSF

ECHO TURF FULLY ADHERED WITH ECHO BOND ADHESIVE

ECHO BOND APPLIED AT 40 SF. PER GALLON WITH 1/4" NAP ADHESIVE ROLLER

(OPTIONAL) ECHO FLOW (FILL) 2" MIN. THICKNESS

AH-160 PROPACK ADHESIVE CONTINUOUS 1-1/2" BEADS SPACED 6" O.C.

ECHO FLOW 2" MIN. THICKNESS

ECHO FLOW IS BACK BUTTERED WITH LIGHT COAT OF 8,000 PSI STRUCTURAL GROUT IN FOUR 10-INCH CIRCLES (2'X2' ECHO FLOW) OR EIGHT 10-INCH CIRCLES (2'X4' ECHO FLOW).

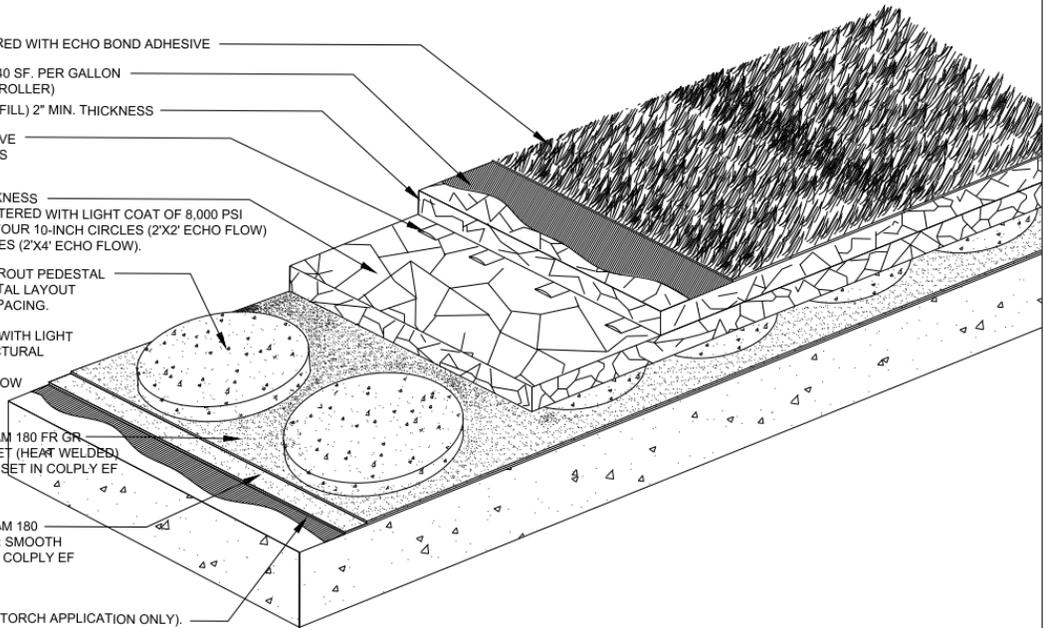
8,000 PSI STRUCTURAL GROUT PEDESTAL REFER TO PADDY PEDESTAL LAYOUT DETAIL FOR REQUIRED SPACING.

COAT TOP OF PEDESTAL WITH LIGHT COAT OF 8,000 PSI STRUCTURAL GROUT AND INSTALL BACKBUTTERED ECHO FLOW ONTO PEDESTAL.

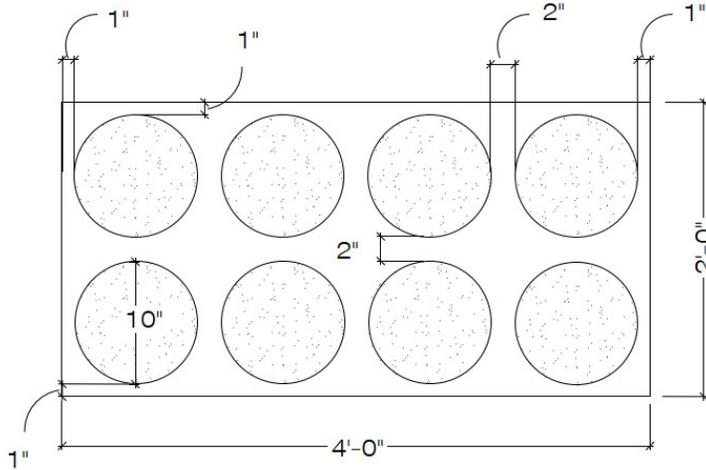
SOPREMA COLPHENE FLAM 180 FR GR GRANULAR SBS CAP SHEET (HEAT WELDED) OR COLPHENE 180 FR GR SET IN COLPLY EF ADHESIVE.

SOPREMA COLPHENE FLAM 180 (HEAT WELD) SBS GRADE. SMOOTH OR COLPHENE 180 SET IN COLPLY EF ADHESIVE.

ELASTOCOL 500 PRIMER (TORCH APPLICATION ONLY).



CONCRETE PADDY PEDESTAL LAYOUT
 2'X4' ECHO FLOW



(INSULATED) ECHO CONCRETE PEDESTAL SYSTEM WITH ECHO TURF
 MAXIMUM DESIGN PRESSURE: -465 PSF

ECHO TURF FULLY ADHERED WITH ECHO BOND ADHESIVE

ECHO BOND APPLIED AT 40 SF. PER GALLON
 WITH 1/4" NAP ADHESIVE ROLLER

(OPTIONAL) ECHO FLOW (FILL) 2" MIN. THICKNESS

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C.

ECHO FLOW 2" MIN. THICKNESS
 ECHO FLOW IS BACK BUTTERED WITH LIGHT COAT OF 8,000 PSI
 STRUCTURAL GROUT IN FOUR 10-INCH CIRCLES (2'X2' ECHO FLOW)
 OR EIGHT 10-INCH CIRCLES (2'X4' ECHO FLOW).

8,000 PSI STRUCTURAL GROUT PEDESTAL
 REFER TO PADDY PEDESTAL LAYOUT
 DETAIL FOR REQUIRED SPACING.

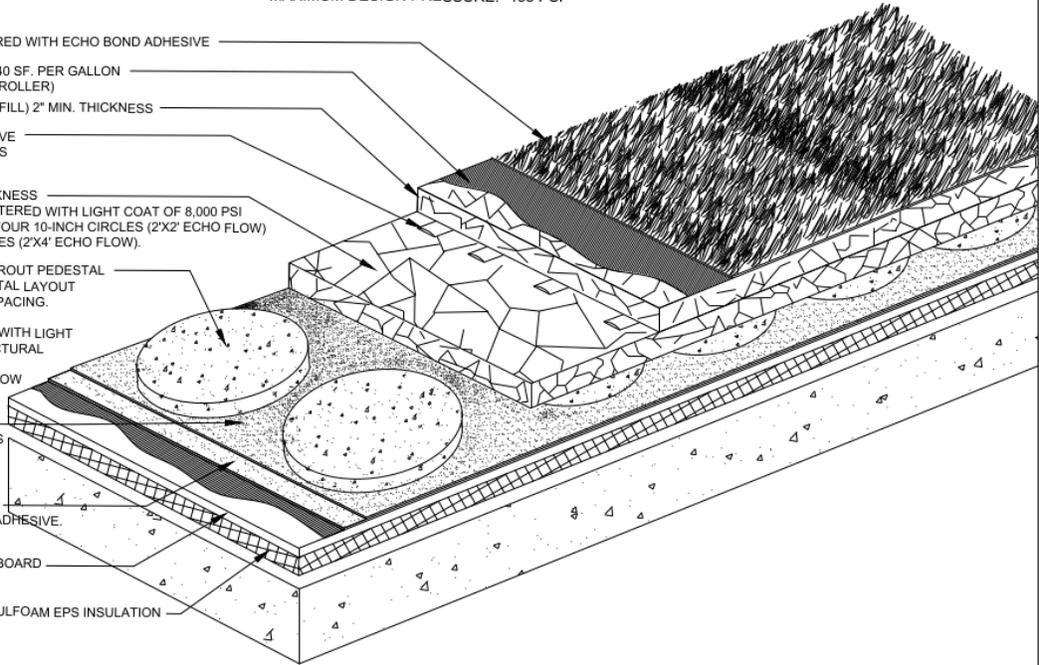
COAT TOP OF PEDESTAL WITH LIGHT
 COAT OF 8,000 PSI STRUCTURAL
 GROUT AND INSTALL
 BACKBUTTERED ECHO FLOW
 ONTO PEDESTAL.

SOPREMA COLPHENE
 180 FR GR GRANULAR SBS
 CAP SHEET ADHERED IN
 COLPLY EF ADHESIVE.

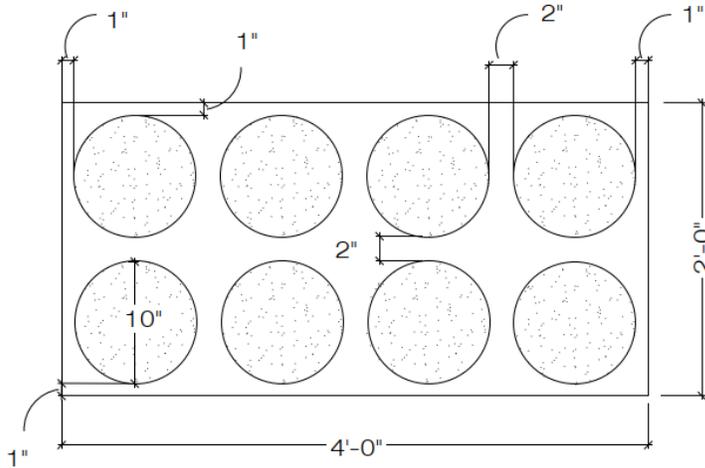
SOPREMA COLPHENE 180
 ADHERED IN COLPLY EF ADHESIVE.

1/2" SECURROCK CEMENT BOARD

1/8" OR 1/4" TAPERED INSULFOAM EPS INSULATION
 1/2" MINIMUM THICKNESS.



CONCRETE PADDY PEDESTAL LAYOUT
 2'X4' ECHO FLOW



Membrane Type: SBS

Deck Type 3I: Concrete Decks, Insulated or non-insulated

Deck Description: Terrace/Plaza Deck, Garden Roof

System Types A(2): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and SBS Membranes with **Surfacing as specified herein.**

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer or Colphene 180 FR GR Sanded adhered with Colply EF Adhesive.

Moisture Detection: (Optional) ILD Smartex DM monitoring strip system adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier or ILD stainless steel vector mapping grid sandwiched between the insulation and cement roof board (for insulated assemblies only).

One or more layers of the following insulations:

(Optional) Base Layer Insulation: Insulfoam EPS type IX+, 60 PSI insulation board min ½” thick. **Optional 5” trough (see attached drawing)**

Note: Base Layer of Insulation shall be splatter adhered to the deck with APOC Polyset Low slope commercial roof adhesive HFO (CR-20).Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Mid Layers Insulation: Insulfoam EPS type IX+, 60 PSI insulation board min ½” thick **Optional 5” trough (see attached drawing)**

Top Layer Insulation: 1/2” Securerock cement roof board. **Optional 5” trough (see attached drawing)**

Note: Additional layers of Insulation shall be splatter adhered onto the previous insulation layer with APOC Polyset Low slope commercial roof adhesive HFO (CR-20).Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of concrete deck, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed concrete deck. . Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply, or Colply EF applied to concrete slab followed by Colphene 180 Sanded and Colphene 180 FR GR Sanded adhered to base ply with Colply EF. For insulated assemblies only, the Colply EF is applied to the securerock roof cement board. Soprema Colphene 180 Sanded SBS modified bitumen base ply is adhered to the Colply EF. Colphene 180 FR GR Sanded SBS modified bitumen cap sheet is adhered to the base ply with Colply EF.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.



ECHO Flow:

Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 HFO adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Or, for the grout pedestal system use the following: 8000 PSI non-shrink high-strength construction grout is poured into 10" round by (1/4"- 4") tall forms on top of the Soprema Colphene 180 FR GR (Flam or sanded) cap sheet. Each pedestal is spaced 2" from each other and 1" from the perimeter (see attached drawings). Forms are left in place to semi dry the 8000 PSI non-shrink high-strength construction grout and removed to expose grout pedestals. A 1/4" square notched trowel is passed on top of each semi dry pedestal for improved bond. A 1/4" fresh layer of slurried grout is placed upon the pedestals. 8000 PSI structural slurried grout is back buttered to the bottom of a 24 inch x 24 inch x 2" minimum Echo Flow inside 4 circle patterns measuring 10" round and spaced 2" from each other to match grout pedestal spacing. Echo Flow is then pressed on top of the pedestal legs. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 HFO adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c

Surfacing:

The following options shall be applied as follows.

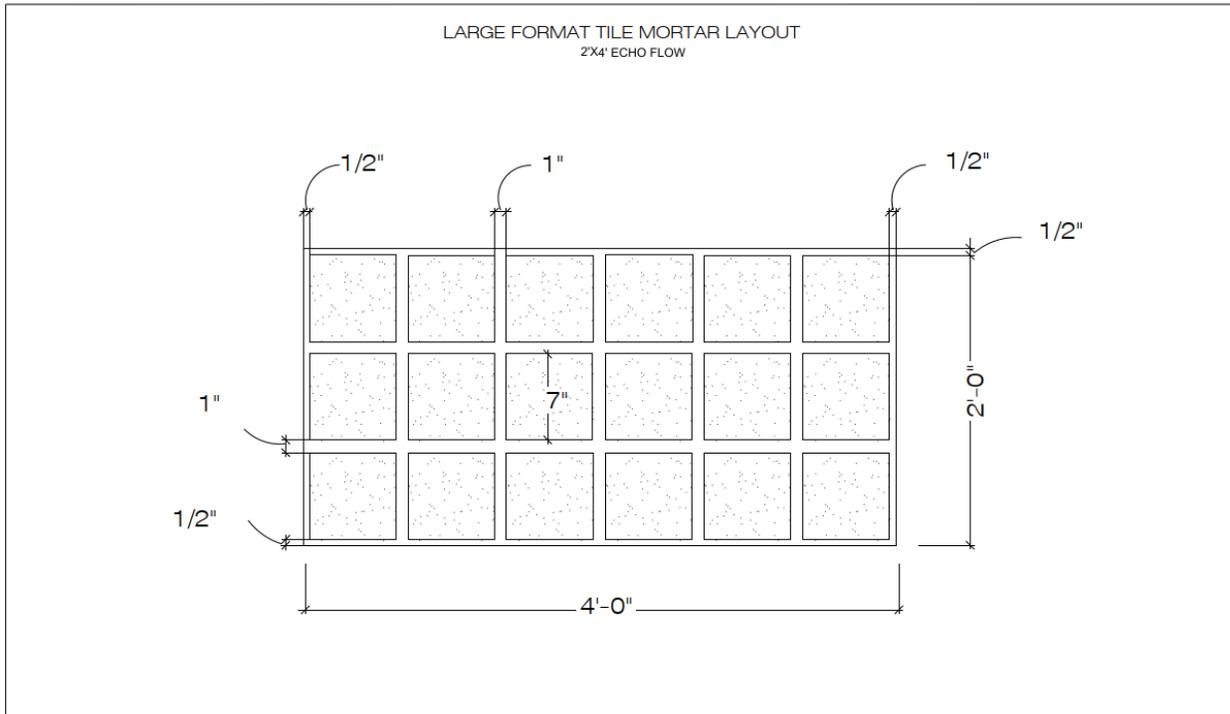
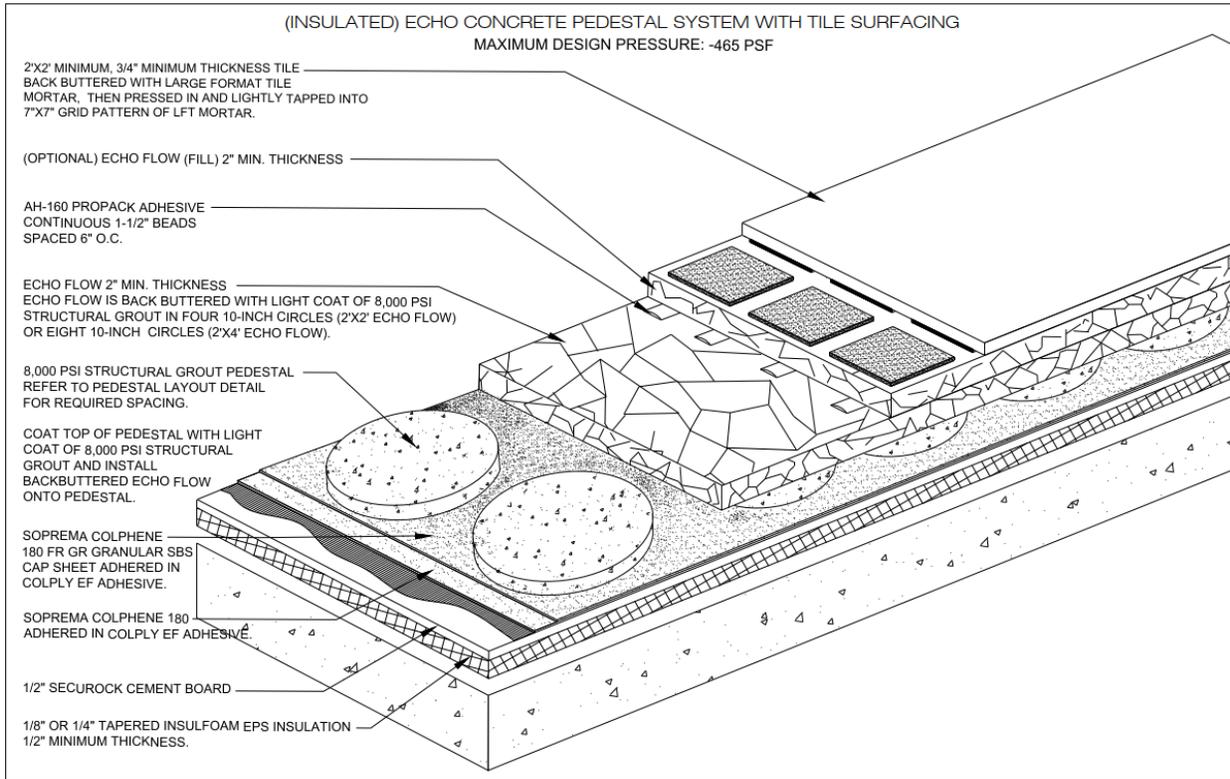
Paver Tile

A 3/4" x 24" x 24" minimum tile is back buttered with a 1/4" square notched trowel and then pressed and lightly tapped into a 7 inch x 7 inch square grid pattern of large format tile mortar applied to Echo Flow (using Miami Echo plastic forms).

Maximum Design Pressure:

-465 psf. (see general limitation #9)





NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 14 of 72

(SLOPED SLAB) ECHO CONCRETE PEDESTAL SYSTEM WITH TILE SURFACING
 MAXIMUM DESIGN PRESSURE: -465 PSF

2'X2' MINIMUM, 3/4" MINIMUM THICKNESS TILE
 BACK BUTTERED WITH LARGE FORMAT TILE
 MORTAR. THEN PRESSED IN AND LIGHTLY TAPPED INTO
 7'X7" GRID PATTERN OF LFT MORTAR.

(OPTIONAL) ECHO FLOW (FILL) 2" MIN. THICKNESS

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C.

ECHO FLOW 2" MIN. THICKNESS
 ECHO FLOW IS BACK BUTTERED WITH LIGHT COAT OF 8,000 PSI
 STRUCTURAL GROUT IN FOUR 10-INCH CIRCLES (2'X2' ECHO FLOW)
 OR EIGHT 10-INCH CIRCLES (2'X4' ECHO FLOW).

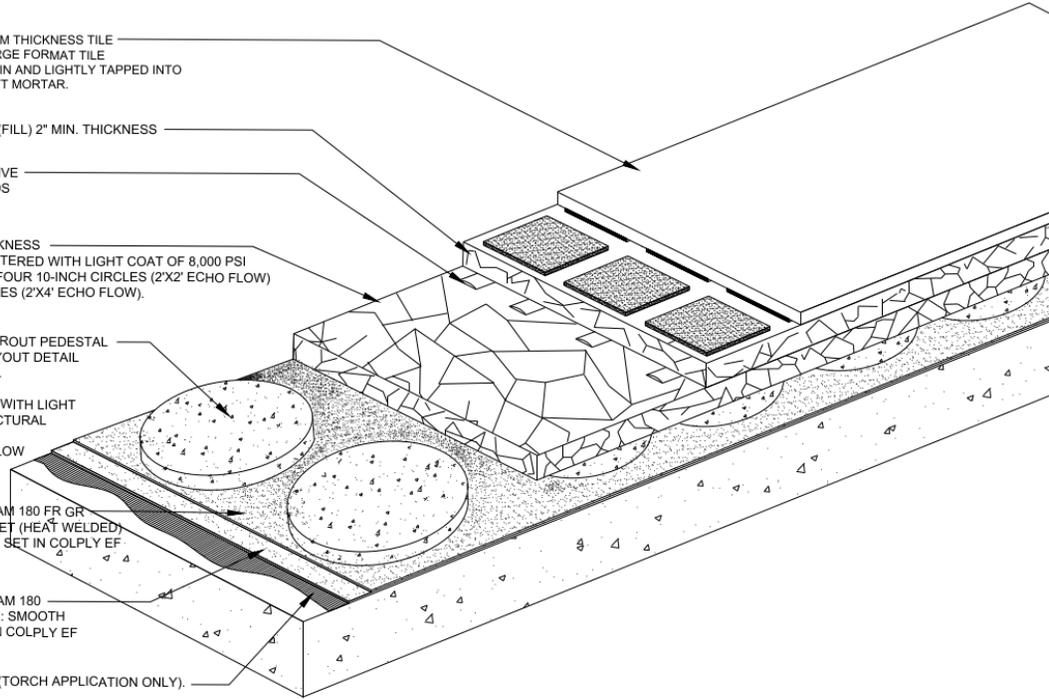
8,000 PSI STRUCTURAL GROUT PEDESTAL
 REFER TO PEDESTAL LAYOUT DETAIL
 FOR REQUIRED SPACING.

COAT TOP OF PEDESTAL WITH LIGHT
 COAT OF 8,000 PSI STRUCTURAL
 GROUT AND INSTALL
 BACKBUTTERED ECHO FLOW
 ONTO PEDESTAL.

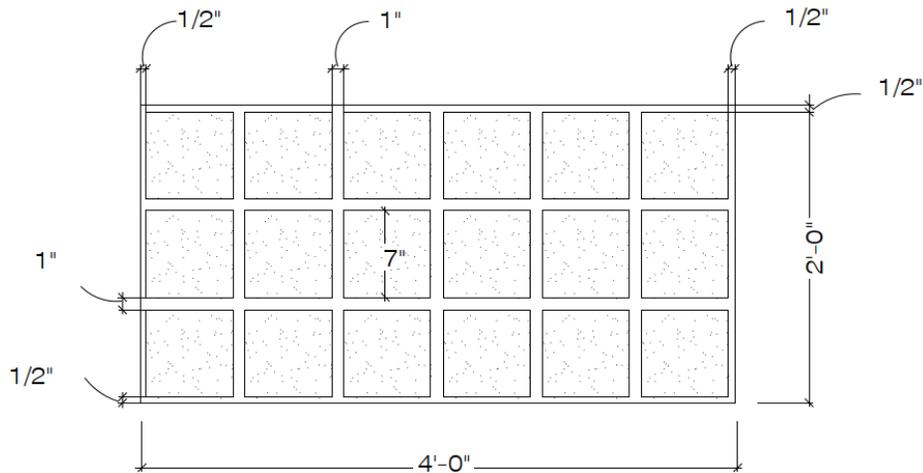
SOPREMA COLPHENE FLAM 180 FR GR
 GRANULAR SBS CAP SHEET (HEAT WELDED)
 OR COLPHENE 180 FR GR SET IN COLPLY EF
 ADHESIVE.

SOPREMA COLPHENE FLAM 180
 (HEAT WELD) SBS GRADE: SMOOTH
 OR COLPHENE 180 SET IN COLPLY EF
 ADHESIVE.

ELASTOCOL 500 PRIMER (TORCH APPLICATION ONLY).



LARGE FORMAT TILE MORTAR LAYOUT
 2'X4' ECHO FLOW



Membrane Type: SBS

Deck Type 3I: Concrete Decks, Insulated or non-insulated

Deck Description: Terrace/Plaza Deck, Garden Roof

System Types A(3): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and SBS Membranes with **Surfacing as specified herein.**

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer or Colphene 180 FR GR Sanded adhered with Colply EF Adhesive.

Moisture Detection: (Optional) ILD Smartex DM monitoring strip system adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier or ILD stainless steel vector mapping grid sandwiched between the insulation and cement roof board (for insulated assemblies only).

One or more layers of the following insulations:

(Optional) Base Layer Insulation: Insulfoam EPS type IX+, 60 PSI insulation board min ½” thick. **Optional 5” trough (see attached drawing)**

Note: Base Layer of Insulation shall be splatter adhered to the deck with APOC Polyset Low slope commercial roof adhesive HFO (CR-20). Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Mid Layers Insulation: Insulfoam EPS type IX+, 60 PSI insulation board min ½” thick **Optional 5” trough (see attached drawing)**

Top Layer Insulation: 1/2” Securerock cement roof board. **Optional 5” trough (see attached drawing)**

Note: Additional layers of Insulation shall be splatter adhered onto the previous insulation layer with APOC Polyset Low slope commercial roof adhesive HFO (CR-20). Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of concrete deck, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed concrete deck. . Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply, or Colply EF applied to concrete slab followed by Colphene 180 Sanded and Colphene 180 FR GR Sanded adhered to base ply with Colply EF. For insulated assemblies only, the Colply EF is applied to the securerock roof cement board. Soprema Colphene 180 Sanded SBS modified bitumen base ply is adhered to the Colply EF. Colphene 180 FR GR Sanded SBS modified bitumen cap sheet is adhered to the base ply with Colply EF.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.



ECHO Flow:

Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 HFO adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Or, for the grout pedestal system use the following: 8000 PSI non-shrink high-strength construction grout is poured into 10" round by (1/4"- 4") tall forms on top of the Soprema Colphene 180 FR GR (Flam or sanded) cap sheet. Each pedestal is spaced 2" from each other and 1" from the perimeter (see attached drawings). Forms are left in place to semi dry the 8000 PSI non-shrink high-strength construction grout and removed to expose grout pedestals. A 1/4" square notched trowel is passed on top of each semi dry pedestal for improved bond. A 1/4" fresh layer of slurried grout is placed upon the pedestals. 8000 PSI structural slurried grout is back buttered to the bottom of a 24 inch x 24 inch x 2" minimum Echo Flow inside 4 circle patterns measuring 10" round and spaced 2" from each other to match grout pedestal spacing. Echo Flow is then pressed on top of the pedestal legs. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 HFO adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c

Surfacing:

The following options shall be applied as follows.

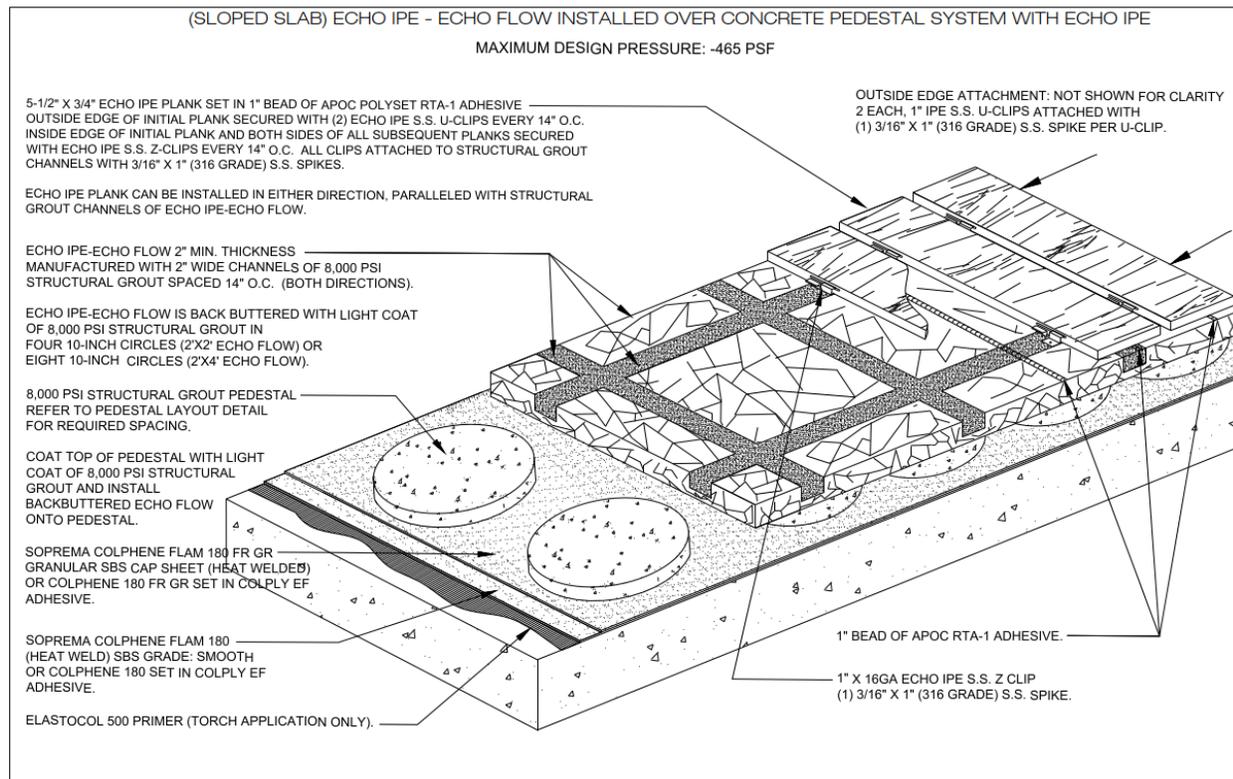
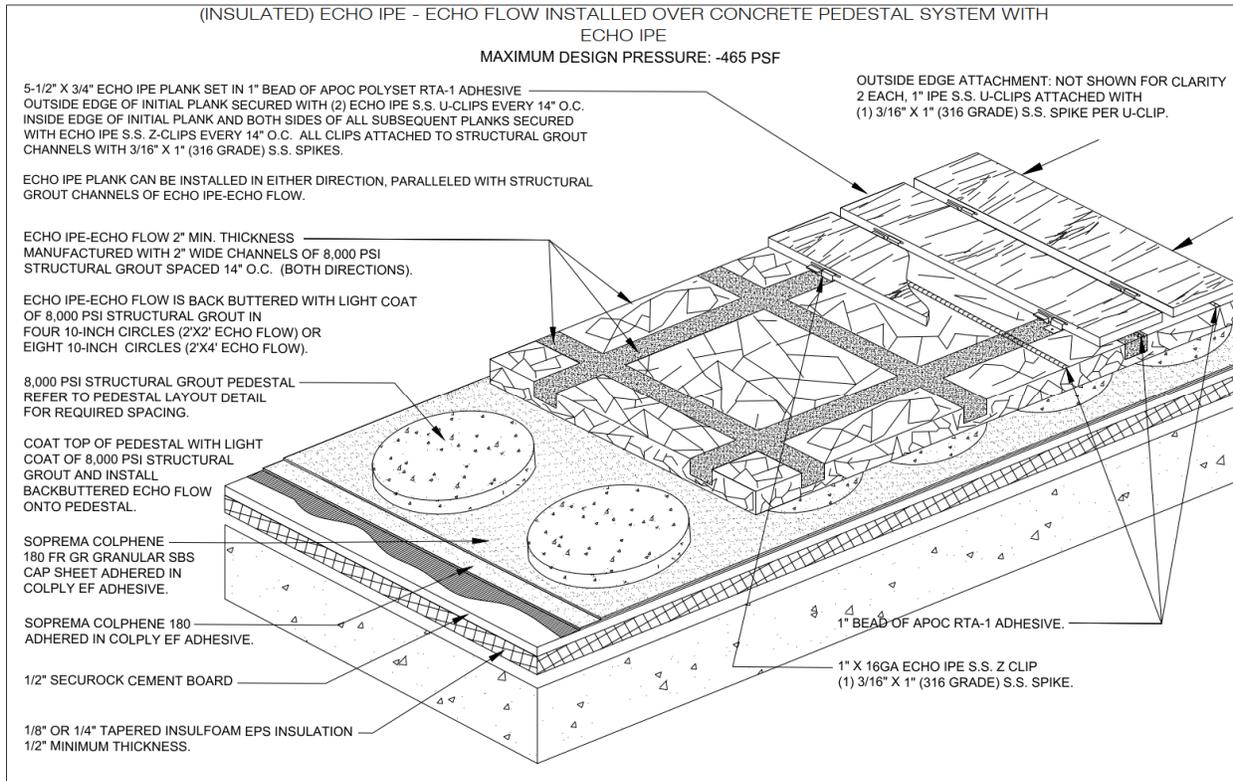
IPE Iron Wood

Echo IPE S.S U-Clips are first attached into Echo Flow (with grout grids) 14" O.C. using 3/16" x 1" 316 S.S Spikes. The same installation procedure is to be followed when installing ECHO IPE S.S Z clips and subsequent ECHO IPE ironwood planks. The 5-1/2" x 3/4" Echo IPE ironwood plank is then slid into the ECHO IPE S.S U-clips and pressed onto the APOC Polyset RTA-1 adhesive. A 1" bead of APOC Polyset RTA-1 adhesive is applied on top of the Echo Flow.

Maximum Design Pressure:

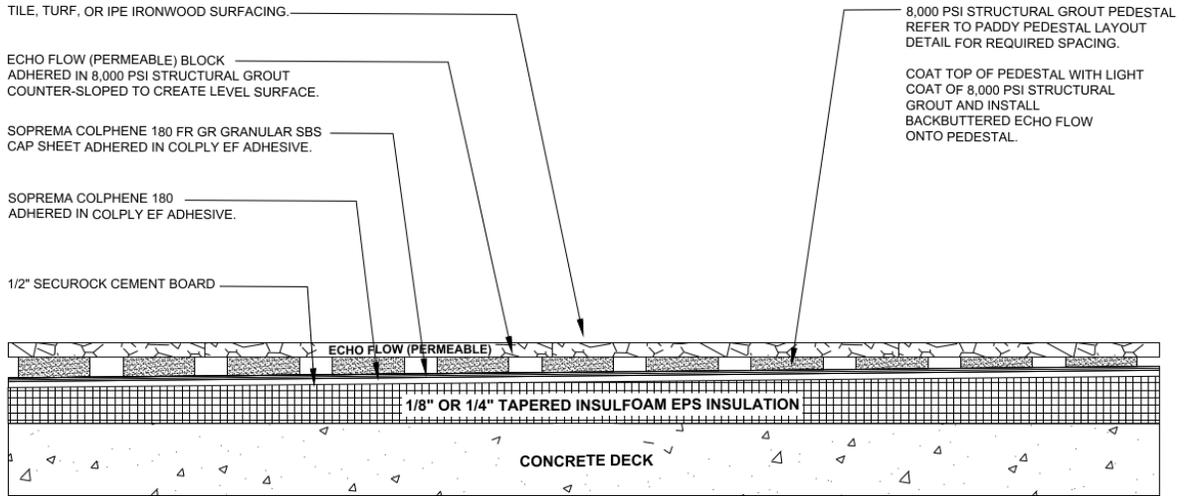
-465 psf. (see general limitation #9)





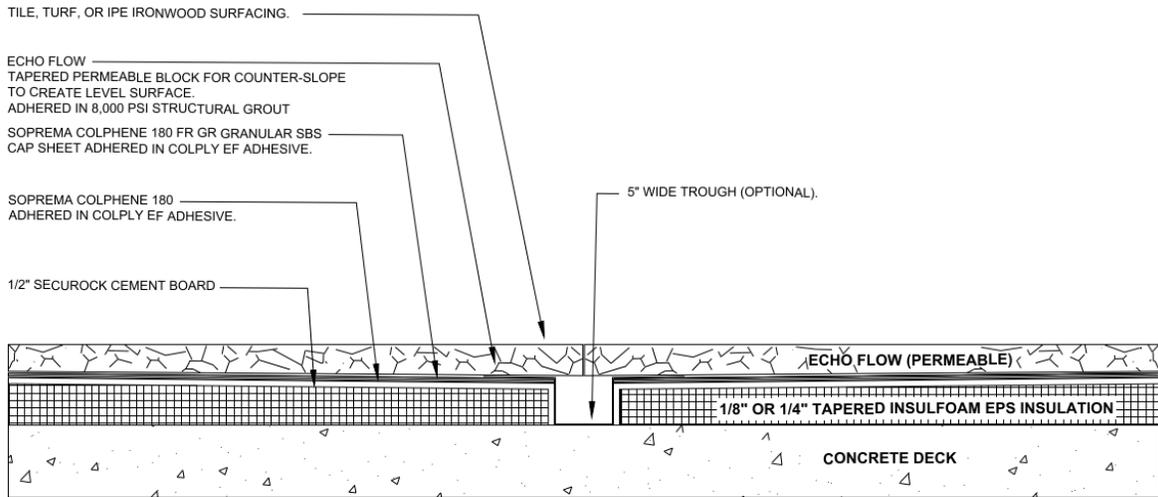
(INSULATED) ECHO CONCRETE PEDESTAL SYSTEM

MAXIMUM DESIGN PRESSURE: -465 PSF



(INSULATED) ECHO TERRACE ASSEMBLY (NON PEDESTAL SYSTEM)

MAXIMUM DESIGN PRESSURE: -465 PSF



Membrane Type: SBS
Deck Type 3I: Concrete Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(4): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and SBS Membranes with a **Paver Tile surfacing.**

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer
Moisture Detection: (Optional) Detec Permascan-C moisture detection system self-adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier

One or more layers of the following insulations:

(Optional)
Base Layer Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional)
Mid Layers Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick or ECHO Flow Minimum 2” Thick

Top Layer Insulation: ECHO Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a ½” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.



Surfacing:

The following option shall be applied as follows.

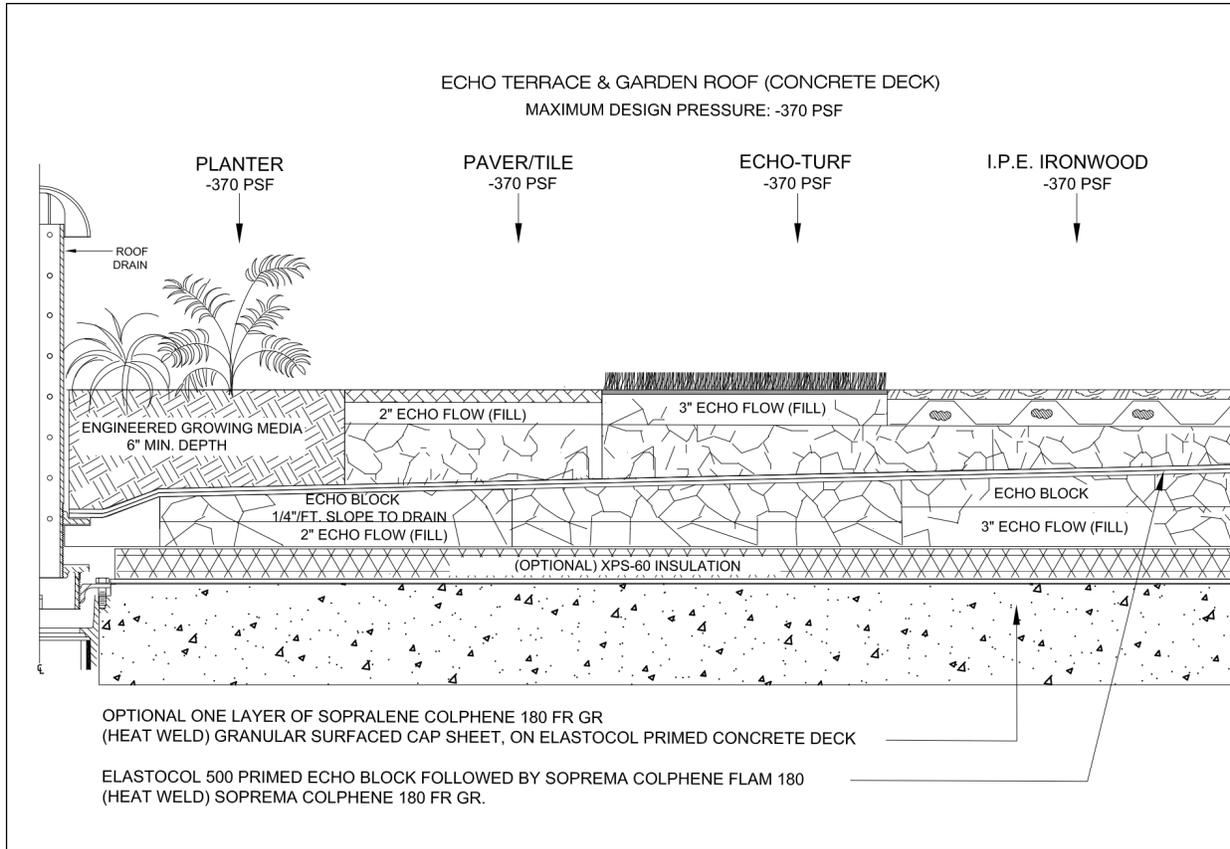
Artificial Turf

ECHO Bond is applied at a combined rate of 40 sqft per gallon with ¼” nap adhesive roller; applied evenly onto both ECHO Flow and ECHO Turf. ECHO Turf is then adhered to ECHO Flow

Maximum Design Pressure:

-370 psf. (see general limitation #9)





Membrane Type: SBS

Deck Type 3I: Concrete Decks, Insulated

Deck Description: Terrace/Plaza Deck, Garden Roof

System Types A(5): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and SBS Membranes with a **Paver Tile surfacing.**

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer

Moisture Detection: (Optional) Detec Permascan-C moisture detection system self-adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier

One or more layers of the following insulations:

(Optional) Base Layer Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Mid Layers Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick or ECHO Flow Minimum 2” Thick

Top Layer Insulation: ECHO Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

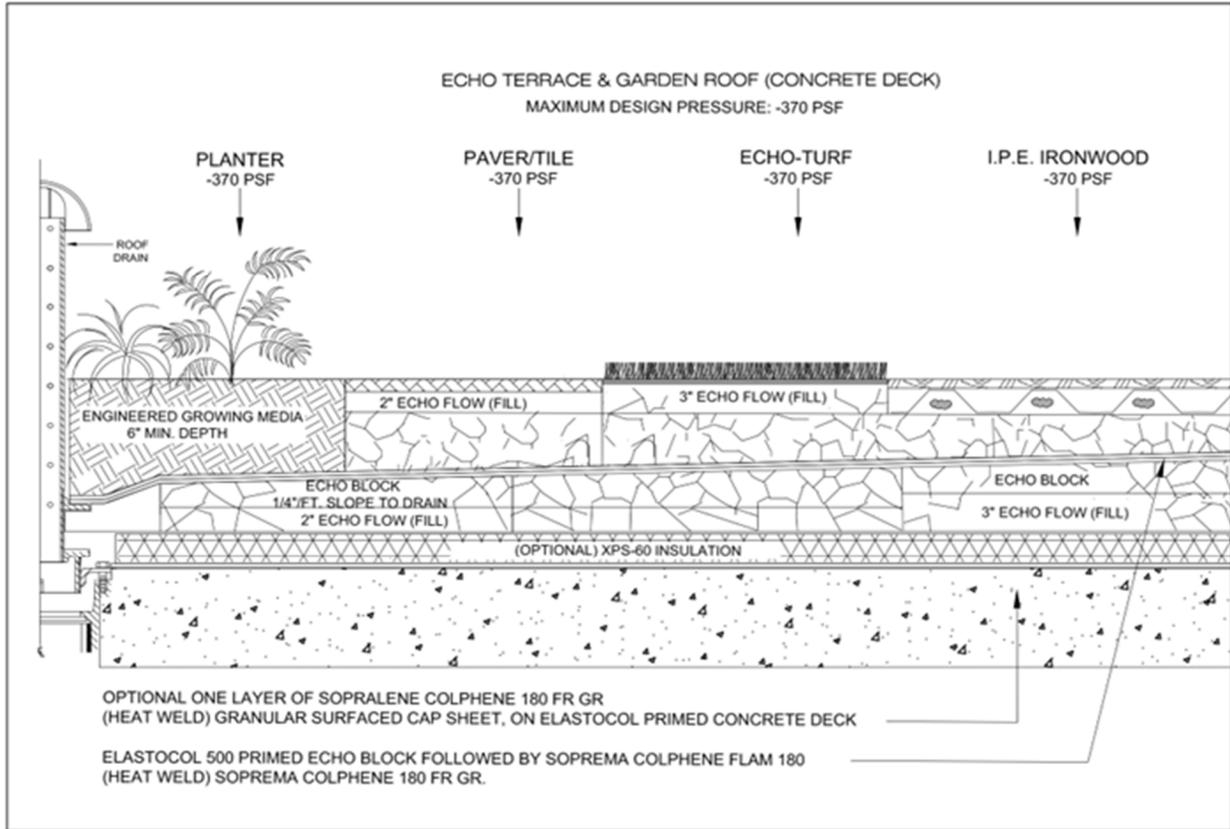
Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a ½” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.





NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 26 of 72

Membrane Type: SBS
Deck Type 3I: Concrete Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(6): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and SBS membranes with **ECHO IPE Ironwood surfacing.**

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer
Moisture Detection: (Optional) Detec Permascan-C moisture detection system self-adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier

One or more layers of the following insulations:

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick
Base Layer Insulation: or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick
Mid Layers Insulation: or ECHO Flow Minimum 2” Thick

Top Layer Insulation: ECHO Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.



Surfacing:

The following option shall be applied as follows.

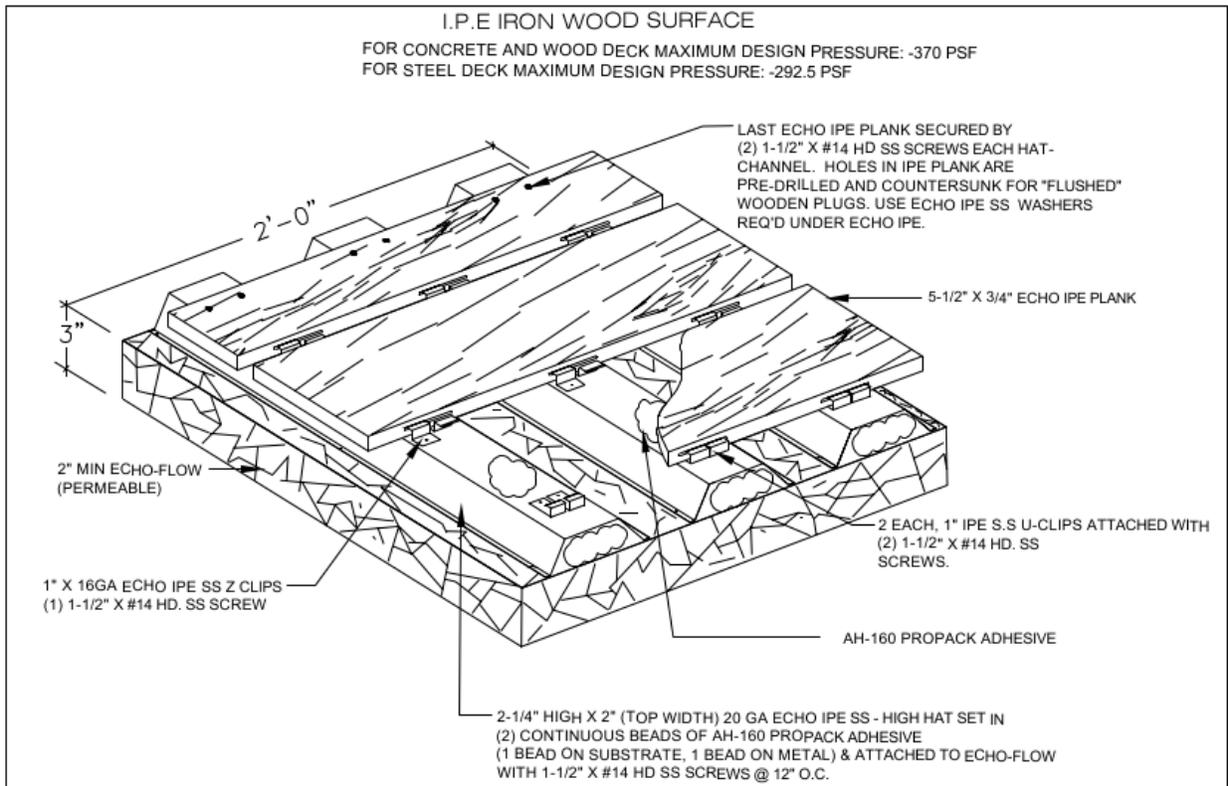
IPE Iron Wood

ECHO IPE S.S Hat Channel (installed 8" O.C) is set onto ECHO Flow with ICP AH-160 adhesive (1 bead on substrate, 1 bead on metal). The ECHO IPE S.S Hat Channel is then fastened into ECHO Flow using 1-1/2", #14 HD S.S screws at 12" O.C. ECHO IPE S.S-U clips are first fastened into ECHO IPE S.S Hat-Channel with 1-1/2", #14 HD S.S screws. ECHO IPE Ironwood is slid into the ECHO IPE S.S-U clips then placed on top of a bead of ICP AH-160 adhesive. The same installation procedure is to be followed when installing ECHO IPE S.S-Z clips and subsequent ECHO IPE ironwood planks. The final ECHO IPE ironwood plank is placed on top of a bead of ICP AH-160 adhesive then secured into the Hat-channel by two each 1-1/2", #14 HD S.S screws (per Hat-channel) through pre-drilled and countersunk holes. Holes in ECHO IPE ironwood planks are filled with wooden plugs.

Maximum Design

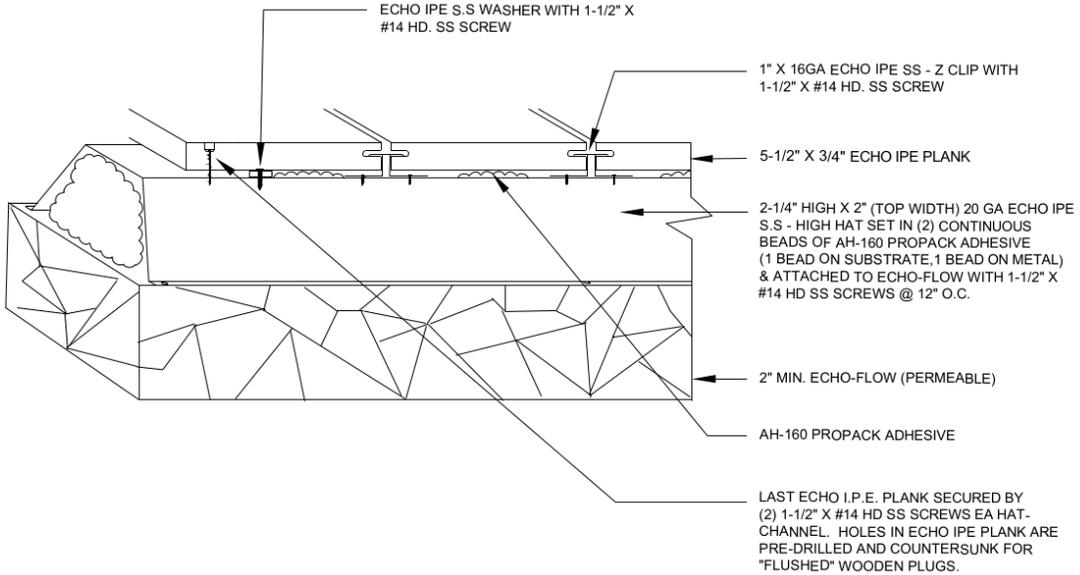
Pressure:

-370 psf. (See General limitation #9)

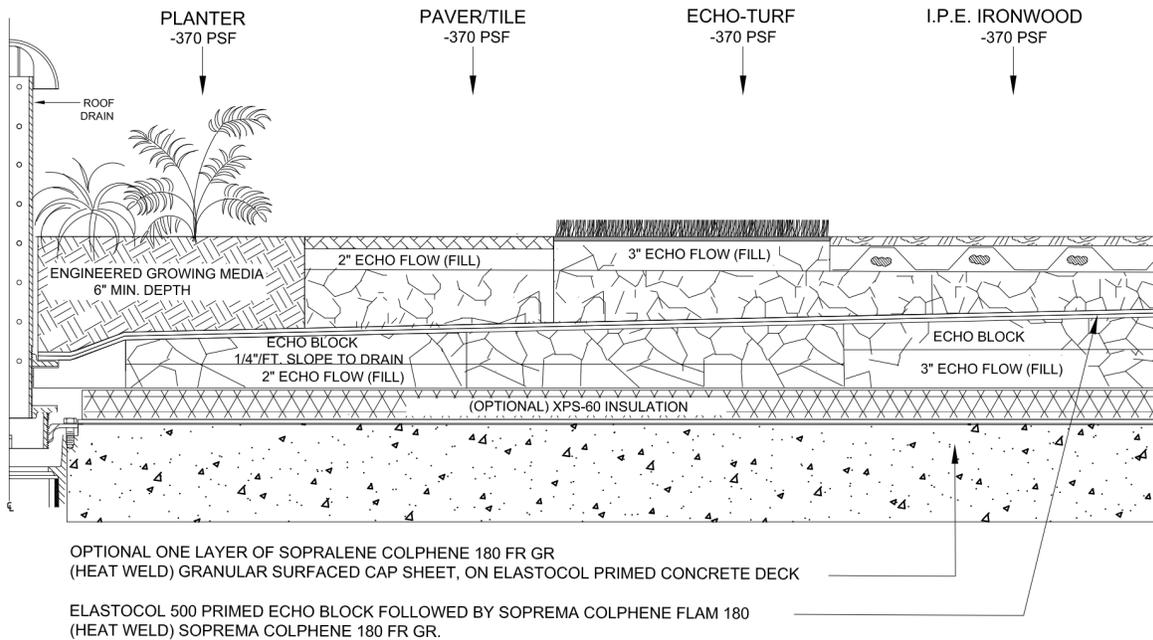


I.P.E IRON WOOD SURFACE

FOR CONCRETE AND WOOD DECK MAXIMUM DESIGN PRESSURE: -370 PSF
 FOR STEEL DECK MAXIMUM DESIGN PRESSURE: -292.5 PSF



ECHO TERRACE & GARDEN ROOF (CONCRETE DECK)
 MAXIMUM DESIGN PRESSURE: -370 PSF



Membrane Type: SBS
Deck Type 3I: Concrete Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(7): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation and Alsan RS with **Growing Media surfacing.**

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer
Moisture Detection: (Optional) Detec Permascan-C moisture detection system self-adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier

One or more layers of the following insulations:

(Optional)
Base Layer Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional)
Mid Layers Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick or ECHO Flow Minimum 2” Thick

Top Layer Insulation: ECHO Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Sopralene 180 SP 3.0 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Alsan RS 222 primer is applied to the Soprema Sopralene 180 SP 3.0 base ply followed by Alsan RS 230 Field. Alsan RS Fleece is set into wet Alsan RS Field followed by final layer on Alsan RS field installation on the top of the Fleece.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Rooftop planters are to be located around roof drains with the roof drain centered within the planter. With the Alsan waterproofing membrane in place at desired planter location, the ECHO Flow permeable top layers are not installed on the Alsan at the planter area. Outside the planter area (on the roof terrace) follow the instruction (within this NOA) for the terrace surfacing option of choice (Turf, Tile, or IPE Ironwood).



Planter Walls:

ECHO Flow Wall blocks that are 6” thick x 12” wide x 18” long are installed on the finished level of ECHO Flow at the terrace/planter boarder with two beads of AH-160 adhesive at a continuous bead thickness of 1.5 inches spaced 6” apart. Maximum height of planter above finished ECHO Flow terrace is 36”. Walls must have a 5/8” minimum fiber reinforced stucco installed in a two-coat application. Not to be used for exterior walls.

Surfacing:

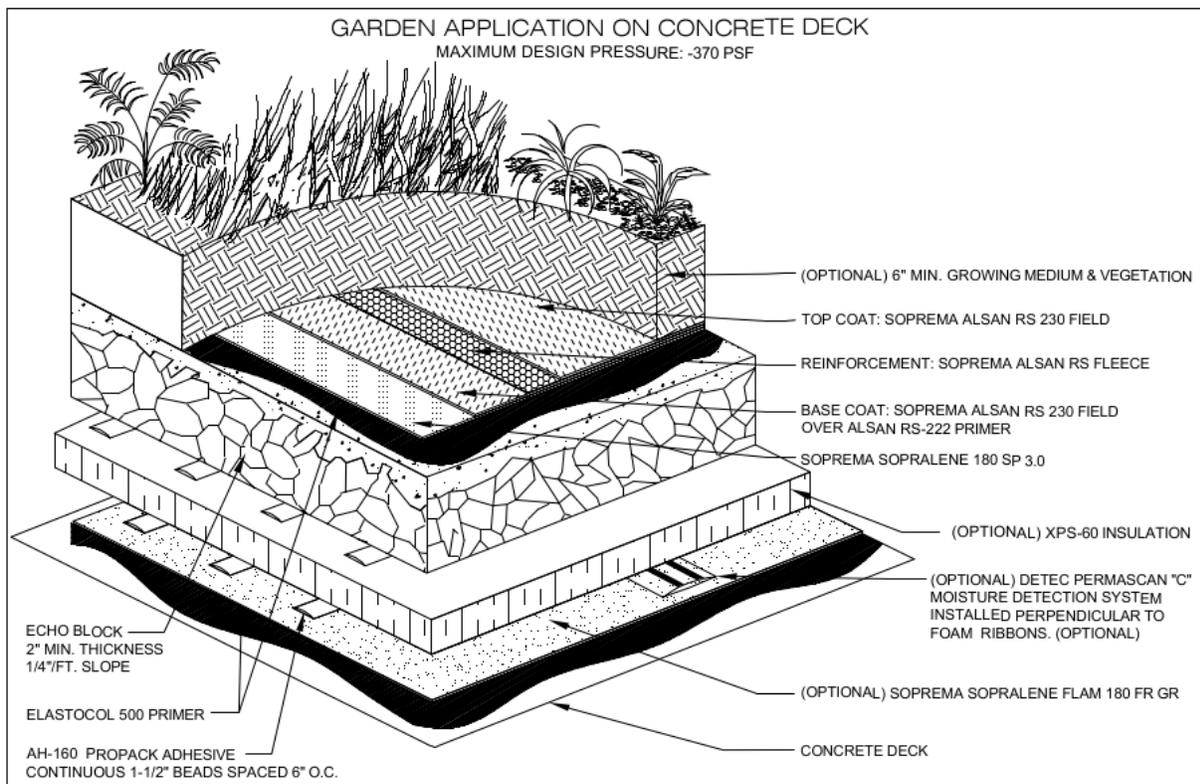
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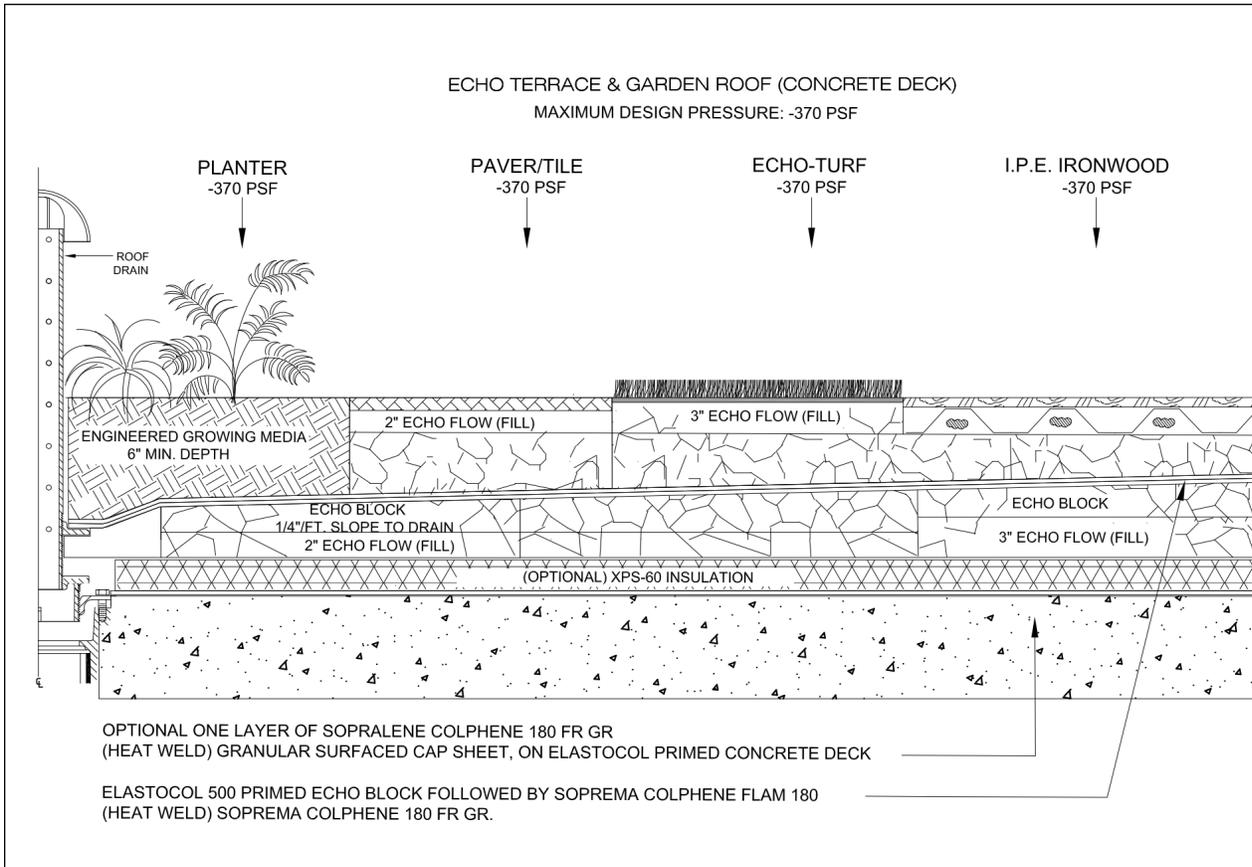
Growing Media

On completion of the planter walls, the ECHO SS Root barrier is installed with #14 S.S 1-1/2” screws 9” O.C followed by the required stucco. (Optional) Alsan Quartz aggregate can be installed on addition wet layer of Alsan 230 Field, followed by a 1/4” layer of grout as a protection layer. Drainage Mats, Filter fabric, media trays and growing media as designed by Landscape architect can be installed from 6” to 36” depth. Any soil less than 24” must have the ECHO Soil retention screen installed, which is to remain at same elevation throughout the planter. The ECHO Tree Restraint system for securing trees to rooftops in high winds is recommended and must be certified by an engineer (project specific).

Maximum Design Pressure:

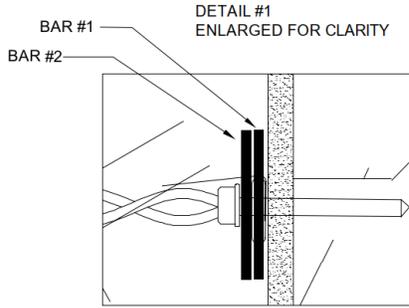
-370 psf. (See General limitation #9)



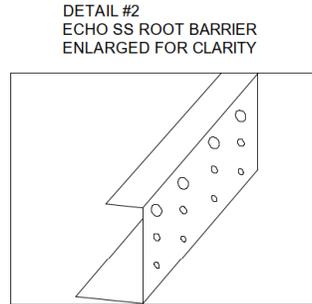


NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 32 of 72

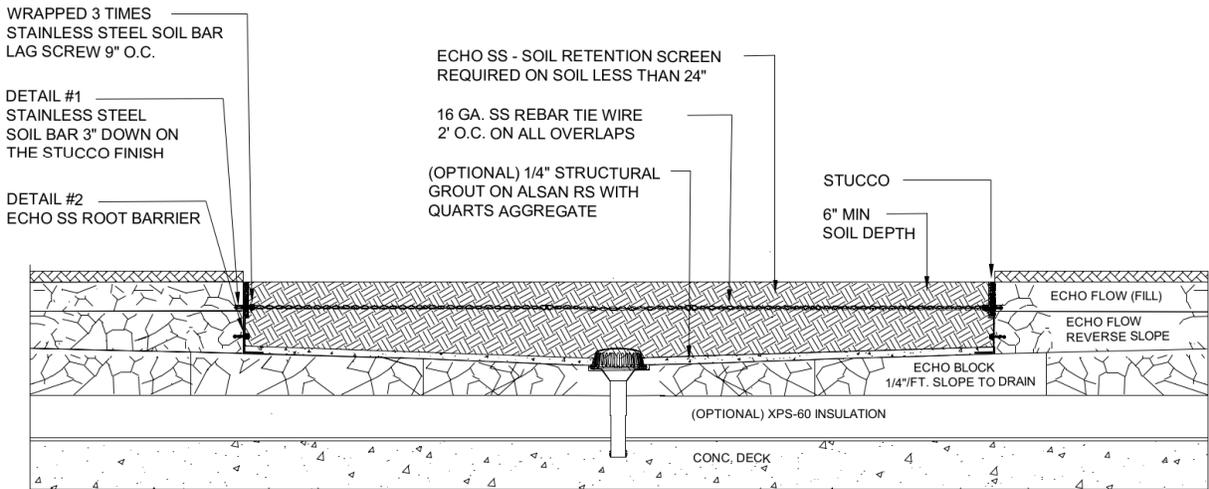
ECHO - SS - SOIL RETENTION SCREEN ON CONCRETE DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF



1ST BAR WRAPPED 3 TIMES WITH ECHO SOIL RETENTION SCREEN 2ND BAR ATTACHED THROUGH 1ST BAR INTO ECHO FLOW WITH 3" LONG X 5/16" SS - HEX HEAD LAG SCREW @ 9" O.C.



WATER RETENTION AND DETENTION. FOR CUSTOMIZED ADJUSTABLE WATER FLOW AND ROOT BARRIER



WRAPPED 3 TIMES STAINLESS STEEL SOIL BAR LAG SCREW 9" O.C.

DETAIL #1 STAINLESS STEEL SOIL BAR 3" DOWN ON THE STUCCO FINISH

DETAIL #2 ECHO SS ROOT BARRIER

ECHO SS - SOIL RETENTION SCREEN REQUIRED ON SOIL LESS THAN 24"

16 GA. SS REBAR TIE WIRE 2' O.C. ON ALL OVERLAPS

(OPTIONAL) 1/4" STRUCTURAL GROUT ON ALSAN RS WITH QUARTS AGGREGATE

STUCCO 6" MIN SOIL DEPTH

ECHO FLOW (FILL)
ECHO FLOW REVERSE SLOPE

ECHO BLOCK 1/4" FT. SLOPE TO DRAIN

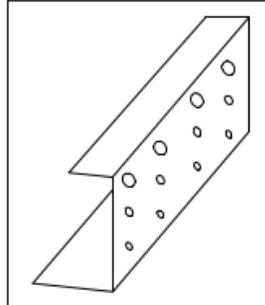
(OPTIONAL) XPS-60 INSULATION

CONC. DECK



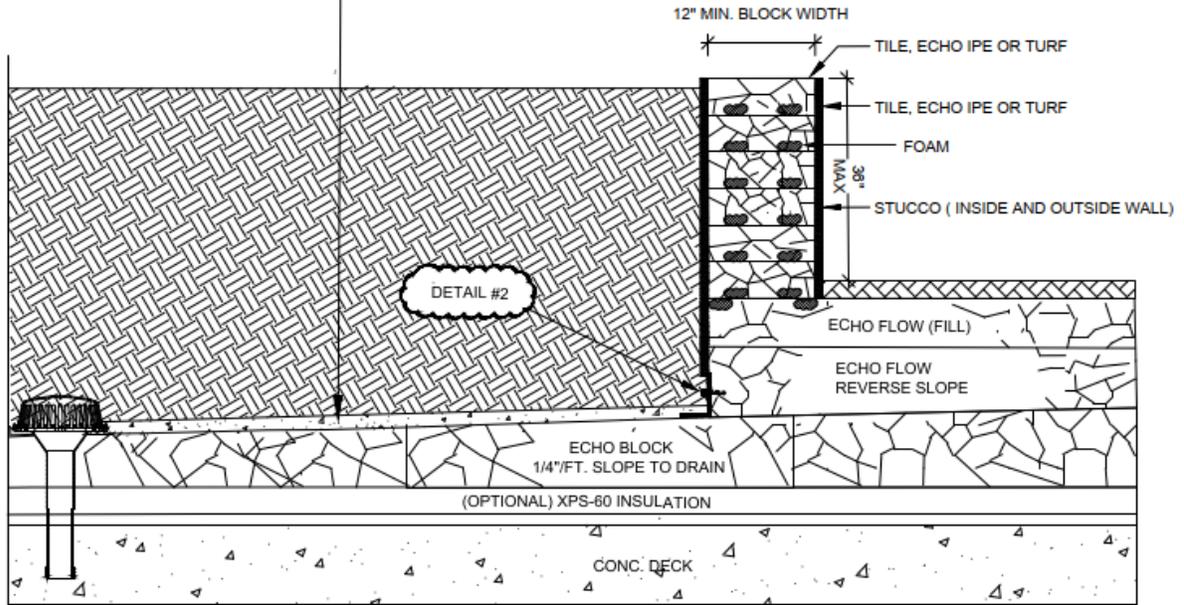
ECHO FLOW PLANTER WALL ON CONCRETE DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF

DETAIL #2
 ENLARGED FOR CLARITY



WATER RETENTION AND DETENTION.
 FOR CUSTOMIZED ADJUSTABLE WATER
 FLOW AND ROOT BARRIER

(OPTIONAL) 1/4" STRUCTURAL GROUT
 ON ALSAN RS WITH QUARTS
 AGGREGATE



Membrane Type: SBS
Deck Type 3I: Sloped Concrete Decks, Non-Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(8): Elastocol 500 on concrete slab followed by Soprema Colphene Flam 180 and Soprema Colphene Flam FR GR on concrete slab followed by Echo Flow and all traffic surfacing options. (**Structurally Sloped Concrete Deck**).

All General and system Limitations Shall Apply

Membranes: Elastocol 500 primer is applied to top of the sloped concrete deck, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed deck. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a ½” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Surfacing: **The following option shall be applied as follows.**

Pre-sloped slab/Echo Flow Only: Pre-Sloped slabs require no ECHO Block installation. Follow the installation (within this NOA) for the terrace surfacing option of choice including growing media.

Maximum Design Pressure: -370 psf. (See General limitation #9)



SLOPE IN STRUCTURE ECHO TERRACE ON CONCRETE
MAXIMUM DESIGN PRESSURE: -370 PSF

ECHO, TURF, TILE, ECHO IPE OVERBURDEN SURFACING

ECHO FLOW 2" MIN. THICKNESS
1/4" / FT. REVERSE SLOPED TO CREATE FLAT SURFACE.
(4-WAY SLOPE RQD.) OR FOLLOW EXISTING SLOPE
WITH FLAT ECHO FLOW 2" MIN THICKNESS

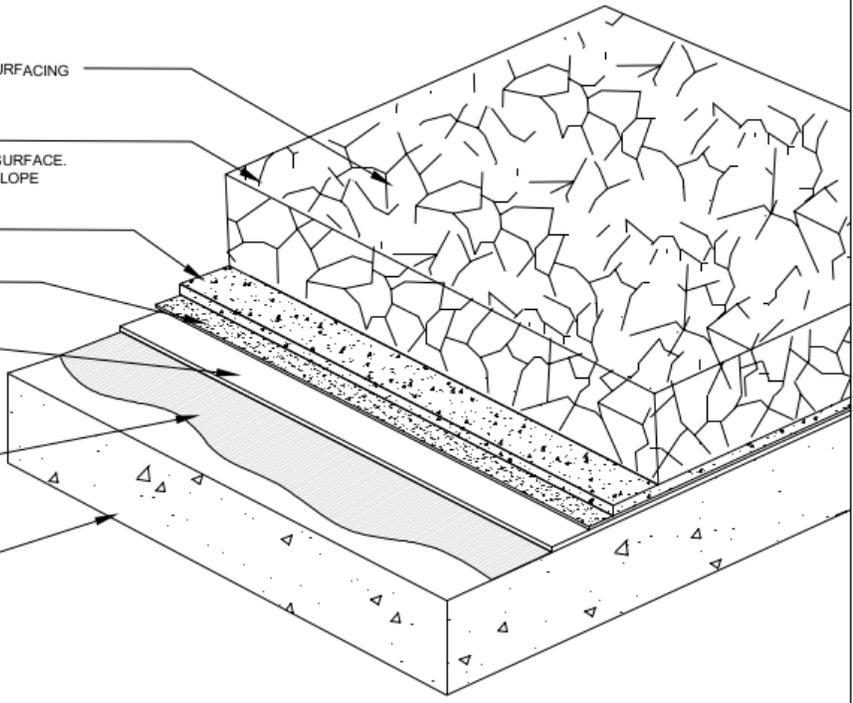
1/2" H.S. NON-SHRINK GROUT

SOPREMA COLPHENE FLAM 180 FR GR
GRANULAR SBS CAP SHEET (HEAT WELDED)

SOPREMA COLPHENE FLAM 180
(HEAT WELD) SBS GRADE: SMOOTH

SOPREMA ELASTOCOL
500 PRIMER

CONCRETE DECK



Membrane Type: SBS
Deck Type 3I: Concrete Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(9): (Optional) Insulation adhered to (optional) vapor barrier or concrete deck followed by additional layers of Insulation, Echo Block, Soprema Sopralene 180 SP 3.0 SBS Modified bitumen and Soprema Alsan RS without overburden. (For **Light Traffic surfacing**).

All General and system Limitations Shall Apply

Vapor Barrier: (Optional) Soprema Colphene Flam 180 SBS modified bitumen granulated cap Type 1 Grade FR GR heat welded to concrete slab primed using Elastocol 500 elastomeric bitumen primer
Moisture Detection: (Optional) Detec Permascan C moisture detection system self adhered over 3 in wide strip of Bostik 915 polyurethane sealant adhesive applied directly over concrete deck or vapor barrier

One or more layers of the following insulations:

(Optional) Base Layer Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Mid Layers Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick or ECHO Flow Minimum 2” Thick

Top Layer Insulation: Echo Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

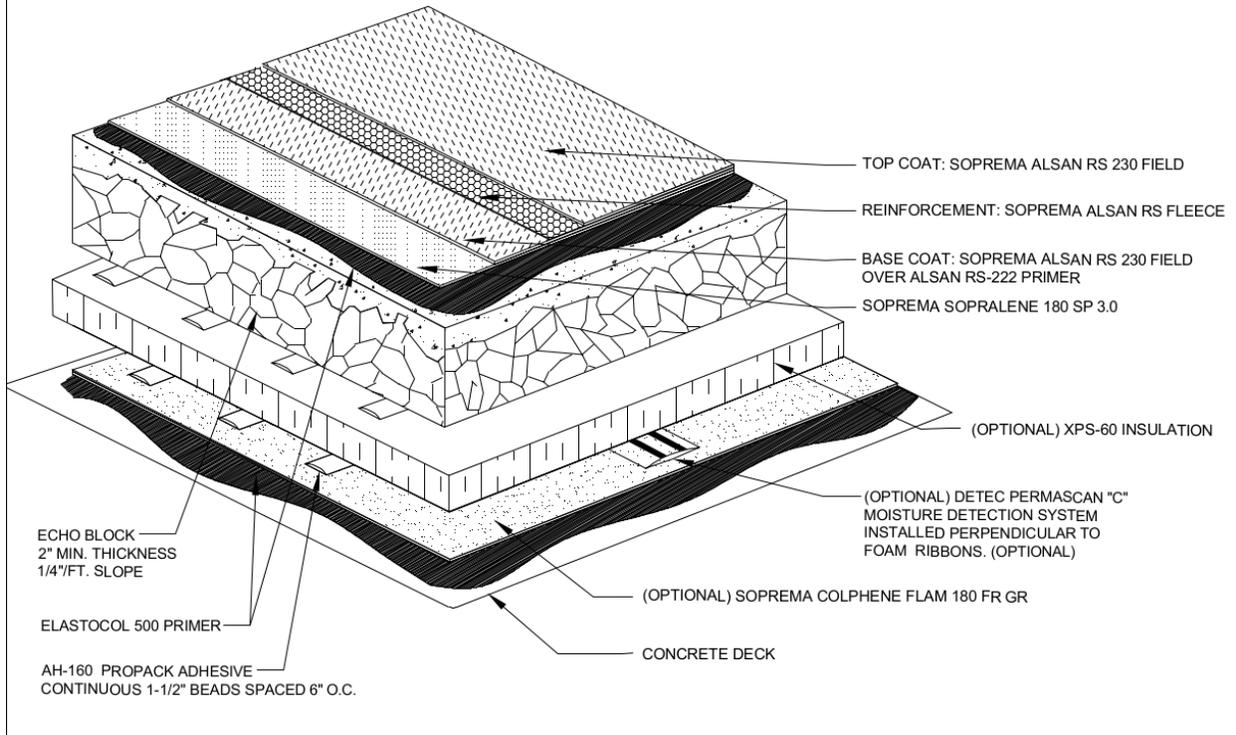
Membranes: Elastocol 500 primer is applied to ECHO Block. Soprema Sopralene 180 SP 3.0 SBS Modified bitumen is heat welded onto ECHO Block. Soprema Alsan RS 222 primer at a rate of 1 gal./sq is applied over Soprema Sopralene 180 SP 3.0 SBS Modified bitumen. Alsan RS 230 base coat is applied over Alsan RS 222 primer at a rate of 3.91 gal./sq. Alsan RS Fleece is embedded into the Alsan RS 230 base coat and Alsan RS 230 Field topcoat is installed at a rate of 1.95 gal./sq over the Alsan RS Fleece. Add optional Alsan RS quartz aggregate to final layer.

Maximum Design Pressure: -370 psf. (See General limitation #9)



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 37 of 72

LIGHT TRAFFIC SURFACING ON CONCRETE DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF



Membrane Type: SBS
Deck Type 2I: Steel Deck Minimum 22 Gage, Grade 33, 1.5 in. Type B, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(10): (Optional) Insulation adhered to steel deck followed by additional layers of Insulation and SBS membranes with **Artificial Turf surfacing.**

All General and system Limitations Shall Apply

One or more of the following insulations:

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick
Base Layers Insulation: or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick
Mid Layers Insulation: or ECHO Flow Minimum 2” Thick

Top Layer Insulation: Echo Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a ½” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Surfacing: **The following option shall be applied as follows.**

Artificial Turf ECHO Bond is applied at a combined rate of 40 sqft per gallon with ¼” nap adhesive roller; applied evenly onto both ECHO Flow and ECHO Turf. ECHO Turf is then adhered to ECHO Flow.

Maximum Design Pressure: -292.5 psf. (see general limitation #9)



ECHO TURF ON STEEL DECK
 MAXIMUM DESIGN PRESSURE: -292.5 PSF

ECHO TURF FULLY ADHERED WITH ECHO BOND ADHESIVE

ECHO BOND APPLIED AT 40 SF. PER GALLON
 WITH 1/4" NAP ADHESIVE ROLLER)

(OPTIONAL) ECHO FLOW (FILL) 2" MIN. THICKNESS

ECHO FLOW 2" MIN. THICKNESS
 1/4"/FT. REVERSE SLOPED TO CREATE FLAT SURFACE.
 (4-WAY SLOPE REQ'D.)

1/2" H.S. NON-SHRINK GROUT

SOPREMA COLPHENE FLAM 180 FR GR
 GRANULAR SBS CAP SHEET (HEAT WELDED)

SOPREMA COLPHENE FLAM 180
 (HEAT WELD) SBS GRADE: SMOOTH

ELASTOCOL 500 PRIMER

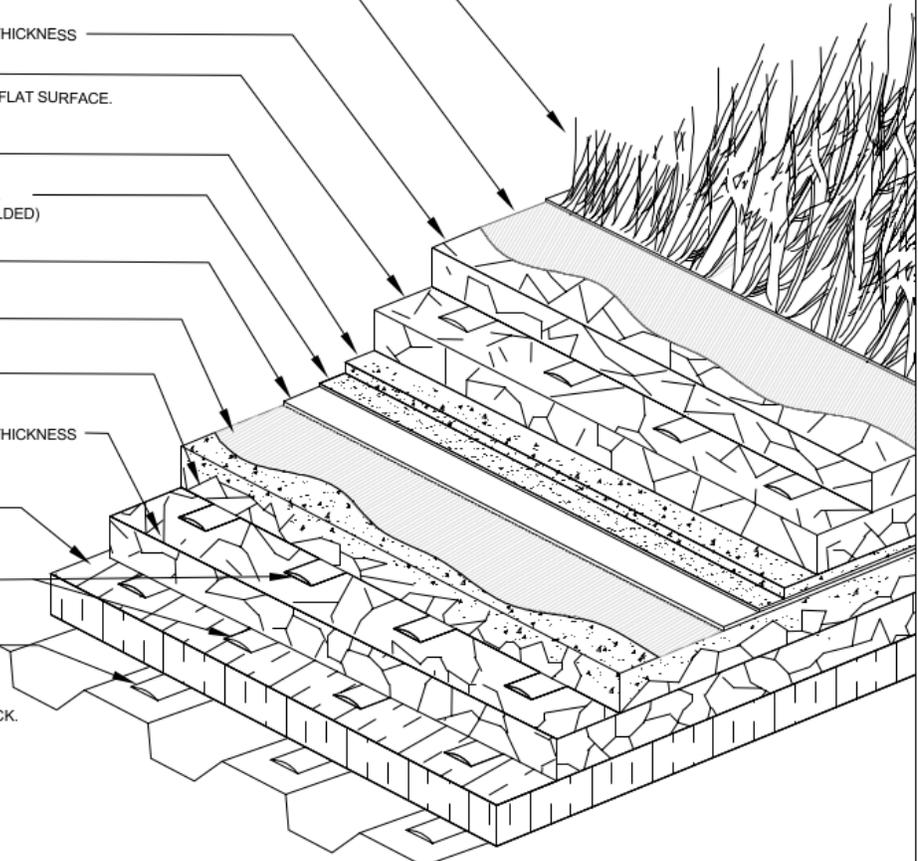
ECHO BLOCK 2" MIN. THICKNESS
 1/4"/FT. SLOPE (4-WAY SLOPE REQ'D.)

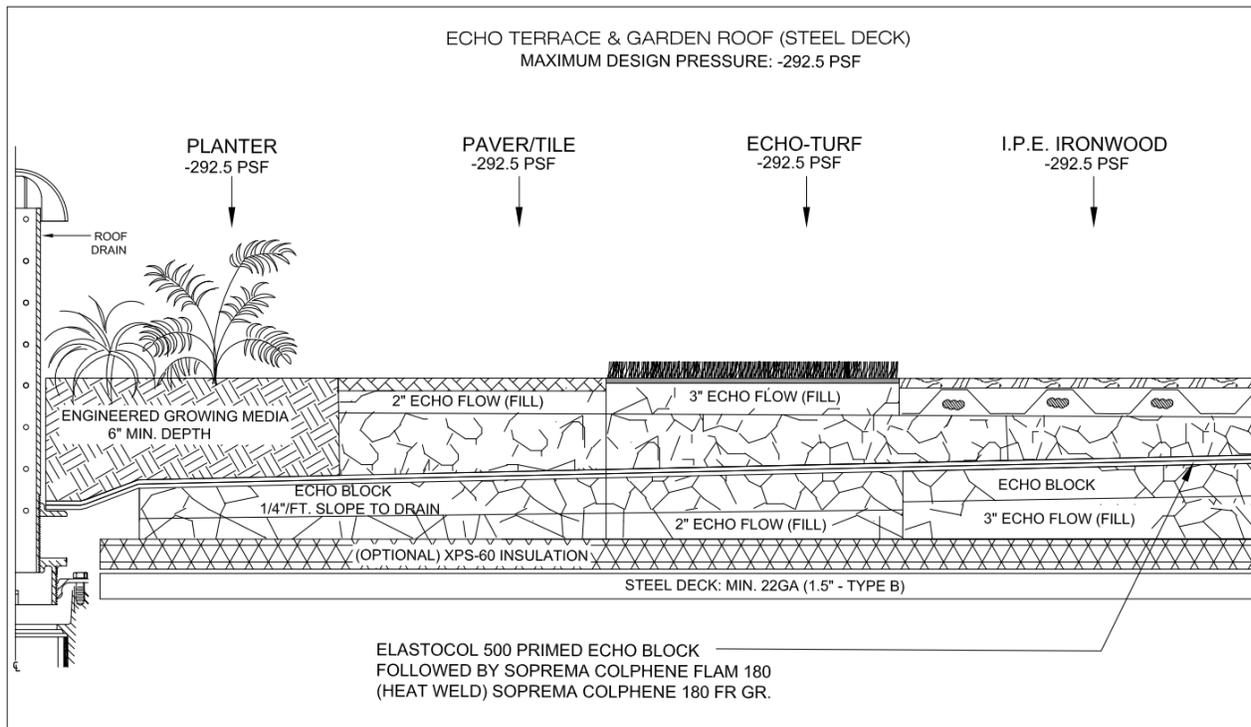
(OPTIONAL) ECHO FLOW (FILL) 2" MIN. THICKNESS
 (MULTIPLE LAYERS AS NEEDED)

(OPTIONAL) XPS-60 INSULATION

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C.

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C. AT EACH TOP
 FLUTE OR PERPENDICULAR TO FLUTES
 MIN. 22GA 1.5" TYPE B GALV. STEEL DECK.





NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 41 of 72

Membrane Type: SBS
Deck Type 2I: Steel Deck Minimum 22 Gage, Grade 33, 1.5 in. Type B, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(11): (Optional) Insulation adhered to steel deck followed by additional layers of Insulation and SBS membranes with **Paver Tile surfacing.**

All General and system Limitations Shall Apply

One or more of the following insulations:

(Optional)
Base Layers Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick
or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional)
Mid Layers Insulation: Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick
or ECHO Flow Minimum 2” Thick

Top Layer Insulation: Echo Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Surfacing: **The following option shall be applied as follows.**

Paver Tile Paver tile 3/4 inch thick x 24 inch x 24 inch is back buttered with large format tile mortar with a smooth trowel at 1/8” thick. Apply large format tile mortar to Echo Flow using a 3/4 inch wide x 9/16 inch deep x 3/8 inch spaced U notched trowel leaving a 1 inch space from every edge of tile exposed with no tile mortar for drainage. The paver is then pressed on top of ECHO Flow. 1/8” gap is required between pavers for proper drainage.

Maximum Design Pressure: -292.5 psf. (See General limitation #9)



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 42 of 72

PAVER TILE ON STEEL DECK
 MAXIMUM DESIGN PRESSURE: -292.5 PSF

2' X 2' X MINIMUM THICKNESS 3/4" PAVER
 SET IN MEDIUM BED OF TILE MORTAR
 WITH 1" PERIMETER OF TILE MORTAR FREE

(OPTIONAL) ECHO FLOW (FILL) 2" MIN. THICKNESS

ECHO FLOW 2" MIN. THICKNESS
 1/4"FT. REVERSE SLOPED TO CREATE FLAT SURFACE.
 (4-WAY SLOPE REQ'D.)

1/2" H.S. NON-SHRINK GROUT

SOPREMA COLPHENE FLAM 180 FR GR
 GRANULAR SBS CAP SHEET (HEAT WELDED)

SOPREMA COLPHENE FLAM 180
 (HEAT WELD) SBS GRADE: SMOOTH

ELASTOCOL 500 PRIMER

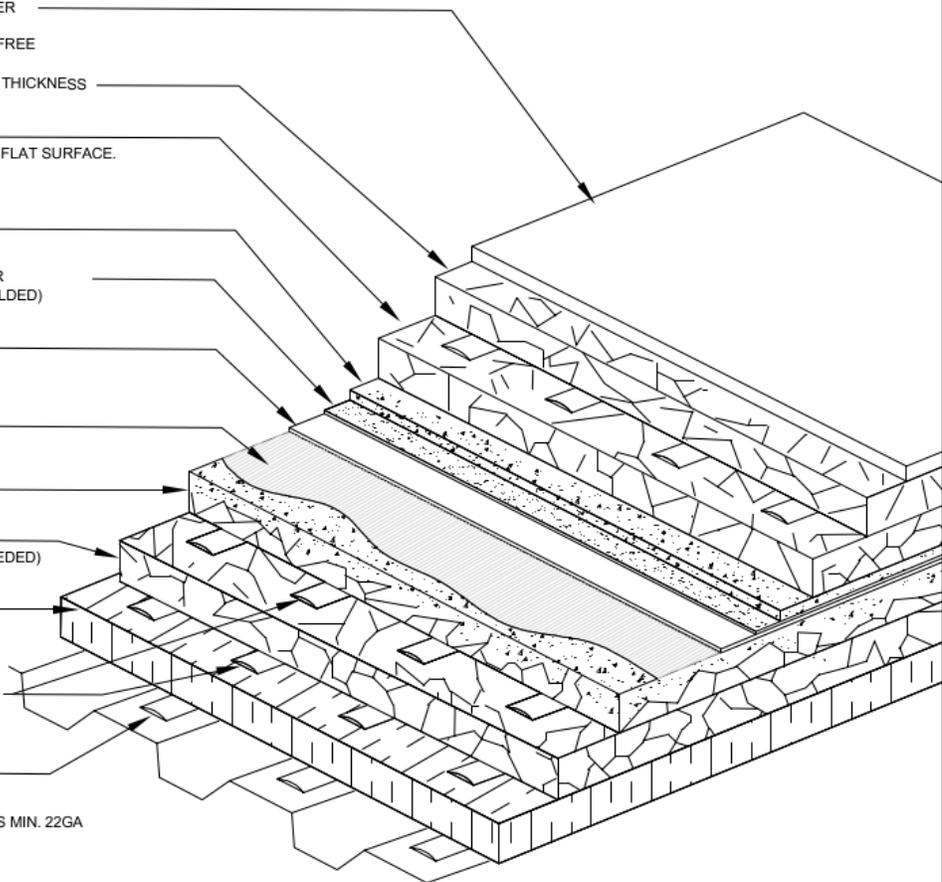
ECHO BLOCK 2" MIN. THICKNESS
 1/4"FT. SLOPE (4-WAY SLOPE REQ'D.)

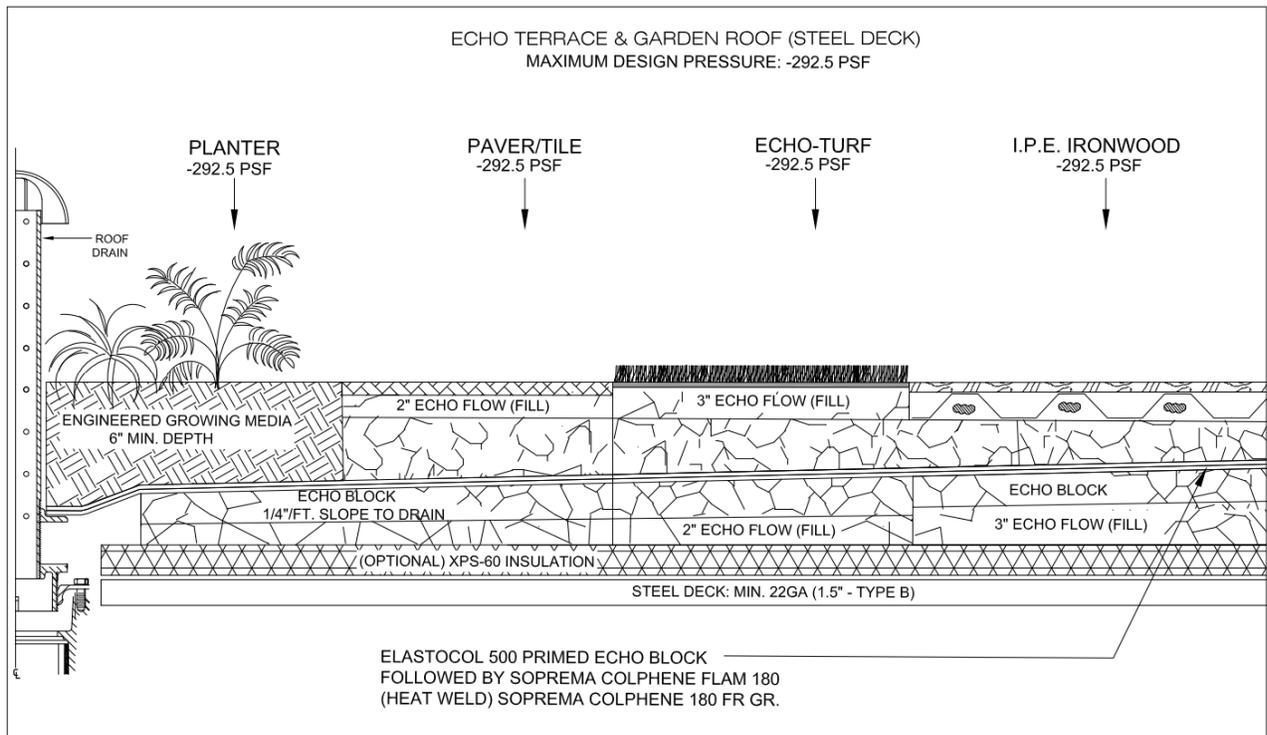
(OPTIONAL) ECHO FLOW (FILL) 2" MIN.
 THICKNESS (MULTIPLE LAYERS AS NEEDED)

(OPTIONAL) XPS-60 INSULATION

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C.

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C. AT EACH TOP
 FLUTE OR PERPENDICULAR TO FLUTES MIN. 22GA
 1.5" TYPE B GALV. STEEL DECK.





NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 44 of 72

Membrane Type: SBS
Deck Type 2I: Steel Deck Minimum 22 Gage, Grade 33, 1.5 in. Type B, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(12): (Optional) Insulation adhered to steel deck followed by additional layers of Insulation and SBS membranes with **IPE Ironwood surfacing.**

All General and system Limitations Shall Apply

One or more of the following insulations:

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick
Base Layers Insulation: or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick
Mid Layers Insulation: or ECHO Flow Minimum 2” Thick

Top Layer Insulation: Echo Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a ½” notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.



Surfacing:

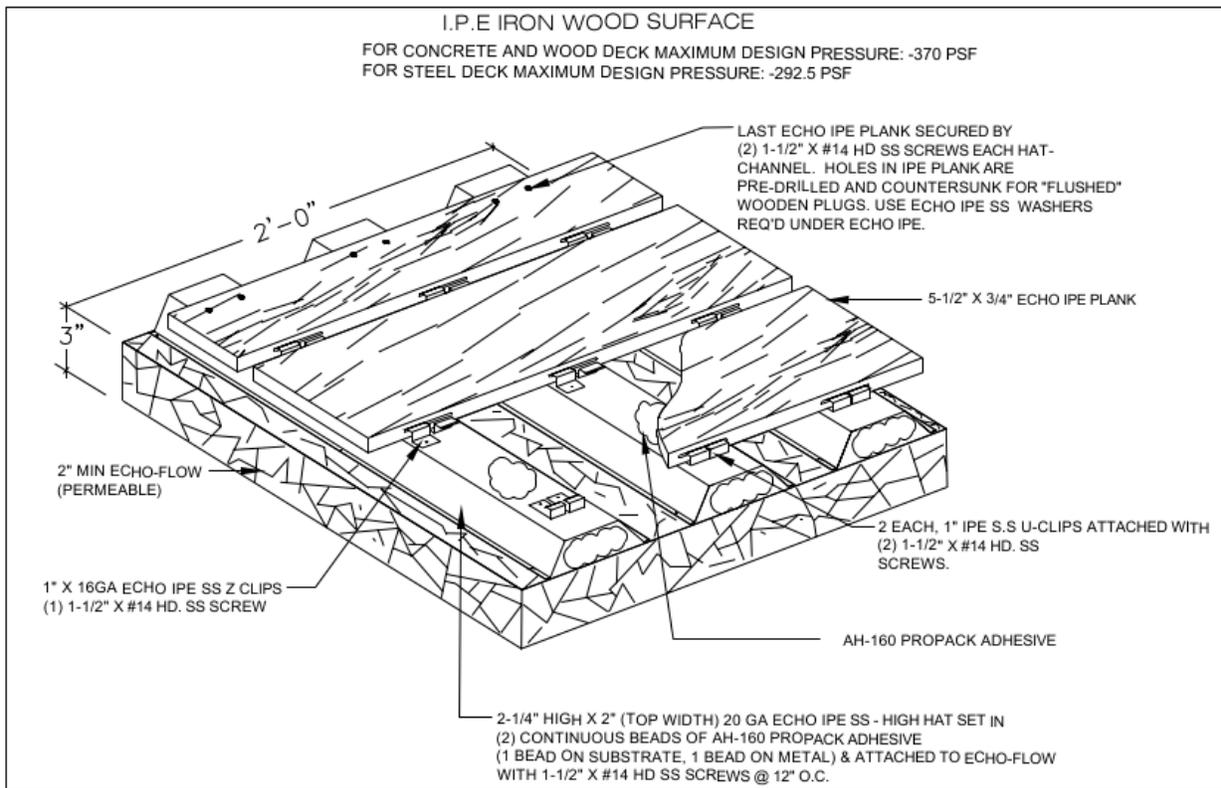
The following option shall be applied as follows.

IPE Ironwood

ECHO IPE S.S Hat Channel (installed 8" O.C) is set onto ECHO Flow with ICP AH-160 adhesive (1 bead on substrate, 1 bead on metal). The ECHO IPE S.S Hat Channel is then fastened into ECHO Flow using 1-1/2", #14 HD S.S screws at 12" O.C. ECHO IPE S.S-U clips are first fastened into ECHO IPE S.S Hat-Channel with 1-1/2", #14 HD S.S screws. ECHO IPE Ironwood is slid into the ECHO IPE S.S-U clips then placed on top of a bead of ICP AH-160 adhesive. The same installation procedure is to be followed when installing ECHO IPE S.S-Z clips and subsequent ECHO IPE ironwood planks. The final ECHO IPE ironwood plank is placed on top of a bead of ICP AH-160 adhesive then secured into the Hat-channel by two each 1-1/2", #14 HD S.S screws (per Hat-channel) through pre-drilled and countersunk holes. Holes in ECHO IPE ironwood planks are filled with wooden plugs.

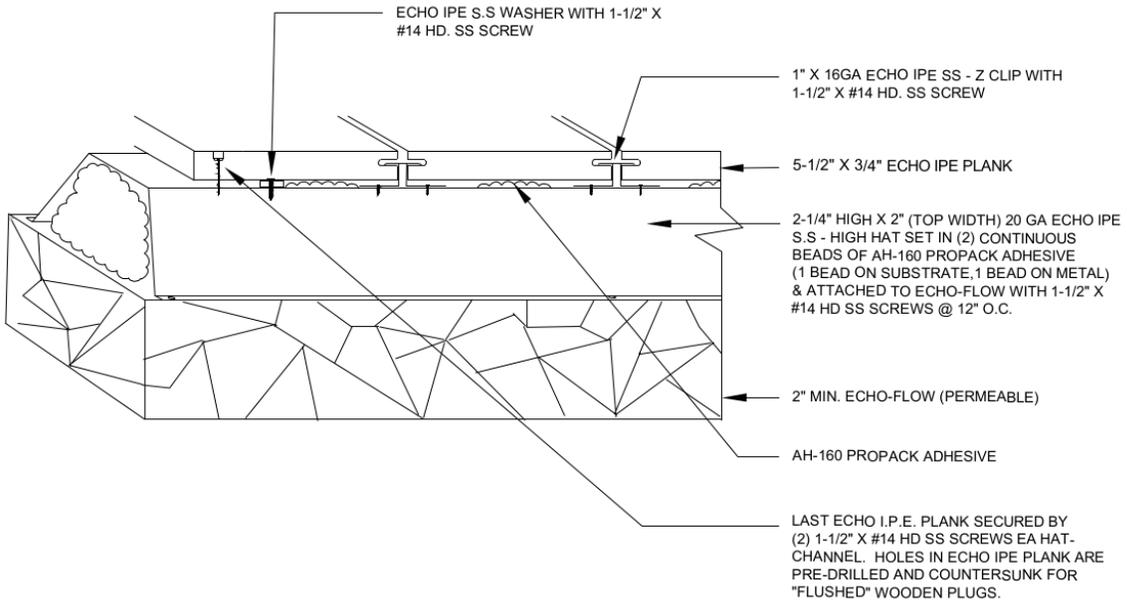
Maximum Design Pressure:

-292.5 psf. (See General limitation #9)

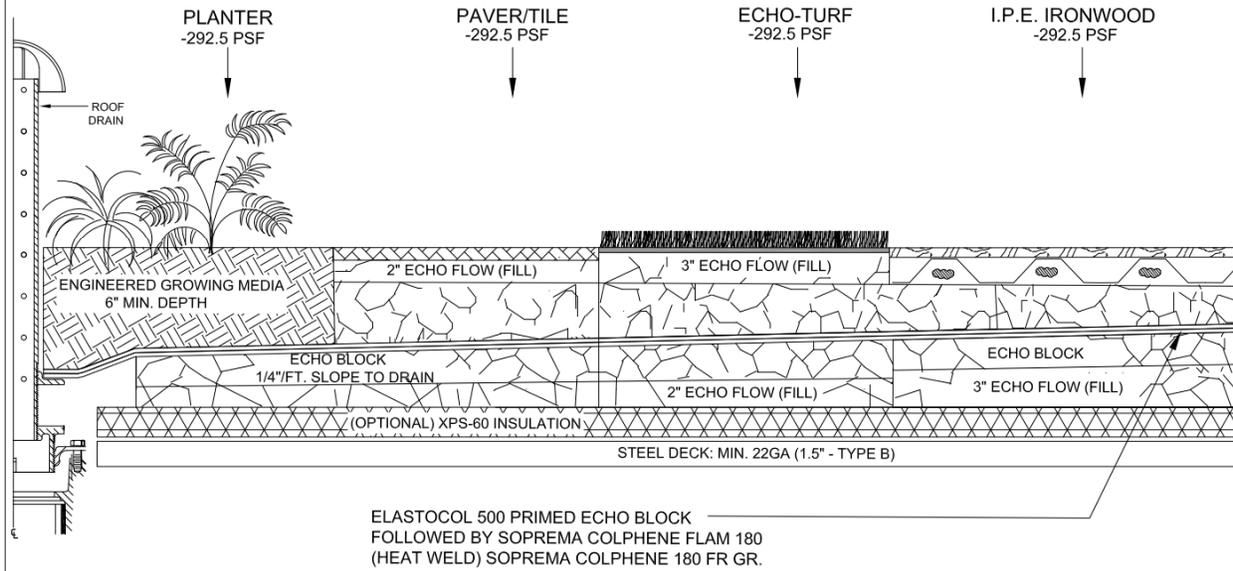


I.P.E IRON WOOD SURFACE

FOR CONCRETE AND WOOD DECK MAXIMUM DESIGN PRESSURE: -370 PSF
 FOR STEEL DECK MAXIMUM DESIGN PRESSURE: -292.5 PSF



ECHO TERRACE & GARDEN ROOF (STEEL DECK)
 MAXIMUM DESIGN PRESSURE: -292.5 PSF



NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 47 of 72

Membrane Type: SBS
Deck Type 2I: Steel Deck Minimum 22 Gage, Grade 33, 1.5 in. Type B, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(13): (Optional) Insulation adhered to steel deck followed by additional layers of Insulation SBS membrane and Alsan RS with **Growing Media surfacing.**

All General and system Limitations Shall Apply

One or more of the following insulations:

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick
Base Layers Insulation: or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick
Mid Layers Insulation: or ECHO Flow Minimum 2” Thick

Top Layer Insulation: Echo Block Minimum 2” Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Sopralene 180 SP 3.0 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Alsan RS 222 primer is applied to the Soprema Sopralene 180 SP 3.0 base ply followed by Alsan RS 230 Field. Alsan RS Fleece is set into wet Alsan RS Field followed by final layer on Alsan RS field installation on the top of the Fleece.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water maybe maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Rooftop planters are to be located around roof drains with the roof drain centered within the planter. With the Alsan waterproofing membrane in place at desired planter location, the ECHO Flow permeable top layers are not installed on the Alsan at the planter area. Outside the planter area (on the roof terrace) follow the instruction (within this NOA) for the terrace surfacing option of choice (Turf, Tile, or IPE Ironwood).

Planter Walls: ECHO Flow Wall blocks that are 6” thick x 12” wide x 18” long are installed on the finished level of ECHO Flow at the terrace/planter boarder with two beads of AH-160 adhesive at a continuous bead thickness of 1.5 inches spaced 6” apart. Maximum height of planter above finished ECHO Flow terrace is 36”. Walls must have a 5/8” minimum fiber reinforced stucco installed in a two-coat application. Not to be used for exterior walls.



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 48 of 72

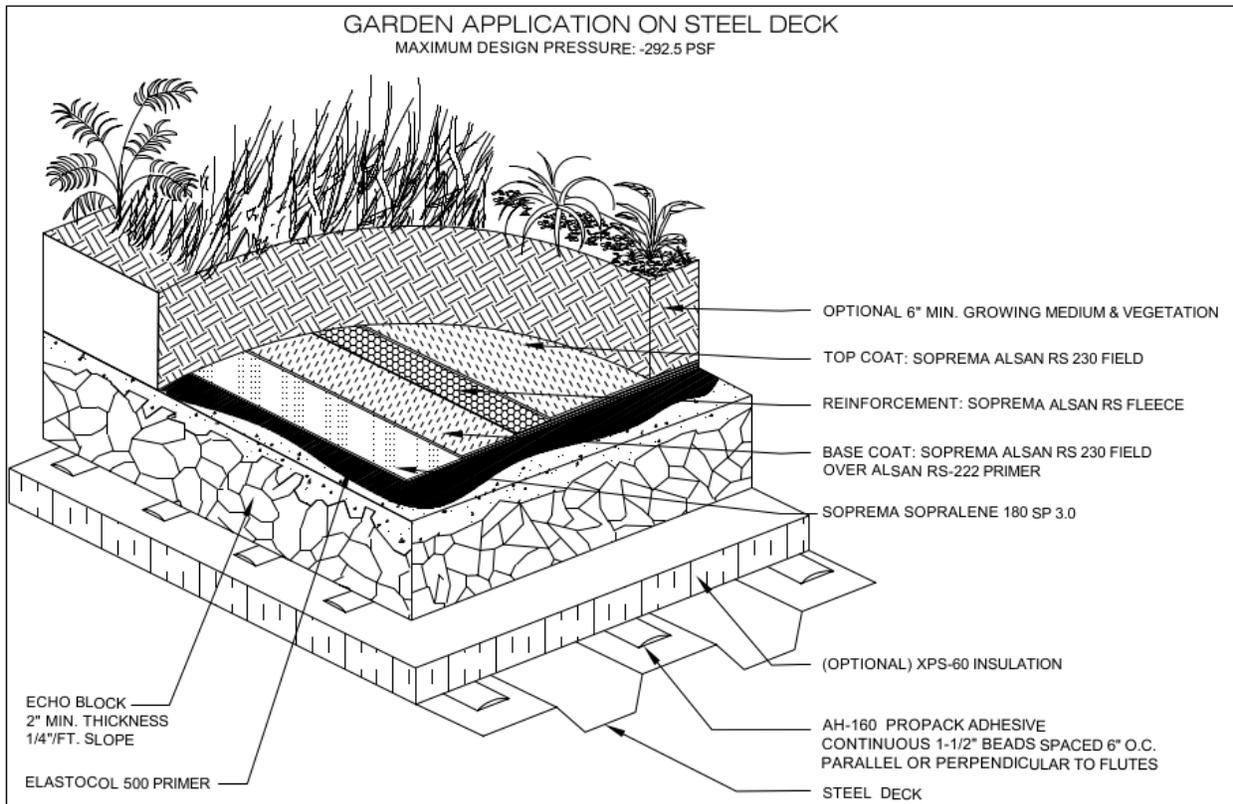
**Surfacing:
Growing Media**

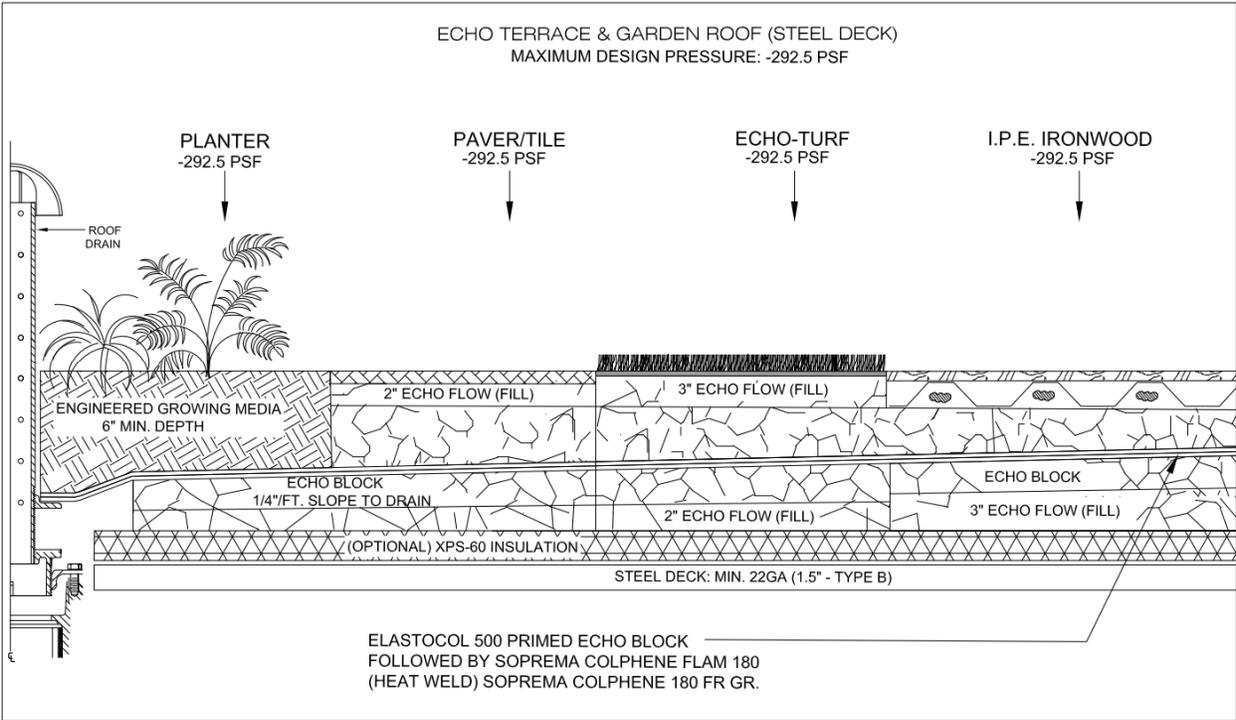
The following option shall be applied as follows.

On completion of the planter walls, the ECHO SS Root barrier is installed with #14 S.S 1-1/2" screws 9" O.C followed by the required stucco. (Optional) Alsan Quartz aggregate can be installed on addition wet layer of Alsan 230 Field, followed by a 1/4" layer of grout as a protection layer. Drainage Mats, Filter fabric, media trays and growing media as designed by Landscape architect can be installed from 6" to 36" depth. Any soil less than 24" must have the ECHO Soil retention screen installed, which is to remain at same elevation throughout the planter. The ECHO Tree Restraint system for securing trees to rooftops in high winds is recommended and must be certified by an engineer (project specific).

**Maximum Design
Pressure:**

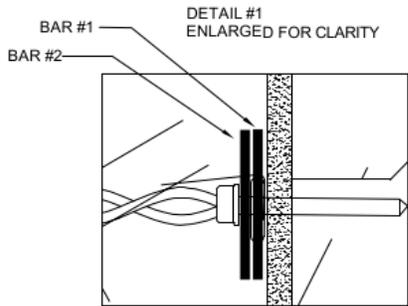
-292.5 psf. (See General limitation #9)



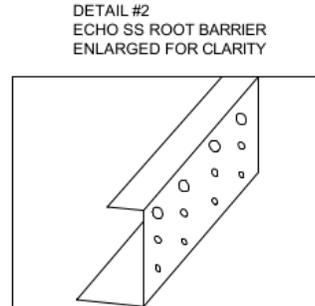


NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 50 of 72

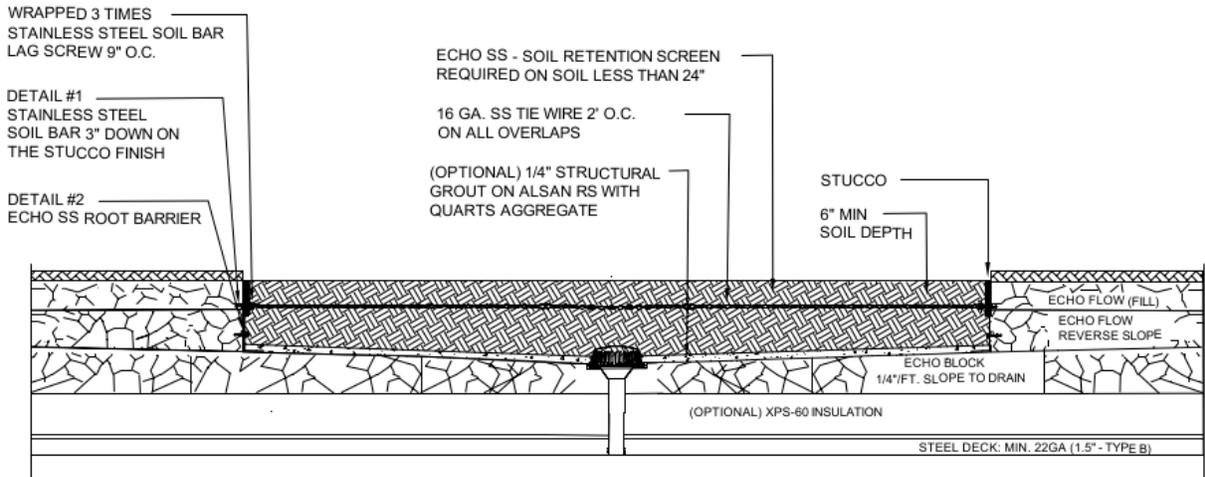
ECHO - SS - SOIL RETENTION SCREEN ON STEEL DECK
 MAXIMUM DESIGN PRESSURE: -292.5 PSF



1ST BAR WRAPPED 3 TIMES WITH ECHO SOIL RETENTION SCREEN 2ND BAR ATTACHED THROUGH 1ST BAR INTO ECHO FLOW WITH 3" LONG X 5/16" SS - HEX HEAD LAG SCREW @ 9" O.C.

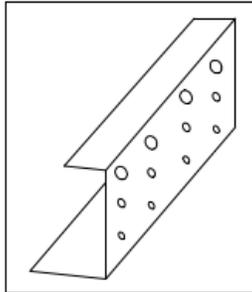


WATER RETENTION AND DETENTION FOR CUSTOMIZED ADJUSTABLE WATER FLOW AND ROOT BARRIER



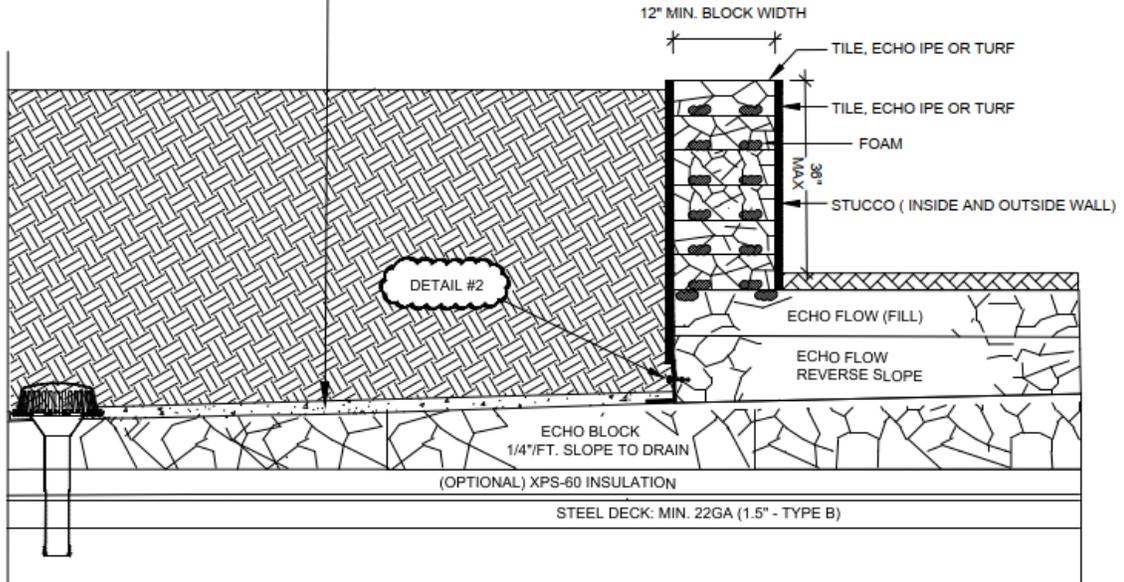
ECHO FLOW PLANTER WALL ON STEEL DECK
 MAXIMUM DESIGN PRESSURE: -292.5 PSF

DETAIL #2
 ENLARGED FOR CLARITY



WATER RETENTION AND DETENTION.
 FOR CUSTOMIZED ADJUSTABLE WATER
 FLOW AND ROOT BARRIER

(OPTIONAL) 1/4" STRUCTURAL GROUT
 ON ALSAN RS WITH QUARTS
 AGGREGATE



Membrane Type: SBS
Deck Type 2I: Steel Deck Minimum 22 Gage, Grade 33, 1.5 in. Type B, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(14): (Optional) Insulation adhered to steel deck followed by additional layers of Insulation and SBS membranes without overburden. (For **Light Traffic surfacing**).

All General and system Limitations Shall Apply

One or more of the following insulations:

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” Thick
Base Layers Insulation: or ECHO Flow Minimum 2” Thick

Note: Base Layer of Insulation shall be adhered to the deck with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(Optional) Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1” thick
Mid Layers Insulation: or ECHO Flow Minimum 2” Thick

Top Layer Insulation: Echo Block Minimum 2” Thick

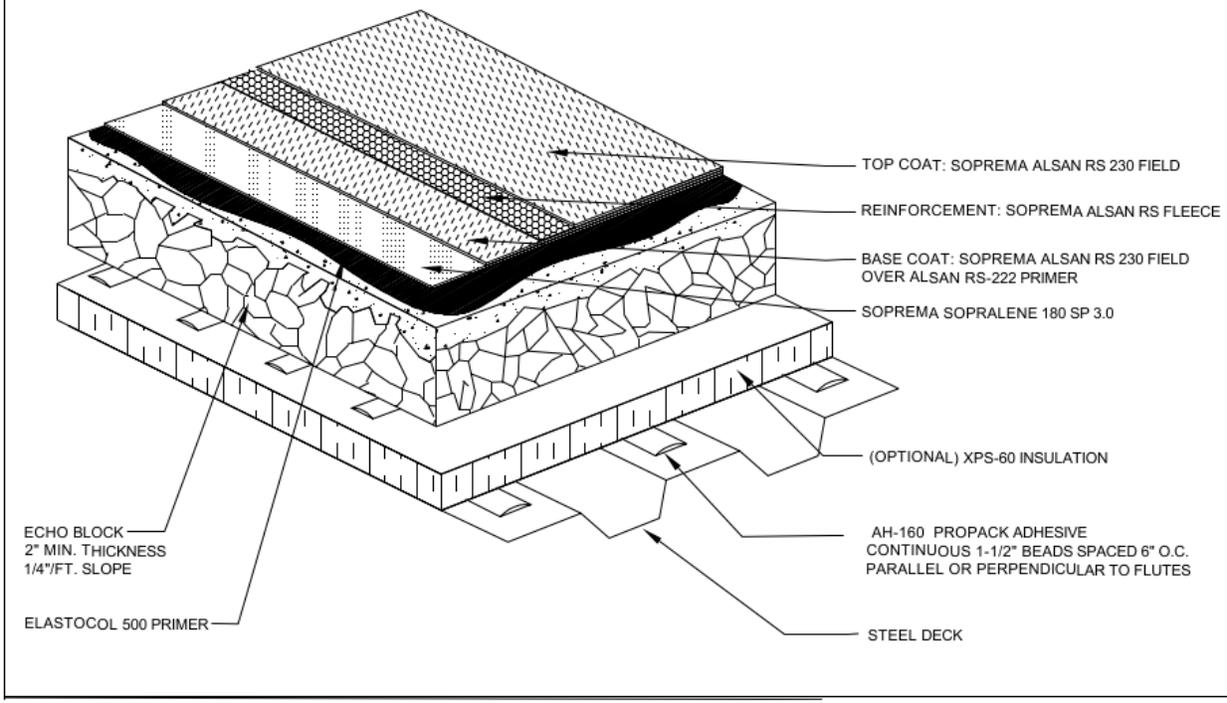
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5” wide beads of ICP Adhesives Polyset AH-160 spaced 6” o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to ECHO Block. Soprema Sopralene 180 SP 3.0 SBS Modified bitumen is heat welded onto ECHO Block. Soprema Alsan RS 222 primer at a rate of 1 gal./sq is applied over Soprema Sopralene 180 SP 3.0 SBS Modified bitumen. Alsan RS 230 base coat is applied over Alsan RS 222 primer at a rate of 3.91 gal./sq. Alsan RS Fleece is embedded into the Alsan RS 230 base coat and Alsan RS 230 Field topcoat is installed at a rate of 1.95 gal./sq over the Alsan RS Fleece. Add optional Alsan RS Quartz aggregate to final layer.

Maximum Design Pressure: -292.5 psf. (See General limitation #9)



LIGHT TRAFFIC SURFACING ON STEEL DECK
 MAXIMUM DESIGN PRESSURE: -292.5 PSF



NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 54 of 72

Membrane Type: SBS
Deck Type II: 5/8" Plywood Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(15) (Optional) Echo Flow Insulation adhered to plywood deck followed by additional layers of insulation and SBS membranes with **Echo Turf surfacing.**

All General and system Limitation Shall Apply

One or more of the following insulations:

(Optional) ECHO Flow Minimum 2" Thick
Base Layers Insulation:

Note: Base Layer of Insulation shall adhere to the deck with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing application Standard RAS 117 for insulation attachment.

(Optional) ECHO Flow Minimum 2" Thick
Mid Layers Insulation:

Top Layer Insulation: ECHO Block Minimum 2" Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water may be maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Surfacing: **The following option shall be applied as follows.**

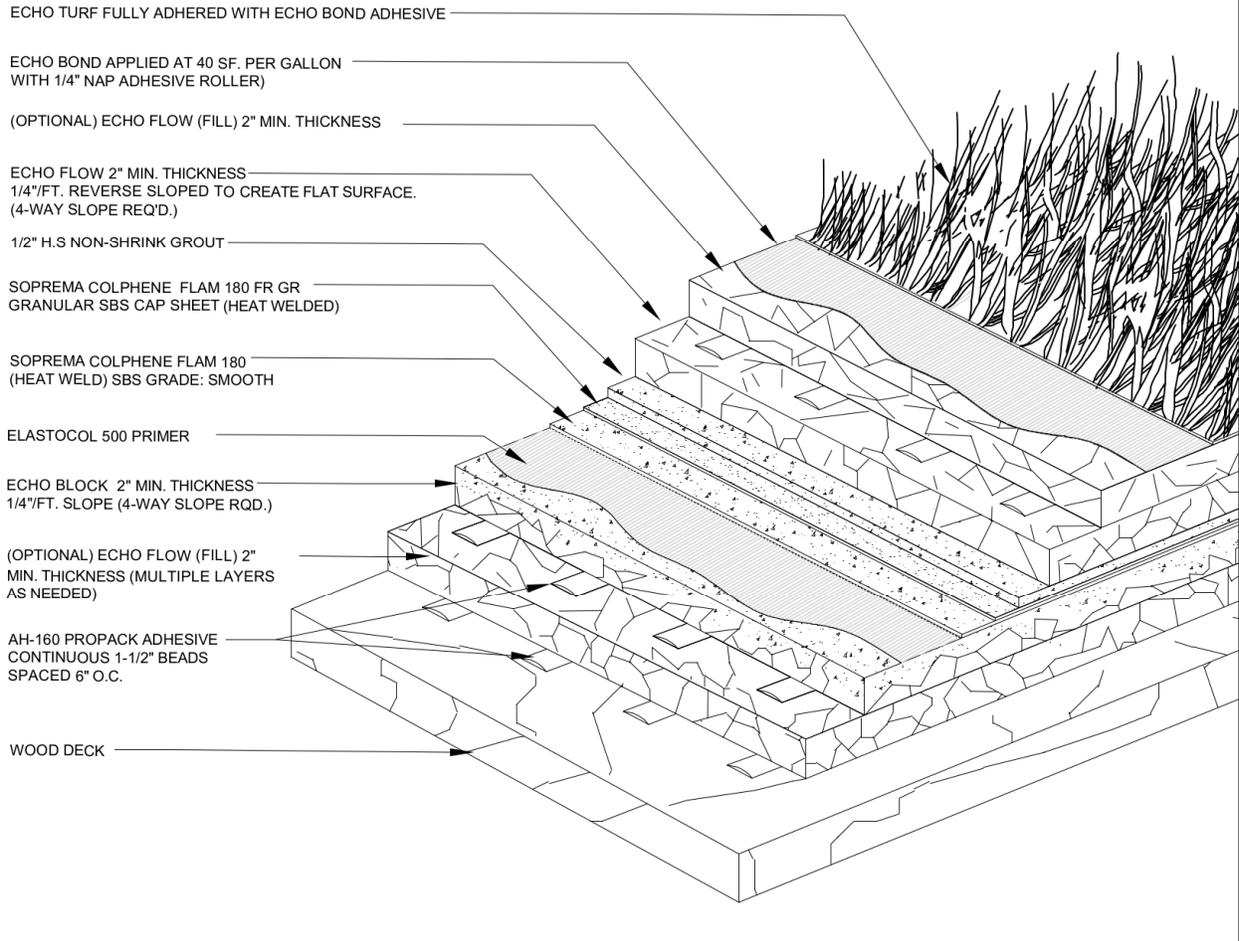
Artificial Turf ECHO Bond is applied at a combined rate of 40 sqft per gallon with 1/4" nap adhesive roller; applied evenly onto both ECHO Flow and ECHO Turf. ECHO Turf is then adhered to ECHO Flow.

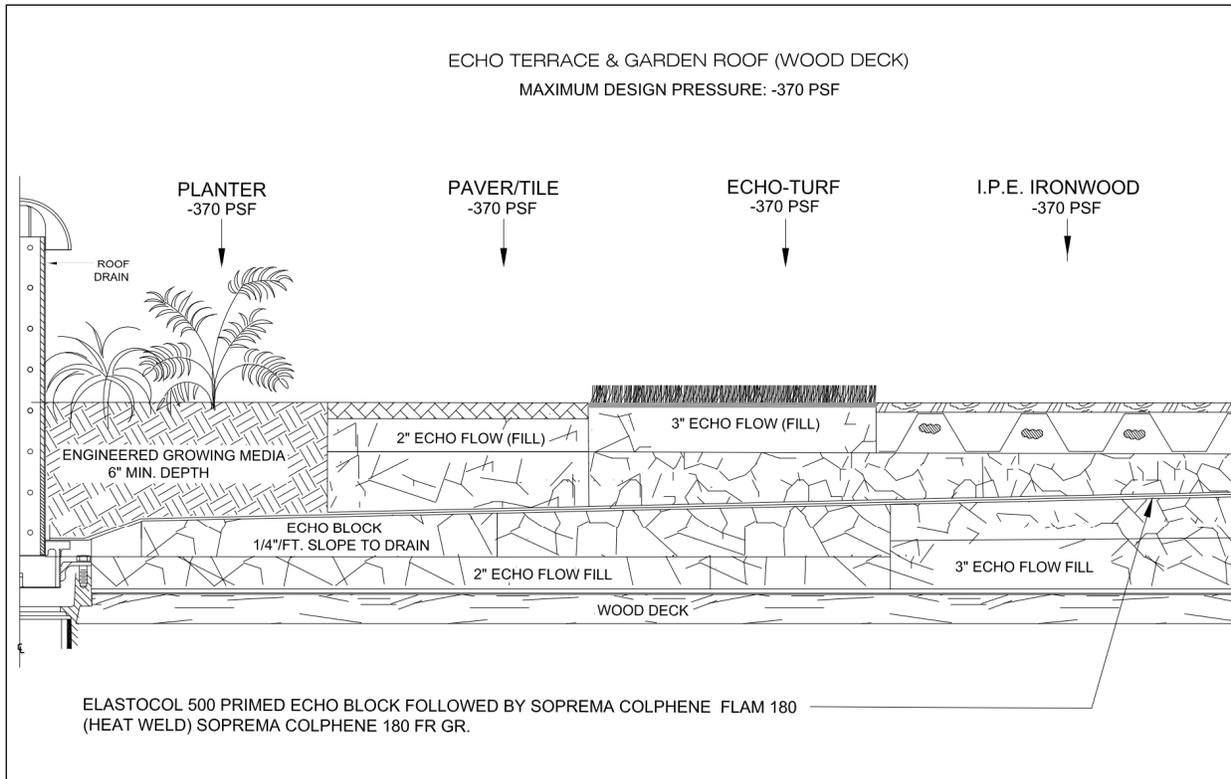
Maximum Design Pressure: -370 psf. (See General limitation #9)



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 55 of 72

ECHO TURF ON WOOD DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF





Membrane Type: SBS
Deck Type 11: 5/8" Plywood Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(16) (Optional) Echo Flow Insulation adhered to plywood deck followed by additional layers of insulation and SBS membranes with **Paver Tile surfacing.**

All General and system Limitation Shall Apply

One or more of the following insulations:

(Optional) ECHO Flow Minimum 2" Thick
Base Layers Insulation:

Note: Base Layer of Insulation shall adhere to the deck with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing application Standard RAS 117 for insulation attachment.

(Optional) ECHO Flow Minimum 2" Thick
Mid Layers Insulation:

Top Layer Insulation: Echo Block Minimum 2" Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by approved lab. Water may be maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.

Surfacing: **The following option shall be applied as follows.**

Paver Tile Paver tile 3/4 inch thick x 24 inch x 24 inch is back buttered with large format tile mortar with a smooth trowel at 1/8" thick. Apply large format tile mortar to Echo Flow using a 3/4 inch wide x 9/16 inch deep x 3/8 inch spaced U notched trowel leaving a 1 inch space from every edge of tile exposed with no tile mortar for drainage. The paver is then pressed on top of ECHO Flow. 1/8" gap is required between pavers for proper drainage.

Maximum Design Pressure: -370 psf. (See General limitation #9)



PAVER TILE ON WOOD DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF

2' X 2' X MINIMUM THICKNESS 3/4" PAVER
 SET IN MEDIUM BED OF TILE MORTAR
 WITH 1" PERIMETER OF TILE MORTAR FREE

(OPTION) ECHO FLOW (FILL) 2" MIN. THICKNESS

ECHO FLOW 2" MIN. THICKNESS
 1/4"/FT. REVERSE SLOPED TO CREATE FLAT SURFACE.
 (4-WAY SLOPE REQ'D.)

1/2" H.S. NON-SHRINK GROUT

SOPREMA COLPHENE FLAM 180 FR GR
 GRANULAR SBS CAP SHEET (HEAT WELDED)

SOPREMA COLPHENE FLAM 180
 (HEAT WELD) SBS GRADE: SMOOTH

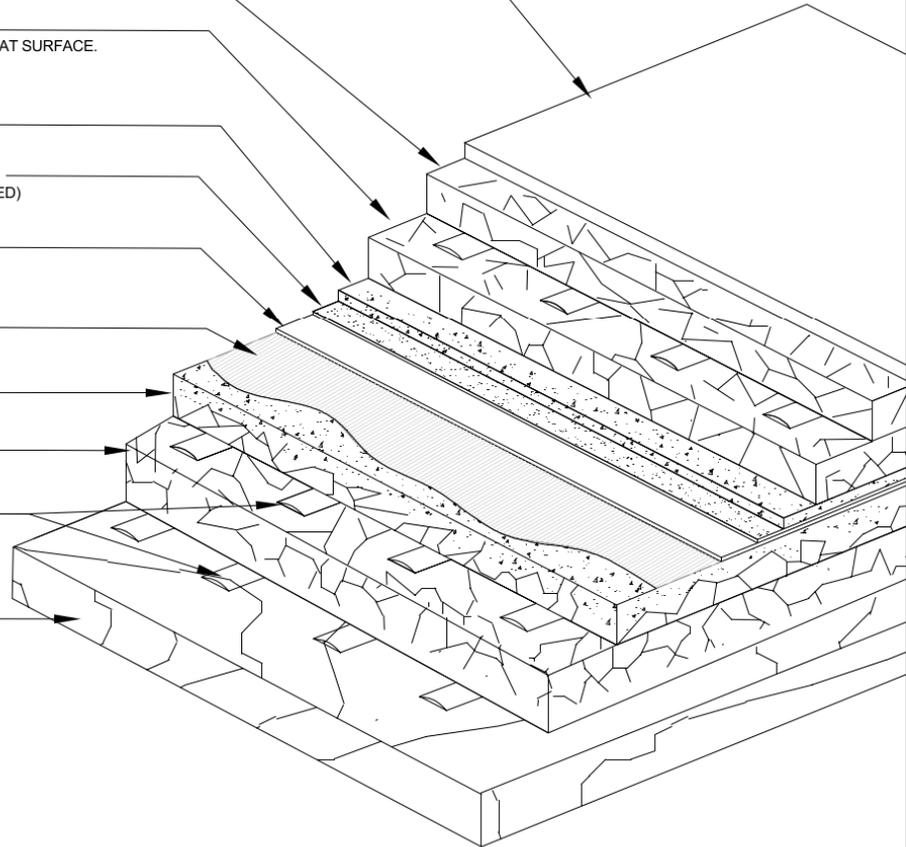
ELASTOCOL 500 PRIMER

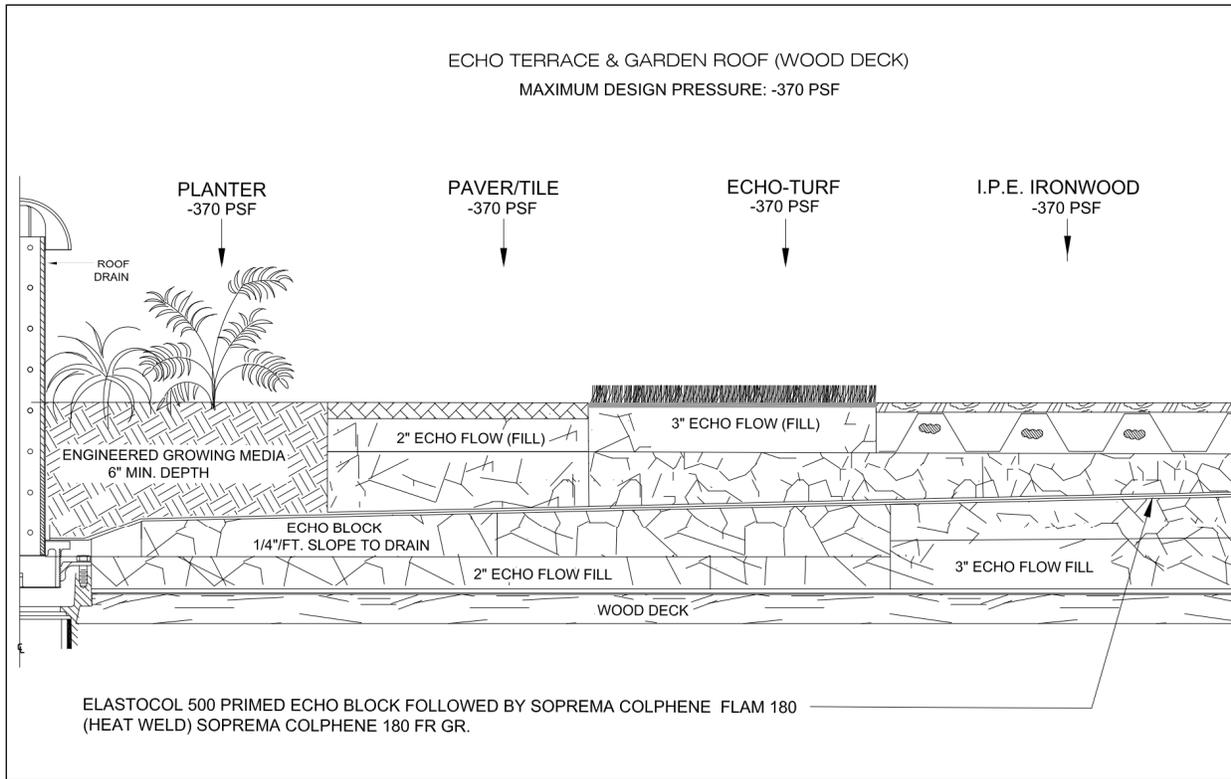
ECHO BLOCK 2" MIN. THICKNESS
 1/4"/FT. SLOPE (4-WAY SLOPE RQD.)

(OPTIONAL) ECHO FLOW (FILL) MIN 2"
 THICKNESS (MULTIPLE LAYERS AS
 NEEDED)

AH-160 PROPACK ADHESIVE
 CONTINUOUS 1-1/2" BEADS
 SPACED 6" O.C.

WOOD DECK





NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 60 of 72

Membrane Type: SBS
Deck Type II: 5/8" Plywood Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(17) (Optional) Echo Flow Insulation adhered to plywood deck followed by additional layers of insulation and SBS membranes with **IPE Ironwood surfacing.**

All General and system Limitation Shall Apply

One or more of the following insulations:

(Optional) ECHO Flow Minimum 2" Thick
Base Layers Insulation:

Note: Base Layer of Insulation shall adhere to the deck with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing application Standard RAS 117 for insulation attachment.

(Optional) ECHO Flow Minimum 2" Thick
Mid Layers Insulation:

Top Layer Insulation: ECHO Block Minimum 2" Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR SBS modified bitumen granulated cap sheet then heat-welded to base ply.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water may be maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 1/2" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 inch ECHO Flow is then adhered onto the previous ECHO Flow with ICP Adhesives Polyset AH-160 adhesive applied at continuous bead thickness of 1.5 inches spaced 6 inches o.c.



Surfacing:

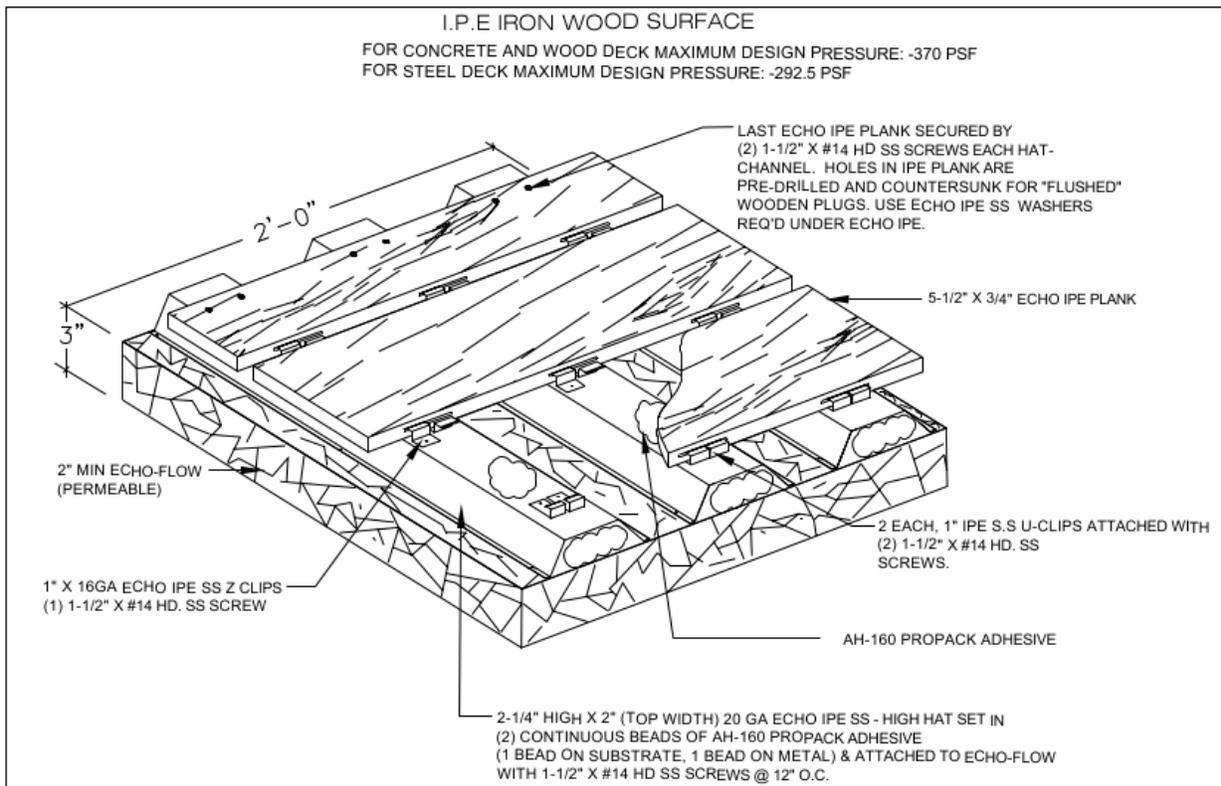
The following option shall be applied as follows.

IPE Ironwood

ECHO IPE S.S Hat Channel (installed 8" O.C) is set onto ECHO Flow with ICP AH-160 adhesive (1 bead on substrate, 1 bead on metal). The ECHO IPE S.S Hat Channel is then fastened into ECHO Flow using 1-1/2", #14 HD S.S screws at 12" O.C. ECHO IPE S.S-U clips are first fastened into ECHO IPE S.S Hat-Channel with 1-1/2", #14 HD S.S screws. ECHO IPE Ironwood is slid into the ECHO IPE S.S-U clips then placed on top of a bead of ICP AH-160 adhesive. The same installation procedure is to be followed when installing ECHO IPE S.S-Z clips and subsequent ECHO IPE ironwood planks. The final ECHO IPE ironwood plank is placed on top of a bead of ICP AH-160 adhesive then secured into the Hat-channel by two each 1-1/2", #14 HD S.S screws (per Hat-channel) through pre-drilled and countersunk holes. Holes in ECHO IPE ironwood planks are filled with wooden plugs.

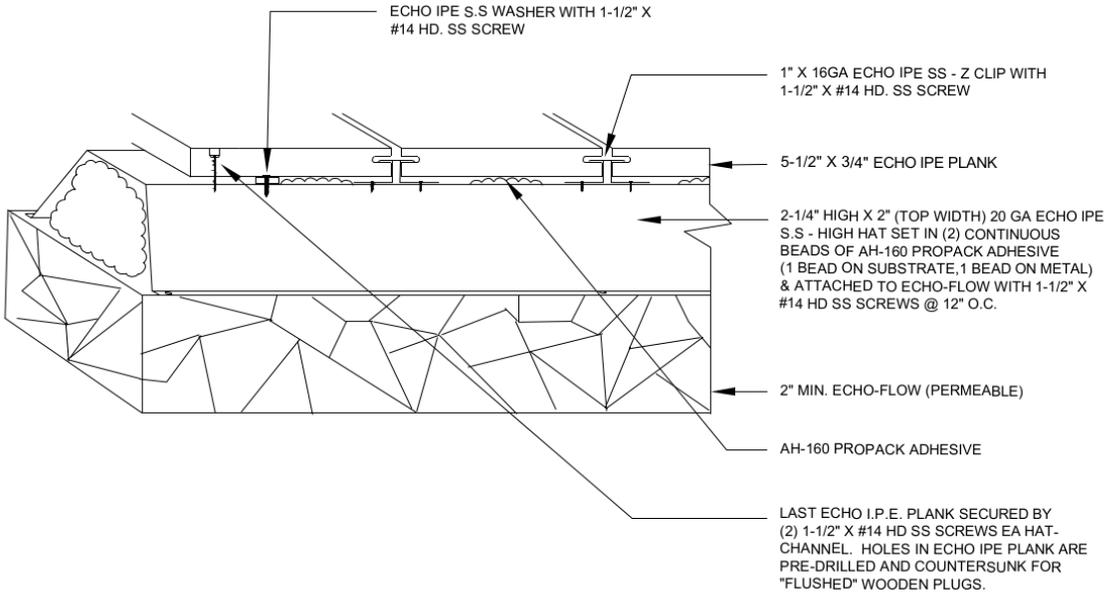
Maximum Design Pressure:

-370 psf. (See General limitation #9)

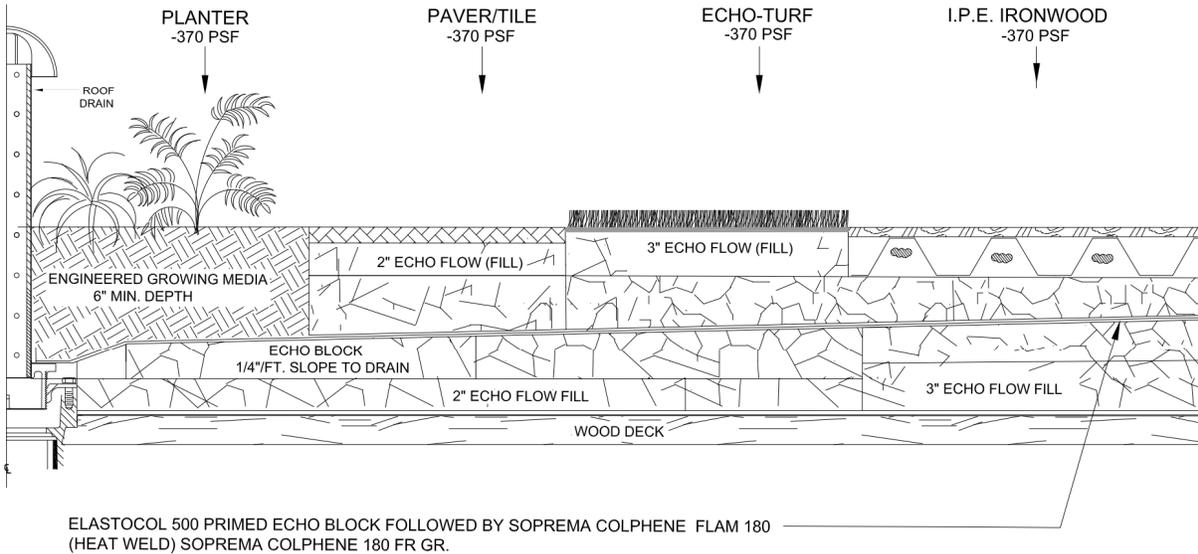


I.P.E IRON WOOD SURFACE

FOR CONCRETE AND WOOD DECK MAXIMUM DESIGN PRESSURE: -370 PSF
 FOR STEEL DECK MAXIMUM DESIGN PRESSURE: -292.5 PSF



ECHO TERRACE & GARDEN ROOF (WOOD DECK)
 MAXIMUM DESIGN PRESSURE: -370 PSF



Membrane Type: SBS

Deck Type II: 5/8" Plywood Decks, Insulated

Deck Description: Terrace/Plaza Deck, Garden Roof

System Types A(18) (Optional) Echo Flow Insulation adhered to plywood deck followed by additional layers of insulation and SBS membranes with **Growing Media surfacing.**

All General and system Limitation Shall Apply

One or more of the following insulations:

(Optional) ECHO Flow Minimum 2" Thick
Base Layers Insulation:

Note: Base Layer of Insulation shall adhere to the deck with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing application Standard RAS 117 for insulation attachment.

(Optional) ECHO Flow Minimum 2" Thick
Mid Layers Insulation:

Top Layer Insulation: ECHO Block Minimum 2" Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Membranes: Elastocol 500 primer is applied to top of ECHO Block, with Soprema Sopralene 180 SP 3.0 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Alsan RS 222 primer is applied to the Soprema Sopralene 180 SP 3.0 base ply followed by Alsan RS 230 Field. Alsan RS Fleece is set into wet Alsan RS Field followed by final layer on Alsan RS field installation on the top of the Fleece.

Integrity Test: Required, and shall be performed in accordance with ASTM D 5957 by an approved lab. Water may be maintained for a period longer than 24 hours if required.

Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow Rooftop planters are to be located around roof drains with the roof drain centered within the planter. With the Alsan waterproofing membrane in place at desired planter location, the ECHO Flow permeable top layers are not installed on the Alsan at the planter area. Outside the planter area (on the roof terrace) follow the instruction (within this NOA) for the terrace surfacing option of choice (Turf, Tile, or IPE Ironwood).

Planter Walls: ECHO Flow Wall blocks that are 6" thick x 12" wide x 18" long are installed on the finished level of ECHO Flow at the terrace/planter boarder with two beads of AH-160 adhesive at a continuous bead thickness of 1.5 inches spaced 6" apart. Maximum height of planter above finished ECHO Flow terrace is 36". Walls must have a 5/8" minimum fiber reinforced stucco installed in a two coat application. Not to be used for exterior walls.



Surfacing:

The following option shall be applied as follows.

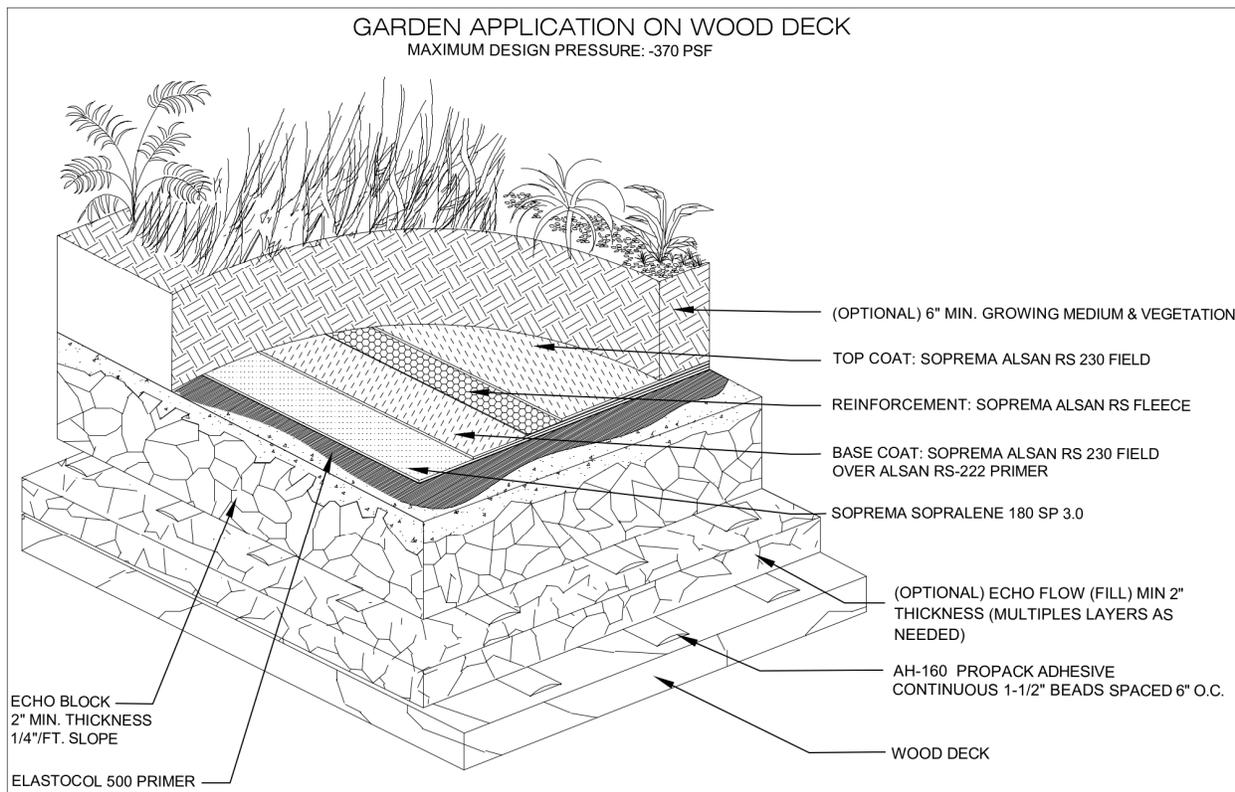
Growing Media

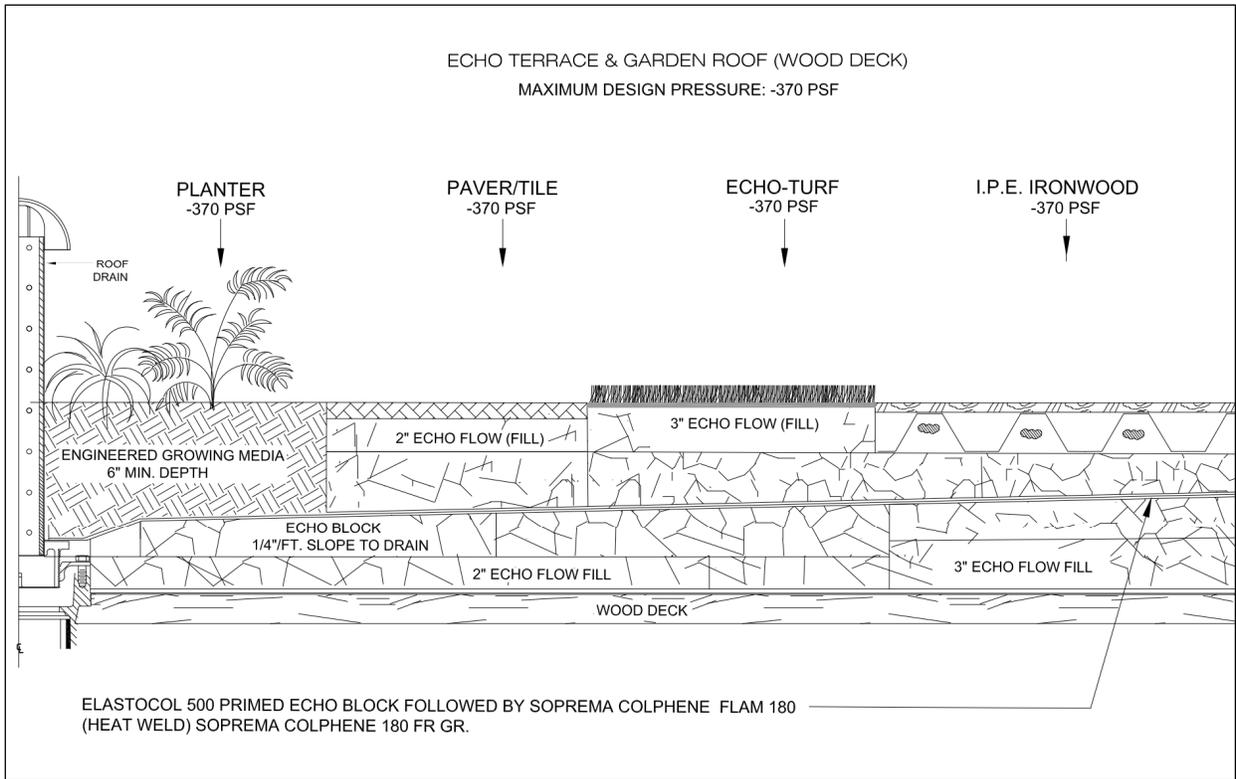
On completion of the planter walls, the ECHO SS Root barrier is installed with #14 S.S 1-1/2" screws 9" O.C followed by the required stucco. (Optional) Alsan Quartz aggregate can be installed on addition wet layer of Alsan 230 Field, followed by a 1/4" layer of grout as a protection layer. Drainage Mats, Filter fabric, media trays and growing media as designed by Landscape architect can be installed from 6" to 36" depth. Any soil less than 24" must have the ECHO Soil retention screen installed, which is to remain at same elevation throughout the planter. The ECHO Tree Restraint system for securing trees to rooftops in high winds is recommended and must be certified by an engineer (project specific).

Maximum Design

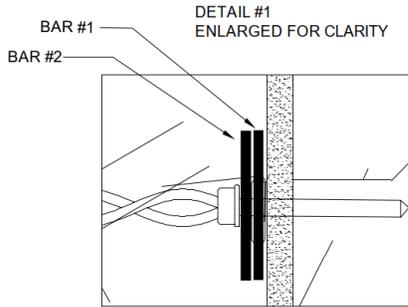
Pressure:

-370 psf. (See General limitation #9)

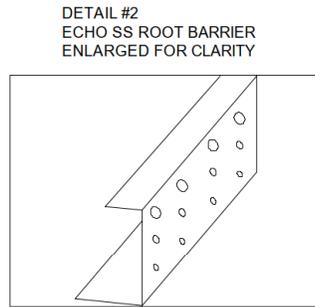




ECHO - SS - SOIL RETENTION SCREEN ON WOOD DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF



1ST BAR WRAPPED 3 TIMES WITH ECHO SOIL RETENTION SCREEN 2ND BAR ATTACHED THROUGH 1ST BAR INTO ECHO FLOW WITH 3" LONG X 5/16" SS - HEX HEAD LAG SCREW @ 9" O.C.



WATER RETENTION AND DETENTION. FOR CUSTOMIZED ADJUSTABLE WATER FLOW AND ROOT BARRIER

WRAPPED 3 TIMES STAINLESS STEEL SOIL BAR LAG SCREW 9" O.C.

DETAIL #1 STAINLESS STEEL SOIL BAR 3" DOWN ON THE STUCCO FINISH

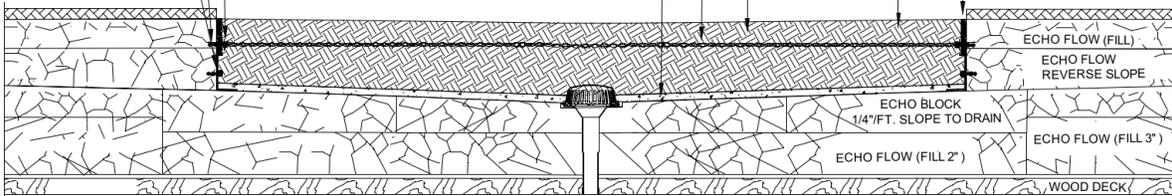
DETAIL #2 ECHO SS ROOT BARRIER

ECHO SS - SOIL RETENTION SCREEN REQUIRED ON SOIL LESS THAN 24"

16 GA. SS TIE WIRE 2' O.C. ON ALL OVERLAPS

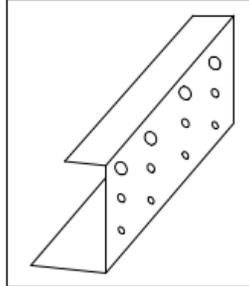
(OPTIONAL) 1/4" STRUCTURAL GROUT ON ALSAN RS WITH QUARTS AGGREGATE

STUCCO
 6" MIN SOIL DEPTH

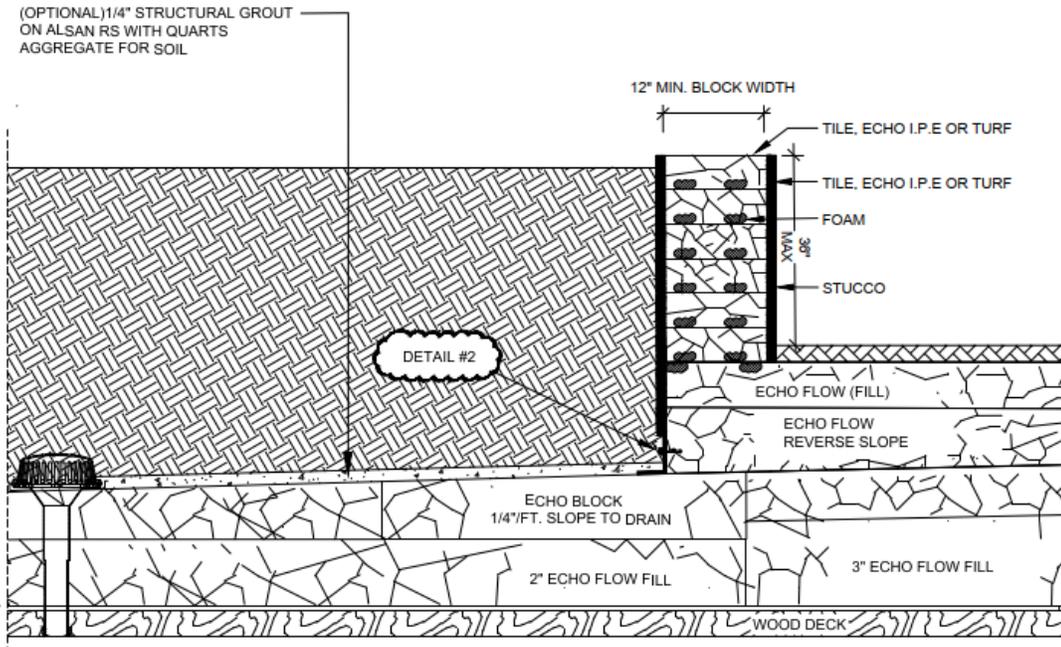


ECHO FLOW PLANTER WALL ON WOOD DECK
 MAXIMUM DESIGN PRESSURE: -.370 PSF

DETAIL #2
 ENLARGED FOR CLARITY



WATER RETENTION AND DETENTION.
 FOR CUSTOMIZED ADJUSTABLE WATER
 FLOW AND ROOT BARRIER



Membrane Type: SBS
Deck Type II: 5/8" Plywood Decks, Insulated
Deck Description: Terrace/Plaza Deck, Garden Roof
System Types A(19) (Optional) ECHO Flow Insulation adhered to plywood deck followed by additional layers of insulation and SBS membranes without overburden.
(For **Light Traffic surfacing**).

All General and system Limitation Shall Apply

One or more of the following insulations:

(Optional) ECHO Flow Minimum 2" Thick
Base Layers Insulation:

Note: Base Layer of Insulation shall adhere to the deck with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing application Standard RAS 117 for insulation attachment.

(Optional) ECHO Flow Minimum 2" Thick
Mid Layers Insulation:

Top Layer Insulation: ECHO Block Minimum 2" Thick

Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

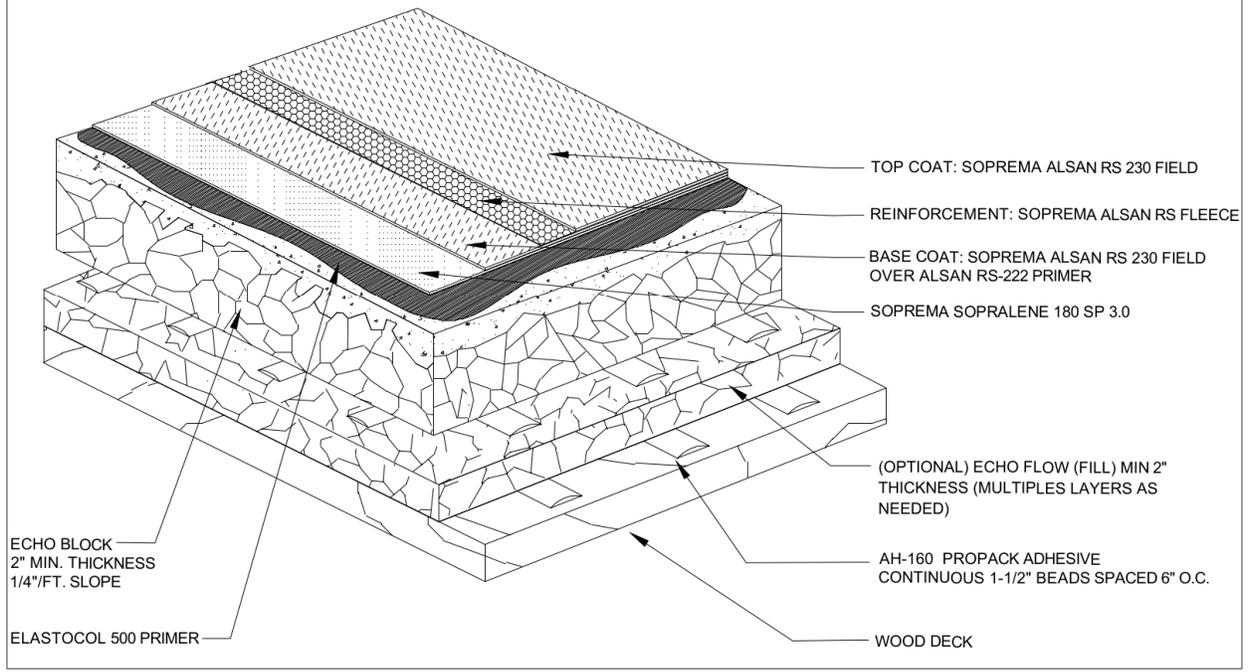
Membranes: Elastocol 500 primer is applied to ECHO Block. Soprema Sopralene 180 SP 3.0 SBS Modified bitumen is heat welded onto ECHO Block. Soprema Alsan RS 222 primer at a rate of 1 gal./sq is applied over Soprema Sopralene 180 SP 3.0 SBS Modified bitumen. Alsan RS 230 base coat is applied over Alsan RS 222 primer at a rate of 3.91 gal./sq. Alsan RS Fleece is embedded into the Alsan RS 230 base coat and Alsan RS 230 Field topcoat is installed at a rate of 1.95 gal./sq over the Alsan RS Fleece. Add optional Alsan RS Quartz aggregate to final layer.

Maximum Design Pressure: -370 psf. (See General limitation #9)



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 69 of 72

ROOFING APPLICATION ON WOOD DECK
 MAXIMUM DESIGN PRESSURE: -370 PSF



NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 70 of 72

GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance; refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. A copy of the integrity test report described herein in accordance with ASTM D5957 shall be provided to the Building Official for review at time of final inspection.
3. Contractor shall submit to the Building Official for review the system specifications and details. Submission of these documents, as well as the proper application and installation of all materials shall be the sole responsibility of the contractor.
4. All work shall be performed by a Contractor licensed to do roofing/waterproofing. Contractor shall be familiar with the details and shall be approved by Miami Echo Inc.. Miami Echo Systems shall be installed solely by approved applicators and only with installation and equipment approved by Miami Echo Inc.
5. Flashings shall be installed according to the manufacturer's published standard details and shall be submitted to the Building Official for review.
6. All attachment and sizing of perimeter nailers, metal profile, and/or flashing termination designs shall conform to Roofing Application Standard RAS 111 and the wind load requirements of applicable Building Code.
7. Perimeter and corner areas shall comply with the enhanced uplift pressure requirements of these areas. Fastener densities shall be increased for both insulation and base sheet as calculated in compliance with Roofing Application Standard RAS 117 and/or RAS 137. Calculations prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant **(When this limitation is specifically referred within this NOA, General Limitation #9 will not be applicable.)**
8. A non-skid surfacing is required for all pedestrian areas, plaza decks or balconies.
9. The maximum designed pressure limitation listed shall be applicable to all roof pressure zones (i.e. field, perimeters, and corners). Neither rational analysis, nor extrapolation shall be permitted for enhanced fastening at enhanced pressure zones (i.e. perimeters, extended corners and corners). **(When this limitation is specifically referred within this NOA, General Limitation #7 will not be applicable.)**
10. All approved products listed herein shall be labeled and shall bear the imprint or identifiable marking of the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved" or the Miami-Dade County Product Control Seal.
11. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 61G20-3 of the Florida Administrative Code.

END OF THIS ACCEPTANCE



NOA No.: 25-0702.01
Expiration Date: 10/03/29
Approval Date: 09/04/25
Page 71 of 72

GREEN SUSTAINABLE ATTRIBUTES

SCOPE: This document is solely for the purpose of the listing of Sustainable Attributes of construction materials. The supporting documentation has been submitted by the NOA holder to Miami-Dade County Product Control.

SOLAR REFLECTANCE AND THERMAL EMMITTANCE

<u>Component Name</u>	<u>Initial Reflectance</u>	<u>Aged Reflectance</u>	<u>Initial Emittance</u>	<u>Aged Emittance</u>	<u>Solar Reflectance Index (SRI)</u>
Alsan RS 230 Field	0.86	0.72	0.88	0.87	109
Echo Turf	0.14		0.89		12.5

ROOF SYSTEM THERMAL RESISTANCE

<u>R-Value</u>	<u>Insulation / Thickness</u>	<u>Products:</u>
2.995	4.05 inches	Echo Bag
4.266	3.25 inches	Echo Flow
2.388	3.89 inches	Echo Block
5	1 inch	Styrofoam Highload 60 Insulation
5	1 inch	Sopra-XPS 60

LOW VOC COMPONENTS

<u>Component Name</u>	<u>Content</u>	<u>Emission</u>
ICP Adhesive Polyset AH-160	4 g/L	
Echo Block	No VOC per MSDS	
Echo Flow	No VOC per MSDS	
Echo Bond	No VOC per MSDS	
Alsan RS 230 Field	2.3 g/L (summer), 2.4 g/L (winter)	

RECYCLED CONTENT / BIO-BASED MATERIAL / RAPIDLY RENEWABLE MATERIAL

<u>Component Name</u>	<u>% Recycled Content when Manufactured</u>	<u>% Able to be Recycled at Disposal</u>	<u>% of Bio-based Material</u>	<u>% of Rapidly Renewable Material</u>
Echo Block	87	100		
Echo Flow	93	100		
Echo Turf	20	100	60	
Styrofoam Highload 60 Insulation	20	100		
Sopra-XPS 60	57	100		

SYSTEM LIFE CYCLE

<u>Years</u>	<u>Assemblies:</u>
40	A(1) through A(16)

REGIONALLY MANUFACTURED COMPONENTS

<u>Component Name</u>	<u>Manufacturing Location</u>
Echo Block	Miami Echo Inc., 2755 NW 63 rd Ct, Fort Lauderdale, FL, 33309
Echo Flow	Miami Echo Inc, 2755 NW 63 rd Ct, Fort Lauderdale, FL, 33309
Echo Bag	Miami Echo Inc., 2755 NW 63 rd Ct, Fort Lauderdale, FL, 33309

U-FACTOR (THERMAL TRANSMITTANCE) BTU/HR-FT²-°F

<u>Component Name</u>	<u>U-Value</u>	<u>Component Name</u>	<u>U-Value</u>
Echo Block	.420	Echo Bag	.334
Echo Flow	.234	Styrofoam Highload 60 Insulation	.200
Sopra-XPS 60 Insulation	.200		

C-FACTOR (THERMAL CONDUCTANCE) BTU/HR-FT²-°F

<u>Component Name</u>	<u>U-Value</u>	<u>Component Name</u>	<u>U-Value</u>
Echo Block	1.634	Echo Bag	1.357
Echo Flow	.809	Styrofoam Highload 60 Insulation	.200
Sopra-XPS 60 Insulation	.200		



NOA No.: 25-0702.01
 Expiration Date: 10/03/29
 Approval Date: 09/04/25
 Page 72 of 72