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

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

NOTICE OF ACCEPTANCE (NOA)

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 renews and revises NOA No. 21-0514.02 and consists of pages 1 through 58
The submitted documentation was reviewed by Jorge L. Acebo.

09/26/24

MIAMI-DADE COUNTY APPROVED

WATERPROOFING SYSTEM APPROVAL

Category:	Roofing
Sub-Category:	Waterproofing
Deck Type:	Concrete, Steel, Wood
Material:	SBS
Maximum Design Pressure:	-370 psf.

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

Product	Dimensions	Test Specification	Product Description
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 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 boarders (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.
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

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

Product	Dimensions	Test Specification	Product Description
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

TRADE NAMES OF PRODUCTS MANUFACTURED BY OTHERS:

Product	Dimensions	Test Specification	Product Description	Manufacturer (With current NOA)
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.
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.

TRADE NAMES OF PRODUCTS MANUFACTURED BY OTHERS:

Product	Dimensions	Test Specification	Product Description	Manufacturer (With current NOA)
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
Paver Tile	Min Thick - ¾” 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
Tile Mortar	Various	ANSI A118.4/A118.11	Large format tile mortar.	Generic
Permascan-C	Various	Proprietary	Moisture detection system	Detec
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.
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

TRADE NAMES OF PRODUCTS MANUFACTURED BY OTHERS:

Product	Dimensions	Test Specification	Product Description	Manufacturer (With current NOA)
#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:

Test Agency	Test Identifier	Test Name/Report	Date
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
	TAS 111(B)	SHTI-001-02-01.1	05/31/17
UL LLC	UL 790	R38782	08/03/22
	UL 790	Project 4789853874	10/27/21
	Water Flow Rate	Project 4787705846	12/22/16
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
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	Soil screen uplift	R0524.01-22 R1	06/23/22
R & D Services, Inc	ASTM C578	RD20192-R2	09/08/20

APPROVED APPLICATIONS:

Membrane Type: SBS

Deck Type 3I: Concrete Decks, 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 **ECHO Turf 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.

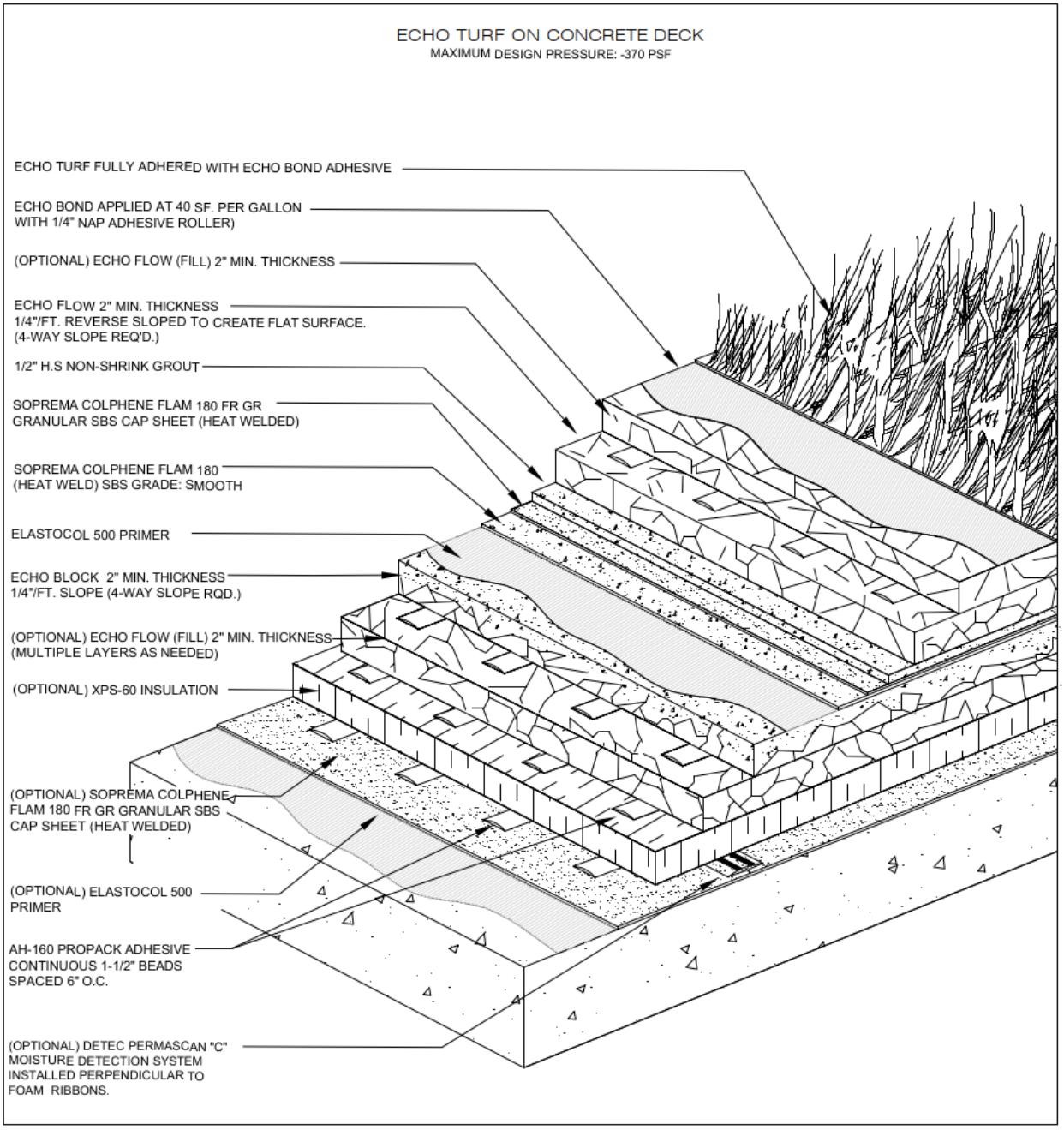
Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

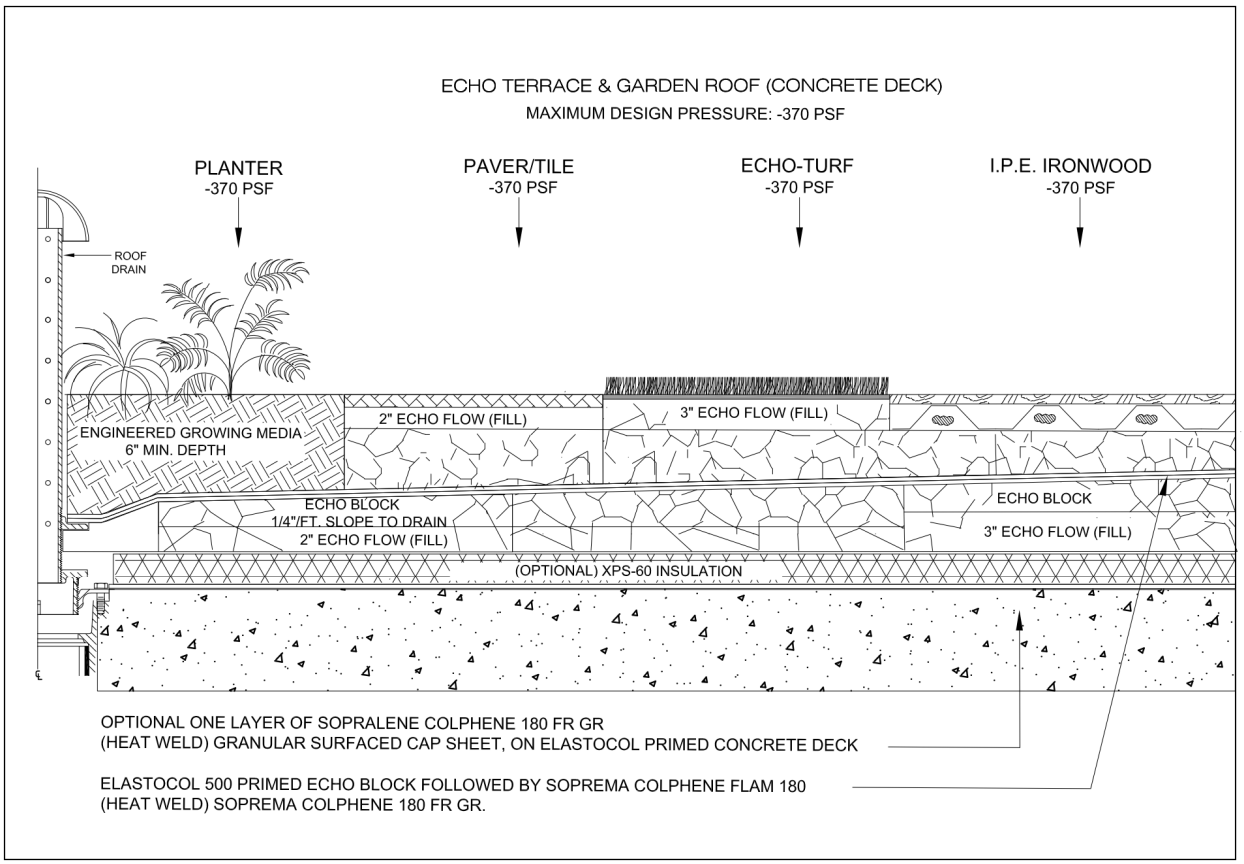
ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a ½" notched trowel over the granulated cap sheet, then a 2 inch minimum x 24 inch x 24 inch ECHO Flow is pressed into the grout. Any additional (optional) secondary layers of 2 inch minimum x 24 inch x 24 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)




ECHO TERRACE & GARDEN ROOF (CONCRETE DECK)
MAXIMUM DESIGN PRESSURE: -370 PSF
PLANTER
-370 PSF
PAVER/TILE
-370 PSF
ECHO-TURF
-370 PSF
I.P.E. IRONWOOD
-370 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW (FILL)
ECHO BLOCK
3" ECHO FLOW (FILL)
(OPTIONAL) XPS-60 INSULATION
OPTIONAL ONE LAYER OF SOPRALENE COLPHENE 180 FR GR
(HEAT WELD) GRANULAR SURFACED CAP SHEET, ON ELASTOCOL PRIMED CONCRETE DECK
ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

Membrane Type:	SBS
Deck Type 3I:	Concrete Decks, 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 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**

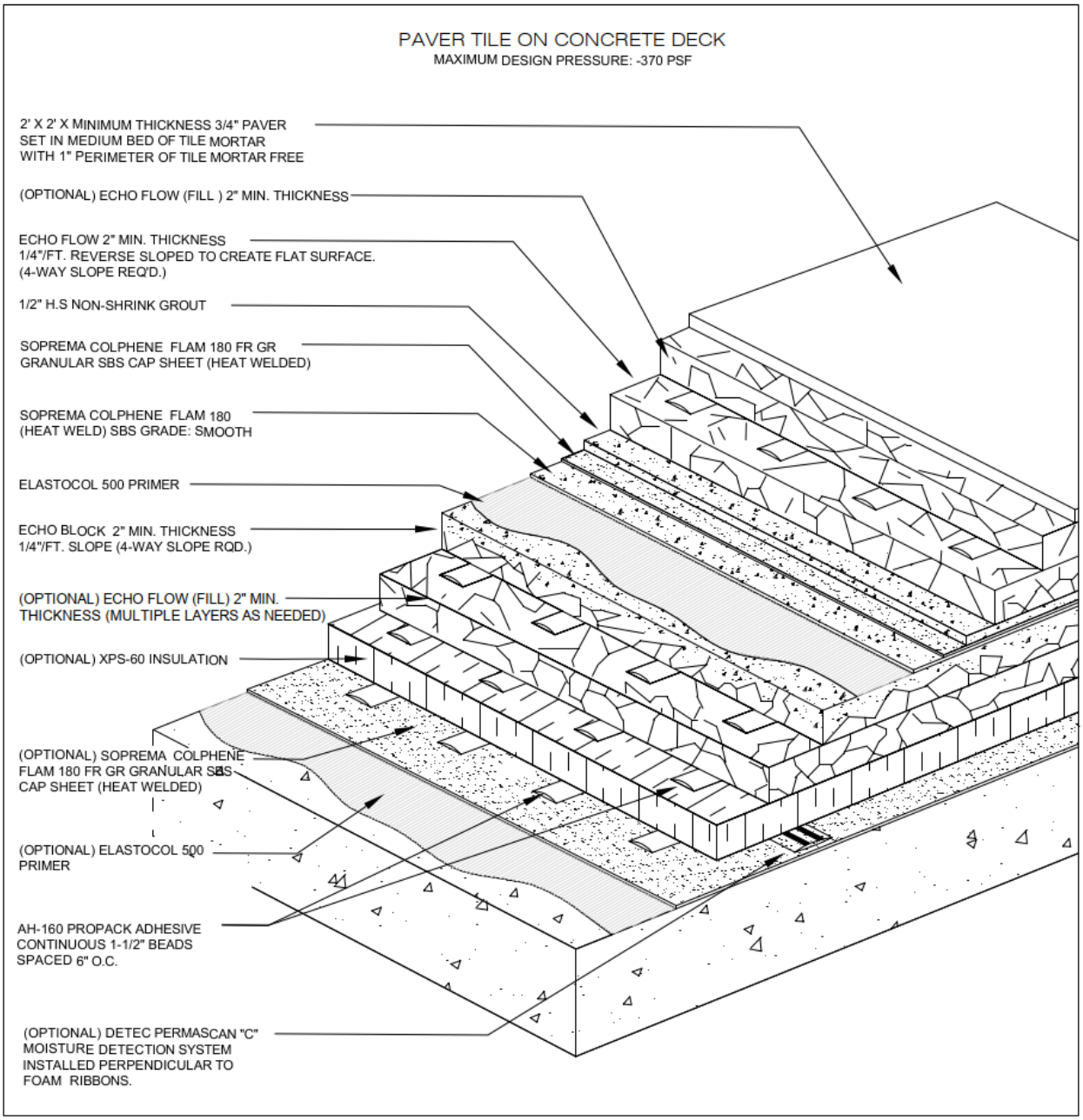
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP Adhesives Polyset AH-160 spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

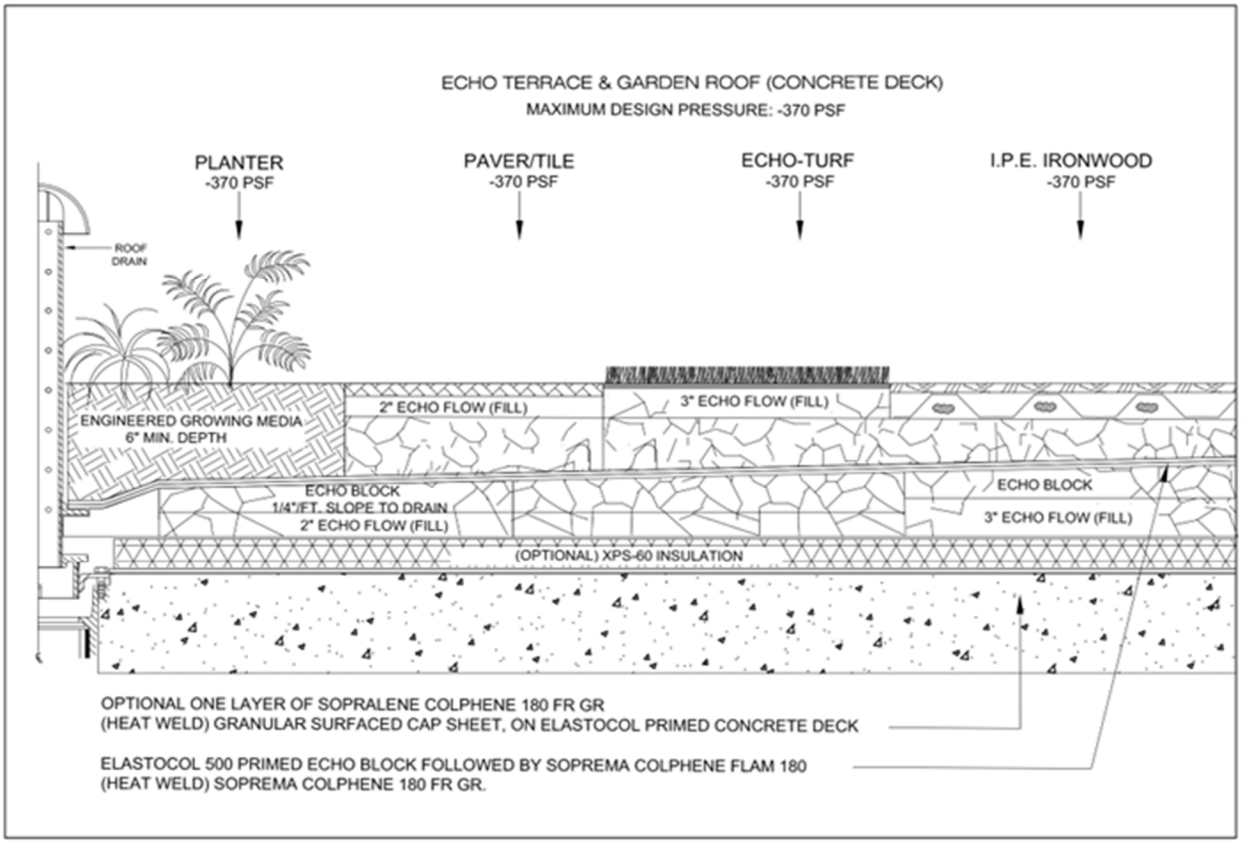
Membranes:	Elastocol 500 primer is applied to top of ECHO Block, with Soprema Colphene Flam 180 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Soprema Colphene Flam 180 FR GR Standard SBS modified bitumen granulated cap sheet then heat-welded to base ply.
Integrity Test:	Required,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

Paver Tile Paver tile ¾ 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 ¾ 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)




ECHO TERRACE & GARDEN ROOF (CONCRETE DECK)
MAXIMUM DESIGN PRESSURE: -370 PSF
PLANTER
-370 PSF
PAVER/TILE
-370 PSF
ECHO-TURF
-370 PSF
I.P.E. IRONWOOD
-370 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW (FILL)
ECHO BLOCK
3" ECHO FLOW (FILL)
(OPTIONAL) XPS-60 INSULATION
OPTIONAL ONE LAYER OF SOPRALENE COLPHENE 180 FR GR
(HEAT WELD) GRANULAR SURFACED CAP SHEET, ON ELASTOCOL PRIMED CONCRETE DECK
ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

Membrane Type:	SBS
Deck Type 3I:	Concrete Decks, 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 **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) 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**

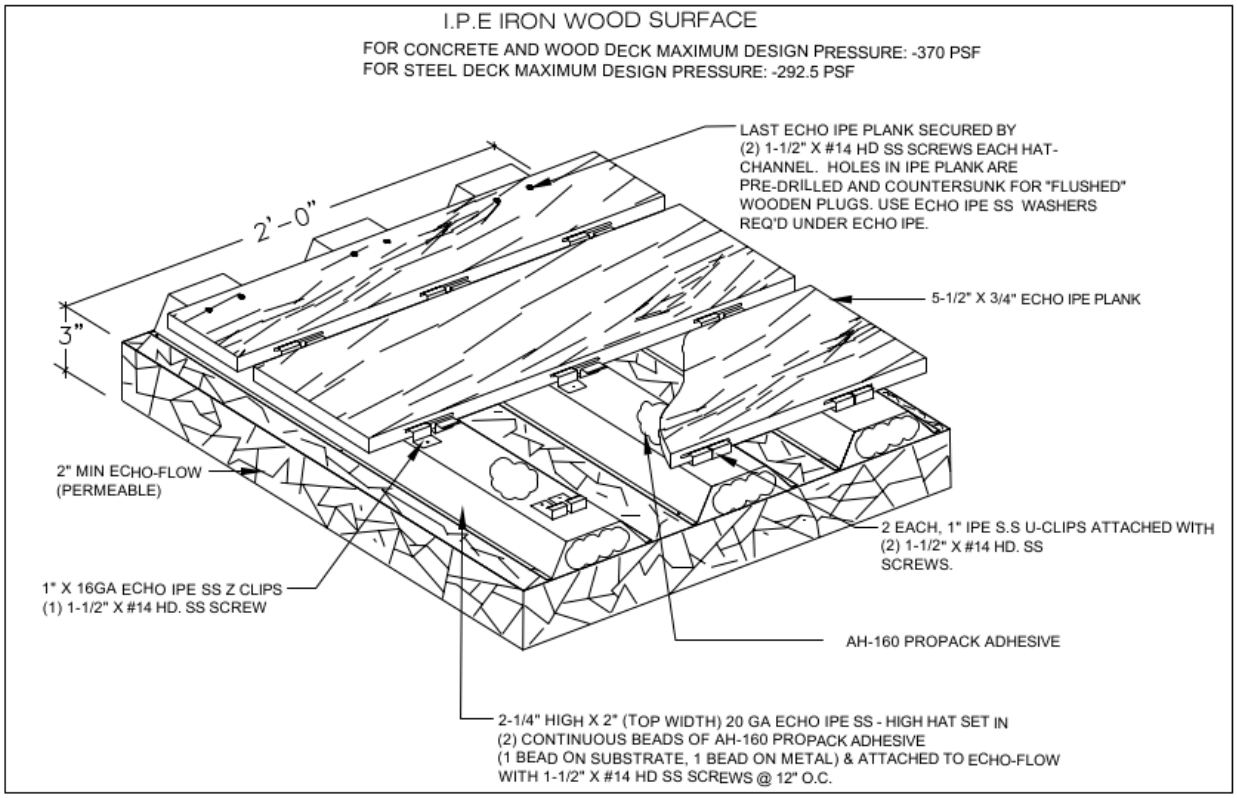
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP Adhesives Polyset AH-160 spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

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.**

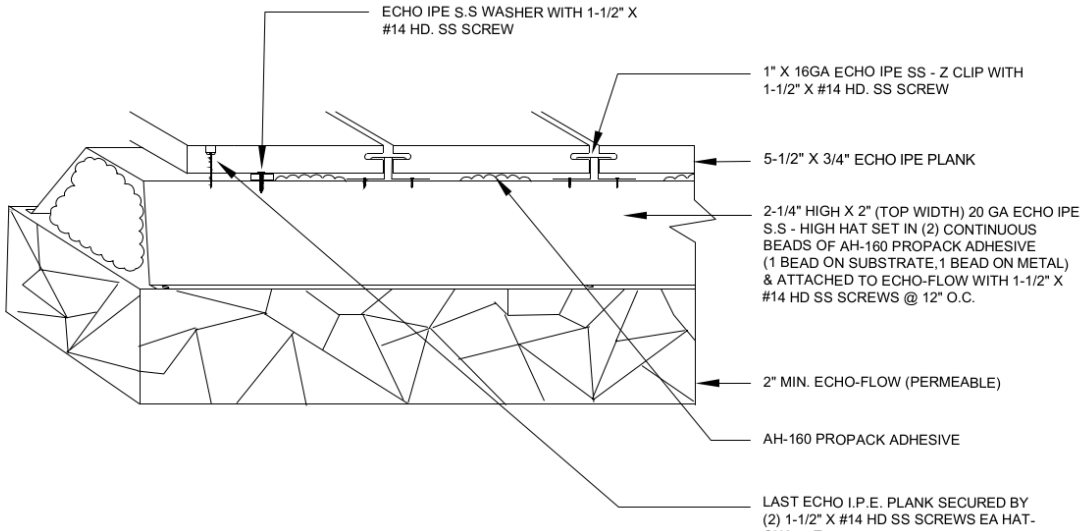
IPE Iron Wood ECHO IPE S.S Hat Channel (installed 8" O.C) is set onto ECHO Flow with ICP AH-160 adhesive (1 bead on substrate, 1 bead on metal). The ECHO IPE S.S Hat Channel is then fastened into ECHO Flow using 1-1/2", #14 HD S.S screws at 12" O.C. ECHO IPE S.S-U clips are first fastened into ECHO IPE 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)



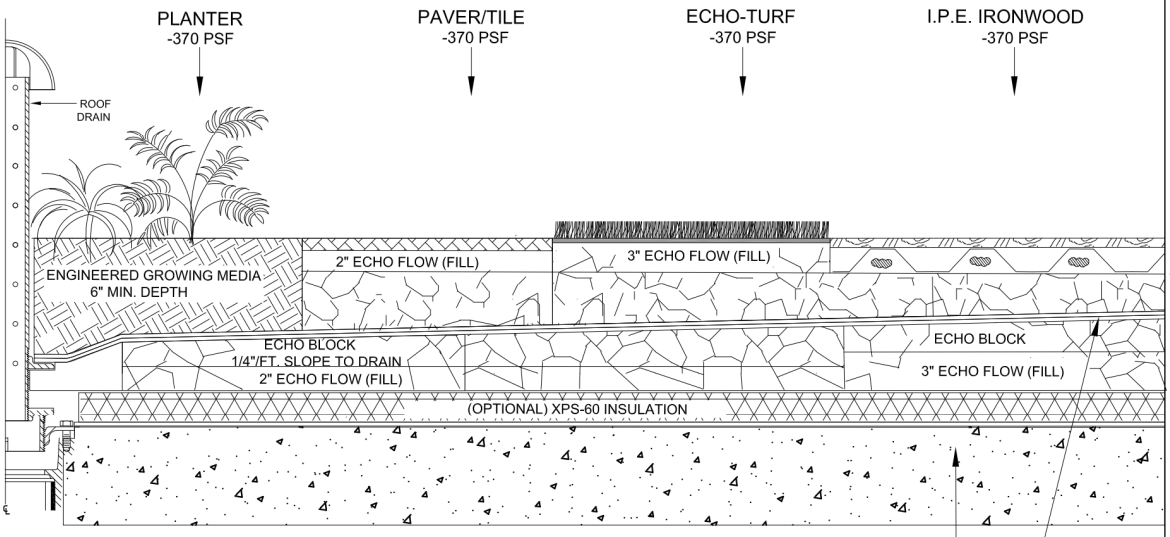
I.P.E IRON WOOD SURFACE

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



OPTIONAL ONE LAYER OF SOPRALENE COLPHENE 180 FR GR
(HEAT WELD) GRANULAR SURFACED CAP SHEET, ON ELASTOCOL PRIMED CONCRETE DECK

ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

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 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.

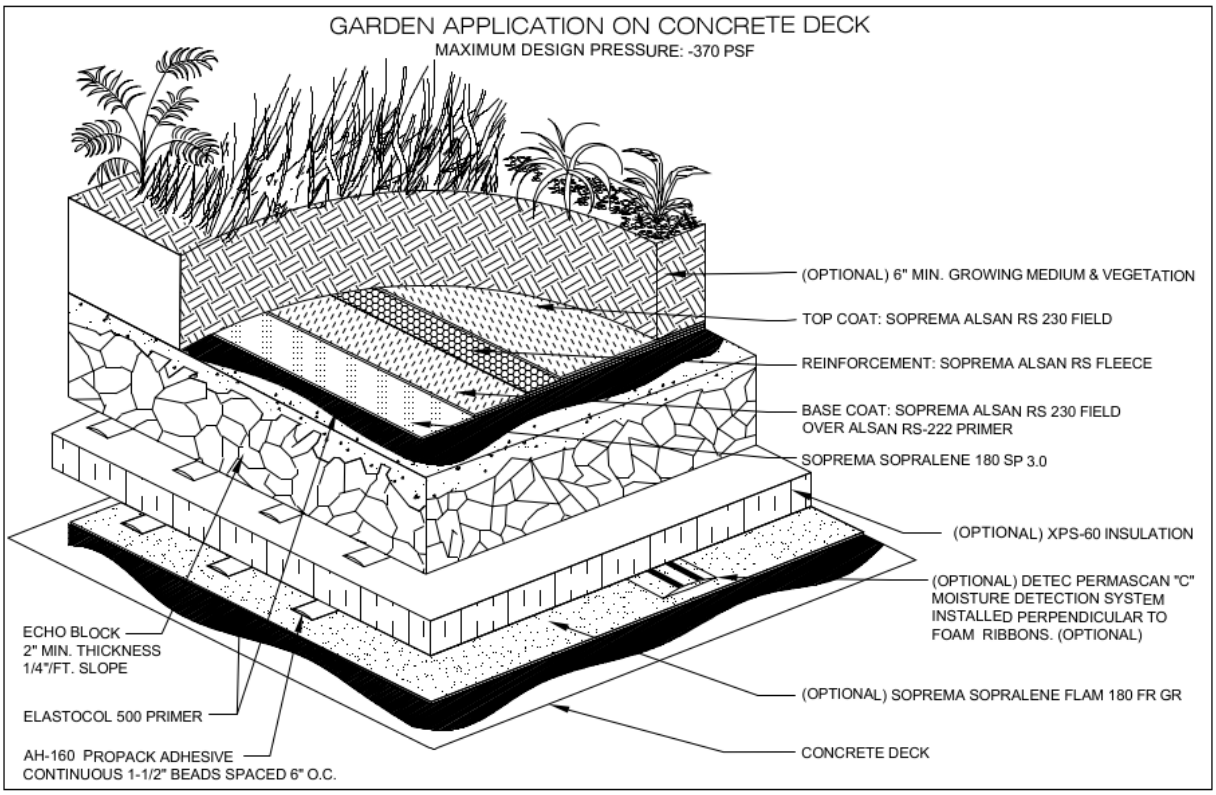
Membranes:	Elastocol 500 primer is applied to top of ECHO Block, with Soprema Sopralene 180 SP 3.0 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Alsan RS 222 primer is applied to the Soprema Sopralene 180 SP 3.0 base ply followed by Alsan RS 230 Field. Alsan RS Fleece is set into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

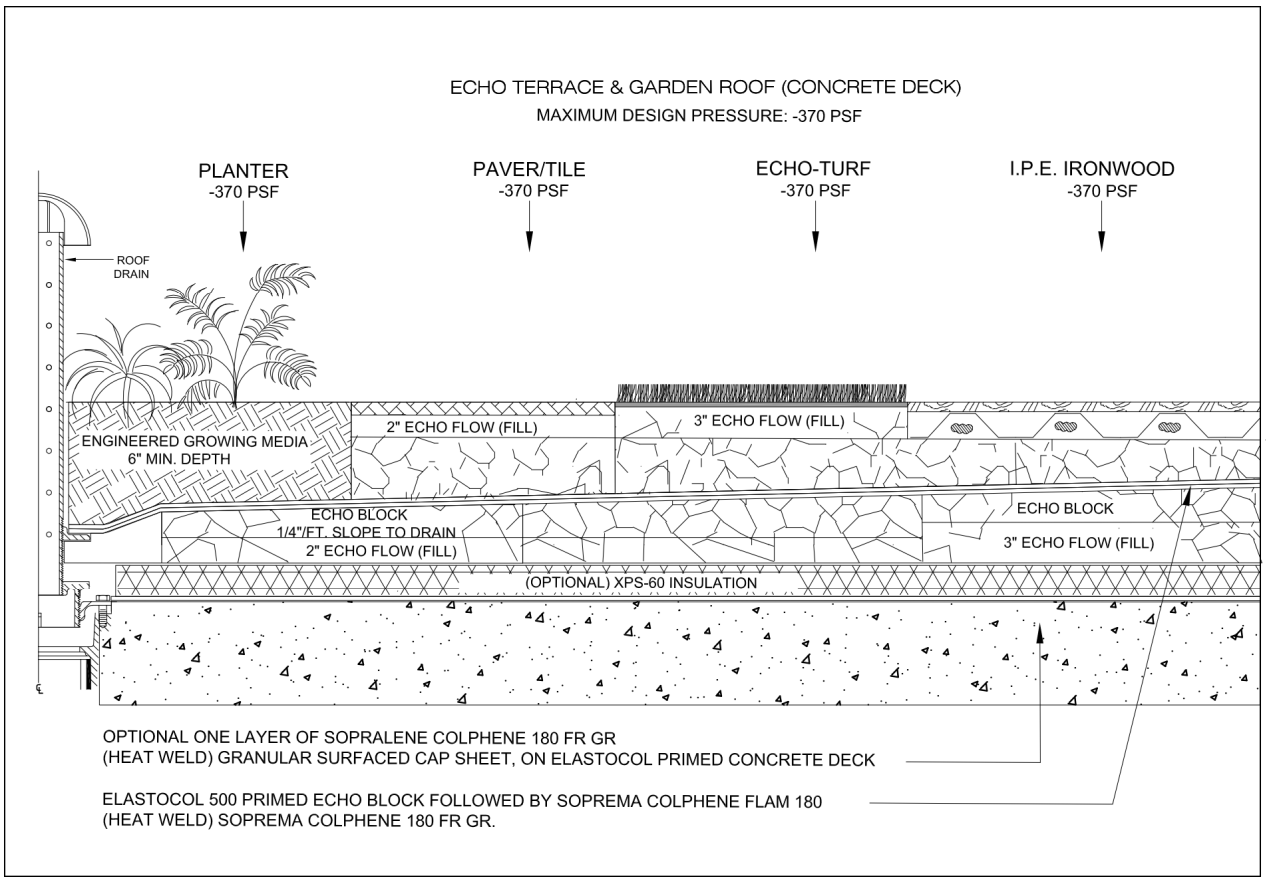
Planter Walls: ECHO Flow Wall blocks that are 6” thick x 12” wide x 18” long are installed on the finished level of ECHO Flow at the terrace/planter boarder with two beads of AH-160 adhesive at a continuous bead thickness of 1.5 inches spaced 6” apart. Maximum height of planter above finished ECHO Flow 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: **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).

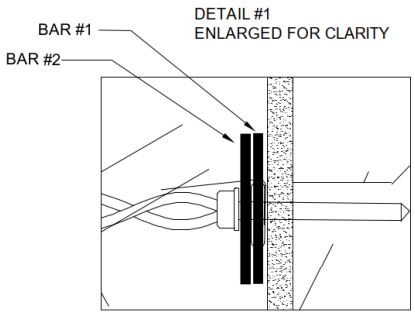
Maximum Design Pressure: -370 psf. (See General limitation #9)



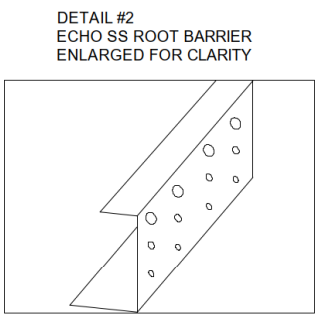

ECHO TERRACE & GARDEN ROOF (CONCRETE DECK)
MAXIMUM DESIGN PRESSURE: -370 PSF
PLANTER
-370 PSF
PAVER/TILE
-370 PSF
ECHO-TURF
-370 PSF
I.P.E. IRONWOOD
-370 PSF
ROOF
DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW (FILL)
ECHO BLOCK
3" ECHO FLOW (FILL)
(OPTIONAL) XPS-60 INSULATION
OPTIONAL ONE LAYER OF SOPRALENE COLPHENE 180 FR GR
(HEAT WELD) GRANULAR SURFACED CAP SHEET, ON ELASTOCOL PRIMED CONCRETE DECK
ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

ECHO - SS - SOIL RETENTION SCREEN ON CONCRETE DECK

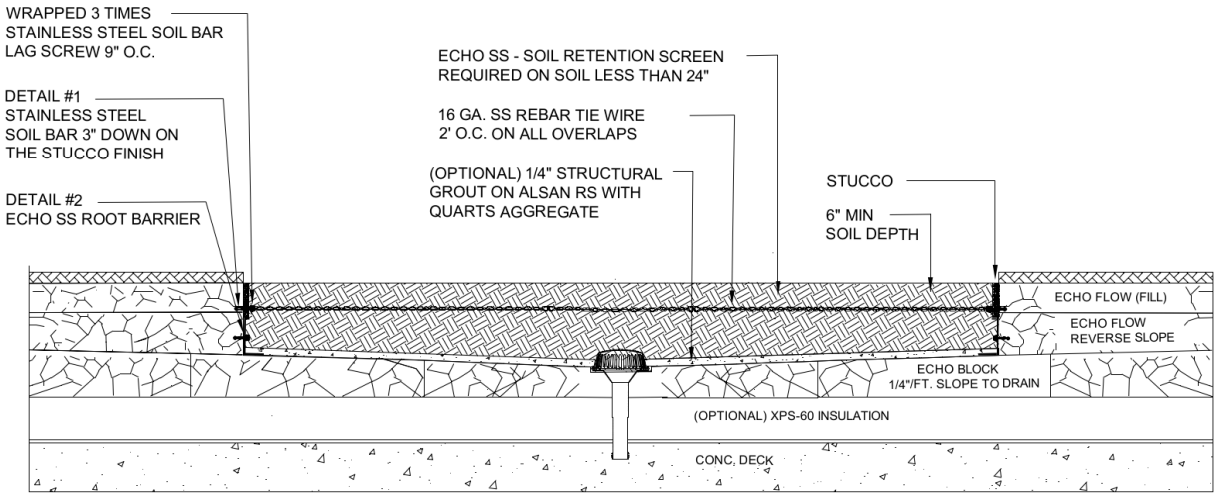
MAXIMUM DESIGN PRESSURE: -370 PSF



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.

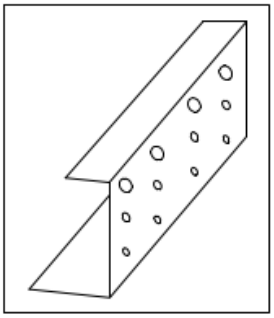


WATER RETENTION AND DETENTION. FOR CUSTOMIZED ADJUSTABLE WATER FLOW AND ROOT BARRIER

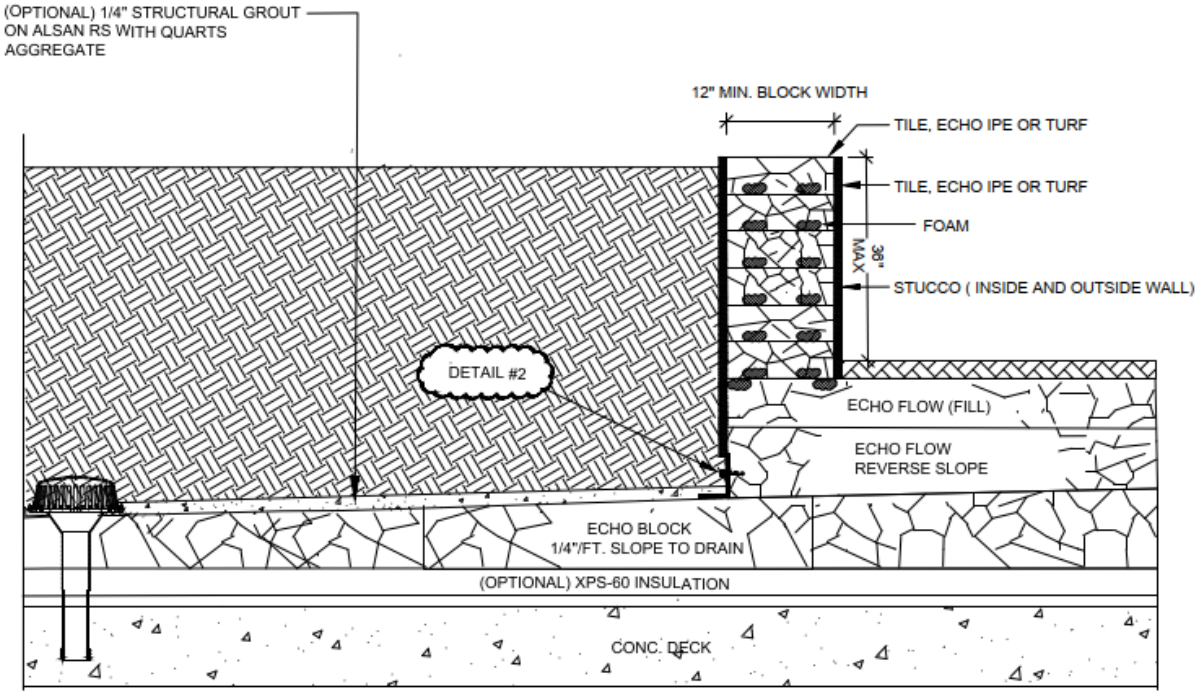


ECHO FLOW PLANTER WALL ON CONCRETE DECK
MAXIMUM DESIGN PRESSURE: -370 PSF

DETAIL #2
ENLARGED FOR CLARITY



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



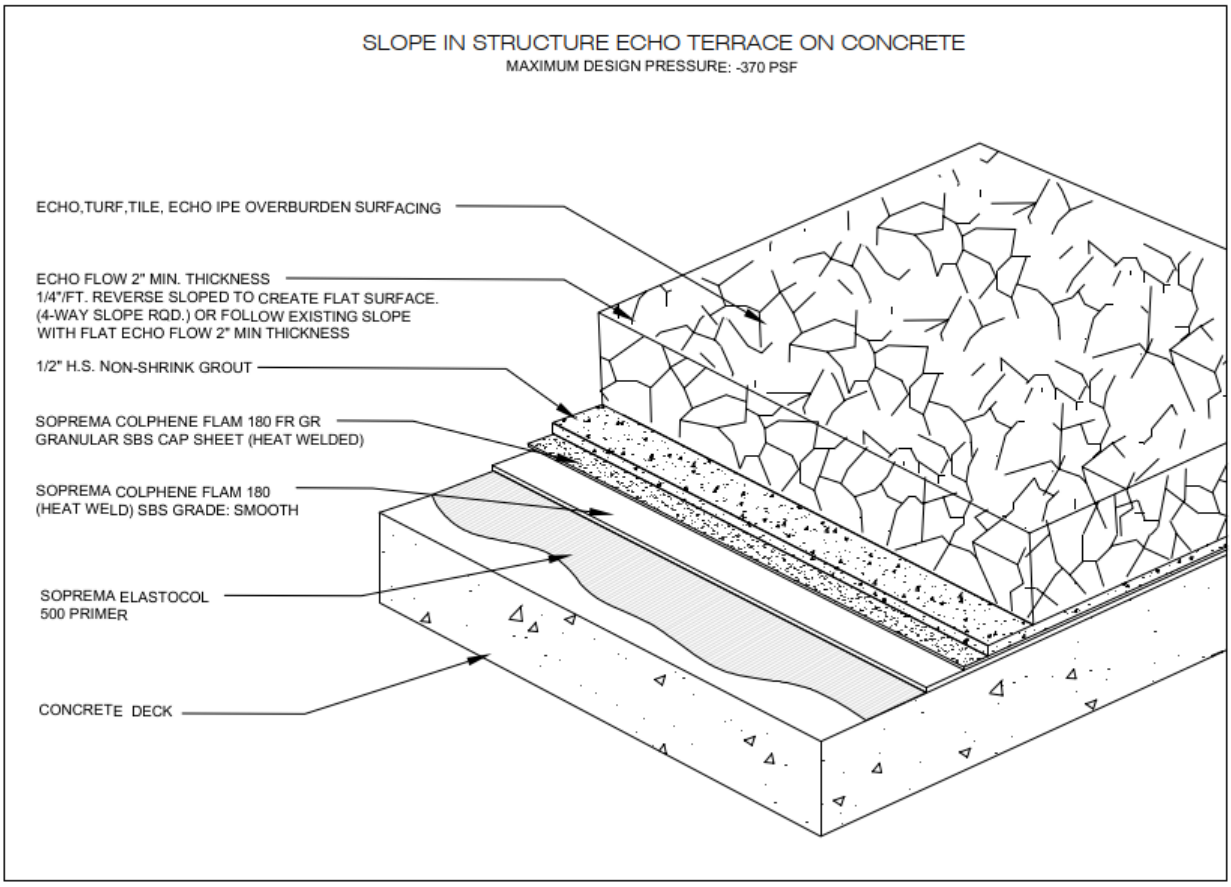
Membrane Type:	SBS
Deck Type 3I:	Sloped Concrete Decks, Non-Insulated
Deck Description:	Terrace/Plaza Deck, Garden Roof
System Types A(5):	Elastocol 500 on concrete slab followed by Soprema Colphene Flam 180 and Soprema Colphene Flam FR GR on concrete slab followed by Echo Flow and all traffic surfacing 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



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, 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.

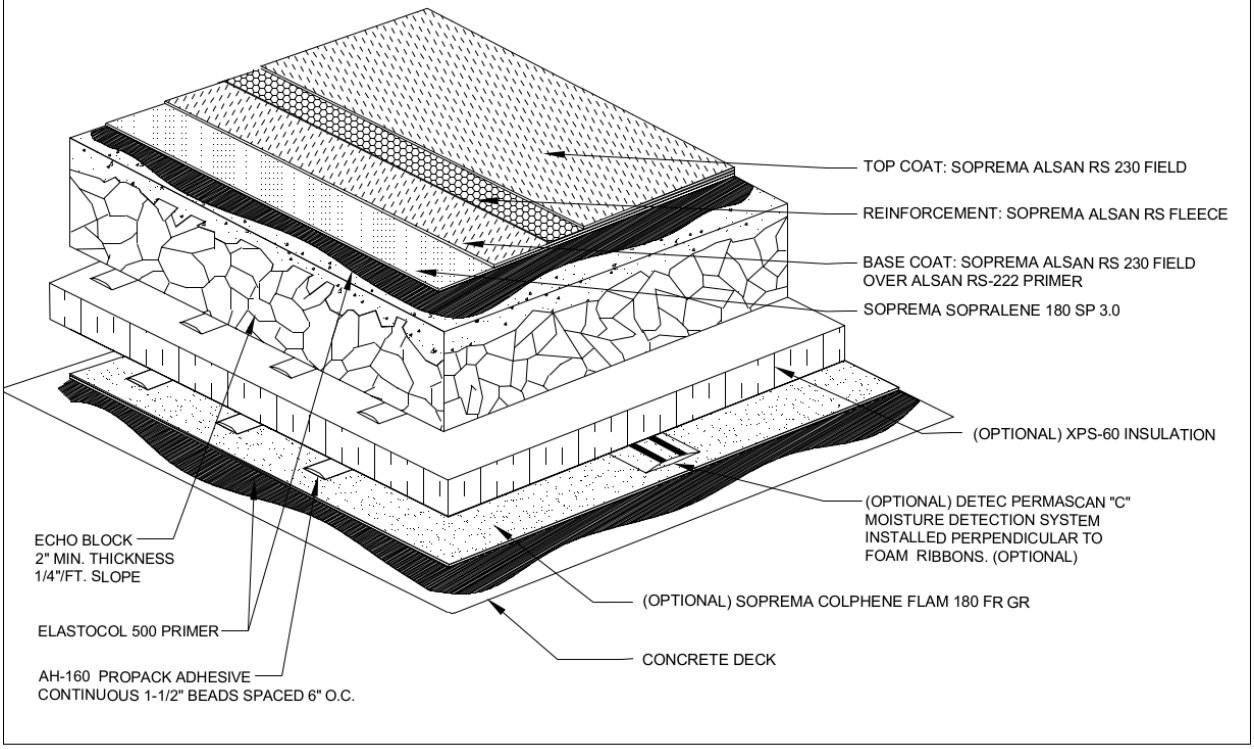
(Optional) Mid Layers Insulation:	**Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1" thick or ECHO Flow Minimum 2" Thick**
Top Layer Insulation:	**Echo Block Minimum 2" Thick**

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)

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(7):	(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) 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.

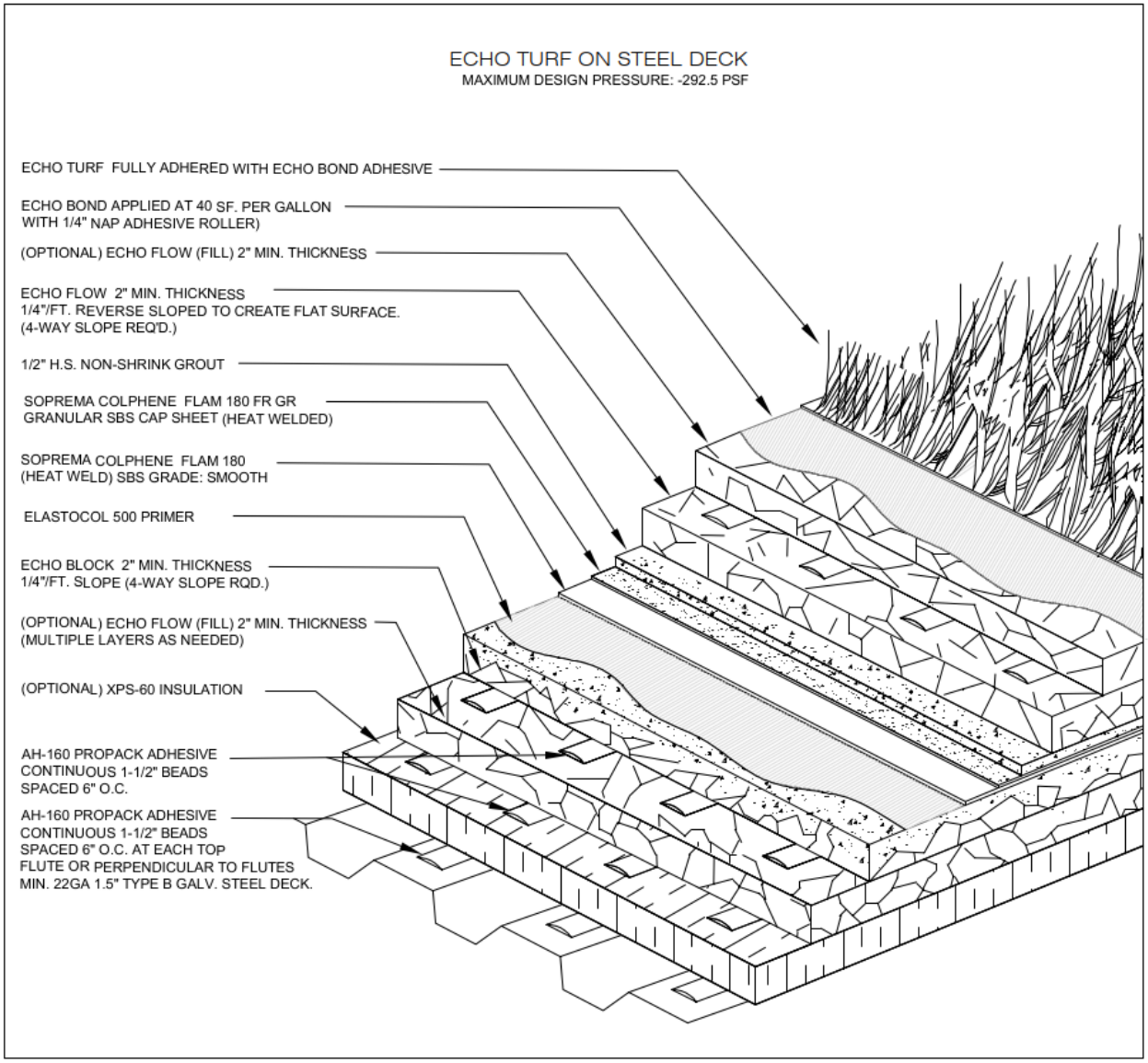
(Optional) Mid Layers Insulation:	**Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1" thick or ECHO Flow Minimum 2" Thick**
Top Layer Insulation:	**Echo Block Minimum 2" Thick**

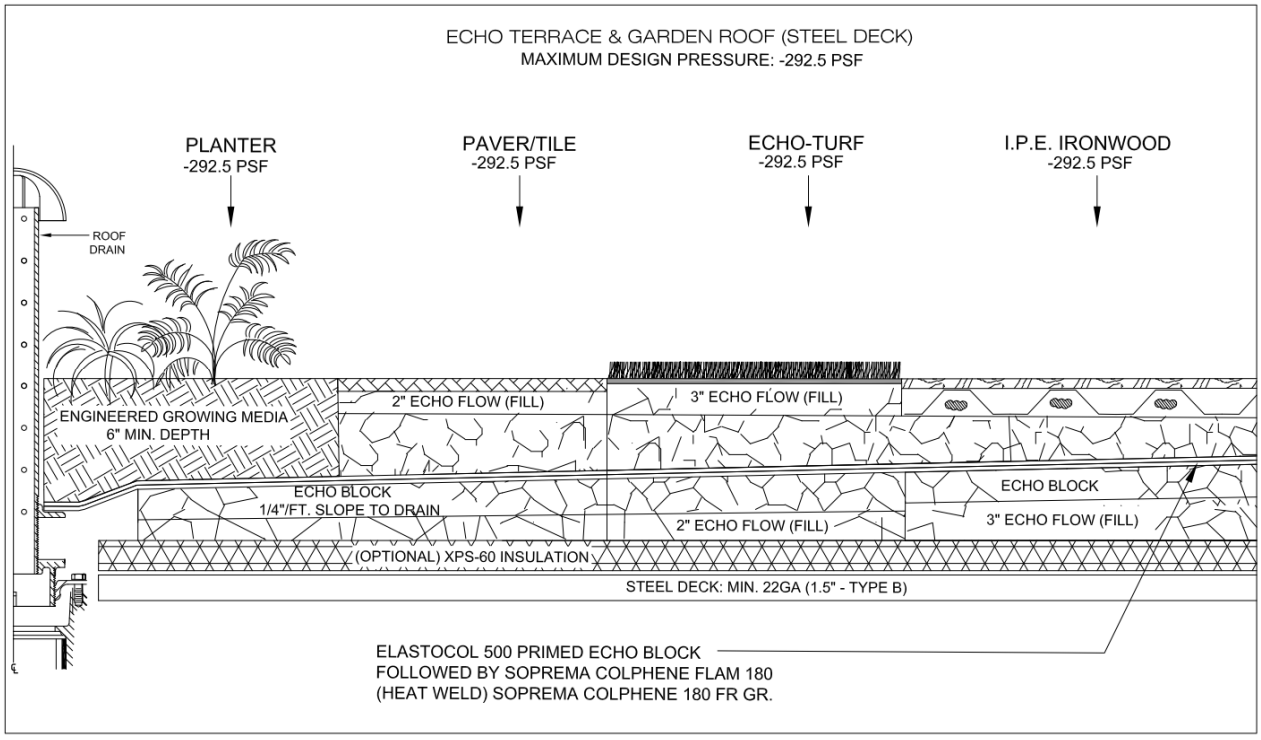
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP Adhesives Polyset AH-160 spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

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 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 TERRACE & GARDEN ROOF (STEEL DECK)
MAXIMUM DESIGN PRESSURE: -292.5 PSF
PLANTER
-292.5 PSF
PAVER/TILE
-292.5 PSF
ECHO-TURF
-292.5 PSF
I.P.E. IRONWOOD
-292.5 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
ECHO BLOCK
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
(OPTIONAL) XPS-60 INSULATION
STEEL DECK: MIN. 22GA (1.5" - TYPE B)
ELASTOCOL 500 PRIMED ECHO BLOCK
FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

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(8):	(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:

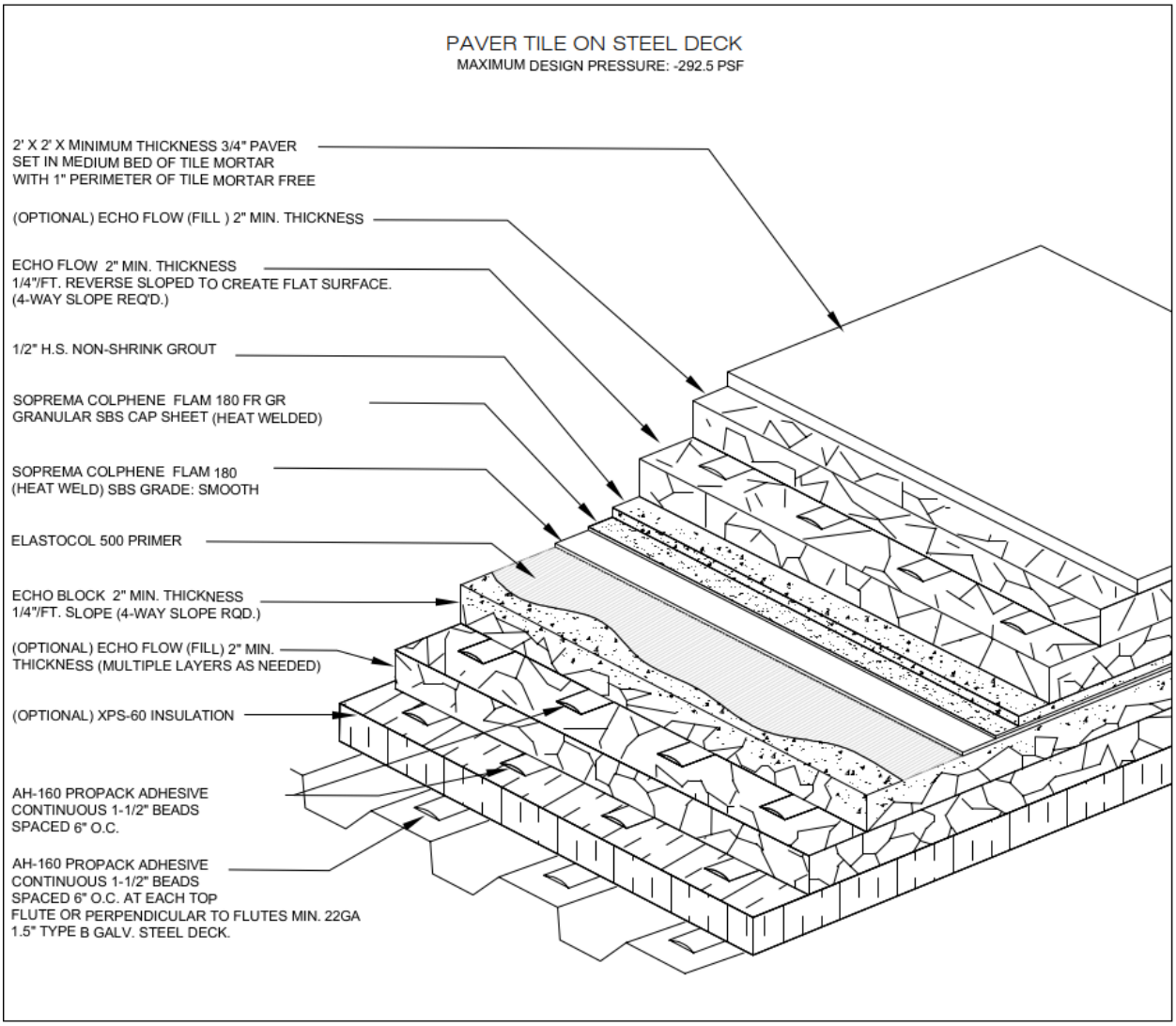
(Optional) Base Layers Insulation:	**Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1" Thick or ECHO Flow Minimum 2" Thick**

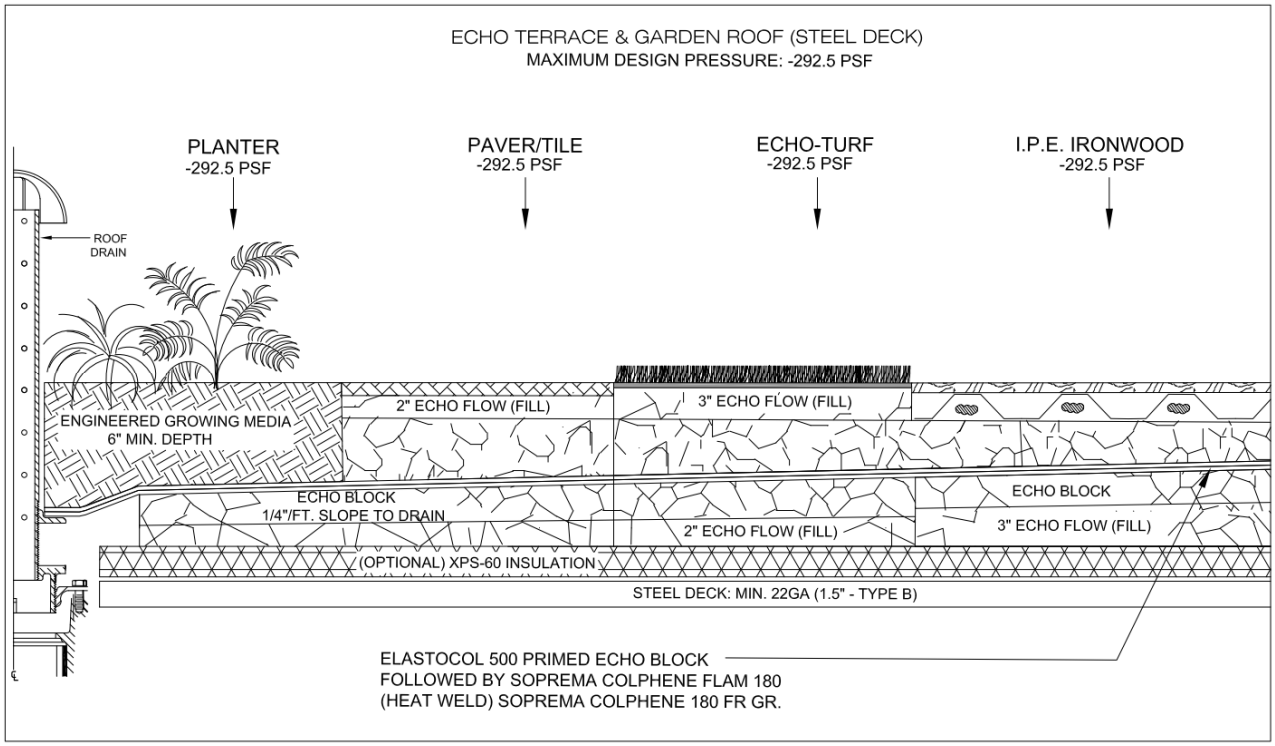
Note: Base Layer of Insulation shall be adhered to the deck with 1.5" wide beads of ICP Adhesives Polyset AH-160 spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

(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 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.**
Paver Tile	Paver tile ¾ 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 ¾ 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)


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 RQD.)
(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.


ECHO TERRACE & GARDEN ROOF (STEEL DECK)
MAXIMUM DESIGN PRESSURE: -292.5 PSF
PLANTER
-292.5 PSF
PAVER/TILE
-292.5 PSF
ECHO-TURF
-292.5 PSF
I.P.E. IRONWOOD
-292.5 PSF
ROOF
DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW (FILL)
ECHO BLOCK
3" ECHO FLOW (FILL)
(OPTIONAL) XPS-60 INSULATION
STEEL DECK: MIN. 22GA (1.5" - TYPE B)
ELASTOCOL 500 PRIMED ECHO BLOCK
FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

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(9): (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) 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.

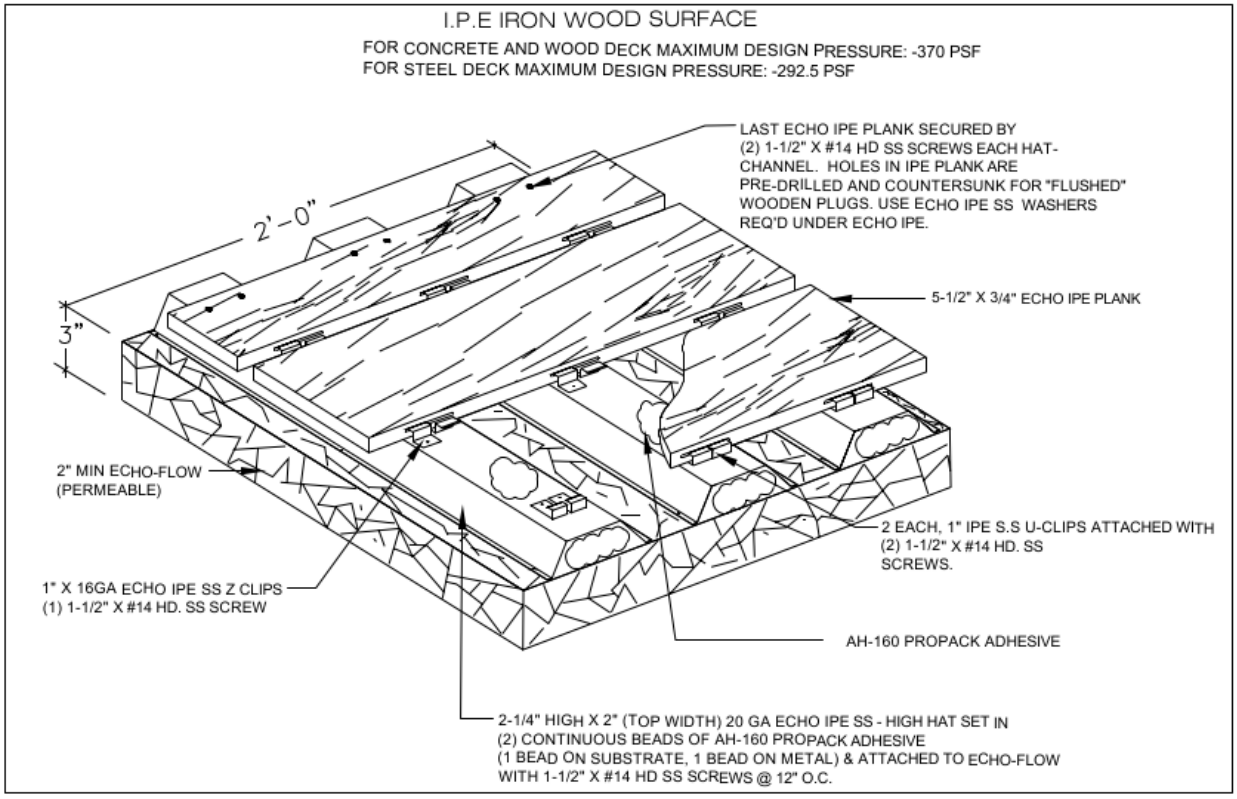
Inspection: Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects shall be corrected.

ECHO Flow: Any ASTM C1107, 8000 PSI non-shrink high-strength construction grout is troweled with a 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.**

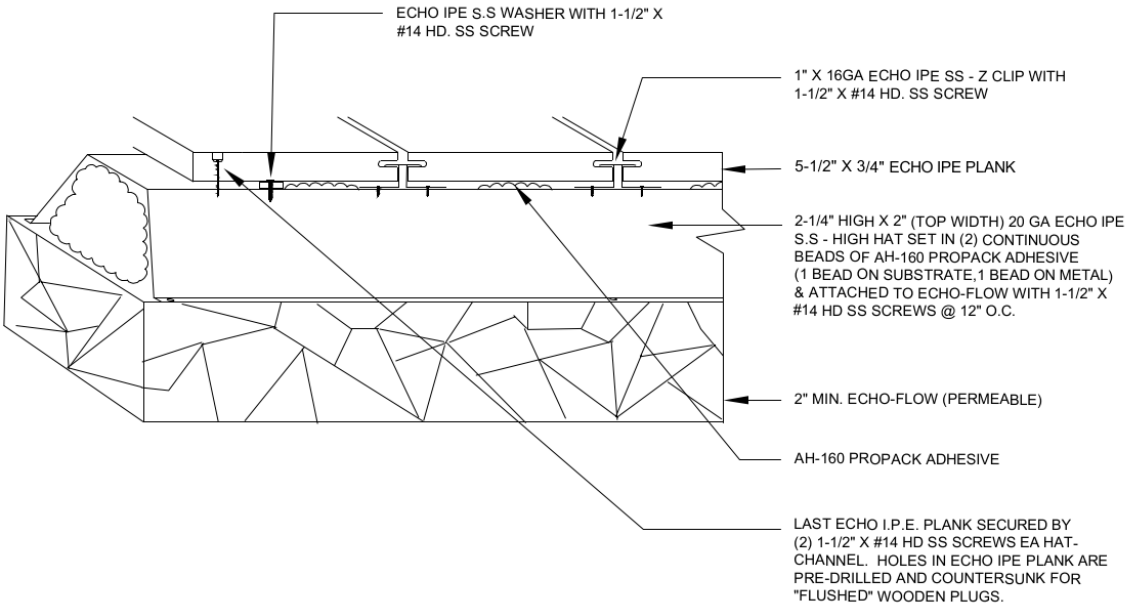
IPE Ironwood ECHO IPE S.S Hat Channel (installed 8” O.C) is set onto ECHO Flow with ICP AH-160 adhesive (1 bead on substrate, 1 bead on metal). The ECHO IPE S.S Hat Channel is then fastened into ECHO Flow using 1-1/2”, #14 HD S.S screws at 12” O.C. ECHO IPE S.S-U clips are first fastened into ECHO IPE 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)



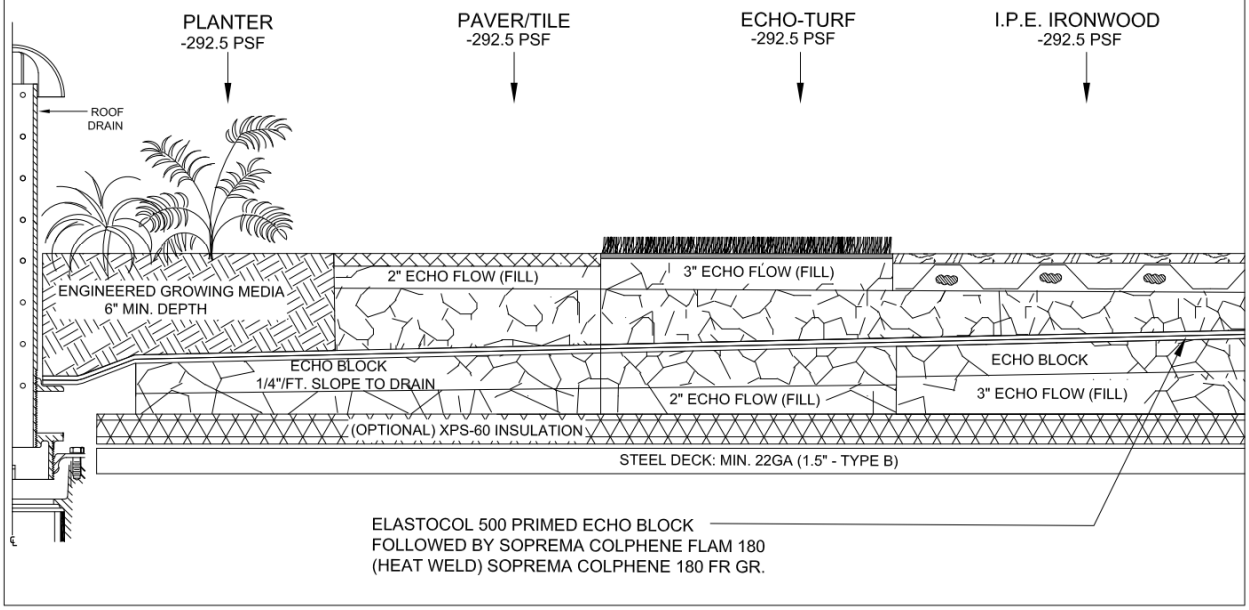
I.P.E IRON WOOD SURFACE

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



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 SBS membrane and Alsan RS with **Growing Media 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 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.

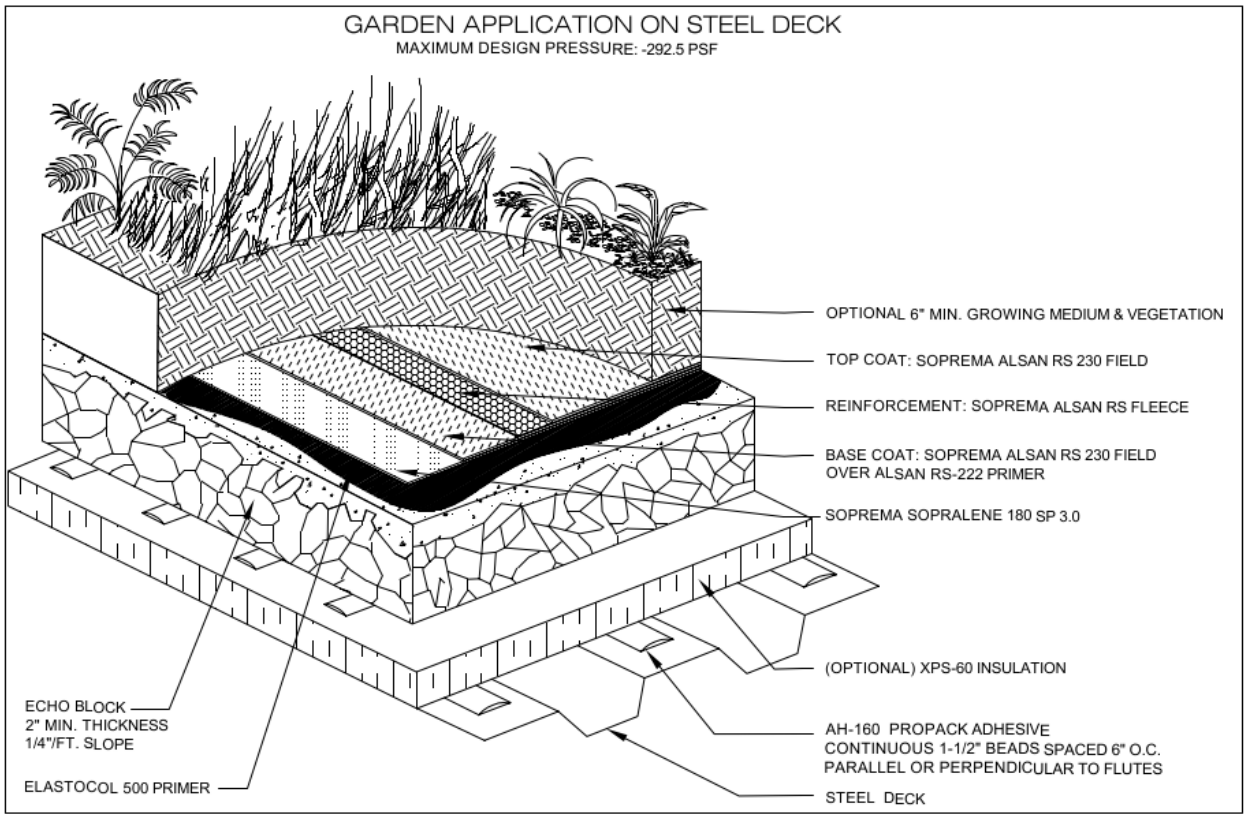
ECHO Flow: Rooftop planters are to be located around roof drains with the roof drain centered within the planter. With the Alsan waterproofing membrane in place at desired planter location, the ECHO Flow permeable top layers are not installed on the Alsan at the planter area. Outside the planter area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

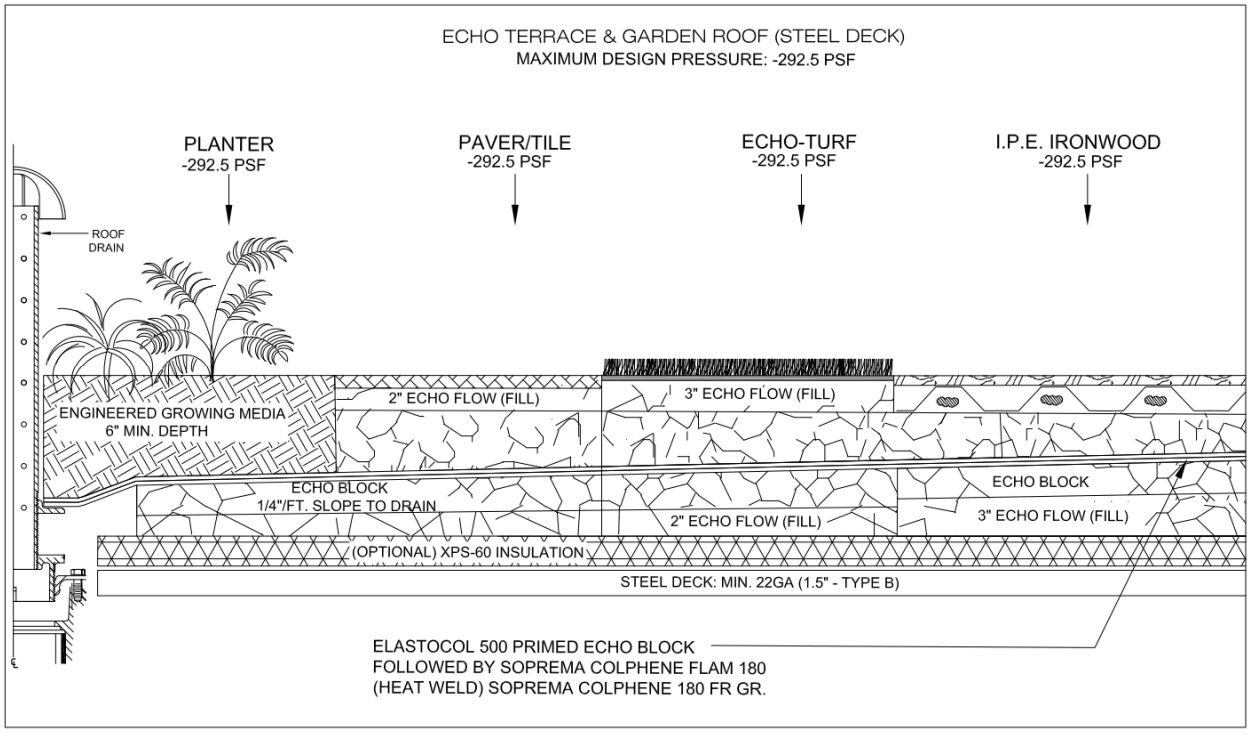
Planter Walls: ECHO Flow Wall blocks that are 6" thick x 12" wide x 18" long are installed on the finished level of ECHO Flow at the terrace/planter boarder with two beads of AH-160 adhesive at a continuous bead thickness of 1.5 inches spaced 6" apart. Maximum height of planter above finished ECHO Flow 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: **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).

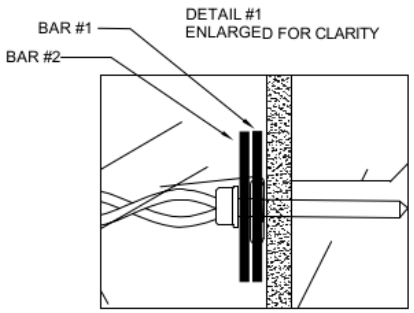
Maximum Design Pressure: -292.5 psf. (See General limitation #9)



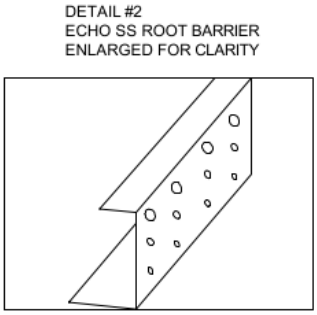

ECHO TERRACE & GARDEN ROOF (STEEL DECK)
MAXIMUM DESIGN PRESSURE: -292.5 PSF
PLANTER
-292.5 PSF
PAVER/TILE
-292.5 PSF
ECHO-TURF
-292.5 PSF
I.P.E. IRONWOOD
-292.5 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
ECHO BLOCK
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
(OPTIONAL) XPS-60 INSULATION
STEEL DECK: MIN. 22GA (1.5" - TYPE B)
ELASTOCOL 500 PRIMED ECHO BLOCK
FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

ECHO - SS - SOIL RETENTION SCREEN ON STEEL DECK

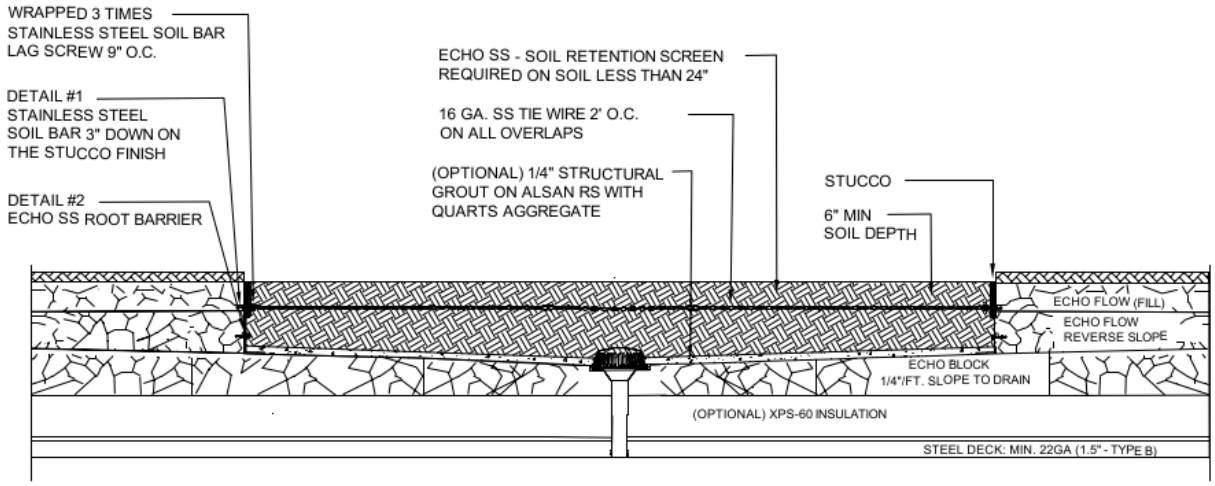
MAXIMUM DESIGN PRESSURE: -292.5 PSF



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.

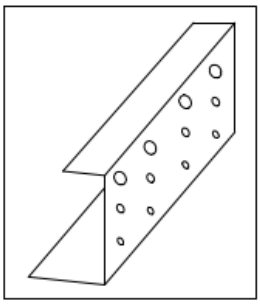


WATER RETENTION AND DETENTION FOR CUSTOMIZED ADJUSTABLE WATER FLOW AND ROOT BARRIER

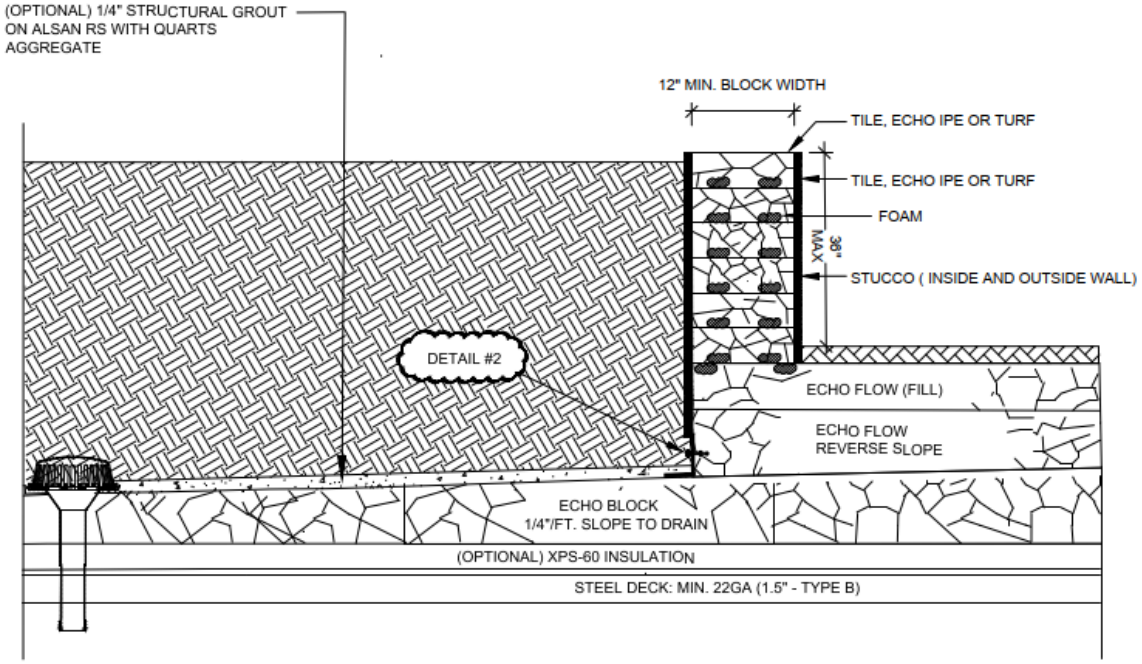


ECHO FLOW PLANTER WALL ON STEEL DECK
MAXIMUM DESIGN PRESSURE: -292.5 PSF

DETAIL #2
ENLARGED FOR CLARITY



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



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 without overburden. (For **Light Traffic 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.

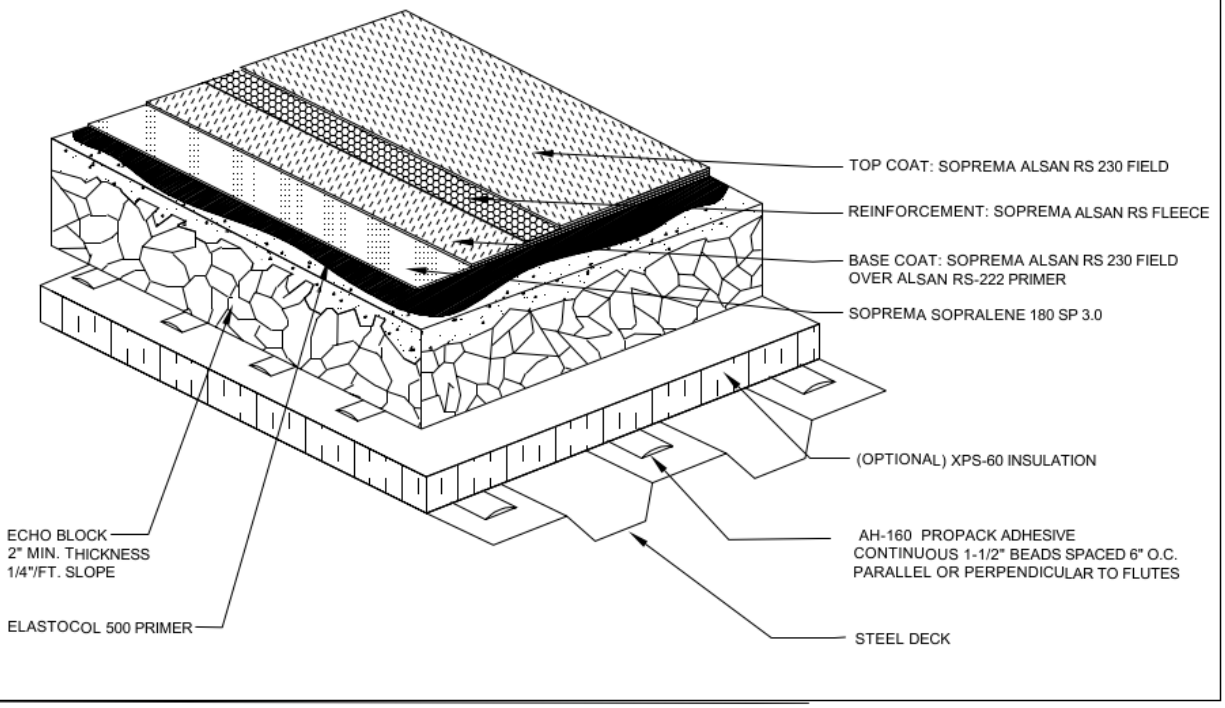
(Optional) Mid Layers Insulation:	**Styrofoam Highload XPS-60 or Sopra-XPS 60 Minimum 1" thick or ECHO Flow Minimum 2" Thick**
Top Layer Insulation:	**Echo Block Minimum 2" Thick**

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 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



Membrane Type:	SBS
Deck Type 1I: **Deck Description:**	5/8" Plywood Decks, Insulated Terrace/Plaza Deck, Garden Roof
System Types A(12)	(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) **Base Layers Insulation:**	**ECHO Flow Minimum 2" Thick**

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.

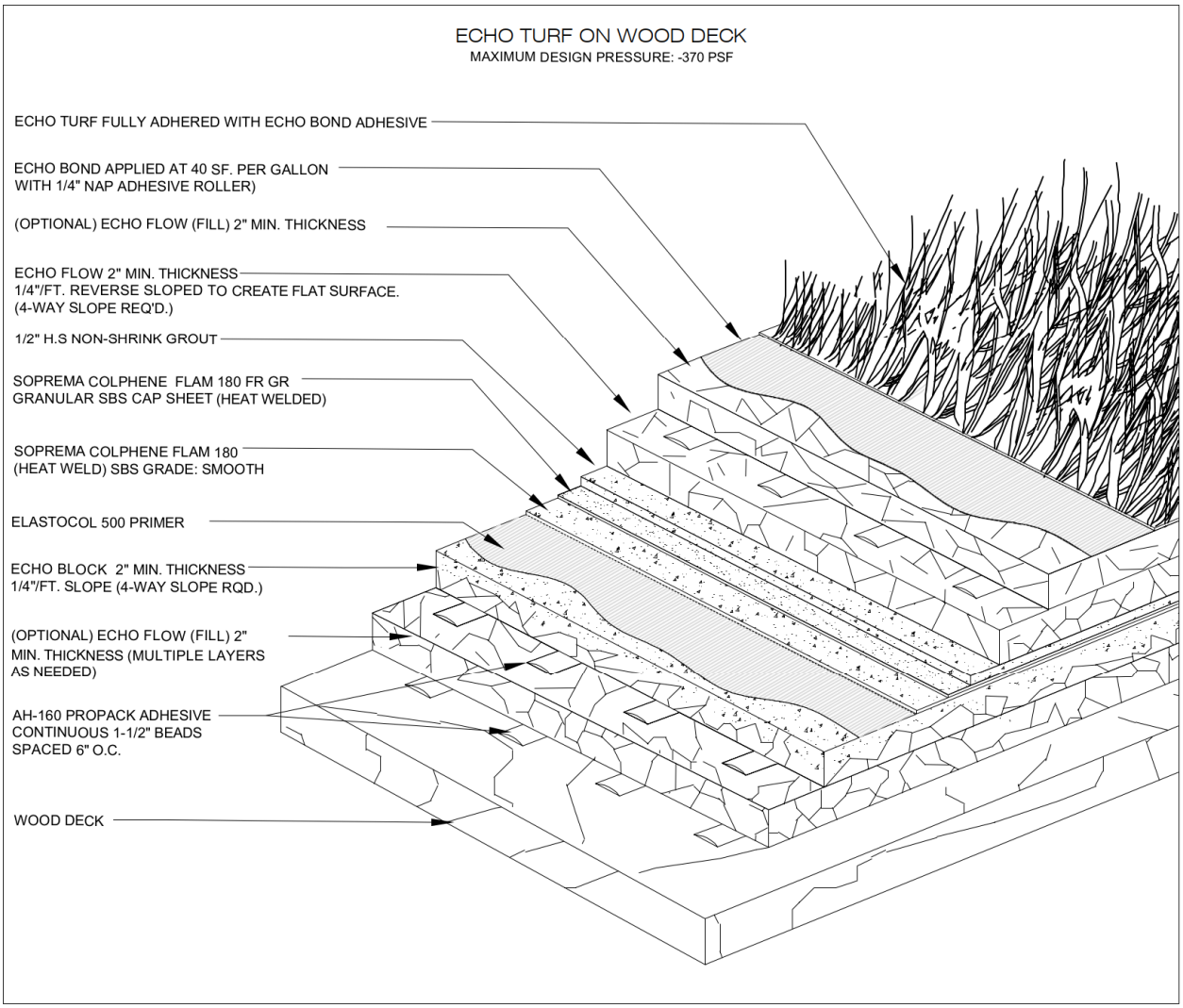
(Optional) **Mid Layers Insulation:**	**ECHO Flow Minimum 2" Thick**
Top Layer Insulation:	**ECHO Block Minimum 2" Thick**

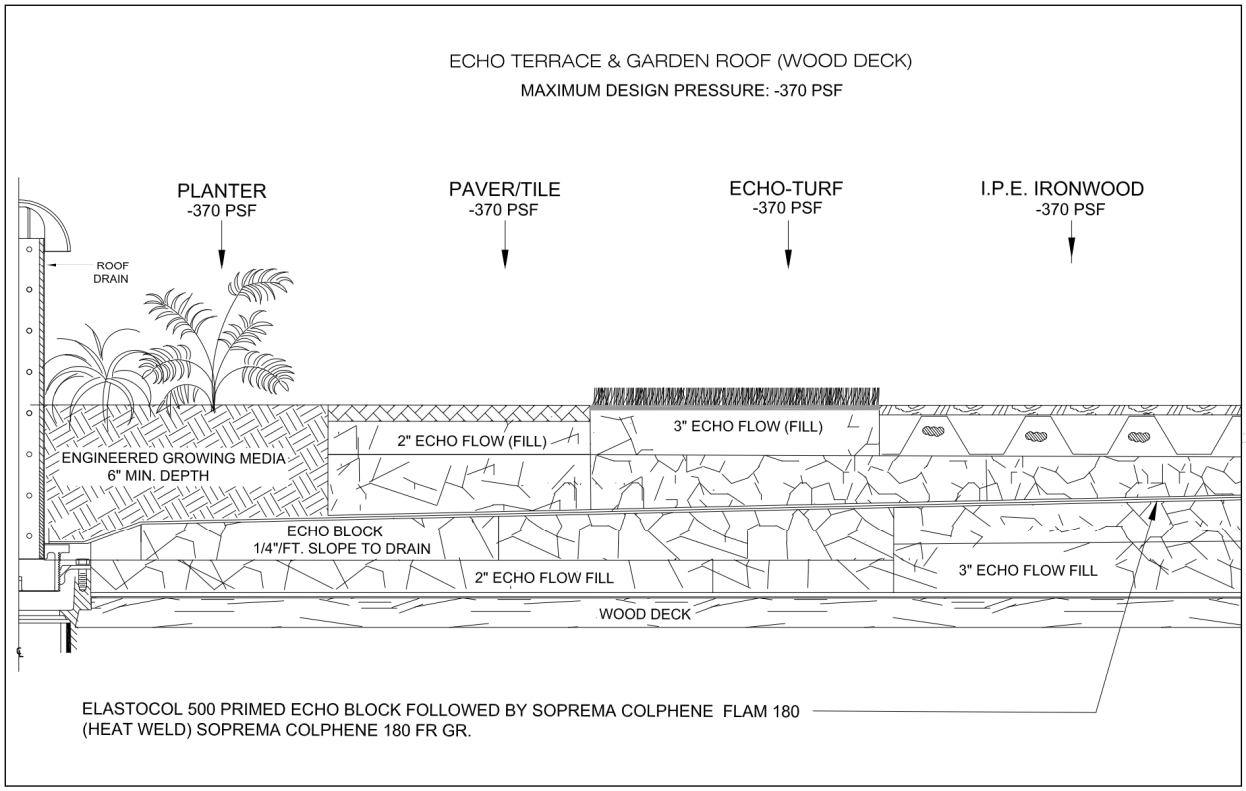
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

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 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)

ECHO TURF ON WOOD DECK

MAXIMUM DESIGN PRESSURE: -370 PSF




ECHO TERRACE & GARDEN ROOF (WOOD DECK)
MAXIMUM DESIGN PRESSURE: -370 PSF
PLANTER
-370 PSF
PAVER/TILE
-370 PSF
ECHO-TURF
-370 PSF
I.P.E. IRONWOOD
-370 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW FILL
3" ECHO FLOW FILL
WOOD DECK
ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

Membrane Type:	SBS
Deck Type 1I:	5/8" Plywood Decks, Insulated
Deck Description:	Terrace/Plaza Deck, Garden Roof
System Types A(13)	(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) Base Layers Insulation:	**ECHO Flow Minimum 2" Thick**

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.

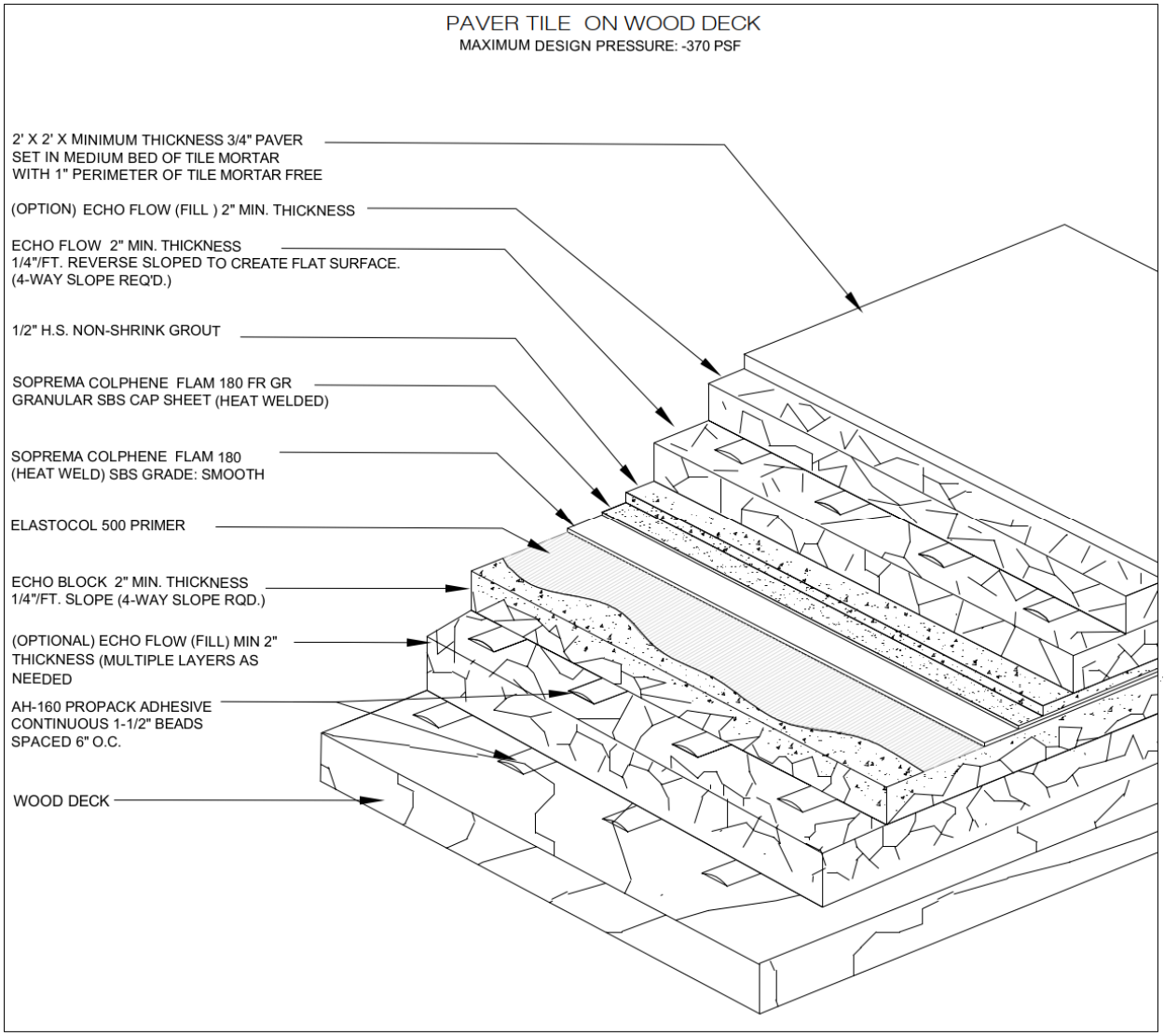
(Optional) Mid Layers Insulation:	**ECHO Flow Minimum 2" Thick**
Top Layer Insulation:	**Echo Block Minimum 2" Thick**

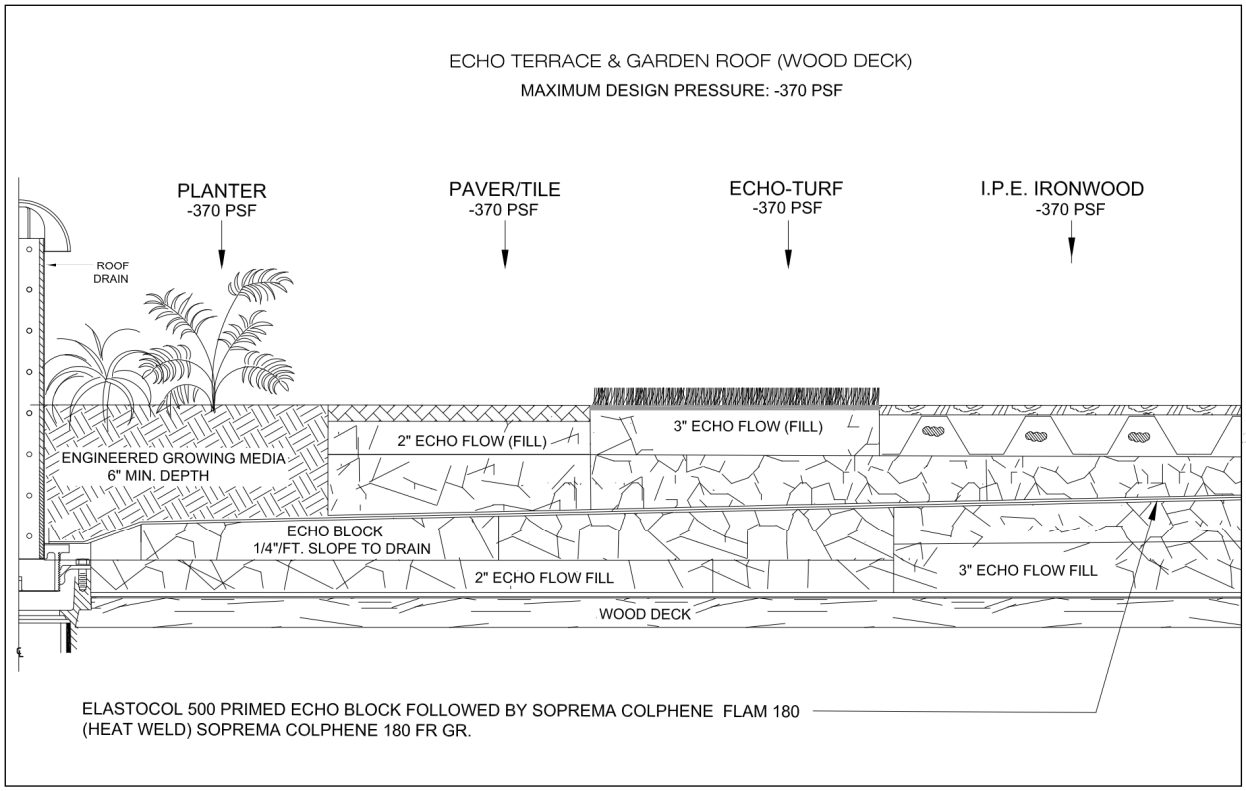
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

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 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.**
Paver Tile	Paver tile ¾ 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 ¾ 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




ECHO TERRACE & GARDEN ROOF (WOOD DECK)
MAXIMUM DESIGN PRESSURE: -370 PSF
PLANTER
-370 PSF
PAVER/TILE
-370 PSF
ECHO-TURF
-370 PSF
I.P.E. IRONWOOD
-370 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW FILL
3" ECHO FLOW FILL
WOOD DECK
ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

Membrane Type:	SBS
Deck Type 1I: **Deck Description:**	5/8” Plywood Decks, Insulated Terrace/Plaza Deck, Garden Roof
System Types A(14)	(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) **Base Layers Insulation:**	**ECHO Flow Minimum 2” Thick**

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) **Mid Layers Insulation:**	**ECHO Flow Minimum 2” Thick**
Top Layer Insulation:	**ECHO Block Minimum 2” Thick**

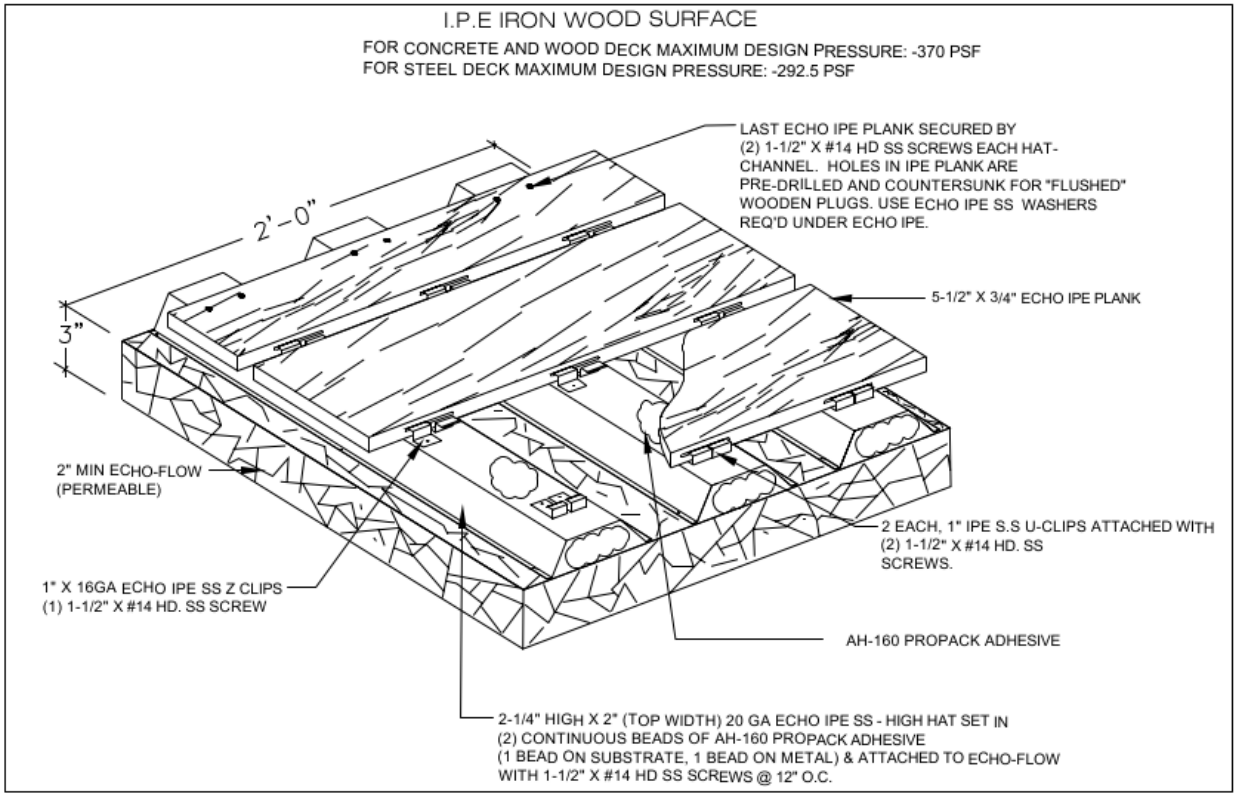
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

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 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.**

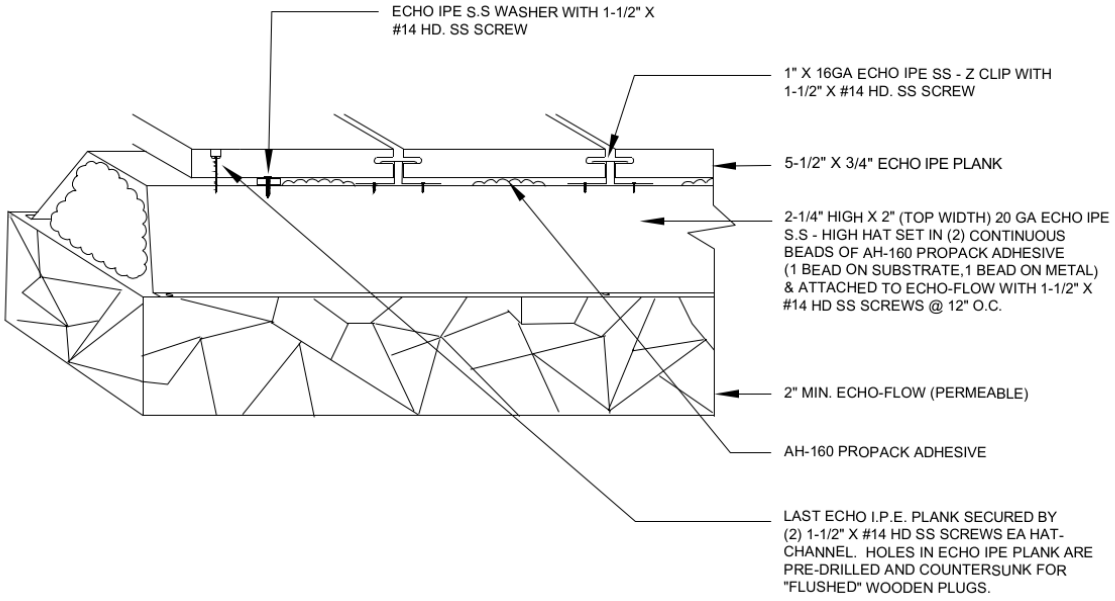
IPE Ironwood ECHO IPE S.S Hat Channel (installed 8" O.C) is set onto ECHO Flow with ICP AH-160 adhesive (1 bead on substrate, 1 bead on metal). The ECHO IPE S.S Hat Channel is then fastened into ECHO Flow using 1-1/2", #14 HD S.S screws at 12" O.C. ECHO IPE S.S-U clips are first fastened into ECHO IPE 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: -370 psf. (See General limitation #9)



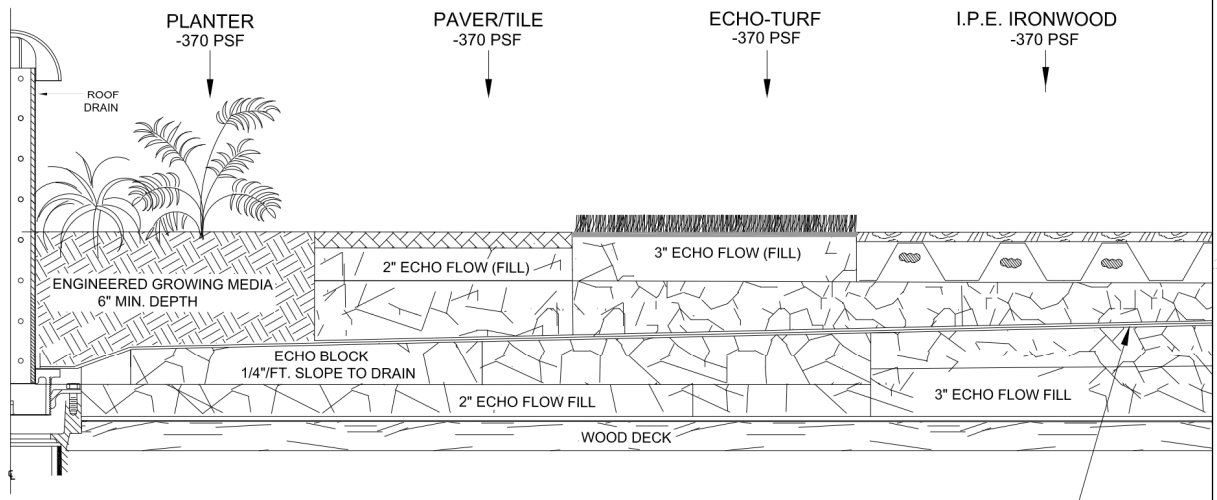
I.P.E IRON WOOD SURFACE

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 1I: **Deck Description:**	5/8” Plywood Decks, Insulated 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 **Growing Media surfacing.**

All General and system Limitation Shall Apply

One or more of the following insulations:

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

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) **Mid Layers Insulation:**	**ECHO Flow Minimum 2” Thick**
Top Layer Insulation:	**ECHO Block Minimum 2” Thick**

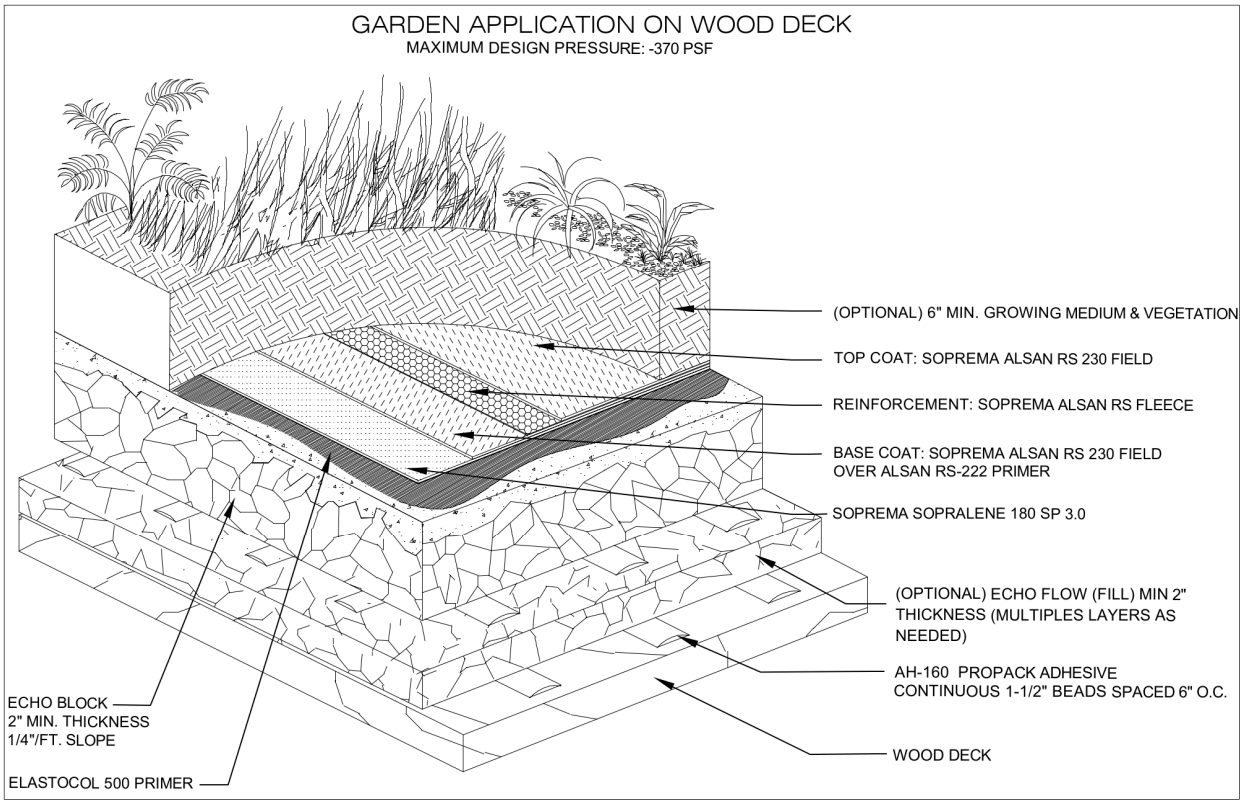
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

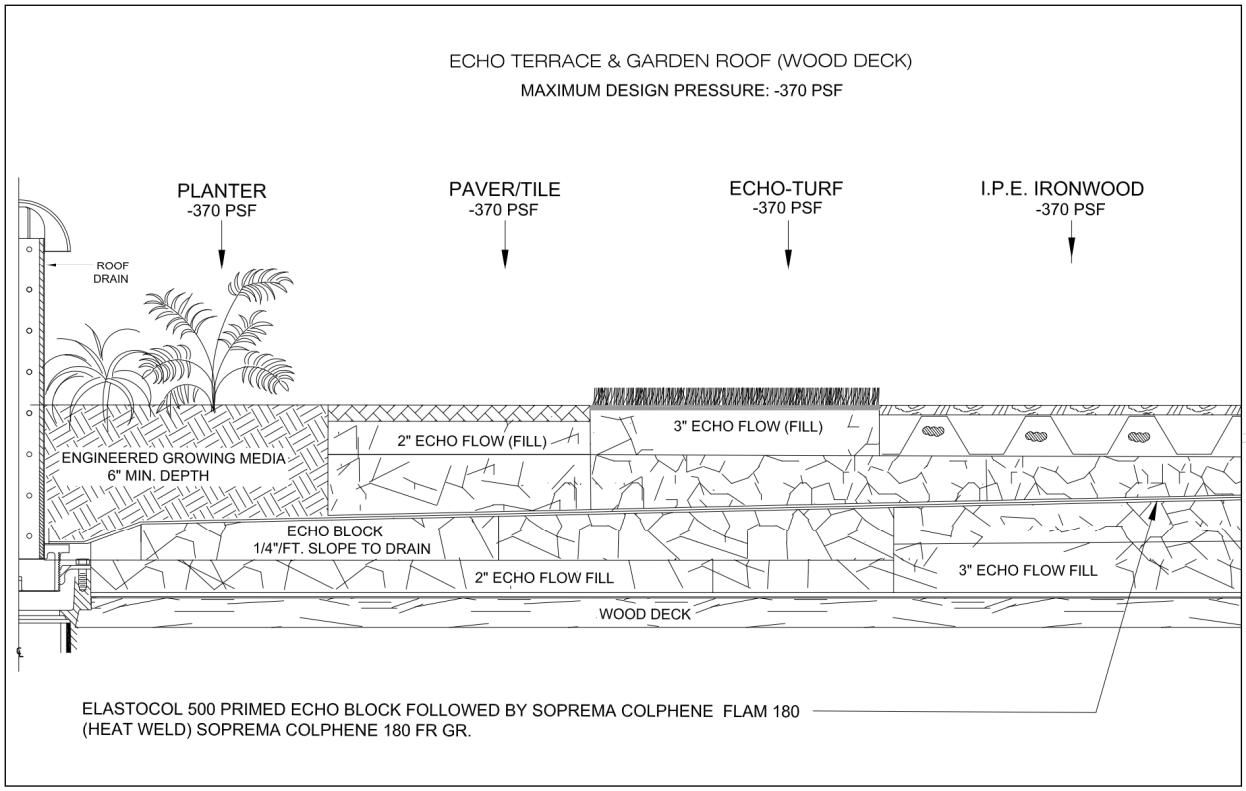
Membranes:	Elastocol 500 primer is applied to top of ECHO Block, with Soprema Sopralene 180 SP 3.0 SBS modified bitumen base ply then heat-welded to primed ECHO Block. Alsan RS 222 primer is applied to the Soprema Sopralene 180 SP 3.0 base ply followed by Alsan RS 230 Field. Alsan RS Fleece is set into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

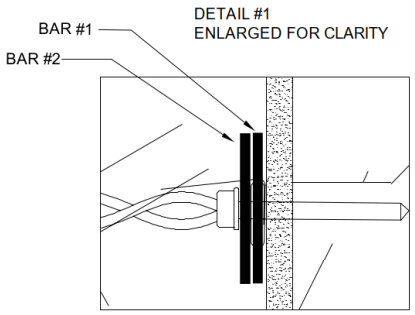
Maximum Design Pressure: -370 psf. (See General limitation #9)



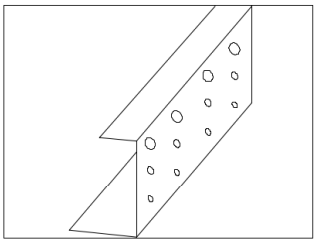

ECHO TERRACE & GARDEN ROOF (WOOD DECK)
MAXIMUM DESIGN PRESSURE: -370 PSF
PLANTER
-370 PSF
PAVER/TILE
-370 PSF
ECHO-TURF
-370 PSF
I.P.E. IRONWOOD
-370 PSF
ROOF DRAIN
ENGINEERED GROWING MEDIA
6" MIN. DEPTH
2" ECHO FLOW (FILL)
3" ECHO FLOW (FILL)
ECHO BLOCK
1/4"/FT. SLOPE TO DRAIN
2" ECHO FLOW FILL
3" ECHO FLOW FILL
WOOD DECK
ELASTOCOL 500 PRIMED ECHO BLOCK FOLLOWED BY SOPREMA COLPHENE FLAM 180
(HEAT WELD) SOPREMA COLPHENE 180 FR GR.

ECHO - SS - SOIL RETENTION SCREEN ON WOOD DECK

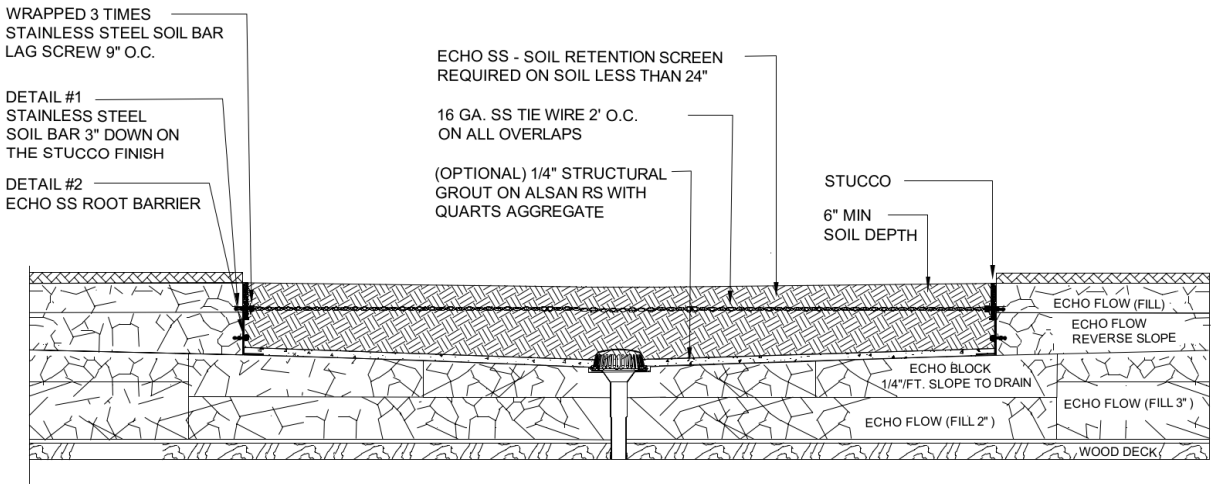
MAXIMUM DESIGN PRESSURE: -370 PSF



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.

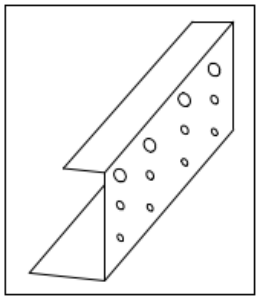


WATER RETENTION AND DETENTION. FOR CUSTOMIZED ADJUSTABLE WATER FLOW AND ROOT BARRIER

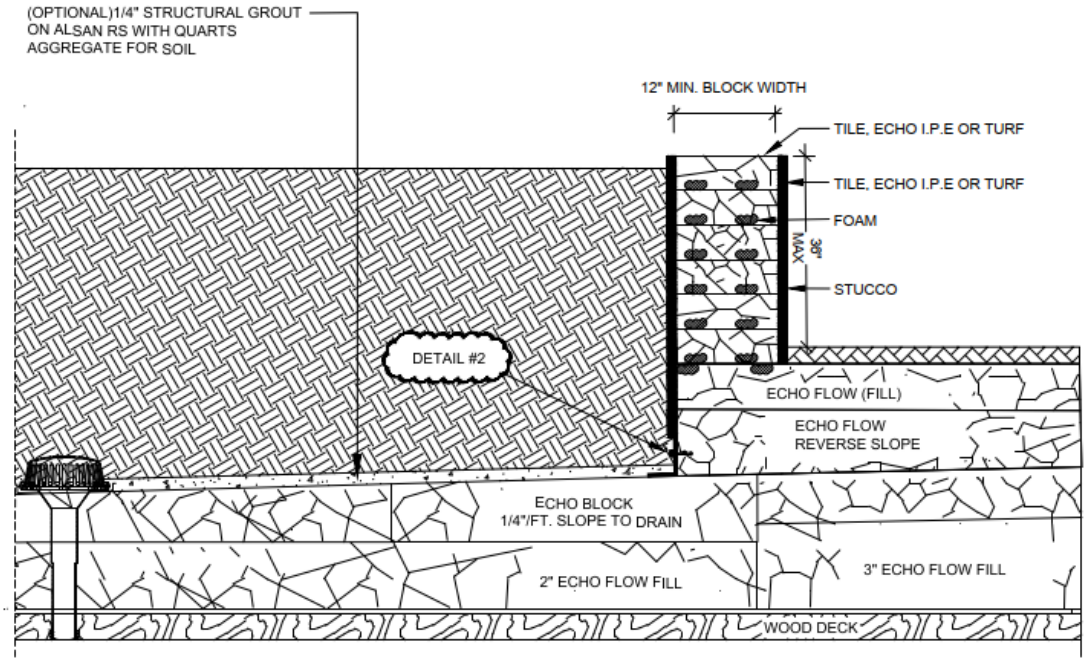


ECHO FLOW PLANTER WALL ON WOOD DECK
MAXIMUM DESIGN PRESSURE: -370 PSF

DETAIL #2
ENLARGED FOR CLARITY



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



Membrane Type: SBS

Deck Type 1I: 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 without overburden.
(For **Light Traffic surfacing**).

All General and system Limitation Shall Apply

One or more of the following insulations:

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

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) Mid Layers Insulation: **ECHO Flow Minimum 2” Thick**

Top Layer Insulation: **ECHO Block Minimum 2” Thick**

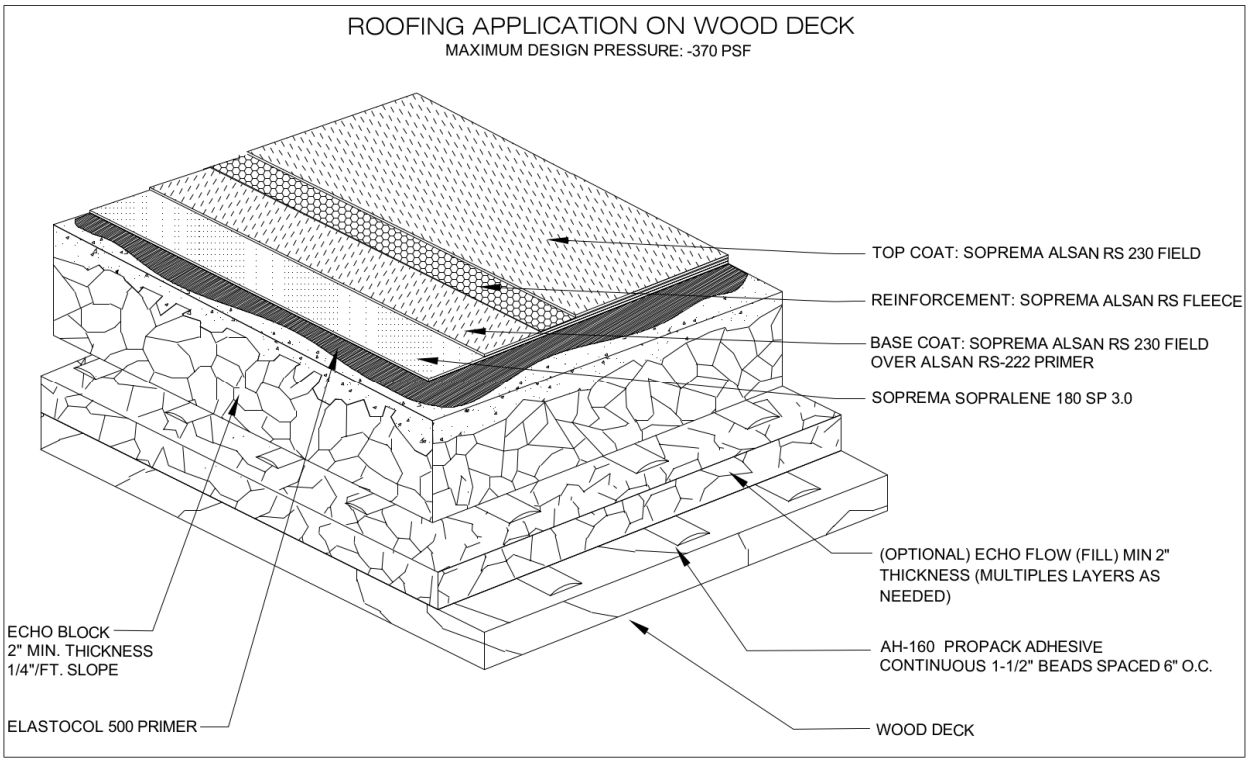
Note: Additional Layers of Insulation shall be adhered onto the previous insulation layer with 1.5" wide beads of ICP AH-160 adhesive spaced 6" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

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)

ROOFING APPLICATION ON WOOD DECK

MAXIMUM DESIGN PRESSURE: -370 PSF



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

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 EMMITANCE

Component Name	Initial Reflectance	Aged Reflectance	Initial Emittance	Aged Emittance	Solar Reflectance Index (SRI)
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

R-Value	Insulation / Thickness	Products:
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

Component Name	Content	Emission
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

Component Name	% Recycled Content when Manufactured	% Able to be Recycled at Disposal	% of Bio-based Material	% of Rapidly Renewable Material
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

Years	Assemblies:
40	A(1) through A(16)

REGIONALLY MANUFACTURED COMPONENTS

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

U-FACTOR (THERMAL TRANSMITTANCE) BTU/HR-FT^2-^{0}F

Component Name	U-Value	Component Name	U-Value
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-FT^2-^{0}F

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