



WISCONSIN PROFESSIONAL BASEBALL PARK DISTRICT



APPENDIX A

Scope of Work

Scope of Work

A point of contact for the Wisconsin Professional Baseball Park District (Stadium District) and the Milwaukee Brewers Baseball Club (MBBC) will be provided to the contractor.

1. General Conditions (A):

- A. All site staging areas must be coordinated with MBBC and the Stadium District in approved locations.
- B. Loading/staging areas are to be completely flagged off in approved areas only.
- C. All hoisting/rigging must be completed during times approved by the MBBC and Stadium District.
- D. Contractors shall notify MBBC and the Stadium District of all material deliveries a minimum of 48 hours prior to their scheduled arrival.
- E. All personnel on site will need a photo ID and will need to register with the building visitor management system in order to get access to the facility.
- F. All roof access is to be arranged by the Stadium District and the MBBC.
- G. Contractors are to provide portable toilets and service in a contained area throughout project duration.
- H. Smoking is prohibited in the building or outside of designated smoking areas. No smoking is permitted in this facility.
- I. MBBC and the Stadium District are a Factory Mutual insured property and all FM guidelines must be followed.
- J. Roofing Contractor shall take the necessary precautionary measures to provide adequate interior and exterior safety monitoring and protection of the internal and external contents during the removal and replacement of the existing roof system. It will be the roofing contractor's responsibility to coordinate with MBBC and the Stadium District.
 - a. The roofing contractor shall mark on a roof plan of all areas requiring original DensDeck replacement. The Roofing Contractor shall coordinate all demolition with MBBC and the Stadium District.
 - b. Contractor shall demarcate the entire daily work areas with yellow caution safety tape to ensure unauthorized personnel cannot enter the designated work areas.
 - c. At the end of the daily demolition period, and workday, the contractor shall remove all temporary interior protection coverings and demarcations and clean-up the areas. Contractor to ensure the space is returned to its previous condition upon the completion of the daily interior protection removal and clean-up.
- K. The Roofing Contractor, with assistance from the MBBC and the Stadium District, will locate electrical wiring within the parameters of the work area. The Roofing Contractor, prior to the fastening the new roof system, must mark out suspect electrical or other wiring systems locations and transpose onto the roof to avoid fastening through the electrical lines. Fasteners must be installed into the upper rib of the metal decking with proper 1" embedment.

2. Sika Sarnafil Scope of Work:

Sika Sarnafil 20-Year with 60MPH Windspeed Warranty

A. Reference FM Global Approval Letter for assembly.

B. This project will remediate corroding metal deck as identified in **Appendix A** (approximately 50 SF) or as discovered as an existing condition during the course of the project, replace wet or damaged DensDeck cover board as discovered, slice and leave the existing membrane in place and install a ½" DensDeck layer over the existing PVC and a new layer of Sika Sarnafill 60-mil PVC membrane over the new ½" DensDeck. The FM Global Plan Review for this project is attached in **Appendix A**. Please refer to the RoofNav Assembly Number of 371714-0-0 for this project application. The width of the rolls referenced in that assembly number is referred to as 5 feet but will actually be 6.56 feet in width. The owner will supply new metal decking, and the custom color 60-mil PVC membrane for this project (roll size is 6.56 feet by 65.6 feet), and fasteners and plates as identified in the RFP. Per the manufacturer recommendation, a 20% waste allowance will also be provided. Please see **Appendix A** for Sika installation details and specifications.

The following is a summary of the work requested for this proposal. The bidding contractor is responsible for reviewing and adhering to the Scope of Work and details attached in **Appendix A**.

1. Cover seating area below construction limits.
2. Where extensive corrosion has been identified (see Appendix A), remove existing roofing materials and insulation down to the structural metal deck-only in the amount that can be remediated and reroofed in each day, with the resulting debris to be removed from the building and premises.
3. Verify with the District representative the remediation needed: painting or removing and replacing the decking. This will be determined by the delamination and/or loss of cross section on the decking.
4. Remediate or replace the deck based on the above determination. This phase requires interior protection, particularly in areas without dropped ceilings, and extreme caution should be exercised because the deck condition may be weak in certain areas.
5. Remediate: Furnish all labor and material to wire brush the metal deck to remove all corrosion. Furnish and install a 24-gauge prefinished flat metal rust preventative coated sleeve, inlaid into the bottom of the web of the existing deck. Fasten in place with ¼" by ½" long Tek screws. Use Interstate Products, Inc. Rust Converter-One Step Rust Killer as the rust inhibitor over entire area.
6. Replace: Furnish all labor and material (Epic metal deck to be owner supplied) to perform metal deck replacement as detailed in Appendix A.
7. For any work outside of Base Bid, thoroughly document the condition of the deck and exact work done for remediation or replacement. Prior approval is needed for any additional remediation or replacement work and contractor will need to submit detailed photos showing the exact amount of each type of work (number of square feet remediated or replaced).
8. Use fastener tools with a depth locator and torque-limiting attachment as recommended or supplied by fastener manufacturer to ensure proper installation.
9. The surface of the substrate shall be inspected prior to installation of the Sarnafil roof membrane. The substrate shall be clean, dry, and free from debris and smooth with no

surface roughness or contamination. Broken, delaminated, wet or damaged cover board shall be removed and replaced.

10. In areas where no corrosion has been identified or found to need remediation, slice existing membrane down to original DensDeck cover board.

11. Leave the existing membrane and insulation fasteners in place.

12. Inspect the existing DensDeck on the deck surface for wet or damaged insulation. Include in the base bid 20% new DensDeck replacement. Any amount of replacement not used to be credited back to owner. Add/Deduct unit cost for DensDeck replacement to be indicated on bid sheet.

13. Daily verification by a District representative and daily photo verification is required.

14. Replace any existing wet or damaged DensDeck with matching thickness DensDeck. Fasten replacement infill properly.

15. Once each days section of existing DensDeck board has been inspected and/or replaced, furnish and install one (1) layer of ½" DensDeck mechanically attached through the existing roof, fastener must be installed through the top of the rib of the existing structural metal deck and must not penetrate below the bottom web of the existing structural metal deck. See Appendix A for existing deck details.

16. Contractor to use Sarnafasteners #12 with 3" Sarnaplates at a rate of 12 per 4' x 8' board, 12 per board in the perimeter and 12 per board in the corners. Mechanically fasten to the structural deck following the manufacturers most recent specifications. See Appendix A for fastening detail.

17. Furnish all labor and material to install mechanically fastened (owner supplied) 60-mil PVC membrane. Use only Sarnadisc Maxload Plates and Sarnafil Maxload Fastener for S327 membrane attachment. The fastening pattern on this building shall be 6 inches on center at all locations. Install five (5) half sheets of Sarnafil S327 membrane fastened 6 inches on center around the perimeter of the panel. The interior sheets are to run perpendicular to the deck. All connections to be hot air welded following the manufacturers most recent specifications.

18. Furnish and install new wood blocking on top of the parapet wall on the exterior perimeter of the panel utilizing FM required fasteners guidelines to provide proper inside slope below the new membrane and metal edge. See Appendix A for edge flashing detail.

19. Instead of DensDeck, install 1/2" CDX plywood at where the ship ladder to panel 3L is located.

20. Provide a manufacturer's 20-year NDL warranty.

3. Details, Drains, Flashings, and Accessories:

- A. Contractor shall include the temporary removal of all stairways, gas lines, water line security cameras and/or conduits to allow for the installation of the new flashings and/or edge metal. Contractor to properly reinstall and flash per Sarnafil's minimum standards for warranty. The temporary removal of all items shall be closely coordinated with MBBC and the Stadium District and their preferred vendors.

- B. Drains – MBBC and the Stadium District will provide free and clear drains; drains must be returned free and clear at end of job. Contractors are to refurbish existing drains (wire brushing, painting and tapping), replace any missing or plastic strainers with cast iron components and replace any missing or broken clamping rings, as necessary. If the existing drains cannot be reworked, the Contractor shall replace the roof drains, strainers, leaders and all necessary piping to existing plumbing as per Sarnafil standard details.
- C. At all rooftop pipe penetrations, remove all existing flashings and properly dispose of all materials legally off-site. Provide and install new Sika Sarnafil 60 mil membrane flashings to an acceptable substrate using an approved separator as per Sika Sarnafil standard details. All flashings shall be field wrapped directly to the substrate. The use of wedding cake or conical flashings are not accepted on this project.
- D. At all adjoining interior parapet walls, ensure all perimeter edge nailers are secured properly per FM 1-49 including correct fastener & spacing or local code requirements, whichever is more stringent. Encapsulate the wall by fully adhering Sika Sarnafil membrane with 2170 Sarnacol Adhesive. It will be required to remove the existing edge metal system and replace with new as currently installed and or approved by FM Global.

4. General Conditions (B):

- A. Provide a 20-Year Sikaplan System Warranty with 60MPH Wind Speed.
- B. No debris is to be stored on the roof; clean up and take away all debris on a daily basis.
- C. All contractors must be licensed to perform the work, per the bid documents, and comply with all applicable local building codes. Provide all permits and licenses to complete the work. Bids are to include all required permit fees, applicable taxes and engineering.
- D. Roofing contractor must use their own work force for labor. No subcontracting is permitted.
- E. Roofing contractor is responsible for providing adequate power supply to operate required power equipment.
- F. Roofing contractor shall submit a Certificate of Insurance to meet MBBC and Stadium District requirements.
- G. Contractor to provide Overhead and Profit on every change order to the Stadium District.
- H. Carry out all roof construction as per Sika Sarnafil, MBBC and Stadium District specifications & follow all OSHA safety requirements: The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable building owner, local, state and federal requirements that are safety related. Safety shall be the responsibility of the roofing contractor. All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers as well as themselves and the occurrence of the general public on or near the site.
- I. The planned construction project shall not interrupt building operations. Adhere to all local jurisdictions for noise/work hour restrictions.
- J. A bar graph schedule shall be provided by the Contractor prior to commencement of the project and on a weekly basis once the project has started. Contractor agrees to provide additional updated schedules as requested by Sika Sarnafil, MBBC, and the Stadium District.

K. A daily work sheet shall be completed by the Contractor showing daily progress. This report will be due by 10:00 AM the following business day. A template will be provided by Sika Sarnafil.

L. A roof plan showing work completed will be required daily to illustrate the work documented on the daily work sheets.

M. Roof plans and drawings are provided for informational purposes only; contractor shall verify all field conditions prior to bid submission.

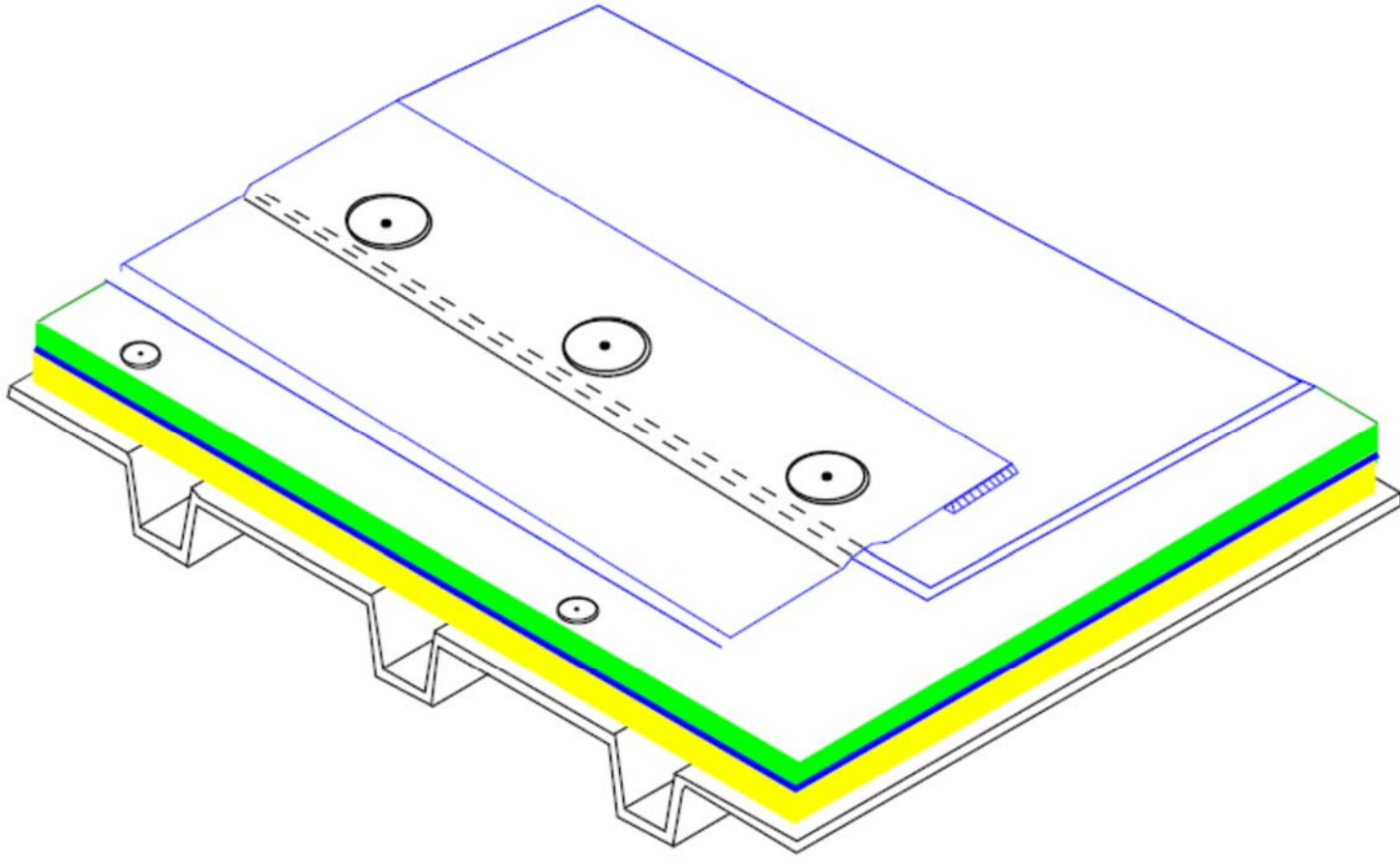
N. Throughout the project, the roofing contractor shall complete all details concurrent with the installation of the field membrane. All roofing is to be watertight at end of day.

END SCOPE OF WORK

REV. NO.	DESCRIPTION	DATE	BY
NA	BID SET	05/19/20	PKJ

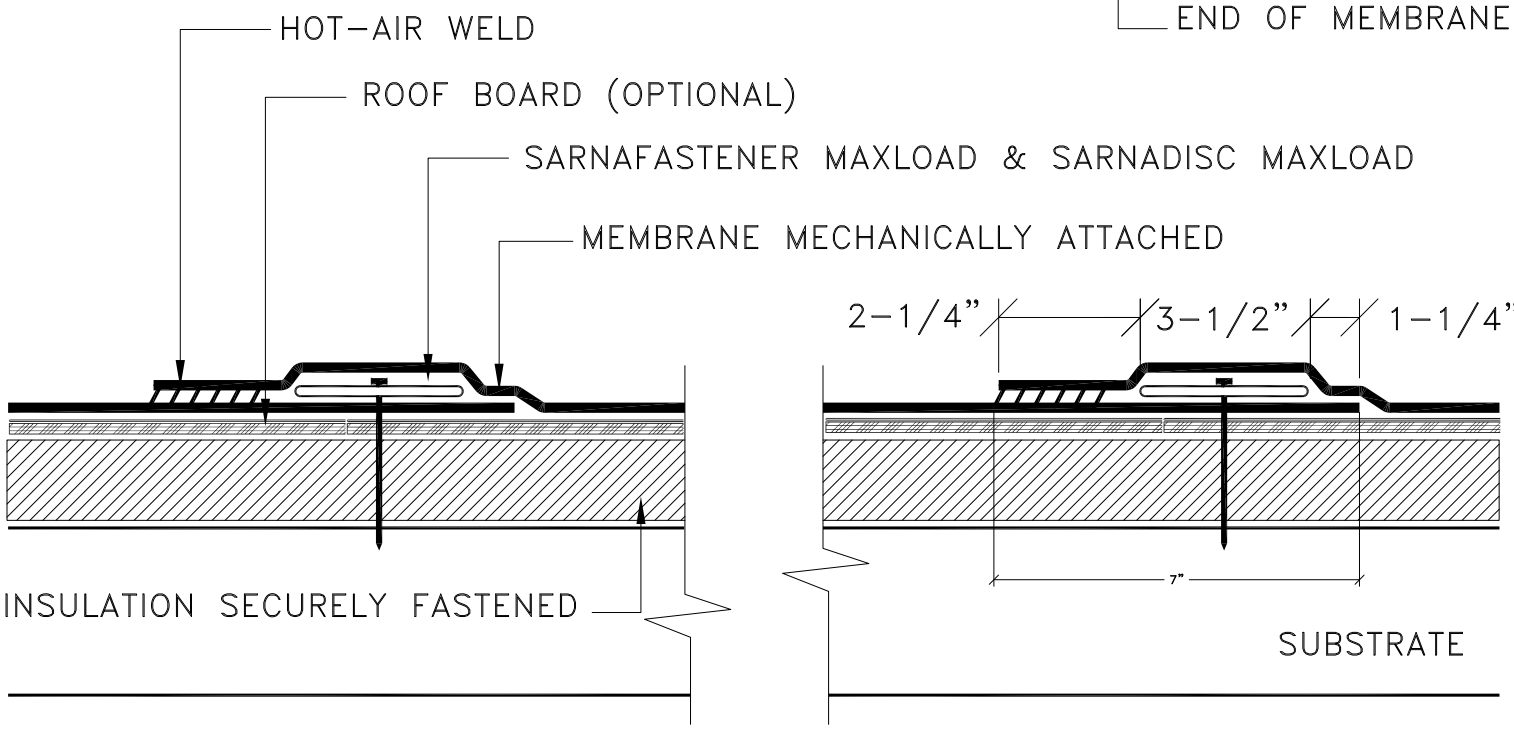
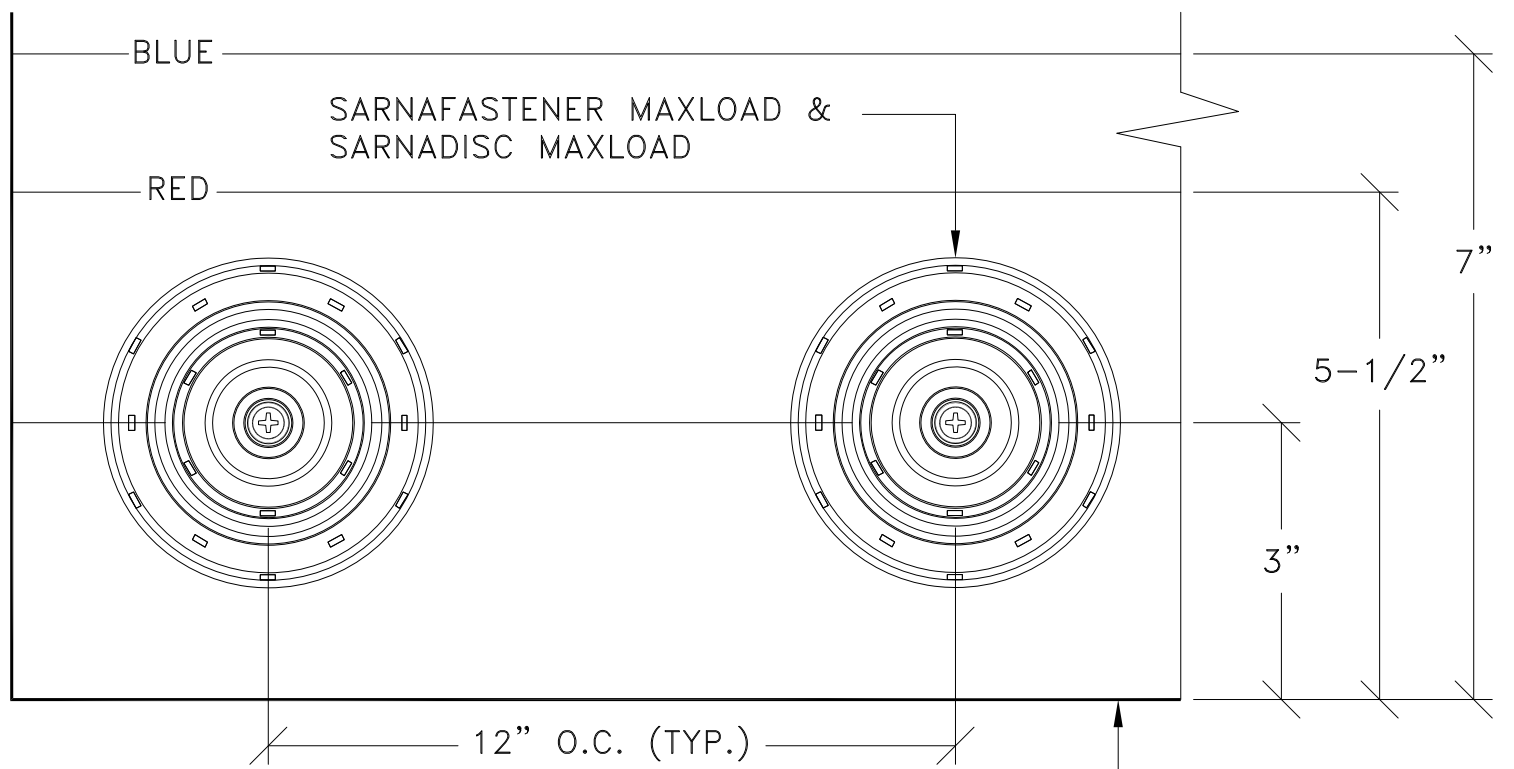
CLIENT:
MILWAUKEE BREWERS

PROJECT:
MILWAUKEE BREWERS
1 Brewers Way, Milwaukee, WI 53214




A

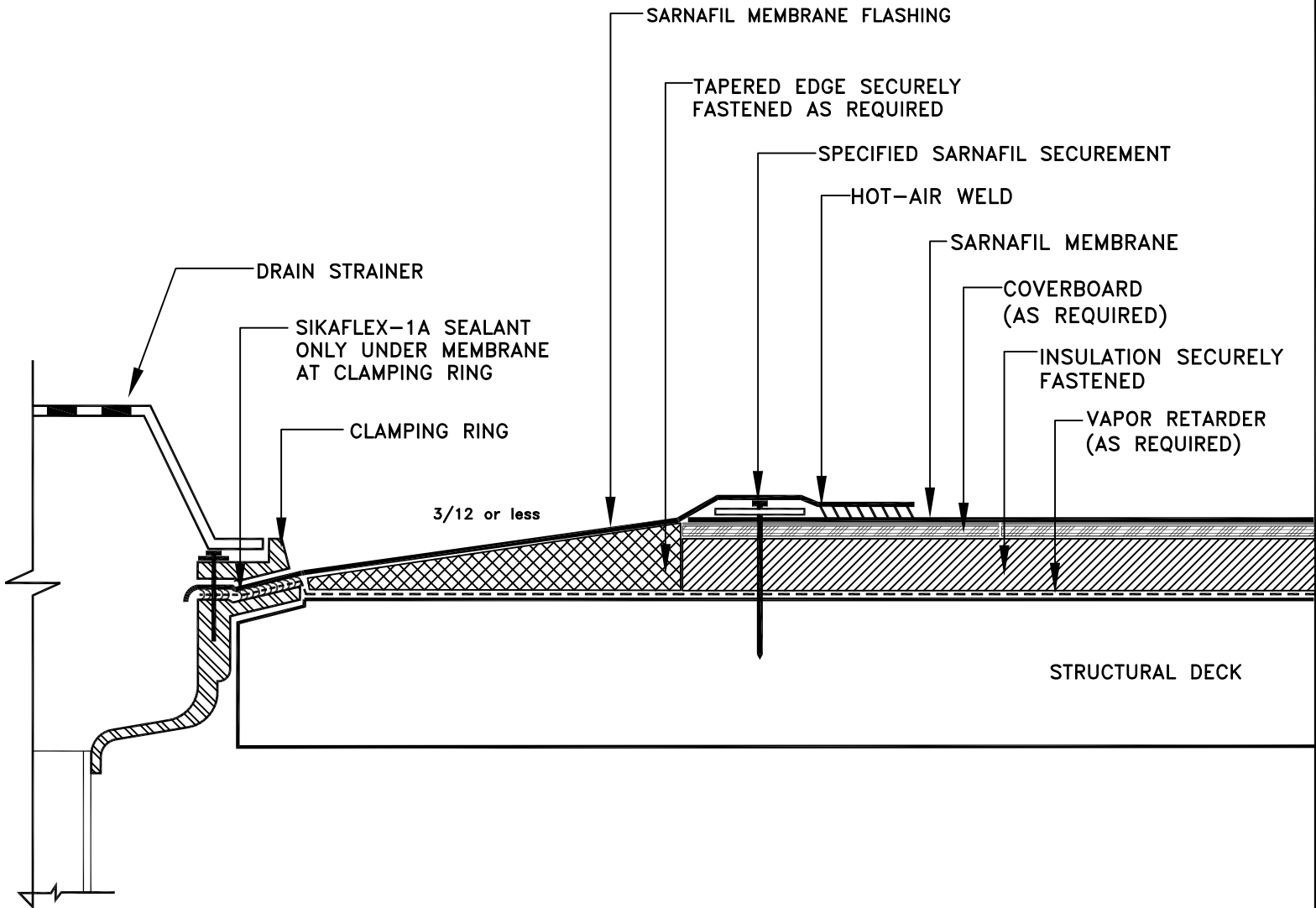
ROOF SYSTEM CROSS SECTION



3-1/2" MAXLOAD DISC PLACEMENT PLAN

 BUILDING TRUST 781-828-5400 usa.sarnafil.sika.com	JOB NAME:		
	SCALE: N.T.S.	DATE: 6/15	FILE NO.: MA-1P
		DRW. NO.: XXX	

AS A MEMBRANE MANUFACTURER, SIKA CORPORATION ("SIKA") REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION, WHILE SIKA PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL SALE OF SIKA PRODUCTS AND SERVICES ARE SUBJECT TO SIKA' TERMS AND CONDITIONS OF SALE AVAILABLE AT USA.SARNAFIL.SIKA.COM.



NOTES:

- 1) EXISTING DRAIN BOWL, CLAMPING RING AND DRAIN ACCESSORIES ARE TO BE CLEANED FREE OF ALL CONTAMINATES.
- 2) SARNAFIL G459 MEMBRANE MUST BE USED IN AREAS OF ASPHALT CONTAMINATION.
- 3) VAPOR RETARDER SHALL BE SEALED AT EDGES.
- 4) FOR SUMPS GREATER THAN 3/12 REFER TO STEEP SUMP TECH BULLETINS

CLAMPING RING DRAIN

BUILDING TRUST

781-828-5400



usa.sarnafil.sika.com

JOB NAME:

SCALE: N.T.S.

DATE: 10/18

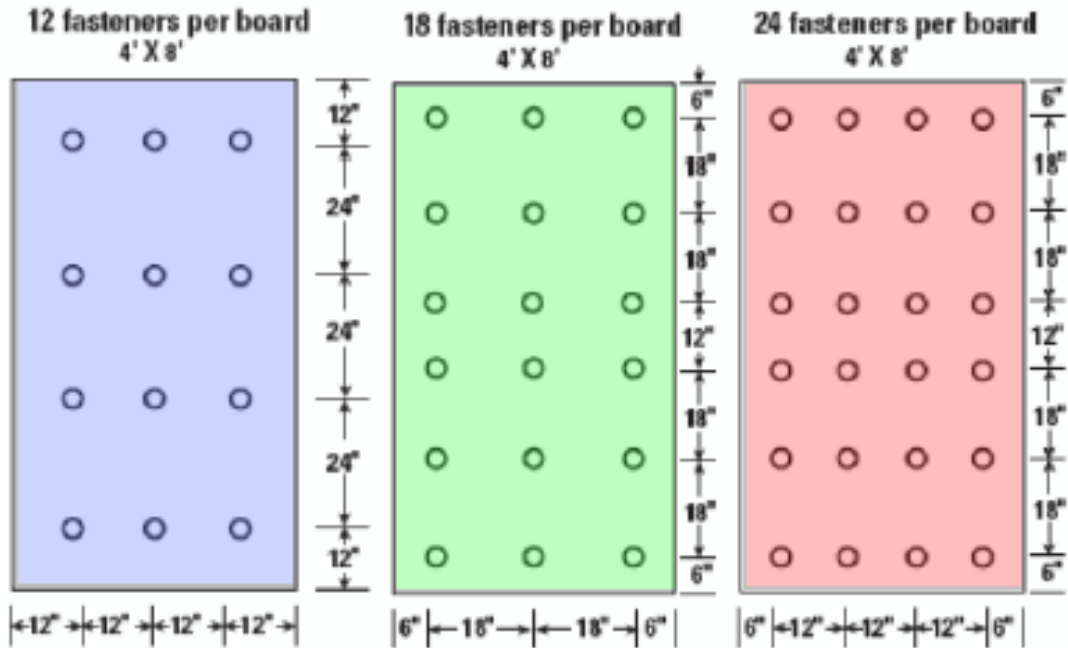
FILE NO.: 6-1

DRW. NO.: XXX

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Sika Sarnafil

World Class Roofing and Waterproofing



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Sarnafil®



PRODUCT DATA SHEET

Sarnafast® Fastener MAXLoad

SARNAFASTENER #21 MAXLOAD IS A THREADED DRILL POINT FASTENER

PRODUCT DESCRIPTION

Sarnafastener #21 MAXLoad is a threaded drill point fastener used within Sarnafil® roof systems to attach Sarnafil® S 327 Membrane into steel decking (22 – 24 gauge) or 1/2 – 5/8" (12.7 – 15.9 mm) wood decks.

USES

Used in conjunction with Sarnadisc MAXLoad or Sarnarail for attachment direct to the roof deck.

Areas of Application

- New Roof Applications
- Reroof Applications
- Recover Applications

CHARACTERISTICS / ADVANTAGES

- Oversized roofing fastener with mini-drill point.
- Extra sharp spade point for quick installation in new or reroof applications.
- Pronounced buttress thread which increases both surface area and friction against the deck for excellent backout and pull out resistance.

APPROVALS / STANDARDS

- Factory Mutual 4470
- ICC Code Compliance – ESR 1157
- Miami-Dade County

PRODUCT INFORMATION

Chemical Base Made from carbon steel, treated with a corrosion-resistant coating to meet the criteria for corrosion resistance.

Packaging	Length	Thread	Packaging	Weight
	2" (51 mm)	Full	1000 / Pail	18 lb (8.2 kg)
	3" (76 mm)	Full	1000 / Pail	24 lb (10.9 kg)
	4" (102 mm)	3" (76 mm)	500 / Pail	28 lb (12.7 kg)
	5" (127 mm)	4" (102 mm)	500 / Pail	35 lb (15.9 kg)
	6" (152 mm)	4" (102 mm)	500 / Pail	42 lb (19.1 kg)
	7" (178 mm)	4" (102 mm)	250 / Pail	26 lb (11.8 kg)
	8" (203 mm)	4" (102 mm)	250 / Pail	29 lb (13.2 kg)
	10" (254 mm)	4" (102 mm)	250 / Box	35 lb (15.9 kg)
	12" (305 mm)	4" (102 mm)	250 / Box	42 lb (19.1 kg)

* One #3 Phillips drive bit is included in each box.

Appearance / Color Blue

Shelf Life N/A

Storage Conditions N/A

Dimensions

- Thread Diameter: 0.33" (8.4 mm)
- Shank Diameter: 0.26" (6.6 mm)
- Head Diameter: 0.66" (16.8 mm)
- Head Style: #3 Phillips

APPLICATION INSTRUCTIONS

APPLICATION

The Sarnafast® Fastener MAXLoad is fastened straight into the roof deck with a extra heavy-duty (6 amp minimum), variable speed (2000 rpm maximum), reversible screwgun with a clutch release and a #3 Phillips drive bit. Sarnafast® Fastener MAXLoad must penetrate steel roof decks by 1" (25mm) and the underside of wood sheathing roof decks by a 1/2" (13mm).

Care must be taken to not damage the roof deck. Choose the correct fastener length and do not overdrive or underdrive the fastener. Pullout tests are required prior to job start when used with existing wood sheathing roof decks for technical evaluation.

MAINTENANCE

Standard maintenance of roofs should include regular inspection of flashings, drains and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.

Warranty

Upon successful completion of the installed roof by the

Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

LEGAL DISCLAIMER

- KEEP CONTAINER TIGHTLY CLOSED
- KEEP OUT OF REACH OF CHILDREN
- NOT FOR INTERNAL CONSUMPTION
- FOR INDUSTRIAL USE ONLY
- FOR PROFESSIONAL USE ONLY

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product's shelf life. User determines suitability of product for intended use and assumes all risks. User's and/or buyer's sole remedy shall be limited to the purchase price or replacement of this product exclusive of any labor costs. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

Sale of SIKA products are subject to the Terms and Conditions of Sale which are available at <https://usa.sika.com/en/group/SikaCorp/termsandconditions.html> or by calling 1-800-933-7452.

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Sika Mexicana S.A. de C.V.
Carretera Libre Celaya Km. 8.5
Fracc. Industrial Balvanera
Corregidora, Queretaro
C.P. 76920
Phone: 52 442 2385800
Fax: 52 442 2250537



Product Data Sheet
Sarnafast® Fastener MAXLoad
September 2019, Version 03.01
020945051100001015

SarnafastFastenerMAXLoad-en-US-(09-2019)-3-1.pdf

PRODUCT DATA SHEET

SARNADISC MAXLOAD

The Sarnadisc MAXLoad is a large diameter high strength round plate used with the Sarnafastener #21 MAXLoad to in-seam attach Sarnafil® S327 roof membrane directly to steel decking (22-24 gauge) and wood sheathing (>15/32”).

PRODUCT INFORMATION

USES

Used with the Sarnafastener #21 MAXLoad when attaching Sarnafil S327 membrane to the roof deck.

AREAS OF APPLICATION

- New Roof Applications
- Reroof Applications

FEATURES / BENEFITS

- Barbed plate design grips membrane securely.
- High ribs and an extruded center hole provide increased strength.
- Round design provides an even distribution of loads and eliminates sharp corners that can damage the insulation or membrane.

TESTS

STANDARDS / APPROVALS

- Factory Mutual 4470
- ICC Code Compliance – ESR 1157
- Miami-Dade County

PRODUCT DATA

FORM

COMPOSITION

Round steel plate made from 20 gauge (0.9 mm) Galvalume® coated steel, with three concentric rings of 6 eyehooks (18 total).

COLOR

Gray

DIMENSIONS

Diameter: 3.5 in (88 mm)

PACKAGING

500 per pail, 52 lbs (23.5 kg) per pail

SYSTEM INFORMATION

INSTALLATION	The Sarnadisc MAXLoad is positioned on the surface of the Sarnafil S327 membrane and a Sarnafastener #21 MAXLoad is placed through the center of it. The Sarnafastener #21 MAXLoad is then set into the roof deck, clamping the Sarnafil S327 membrane in place.
AVAILABILITY	From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.
MAINTENANCE	Standard maintenance of Sarnafil or Sikaplan systems should include regular inspections of flashing, drains, and termination sealants at least twice a year and after each storm.
WARRANTY	As a Sika supplied accessory, Sarnadisc MAXLoad is covered under Sika Corporation warranties.

LEGAL NOTES	<p>All information provided by Sika Corporation (“Sika”) concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika’s current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika’s instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika’s control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at usa.sarnafil.sika.com or by calling 800-451-2504.</p> <p>Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product’s most current Product Data Sheet, product label and Safety Data Sheet which are available online at usa.sarnafil.sika.com or by calling Sika’s Technical Service Department at 800-451-2504. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.</p> <p>Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer’s sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.</p> <p>NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.</p>
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PRODUCT DATA SHEET

Sarnafil® S 327-60 EnergySmart

SARNAFIL S 327 ROOF MEMBRANE IS A PVC THERMOPLASTIC MEMBRANE

PRODUCT DESCRIPTION

Sarnafil® S 327-60 EnergySmart Roof Membrane is a PVC thermoplastic membrane produced with an integral polyester reinforcement for high strength, is highly reflective, guaranteed for thickness, with heat-weldable seams, and a unique lacquer coating applied to the top of the membrane to reduce dirt pick up.

USES

Sarnafil S 327 is used in mechanically attached applications with various fastening methods, over various substrates.

Areas of Application

- New Roofs
- Reroofs
- Recovers

CHARACTERISTICS / ADVANTAGES



- Highly reflective
- Excellent tear strength resistance
- Factory applied lacquer coated to reduce dirt pick up
- Hot-air welded seams for long-term performance
- Proven membrane performance
- Guaranteed thickness
- Superior fire resistance

APPROVALS / STANDARDS

- FM Global
- Underwriters Laboratories
- Underwriters Laboratories of Canada
- ICC Code Compliance – ESR 1157
- Miami-Dade County
- Florida Building Code
- NSF/ANSI 347: Platinum Certified
- ENERGY STAR®
- California Title 24
- LEED / Green Globes

PRODUCT INFORMATION

Chemical Base	High-quality, PVC membrane containing ultraviolet light stabilizers, flame retardant and polyester scrim reinforcement with a unique lacquer coating on the top surface.	
Recycled Content	9 % Pre-consumer, 1 % Post-consumer	
Reinforcing Material	Polyester	
Packaging	60 mil (1.5 mm) Membrane Bareback: 10 ft x 100 ft (3 m x 30 m) roll, 389 lbs (177 kg) per roll 8 rolls per pallet 5 ft x 100 ft (1.5 m x 30 m) roll, 195 lbs (89 kg) per roll 12 rolls per pallet Coverstrip: 8" x 100 ft (20 cm x 30 m) roll, 25 lbs (12 kg) per roll 25 per pallet	
Appearance / Color	<ul style="list-style-type: none"> ▪ Top: White, Tan, and Reflective Gray ▪ Bottom: Gray 	
Shelf Life	N/A	
Storage Conditions	Store rolls on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.	
Overall Thickness	60 mil 45 mil	(ASTM D-751) (ASTM Type III D-4434 Spec. Requirement)
Thickness Above Scrim	27 mil 16 mil	(-) (ASTM Type III D-4434 Spec. Requirement)

TECHNICAL INFORMATION

Resistance to Static Puncture	Pass 33 lbf (15 kg)	(ASTM D-5602) (ASTM Type III D-4434 Spec. Requirement)
Resistance to Dynamic Puncture	Pass 14.7 ft-lbf (20 J)	(ASTM D-5635) (ASTM Type III D-4434 Spec. Requirement)
Tensile Strength	305 lbf (1356 N) 200 lbf (890 N)	(ASTM D-751) (ASTM Type III D-4434 Spec. Requirement)
Elongation at Break	28.5 & 29.5 % MD & CMD ¹ 15 & 15 % MD & CMD ¹	(ASTM D-751) (ASTM Type III D-4434 Spec. Requirement)
¹ MD = Machine Direction, CMD = Cross Machine Direction.		
Linear Dimensional Change	-0.12 % 0.5 %	(ASTM D-1204) (ASTM Type III D-4434 Spec. Requirement)
Tear Strength	48 lbf (213 N) 45 lbf (200 N)	(ASTM D-1004) (ASTM Type III D-4434 Spec. Requirement)
Seam Strength	Pass 75 % of original ²	(ASTM D-751) (ASTM Type III D-4434 Spec. Requirement)
² Failure occurs through membrane rupture not seam failure.		
Low Temperature Bend	Pass Pass -40°F (-40°C)	(ASTM D-2136) (ASTM Type III D-4434 Spec. Requirement)

Retention of Properties after Heat Aging	Tensile Strength, % of original: Pass	(ASTM D-3045)
	Elongation, % of original: Pass	(ASTM D-751)
	Tensile Strength, % of original: 90	(ASTM Type III D-4434 Spec. Requirement)
	Elongation, % of original: 90	
UV Exposure	10,000 hours	(ASTM G-154)
	5,000 hours	(ASTM Type III D-4434 Spec. Requirement)
	Cracking (7x magnification)	None
	Discoloration (by observation)	Negligible
	Crazing (7x magnification)	None

Weight Change after Immersion in Water	2.0 % ± 3.0 %	(ASTM D-570) (ASTM Type III D-4434 Spec. Requirement)
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Solar Reflectance	EnergySmart Colors	Initial Solar Reflectance¹	3-Year Solar Reflectance¹
	EnergySmart White ²	0.84	0.76
	EnergySmart Tan ²	0.73	0.65
	EnergySmart Reflective Gray ²	0.73	0.66

¹ Solar Reflectance testing according to ASTM C1549.

² Meets ENERGY STAR®, LEED, Green Globes, and California's Title 24 criteria for Low and Steep Slope applications.

Thermal Emittance	EnergySmart Colors	Initial Thermal Emittance¹	3-Year Thermal Emittance¹
	EnergySmart White ²	0.86	0.85
	EnergySmart Tan ²	0.85	0.86
	EnergySmart Reflective Gray ²	0.89	0.88

¹ Thermal Emittance testing according to ASTM C1371, Slide Method.

² Meets ENERGY STAR®, LEED, Green Globes, and California's Title 24 criteria for Low and Steep Slope applications.

Solar Reflectance Index	EnergySmart Colors	Initial Solar Reflectance Index	3-Year Solar Reflectance Index
	EnergySmart White ¹	105	93
	EnergySmart Tan ¹	89	78
	EnergySmart Reflective Gray ¹	90	80

¹ Meets ENERGY STAR®, LEED, Green Globes, and California's Title 24 criteria for Low and Steep Slope applications.

APPLICATION INSTRUCTIONS

APPLICATION

Sarnafil S 327 is rolled out after proper preparation of the approved substrate and fastened to the roof deck with appropriate mechanically attached system with Sarnafasteners in accordance with Sika's technical

requirements. Sarnafil S 327 seams are heat-welded together by trained operators using hot-air welding equipment. Different mechanically attached systems require different application methods. Please consult Sika's Specifications or Applicator Handbook for detailed installation procedures.

MAINTENANCE

Standard maintenance of Sarnafil systems should include inspections of flashings, drains, and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.

Warranty

Upon successful completion of the installed roof by the Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

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Product Data Sheet
Sarnafil® S 327-60 EnergySmart
September 2019, Version 04.01
020905012060153002

SarnafilS327-60EnergySmart-en-US-(09-2019)-4-1.pdf



PRODUCT DATA SHEET

Sarnafast® Fastener XP

SARNAFASTENER #15 XP IS A THREADED DRILL POINT FASTENER

PRODUCT DESCRIPTION

Sarnafastener #15 XP is a threaded drill point fastener used within Sarnafil® roof systems to attach Sarnafil® S 327 Membrane, Sikaplan Fastened Membrane or Sarnatherm® insulation, Sarnatherm® roof boards, gypsum roof boards, or other Sika approved boards into steel decking (18 – 24 gauge), wood plank (min. 1–1/2”), or wood sheathing (> 15/32”).

USES

Used in conjunction with Sarnadiscs, Sarnarail, Sarnabars, or Sarnaplates for attachment direct to the roof deck.

Areas of Application

- New Roof Applications
- Reroof Applications
- Recover Applications

CHARACTERISTICS / ADVANTAGES

- Oversized heavy shank and thread diameters.
- Deep buttress threads for high pullout resistance.
- Miniature drill point penetrates decks quickly and contributes to exceptional resistance to back out.

APPROVALS / STANDARDS

- Factory Mutual 4470
- ICC Code Compliance – ESR 1157
- Miami-Dade County

PRODUCT INFORMATION

Chemical Base Made from carbon steel, treated with a corrosion-resistant coating to meet the criteria for corrosion resistance.

Packaging	Length	Thread	Packaging	Weight
	1–1/4" (32 mm)	Full	1000 / Pail	12 lb (5.4 kg)
	2" (51 mm)	Full	1000 / Pail	20 lb (9.1 kg)
	3" (76 mm)	Full	1000 / Pail	29 lb (13.2 kg)
	4" (102 mm)	3" (76 mm)	1000 / Pail	38 lb (17.2 kg)
	5" (127 mm)	4" (102 mm)	500 / Pail	24 lb (10.9 kg)
	6" (152 mm)	4" (102 mm)	500 / Pail	28 lb (12.7 kg)
	7" (178 mm)	4" (102 mm)	500 / Pail	34 lb (15.4 kg)
	8" (203 mm)	4" (102 mm)	500 / Pail	38 lb (17.2 kg)
	9" (229 mm)	4" (102 mm)	500 / Pail	42 lb (19.1 kg)
	10" (254 mm)	4" (102 mm)	500 / Pail	47 lb (21.3 kg)
	12" (305 mm)	4" (102 mm)	500 / Pail	56 lb (25.4 kg)
	14" (356 mm)	4" (102 mm)	250 / Box	32 lb (14.5 kg)
	16" (406 mm)	4" (102 mm)	250 / Box	38 lb (17.2 kg)
	18" (457 mm)	4" (102 mm)	250 / Box	41 lb (18.6 kg)
	20" (508 mm)	4" (102 mm)	250 / Box	44 lb (20 kg)

#3 Phillips bit included in each bucket/carton

Appearance / Color Blue

Shelf Life N/A

Storage Conditions N/A

Dimensions

- Thread Diameter: 0.265" (6.7 mm)
- Shank Diameter: 0.202" (5.1 mm)
- Head Diameter: 0.435" (11 mm)
- Head Style: #3 Phillips

APPLICATION INSTRUCTIONS

APPLICATION

*Pre-drill a 3/16" (4.8 mm) pilot hole at least 1/2" (13 mm) deeper than fastener embedment.

The Sarnafastener #15 XP is fastened straight into the roof deck with a heavy-duty (4 amp minimum), variable speed (0 – 2500 rpm), reversible screwgun with a clutch release and a #3 Phillips drive bit.

Sarnafastener #15 XP must penetrate steel and wood plank roof decks by 1" (25 mm) and the underside of wood sheathing roof decks by a 1/2" (13 mm).

Care must be taken to not damage the roof deck. Choose the correct fastener length and do not overdrive or underdrive the fastener. Pullout tests are required prior to job start when used with existing wood sheathing roof decks for technical evaluation.

MAINTENANCE

Standard maintenance of roofs should include regular inspection of flashings, drains and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.

Warranty

Upon successful completion of the installed roof by the Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

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Product Data Sheet
Sarnafast® Fastener XP
September 2019, Version 03.01
020945051100001009

SarnafastFastenerXP-en-US-(09-2019)-3-1.pdf



PRODUCT DATA SHEET

Sarnaplate

SARNAPLATE IS A STRESS PLATE

PRODUCT DESCRIPTION

Sarnaplate is a specially-designed stress plate used with #12, #14, and #15 Sarnafasteners to attach Sarnatherm® insulation, Sarnatherm® roof boards, gypsum roof boards, or other Sika approved boards directly to the roof deck prior to the installation of the Sarnafil® mechanically-attached or adhered roof membrane.

USES

Used with Sarnafasteners to attach insulation or roof boards direct to the roof deck.

Areas of Application

- New Roof Applications
- Reroof Applications
- Recover Applications

CHARACTERISTICS / ADVANTAGES

- Designed to provide protection to the membrane underside from abrasion by the fastener head.
- Superior resistance to bending.

APPROVALS / STANDARDS

- Factory Mutual 4470
- ICC Code Compliance – ESR 1157
- Miami-Dade County

PRODUCT INFORMATION

Chemical Base	26 gauge (0.46 mm) stamping of SAE 1010 steel with a Galvalume® coating
Packaging	1000 per pail, 45 lbs (20.4 kg) per pail
Appearance / Color	Gray
Shelf Life	N/A
Storage Conditions	N/A
Dimensions	Square: 3" (75 mm) x 3" (75 mm) Round: 3" (75 mm) Diameter

APPLICATION INSTRUCTIONS

APPLICATION

Sarnaplate is positioned on the surface of the insulation board. A Sarnafastener is set through the center of it and set into the roof deck. The Sarnaplate clamps the insulation board in place.

MAINTENANCE

Standard maintenance of Sarnafil® or Sikaplan® systems should include inspections of flashings, drains, and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.

Warranty

Upon successful completion of the installed roof by the Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

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Product Data Sheet
Sarnaplate
September 2019, Version 03.01
020945051100002006

Sarnaplate-en-US-(09-2019)-3-1.pdf



PRODUCT DATA SHEET

Sarnaclad

SARNACLAD IS A PVC-COATED, HEAT-WELDABLE SHEET METAL

PRODUCT DESCRIPTION

Sarnaclad is a PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles.

USES

Perimeter edge, wall, or curb flashings.

Areas of Application

- New Roofs
- Recover Roofs

CHARACTERISTICS / ADVANTAGES

- Allows direct heat welding of membrane to form monolithic system.
- Resists staining from airborne dirt and pollutants.

PRODUCT INFORMATION

Chemical Base	Meets ASTM A-653 for 24 gauge, G90 galvanized metal sheet with a 20 mil (0.5 mm) unsupported membrane comprised of the same time tested Sarnafil® formula laminated on one side.
Recycled Content	Recycled Content (metal): 25 % Post Consumer, 6 % Pre Consumer Recycled Content (membrane): 0 %
Packaging	<p>4 ft x 8 ft sheet:</p> <ul style="list-style-type: none"> ▪ 25 sheets per pallet, 35 lbs (16 kg) per sheet, 905 lbs (410.5 kg) per pallet <p>4 ft x 10 ft sheet:</p> <ul style="list-style-type: none"> ▪ 25 sheets per pallet, 44 lbs (20 kg) per sheet, 1,130 lbs (512.6 kg) per pallet
Appearance / Color	White, Tan, Reflective Gray, Patina Green, Lead Grey, Copper Brown, Evergreen, or Bronze
Shelf Life	N/A
Storage Conditions	N/A
Dimensions	<p>Two sizes:</p> <ul style="list-style-type: none"> ▪ 4 ft x 8 ft (1.2 m x 2.4 m) ▪ 4 ft x 10 ft (1.2 m x 3.0 m) (White only)

Product Data Sheet

Sarnaclad

February 2020, Version 03.01

020945012000000005

APPLICATION INSTRUCTIONS

APPLICATION

Sarnaclad is cut and formed to shape on standard sheet metal equipment. Sarnaclad is fastened in position in accordance with Sika-Roofing technical requirements. The Sarnaclad joints are covered by 2" (50 mm) wide aluminum foil tape and then made watertight by heat-welding a 4" (100 mm) wide membrane strips over the tape. Membrane is then heat-welded to the Sarnaclad.

MAINTENANCE

Standard maintenance of Sarnafil® or Sikaplan® systems should include inspections of flashings, drains, and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.

Warranty

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BASIS OF PRODUCT DATA

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OTHER RESTRICTIONS

See Legal Disclaimer.

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Product Data Sheet

Sarnaclad
February 2020, Version 03.01
020945012000000005

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Sarnaclad-en-US-(02-2020)-3-1.pdf

PRODUCT DATA SHEET

Sarnacol®-2170 (US)

SARNACOL 2170 MEMBRANE ADHESIVE IS A SOLVENT-BASED REACTIVATING ADHESIVE

PRODUCT DESCRIPTION

Sarnacol®-2170 (US) is a solvent-based reactivating adhesive used for Sarnafil® or Sikaplan® Adhered roofing systems. It is also used within any Sika approved roofing or waterproofing system for adhering flashings. Sarnacol 2170 is formulated for adhering membranes in a two-step process to clean, dry, surfaces with no slope restrictions.

USES

Sarnacol 2170 is uniquely formulated to be compatible with Sarnafil® and Sikaplan® membranes.

Areas of Application

Bareback Membrane Substrates

- Isocyanurate Organic Facer
- Isocyanurate Glass Facer
- Smooth Plywood
- Metal
- Concrete Wall
- Glass Faced Gypsum
- Prime Glass Faced Gypsum
- Securock® Gypsum-Fiber

Feltback Membrane Substrates

- Isocyanurate Organic Face
- Isocyanurate Glass Facer
- Smooth Plywood
- Metal
- Concrete Deck
- Concrete Wall
- Masonry Wall
- Cellular Concrete
- Glass Faced Gypsum
- Prime Glass Faced Gypsum

- Securock® Gypsum-Fiber

CHARACTERISTICS / ADVANTAGES

Low temperature applications

APPROVALS / STANDARDS

- FM Global
- Underwriters Laboratories
- Miami-Dade
- Florida Building Code
- ICC Code Compliant – ESR 1157

PRODUCT INFORMATION

Packaging	5 gal (18.9 L) pails, 37 lb (16.8 kg) per pail, 48 pails per pallet
Appearance / Color	Dark Yellow
Shelf Life	12 months if stored properly in original unopened, sealed and undamaged packaging
Storage Conditions	Store in tightly closed containers in temperatures between -4°F (-20°C) and 86°F (30°C)
Volatile organic compound (VOC) content	694.2 g/L

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

All work surfaces should be clean, dry, free of dirt, dust, debris, oils and other contaminants.

MIXING

Mix well before use.

APPLICATION

General Application:

Apply Sarnacol 2170 using solvent-resistant ¾" (19 mm) nap paint rollers in a smooth, even coating with no gaps, globs, puddles or similar inconsistencies. Clean any wet adhesive from the seams before welding.

Bareback Membrane Application:

Apply Sarnacol 2170 to the substrate at a rate of 80 - 100 ft²/gal (2 - 2.5 m²/L) and allow to dry. After the substrate adhesive has dried completely, apply Sarnacol 2170 to the back side of the membrane at a rate of 200 ft²/gal (4.9 m²/L) and allow to become tacky (producing strings) when touched with a dry finger. Do not allow the adhesive on the back of the membrane to dry. Roll the tacky coated membrane onto the previously coated dry substrate being careful to avoid wrinkles. Press the bonded sheet firmly in place with a minimum 100 lb (45 kg) steel roller by rolling in two directions. Use a hand roller on vertical flashings.

Feltback Membrane Application:

Apply Sarnacol 2170 to the substrate at a rate of 80 - 100 ft²/gal (2 - 2.5 m²/L) and allow to dry. Apply a second coat of adhesive at a rate of 100 ft²/gal (2.5 m²/L) to the previously coated dried substrate. Do not allow the second coat of adhesive to dry. Unroll the membrane immediately into the second layer of wet adhesive. Press the bonded sheet firmly in place with a minimum 100 lb (45 kg) steel roller by rolling in two directions. Use a hand roller on vertical flashings.

COVERAGE

The coverage rate may vary depending on substrate porosity, ambient temperature, and experience. The

typical coverage rate for the following applications are:

- Bareback membrane: 57 - 67 ft²/gal. (5.3 - 6.2 m²/L)
- Feltback membrane: 44 - 50 ft²/gal. (4.1 - 4.6 m²/L)

MAINTENANCE

Standard maintenance of roofs, green roofs and plaza decks should include regular inspection of flashings, drains and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan systems.

Warranty

Upon successful completion of the installed roof by the Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator

LIMITATIONS

Precautions should be taken to prevent odors and/or vapors from entering the building/structure, including but not limited to turning off and sealing air intake vents or other means of ingress for odors and/or vapors into the building/structure during product application and cure.

- Do not apply in wet weather or to a wet surface.
- Do not install when air temperature is within 5°F (3°C) of dew point.
- Open time varies depending on weather and temperature conditions.
- Eliminate uneven surfaces to ensure positive contact between the membrane and the substrate.
- Unused adhesive can be saved for use at a later date by resealing the pail cover.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

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Product Data Sheet
Sarnacol®-2170 (US)
September 2019, Version 03.01
020945072000000037

Sarnacol-2170US-en-US-(09-2019)-3-1.pdf



PRODUCT DATA SHEET

Sarnastop

SARNASTOP IS AN ALUMINUM ALLOY BAR

PRODUCT DESCRIPTION

Sarnastop is an aluminum alloy bar used with approved fasteners to clamp Sarnafil® or Sikaplan® membrane to the roof deck, walls, curbs and other details.

USES

Sarnastop distributes the loads uniformly across a series of fastening points, maximizing fastener pullout and backout resistance.

Areas of Application

- Base of walls
- Curbs
- Transitions

CHARACTERISTICS / ADVANTAGES

- Easy to install

PRODUCT INFORMATION

Chemical Base	Produced from 6063 T6 extruded aluminum alloy with a mill finish. Sarnastop is provided with predrilled holes at 6" (152 mm) o.c.
Packaging	25 pieces per box, 1.5 lbs (680 g) per piece
Appearance / Color	Gray
Shelf Life	N/A
Storage Conditions	N/A
Dimensions	Width: 1" (25.4 mm) Length: 10 ft (3 m) Thickness: 0.13" (3 mm)

APPLICATION INSTRUCTIONS

APPLICATION

Sarnastop is positioned over the top of the membrane and fastened to the substrate with approved fasteners. Fastener spacing is determined by Sika technical

requirements. The fasteners are set to a depth to clamp the membrane in place without damaging the substrate. Depending on the specific detail, a membrane coverstrip is welded over the Sarnastop for watertightness.

MAINTENANCE

Standard maintenance of Sarnafil® or Sikaplan® systems should include regular inspection of flashings, drains and termination sealants at least twice a year and after each storm.

AVAILABILITY/WARRANTY

Availability

From Sika Corporation – Roofing Authorized Applicators for use within Sarnafil or Sikaplan syste

Warranty

Upon successful completion of the installed roof by the Sika Authorized Applicator, Sika Corporation will provide a warranty to the Building Owner via the Sika Authorized Applicator.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

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ENVIRONMENTAL, HEALTH AND SAFETY

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Product Data Sheet
Sarnastop
September 2019, Version 02.01
020945051100000017

Sarnastop-en-US-(09-2019)-2-1.pdf



PRODUCT DATA SHEET

Sikaflex[®]-1A

ELASTOMERIC JOINT SEALANT / ADHESIVE

PRODUCT DESCRIPTION

Sikaflex[®]-1A is a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant. Sikaflex-1a can be used in green and damp concrete applications. Meets Federal Specification TT-S-00230C, Type II, Class A. Meets ASTM C-920, Type S, Grade NS, Class 35, use T, NT, O, M, G, I, A. Canadian standard CAN/CGSB 19.13-M87.

USES

- Designed for all types of joints where maximum depth of sealant will not exceed 1/2 in.
- Excellent for small joints and fillets, windows, door frames, reglets, flashing, common roofing detail applications, and many construction adhesive applications.
- Suitable for vertical and horizontal joints; readily placeable at 40°F
- Has many applications as an elastic adhesive between materials with dissimilar coefficients of expansion.
- Submerged conditions, such as canal and reservoir joints.

CHARACTERISTICS / ADVANTAGES

- Eliminates time, effort, and equipment for mixing, filling cartridges, pre-heating or thawing, and cleaning of equipment.
- Fast tack-free and final cure times.
- High elasticity - cures to a tough, durable, flexible consistency with exceptional cut and tear -resistance.
- Stress relaxation.
- Excellent adhesion - bonds to most construction materials without a primer.
- Excellent resistance to aging, weathering.

- Proven in tough climates around the world.
- Can be applied to green concrete 24 hours after pour
- Can be applied to damp concrete 1 hour after getting wet
- Odorless, non-staining.
- Jet fuel resistant.
- Certified to the NSF/ANSI Standard 61 for potable water.
- Urethane-based; suggested by EPA for radon reduction.
- Paintable with water-, oil- and rubber-based paints.
- Capable of ±35% joint movement.

APPROVALS / STANDARDS

- ASTM C 920, Type S, Grade NS, Class 35, use NT, A, M
- Federal specification TT-S-00230 C Type II, Class A
- Canadian Standard CAN/CGSB 19.13-M87
- Certified to NSF/ANSI standard 61 for portable water

PRODUCT INFORMATION

Packaging	10.1 fl. oz. (300 mL) Cartridge, 20 fl. oz. uni-pac Sausages, 4.5 gal (17 L) in a 5 gal pail, 52 gal (197 L) in a 55 gal drum
Color	White, colonial white, aluminum gray, limestone, black, dark bronze, capitol tan, stone and medium bronze. Special architectural colors on request.
Shelf Life	Cartridge and Sausage: 12 months in original, unopened packaging. Pail and Drum: 6 months in original, unopened packaging.
Storage Conditions	Store at 40°-95°F (4°-35°C).

TECHNICAL INFORMATION

Shore A Hardness	(21 day) 45±5	(ASTM C 661)												
Tensile Stress at Specified Elongation	21 day Tensile Stress Stress @ 100%	<u>175 psi (1.21 MPa)</u> <u>85 psi (0,59 N/mm²)</u> (ASTM D 412)												
Elongation at Break	550 %	(ASTM D-412)												
Adhesion in Peel	<table><thead><tr><th>Substrate</th><th>Peel Strength</th><th>Adhesion loss</th></tr></thead><tbody><tr><td>Concrete</td><td>20 lbs</td><td>0 %</td></tr><tr><td>Aluminium</td><td>20 lbs</td><td>0 %</td></tr><tr><td>Glass</td><td>20 lbs</td><td>0 %</td></tr></tbody></table>	Substrate	Peel Strength	Adhesion loss	Concrete	20 lbs	0 %	Aluminium	20 lbs	0 %	Glass	20 lbs	0 %	(ASTM C-794) (TT-S-00230C)
Substrate	Peel Strength	Adhesion loss												
Concrete	20 lbs	0 %												
Aluminium	20 lbs	0 %												
Glass	20 lbs	0 %												
Tear Strength	55 lb./in.	(ASTM D-624)												
Movement Capability	±35 %	(ASTM C-719)												
Chemical Resistance	Good resistance to water, diluted acids, and diluted alkalines. Consult Technical Service for specific data.													
Resistance to Weathering	Excellent													
Service Temperature	-40 °F to +170 °F													

APPLICATION INFORMATION

Coverage**10.1 oz Cartridge: Yield in Linear Feet**

Width/Depth	1/4"	3/8"	1/2"
1/4"	24.3		
3/8"	16.2	10.8	
1/2"	12.1	8.1	6.1
3/4"	8.1	5.4	4.0
1"			3.0
1.25"			2.4
1.5"			2.0

20 oz Sausage: Yield in Linear Feet

Width/Depth	1/4"	3/8"	1/2"
1/4"	48.1		
3/8"	32.1	21.4	
1/2"	24.1	16.0	12.0
3/4"	16.0	10.7	8.0
1"			6.0
1.25"			4.8
1.5"			4.0

1 gallon: Yield in Linear Feet

Width/Depth	1/4"	3/8"	1/2"
1/4"	307.9		
3/8"	205.3	136.8	
1/2"	153.9	102.6	77.0
3/4"	102.6	68.4	51.3
1"			38.5
1.25"			30.8
1.5"			25.7

Cure Time Final cure: 4 to 7 days

Curing Rate Tack-free time 3 to 6 hours
Tack-free to touch 3 hours

APPLICATION INSTRUCTIONS**SUBSTRATE PREPARATION**

Product Conditioning: Condition material to 65°-75°F before using.

Clean all surfaces. Joint walls must be sound, clean, frost-free, and free of oil and grease. Curing compound residues and any other foreign matter must be thoroughly removed. A roughened surface will also enhance bond. Install bond breaker tape or backer rod to prevent bond at base of joint. Priming is not usually necessary. Most substrates only require priming if testing indicates a need or where sealant will be subjected to water immersion after cure.

For green concrete applications control joints must be cut 8 hours prior to sealant installation and in expansion joint forms must be removed 4 hours prior to sealant installation. For wet concrete applications all excess or standing water must be displaced and concrete must

then dry for a minimum of 60 min prior to sealant installation. Consult Sikaflex Primer Technical Data Sheet or Technical Service for additional information on priming.

APPLICATION METHOD / TOOLS

Recommended application temperatures: 40°-100°F. For cold weather application, condition units at approximately 70°F; remove prior to using. For best performance, Sikaflex-1a should be gunned into joint when joint slot is at mid-point of its designed expansion and contraction. Place nozzle of gun into bottom of the joint and fill entire joint. Keep the nozzle in the sealant, continue on with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping of sealant to eliminate entrapment of air.

Sikaflex-1a can be applied on green concrete after the concrete has cured for a minimum of 24 hours at 75°F. Control joints must be cut and open for min of 8 hours prior to application. Expansion joints must have

forms removed a minimum of 4 hours prior to application. For damp concrete applications Sikaflex-1a can be applied 60 minutes after any and all water has been displaced.

Tooling & Finishing

Tool sealant to ensure full contact with joint walls and remove air entrapment. Joint dimension should allow for 1/4 inch minimum and 1/2 inch maximum thickness for sealant. Proper design is 2:1 width to depth ratio, For use in horizontal joints in traffic areas, the absolute minimum depth of the sealant is 1/2 in. and closed cell backer rod is recommended.

Removal

Use personal protective equipment (chemical resistant gloves/goggles/clothing). Without direct contact, remove spilled or excess product and placed in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations.

Over Painting

Allow 1-week cure at standard conditions when using Sikaflex-1a in total water immersion situations and prior to painting.

CLEANING OF TOOLS

Clean all tools and application equipment with Sika® Remover-208 immediately after use. Hardened material can only be removed mechanically. For cleaning skin use Sika® Cleaning Wipes-100.

AVAILABILITY/WARRANTY

- Pre-treatment Sealing and Bonding Chart
- Method Statement: Joint Sealing
- Method Statement: Joint Maintenance, Cleaning and Renovation
- Technical Manual: Facade Sealing

LIMITATIONS

- Allow 1 week cure at standard conditions when using Sikaflex-1a in total water immersion situations.
- When overcoating with water, oil and rubber based paints, compatibility and adhesion testing is essential.
- Sealant should be allowed to cure for 7 days prior to overcoating
- Avoid exposure to high levels of chlorine. (Maximum continuous level is 5 ppm of chlorine.)
- Maximum depth of sealant must not exceed 1/2 in.; minimum depth is 1/4 in.
- Maximum expansion and contraction should not exceed 35% of average joint width.
- Do not cure in the presence of curing silicone sealants.
- Avoid contact with alcohol and other solvent cleaners during cure.
- Do not apply when moisture-vapor-transmission condition exists from the substrate as this can cause

bubbling within the sealant.

- Use opened cartridges and uni-pac sausages the same day.
- When applying sealant, avoid air-entrapment.
- Since system is moisture-cured, permit sufficient exposure to air.
- White color tends to yellow slightly when exposed to ultraviolet rays.
- Light colors can yellow if exposed to direct gas fired heating element.
- The ultimate performance of Sikaflex-1a depends on good joint design and proper application with joint surfaces properly prepared.
- The depth of sealant in horizontal joints subject to traffic is 1/2 in.
- Do not tool with detergent or soap solutions.
- Do not use in contact with bituminous/asphaltic materials.
- In green concrete applications sealing joints in poor or low strength concrete 24 hours after pour may impact ability of sealant to gain proper adhesion.
- In damp concrete applications all standing water and excess water must be eliminated prior to the 60 minute waiting time.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

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Product Data Sheet
Sikaflex®-1A
August 2019, Version 01.01
020511010000000008

Sikaflex-1A-en-US-(08-2019)-1-1.pdf





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Sports Lighting:
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212.532.9600

Security:
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817.572.3300

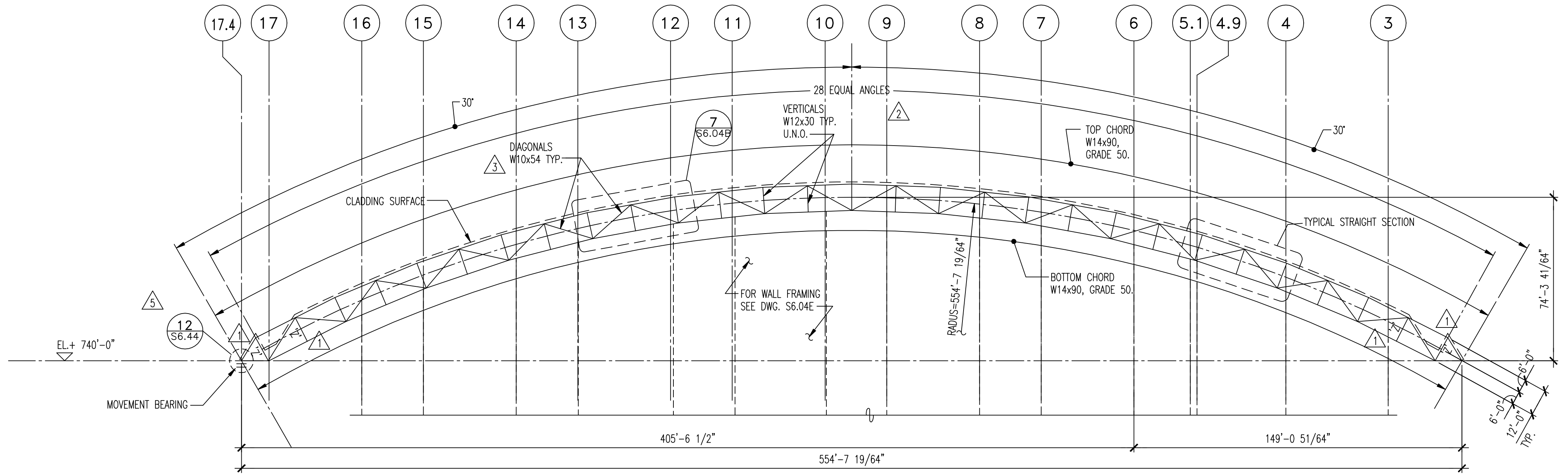
Telecommunications:
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Milwaukee, WI 53212
414.959.2720

Connections Inc.
Brookfield, WI 53005
414.789.8300

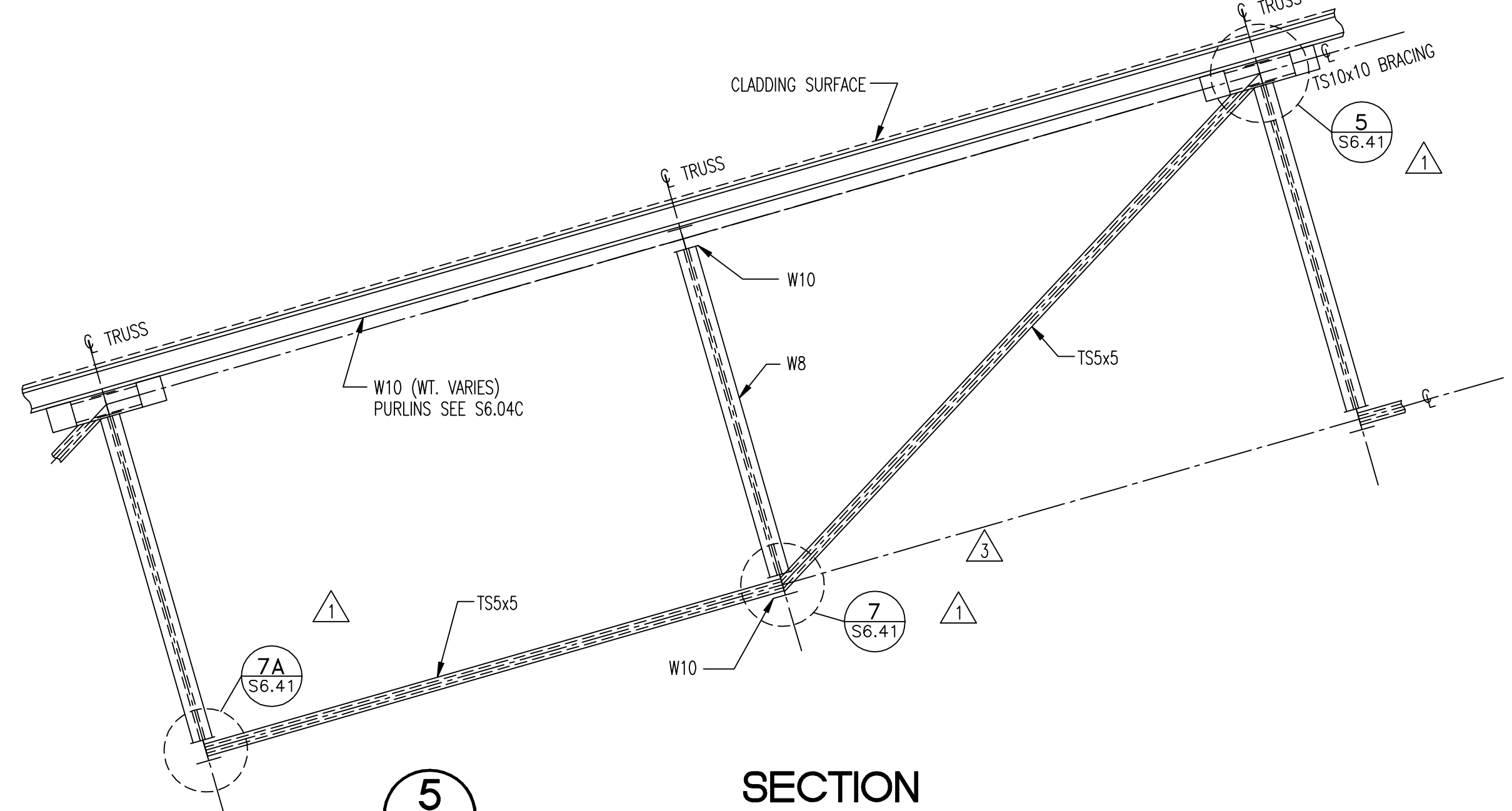
Landscape Architecture:
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Graphics Designer:
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Culver City, CA 90232
310.836.3939

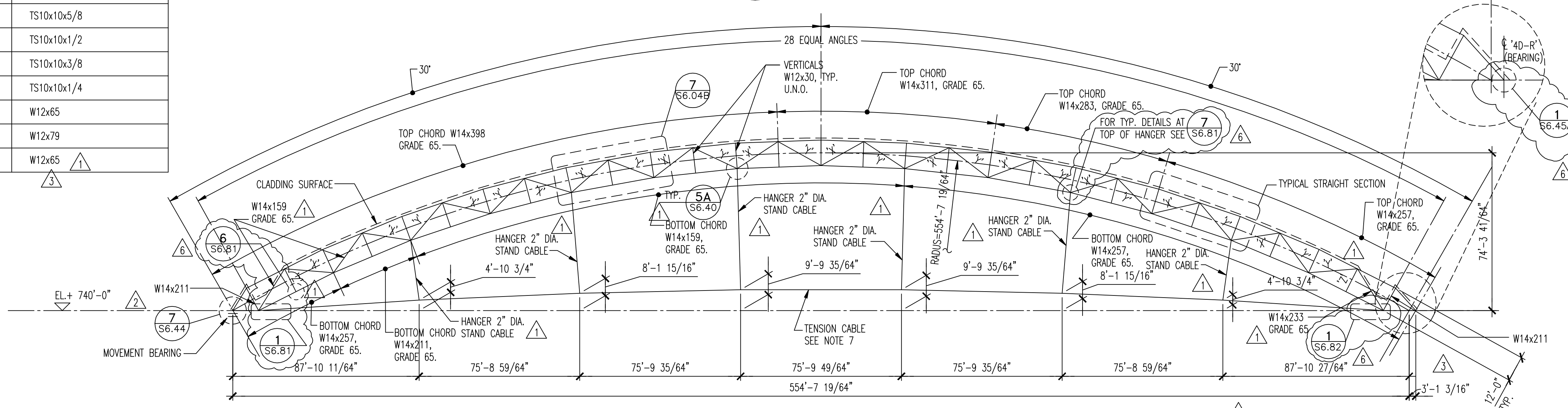


1 TRUSS '4A' ELEVATION
S6.04B

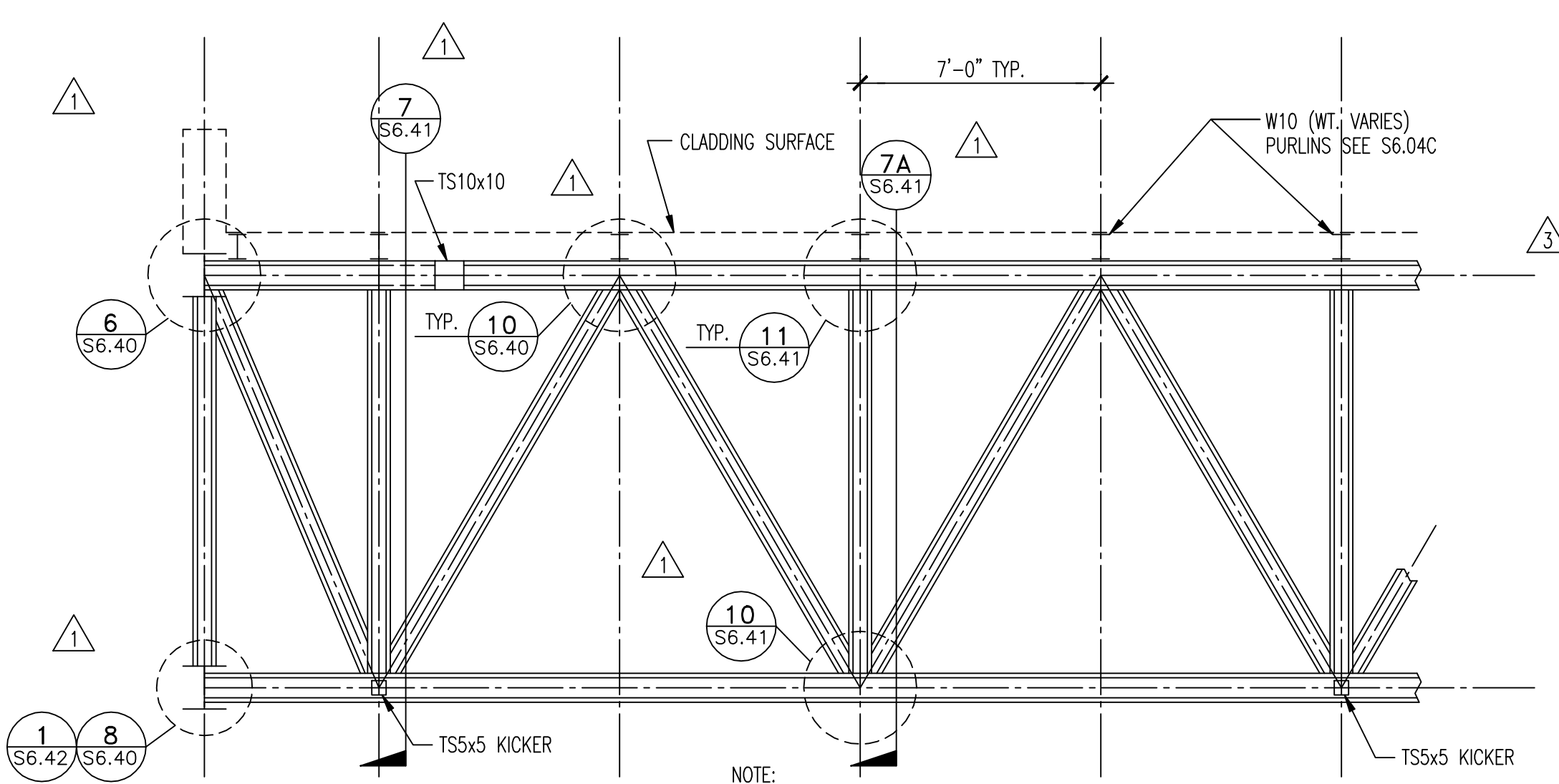


5 SECTION
S6.04B

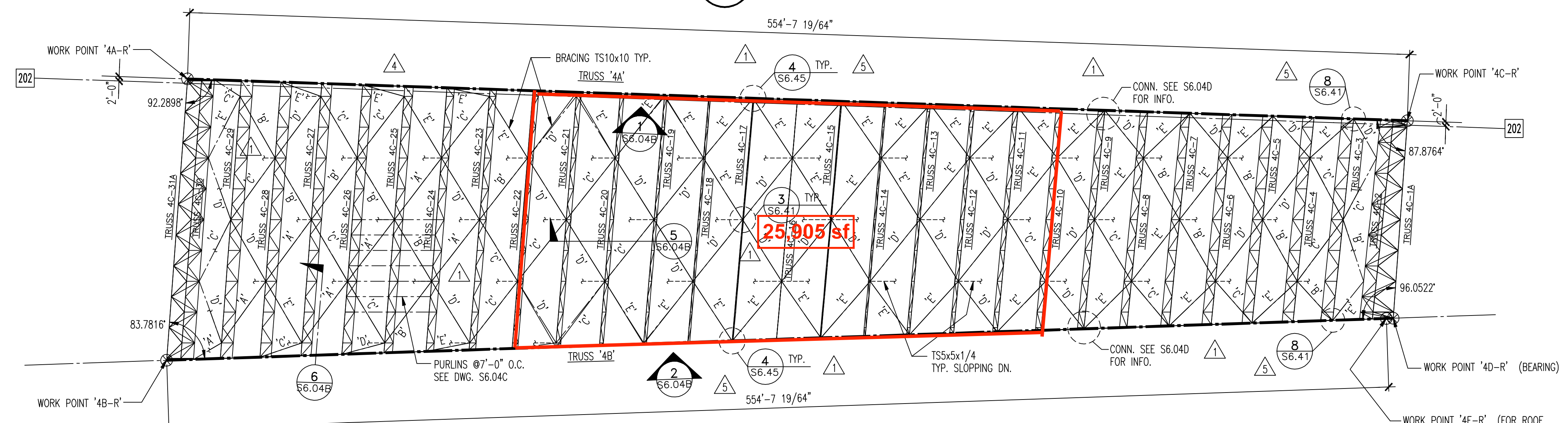
MEMBER MARKS	MEMBER SIZES
'A'	TS10x10x5/8 WITH (2)-1/8"x3/8" THK. PL.
'B'	TS10x10x5/8
'C'	TS10x10x1/2
'D'	TS10x10x3/8
'E'	TS10x10x1/4
'X'	W12x65
'Y'	W12x79
'Z'	W12x65



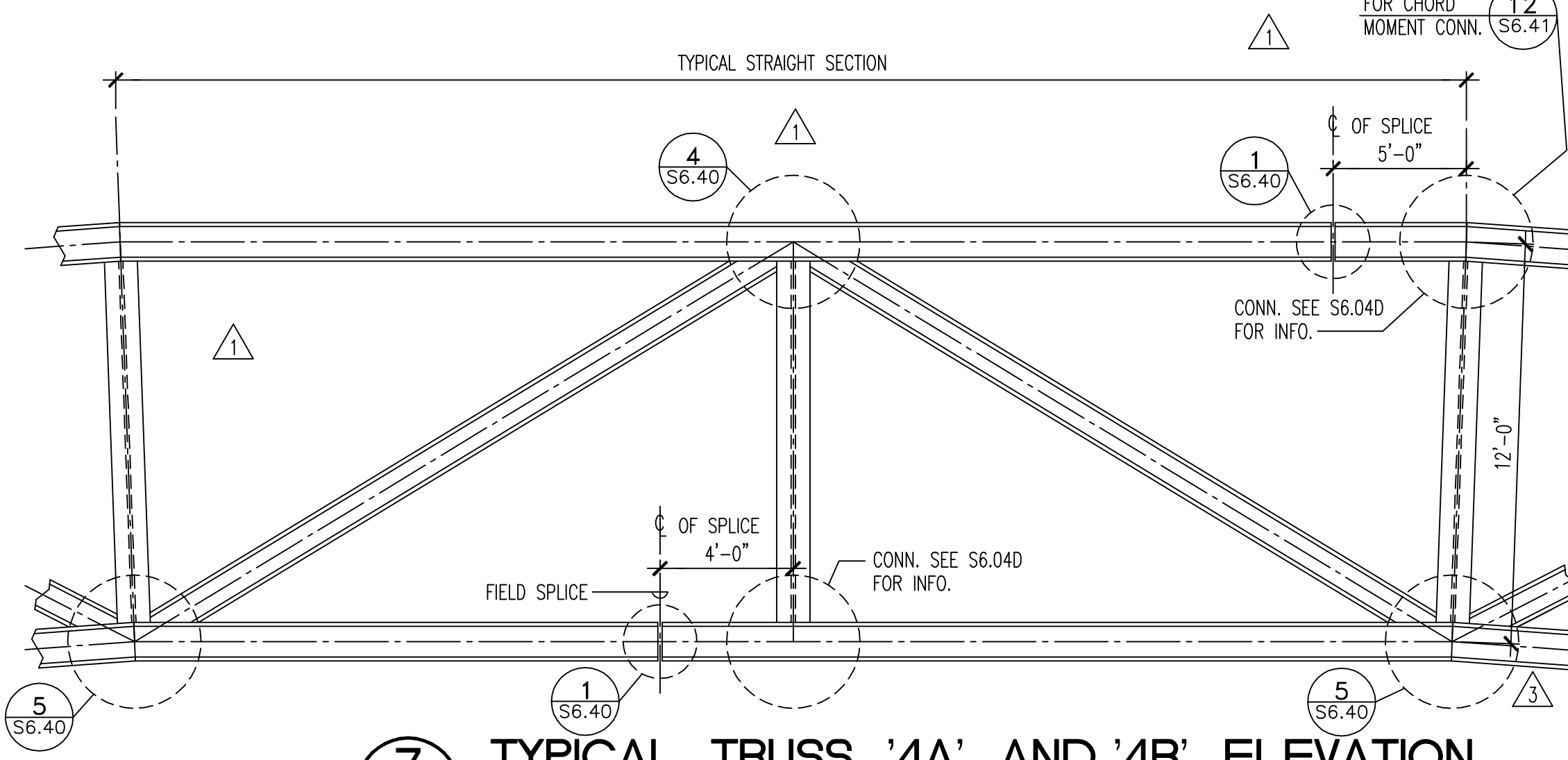
2 TRUSS '4B' ELEVATION
S6.04B



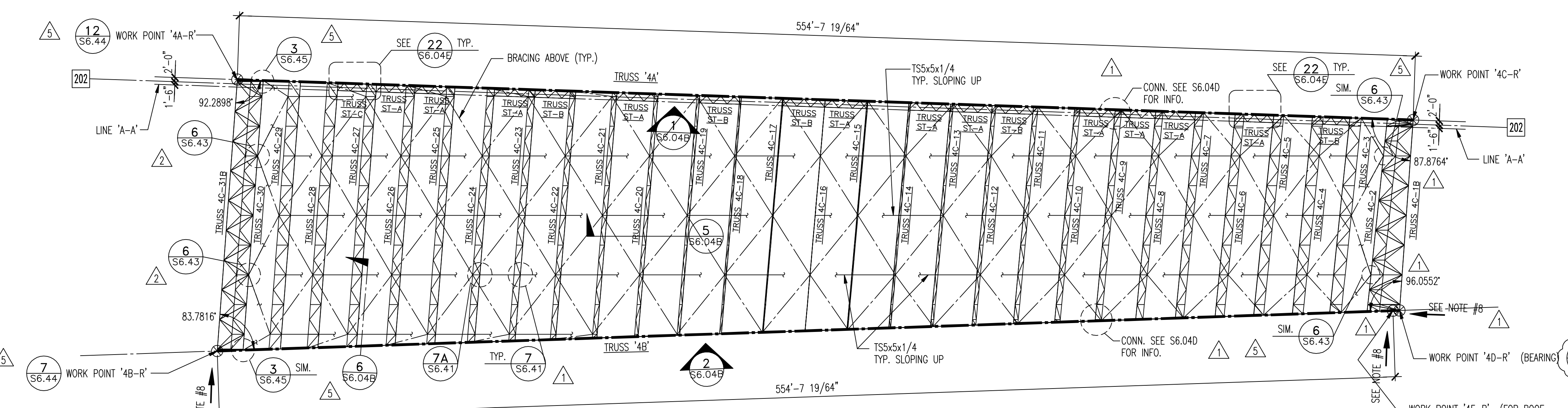
6 TYPICAL TRUSS '4C' ELEVATION
S6.04B



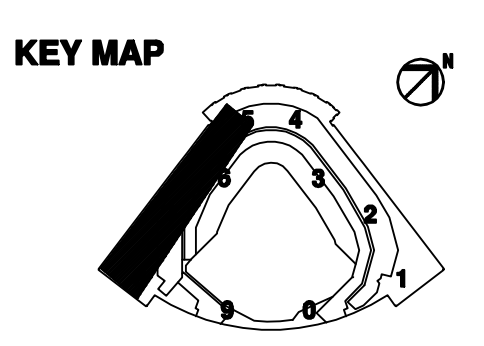
3 ROOF PANEL TYPE '4' TOP PLAN
S6.04B



7 TYPICAL TRUSS '4A' AND '4B' ELEVATION
S6.04B



4 ROOF PANEL TYPE '4' BOTTOM PLAN
S6.04B



KEY MAP

PER RECORD SET

Job No: 5128

Revision:

B.P. 'L' ADDENDUM #1	7-15-97
B.P. 'L' ADDENDUM #4	10-1-97
B.P. 'L' ADDENDUM #13	11-17-97
B.P. 'L' ADDENDUM #14	12-5-97
B.P. 'L' ADDENDUM #17	12-19-97
B.P. 'L' ADDENDUM #18	1-9-98
B.P. 'L' ADDENDUM #19	1-16-98

- NOTES:
- PANEL TYPE 4(RF) AS SHOWN, PANEL TYPE 4(LF) SIMILAR HANDED.
 - SEE SHEET S2.07 AND ARCHITECTURAL DRAWINGS FOR OVERALL SETTING OUT.
 - SEE SHEETS S6.04A - 3D VIEWS
S6.04C - PURLIN LAYOUT
S6.04D - SECONDARY TRUSSES
S6.04E - WALL FRAMING
 - ALL STEEL ASTM A572 GRADE 50 UNLESS NOTED OTHERWISE.
 - STEEL TUBES ASTM A500 GRADE B.
 - TRUSS CHORD ASTM A913 GRADE 65 WHERE SHOWN.
 - TENSION CABLE:
MIN. BREAKING LOAD: = 7,000 K
MIN. STIFFNESS: $E_xA = 770,000 (K/in^2 \times in^2)$
 - ← INDICATES DIRECTION OF LATERAL RESTRAINT.

Date: JULY 15, 1997
Scale: 1/32" = 1'-0"

Sheet Title:
STRUCTURAL
ROOF PANEL DETAILS
PANEL TYPE '4' (RF)

Sheet No:

S6.04B ©1998 HKS Inc.

File: S604.DWG
Date: APR 01, 1997
Time: 11:08 AM



Southeast Wisconsin Professional Baseball Park District
West Allis, WI 53214
414.607.4045

Milwaukee Brewers Baseball Club
Milwaukee, WI 53214
414.933.4144

Architects:
HKS Inc.
Dallas, TX 75201-7485
214.989.5599

NBBJ Sports and Entertainment
Los Angeles, CA 90014
213.243.1160

Epstein Uhlen Architects
Milwaukee, WI 53201-0728
414.271.5350

Structural Engineers:
Ove Arup & Partners
Los Angeles, CA 90064
310.312.5040

Flad Structural Engineers
Madison, WI 53711
608.238.2661

Roof Consultant:
Mitsubishi Heavy Industries, LTD.
Chicago, IL 60611
312.640.8643

Traffic Engineers:
HNTB
Milwaukee, WI 53224
414.359.2300

Mechanical/Electrical/Plumbing/
Fire Protection
Ove Arup & Partners
Los Angeles, CA 90064
310.312.5040

PSJ Engineering, Inc.
Milwaukee, WI 53217
414.352.2211

The Wilson Firm
Milwaukee, WI 53213
414.771.6222

Audio-Visual/Electronics/Acoustical
Pelton, Marsh, Kinsella
Dallas, TX 75247-4951
800.229.7444

Food Service:
William Caruso & Associates
Englewood, CO 80112
303.649.1600

Sports Lighting:
Flack + Kurtz
New York, NY 10017
212.532.9600

Security:
HMA, Inc.
Arlington, TX 76017
817.572.2300

Telecommunications:
Lewis & Associates
Milwaukee, WI 53212
414.952.7270

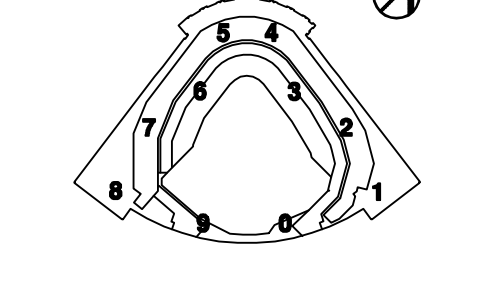
Connections Inc.
Brookfield, WI 53005
414.789.8300

Landscape Architecture:
Plant Associates
New Berlin, WI 53151
414.679.1881

Civil Engineering:
Barronette & Associates
Milwaukee, WI 53225
414.527.2773

Graphics Designer:
Sussman Prejza
Culver City, CA 90232
310.836.3939

KEY MAP



PER RECORD SET

Job No: 5128

Revision: B.P. 1' ADDENDUM #1 7-15-97

Date: JULY 15, 1997

Scale: 1/32" = 1'-0"

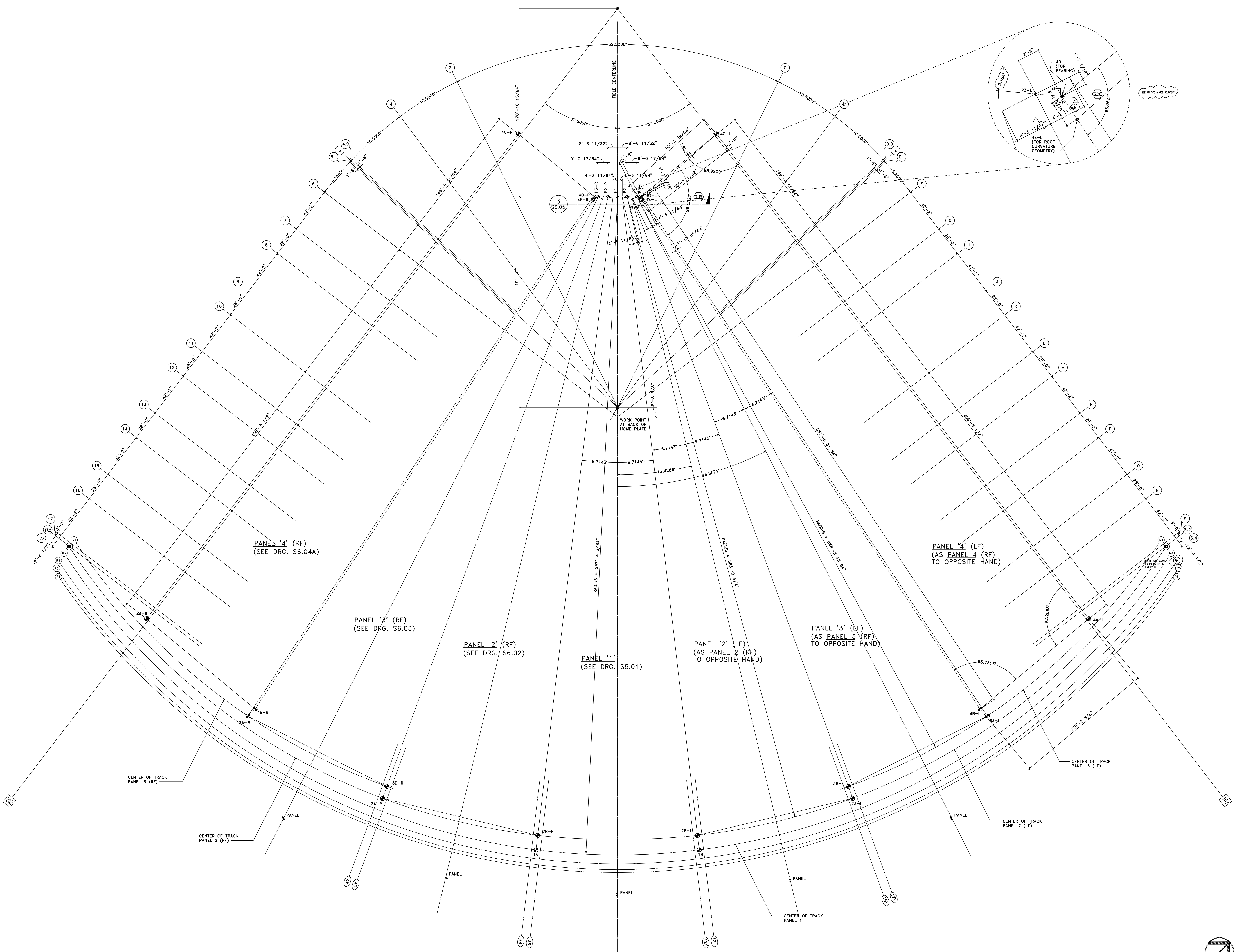
Sheet Title: STRUCTURAL ROOF KEY PLAN

Sheet No: S2.07

©1996 HKS Inc.

Plot date: File: S207.DWG File Date: TBLK_XS-GRID_XS-S207

NAME: H:\30665\5\S207.DWG DATE: MAY 28, 1997 TIME: 10:48 AM

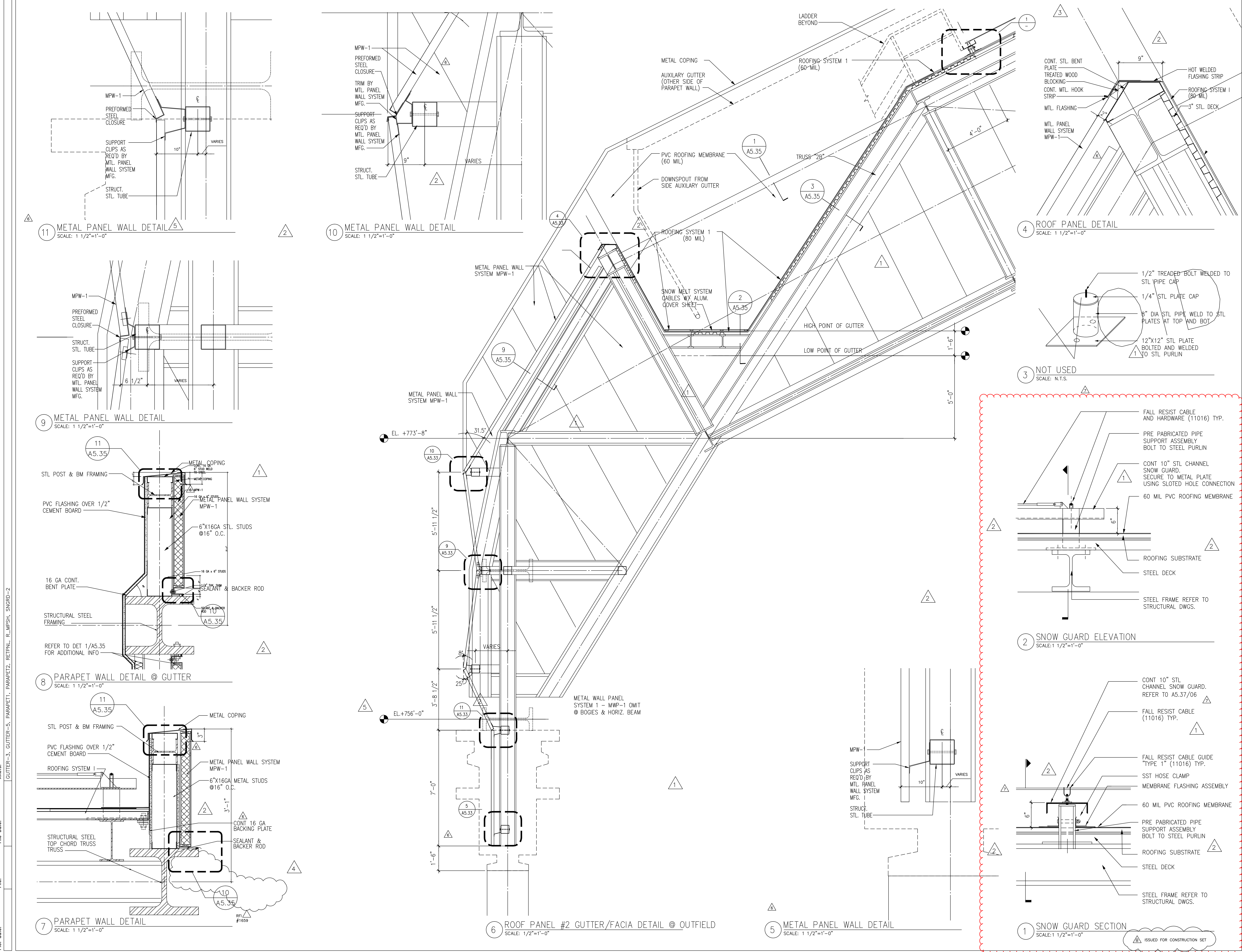


ROOF KEY PLAN
SCALE: 1/32" = 1'-0"





Southeast Wisconsin Professional Baseball Park District
 West Allis, WI 53214
 414.607.4045
 Milwaukee Brewers Baseball Club
 Milwaukee, WI 53214
 414.933.1144
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 Epstein Uhen Architects
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 Flad Structural Engineers
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 608.238.2661
 Roof Consultant:
 Mitsubishi Heavy Industries, LTD.
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 Sussman Prejza
 Culver City, CA 90232
 310.836.3939
 Vertical Transportation:
 Persohn-Hahn Associates, Inc.
 Dallas, TX 75379
 972.387.1442



11 METAL PANEL WALL DETAIL
 SCALE: 1 1/2"=1'-0"

10 METAL PANEL WALL DETAIL
 SCALE: 1 1/2"=1'-0"

4 ROOF PANEL DETAIL
 SCALE: 1 1/2"=1'-0"

9 METAL PANEL WALL DETAIL
 SCALE: 1 1/2"=1'-0"

3 NOT USED
 SCALE: N.T.S.

8 PARAPET WALL DETAIL @ GUTTER
 SCALE: 1 1/2"=1'-0"

2 SNOW GUARD ELEVATION
 SCALE: 1 1/2"=1'-0"

7 PARAPET WALL DETAIL
 SCALE: 1 1/2"=1'-0"

6 ROOF PANEL #2 GUTTER/FACIA DETAIL @ OUTFIELD
 SCALE: 1/2"=1'-0"

5 METAL PANEL WALL DETAIL
 SCALE: 1 1/2"=1'-0"

1 SNOW GUARD SECTION
 SCALE: 1 1/2"=1'-0"

Job No: 5128

Revision:

1	B.P. "L" ADDENDUM #14	12-02-97
2	B.P. "L" ADDENDUM #16	01-15-98
3	B.P. "L" ADDENDUM #21	02-09-98
4	B.P. "L" ADDENDUM #23	02-25-98
5	B.P. "L" ADDENDUM #27	04-17-98
6	B.P. "L" ADDENDUM #29	05-08-98
7	B.P. "L" ADDENDUM #33	07-22-98
8	CONSTRUCTION ISSUE	08-18-98

Date: Bid Pack "L" ADD # 12 11-12-97

Sheet Title: ROOF DETAILS

Sheet No: A5.33

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XRefs: GUTTER-3, GUTTER-5, PARAPET1, PARAPET2, RETPIL, R_MPISH, SNGRD-2
 File Date:
 File:
 Plot date:

ISSUED FOR CONSTRUCTION SET

Approximately 9 locations of metal deck remediation and/or replacement (~ 50 Sq Ft)









PLAN REVIEW



Major League Baseball
"American Family Field"
1 Brewers Way
Milwaukee, WI 53214-3651

Index-Rec No: 000204.34-03
Account No: 01-52503
Date of Review: July 26, 2021
Review No: 339638

Plans Submitted By: Kristi Kreklow, SE WI Professional Baseball Park Dist, kkreklow@wibaseballdistrict.com

Subject: Reroofing Bid Specifications – Milwaukee Brewers Stadium Section 4R

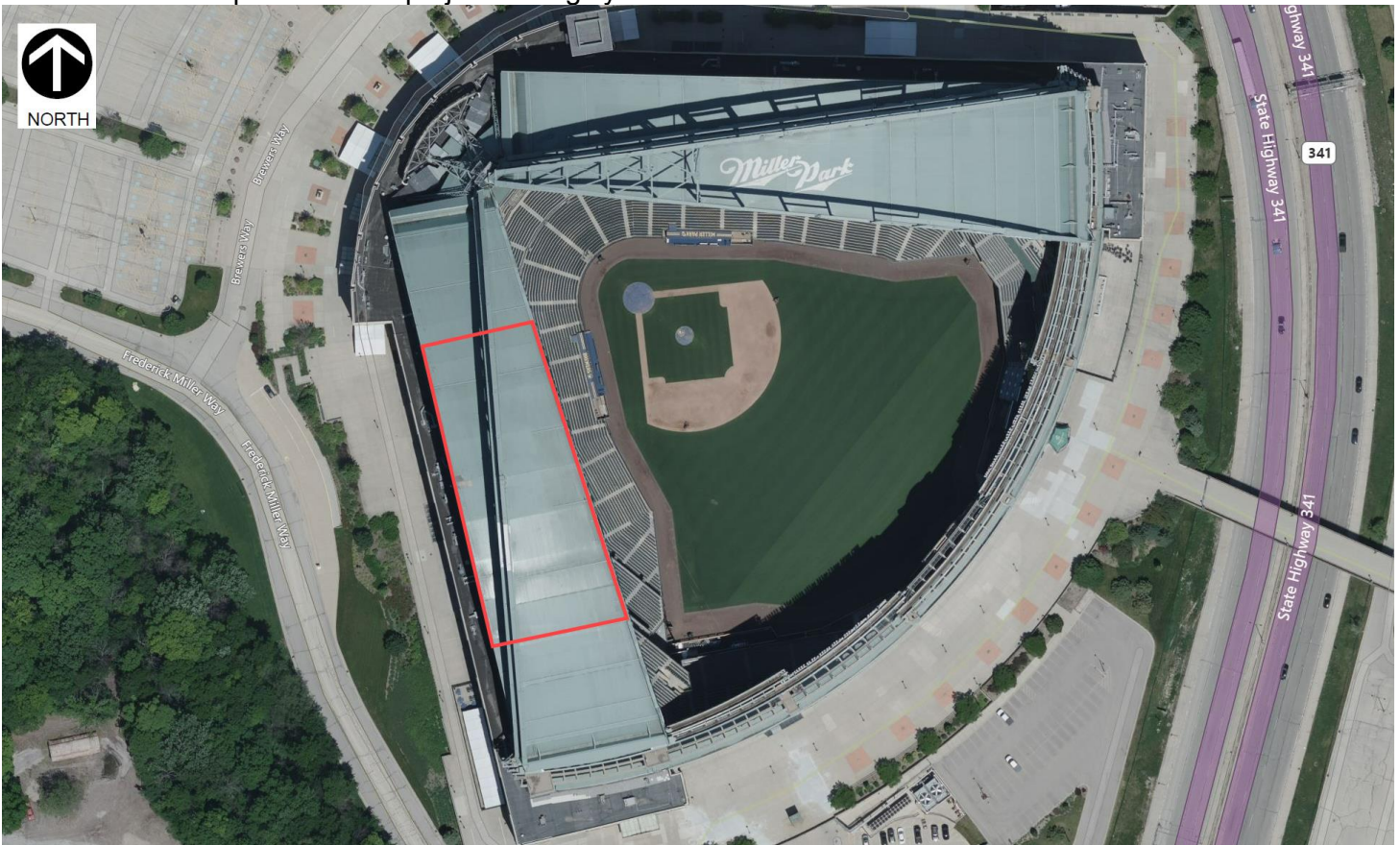
Executive Summary:

This letter will document our review of reroofing bid specifications for a 29,636-sq. ft. section of Roof 4R.

This submittal is acceptable subject to the comments below, **especially Comment Nos. 1, 2, and 3**. Final acceptance of this installation will be after field examination by a representative of FM Global.

Scope of Review:

This confirms the receipt and review of RFP 4R PVC Membrane Replacement dated July 23, 2021, supporting drawings, and a copy of FM Global's May 5, 2020 (Review No. 313868) Plan Review Letter for the larger project. The location of this portion of the project is roughly outlined below in red.



This report has been developed for insurance underwriting purposes. It is provided to you for informational purposes only to reduce the possibility of loss to insured property by bringing to your attention certain potential hazards or conditions. Life, safety, or health issues are not addressed. You must make the decision whether to take any action. The company undertakes no duty to you or any other party by providing this report or the activities on which it is based. The liability of the company is limited to that contained in its insurance policies.

PLAN REVIEW

The stadium is 330 ft. at its highest point and its sections are 600 ft. by 175 ft. wide. The five center sections of the roof are fan shaped and retractable around a pivot point behind home plate. The current roof covering consists of 6.56 ft. by x 65.6 ft. Sika Sarnafil S327 PVC Membrane sections mechanically attached over mechanically attached DensDeck over polyisocyanurate insulation on steel deck.

The roof involved with this portion of the project is Roof Section 4R is the southern fixed segment of the upper roof. The specific segment is the ~277 ft. by ~110 ft. center crown (C8 to C22). The height of the 4R panel above Field Concourse/plaza is 196.3 ft. at center of the arch and 122 ft. at bearing points.

This project will replace identified corroding metal deck, replace wet or damaged DensDeck cover board, slice and leave the existing membrane in place. It will then involve installing a new 0.5-in. DensDeck layer over the existing roofing with a new Sika Sarnafil 60-mil PVC membrane. The new DensDeck and PVC membrane will follow RoofNav Assembly Number of 371714-0-0 as detailed in FM Global's May 5, 2020 (Review No. 313868) Plan Review Letter.

The new roof edge flashing will be FM Approved Metal-Era One Edge fascia.

The new steel deck will be Epic Metals Corporation metal deck which is supplied by owner. The new deck and adjacent existing deck will be fastened with a 24/5 pattern with #12-24 x 1 1/4" TEKS 5 screws or approved equivalent.

Any hot work required for the project will be supervised by the FM Global Hot Work Permit.

A Base Bid Add-On is to replace the 3R Outfield Gutter as detailed in FM Global's May 5, 2020 (Review No. 313868) Plan Review Letter.

Review Comments:

1. The increased roof perimeter fastening (Zone 2n) should be increased to 27 ft. wide (from 15 ft.) in accordance with FM Global Property Loss Prevention Data Sheet 1-28, *Wind Design*.
2. The #12-24 x 1 1/4" TEKS 5 screws deck fasteners should be FM Approved.
3. The Epic Metals Corporation metal deck should be one of their FM Approved steel decks.
4. FM Approved materials should be provided where applicable and details of the installations should conform to FM Global Property Loss Prevention Data Sheets 1-29, *Roof Deck Securement and Above-Deck Roof Components* and 1-49, *Perimeter Flashing*.

Recommendations to Reduce Hazards during Installation:

- Require contractors to strictly adhere to facility safety practices and closely monitor/manage contractor activity throughout the course of the project. Reference FM Global Property Loss Prevention Data Sheets 1-0, *Safeguards During Construction* and 10-4, *Contractor Management*. Facility personnel should closely supervise any hot work required for this project. All basic precautions on the FM Global Hot Work Permit should be completed before hot work can begin.

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PLAN REVIEW

This review is for property insurance purposes only in accordance with FM Global standards and guidelines. Nothing should be inferred from this review regarding compliance with any rules, regulations or requirements of government agencies, state or local codes or any other jurisdictional authority. We are retaining the copy of your submitted plans for our files.

Sincerely,

Kevin Maag, P.E.
Senior Engineering Specialist
kevin.maag@fmglobal.com
+1 847 430 7707

Loss Prevention Resources:

[FM Global Property Loss Prevention Data Sheets](#)

[FM Global Loss Prevention Training](#)

[Approval Guide](#)

[RoofNav](#)

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Plan Review

Major League Baseball
"Miller Park"
1 Brewers Way
Milwaukee, WI 53214-3651

Index-Rec No: 000204.34-03
Account No: 01-52503
Date of Review: May 5, 2020
Review No: 313868

Plans Submitted By: Patrick Johnson, Sika, johnson.patrick@us.sika.com

Subject: Reroofing Bid Specifications – Milwaukee Brewers Stadium

Executive Summary:

This letter will document our review of bid specifications for the recover of the upper roofs at Milwaukee Brewers Stadium.

This bid submittal is acceptable subject to the comments below, *especially Comment Nos. 1 and 2*. We look forward to reviewing the full details of the roof edge flashing when available. Final acceptance of this installation will be after field examination by a representative of FM Global.

Scope of Review:

This confirms the receipt and review of Sarnafil/Sika letter dated April 30, 2020.

The stadium is 330 ft. at its highest point and it sections are 600 ft. by 175 ft. wide. The five center sections of the roof are fan shaped and retractable around a pivot point behind home plate. The current roof covering consists of 6.56 ft. by x 65.6 ft. Sika Sarnafil S327 PVC Membrane sections mechanically attached over mechanically attached DensDeck over polyisocyanurate insulation on steel deck.

The proposal is to recover the existing roof with a new roof covering that aligns with FM Global RoofNav Assembly No. 371714-0-0, which is a single-ply system that is for an existing steel deck. It is rated for 210-psf uplift resistance, severe hail resistance and has a 1A fire rating for roofs with slope of 2 in 12 or less. The other details of the proposed roof are as follows:

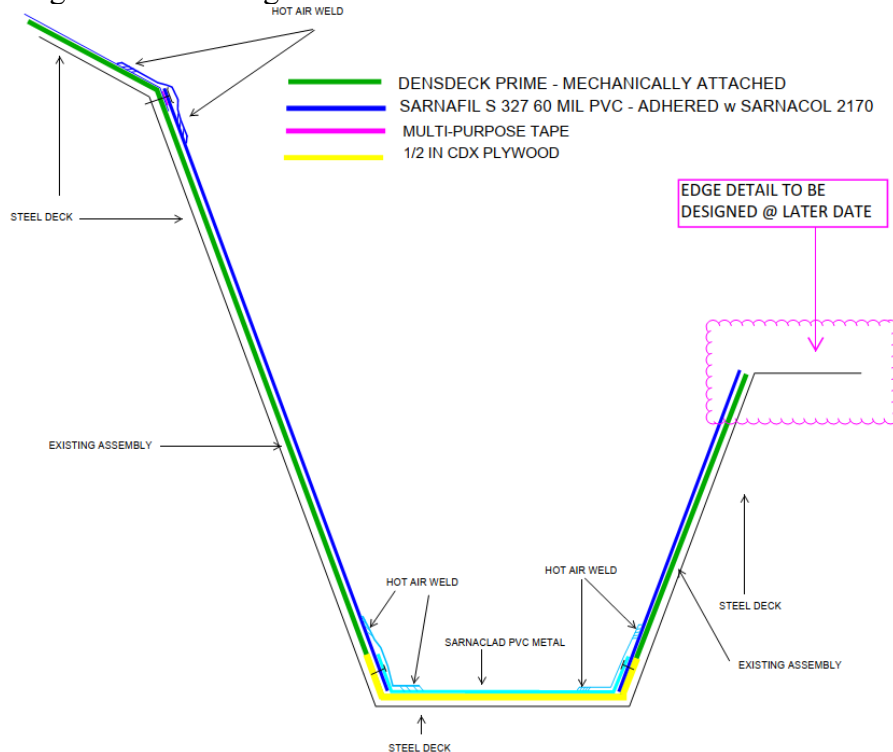
1. Cover (Single-ply)	
Sika Sarnafil Inc	S327(10) View
Securement (Sheet Lap)	
Generic	weld, hot air View
2. Securement (Cover) from 1. Cover (Single-ply) to 7. Existing Roof Comments	
6.5 in (165 mm) wide side laps.	
SSSP15403 View	
Sika Sarnafil Inc	Sarnadisc MAXLoad
Sika Sarnafil Inc	Sarnafastener MAXLoad

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3. Insulation (Board Stock)		View
Georgia-Pacific Gypsum LLC	DensDeck	
4. Securement (Board Stock) from 3. Insulation (Board Stock) to 7. Existing Roof		
SSSP15260		View
See Separate Stress Plate or Fastener Manufacturer Listing	preseurement plate (any Approved stress plate)	
See Separate Stress Plate or Fastener Manufacturer Listing	preseurement fastener (any fastener Approved for use with the stress plate & deck)	
5. Vapor Retarder		optional
6. Thermal Barrier		optional
7. Existing Roof		View

The Sarnafil S 327 seams are heat-welded together and fastened at 6 in. o. c. with Sarnadisc MAX Load Plates and Sarnafil Maxload Fasteners. The sheets will be 6.56 ft. wide (versus the approved 5 ft. width) except at all perimeters where half sheets will be used. The 0.50 in. thick DensDeck will be presecurd with No. 12 Sarnafasteners and 3-in. Sarnaplates at a rate of 12 per 4 ft. by 8-ft. board.

Due to damage experienced from sliding snow and ice in the bottom of the gutters, plywood will be applied over the steel deck. The Sika Sarnafil S327 PVC Membrane will be adhered with Sarnacol 2170 to DensDeck Prime over related areas of the gutter. The arrangement is as shown below.



The existing single-ply roof membrane will be sliced into 10 ft. by 10 ft. squares. All wet, damaged, and deteriorated components of the existing roof assembly will be removed and replaced in kind.

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A structural analysis was completed that ensures that adequate snow load capacity will be maintained with the additional roof covering.

Review Comments:

1. All new perimeter flashing should be prefabricated FM Approved for at least 135 psf field roof and installed in accordance with FM Global Property Loss Prevention Data Sheet 1-49, *Perimeter Flashing*, manufacturer's guidelines and the current FM Global RoofNav approval listing. The details of the FM Approved flashing and/or coping including manufacturer and type as well as the installation plans should be submitted to FM Global to confirm that FM Approved flashing/coping is being used. If the details of the roof edge is not compatible with an FM Approved flashing/coping (e.g. membrane is being secured via a termination bar on a parapet wall), these details should be provided for review comment.
2. The Sarnacol 2170 Adhesive should be applied on the DensDeck Prime at 0.75 gal/sq. and to the underside of the membrane at 0.50 gal/sq.
3. If the awarded contractor deviates from the bid specifications detailed above, the revised details should be provided to FM Global for review.
4. Be aware that the "A" external fire rating will not be valid for areas of the roof with pitches of over 5 in 12 (per FM Global RoofNav Assembly No. 392009-0-0).
5. FM Approved materials should be provided where applicable and details of the installations should conform to FM Global Property Loss Prevention Data Sheets 1-29, *Roof Deck Securement and Above-Deck Roof Components*.

Recommendations to Reduce Hazards during Installation:

6. Facility personnel should closely supervise any hot work required for this project. All basic precautions on the FM Global Hot Work Permit should be completed before hot work is allowed to begin. This should include, but not be limited to, any torch-applied roofing materials, any asphalt heating units and grinding of decking or flashing.
7. Install only as much roof insulation as can be covered with a roof covering in a single working day, or prior to the expected start of inclement weather. Seal loose roof cover edges at the end of each day to minimize potential moisture damage. Proprietary sealers are available for single-ply roof covers. Do not allow water to run in the deck ribs under completed roof sections. Follow the manufacturer's recommendations and safety regulations highlighted in the associated Roofing Specifications.
8. The following precautions should be taken: an ample supply of fire extinguishers should be maintained on the roof at all times during the roofing project; any flammable adhesives should be limited to a maximum of one day's use on the roof; and care should be taken to ensure that the storage on the roof is limited so as not to exceed the design strength of the roof structure.

This review is for property insurance purposes only in accordance with FM Global standards and guidelines. Nothing should be inferred from this review regarding compliance with any rules, regulations or requirements of government agencies, state or local codes or any other jurisdictional authority. We are retaining the copy of your submitted plans for our files.

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Sincerely,

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Loss Prevention Resources:

FM Global Property Loss Prevention Data Sheets (<http://www.fmglobaldatasheets.com>)

FM Global Online Training (<http://training.fmglobal.com/>)

Approval Guide (<http://www.approvalguide.com>)

RoofNav (<http://roofnav.fmglobal.com>)

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BUILDING TRUST



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CONTACT

Patrick Johnson
Sika Corporation · Roofing
Phone: 815-641-0634
johnson.patrick@us.sika.com

**MILWAUKEE BREWERS – MILLER PARK – 1 BREWERS
WAY, MILWAUKEE, WI 53214 – SIKA SARNAFIL
ROOFING LETTER**

April 30, 2020

Dear Mr. Maag,

By receipt of this letter please be advised that the Milwaukee Brewers, The Sigma Group, Inc. and V & F Roof Consulting and Service are in the process of designing the roof system at the address provided above. The project will go out to bid this year and they anticipate to start the construction in Summer 2020. Below is the current Sika Sarnafil roofing system that has been in place for the past (20) plus years and from our understanding there have been no known uplift pressure complications on this project. Since this is a very high profile, unique roofing application, and an FM Insured Client we would like to obtain approval from FM Global for the proposed roofing application.

CURRENT ROOF ASSEMBLY:

Sika Sarnafil S327 PVC Membrane: 6.56 FT x 65.6 FT – Mechanically Attached
DensDeck – Mechanically Attached
Polyisocyanurate Insulation
Steel Deck

2020 PROPOSED ROOF ASSEMBLY (ROOF NAV#371714-0-0)

Sika Sarnafil S327 PVC Membrane: 6.56 FT x 65.6 FT – Mechanically Attached (Note 1)
½” DensDeck – Mechanically Attached (Note 2)
Existing PVC (Note 3)
Existing DensDeck
Existing Polyisocyanurate
Steel Deck

We are proposing on leaving the existing Sika Sarnafil single-ply PVC system in place and installing a cover board over the existing PVC. Please note that Sika Sarnafil has the exact RoofNav Assembly Number for the anticipated cross section mentioned above. The Roof Nav Assembly number that shall be referenced for this application is 371714-0-0. This will meet and exceed the uplift pressures that is highlighted in this letter. We intend to use 6.56 foot

PAGES 2/9
DATE April 30, 2020

width rolls versus the 5 foot listed under RoofNav #371714-0-0. Please see additional notes in the letter about this scenario.

Note 1: Sarnafil S 327 Roof Membrane is a PVC thermoplastic membrane produced with an integral polyester reinforcement for high strength, guaranteed for thickness, with heat-weldable seams, and a unique lacquer coating applied to the top of the membrane to reduce dirt pick up. Sarnafil S 327 seams are heat-welded together by trained operators using hot-air welding equipment. Use only Sarnadisc MAX Load Plates and Sarnafil Maxload Fastener for S327 membrane attachment. The fastening pattern on this building shall be 6 inches on center at all locations. Install (5) half sheets of Sarnafil S327 membrane fastened 6 inches on center around the perimeter of entire building. The interior sheets are to run perpendicular to the deck.

Note 2: Mechanically attach 1/2 inch DensDeck into steel decking with Sarnafasteners #12 with 3 inch Sarnaplates at a rate of 12 per 4' x 8' board in the field, 12 per board in the perimeter, and 12 per board in the corners.

Note 3: Slice existing single ply roofing into 10 x 10 feet squares. All wet, damaged, and deteriorated components of the existing roof assembly must be removed and replaced accordingly. Existing roof components are not included in the Sika Sarnafil warranty. It would be recommended to use a third-party consulting firm to provide a scan on the existing building prior to bid. This thermal scan will give the Owner a sense of security of what will need to be replaced prior to the installation of the new roofing system.

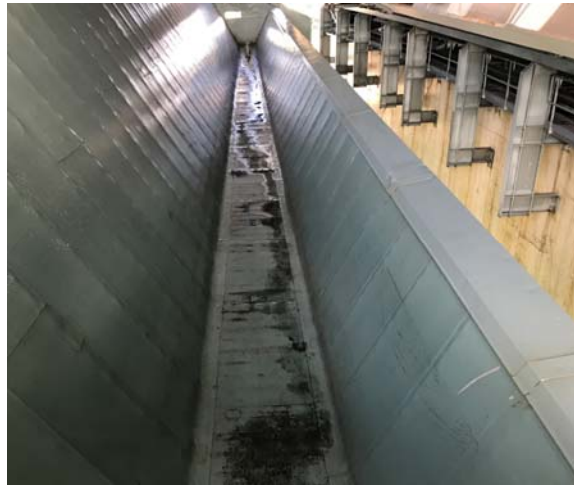
Gutter Detail Proposal:

Sika Sarnafil is proposing the following cross section to be reviewed at the gutter as the existing gutter has sustained damage to the cover board over the past (20) plus years. This will help reduce the damage that has occurred at the gutter. Please let us know if the following is acceptable at the gutter detail along the perimeter of the building. I have also attached close-up photos of this condition to better assist you.

Sika Sarnafil S327 PVC Membrane – Adhered
Plywood – Mechanically Fastened into the steel deck
Steel Deck

PAGES 3/9
DATE April 30, 2020

Figure I – Overall Gutter Condition



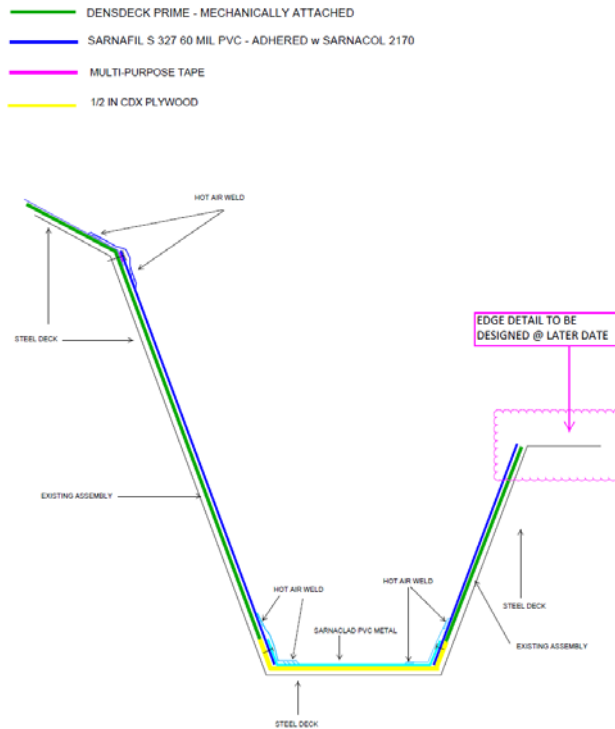
It is not visual in the photo but the cover board below the single-ply membrane has become compromised from the snow and ice over the past (20) years. The cover board in this area has broken down over the years and is inside of the steel deck. Please let us know if it is acceptable to install plywood at this condition versus a gypsum product that we know will be damaged long-term.

Figure II – Elevation Photo of Gutter



PAGES 4/9
 DATE April 30, 2020

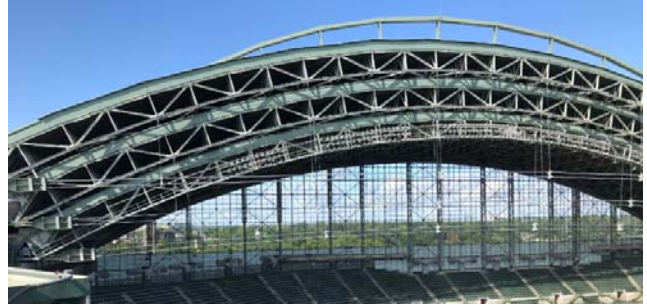
Proposed Detail at Gutter:



THIS DETAIL IS ALSO ATTACHED FOLLOWING THIS LETTER FOR A BETTER VISUAL

Miller Park has a fan-shaped roof that includes 12,000 tons of structural steel and spans approximately 600 feet from home plate to the outfield track beam. The roof covers more than 8.5 acres and is comprised of seven panels (five of which are movable). The roof can open or close in ten minutes with three of the movable roof panels stacking on the left side and two movable roof panels stacking on the right side of the ballpark. Each movable roof panel moves independently of the others, rotating on a fixed pivot bearing behind home plate. Each movable roof panel is powered by two 60-horsepower electric motors on drive trucks that move along a semi-circular rail system on the track beam about 150 feet above the playing field. Below are photographs from inside the stadium highlighting the seven individual roofs that are stacked together when the roof is open. The calculations on this project were figured per roof area versus the entire stadium.

PAGES 5/9
DATE April 30, 2020



Below is the illustration on how the uplift pressures was valued for this project. Please review the uplift pressures calculated and verify that the Roof Nav Assembly mentioned in this letter will suffice for this project. The calculations on this project were figured per roof area /panel versus the entire stadium. This was also figured as an open roof area versus an enclosed roof area.

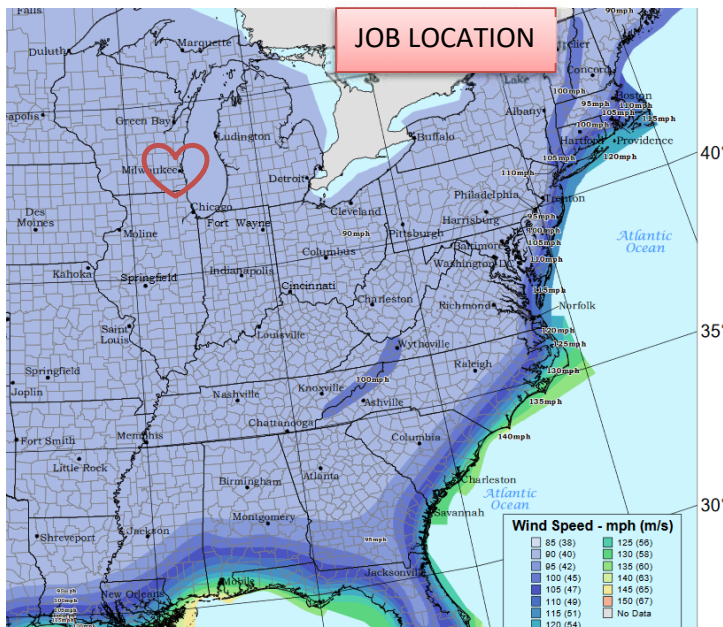
PAGES 6/9
DATE April 30, 2020

**MILLER PARK
MILWAUKEE, WISCONSIN
BUILDING HEIGHT: 330 FEET
PANEL SIZE: 600 X 175**



PAGES 7/9
DATE April 30, 2020

**FM Global Property Loss Prevention Data Sheet
1-28 – WIND DESIGN**



Calculated Wind Uplift

Roof Area Properties	Dimensions	600 x 175 ft (182.88 x 53.34 m)
	Height	330 ft (100.58 m)
	Slope	2 in 12 (9.5°)
	Min 3 ft (1 m) continuous parapet	N
Site Properties	Surface Roughness	C
	Wind Speed	90 mph
	Wind Borne Debris Risk	Yes
Wind Pressures	Field	64 psf (3.1 kPa)
	Perimeter	94 psf (4.5 kPa)
	Corner	124 psf (5.9 kPa)
Wind Uplift Ratings	Field	135 psf
	Perimeter	195 psf
	Corner	255 psf

PAGES 8/9
DATE April 30, 2020

As you can see in the calculated wind uplift above the assembly needs to reach a 1-135 psf uplift pressure for each roof area or panel. The RoofNav Assembly and system intended for this project is tested for a 1-210 psf uplift pressure. As mentioned above we would like to use 6.56 foot width rolls versus the 5 foot width listed in RoofNav Assembly #371714-0-0. It will be in the drawings and specification to install (5) half sheets of Sarnafil S327 membrane fastened 6 inches on center around the perimeter of entire building. The interior sheets are to run perpendicular to the deck and will also be fastened 6 inches on center at all locations.

Attached in this letter are the pull-out values for the above referenced project. This was performed by Sika's vendor on March 02, 2020.

Additional Notes for The Milwaukee Brewers and The Sigma Group:

- It is recommended to consult with a structural engineer as the scope of work is adding additional weight to the stadium and to the track system that assists with the retractable roof.
- If aesthetics are at a premium it is recommended for Sika Corporation to take a sample of the existing membrane from the roof system. We will then be able to customize the color that is existing. Please reference the photo below highlighting a sample that was taken at the stadium versus Sika Sarnafil's standard color of patina green.



PAGES 9/9
DATE April 30, 2020

Partnership and Quality: Sika Sarnafil will support The Sigma Group, Inc., Milwaukee Brewers, and FM Global along every milestone of the project through to completion of construction. As part of value added services to this project, Sika Sarnafil will have a Representative present for the first (3) days of production, then every 8 to 14 days of production, and a final inspection. A copy of each inspection report along with pictures will be sent to all parties involved on the project.

Sika works with a select group of trained, authorized roofing applicators– only the best are invited to join our team. Maintaining strict control over the installation process means that Sika roofing quality is carried through from start to finish.

Because of Sika's dedication to its Milestone Management process, when you buy a Sarnafil roofing or waterproofing membrane system, you're getting a total system solution. From system design to final inspection, our Milestone Management process is your guarantee of superior quality, precision installation and unrivalled reliability. Every Sika Sarnafil approved contractor goes through a rigorous training and evaluation program to assure that they meet Sika Sarnafil's high standards.

Choosing a Sika Sarnafil contractor is your best assurance of a high-quality installation. You will have peace-of-mind when you choose to use Sika Sarnafil and a partner contractor.

Regardless of the outcome everyone at Sika wishes your group and everyone involved a successful and safe project. Thank you for reviewing this request by Sika Corporation at the request of your client The Milwaukee Brewers, The Sigma Group, and V & F Roof Consulting and Service. Please let us know if the assembly mentioned is acceptable through FM Global. If you need additional information or have any questions please feel free to contact the undersigned, The Sigma Group, Inc., Milwaukee Brewers, or V & F Roof Consulting and Service.

Sincerely,

Patrick Johnson
Sika Corporation

Cc: S. Schwingle (The Sigma Group, Inc.), The Milwaukee Brewers, Eric Hurst (Sika Corp,) and Pat Finger (V & F Roof Consulting & Service)



ROOFING SYSTEM CONTRACTOR PACKAGE

CONTACT INFORMATION

OVERVIEW OF WORK

Building Name/Number:		Area of Roof:	Field
Roof Area:		Index Number (Optional):	
Created In RoofNav:	Sep 24, 2019	Assembly #:	371714-0-0
Type of Work:	Re-Cover	Min 3ft (1 m) Continuous Parapet:	

ROOF AREA CLASSIFICATIONS

Roof Area Properties	Site Properties	Fire / Hail	Wind Uplift Ratings
Dimensions:	Surface Roughness:	Internal Fire:	Field:
Height:	Wind Speed:	Exterior Fire:	Perimeter:
Slope:	Wind Borne Debris Risk:	Hail:	Corner:

RATINGS FOR FM APPROVED ASSEMBLY#:

Internal/Exterior Fire:	Max Slope:	Hail:	*Wind Uplift Rating:
1/A	2.0000 in 12 (9.5°)	SH	210 psf

Assembly limited to use with noncombustible walls only:

No

* FM Approved roofs must also have corner and perimeter enhancements and FM Approved perimeter flashing. For details, see FM Global Property Loss Prevention Data Sheets 1-29 and 1-49. For Standing/Lap Seam roofs, see Property Loss Prevention Data Sheet 1-31.



ROOFING SYSTEM CONTRACTOR PACKAGE

ASSEMBLY DETAIL COMMENTS

SIGNATURES

Signature of Installing Contractor: _____

Title: _____ **Date:** _____

Signature of Designer/Observer: _____

Title: _____ **Date:** _____

Signature of Client/Property Owner: _____

Title: _____ **Date:** _____

1. Cover (Single-ply)

Comments: none

Cover (Single-ply)

Company: Sika Sarnafil Inc
Trade Name: S327(10)
Max Width: 59.5000 in
Material: PVC (polyvinylchloride)
Min Thickness: 0.0480 in
Backing: (none)
Max Thickness: 0.0960 in
Reinforcement: polyester
Comments: none

Securement (Sheet Lap)

Comments: none

Weld (Heat)

Company: Generic
Trade Name: weld, hot air
Configuration: Single
Outside/Full Width: 1.6000 in
Inside Width: 0.0000 in
Comments: Min 6.5 in. (165 mm) wide roof cover side laps sealed with min 1.6 in. (40 mm) wide heat weld.

2. Securement (Cover) from 1. Cover (Single-ply) to 7. Existing Roof

Comments: 6.5 in (165 mm) wide side laps.

Fastening System (Stress Plate)

System:	SSSP15403
Company	TradeName
Sika Sarnafil Inc	Sarnafil Maxload Fastener
Sika Sarnafil Inc	Sarnadisc MAX Load Plates
System Comments	none
Row Spacing:	53.0000 in
On Center:	6.0000 in
Fasteners per Plate/Clip:	1
Field Rows:	No
Field Row on Center:	0.0000 in
Number of Field Rows:	0
Application Method:	n/a
Contributory Area:	0.0000 ft2
Embedment:	0.0000 in
Comments:	none

3. Insulation (Board Stock)

Comments: none

Insulation (Board Stock)

Company:	Georgia-Pacific Gypsum LLC
Trade Name:	DensDeck
Material:	gypsum
Min Board Size:	48.00 x 96.00 in
Board Profile:	flat
Min Thickness:	0.5000 in
Max Thickness:	0.6250 in
Min Density:	0.0000 lb/ft3
Comments:	none

4. Securement (Board Stock) from 3. Insulation (Board Stock) to 7. Existing Roof

Comments: none



ROOFING SYSTEM CONTRACTOR PACKAGE

Member of the FM Global Group

Fastening System (Stress Plate)

System: SSSP15260

Company	TradeName
See Separate Stress Plate or Fastener Manufacturer Listing	preseurement fastener (any fastener Approved for use with the stress plate & deck)
See Separate Stress Plate or Fastener Manufacturer Listing	preseurement plate (any Approved stress plate)

System Comments Refer to Data Sheet 1-29, Table 6 for preseurement fastening requirements.

Row Spacing: 0.0000 in

On Center: 0.0000 in

Fasteners per Plate/Clip: 1

Field Rows: No

Field Row on Center: 0.0000 in

Number of Field Rows: 0

Application Method: n/a

Contributory Area: 0.0000 ft²

Embedment: 0.0000 in

Comments: none

5. Vapor Retarder

Comments: none

6. Thermal Barrier

Comments: none

7. Existing Roof

Insulation Material: Any

Single Ply Material: Any

Roof Deck: Steel

Cover: Any

Surface: Any

Steel Strength: 80.0000 ksi

Min Steel Thickness: 0.0295 in

Max Steel Thickness: 0.0000 in

Min Insulation Thick: 0.0000 in

Max Insulation Thick: 0.0000 in

Comments: See Glossary – ReCover definition for additional information

8. Structure

Structure Type:	steel
Max Spacing:	0.0000 in
Min Thickness:	0.0000 in
Min Strength:	0.0000 ksi
Comments:	none

Fastener Placement

Now that the configuration is complete for the field of the roof, you must select the required fastener placement from FM Global Property Loss Prevention Data Sheet 1-29.

Corner/Perimeter Enhancements

Now that you have selected a fastener placement, you must select enhancements for the corners and perimeters. Refer to FM Global Property Loss Prevention Data Sheet 1-29.

If you have sufficient detail about the roof assembly, you can select enhancements that have been approved for roofs with your specifications from Table 1A: Recommended Rating of Field, Perimeter and Corner Areas (Zones 1, 2 and 3) for Enclosed Buildings.

Otherwise, you can select the appropriate prescriptive enhancements from section 2.2.1.5.1.

Also, the deck must be secured per the requirements in Data Sheet 1-29. For a steel deck, see section 2.2.1.5.6. For installation instructions, see section 2.2.13.2.

Perimeter Flashing

Now that you have selected enhancements for the corners and perimeters, you must select an FM Approved perimeter flashing that meets a Class X rating, where X is the Wind Uplift rating for your roof. For more information, see FM Global Property Loss Prevention Data Sheet 1-49.

You can find FM Approved perimeter flashings in RoofNav. To do so, click Products. On the Product Search page, select Other for the Category and Perimeter Flashing for the Subcategory. Specify any other criteria as needed and then click Search.



March 5, 2020

Patrick Johnson
Sika Sarnafil - IL
16614 W 159th Street
LOCKPORT, IL

Re: 1 Brewers Way - Milwaukee, WI - L1 Logo Section

Dear Patrick,

I have enclosed the Job Report Number PT-06538 from the job referenced above. The report was recorded by Zachary Ehrat, OMG Technical Service Representative.

OMG is interested in your feedback on our services. Please visit www.omglistens.com to take a brief, 2-3 minute survey to help us understand how we did on this project, and more importantly, anything we can do better next time. We value your time and input, and thank you in advance for your participation.

If you have any further questions, please feel free to call.

Sincerely,

A handwritten signature in blue ink that reads "Stephen Childs".

Stephen Childs
OMG Technical Support

To: johnson.patrick@us.sika.com; mloutfi@omginc.com; ponikvar.ryan@us.sika.com; zehrat@omginc.com

PULL TEST REPORT



JOB NAME	1 Brewers Way - Milwaukee, WI - L1 Logo Section
JOB LOCATION	Milwaukee, WI
ROOF AREA (SQFT)	50,000
BUILDING HEIGHT (FT)	400'
PROJECT TYPE	Re-roof
THICKNESS OF EXISTING ROOF ASSEMBLY	3/4"
ROOF COVER TYPE	M/A Single Ply
NEW SYSTEM MANUFACTURER	Sika-Sarnafil
FASTENER(S) TESTED	Sarnafastener MaxLoad, Sarnafastener XP, Sarnafastener #12

REPORT NUMBER	PT-06538
TEST DATE / TIME	3/2/2020 10:30:00 AM
AMBIENT TEMPERATURE	39°F
TESTER MANUFACTURER	DMD Force-2000
MAX CAP OF TESTER (LBS)	2,000
TEST PERFORMED BY	Zachary Ehrat
TEST CUT AREA REPAIRED BY	Patrick Johnson Ryan Ponikvar
TEST WITNESSED BY	Patrick Johnson, Mohammed Loutfi, Ryan Ponikvar

INSULATION MANUFACTURER	INSULATION TYPE	THICKNESS
Sika Sarnafil	Dens Deck	1/2"

DECK TYPE	THICKNESS
Steel	Unknown

Disclaimer: Manufacturer's installation requirements shall be followed when using any of the tested fasteners or adhesives. Neither the technician performing the pullout tests, nor his/her company is responsible for the waterproofing integrity of the repairs. This test report does not certify the structural integrity of the roof deck.

TEST RESULTS



TEST LOCATION NUMBER	PULL VALUE (LBF)	FASTENER TESTED	PENETRATION (IN)	BIT DIAMETER (IN)	COMMENTS
1	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
2	965	Sika Sarnafil Sarnafastener XP	3/4"		
3	916	Sika Sarnafil Sarnafastener #12	3/4"		
4	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
5	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
6	748	Sika Sarnafil Sarnafastener XP	3/4"		
7	1000	Sika Sarnafil Sarnafastener XP	3/4"		
8	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
9	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
10	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
11	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		
12	1000	Sika Sarnafil Sarnafastener XP	3/4"		
13	722	Sika Sarnafil Sarnafastener XP	3/4"		
14	452	Sika Sarnafil Sarnafastener #12	3/4"		
15	1000	Sika Sarnafil Sarnafastener MaxLoad	1"		

PULL TEST COMMENTS

PULL TEST COMMENTS

Tests were stopped if failure did not occur before 1000 lbf. was reached.

ROOF IMAGE/DIAGRAM

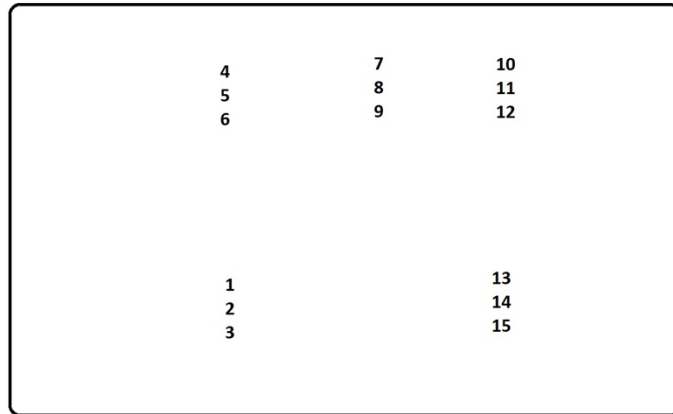
**1 BREWERS WAY - MILWAUKEE,
WI - L1 LOGO SECTION**

3/2/20
10:30AM

1 Brewers Way
Milwaukee, WI 53214

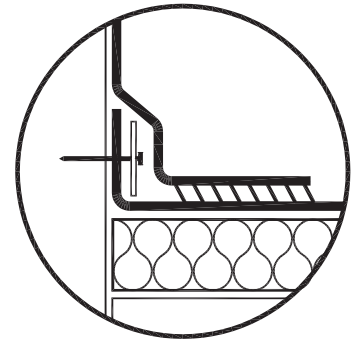
L1 Logo Section

_____ I-94 _____



400'

END OF REPORT



SECUREMENT FASTENED AT
BASE OF WALL OR CURB

ALTERNATE BASE FASTENING

BUILDING TRUST

781-828-5400



usa.sarnafil.sika.com

JOB NAME:

SCALE: **N.T.S.**

DATE:

FILE NO.:

DRW. NO.:

AS A MEMBRANE MANUFACTURER, SIKA CORPORATION ("SIKA") REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION, WHILE SIKA PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL SALE OF SIKA PRODUCTS AND SERVICES ARE SUBJECT TO SIKA' TERMS AND CONDITIONS OF SALE AVAILABLE AT USA.SARNAFIL.SIKA.COM.



BUILDING TRUST



Kristi Kreklow | Associate Director
 Southeast Wisconsin Professional Baseball Park District
 American Family Field
 1 Brewers Way , Milwaukee, WI 53214
 E-mail: kkreklow@wibaseballdistrict.com
 P: (414) 902-4045 C: (414) 628-5933

CONTACT

Patrick Johnson
 Sika Corporation · Roofing
 Phone: 815-641-0634
johnson.patrick@us.sika.com

**AMERICAN FAMILY FIELD – 1 BREWERS WAY,
 MILWAUKEE, WI 53214 – SIKA SARNAFIL FASTENER /
 PLATE LETTER**

September 8, 2021

Dear Ms Kreklow,

This letter is to inform you that OMG Roofing Products manufactures and private labels fasteners and plates for Sika Corporation.

RoofNav Assembly No. 371714-0-0 used for this project only mentions “Sarnadisc MAXLoad” and “Sarnafastener MAXLoad”, reference screen shot below. It is recommended to let FM Global know that the Southeast Wisconsin Professional Baseball Park District was able to secure the plates referenced below from OMG Roofing Products and they will not have a Sika label when they are installed on the project.

2. Securement (Cover) from 1. Cover (Single-ply) to 7. Existing Roof		Comments
SSSP15403 View		
<input type="checkbox"/> Sika Sarnafil Inc	Sarnadisc MAXLoad	
<input type="checkbox"/> Sika Sarnafil Inc	Sarnafastener MAXLoad	

Product / Manufacturer	Sika Product Name	Warrantable by Sika
OMG / MAXLoad / #21	Sarnafastener MAXLoad	Yes
OMG / MAXLoad Plate	Sarnadisc MAXLoad	Yes

****These products will be purchased by another source as Sika Corp will not have these available until December 2021***

The presecurement plate and presecurement fastener for the insulation board to the existing roof will be purchased through Sika Corporation as these products were readily available. We trust this letter addresses the points raised, however please do not hesitate to contact the undersigned at (815) 641-0634 should you have any additional questions.



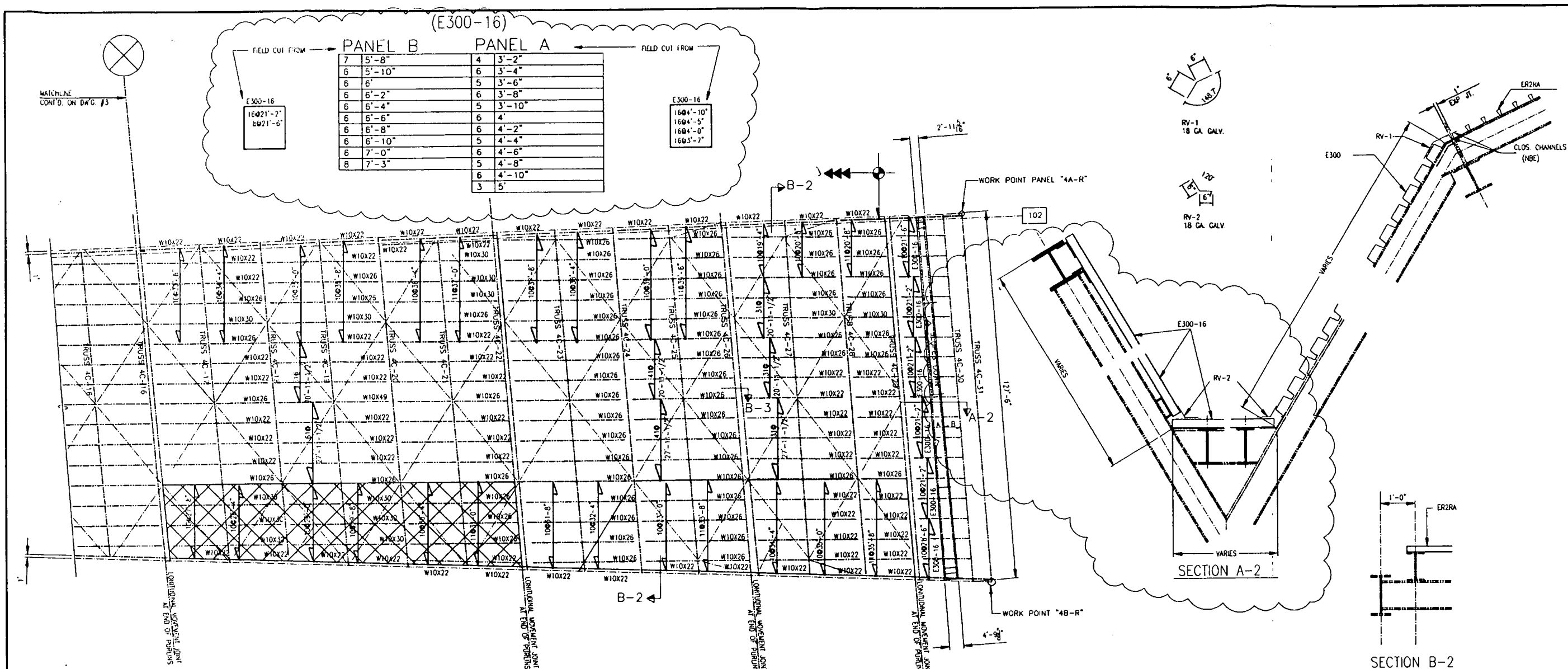
PAGES 2/2
DATE September 8, 2021

Sincerely,

Patrick Johnson
Sika Corporation

Enclosure

DISCLAIMER: AS A MEMBRANE MANUFACTURER, SIKA CORPORATION ("SIKA") REVIEWS DETAILS PREPARED BY THE CONSULTANT, ARCHITECT AND/OR ENGINEER FOR A PROJECT SOLELY FOR THE PURPOSE OF DETERMINING IF A SIKA WARRANTY MAY ISSUE FOR THE PROJECT. THIS REVIEW IS NOT TO BE CONSTRUED AS APPROVAL OF DETAILS BY SIKA AND IS NOT BEING CONDUCTED IN LIEU OF SOUND ENGINEERING AND ARCHITECTURAL PRACTICES AND JUDGMENT AND SHOULD NOT BE RELIED UPON FOR THAT PURPOSE. SIKA CORPORATION ASSUMES NO LIABILITY WITH RESPECT TO THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM. THE ARCHITECT, CONSULTANT AND/OR ENGINEER OR DESIGN PROFESSIONAL FOR A PARTICULAR PROJECT BEARS THE SOLE RESPONSIBILITY FOR THE DESIGN OF THE ROOFING OR WATERPROOFING SYSTEM, FOR THE PREPARATION AND APPROVAL OF THE DETAILS AND SHOP DRAWINGS, AND FOR DETERMINING THEIR SUITABILITY FOR A PARTICULAR PROJECT OR APPLICATION. WHILE SIKA PROVIDES GENERAL INSTRUCTIONS FOR THE INSTALLATION OF ITS MEMBRANE AS WELL AS TRAINING FOR SIKA AUTHORIZED APPLICATORS, THE MEANS AND METHODS USED BY THE CONTRACTOR FOR SURFACE PREPARATION AS WELL AS THE MEANS AND METHODS EMPLOYED BY THE CONTRACTOR IN THE INSTALLATION OF THE SIKA MEMBRANE ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL SALE OF SIKA PRODUCTS AND SERVICES ARE SUBJECT TO SIKA' TERMS AND CONDITIONS OF SALE AVAILABLE AT WWW.USA.SARNAFIL.SIKA.COM .

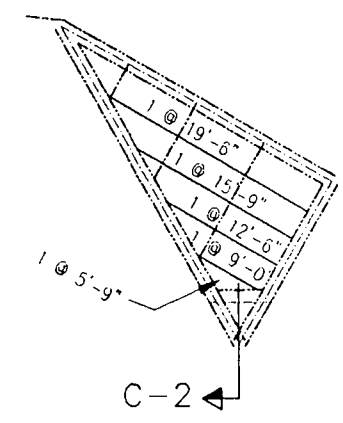


PARTIAL ROOF DECK LAYOUT (OUTFIELD) "PANEL 4L"

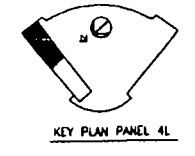
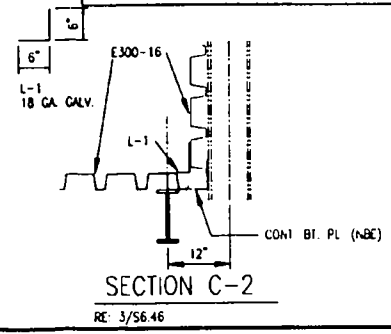
ERECTOR NOTE:
MAINTAINING 24 1/2" ER2RA COVERAGE IS OF EXTREME IMPORTANCE.

ERECTOR NOTE:
DECK TO BE FIELD CUT ALONG ALL SKEWED EDGES. (TYP.)

- PLAN NOTES:**
- DECK BEARING AT ELEVATION: VARIES (DATUM) U.M. (+/-)
 - DECK TYPE: ER2RA-20 090 GALV. (TYP. U.M.) | 50 KSI |
ER2RA-18 090 GALV. (MATCHED) | 50 KSI |
E300-16 090 GALV. AS NOTED | 40 KSI |
 - REFERENCE DRAWING(S): S6.04C 11/11/97
 - FOR LIST OF ABBREVIATIONS & SYMBOLS SEE DRAWING # 1
 - FOR DECK PROFILE & ERECTION NOTES SEE DRAWING # 1
- ACCESSORIES THIS DRAWING:**
- 72 L/F L-1 (18GA. GALV. X 12" GRTH)
 - 132 L/F RV-1 (18GA. GALV. X 12" GRTH)
 - 264 L/F RV-2 (18GA. GALV. X 12" GRTH)



GUTTER END PANELS (2 REQ'D.) 1 AS SHOWN/1 OPP.HAND



NO.	DATE	REVISION
1	4/27/99	REVISED GUTTER DECK LAYOUT & SECTION
2	1/7/99	REVISED & ISSUED FOR JOB USE
3	10/12/98	REVISED & ISSUED FOR FINAL APPROVAL
4	7/1/98	REVISED & RE-ISSUED FOR APPROVAL
5	4/1/98	FOR APPROVAL ONLY

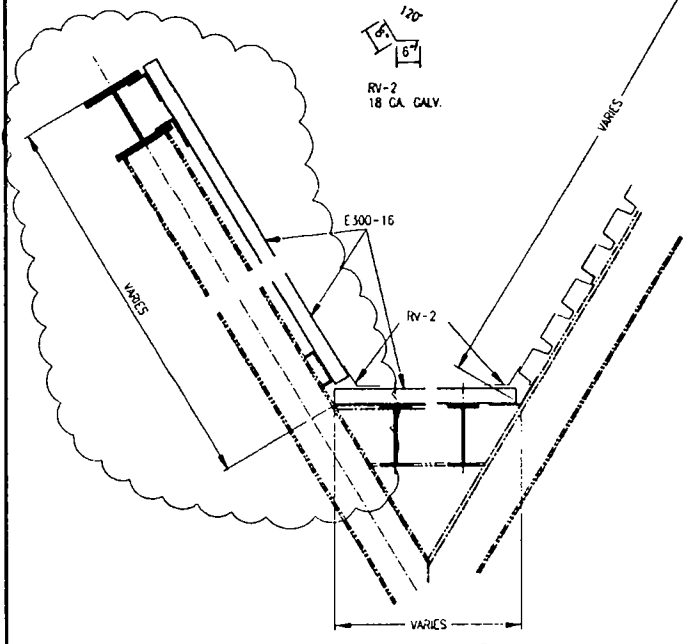
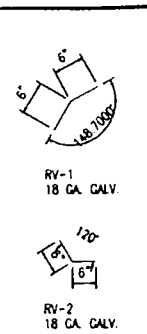
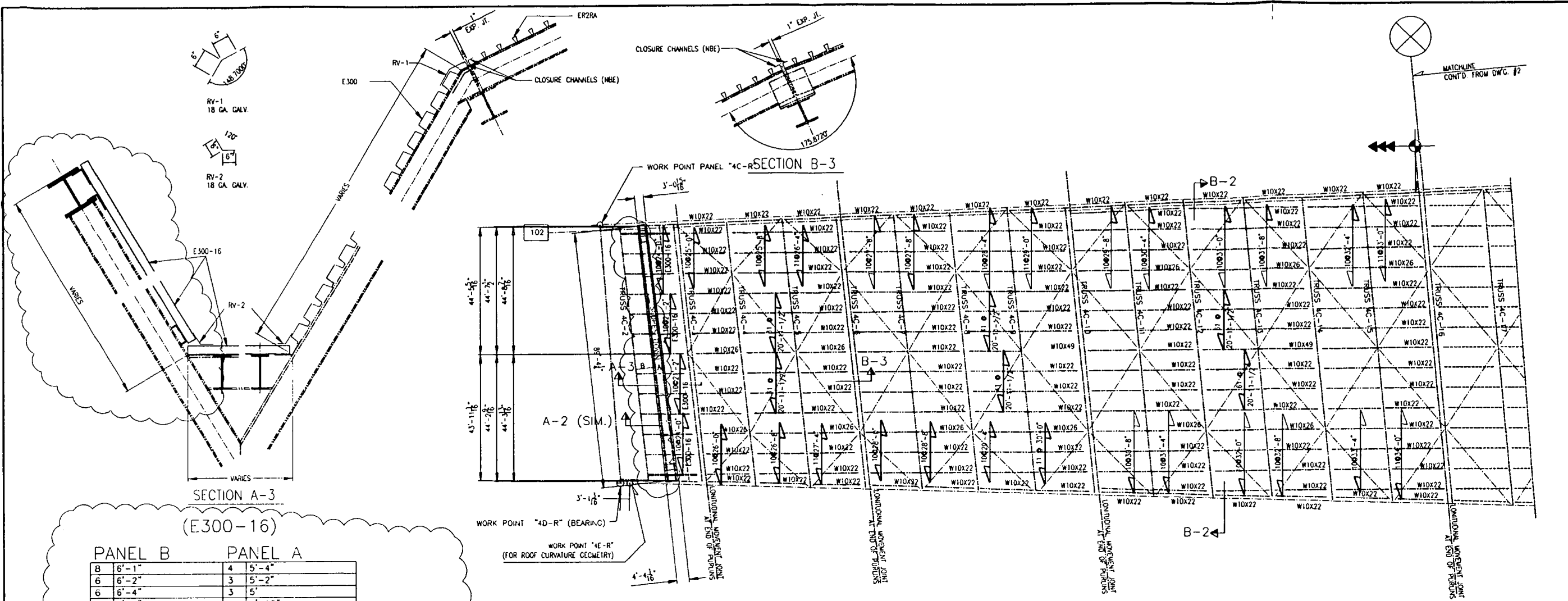
EPIC
METALS CORPORATION
RANKIN, PA. 15104 PHONE 412-351-3913

JOB: MILLER PARK
LOCATION: MILWAUKEE, WI
ARCHITECT: HKS/NBBJ/EPPSTEIN UHEN
CONTRACTOR:

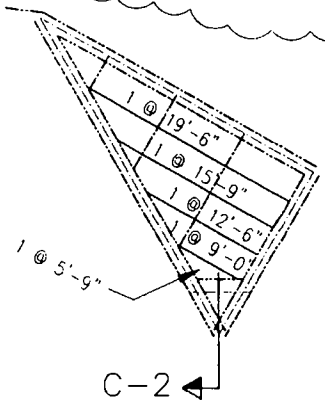
DTL'R: R.O. CHK'R: N.C. SCALE: 1/16"=1' DATE: 4/1/98

TITLE:
PARTIAL PANEL 4L (OUTFIELD) ROOF DECK LAYOUT

CUSTOMER	EPIC JOB NO.	DWG. NO.
MITSUBISHI HEAVY INDUSTRIES AMERICA	D98 - EC - 144	2 OF



PANEL B		PANEL A	
8	6'-1"	4	5'-4"
6	6'-2"	3	5'-2"
6	6'-4"	3	5'
6	6'-6"	4	4'-10"
6	6'-8"	3	4'-8"
6	6'-10"	3	4'-6"
8	7'-1"	4	4'-4"
		3	4'-2"
		3	4'
		3	3'-10"
		4	3'-8"
		3	3'-6"
		3	3'-4"
		2	3'-3"

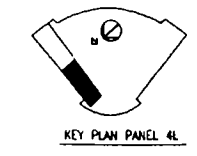


ERECTOR NOTE:
 MAINTAINING 24 1/2" ER2RA COVERAGE IS OF EXTREME IMPORTANCE.

ERECTOR NOTE:
 DECK TO BE FIELD CUT ALONG ALL SKEWED EDGES. (TYP.)

PARTIAL ROOF DECK LAYOUT (HOME PLATE) "PANEL 4L"

- PLAN NOTES:**
1. DECK BEARING AT ELEVATION VARIES (DATUM) U.N. (+/-)
 2. DECK TYPE: ER2RA-20 G90 GALV. (TYP. U.N.) [50 KSI]
E300-16 G90 GALV. (AS NOTED) [40 KSI]
 3. REFERENCE DRAWING(S) / S6.04C 11-11-97
 4. FOR LIST OF ABBREVIATIONS & SYMBOLS SEE DRAWING / 1
 5. FOR DECK PROFILE & ERECTION NOTES SEE DRAWING / 1
- ACCESSORIES THIS DRAWING:**
- 72 L/F L-1 (18GA. GALV. X 12" GIRTH)
 - 96 L/F RV-1 (18GA. GALV. X 12" GIRTH)
 - 192 L/F RV-2 (18GA. GALV. X 12" GIRTH)



GUTTER END PANELS (2 REQ'D.) 1 AS SHOWN/1 OPP.HAND

NO.	DATE	REVISION
1	4/27/99	REVISED SECT. A-3 & RE-ISSUED FOR JOB USE
2	1/7/99	REVISED & ISSUED FOR JOB USE
3	10/12/98	REVISED & ISSUED FOR FINAL APPROVAL
4	7/1/98	REVISED & RE-ISSUED FOR APPROVAL
5	4/1/98	FOR APPROVAL ONLY

EPIC METALS CORPORATION
 11 TALBOT AVENUE, RANKIN, PA 15104, PHONE 412-351-3913

JOB: MILLER PARK
 LOCATION: MILWAUKEE, WI
 ARCHITECT: HKS/NBBJ/EPPSTEIN UHEN
 CONTRACTOR: []

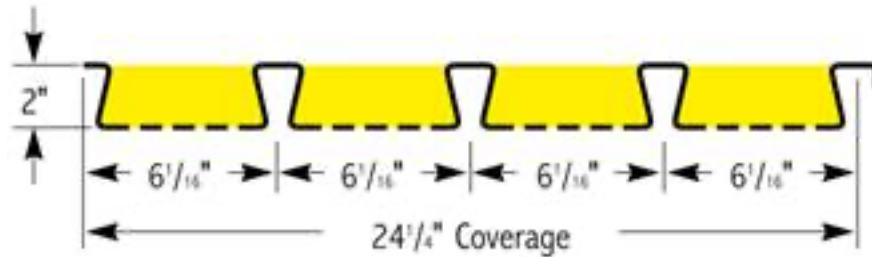
DTL'R: R.O. CHK'R: N.C. SCALE: 1/16"=1' DATE: 4/1/98

TITLE: PARTIAL PANEL 4L (HOME PLATE) ROOF DECK LAYOUT

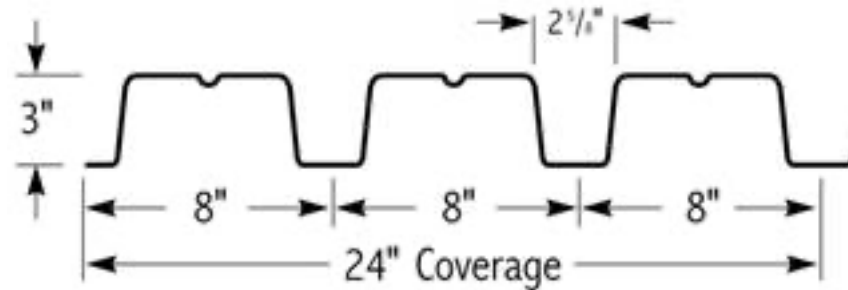
CUSTOMER	EPIC JOB NO.	DWG. NO.
MITSUBISHI HEAVY INDUSTRIES AMERICA	098 - EC - 144	3 OF

EXISTING DECK DETAILS

- **Main Roof: 2" x 20 ga ER2RA acoustical deck manufactured by Epic Metals Corp; Thickness = .0358", Yield Stress = 50 ksi**

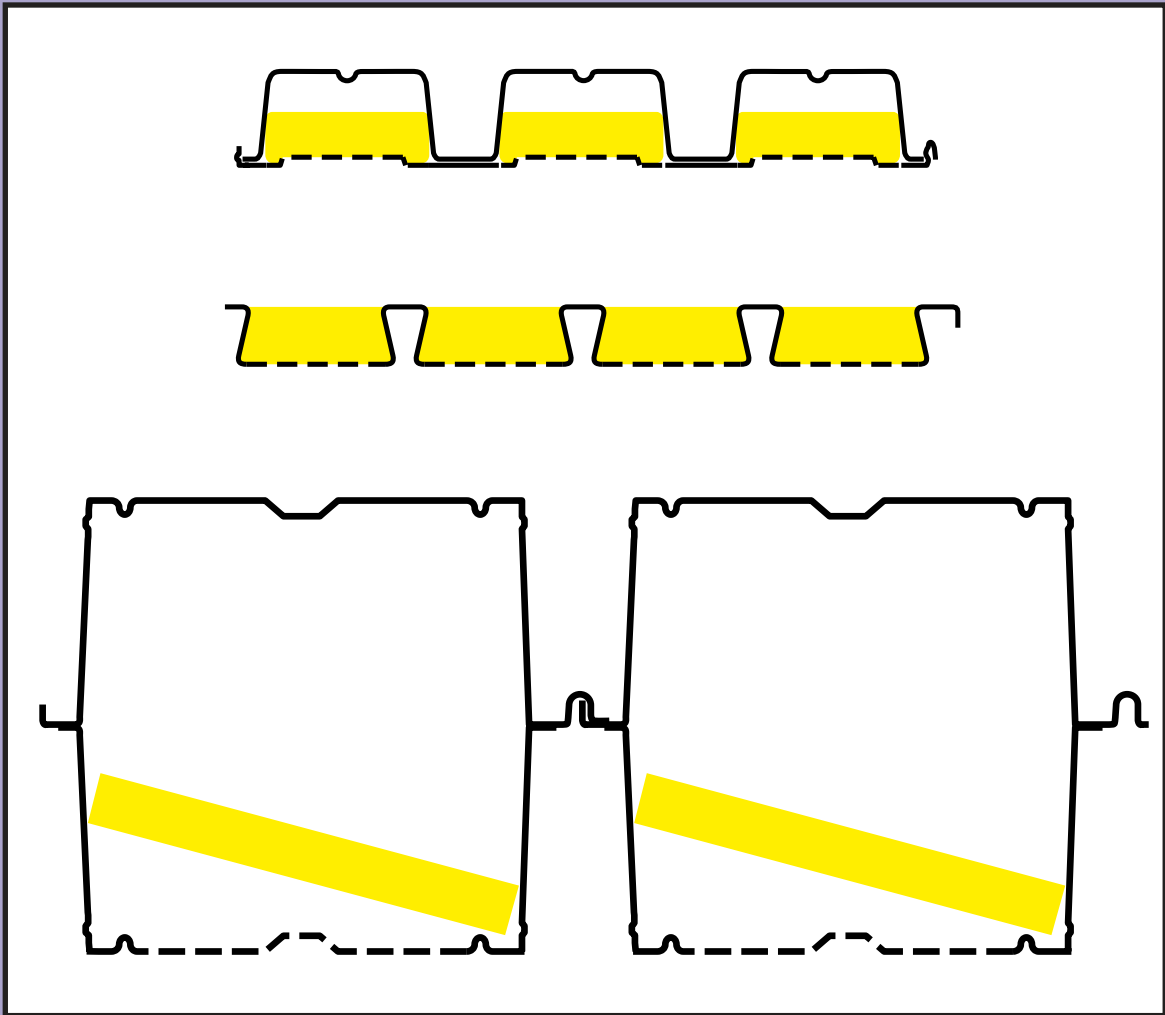


- **Gutters: 3" x 16 ga E300 deck manufactured by Epic Metals Corp; Thickness = .0600", Yield Stress = 40 ksi**



EPIC[®]

Roof and Acoustical Decks



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Manufacturing Facilities

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(412) 351-3913

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Before making use of this brochure, please review notice on page 17.

Epic is the best source for all steel decks.

Epic manufactures roof decks, acoustic roof decks, and composite floor decks in a complete range of depths, profiles, and material thicknesses. Epic is especially well known for the unique and exclusive Epicore® and Wideck® Composite Floor and Roof Deck Ceiling Systems.

Two Epic plants provide efficient delivery for the greatest variety of products.

Manufacturing facilities in two strategic locations simplify scheduling and expedite shipments.

Epic roof decks are important structural members.

Cold-formed from steel sheets or coils, Epic roof decks perform the following functions in a typical roof assembly: structural support for uniform roof loads, structural diaphragm to resist wind loads, and support base for insulation and roofing material.

Consider Epic E200 for exceptional economy.

For many roof designs, E200 (2" deep) can meet most requirements at significantly lower costs than other choices. For technical information, see page 9, or consult Epic engineers.

ER2 has smallest rib openings.

ER2 has minimum rib openings, and, therefore, maximum flat area. As a result, it provides maximum support for insulation board, maximum area for bonding, and the most efficient use of adhesive materials.

Epic engineers assure better products and applications.

A staff of professional engineers continuously work on product improvement, new product development, and better manufacturing procedures. In addition, they provide assistance in product selection.

Epic is a member of the Steel Deck Institute.

Epic actively supports the efforts of the Steel Deck Institute to establish uniform industry standards for design, engineering, manufacturing, and installation of steel decks.

Loads exceed SDI Standards.

Uniform total loads shown for B30/B36, IB30, E150, and E300 are greater than those shown in the SDI manual for narrow, intermediate, wide, and deep rib decks.

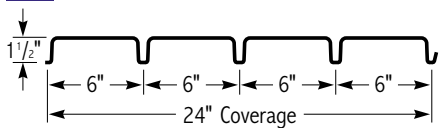
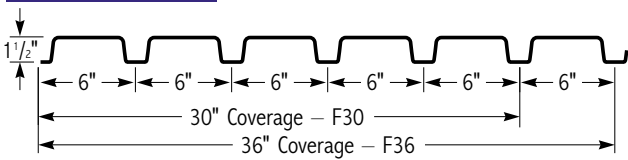
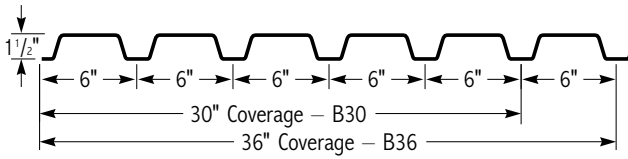
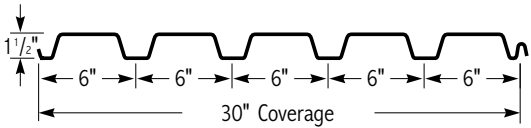
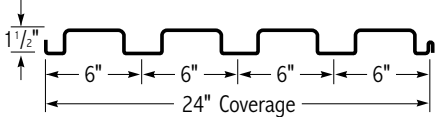
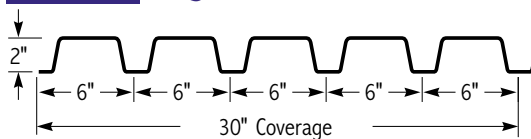
Design Thickness replaces Gage as the unit of measure for thickness of material.

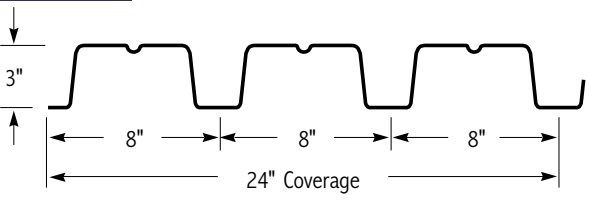
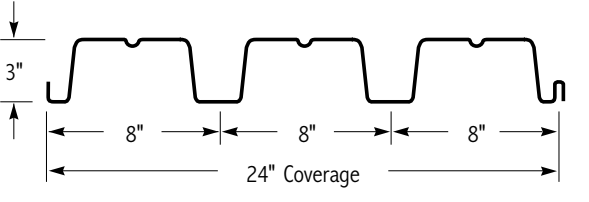
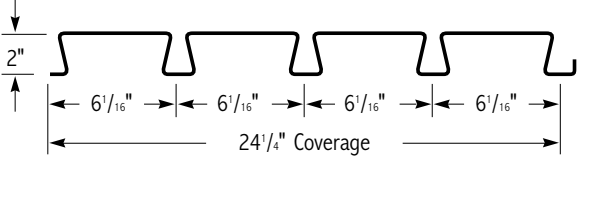
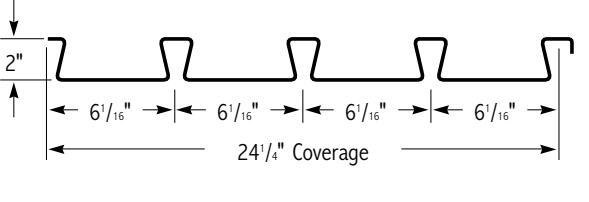
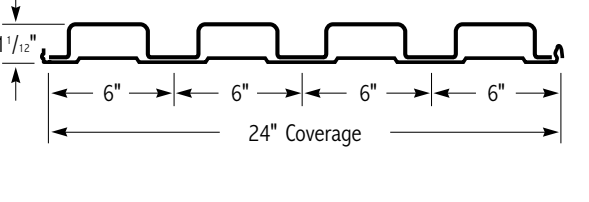
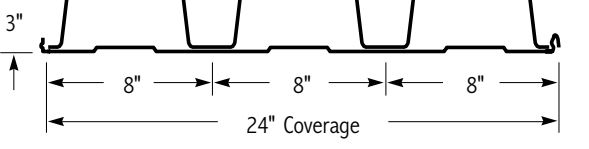
Epic has adopted *Design Thickness* in place of *Gage* in all references to material thickness.

This terminology is a more accurate expression of the closer thickness tolerances now being achieved by steel manufacturers.

In accordance with the Steel Deck Institute Specifications, the thickness of the material supplied will not be less than 95% of the *Design Thickness*.

Roof Deck Selection Chart

	Depth (in.)	Economical Span Range (ft.)	Finishes Available
A Contact Epic for Details 	1½	4–6	Galvanized or Galvanized and Painted
F30/F36 Contact Epic for Details 	1½	4–7	Galvanized or Galvanized and Painted
B30/B36 Page 7 	1½	5–9	Galvanized or Galvanized and Painted
IB30 Page 7 	1½	5–9	Galvanized or Galvanized and Painted
E150 Page 8 	1½	5–9	Galvanized or Galvanized and Painted
E200 Page 9 	2	6–10	Galvanized or Galvanized and Painted

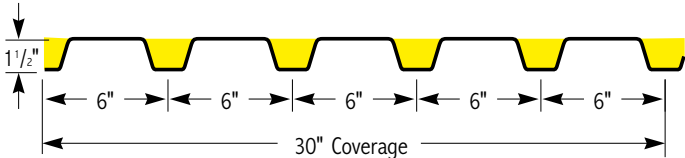
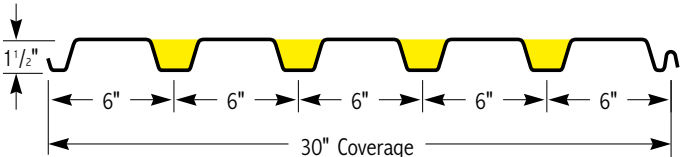
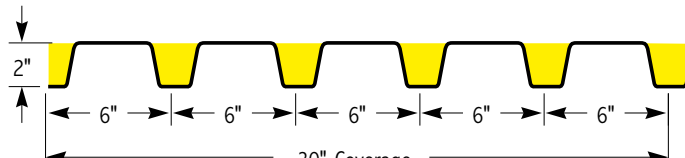
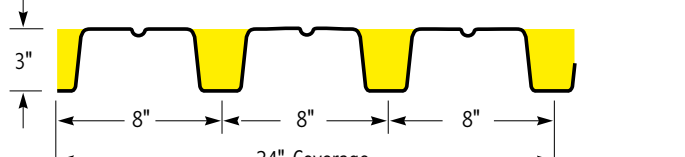
	Depth (in.)	Economical Span Range (ft.)	Finishes Available
E300 Page 10 	3	9-14	Galvanized or Galvanized and Painted
IE300 Page 10 	3	9-14	Galvanized or Galvanized and Painted
ER2 Contact Epic for Details 	2	8-12	Galvanized or Galvanized and Painted
ER2R (see <i>Epicore Composite Floor and Roof Deck Ceiling Systems Catalog</i>) 	2	8-15	Galvanized or Galvanized and Painted
EP150 Page 11 	1½	6-10	Galvanized or Galvanized and Painted Bottom
EP300 Page 12 	3	9-14	Galvanized or Galvanized and Painted Bottom

Acoustic Roof Deck Selection Chart

Acoustical roof decking can be specified as an economical means of reducing noise levels in buildings. Noise can be defined as sound of a loud or harsh type that is not wanted. These tables provide the Noise Reduction Coefficients (NRC) values for Epic Metals Acoustical Roof Decks. NRC values are the noise absorption averages over four frequency ranges. The higher the NRC value the greater the noise that is absorbed over the four frequency ranges. An NRC value of 1.00 would mean that 100% of the noise that strikes the panel is absorbed, whereas an NRC value of .60 would mean that only 60% of the sound that strikes the panel is absorbed and 40% of the sound that strikes the panel is reflected back into the room. Lower NRC values can contribute to creating reverberation

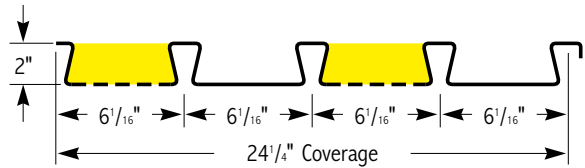
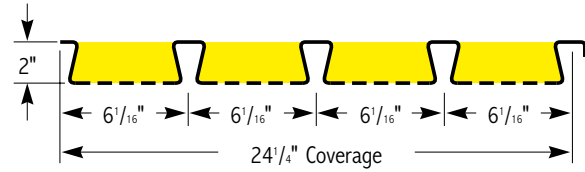
(an echo effect) that makes speech less intelligible and can create the sense of noise amplification. Many building factors, such as the room sizes, layout, shapes, materials specified, windows, the number of occupants, and noise sources can affect the noise levels of any given building area. Therefore, Epic Metals recommends that these factors be considered prior to the preparation of acoustical design specifications.

Note: To determine load capacity for acoustic roof decks, reduce loads shown in non-acoustic roof deck load tables by 5%. NRC values can vary based on different size and density of insulation used.

	<i>Appearance</i>	<i>NRC Value</i>	<i>Economical Span Range (ft.)</i>	<i>Finishes Available</i>
B30A Page 7 	Industrial/ Warehouse	.65	5–9	Galvanized or Galvanized and Painted
IB30A Page 7 	Industrial/ Warehouse	.60	5–9	Galvanized or Galvanized and Painted
E200A Page 9 	Commercial	.70	6–10	Galvanized or Galvanized and Painted
E300A Page 10 	Commercial	.70	9–14	Galvanized or Galvanized and Painted

ER2RA (see *Epicore Composite Floor and Roof Deck Ceiling Systems Catalog*)

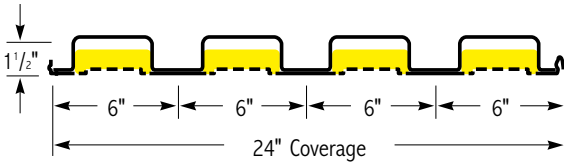
Appearance	NRC Value	Economical Span Range (ft.)	Finishes Available
Architectural/ Linear Plank	.95	8–15	Galvanized or Galvanized and Painted



Architectural/ Linear Plank	.75	8–15	Galvanized or Galvanized and Painted
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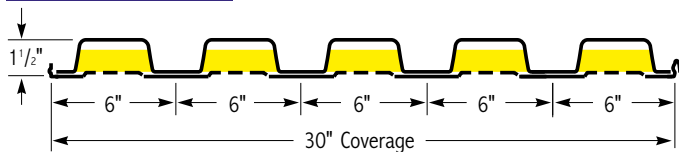
EP150A Page 11

Flush/Minor Shadow Lines	.65	6–10	Galvanized or Galvanized and Painted Bottom
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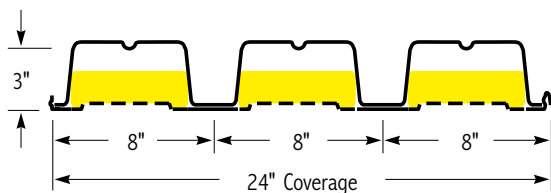
EPB150A Contact Epic for Details

Flush/Minor Shadow Lines	.70	6–10	Galvanized or Galvanized and Painted Bottom
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EP300A Page 12

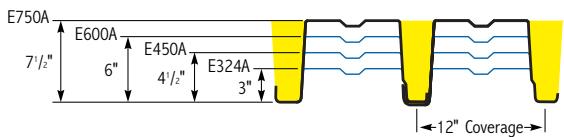
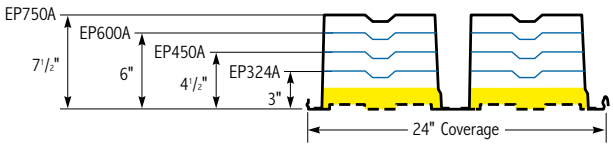
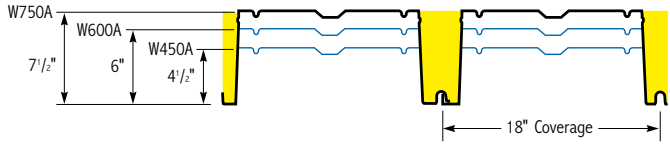
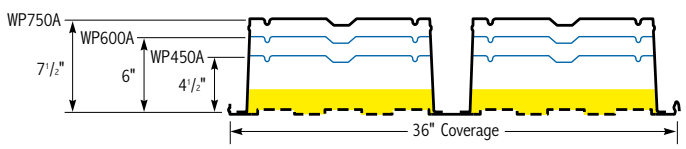
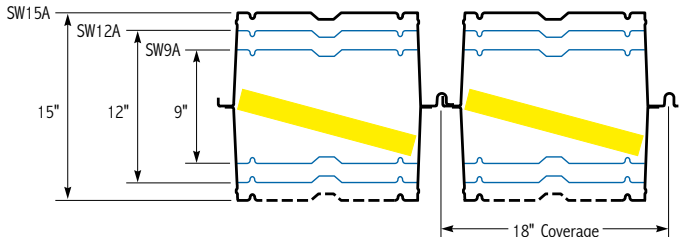
Flush/Minor Shadow Lines	.90	9–14	Galvanized or Galvanized and Painted Bottom
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Insulation indicated by yellow in profile diagrams.

Acoustic Roof Deck Selection Chart continued on next page

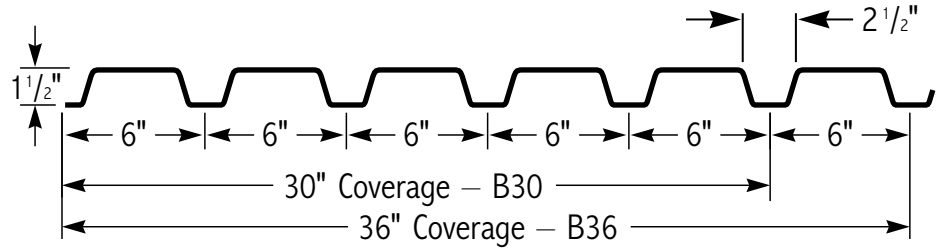
Acoustic Roof Deck Selection Chart (continued)

	<i>Appearance</i>	<i>NRC Value</i>	<i>Economical Span Range (ft.)</i>	<i>Finishes Available</i>	
E750A, E600A, E450A, E324A 	See Wideck Catalog	Architectural/ Bold Ribbed	.60– .80	10–30	Galvanized or Galvanized and Painted
EP750A, EP600A, EP450A, EP324A 	See Wideck Catalog	Architectural/ Flush/Minor Shadow Lines	.9– 1.0	10–30	Galvanized or Galvanized and Painted Bottom
W750A, W600A, W450A 	See Wideck Catalog	Architectural/ Bold Ribbed	.60– .70	10–30	Galvanized or Galvanized and Painted
WP750A, WP600A, WP450A 	See Wideck Catalog	Architectural/ Flush Minor Shadow Lines	1.0	10–30	Galvanized or Galvanized and Painted Bottom
SW15A, SW12A, SW9A 	See Wideck Catalog	Architectural/ Linear Beamed	.75– .85	24–45	Galvanized or Galvanized and Painted Bottom

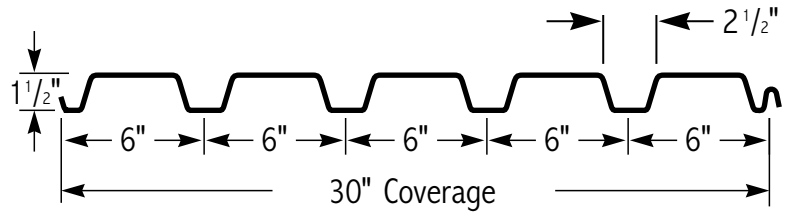
Insulation indicated by **yellow** in profile diagrams.

B30/B36

B24 is available in 12 gauge



IB30



Section Properties (Per Foot of Width)

Design Thickness (in.)	Weight (psf)	I (in. ⁴)	S _p (in. ³)	S _n (in. ³)
.0295	1.6	.165	.195	.207
.0358	2.0	.211	.242	.258
.0474	2.6	.305	.330	.340
.0600	3.3	.389	.409	.414
.0747	4.1	.483	.510	.510
.1046	5.7	.675	.702	.702

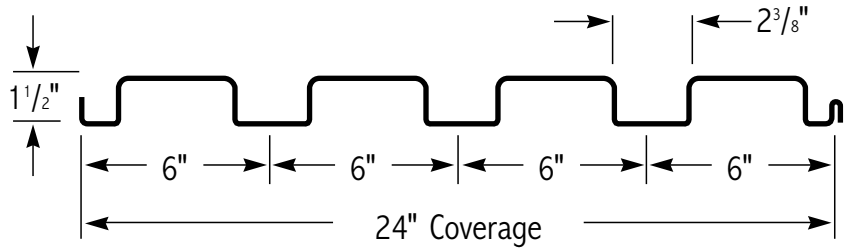
Uniform Total (Dead and Live) Load in Pounds per Square Foot

Span Condition	Designation	Design Thickness (in.)	Span Length (c-c Joists or Purlins) (Ft.-In.)											
			5'0"	5'6"	6'0"	6'6"	6'8"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"
Simple 	B30/B36-22	.0295	97	75	60	49	46	42						
	B30/B36-20	.0358	121	93	74	60	57	50	43					
	B30/B36-18	.0474	170	130	103	83	77	68	57	49	43			
	B30/B36-16	.0600	214	164	128	103	96	84	71	60	52	45	40	
	B30/B36-14	.0747	264	201	157	125	117	102	85	72	62	54	47	42
	B24-12	.1046	365	276	215	171	160	139	115	97	82	71	62	54
2 	B30/B36-22	.0295	110	91	77	65	61	56	49	43				
	B30/B36-20	.0358	138	114	96	81	77	70	61	54	48	42		
	B30/B36-18	.0474	181	150	126	107	101	93	81	71	63	56	50	45
	B30/B36-16	.0600	221	182	153	131	123	113	98	86	76	68	61	55
	B30/B36-14	.0747	272	225	189	161	153	139	121	106	94	84	75	68
	B24-12	.1046	374	309	260	222	211	191	166	146	130	116	104	94
3 or more 	B30/B36-22	.0295	138	114	96	82	77	70	58	50	43			
	B30/B36-20	.0358	172	142	119	102	96	86	72	61	53	46	40	
	B30/B36-18	.0474	227	187	157	134	126	116	101	84	71	62	54	48
	B30/B36-16	.0600	276	228	192	163	154	141	123	104	88	76	66	58
	B30/B36-14	.0747	340	281	236	201	191	173	151	127	107	92	80	70
	B24-12	.1046	468	387	325	277	263	239	208	173	146	125	107	94

Notes

1. Loads in shaded areas and boldface type are controlled by live load deflection of $l/240$ plus a 10 psf assumed dead load to account for the weight of deck, insulation and built up roofing. All other loads are governed by the allowable flexural stress limit of 20 KSI for steel with a yield point of 33 ksi.
2. See Construction Load table on page 13 for maximum recommended spans.
3. For male and female interlocking side lap, specify Type IB30.
4. IB is not available in .0747 and .1046 in. thicknesses.

E150



Section Properties (Per Foot of Width)

Design Thickness (in.)	Weight (psf)	I (in. ⁴)	S _p (in. ³)	S _n (in. ³)
.0295	1.8	.181	.194	.208
.0358	2.2	.220	.255	.265
.0474	2.9	.323	.369	.385
.0600	3.7	.424	.467	.476

Uniform Total (Dead and Live) Load in Pounds per Square Foot

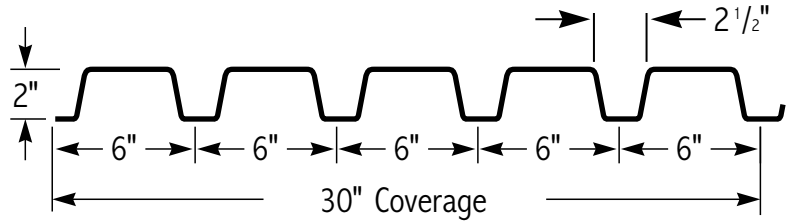
Span Condition	Designation	Design Thickness (in.)	Span Length (c-c Joists or Purlins) (Ft.-In.)												
			5'0"	5'6"	6'0"	6'6"	6'8"	7'0"	7'6"	8'0"	8'4"	8'6"	9'0"	9'6"	10'0"
Simple 	E150-22	.0295	103	81	65	53	50	45							
	E150-20	.0358	126	97	77	63	59	52	44						
	E150-18	.0474	180	137	108	87	82	72	60	51	47	45			
	E150-16	.0600	233	177	139	111	104	91	76	64	58	55	48	42	
2 	E150-22	.0295	111	92	77	66	62	57	49	43	40				
	E150-20	.0358	141	117	98	84	79	72	63	55	51	49	44		
	E150-18	.0474	205	170	143	121	115	105	91	80	74	71	63	57	51
	E150-16	.0600	254	210	176	150	143	130	113	99	91	88	78	70	63
3 or more 	E150-22	.0295	139	115	96	82	78	71	62	54	50	46			
	E150-20	.0358	177	146	123	105	99	89	75	63	57	54	47		
	E150-18	.0474	257	212	178	152	144	126	105	88	79	75	65	57	50
	E150-16	.0600	317	262	220	188	178	162	134	112	101	95	82	71	62

Notes

1. Loads in shaded areas and boldface type are controlled by live load deflection of $l/240$ plus a 10 psf assumed dead load to account for the weight of deck, insulation and built up roofing. All other loads are governed by the allowable flexural stress limit of 20 KSI for steel with a yield point of 33 ksi.
2. See Construction Load table on page 13 for maximum recommended spans.

E200

Economical and Efficient



Section Properties (Per Foot of Width)

Design Thickness (in.)	Weight (psf)	I (in. ⁴)	S _p (in. ³)	S _n (in. ³)
.0295	1.8	.256	.236	.251
.0358	2.2	.324	.287	.306
.0474	2.9	.461	.388	.400

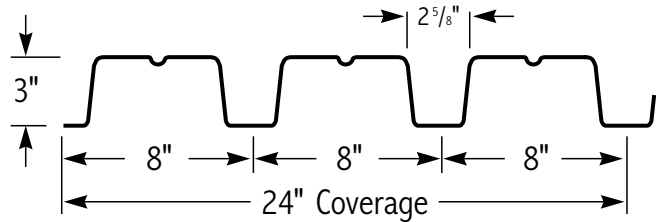
Uniform Total (Dead and Live) Load in Pounds per Square Foot

Span Condition	Designation	Design Thickness (in.)	Span Length (c-c Joists or Purlins) (Ft.-In.)											
			6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"
Simple 	E200-22	.0295	87	71	59	50	43							
	E200-20	.0358	106	87	72	60	52	45						
	E200-18	.0474	144	120	98	82	69	59	52	45	40			
2 	E200-22	.0295	93	79	68	59	52	46	41					
	E200-20	.0358	113	97	83	73	64	56	50	45	41			
	E200-18	.0474	148	126	109	95	83	74	66	59	53	48	44	40
3 or more 	E200-22	.0295	116	99	85	74	65	58	52	46				
	E200-20	.0358	142	121	104	91	80	71	63	57	50	45		
	E200-18	.0474	185	158	136	119	104	92	82	74	67	59	53	47

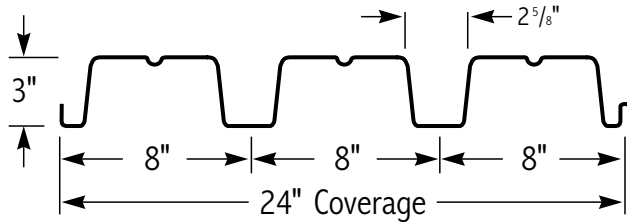
Notes

1. Loads in shaded areas and boldface type are controlled by live load deflection of $l/240$ plus a 10 psf assumed dead load to account for the weight of deck, insulation and built up roofing. All other loads are governed by the allowable flexural stress limit of 20 KSI for steel with a yield point of 33 ksi.
2. See Construction Load table on page 13 for maximum recommended spans.

E300



IE300



Section Properties (Per Foot of Width)

Design Thickness (in.)	Weight (psf)	I (in. ⁴)	S _p (in. ³)	S _n (in. ³)
.0295	2.0	.796	.422	.415
.0358	2.5	.945	.501	.512
.0474	3.3	1.257	.675	.676
.0600	4.2	1.571	.844	.844

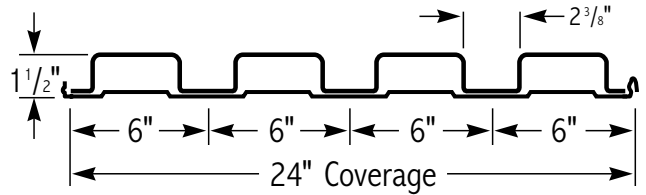
Uniform Total (Dead and Live) Load in Pounds per Square Foot

Span Condition	Designation	Design Thickness (in.)	Span Length (c-c Joists or Purlins) (Ft.-In.)												
			9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	12'6"	13'0"	13'6"	14'0"	14'6"	15'0"
	E300-22	.0295	69	62	56	51	47	43							
	E300-20	.0358	82	74	67	61	55	51	46	42	38				
	E300-18	.0474	111	100	90	81	72	64	58	52	48	44	40	37	34
	E300-16	.0600	139	125	113	99	88	78	70	63	57	52	48	44	41
	E300-22	.0295	68	61	55	50	46	42							
	E300-20	.0358	84	76	68	62	56	52	47	44	40				
	E300-18	.0474	111	100	90	82	74	68	63	58	53	49	46	43	40
	E300-16	.0600	139	125	113	102	93	85	78	72	67	62	57	54	50
	E300-22	.0295	85	77	69	63	57	52	48	44	41	40 ft. overall sheet length			
	E300-20	.0358	105	95	85	77	71	65	59	55	50				
	E300-18	.0474	139	125	113	102	93	85	78	72	67				
	E300-16	.0600	174	156	141	128	116	106	98	90	83				

Notes

1. Loads in shaded areas and boldface type are controlled by live load deflection of $l/240$ plus a 10 psf assumed dead load to account for the weight of deck, insulation and built up roofing. All other loads are governed by the allowable flexural stress limit of 20 KSI for steel with a yield point of 33 ksi.
2. See Construction Load table on page 13 for maximum recommended spans.

EP150



Section Properties (Per Foot of Width)

Design Thickness (in.) Deck/Plate	Weight (psf)	I (in. ⁴)	S _p (in. ³)	S _n (in. ³)
.0358/.0358	3.8	.368	.307	.458
.0358/.0474	4.3	.397	.312	.468
.0474/.0358	4.5	.503	.455	.582
.0474/.0474	5.1	.546	.460	.594
.0474/.0600	5.6	.585	.465	.606
.0600/.0474	5.8	.701	.634	.720
.0600/.0600	6.4	.754	.640	.735

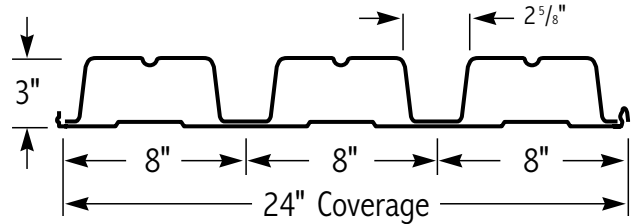
Uniform Total (Dead and Live) Load in Pounds per Square Foot

Span Condition	Designation	Design Thickness (in.) Deck/Plate	Span Length (c-c Joists or Purlins) (Ft.-In.)										
			6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"
Simple 	EP150-20/20	.0358/.0358	114	97	80	67	57	49	43	38	34	31	28
	EP150-20/18	.0358/.0474	116	98	85	72	61	52	46	40	36	33	30
	EP150-18/20	.0474/.0358	163	130	106	88	75	64	55	49	43	39	35
	EP150-18/18	.0474/.0474	170	141	115	95	80	68	59	52	46	41	37
	EP150-18/16	.0474/.0600	172	147	122	101	85	73	63	55	48	43	39
	EP150-16/18	.0600/.0474	223	178	144	119	100	85	73	64	56	50	45
	EP150-16/16	.0600/.0600	237	190	154	127	107	91	78	68	60	53	47
2 	EP150-20/20	.0358/.0358	170	145	125	109	95	85	75	68	61	55	50
	EP150-20/18	.0358/.0474	173	148	127	111	98	86	77	69	62	57	52
	EP150-18/20	.0474/.0358	216	184	158	138	121	107	96	86	78	70	64
	EP150-18/18	.0474/.0474	220	187	162	141	124	110	98	88	79	72	65
	EP150-18/16	.0474/.0600	224	191	165	144	126	112	100	90	81	73	67
	EP150-16/18	.0600/.0474	267	227	196	171	150	133	119	106	96	87	79
	EP150-16/16	.0600/.0600	272	232	200	174	153	136	121	109	98	89	81
3 or more 	EP150-20/20	.0358/.0358	178	151	131	114	99	84	72	63	56	49	44
	EP150-20/18	.0358/.0474	181	154	133	116	102	90	77	67	59	52	47
	EP150-18/20	.0474/.0358	263	224	191	157	132	111	95	83	72	64	57
	EP150-18/18	.0474/.0474	266	227	196	170	142	120	103	89	78	68	61
	EP150-18/16	.0474/.0600	269	229	198	172	151	128	109	94	82	73	64
	EP150-16/18	.0600/.0474	333	284	245	213	179	151	129	111	97	85	75
	EP150-16/16	.0600/.0600	340	290	250	218	191	162	138	119	103	91	80

End bearing = 2 inches Interior bearing = 4 inches

Notes

1. Loads in shaded areas and boldface type are controlled by live load deflection of $l/240$ plus a 10 psf assumed dead load to account for the weight of deck, insulation and built up roofing. All other loads are governed by the allowable flexural stress limit of 20 KSI for steel with a yield point of 33 ksi.
2. Other thickness combinations are available.
3. Flush bottom plates (without shallow stiffeners) are available upon request.



Section Properties (Per Foot of Width)

Design Thickness (in.) Deck/Plate	Weight (psf)	I (in. ⁴)	S _p (in. ³)	S _n (in. ³)
.0358/.0358	4.1	1.883	.939	.949
.0358/.0474	4.6	2.058	.958	1.007
.0474/.0358	4.9	2.302	1.323	1.119
.0474/.0474	5.4	2.522	1.355	1.290
.0474/.0600	5.9	2.723	1.381	1.339
.0600/.0474	6.3	2.953	1.691	1.508
.0600/.0600	6.8	3.183	1.723	1.644

Uniform Total (Dead and Live) Load in Pounds per Square Foot

Span Condition	Designation	Design Thickness (in.) Deck/Plate	Span Length (c-c Joists or Purlins) (Ft.-In.)												
			9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	12'6"	13'0"	13'6"	14'0"	14'6"	15'0"
Simple 	EP300-20/20	.0358/.0358	98*	92*	88*	84*	80*	76*	73*	70*	66	60	55	51	47
	EP300-20/18	.0358/.0474	98*	92*	88*	84*	80*	76*	73*	70*	68*	65	59	54	50
	EP300-18/20	.0474/.0358	180*	171*	161	141	124	109	97	87	79	71	65	60	55
	EP300-18/18	.0474/.0474	180*	171*	162*	153	134	119	106	95	85	77	70	64	59
	EP300-18/16	.0474/.0600	180*	171*	162*	154*	144	128	113	102	91	83	75	69	63
	EP300-16/18	.0600/.0474	276	236	204	177	156	137	122	109	98	89	81	74	67
	EP300-16/16	.0600/.0600	284	254	219	191	167	147	131	117	105	95	86	79	72
2 	EP300-20/20	.0358/.0358	125*	118*	112*	107*	102*	96	88	81	75	69	65	60	56
	EP300-20/18	.0358/.0474	125*	118*	112*	107*	102*	98*	93	86	79	74	69	64	60
	EP300-18/20	.0474/.0358	184	165	149	135	123	113	104	95	88	82	76	71	66
	EP300-18/18	.0474/.0474	210*	191	172	156	142	130	119	110	102	94	88	82	76
	EP300-18/16	.0474/.0600	210*	198	179	162	148	135	124	114	106	98	91	85	79
	EP300-16/18	.0600/.0474	248	223	201	182	166	152	140	129	119	110	103	96	89
	EP300-16/16	.0600/.0600	271	243	219	199	181	166	152	140	130	120	112	104	97
3 or more 	EP300-20/20	.0358/.0358	122*	116*	110*	105*	100*	95*	91*	88*	84*	81*	78*	75	70
	EP300-20/18	.0358/.0474	122*	116*	110*	105*	100*	95*	91*	88*	84*	81*	78*	76*	73*
	EP300-18/20	.0474/.0358	225*	207	187	169	154	141	130	119	110	102	95	89	83
	EP300-18/18	.0474/.0474	225*	213*	203*	193*	178	163	149	138	127	118	110	102	96
	EP300-18/16	.0474/.0600	225*	213*	203*	193*	184	169	155	143	132	122	114	106	99
	EP300-16/18	.0600/.0474	310	278	251	228	208	190	175	161	149	138	128	120	112
	EP300-16/16	.0600/.0600	338	304	274	249	226	207	190	175	162	150	140	130	122

End bearing = 2 inches Interior bearing = 4 inches

Notes

1. Loads in shaded areas and boldface type are controlled by live load deflection of $l/240$ plus a 10 psf assumed dead load to account for the weight of deck, insulation and built up roofing. Loads with asterisks (*) are governed by end or intermediate support reactions. All other loads are governed by the allowable flexural stress limit of 20 KSI for steel with a yield point of 33 ksi.
2. Other thickness combinations are available.
3. Flush bottom plates (without shallow stiffeners) are available upon request.

Recommended Maximum Spans for Construction Load 1½", 2", and 3" Roof Decks

Designation	Span Condition	Maximum Span
A22	1	4'7"
A22	2 or more	5'8"
A20	1	5'5"
A20	2 or more	6'4"
A18	1	6'6"
A18	2 or more	7'2"
F30/F36-22	1	5'1"
F30/F36-22	2 or more	6'0"
F30/F36-20	1	5'9"
F30/F36-20	2 or more	6'9"
F30/F36-18	1	6'11"
F30/F36-18	2 or more	8'2"
B30/B36-22	1	5'9"
B30/B36-22	2 or more	6'10"
B30/B36-20	1	6'7"
B30/B36-20	2 or more	7'9"
B30/B36-18	1	7'10"
B30/B36-18	2 or more	9'4"
B30/B36-16	1	8'11"
B30/B36-16	2 or more	10'6"
B24-14	1	9'11"
B24-14	2 or more	11'9"
B24-12	1	11'9"
B24-12	2 or more	13'10"
E150-22	1	6'1"
E150-22	2 or more	7'2"
E150-20	1	6'8"
E150-20	2 or more	7'11"
E150-18	1	8'1"
E150-18	2 or more	9'7"
E150-16	1	9'3"
E150-16	2 or more	10'11"

Designation	Span Condition	Maximum Span
E200-22	1	7'2"
E200-22	2 or more	8'6"
E200-20	1	8'1"
E200-20	2 or more	9'7"
E200-18	1	9'8"
E200-18	2 or more	11'5"
E300-22	1	12'9"
E300-22	2 or more	15'1"
E300-20	1	13'11"
E300-20	2 or more	16'5"
E300-18	1	16'1"
E300-18	2 or more	18'11"
E300-16	1	17'11"
E300-16	2 or more	21'2"
ER2-22	1	7'8"
ER2-22	2 or more	9'0"
ER2-20	1	8'7"
ER2-20	2 or more	10'2"
ER2-18	1	10'4"
ER2-18	2 or more	12'3"
ER2-17	1	11'3"
ER2-17	2 or more	13'3"
ER2-16	1	12'0"
ER2-16	2 or more	14'2"
ER2R-22	1	9'2"
ER2R-22	2 or more	10'10"
ER2R-20	1	10'0"
ER2R-20	2 or more	11'9"
ER2R-18	1	11'4"
ER2R-18	2 or more	13'4"
ER2R-17	1	12'0"
ER2R-17	2 or more	14'2"
ER2R-16	1	12'7"
ER2R-16	2 or more	14'10"

The load tables printed for Epic deck are based on uniformly distributed total (dead and live) loads in psf. When heavier construction loads or other unusual concentrated loads are anticipated, a heavier live load must be specified.

The Epic Construction Load table shows the effect of a 200-pound concentrated load bearing on a one-foot-wide section of deck. The table allows a maximum flexural stress limit of .8Fy based on the assumption that this loading will be temporary.

If the designer contemplates loads of greater magnitude, spans should be decreased and/or the thickness of the material should be increased appropriately.

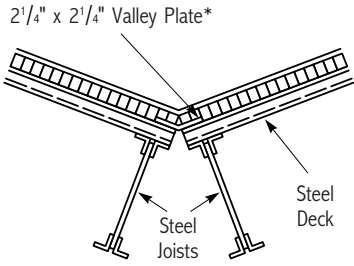
For the specific applications, we recommend that the designer consult with Epic engineers.

Note

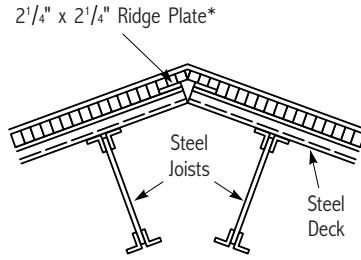
- Spans are governed by the allowable flexural stress limit of .8Fy and a maximum deflection of $l/240$ with a 200-lb. concentrated load at mid-span on a 1'0"-width section of deck.
- Reduce spans by 5% for acoustic decks.

Standard Details—Roof Decks

Valley Detail

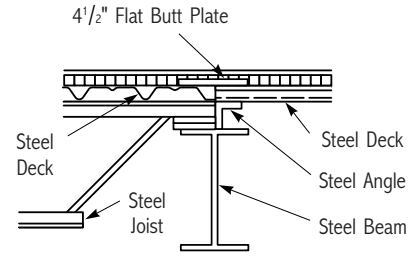


Ridge Detail

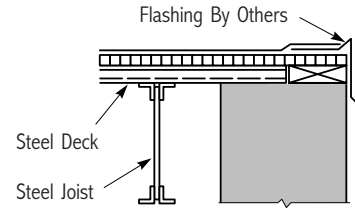
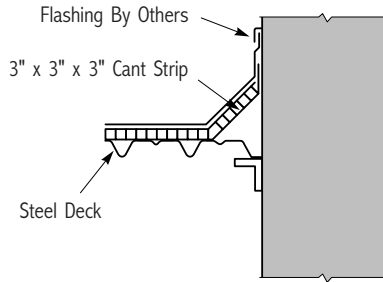
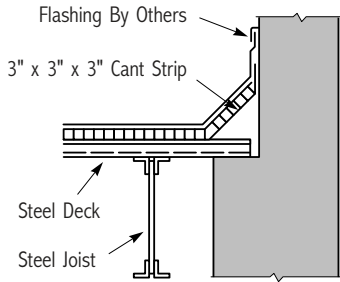


* Required When Slope Exceeds 1/4" in 12"

Detail Where Deck Changes Direction

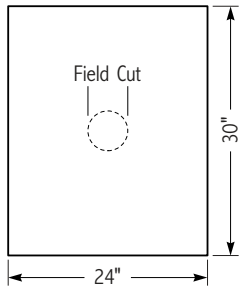


Wall Detail

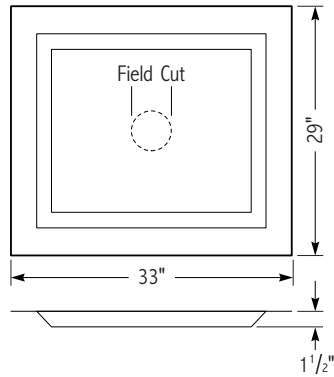


Sump Recess Pans

Flat Sump Plate

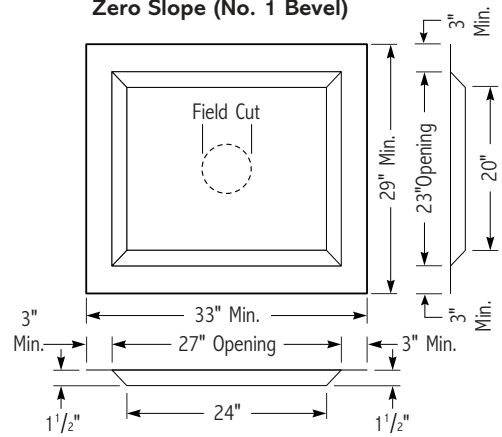


Level Sump Pan



Note:
Sloped Sump Pump
Pans Available
for Sloped Roofs

Zero Slope (No. 1 Bevel)



Specifications for Steel Roof Decks

Part 1: General

1.1 Summary

- A. The Requirements of this Specification Section include all materials, equipment and labor necessary to furnish and install an EPIC Roof/Ceiling System.

1.2 Submittals

- A. Product Data: Submit manufacturer's specifications, section properties, load tables, diaphragm shear tables, dimensions, finishes and noise reduction coefficients.
- B. Shop Drawings: Submit placement drawings showing profiles and material thicknesses, layout, anchorage and openings as dimensioned on the structural drawings.

1.3 Reference Standards

- A. Section Properties: Shall be computed in accordance with the American Iron and Steel Institute (AISI) Specification for Design of Cold Formed Steel Structural Members.
- B. Welding: Shall comply with applicable provisions of the American Welding Society (AWS) D1.3 Structural Welding Code—Sheet Steel.
- C. Superimposed Load and Diaphragm Shear Capacities: Shall be computed in accordance with the requirements of the Steel Deck Institute (SDI).
- D. Noise Reduction Coefficients: Shall be verified by the results of sound absorption tests conducted at Riverbank Acoustical Laboratories.

1.4 Delivery, Storage And Handling

- A. Roof deck units shall be protected from damage during delivery, storage and handling.
- B. If storage at the job site is required, Roof deck units shall be elevated above the ground, sloped to provide drainage and protected from weather with a ventilated covering.

Part 2: Products

2.1 Manufacturer

- A. In accordance with the requirements of this Specification Section, provide products manufactured by Epic Metals Corporation, Rankin, PA.

2.2 Materials

- A. Roof deck units shall be manufactured from cold-formed steel sheets conforming to ASTM A653-94 Structural Quality with a minimum yield strength of 33 KSI.
- B. Before forming, the steel sheets shall have received a hot-dip protective zinc coating conforming to ASTM A924-94 with a minimum coating class of G60 (Z180) as defined in ASTM A653-94.
- (Add if Epiclad System for Fluted Deck units is required) Steel Sheets shall be cleaned and chemically treated and then painted with a .2 mil epoxy primer followed by a .5 mil polyester top coat primer or a .7 mil polyester (Epiclad System) oven baked and cured.
- C. The minimum uncoated thickness of materials furnished shall not be less than 95% of the design thickness.

2.3 Fabrication

- A. Roof deck units shall be cold-formed by the roll forming process to insure quality and uniformity of profile.
- (Add for Fluted Deck) Fluted deck units shall have nested or interlocking sidelaps.
 - (Add for Cellular Deck) Cellular deck units shall have interlocking and vertically self-aligning type sidelaps that from the underside present a flush appearance with tight fitting joints.
- B. (Add if prime painting of Cellular deck units is required) The bottom surfaces of the Cellular deck units shall be prime painted at the factory. Before painting, the galvanized steel shall be chemically cleaned and an acid wash pretreatment primer applied. Afterwards, manufacturer's standard prime paint shall be applied and oven-baked. Compatibility of field applied finish paint with factory applied prime paint shall be the responsibility of the painting contractor.
- C. (Add for Acoustic Fluted Deck) The webs of acoustic Fluted deck units shall be perforated for enhanced acoustic performance. Uniform rows of 0.156" holes at 0.375" staggered centers shall be provided. Acoustic insulation batts of 1.65 pcf density shall be provided to completely fill the flutes of the units. These shall be field installed by others.

(Add for Type A Acoustic Cellular Deck) For acoustic Cellular deck type (A) ("Perforated") the bottom plates of Cellular units in the area located between the webs shall be perforated for enhanced acoustic performance. Uniform rows of 0.125" holes at 0.375" staggered centers shall be provided. Acoustic insulation batts of 3 pcf density shall be provided for the cells of the units. These shall be factory installed by Epic. The acoustic insulation shall be supported above the bottom plate by either individual clips or continuous mesh to avoid plugging the perforated holes if field painting is required.

(Add for Type K Acoustic Cellular Deck) For acoustic Cellular deck type (K) ("Arcaded") the bottom plates of Cellular units in the area located between the webs shall be arcaded for enhanced acoustic performance. Uniform rows of rectangular arched slots 0.187" wide by 0.750" long at 0.750" staggered centers shall be provided. Acoustic insulation batts of 3 pcf density shall be provided for the cells of the units. These shall be factory installed by Epic. The arched slots shall support the acoustic insulation above the bottom plate so that they will not become plugged if field painting is required. (Contact Epic for availability.)

- D. (Add for Cellular Deck) Shallow stiffening ribs shall be provided in the bottom plates of Cellular units. In non-acoustic or acoustic type (A), ribs shall be located in the area between the webs to enhance flatness of the bottom plates. (Not available in Type (K) Acoustic).
- E. (Add for Cellular Deck) The entire bottom plate area of Cellular units shall be embossed to enhance appearance and to disguise spot welds that connect the plates to the hat sections (Not available in 14 gage).

Specifications for Steel Roof Decks (continued)

- F. The type of Roof deck units required shall be indicated on the structural drawings.
1. The structural drawings shall indicate required minimum design thicknesses, section properties and noise reduction coefficients.
 2. The Roof deck units selected shall be capable of supporting the design loads indicated on the structural drawings.
 3. Openings and reinforcement for openings shall be provided as indicated on the structural drawings.
 4. Manufacturer's standard ridge plates, valley plates, transition plates, sump pans, and eave plates shall be provided unless indicated otherwise on the structural drawings.

Part 3: Execution

3.1 General

- A. The Roof deck units shall be installed in strict accordance with the manufacturer's instructions, approved erection drawings, the Steel Deck Institute's (SDI) Manual for Construction with Steel Deck and all applicable safety regulations.

3.2 Installation

- A. Bundles of material shall be located on the supporting frame in such a manner that overloading of any of the individual framing members does not occur.
- B. Before being permanently fastened, deck units shall be placed on the supporting frame and adjusted to final position with ends accurately aligned and adequately bearing on the supporting frame. Consistent coverage shall be maintained so that panels located in adjacent bays will be properly aligned.
- C. Cutting of deck units to suit job site conditions, including all skew cuts, shall be performed in a neat and workmanlike manner. Only those openings indicated on the structural drawing shall be cut. Other openings shall be cut and re-inforced by those requiring the opening as approved by the structural engineer.

- D. (Add for Fluted deck) Fluted deck units shall be fastened to all supporting members with 0.625" diameter puddle welds at a spacing of 12" o.c. or as indicated on the manufacturer's erection drawings.

(Add for Cellular deck) Cellular deck units shall be fastened to all supporting members with three 0.750" diameter puddle welds per 24" wide unit or as indicated on the manufacturer's erection drawings.

- E. (Add for Fluted deck) The side laps of Fluted deck units shall be fastened together with #10 screws (nested laps only), button punching (interlocking laps only) or 1" long welds at a maximum spacing of 36" c/c or less as indicated in the manufacturer's erection drawings.

(Add for Cellular deck) The side laps of Cellular deck units shall be fastened together by 1½" welds or button punching at a maximum spacing of 36" c/c or less as indicated on the manufacturer's erection drawings.

- F. The sides of deck units located at the perimeter of the building shall be fastened to supporting members at a maximum spacing of 36" o.c. or less as indicated on the manufacturer's erection drawings.
- G. Construction loads shall not be applied to deck units until after the units are permanently fastened to supporting members and shall not exceed the load carrying capacity of the units.
- H. Items such as ceilings, light fixtures, conduit, pipe and ductwork shall not be suspended from deck units without specific approval of the structural engineer.

NOTE: DELETE UNDERLINED AREAS FOR NON-ACOUSTIC APPLICATIONS.

Metric Conversion Chart

Multiply:	by:	to obtain:
Inch (in)	25.4	Millimeter (mm)
Foot (ft)	0.3048	Meter (m)
Pounds per square inch (lb/in ²) or (psi)	0.0007	Kilograms per square millimeter (kg/mm ²)
Pounds per square foot (lb/ft ²) or (psf)	4.8824	Kilograms per square meter (kg/m ²)
Pounds per cubic foot (lb/ft ³) or (pcf)	16.02	Kilograms per cubic meter (kg/m ³)
Cubic inches per foot (in ³ /ft)	53,763	Cubic millimeters per meter (mm ³ /m)
Inches to the fourth power per foot (in ⁴ /ft)	1,365,588	Millimeters to the fourth power per meter (mm ⁴ /m)

Tolerances

All material is furnished in accordance with tolerances as shown below:

Cover Width

Panels to 24 inch, cover width minus 0 plus ½"
 Panels 24 to 30 inch, cover width minus 0 plus ⅝"
 Panels 30 to 36 inch, cover width minus 0 plus ¾"

Camber Tolerance

Side camber ¼" in 10'

Steel Thickness Tolerance

Black steel thickness not less than 95 percent of design thickness

Designer's Responsibility

The information presented in this brochure has been prepared in accordance with generally recognized engineering principles. We recommend that this information not be used or relied upon for any application without a thorough review by a licensed professional engineer, designer, or architect who shall be competent to evaluate the significance and limitations of this material and who will accept responsibility for the application of this material for any specific application.

Epic Metals Corporation makes no representation or warranty respecting any information contained in this brochure, including but not limited to the accuracy, completeness, or suitability of such information for any particular purpose or use.

Epic Metals Corporation expressly disclaims any and all warranties, expressed or implied.

By making this information available, Epic Metals Corporation is not rendering professional services, and assumes no duty or responsibility with respect to any person making use of such information.

In addition, Epic Metals Corporation shall not be liable for any claim, demand, injury, loss, expense, or liability of any kind whatsoever which in any way arises out of or is connected with the use of the information contained in this publication, whether or not such claim, demand, loss, expense, or liability results directly or indirectly from any action or omission of Epic Metals Corporation. Any party using the information contained in this brochure assumes all liability arising from such use.

Since hazards may be associated with the handling, installation, or use of steel and its accessories, prudent construction practices should always be followed. We recommend that the parties involved in such handling, installation, or use review all applicable manufacturers' material safety data sheets, applicable rules and regulations of the Occupational Safety and Health Administration, and other government agencies having jurisdiction over such handling, installation, or use, and other relevant construction practice publications, including the Steel Deck Institute (SDI) Manual for Construction with Steel Deck.

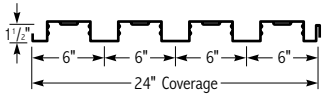
Warranty

Epic Metals Corporation warrants that all material and mechanical parts to be furnished under this contract, so far as the same is of our manufacture, shall be free from defects. In the event of the failure of the material or mechanical parts within one year from the date of delivery, or from the date of completion of erection or installation if the seller is required to erect or install, and such failure is attributable to defects found to have existed at the time of delivery or erection or installation, Epic Metals' liability hereunder shall be limited to furnishing necessary replacement material or parts. If Epic Metals is required to erect or install material or mechanical parts under this contract, Epic Metals warrants that all erection or installation work shall be done in a good and workmanlike manner, and will repair or rectify any work performed in an unworkmanlike manner if notified in writing within one year from the date of completion of the work. Epic Metals assumes no liability for damages, losses, or injuries, direct or consequential, that may arise from use or inability to use our products.

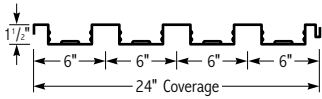
Except as provided, there are no express or implied warranties as to merchantability or fitness of the material or equipment to any particular purpose.

Epic Composite Floor Decks

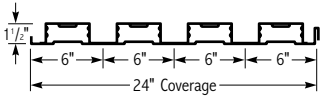
EC150



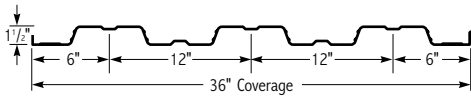
EC150R



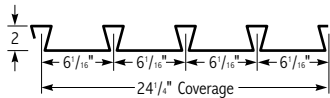
ECP150



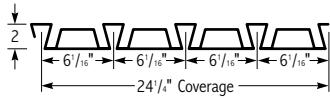
EC156



Epicore

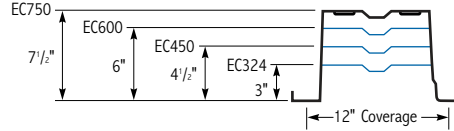


Epicore A

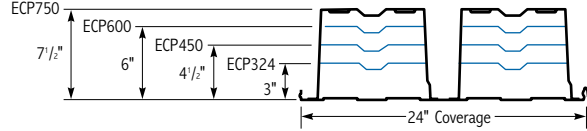


Wideck

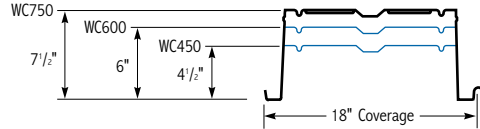
Type EC



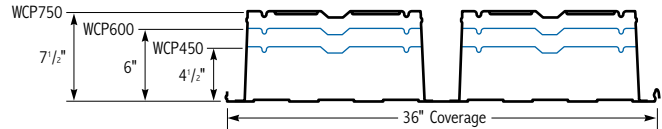
Type ECP



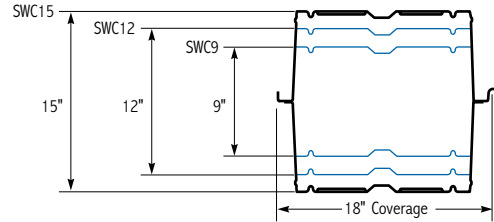
Type WC



Type WCP



Type SWC



Note: SDI standard 1 1/2" deep x 6" pitch, 2" deep x 12" pitch, 3" deep x 8" pitch, and 3" deep x 12" pitch composite decks are also available in fluted or cellular profiles.

Epic Literature

Epicore Composite Floor and Roof Deck Ceiling Systems

Wideck Long-Span Roof and Floor Deck Ceiling Systems

Epicore Concept 2 Floor System for multiple-unit residential construction

Epicore Composite Floor System with concrete framing

Epic Long-Span Security Ceiling

Epic Composite Floor Decks

Epic Structural Standing Seam Roof System



General Offices

Eleven Talbot Avenue
Rankin, Pennsylvania 15104
(412) 351-3913
(412) 351-2018 fax
<http://www.epicmetals.com>

Manufacturing Facilities

Eleven Talbot Avenue
Rankin, Pennsylvania 15104
(412) 351-3913

1930 Route 60 West
Bartow, Florida 33830
(941) 533-7404



DensDeck® Roof Board

Updated: 7/17



*Quality You Can Trust...From
North America's Largest Roofing Manufacturer!™*



DENSDECK®

ROOF BOARD (1 of 2)

Manufactured by:



133 Peachtree Street, N.E.
Atlanta, GA 30303
Technical: 1-800-225-6119

Description

DensDeck® Roof Board combines exceptional fire resistance, a thermal barrier, and recovery board for use in various commercial roofing systems. The patented DensDeck® Roof Board design employs glass mat facings front and back that are embedded into a water-resistant gypsum core, providing excellent fire resistance, moisture resistance, and wind uplift properties. The unique construction of DensDeck® Roof Boards provides superior flute spanning that stiffens and provides increased foot traffic resistance to the roof deck. Additionally, DensDeck® panels have been shown to withstand delamination, deterioration, warping, and job site damage more effectively than other roofing membrane substrates such as paper-faced gypsum board, fiber board, and perlite insulation.

Primary Uses

Roof system manufacturers and designers have found DensDeck® Roof Boards to be compatible with many types of roofing systems, including built-up, modified bitumen, single ply, metal systems, wood shingle and shake, tile, slate, and re-cover board, as well as an overlayment protection board for polyisocyanurate and polystyrene insulation. DensDeck® can also be used as a form board for poured gypsum concrete decks in roof applications as well as a substrate for spray foam roofing systems. 1/2" (13 mm) and 5/8" (16 mm) DensDeck® Prime may also be used in vertical applications as a backer board or liner for the roof side of parapet walls. Georgia-Pacific Gypsum offers a limited warranty for up to 90 days of exposure to normal weather conditions when applied vertically on parapet walls. For complete warranty details, visit DensDeck.com.

Some membrane manufacturers have hot mop asphalt or torch applications directly to DensDeck® without using a primer or base sheet. **Refer to specific membrane system application instructions.** System manufacturers and designers have found DensDeck® to be compatible with bonding adhesives for fully adhered single-ply membrane applications.

The DensDeck® panel's exceptional moisture resistance and low R-value make it the preferred substrate for vapor retarders.

Having excellent fire resistance, DensDeck® Roof Board features a noncombustible core and fiberglass mat that offers greater fire protection than other conventional commercial roofing products when applied over combustible roof decks and steel decks. DensDeck® Roof Boards are FM tested and approved as the only 1/2" (13 mm) gypsum product to meet the calorimeter requirements for conventionally insulated decks. Tested in accordance with ASTM E84, its surface burning characteristics are Flame Spread-0 and Smoke Developed-0. 5/8" (16 mm) DensDeck® panels can replace any generic type X gypsum board in any roof assembly in the UL Fire Resistance Directory under the prefix "P."

Limitations

DensDeck® Roof Boards are designed to act with a properly designed roof system. The actual use of DensDeck® Roof Board as a roofing component is the responsibility of the roofing system's designing authority.

Conditions beyond the control of Georgia-Pacific Gypsum such as weather conditions, dew, application temperatures, and techniques may cause adverse effects with adhered roofing systems. Always consult the roofing system manufacturer's specific instructions for applying the various roofing types to DensDeck® Roof Board.

Panels must be kept dry before, during, and after installation. Apply only as much DensDeck® Roof Board as can be covered by a roof membrane system in the same day.

Accumulation of water due to leaks or condensation in or on DensDeck® Roof Boards must be avoided during construction and after construction. Avoid over-use of non-vented direct-fired heaters during winter months. Avoid application of DensDeck® Roof Board during rains, heavy fogs, and other conditions that may deposit moisture on the surface. When applying solvent-based adhesives or primers, allow sufficient time for the solvent to flash off to avoid damage to roofing components. Maximum flute span is 2-5/8" (67 mm) for 1/4" (6 mm) DensDeck®; 5" (127 mm) for 1/2" (13 mm) DensDeck®.

Hot Mopping over DensDeck® Roof Boards:

For hot mopping asphalt or coal tar directly to DensDeck® Prime Roof Board, follow the manufacturer's recommended system application temperature guidelines and good roofing practices. DensDeck® Prime Roof Board is the preferred substrate for torch application. However, the product must be dry prior to commencing installation of torch application.

- Ensure product is dry. Ensure proper torching technique.
- Limit the heat to the roof board. Maintain a majority of the torch flame directly on the roll.
- When using DensDeck® Roof Board in lieu of DensDeck® Prime Roof Board, prime the surface of the DensDeck® Roof Board and allow to dry thoroughly.
- When torching to DensDeck® Prime Roof Boards, field priming should not be required.

Note: DensDeck® is a registered trademark of Georgia Pacific.

Product Specifications (nominal)

Thickness	1/4" – 6 mm; 1/2" – 13 mm; 5/8" – 16 mm Fireguard® Type X
Widths	4' – 1.22 mm standard, 1/8" – 3 mm tolerance
Lengths	8' – 2.44 mm standard, tolerance 1/4" – 6 mm; Optional: 4' – 1.22 mm available
Edges	Square
Spanning	1/4" (6 mm) DensDeck® spans flute widths up to 2 5/8" (67 mm)
	1/2" (13 mm) DensDeck® spans flute widths up to 5" (127 mm)
	5/8" (16 mm) DensDeck® spans flutes up to 8' wide (203 mm)



DENSDECK®

ROOF BOARD (2 of 2)



133 Peachtree Street, N.E.
Atlanta, GA 30303
Technical: 1-800-225-6119

Technical Data

Flame spread 0, smoke developed 0, when tested in accordance with ASTM E84 or CAN/ULC-S102. Noncombustible when tested in accordance with ASTM E136. DensDeck® Fireguard®: UL Classified when tested in accordance with ASTM E119. 1/4" (6 mm) DensDeck® panels have been tested by Factory Mutual for 60 psf and 90 psf wind uplift for BUR, EPDM, thermoplastics, and modified bitumen roof systems. Higher wind uplift ratings have been achieved by numerous membrane manufacturers using DensDeck® in their FM-approved construction designs.

Installation

- DensDeck® panels should be used with fasteners specified in accordance with FM requirements and roof membrane manufacturer's written recommendations.
- For wind uplift/FMRC compliance where DensDeck® Roof Boards are mechanically attached to metal decks, DensDeck® Roof Boards shall be installed to the specifics of the FMRC design assembly.
- For installations involving BUR, EPDM, thermoplastics, and modified bitumen roof systems, call GP's Technical Hotline at 1-800-225-6119 for fastener patterns of GP's FM uplift assemblies.
- In accordance with approved shop drawings, FM-approved fasteners shall be installed with plates through the DensDeck® panels, flush with the surface.
- Where DensDeck® is installed over combustible wood decks or insulation, all joints should be staggered. The optional separator sheet should be installed prior to the installation of DensDeck® Roof Boards.
- Edge joints should be located on, and parallel to, deck ribs. End joints of adjacent lengths of DensDeck® should be staggered.
- DensDeck® shall be installed with ends and edges butted tightly.
- DensDeck® is manufactured to meet ASTM C1177.

PHYSICAL PROPERTIES

PROPERTIES	1/4" (6.4 mm)	1/2" (12.7 mm)	5/8" (15.9 mm)
Thickness, nominal	1/4" (6.4 mm) ± 1/16" (1.6 mm)	1/2" (12.7 mm) ± 1/32" (0.8 mm)	5/8" (15.9 mm) ± 1/32" (0.8 mm)
Width, standard	4' (1,219 mm) ± 1/8" (3 mm)	4' (1,219 mm) ± 1/8" (3 mm)	4' (1,219 mm) ± 1/8" (3 mm)
Length, standard	8' (1,219 mm) ± 1/4" (6.4 mm)	8' (2,438 mm) ± 1/4" (6.4 mm)	8' (2,438 mm) ± 1/4" (6.4 mm)
Weight nominal, lbs./sq. ft. (Kg/m ²) ⁷	1.2 (5.9)	2.0 (9.8)	2.5 (12.2)
Surfacing	Fiberglass mat	Fiberglass mat	Fiberglass mat
Flexural Strength ¹ , parallel, lbf. min. (N)	≥40 (178)	≥80 (356)	≥100 (444)
Flute Spanability ²	2 ⁵ / ₈ " (67 mm)	5" (127 mm)	8" (203 mm)
Permeance ³ , perms (ng/Pa•S•m ²) >	50 (>2850)	>35 (>1995)	>32 (>1824)
R Value ⁴ , ft ² •°F•hr/BTU (m ² •K/W)	.28	.56	.67
Lineal Variation with Change in Temp., in/in °F (mm/mm°C)	8.5x10 ⁶ (15.3x10 ⁶)	8.5x10 ⁶ (15.3x10 ⁶)	8.5x10 ⁶ (15.3x10 ⁶)
Lineal Variation with Change in Moisture	6.25x10 ⁶	6.25x10 ⁶	6.25x10 ⁶
Water Absorption ⁵ , % max	<10.0	<10.0	<10.0
Compressive Strength ⁶ , psi nominal	900	900	900
Surface Water Absorption, grams, nominal ¹	<2.5	<2.5	<2.5
Flame Spread, Smoke Developed (ASTM E84, UL 723, CAN/ULC-S102)	0/0	0/0	0/0
Fire Classification	UL Classified FM Approvals	UL Classified FM Approvals	UL Classified FM Approvals
Bending Radius	5' (1,524 mm)	8' (2,438 mm)	12' (3,658 mm)

¹ Tested in accordance with ASTM C473, method B.

² Tested in accordance with ASTM E661.

³ Tested in accordance with ASTM E96 (dry cup method).

⁴ Tested in accordance with ASTM C518 (heat flow meter).

⁵ Specified values per ASTM C1177.

⁶ Tested in accordance with ASTM C473.

⁷ Represents approximate weight for design and shipping purposes. Actual weight may vary based on manufacturing location and other factors.

MOLD RESISTANCE. When tested, as manufactured, in accordance with ASTM D3273, DensDeck® Roof Boards have scored a 10, the highest level of performance for mold resistance under the ASTM D3273 test method. The score of 10, in the ASTM D3273 test, indicates no mold growth in a 4-week controlled laboratory test. The mold resistance of any building product when used in actual job site conditions may not produce the same results as were achieved in the controlled, laboratory setting. No material can be considered mold proof. For additional information, go to www.buildgpc.com/safetyinfo.

EDGE DETAIL

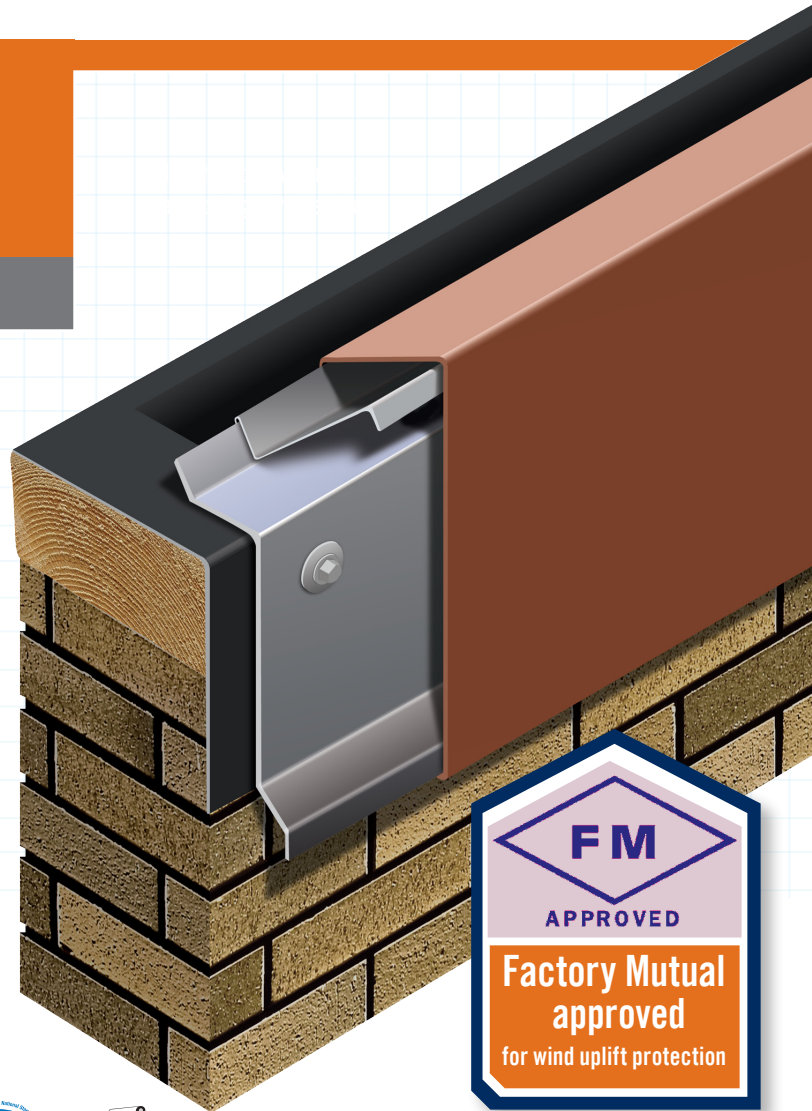
All new exterior edge flashing should be prefabricated FM Approved for at least **135** psf field roof and installed in accordance with FM Global Property Loss Prevention Data Sheet 1-49, *Perimeter Flashing*, manufacturer's guidelines and the current FM Global RoofNav approval listing. Proposals should include utilizing the following "Edge 1" system, or similar, for all edge detail. Furnish and install new wood blocking installed on top of the parapet wall utilizing FM required fasteners guidelines to provide proper inside slope below the new membrane and metal edge.

Edge Systems **ONE** ECONOMICAL | FAST | TESTED

One Edge

A High Performance System at an **Economical Price**

- ▶ Try Edge Systems One's quick-to-ship products and see how Metal-Era can help to deliver your project
ON TIME AND ON BUDGET.



High Quality

- ▶ Carefully designed and ANSI/SPRI/FM 4435/ES-1 tested to comply with the International Building Code
- ▶ Available in 15 popular express colors or custom finishes with a 30-year warranty
- ▶ Available in galvanized steel
- ▶ 20-year, 120 mph warranty
- ▶ Factory Mutual approved for wind uplift protection

Economical

- ▶ Lower price than other customized solutions
- ▶ Decreased labor costs due to easy installation
- ▶ Higher overall profit on your construction projects

Easy Installation

- ▶ Manufactured in 12' lengths, saving 20% - 40% in material handling when compared to 10' or 8' material
- ▶ No need for stripping-in or heat welding that are typical with other systems
- ▶ Simple snap-on cover with no crimping necessary

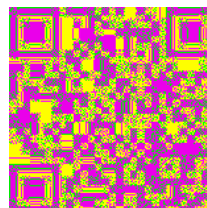
Versions

- ▶ Built-Up or Modified
- ▶ Fully Adhered or Mechanically Attached Single-Ply



With Metal-Era's SPEQ promise of speed, protection, expertise and quality, you are assured that Edge Systems One is backed with quality and service guarantees.

800-558-2162
www.metalera.com

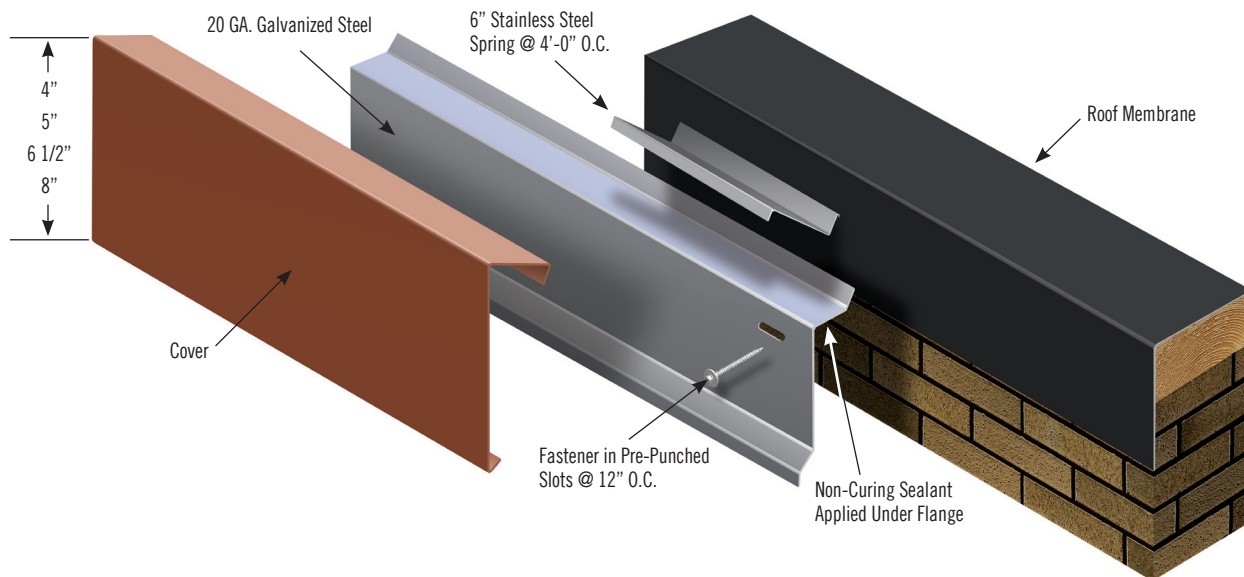


Scan to watch how Edge Systems One compares to shop fabrication.

Quick Shipping in 15 Express Colors

Standard and custom finishes are also available to meet your needs. Our finishes are made of Valspar's Fluropon® high performance Hylar 5000®/Kynar 500® finish and include a 30-year warranty. For the most accurate color representation, contact us to request a paint chip.

Call us at 800-558-2162 for lead times on your next project.



5-Step Easy Installation

Step 1	Step 2	Step 3	Step 4	Step 5
<p>Place membrane over roof edge, fully covering nailer</p>	<p>Apply sealant to rail (rail shown with inside face up)</p>	<p>Fasten base rail to nailer through provided slots</p>	<p>Place spring clips every 4' o.c., typical</p>	<p>Remove protective film from cover then snap onto base rail</p>

Plytanium® plywood sheathing is ideal for residential and light commercial construction, and provides outstanding performance for walls and roofs. It adds proven performance and durability to new homes, room additions and renovations.

Available Sizes (Sized for 4' x 8')

Square Edge 3'-11⁷/₈" (1.216 m) x 7'-11⁷/₈" (2.435 m)

Building Code Performance Categories, Panel Thickness

- 3/8 CAT, 0.354" (8.99 mm)
- 15/32 CAT (3-ply), 0.451" (11.45 mm)
- 15/32 CAT (4-ply), 0.451" (11.45 mm)
- 19/32 CAT, 0.578" (14.68 mm)
- 23/32 CAT, 0.703" (17.85 mm)

Specifications

Length/Width Tolerance +0, -1/16" (+0, -1.6 mm)

Straightness Tolerance ±1/16" (±1.6 mm)

Squareness Tolerance ±1/8" (±3.2 mm)

Primary Species Southern Yellow Pine

Testing Agency APA®-The Engineered Wood Association

Classifications **Exposure 1** – Plywood suitable for uses not permanently exposed to the weather. Panels classified as Exposure 1 are intended to resist the effects of moisture on structural performance as may occur due to construction delays, or other conditions of similar severity.

Code Fire Classification Class III or C

Flame Spread Rating 76-200, smoke-developed index <450

Building Code Compliance PS 1-09 or PS 2-10

Other Information

Forestry Certification Plytanium plywood panels are made from wood sourced through a system that is third-party certified to the Sustainable Forestry Initiative® procurement standard.



Green Building Programs See our Plytanium plywood *Sustainability Fact Sheet* available at www.builditbetter.com for more information on potential point contributions towards specific green building programs.

NGBS Green Certified Plytanium plywood is Home Innovation NGBS Green Certified for Resource Efficiency and Indoor Environmental Quality. Please visit Homeinnovation.com/Green for more information.



Product Warranty Plytanium® plywood is covered by a Lifetime Limited Warranty. For terms and conditions, please refer to our Lifetime Limited Warranty available at www.builditbetter.com.

International Shipping

To prevent the introduction and spread of plant pests, *ISPM 15: International Standards for Phytosanitary Measures*, requires that internationally shipped solid wood pallets be debarked, treated with heat or fumigated with methyl bromide, and marked with a seal of compliance. **Pallets made with engineered wood, including Plytanium plywood, are exempt from ISPM 15 regulations.** This is because the process of manufacturing engineered wood destroys any live organisms in the wood. (Source: “Boxes, Crate and Reel Manufacturing,” www.PerformancePanels.com)

Formaldehyde Emissions

Plytanium plywood contains no added urea formaldehyde resins. PS 1 and PS 2 structural panels are exempt from testing by the California Air Resources Board (CARB) in the *Composite Wood Air Toxic Control Measure (ATCM)* and phenolic bonded structural panels are exempt from testing or monitoring by HUD in the *Manufactured Home Construction and Safety Standards*.

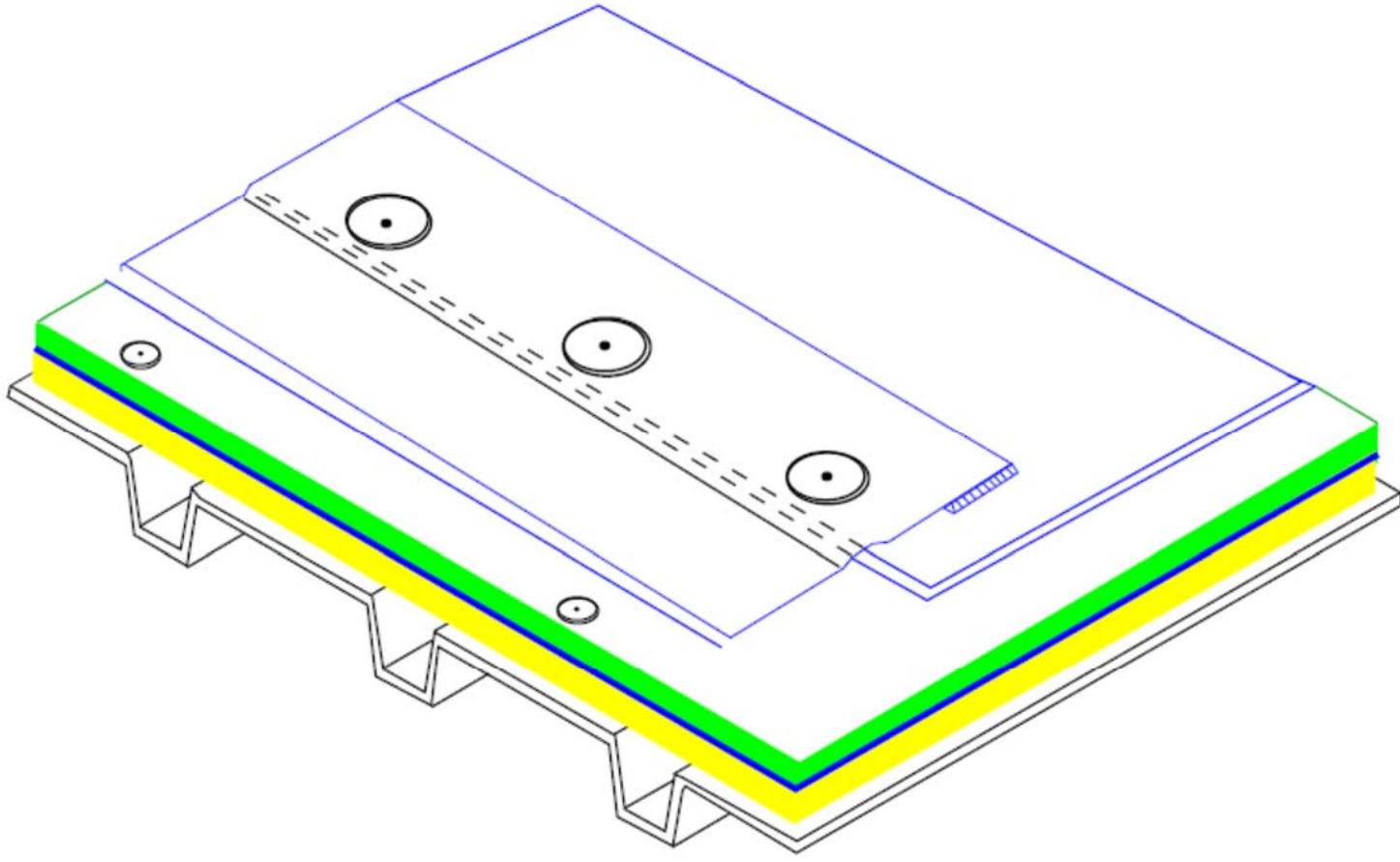
Manufacturing Locations

Location	APA Mill Number	Zip Code	Harvest Radius
Camden, TX	515	75934	90 miles
Corrigan, TX	516	75939	90 miles
Dudley, NC	348	28333	80 miles
Emporia, VA	230	23847	40 miles
Gurdon, AR	517	71743	60 miles
Madison, GA	404	30650	100 miles
Prosperity, SC	329	29127	80 miles
Taylorville, MS	282	39168	50 miles
Warm Springs, GA	324	31830	450 miles

REV. NO.	DESCRIPTION	DATE	BY
NA	BID SET	05/19/20	PKJ

CLIENT:
MILWAUKEE BREWERS

PROJECT:
MILWAUKEE BREWERS
1 Brewers Way, Milwaukee, WI 53214



A

ROOF SYSTEM CROSS SECTION