Winston Towers 100

Scope of Work, Data Sheets,

Roof Plan, & Details

Winston Towers Scope of Work:

1. On all concrete roof deck areas, completely remove the existing roof components down to the concrete substrate including all base flashing membranes as well as all existing metal flashings that are associated with the existing roof systems. Dispose of roof removal debris and its components as per Florida State and Local Requirements. This roof is to be a complete roof removal and complete roof replacement over the concrete deck areas.
2. Provide and Install a Temp Roof/Vapor Barrier w/ Walls and Curbs using Sure MB 90TG Smooth Modified.
3. Over the entire prepared concrete substrate, install a 1/8" Tapered insulation w/ 25 PSI Insulfoam Type IX 2# starting at minimum 1.5" thickness at drain.
4. Contractor is responsible for installing crickets and saddles where needed to alleviate ponding water around curbs, drains, and areas that may pond water in order that all areas of the new roof will be covered under the manufacturer's warranty and conform to the HVHZ Florida Building Code 2020 Requirements.
5. TPO Membrane to be Carlisle 60 Mil fully adhered in Cav Grip III Bonding Adhesive.
6. Walls to be primed with Cav Grip III
7. All accessories must be Carlisle Prefabricated products. Including Pitch Pockets, Pipe boots.
8. Resize all Existing Primary Scuppers (6) to meet current FBC Standards.
9. Cut New Primary (___) and Secondary Scuppers (___) to meet current FBC Standards.

10. Install Wall Flashing to be carried up and over parapet walls wherepossible. There should be a 24-gauge stainless steel w/ a 22-gauge stainless steel continuous cleat.

10. Install a new pressure treated wood nailer at all Coping Caps.
11. Install Stainless Steel at all walls, curbs, andscuppers
12. Where coping caps cannot be utilized, install a 2 piece (Reglet/Fry Reglet) stainless steel counter flashing. (Stucco & paint byOthers)

13. Above the perimeter counterflashing. Provide a Liquid applied Waterproofing to prepared concrete substrate. (Recommended usage: (Tropical 911 Elastomeric Coating or Equal)
14. Install new curb expansion joints with new wood nailers & a new stainless steel coping cap.
15. Provide and install drain-clamping rings and drain domes at all drain locations.
16. Provide and install sacrificial pads for portable pipehangars.
17. Provide Contractor's five (5) year roofing labor and sheet metal warranty and manufacturer's twenty (20 NDL) Warranty.
18. Provide necessary maintenance for 5 years to maintain a contractor warranty.

Coal Tar Pitch Gide Specification

Remove existing roofing and insulation to concrete deck.
Prepare deck to receive new assembly.
Prime deck with asphalt primer.
Install one (1) ply modified bitumen secondary membrane.
Install 1.5" Isocyanurate insulation in hot asphalt.
Install 1⁄2" wood fiberboard insulation in hot asphalt.
Install Durapax fiberglass base in hot asphalt.
Install two (2) plies Durapax # 15 tarred organic felt in coal tar pitch.
Install one (1) ply of Targlass (IV) in coal tar pitch.

Final surfacing shall consist of a flood coat of coal tar pitch with embedded aggregate.
Include new # 316 stainless steel – 24 gauge; gutter, downspouts, conductor heads, stucco stop, overflow scuppers.
Include new drain rings, domes, and hardware.
Walk pads to be installed at service side of HVAC equipment.
New code compliant supports at condensate lines.
Include in bid cost of revising overflow scuppers to accommodate new insulation.
Include in bid cost to raise all roof top equipment to accommodate new insulation.
Include roofing manufacturer's twenty (20) year no dollar limit Labor and Material
Warranty.
Include contractors' two (2) year Labor and Material Warranty.

CARLISLE SYNTEC SYSTEMS

Flexible FAST™ Dual Tank Adhesive

Overview

Carlisle's Flexible FAST Dual Tank Adhesive is a two-component, construction-grade, low-rise polyurethane adhesive designed for bonding Carlisle's FleeceBACK® membranes and/or insulation to various substrates.

Flexible FAST Dual Tank Adhesive is compatible with: HP Recovery Board, InsulBase® Polyiso, SecurShield® Polyiso, SecurShield HD, SecurShield CD, SecurShield HD Plus, expanded polystyrene (EPS), extruded polystyrene (XPS), spray polyurethane foam (new or scarified SPF), DensDeck®, SECUROCK®, and Stormbase®.

Compatible deck types include: concrete, cellular lightweight concrete (LWC), gypsum, cementitious wood fiber, wood, and painted or galvanized steel.

Flexible FAST Dual Tank Adhesive is also compatible with the following roofing materials: smooth (previously exposed) BUR, mineral cap sheets, smooth (previously exposed) or granulated mod bit, aged EPDM, aged Hypalon®, and Carlisle's VapAir Seal™ 725TR Air and Vapor Barrier.

Splatter application not approved for applications over 5,000 feet above sea level. Contact Carlisle for all bead applications over 5,000 feet above sea level.

Flexible FAST EU Dual Tanks meet the requirements for pressurized tanks for the European Union. The features, benefits, installation, storage, and precaution criteria listed on this PDS also apply to Flexible FAST EU Dual Tanks.

Features and Benefits

- VOC-compliant, self-contained system
- Quick, quiet, low-odor application
- Superior wind uplift resistance
- Added puncture resistance of 33–50% compared to standard competitive 2-component low-rise adhesives
- Added elongation of up to 150%
- FM approved

Productivity Boosting Features and Benefits:

- Self-contained set includes spray tips, guns, nozzles extensions, and hoses in A-side box
- Reduces labor by eliminating equipment maintenance and breakdowns
- Application time reduced up to 15% when compared to low-pressure dispensing machines
- Increased productivity when Dual Tanks are used simultaneously (each additional Dual Tank can increase productivity up to 100%)
- Reduces membrane application time up to 60% when compared to traditional installation using bonding adhesives on non-FleeceBACK systems

Coverage Rate

FleeceBACK membrane or insulation attachment to lightweight concrete, concrete, plywood and OSB, plank wood, steel, smooth BUR, mod-bit, mineral cap sheets, SPF, or multiple layers of insulation:

(Application rates may vary depending on ambient temperatures, surface, and substrate absorption rate.)

Approximate Coverage Rate (Sq. Ft.)	Splatter	4" o.c.	6" o.c.	12" o.c.
	2,000-2,200	1,000-1,200	1,500-1,700	3,000-3,200

*Splatter approved for membrane attachment to smooth flat surfaces only.

May vary depending on climate, temperature, humidity, and equipment. Please consult Carlisle for project-specific bead widths and spacing.

Application

Substrate Preparation

1. The surface to which adhesive is to be applied shall be dry, free of fins, protrusions, sharp edges, loose or foreign material, oil, and grease. Depressions greater than ¼" shall be filled with adhesive or other approved patching material. All sharp projections shall be removed.
2. Seal gap between the wall/penetrations and concrete deck with VapAir Seal 725TR, Flashing Foam, or other suitable material to avoid condensation or air infiltration issues.
3. Apply Flexible FAST Dual Tank Adhesive when substrate and ambient temperature are 25°F or above.

Flexible FAST Dual Tank Adhesive

4. Bead spacing is minimum. Depending on warranty length and wind coverage, ribbon spacing may be reduced. Refer to published specification and warranty.

Setup

Note: When spraying the dispensing unit for the first time, or when starting a new kit, Carlisle recommends that users trigger the gun only a quarter to halfway open until the desired output and spray pattern is achieved. This allows complete control of the flow rate and spray pattern that best fits the application.

1. Spray gloves, long sleeves, and protective glasses should be worn during setup and dispensing.
2. For best results, use when material is between 70°F and 90°F. Clean grease, oil, dirt, and water off surfaces to be foamed. Shake kits for 15–20 seconds before use.
3. Connect hoses to tanks prior to opening the A and B tank valves.
4. Before attaching the nozzle to the dispensing unit, apply a generous amount of petroleum jelly to the face. This will help to prevent contamination by cured foam or chemicals and will help to keep the sealing ports clean. Detailed instructions for attaching the nozzle are included in packaging for A-side tanks.
5. **When applying Flexible FAST Dual Tank Adhesive as a bead, the 14" extension nozzle is required and must be attached to the end of the gun tip before dispensing adhesive. Attach the nozzle extension by rotating the extension tip clockwise onto the end of the gun tip.**
6. **When applying Flexible FAST Dual Tank Adhesive as a splatter application, the 14" extension nozzle should not be used. Splatter application can be achieved by triggering the gun from a distance of 2'–3' off the deck. Adhesive should be dispersed using a horizontal back and forth motion, achieving 50% coverage of the substrate at 3.75 lbs/sq.**
7. Once the trigger is released, it MUST BE REACTIVATED WITHIN 15 SECONDS or a new nozzle must be installed. Failure to do this could result in chemical leakage, spills, or splashes which can ruin the dispensing unit and/or hoses.
8. After releasing the trigger, activate the trigger safety to prevent accidental discharge.
9. The dispensing unit face can be kept clean by using petroleum jelly on the face or using a soft cloth to remove residue.
10. Do not remove the hoses from tanks. Do not flush or clean hoses with air, water, or solvent. Removing and/or cleaning the hoses will compromise the foam.
11. When storing or using adhesive in temperatures below 40°F, the adhesive internal temperature must be returned to 70°F prior to use. Placing adhesive in a heated area (70–90°F) for 4 hours should allow liquid adhesive to reach 70–90°F.
12. In colder temperatures, it is recommended to utilize heated blankets to ensure the tanks are kept warm while dispensing the product.
13. **When temperates are in excess of 90°F (32°C), utilize white membrane or material to shield the drums from direct sunlight.**

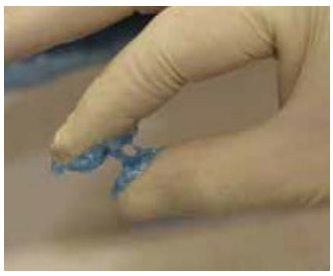
Storage

1. Close tank valves.
2. Do not store at temperatures above 100°F or below 50°F.
3. The used nozzle should be removed and the dispensing unit should be cleaned with a splice wipe to help keep outlet ports clean and free from any dust, dirt, or chemicals that can affect the proper sealing of the nozzle. ALWAYS engage the trigger safety and close all supply valves during storage. Do not purge adhesive from hose.
4. Do not remove the hoses from tanks. Do not flush or clean hoses with air, water, or solvent. Removing and/or cleaning the hoses will compromise the foam.

Application of petroleum jelly to spray gun

Shaking of A-side and B-side tanks

Apply using extension nozzle



Performing the string-time test

Re-use of Dispensing Unit After Storage

1. Check the face of the dispensing unit to ensure outlet ports are clear and the face of the unit is free from dirt, chemicals, or other debris. If necessary, use a soft cloth or rag to remove any cured foam or chemicals from the face of the dispensing unit. The use of petroleum jelly is recommended to cover the face of the dispensing unit to prevent further contamination or if chemical is accidentally leaked into this area.
2. Attach a new or cleaned nozzle to the dispensing unit.
3. Shake kits for 15–20 seconds before use.

FleeceBACK Membrane Attachment
Slide-in Method:

1. Unroll FleeceBACK sheet and position. Fold the sheet back in half lengthwise (end-to-end).
2. Dispense Flexible FAST Adhesive to the substrate.
   - For splatter applications, splatter adhesive to obtain 50% coverage. Ensure end laps are protected from adhesive.
   - For bead applications, apply at 4", 6", or 12" on center with a min. 1.5" wide foamed bead. Ensure end laps are protected from adhesive.
3. Once "string time" occurs, gradually feed FleeceBACK sheet into Flexible FAST Adhesive, checking for "string/body" every few feet. Stop feeding FleeceBACK sheet into adhesive when applicator reaches adhesive that has NOT developed "string/body". Immediately begin to roll membrane width-wise with a 150-lb. segmented weighted roller. Repeat process until FleeceBACK sheet is fully installed.

Roll-in (Mod Bit) Method:

1. Keeping the FleeceBACK sheet on the core, position roll of FleeceBACK membrane at the designated starting point.
2. Dispense Flexible FAST Adhesive to the substrate.
   - For splatter applications, splatter adhesive to obtain 50% coverage. Ensure end laps are protected from adhesive.
   - For bead applications, apply at 4", 6", or 12" on center with a min. 1.5" wide foamed bead. Ensure end laps are protected from adhesive.
3. Once "string time" occurs, gradually roll FleeceBACK membrane into Flexible FAST Adhesive, checking for "string/body" every few feet. Stop rolling FleeceBACK into adhesive when applicator reaches adhesive that has NOT developed "string/body". Immediately begin to roll membrane width-wise with a 150-lb. segmented weighted roller. Repeat process until FleeceBACK sheet is fully installed.

Insulation Attachment:

1. Dispense Flexible FAST Dual Tank Adhesive at the appropriate coverage rate. For steel decks, beads of adhesive must run parallel with, and be on top of, all of the flutes.
2. Place insulation boards (maximum 4'x4' insulation boards when adhesive is dispensed at 12" o.c. or when boards exceed 4" thickness, or 4'x 8' insulation boards when adhesive is applied at 4", or 6" beads) into adhesive after allowing it to rise and develop "string/body". String time will vary based on environmental conditions like temperature and humidity. Do not allow the adhesive to over-cure prior to setting insulation boards.
3. Bead spacing guidelines for 5-, 10-, or 15-year, 55-mph warranties are listed above. Previously unexposed asphalt must be primed with CAV-GRIP™ III.

Building Height	Bead Spacing (Perimeter)	Bead Spacing (Field)
0' – 25'	6" o.c. - 4'	12" o.c.
25' – 50'	6" o.c. - 8'	12" o.c.
50' – 75'	6" o.c. - 12'	12" o.c.
75' – 100'	6" o.c. - 16'	12" o.c.
100' or greater: Contact Carlisle for bead spacing requirements		

4. Designate one person to walk boards into place and then roll with a 150-lb. segmented roller 5 to 7 minutes from the initial adhesive application. Boards may be temporarily weighted or relief cut where necessary to keep boards in constant contact with the adhesive until adhesive is cured.
5. At the beginning of the insulation attachment process and periodically throughout the day, check the adhesion of boards to ensure a tight bond has been created and maximum contact has been achieved.

Review Carlisle specifications and details for complete application information.

Disposal Procedures:

1. Eye protection and impervious gloves MUST be worn during disposal procedures.
2. **DO NOT dispose of, puncture, or incinerate cylinder tanks while under pressure.**
3. When the job is completed or tanks are empty, pressure must be released from the tanks.
4. With the tank valves open, trigger Dual Tank gun open 100%, discharging remaining adhesive, as well as pressure and propellant, into a lined waste container.

Flexible FAST Dual Tank Adhesive

5. After cylinders are empty of all pressure and propellant, tanks must be vented. **CAUTION: tanks could still be under pressure.**
6. Close valves and release remaining pressure from hoses. Remove hoses, flip tank upside down, and with tank valve positioned AWAY from face and others, slowly reopen tank valve and allow excess pressure and or chemical to drain into a lined waste container and allow pressure to completely vent.

   CAUTION: All pressure MUST be vented 100%. Empty tanks could contain potential vapor toxicity hazard. Provide adequate ventilation or respiratory protection (consult SDS).
7. Once cylinder is empty and vented, carefully puncture the friable disc on the top of the cylinder. Cylinders should sit for 30 minutes prior to disposal.
8. DISPOSE OF EMPTY CYLINDERS AND EXCESS CHEMICAL ACCORDING TO APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
9. For recycling information, check with local municipality.

Precautions

» **Flexible FAST Dual Tank splatter application is NOT approved for walls.**

» Review the applicable Safety Data Sheet (SDS) for complete safety information prior to use.

» The foam produced is an organic material. It must be considered to be combustible and may constitute a fire hazard. Foam adhesive must not be left exposed or unprotected. Shield from heat and sparks.

» Do not smoke during application.

» Use with adequate ventilation. Avoid breathing vapors. Wear a NIOSH- or MSHA-approved respirator for organic vapors with prefilters and solvent-resistant cartridges if concentrations of MDI exceed the TLV or are unknown. Proper safety training is essential for all persons involved in the application process. If inhaled, remove to fresh air and administer oxygen if breathing is difficult. Consult a physician immediately.

» Avoid contact with eyes. Safety glasses or goggles are required. If splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.

» Avoid contact with skin. Wear long sleeves and pants. Wash thoroughly after handling. In case of contact with skin, thoroughly wash affected area with soap and water or corn oil.

NOTE: Nitrile gloves are required when handling Part A directly.

» Jobsite storage temperatures in excess of 90°F may affect product shelf life. Should the components be stored at temperatures lower than 70°F, restore to room temperature prior to use. Do not allow material to freeze.

» High-slope applications require adhesive to be applied to the back of the insulation board on a flat surface.

» REMOVE THE NOZZLE IMMEDIATELY when stopping or pausing for more than 15 seconds. Wipe opening with a clean rag and reinstall plastic stopper. When ready to restart application of adhesive, ensure openings in each side are clear and install new nozzle.

» KEEP OUT OF THE REACH OF CHILDREN.

» Splatter application not approved for applications over 5,000 feet above sea level.

» Contact Carlisle for bead applications over 5,000 feet above sea level

Typical Properties and Characteristics

	Dual Tank-A	Dual Tank-B
Base	Polymeric Isocyanate	Polyols, Surfactants, Catalyst
Viscosity (CPS@25°C)	400	400
Average Net Weight	9.88 lbs/gal	9.23 lbs/gal
Packaging	59 lbs (26.8kg))	57 lbs (25.8 kg)
Shelf Life	1 year	1 year

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

LEED® Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
Manufacturing Location	Tomball, TX

For more information on substrate compatibility, please refer to the chart found on the Flexible FAST Adhesive Product Data Sheet.

800-479-6832 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7053 | **www.carlislesyntec.com**

REPRINT CODE: 600168 - "Flexible FAST Dual Tank Adhesive Product Data Sheet"

InsulFoam IX · 25 PSI
MOISTURE RESISTANT INSULATION

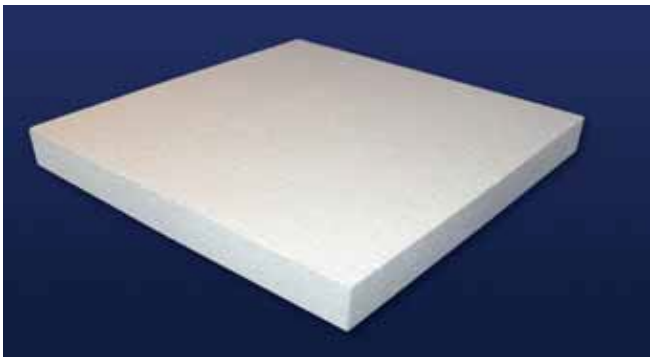
Description
InsulFoam IX is an engineered insulation consisting of a superior closed-cell, lightweight and resilient expanded polystyrene (EPS). InsulFoam IX meets or exceeds the requirements of ASTM C578, Type IX, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation. InsulFoam IX has a nominal density of 2.0 lb/ft^3. In addition, InsulFoam IX offers a long-term, stable R-value and has excellent dimensional stability, compressive strength and water resistance properties.

Uses
InsulFoam IX Insulation is successfully used in numerous commercial, industrial and residential applications. The following are examples of the many applications:

- Interior & Exterior Wall Insulation
- EIFS & Stucco Insulation
- Single-Ply Roof Insulation
- Roof Recover Board
- Continuous Below-Grade Insulation
- Foundation, Perimeter, Slab & Basement Insulation
- Retaining Walls
- Drainage Board
- Waterproofing Protection Board
- Freezers & Cold Storage

Advantages

- Environmentally Friendly. It does not contain any blowing agents, may contain recycled material, and is 100% recyclable if ever removed or replaced.
- Stable R-value. The product's thermal properties will remain stable over its entire service life. There is no thermal drift, so the product is eligible for an Insulfoam 20-year thermal performance warranty.
- Proven Performance. EPS has been manufactured using the same chemistry since the mid-1950s, providing proven performance.
- Water Resistance. InsulFoam IX does not readily absorb moisture from the environment.
- Code Approvals. Insulfoam insulations are recognized by the International Code Council Evaluation Service (ICC-ES), and have numerous Underwriters Laboratory and Factory Mutual Approvals. Please contact your local Insulfoam representative for details.



Sizes
InsulFoam IX is available in 4' x 4' and 4' x 8' standard sizes with thickness from ¼" to 40", and is readily available in custom lengths and widths with little to no impact on lead time. It is also available in tapered panels, with thickness from 0 (1/8" actual) to 40", and any slope per foot.

Typical Physical Properties

Property	Test Method	Value
Density (nom. pcf)	ASTM C303	2.00
C-Value (Conductance) - per inch BTU/(hr•ft^2•°F)	ASTM C518 or ASTM C177	
@ 25 °F		0.200
@ 40 °F		0.210
@ 75 °F		0.230
R-value (Resistance) - per inch (hr•ft2•°F)/BTU	ASTM C518 or ASTM C177	
@ 25 °F		5.00
@ 40 °F		4.76
@ 75 °F		4.35
Compressive Strength (psi, 10% deformation)	ASTM D1621	25
Flexural Strength (min. psi)	ASTM C203	50
Dimensional Stability (maximum %)	ASTM D2126	2.0
Water Vapor Permeance (max. perm., 1 inch)	ASTM E96	2.0
Water Absorption (max. % vol.)	ASTM C272	2.0
Capillarity	–	none
Flame Spread	ASTM E84	< 20
Smoke Developed	ASTM E84	150-300

*Properties are based on data provided by resin manufacturers, independent test agencies and Insulfoam.

INSULATION ENGINEERED TO MAKE A DIFFERENCE.

INSULFOAM®
ROOF INSULATION SYSTEMS

PREMIUM TAPERED INSULATION

Description

InsulFoam Taper is an engineered insulation consisting of a superior closed-cell, lightweight expanded polystyrene (EPS). InsulFoam Taper is cut from the same high-quality EPS as our flat InsulRoof products, and meets or exceeds the requirements of ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation. InsulFoam Taper offers a long-term, stable R-value and has excellent dimensional stability, compressive strength and water resistance properties.

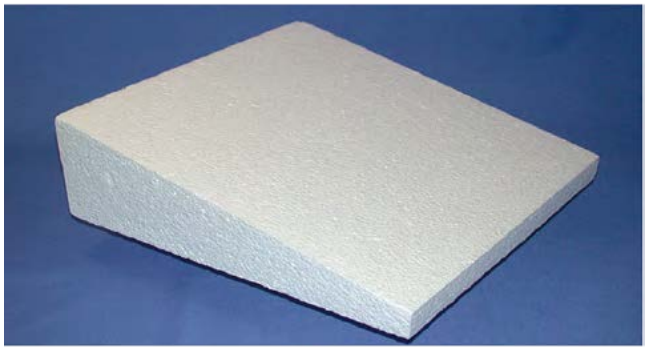
Uses

InsulFoam Taper is well-suited for single-ply roof applications that employ ballasted, mechanically fastened TPO, PVC, EPDM and CSPE with a slip sheet, as well as low-sloped built-up, modified bitumen and fully adhered single-ply roofs that incorporate cover boards. Consult local building codes and membrane manufacturers for system requirements.

Advantages

- Labor Savings. There are no complicated filler panel systems. InsulFoam Taper can be installed in a single layer for thicknesses up to 40", and is significantly more cost-effective than extruded polystyrene, perlite and isocyanurate tapered systems.
- Promotes Positive Drainage. InsulFoam Taper is the ideal insulation for both new construction and re-roofing projects in which positive slope is desired or ponded water is a concern.
- Environmentally Friendly. InsulFoam Taper does not contain any ozone-depleting blowing agents, may contain recycled material, and is 100% recyclable if ever removed or replaced.
- Stable R-value. The product's thermal properties will remain stable over its entire service life. There is no thermal drift, so the product is eligible for an Insulfoam 20-year thermal performance warranty.
- Proven Performance. EPS has been manufactured using the same chemistry since the mid-1950s, providing proven performance.
- Water Resistance. InsulFoam Taper does not readily absorb moisture from the environment.
- Code Approvals. Insulfoam insulations are recognized by the International Code Council Evaluation Service (ICC-ES), and have numerous Underwriters Laboratory and Factory Mutual Approvals. Please contact your local Insulfoam representative for details.

PREDICTABLY **CONSISTENT** VALUE.



Sizes

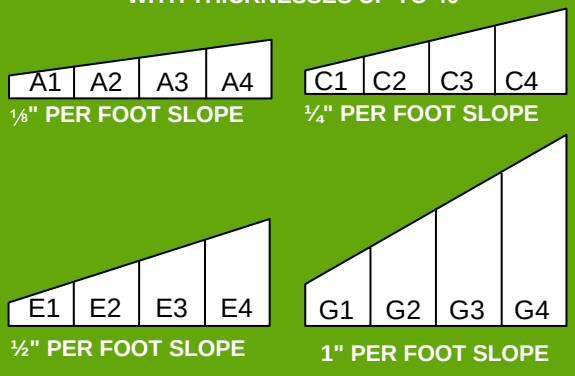
InsulFoam Taper is available in 4' x 4' and 4' x 8' panels with thickness from 0 (⅛" actual) to 40" in a single layer. There are no limitations to available slope per foot.

Typical Tested Physical Properties

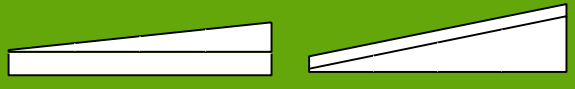
For typical tested physical properties, please refer to the corresponding flat InsulFoam Data Sheet.

SAMPLE SLOPE CROSS SECTIONS
1/8" to 1" Per Foot Slopes

*** NO SEPARATE FILLER PANELS REQUIRED WITH THICKNESSES UP TO 40"**



SAMPLE HYBRID CROSS SECTIONS
1/8" to 1" Per Foot Slopes



INSULATION ENGINEERED TO MAKE A DIFFERENCE.

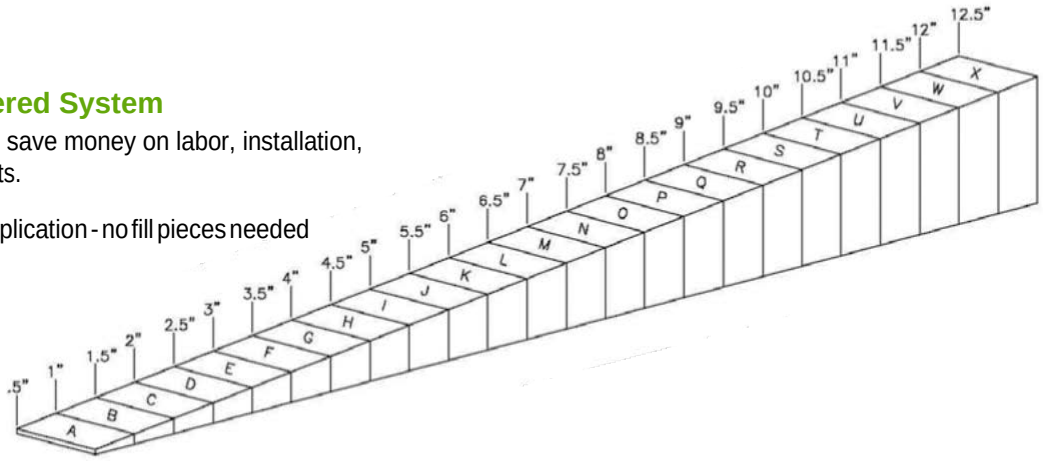
INSULFOAM®
ROOF INSULATION SYSTEMS

PREMIUM TAPERED INSULATION

Insulfoam EPS Tapered System

Use InsulFoam Taper and save money on labor, installation, adhesives and material costs.

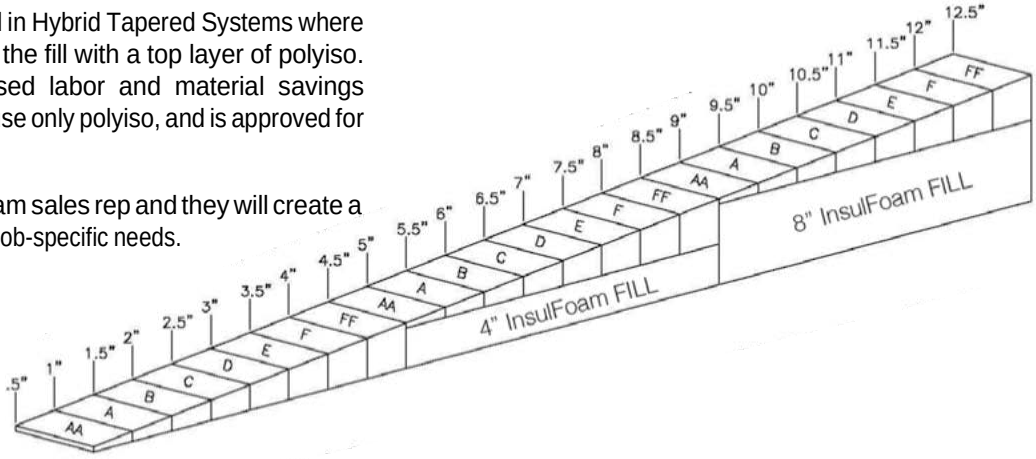
- 0-40" in a single layer application - no fill pieces needed
- no limitations on slope



Hybrid Tapered System

Insulfoam EPS is approved in Hybrid Tapered Systems where the InsulFoam is used as the fill with a top layer of polyiso. This system has increased labor and material savings compared to systems that use only polyiso, and is approved for fully adhered systems.

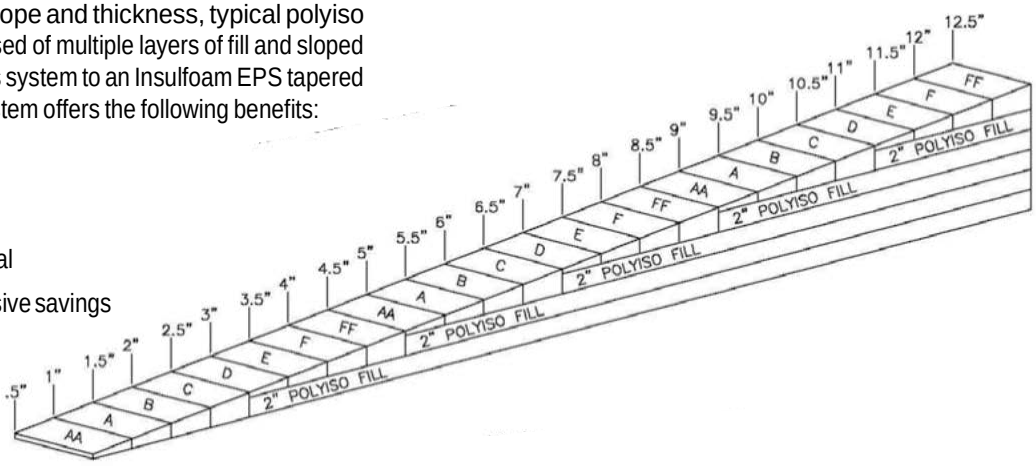
Contact your local Insulfoam sales rep and they will create a custom design to meet your job-specific needs.



Typical Polyiso Tapered System

Due to the limitations on slope and thickness, typical polyiso tapered systems are comprised of multiple layers of fill and sloped panels. When comparing this system to an Insulfoam EPS tapered system, the EPS tapered system offers the following benefits:

- Fewer installed panels
- Less complex system
- Less expensive fill material
- Labor, material and adhesive savings



INSULATION ENGINEERED TO MAKE A DIFFERENCE.

CARLISLE SYNTEC SYSTEMS

CAV-GRIP® III Adhesive/Primer

HFC-FREE

Overview

Carlisle's CAV-GRIP III is a low-VOC (<250 g/L), California-compliant, spray applied aerosol contact adhesive and primer used for a variety of applications: adhering standard TPO and EPDM membranes to horizontal and vertical surfaces, adhering FleeceBACK membranes to vertical surfaces, as a primer for VapAir Seal 725TR, and as an unexposed asphalt primer for Flexible FAST. CAV-GRIP III is available in disposable/recyclable #40 size cylinders and in returnable/refillable #85 size cylinders.

CAV-GRIP III is applied using a self-contained spray system for quick and even coverage with an excellent open time and requires minimal clean-up or maintenance. A spray gun with an extension wand is available for field of roof applications and a standard spray gun is available for wall applications. CAV-GRIP III Spray guns and hoses are sold separately.

Productivity Boosting Features and Benefits:

- Quick application with spray gun
- Fast flash-off and great open time
- No stirring
- Up to 60% labor savings compared to traditional bonding adhesive
- Compatible with 5' and 10' (1.5m and 3m) wide spray carts

Features and Benefits

- Excellent option for adhering TPO and EPDM to horizontal and vertical surfaces and all FleeceBACK membranes to vertical surfaces
- Can be used in temperatures as low as 25°F (-4°C) when used as an adhesive and 15°F (-9°C) when used as a primer.
- Easy setup
- Easy cleanup
- Low odor

Acceptable Membranes and Applications

Membrane	Wall	Field
TPO	P	P
EPDM	P	P
PVC	X	X
FleeceBACK	P	X

Installation

1. Connect spray gun to hose and connect hose to cylinder. Use lithium grease or petroleum jelly on all fittings and be careful to avoid cross-threading. Open valve on cylinder to check fittings for leaks. **Keep cylinder valve open to maintain pressure in the hose/spray gun when not in use.**
2. CAV-GRIP III can be applied at ambient temperature of 25°F (-4°C) and above. **Propellant in cylinders must be kept above 70°F (21°C) for the product to spray properly. Utilize power-heated blankets and hot boxes when necessary. Ensure that cylinder temperatures stay below 110°F (43°C).** Substrate shall be clean, dry, and free of debris and contaminants.
3. For applications taking place in ambient temperature below 70°F (21°C), store cylinders in heated space and move to project area during application. Cylinders must be kept warm on the jobsite. Dispense product from cylinder while it is still warm. When product in cylinder becomes too cold, it will begin to spit rather than spray. If this occurs, swap cold cylinder for warmer one and return cold cylinder to heated area. When changing cylinder, close the valve on the cylinder and depressurize the hose. Remove the hose and attach to the new cylinder. Open valve and do a test spray.
4. Apply CAV-GRIP III in an even coat to substrate (refer to the drawing on page 3), keeping the spray tip approximately 12" (30cm) away and perpendicular to the surface during spray. Avoid high thickness buildup that can skin over, trap solvent, and create a blister.

CAV-GRIP III Adhesive/Primer

5. Allow heavy areas of CAV-GRIP III to flash-off until it does not transfer to your finger when touched and pushed. Limit application of CAV-GRIP III to surfaces that will be covered with membrane or Carlisle's VapAir Seal 725TR the same day.
6. Solvent flash-off can lower the surface temperature below the dew point causing moisture to form on the adhesive. Slide your hand across the flashed-off adhesive on the insulation or cover board to ensure moisture has evaporated and the adhesive surface is dry and tacky prior to installing the membrane.

Vertical Applications of Standard TPO, EPDM membrane, or any FleeceBACK membrane:

Acceptable substrates include: Carlisle's InsulBase® Polyiso, SecurShield® Polyiso, SecurShield HD, SecurShield HD Plus, DensDeck® Prime, SECUROCK®, OSB, plywood, metal, residual asphalt, and clean concrete block. To improve adhesion and reduce potential for asphalt bleed-through on vertical surfaces with residual asphalt, apply an initial "sealing" base coat of CAV-GRIP III and allow to flash off properly; then, apply a second coat of CAV-GRIP III to the vertical surface. Contact Carlisle before using on substrates other than those listed above.

There are no vertical height restrictions when using CAV-GRIP III.

1. Spray wall and back of the membrane, utilizing a 50% overlap spray pattern.
2. Do not apply adhesive to splice areas.
3. Allow adhesive to flash-off so that the adhesive will not transfer to your finger when touched and pushed.
4. Mate membrane with the wall from the center of the sheet towards the edges, smoothing by hand.
5. Broom the membrane with a soft-bristle broom.
6. Roll in with a hand roller or extendable floor roller.

Horizontal Application of Standard TPO and EPDM Membranes

Acceptable substrates include: Carlisle's InsulBase Polyiso, SecurShield Polyiso, SecurShield HD, SecurShield HD Plus, DensDeck Prime, SECUROCK, OSB, and plywood. Please see Carlisle's Specifications for a complete list of acceptable substrates.

The surface, on or against which adhesive is to be applied, shall be clean, smooth, dry, free of films, sharp edges, loose and foreign materials, oil and grease. Depressions greater than ¼" (6 mm) should be feathered, using epoxy, mortar or other approved patching material. All sharp projections shall be removed by sweeping, blowing or vacuum cleaning.

Application shall be continuous and uniform, avoiding globs or puddles.

1. Spray substrate and back of the membrane with enough overlap to ensure 100% coverage.
2. Do not apply adhesive to splice areas to be hot-air welded.
3. Allow heavy areas of adhesive to flash-off so that the adhesive will not transfer to your finger when touched and pushed.
4. Roll the membrane onto the adhesive-coated substrate while avoiding wrinkles. **Immediately brush down the bonded portion of the sheet with a soft-bristle push broom, and then roll the membrane with a weighted segmented roller to achieve maximum contact.**

CLEANUP: Carlisle's Low-VOC UN-TACK™ solvent or mineral spirits can be used to clean tools and surfaces. If the spray gun valve becomes stuck, attach hose and spray gun to cylinder of Citrus Cleaner or Low-VOC UN-TACK and trigger spray gun repeatedly until operation is smooth. If the spray gun is clogged, a small-gauge wire or torch clean-out tool is helpful after soaking the brass fitting in Low-VOC UN-TACK.

STORAGE: Store cylinders in protected, conditioned space with temperature maintained above 70°F (21°C). Do not store or heat cylinders where temperatures reach 110°F (43°C) or higher. Contents are flammable. Store in accordance with local, state, and federal regulations. **Keep cylinder valve open to maintain pressure in the hose and spray gun.** Periodically spray in a safe manner to help prevent possible clogging. Keep spray gun trigger locked when not in use. Flush gun and hose with Low-VOC UN-TACK for long-term storage beyond 30 days.

RETURN INSTRUCTIONS FOR #85 CYLINDERS:

1. A minimum of 12 empty cylinders are required for a free return.
2. Arrange 12 empty #85 cylinders upright on a pallet.
3. Secure and shrink-wrap the entire pallet (including cylinders) to ensure safe shipment.
4. Call the 1-800 number listed on the #85 cylinder to schedule the pick-up of the pallet.
5. Please note: A forklift or loading dock is the preferred method to load the pallet onto the truck. If a forklift or loading dock is not available, discuss alternative methods when arranging the return.

CYLINDER DISPOSAL: When all adhesive/primer in the cylinder has been used, close cylinder valve and evacuate hose and spray gun before disconnecting hose from cylinder. If hose is not to be connected to a new cylinder immediately, do not evacuate hose and spray gun to ensure material does not harden in spray gun and hose. Clean up adhesive/primer residue, spray gun, and spray tips with Low-VOC UN-TACK or mineral spirits. In most areas, the empty cylinder can be disposed as an aerosol can or recycled as scrap metal. If disposal is not allowed in your area, contact your distributor for disposal arrangements. Federal law forbids transportation if refilled.

Review Carlisle specifications and details for complete installation information.

Precautions

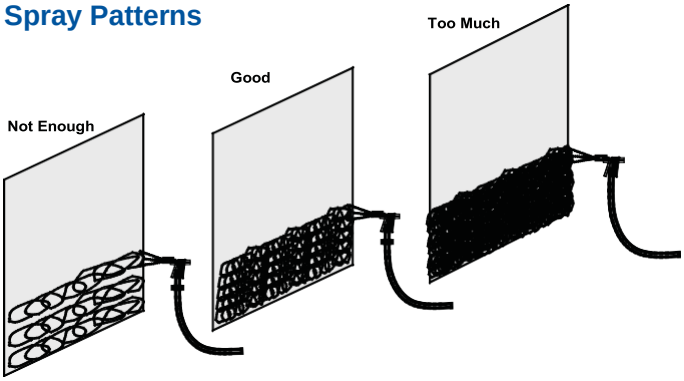
CAV-GRIP III is a flammable liquid propellant and vapor. Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electrical motors, static discharge, or other ignition sources at locations distant from the material handling point and flashback. Keep away from open flame. Use with adequate ventilation. Avoid inhalation of spray mist or vapors. Harmful

orfatalifswallowed.Maycauseeyeirritation.Keepoutofreachofchildren. ReviewSafetyDataSheetforcompletesafetyinformationpriortouse.Use ofgogglesandglovesisrequired.#40aerosolcylindersarenotrefillableand when empty are harmless and disposable. Dispose according to local codes andlaws.Read safetyprecautionsand warningson cylinderlabel.Wear gloves and goggles before using this product. Do not aim spray gun at people or animals at any time. PPE Gloves must be used while handling material.

For industrial professional use only.

*Important note: cylinder, hoses, and gun are each sold separately

Spray Patterns



Proper Coverage on Membrane

Proper Coverage on Insulation

Packaging

Product	Size/Weight	Part Number
CAV-GRIP III	#40 Aerosol Cylinder Fill Weight: 30 lbs (13.6 kg) of adhesive	329902
CAV-GRIP III #85 (returnable cylinder)	#85 Cylinder Fill Weight: 60 lbs (27.2 kg) of adhesive	332659
6' Hose	6' (1.8 m) Length	304302
12' Hose	12' (3.7 m) Length	304303
18' Hose	18' (5.5 m) Length	304304
Spray Gun with Extension	–	330912
Spray Gun Adjustable	–	307490
Low-VOC UN-TACK	#8 Aerosol Cylinder	330793

Typical Properties and Characteristics

Physical Property	Typical Value
Color	Light Green
Consistency	Aerosol Spray
Spray Pattern	Variable Web
Odor	Low
Base	Rubber/Solvent Blend
Coverage Rate #40 Cylinder	1- Sided Primer - 2000-2500 ft^2 when used with air and vapor barriers* 2- Sided Adhesive - Walls – 750 ft^2* (70 sq. m) 2-Sided Adhesive - Field – 1000 ft^2* (93 sq. m)
Coverage Rate #85 Cylinder	1-Sided Primer - 4000-5000 ft^2 (372-465 sq. m)* 2-Sided Adhesive - Walls – 1500 ft^2 (140 sq. m)* 2-Sided Adhesive - Field – 2000 ft^2 (186 sq. m)*
Adhesion	Excellent
Flammability	Flammable when wet. Non-flammable when dry.
Water Resistance	Excellent
Mildew Resistance	Excellent
Shelf Life	12 months (unopened container)

* Approximate Coverage

LEED® Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
Manufacturing Location	Lynchburg, VA
VOC	248 g/L

Low-VOC UN-TACK Adhesive Remover and Cleaner

Overview

Carlisle's Low-VOC UN-TACK Adhesive Remover and Cleaner is designed to remove adhesives from a variety of surfaces including single-ply membranes, accessories, metal, plastic, rubber, and glass. Low-VOC UN-TACK is used to clean spray guns and hoses when an opened CAV-GRIP III cylinder is going to be stored for more than 30 days.

Features and Benefits

» Clears clogged spray guns and hoses
» Allows easy cleanup of excess adhesive and overspray
» VOC compliant in all 50 states

Coverage Rate

250–300 FT²/(23-28 sq. m) surface area to be cleaned per Low-VOC UN-TACK cylinder.

Typical Properties and Characteristics

Physical Property	Typical Value
Color	Clear
Consistency	Aerosol Spray
Odor	Slight Solvent
VOC	33 g/l
Application Temperature	25°F to 100°F (-4°C to 38°C)
Packaging	#8 Aerosol Cylinder
Part Number	330793

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product. Carlisle's Low-VOC UN-TACK Adhesive Remover and Cleaner CANNOT be used to clean CAV-PRIME pressurized cylinders. *For application procedures and precautions please see the Low-VOC UN-TACK Adhesive Remover and Cleaner Product Data Sheet.

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CARLISLE SYNTEC SYSTEMS

Sure-Weld® TPO
Reinforced Membrane

Overview

Carlisle's Sure-Weld TPO reinforced membrane is a premium, heat-weldable, single-ply thermoplastic polyolefin (TPO) sheet designed for new roof construction and re-roofing applications. Sure-Weld High Slope (HS) membrane is formulated with additional flame retardant for higher-slope fire code approvals. Sure-Weld EXTRA is 80 mils thick for significantly higher strength and weatherability.

Sure-Weld TPO membranes use advanced polymerization technology that combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene. All Sure-Weld TPO membranes include OctaGuard XT™, an industry-leading, state-of-the-art weathering package. OctaGuard XT technology enables Sure-Weld TPO to withstand the extreme weatherability testing that is intended to simulate exposure to severe climates.

Physical properties of the membrane are enhanced by a strong polyester fabric that is encapsulated between the TPO-based top and bottom plies. The combination of the fabric and TPO plies provides high breaking and tearing strength, as well as excellent puncture resistance. The relatively smooth surface of the membrane produces a total surface fusion weld that results in a consistent, watertight, monolithic roof assembly. The membrane is environmentally friendly and safe to install.

Carlisle's standard and HS TPO membranes are available in highly reflective white, tan, and gray, in both 45-mil and 60-mil thicknesses. 80-mil Sure-Weld EXTRA (including HS) is also offered in white, gray, and tan colors. Special color Sure-Weld HS TPO membranes are also available (see Carlisle's TPO Color Palette brochure). Carlisle's TPO is offered in 4-, and 6-ft perimeter sheets and 8-, 10-, and 12-ft Sure-Weld field sheets. Sure-Weld HS and special color TPO membranes are available in limited sizes.

Carlisle's tan and white TPO membranes are ENERGY STAR®*-qualified and California Title 24 compliant and can contribute toward LEED® (Leadership in Energy and Environmental Design) credits.

Productivity Boosting Features and Benefits:

Optional APEEL™ Protective Film

Carlisle's Sure-Weld TPO reinforced membrane is available with an optional APEEL Protective Film, saving time and labor by eliminating the need for roof cleaning upon project completion. Carlisle's innovative APEEL Protective Film can be left in place for up to 90 days without affecting the integrity of the film, guarding the TPO membrane's surface from scuffs and dirt accumulation during installation. Durable and easy to remove, APEEL Protective Film improves aesthetics and long-term reflectivity and is ideal for re-roofing, re-cover, and new construction projects.

OCTAGUARD XT WEATHERING PACKAGE

APEEL PROTECTIVE FILM

Features and Benefits

- Outstanding puncture resistance
- Excellent fire resistant assemblies
- Environmentally friendly and stable formulation
- Excellent resistance to impact and low temperatures
- Excellent chemical resistance to acids, bases and restaurant exhaust emissions
- UL 2218 Class 4 hail rating
- Exceptional resistance to heat, solar UV, ozone and oxidation
- Manufactured using a hot-melt extrusion process for complete scrim encapsulation
- 100% recyclable (see Carlisle's Recyclability Statement)
- Enhanced with the OctaGuard XT weathering package
- APEEL Protective Film application guards the TPO membrane's surface from scuffs and dirt accumulation during installation, improving the roof system's appearance and long-term performance
- APEEL Protective Film can be left in place for up to 90 days without degrading due to its excellent heat- and UV-resistance

Sure-Weld TPO
Reinforced Membrane

Installation

1. Sure-Weld TPO roofing systems are quick to install, as minimal labor and few components are required. TPO systems are installed using an Automatic Heat Welder, making sheet welding fast, clean, consistent, and easy to learn, while reducing strain on the roofing technician.
2. APEEL Protective Film should be removed from within areas that are to be heat-welded together. In areas that do not require heat-welding, the APEEL Protective Film can be left in place for up to 90 days. When the installation of the entire TPO roofing system is complete, remove and discard the APEEL Protective Film.
3. **The Carlisle Mechanically Fastened Roof System** installation starts by fastening the insulation with a minimum of 4 fasteners per 4' by 8' board. The membrane is mechanically fastened to the deck using HP-X™ Fasteners and Piranha Plates™ or HP-XTRA Fasteners and Piranha XTRA Plates. Adjoining sheets of membrane are overlapped over the fasteners and plates and joined together with a minimum 1½"-wide (4 cm) hot-air weld.

Typical Properties and Characteristics

Physical Property	ASTM D6878 Requirement	45-mil	60-mil	80-mil EXTRA
Tolerance on Nominal Thickness, % ASTM D751 test method	+15, -10	± 10	± 10	± 10
Thickness Over Scrim, in. (mm) ASTM D7635 optical method, average of 3 areas	0.015 min (0.380)	0.018 typical (0.457)	0.024 typical (0.610)	0.034 typical (0.864)
Breaking Strength, lbf (kN) ASTM D751 grab	220 (976 N) min	225 (1.0) min 320 (1.4) typical	250 (1.1) min 360 (1.6) typical	350 (1.6) min 425 (1.9) typical
Elongation Break of Reinforcement, % ASTM D751 grab method	15 min	15 min 25 typical	15 min 25 typical	15 min 25 typical
Tearing Strength, lbf (N) ASTM D751 proc. B 8 in. x 8 in.	55 (245) min	55 (245) min 130 (578) typical	55 (245) min 130 (578) typical	55 (245) min 130 (578) typical
Brittleness Point, °F (°C) ASTM D2137	-40 (-40) max	-40 (-40) max -50 (-46) typical	-40 (-40) max -50 (-46) typical	-40 (-40) max -50 (-46) typical
Linear Dimensional Change, % ASTM D1204, 6 hours at 158°F	± 1 max	± 1 max -0.2 typical	± 1 max -0.2 typical	± 1 max -0.2 typical
Ozone Resistance, no cracks 7X ASTM D1149, 100 pphm, 168 hrs	PASS	PASS	PASS	PASS
Water Absorption Resistance, mass % ASTM D471 top surface only 166 hours at 158°F water	± 3.0 max	± 3.0 max 0.90 typical	± 3.0 max 0.90 typical	± 3.0 max 0.90 typical
Factory Seam Strength, lbf (N) ASTM D751 grab method	66 (290) min	66 (290) min	66 (290) min	66 (290) min
Field Seam Strength, lbf/in (kN/m) ASTM D1876 tested in peel	No requirement	25 (4.4) min 50 (8.8) typical	25 (4.4) min 60 (10.5) typical	40 (7.0) min 70 (12.3) typical
Water Vapor Permeance, Perms ASTM E96 proc. B	No requirement	0.10 max 0.05 typical	0.10 max 0.05 typical	0.10 max 0.05 typical
Puncture Resistance, lbf (kN) FTM 101C, method 2031 (see supplemental section)	No requirement	250 (1.1) min 325 (1.4) typical	300 (1.3) min 350 (1.6) typical	400 (1.8) min 450 (2.0) typical
Properties After Heat Aging ASTM D573, 32 weeks @ 240°F or 8 weeks @ 275°F No cracking when bent around 3" diameter mandrel Weight Change, %	 PASS No cracking ± 1.5 max	 PASS No cracking 1.0 max	 PASS No cracking 1.0 max	 PASS No cracking 1.0 max
Typical Weights lb/ft² (kg/m²)		0.23 (1.1)	0.29 (1.4)	0.40 (2.0)

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

Sure-Weld TPO
Reinforced Membrane

4. **The Carlisle Fully Adhered Roofing System** installation begins by fastening the insulation at the required density necessary to meet the appropriate warranty or wind load requirement. The substrate and membrane are then coated with an appropriate Sure-Weld TPO bonding adhesive and the membrane is rolled into place.

Review Carlisle specifications and details for complete installation information.

Precautions

» Sunglasses that filter out ultraviolet light are strongly recommended, as tan and white surfaces are highly reflective. Roofing technicians should dress appropriately and wear sunscreen.

» Surfaces may become slippery due to frost and ice buildup. Exercise caution during cold conditions to prevent falls.

» Care must be exercised when working close to a roof edge when the surrounding area is snow-covered, as the roof edge may not be clearly visible.

» Use proper stacking procedures to ensure sufficient stability of the rolls.

» Exercise caution when walking on wet membrane. Membranes may be slippery when wet.

» Store membrane in the original undisturbed plastic wrap in a cool, shaded area and cover with light-colored, breathable, waterproof tarpaulins. Membrane that has been exposed to the weather must be prepared with Weathered Membrane Cleaner prior to hot-air welding.

» Take care not to stand or place heavy objects on the edge of folded-over membrane, as this could cause a hard crease in the membrane.

» Maximum sustained temperature not to exceed 160°F (71°C) for TPO membrane.

» Do not use razor blades or other sharp tools to cut the APEEL Protective Film while it is still adhered to the TPO membrane as damage to the underlying membrane may occur. Pull the protective film away from the membrane prior to cutting.

» Remove APEEL Protective Film by pulling towards the center of the roof. Do not remove the film by pulling towards the roof edge.

» A static electric charge may develop when removing APEEL Protective Film from the surface of the membrane sheet. To avoid the possibility of ignition, lids must be closed on any flammable products and a fire extinguisher should be readily available.

» Color membranes will 'fade' over time mainly due to the ultraviolet portion of sunlight. Since most roof surfaces are exposed to variable sunlight, some areas will be more susceptible to color changes caused by UV fading. Warranties for color membranes do not cover fading of colors.

EXTREME Testing for Severe Climates

ASTM Standard D6878 is the material specification for Thermoplastic Polyolefin-Based Sheet Roofing. It covers material property requirements for TPO roof sheeting and includes initial and aged properties after heat and xenon-arc exposure. As stated in the scope of the standard, "the tests and property limits used to characterize the sheet are values intended to ensure minimum quality for the intended purpose." Carlisle's goal is to produce TPO that delivers maximum performance for the intended purpose of roofing membranes. Maximum performance requires the membrane to far exceed the requirements of ASTM D6878.

Heat Aging accelerates the oxidation rate that roughly doubles for each 18°F (10°C) increase in roof membrane temperature. Oxidation (reaction with oxygen) is one of the primary chemical degradation mechanisms of roofing materials.

Carlisle Testing – Heat Aging

	ASTM Requirement	Sure-Weld Requirement
ASTM TEST 240°F	32 weeks**	>128 weeks

**Heat exposure comparable to 3,120 weeks (60 years) at 185°F for 8 hours/day.

» Test specimen is a 2" by 6" piece of 45-mil membrane unbacked, placed in circulating hot-air oven.

» Criterion – no visible cracks after bending aged test specimen around 3"-diameter mandrel.

Q-T rac testing combines accelerated weathering with real-world conditions using an array of ten mirrors to reflect and concentrate full spectrum sunlight onto membrane test specimens. The Q-Trac device automatically tracks the sun's path from morning to night. Also, it adjusts to compensate for seasonal changes in the sun's altitude. Eight years in Q-Trac testing is equal to 40 years of real-world exposure. Carlisle requires its Sure-Weld TPO membranes to pass the equivalent of 40 years of exposure in the Q-Trac.

Carlisle Testing – Q-Trac

	ASTM D6878 Requirement	Sure-Weld Requirement
ASTM TEST N/A	N/A	Equivalent of 40 years of exposure

Environmental Cycling subjects the membrane to repeated cycles of heat aging, hot-water immersion, and xenon-arc exposure.

» ASTM requirement – none

» Carlisle EXTREME test*:

- 10 days heat aging at 240°F (116°C) followed by

CARLISLE SYNTEC SYSTEMS

Sure-Weld TPO
Reinforced Membrane

- 5 days water immersion at 158°F (70°C) followed by
- 5,040 kJ/m² (2000 hours at 0.70 W/m² irradiance) xenon-arc exposure

*Test specimen is 2.75" by 5.5" piece of membrane with edges sealed.

*Criterion – after 3 complete cycles, test specimens shall remain flexible and not have any cracking under 10x magnification while wrapped around a 3"-diameter mandrel.

Supplemental Approvals, Statements and Characteristics:

1. Sure-Weld TPO meets or exceeds the requirements of ASTM D6878 Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing.
2. Radiative Properties for ENERGY STAR, Cool Roof Rating Council (CRRC) and LEED.
3. Sure-Weld TPO membranes conform to requirements of the US E.P.A. Toxic Leachate Test (40 CFR part 136) performed by an independent analytical laboratory.
4. Sure-Weld TPO was tested for dynamic puncture resistance per ASTM D5635-04 using the most recently modified impact head. 45-mil was watertight after an impact energy of 12.5 J (9.2 ft-lbf) and 60-mil was watertight after 22.5 J (16.6 ft-lbf). 80-mil EXTRA was watertight after an impact energy of 30.0 J (22.1 ft-lbf).
5. NSF-P151 Certification for rainwater catchment system components.
   - Plant 91/White Only

LEED Information

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Senatobia, MS Tooele, UT Carlisle, PA
Solar Reflectance Index (SRI)	99 (white) 86 (tan)

Radiative Properties for ENERGY STAR*, and LEED

	Test Method	White TPO	Tan TPO	Gray TPO
ENERGY STAR – Initial solar reflectance	Solar Spectrum Reflectometer	0.79	0.71	N/A
ENERGY STAR – Initial solar reflectance after 3 years	Solar Spectrum Reflectometer (uncleaned)	0.70	0.64	N/A
CRRC – Initial solar reflectance	ASTM C1549	0.79	0.71	0.46
CRRC – Solar reflectance after 3 years	ASTM C1549 (uncleaned)	0.70	0.64	0.43
CRRC – Initial thermal emittance	ASTM C1371	0.90	0.86	0.89
CRRC – Thermal emittance after 3 years	ASTM C1371 (uncleaned)	0.86	0.87	0.88
LEED – Thermal emittance	PASS	0.90	0.86	0.85
SRI - Initial (Solar Reflectance Index)		99	86	53
SRI - 3 year aged (Solar Reflectance Index)		85	77	48

Radiative Properties (Initial) for Special Colors

	Reflectance	Emittance	SRI
Medium Bronze	0.28	0.86	29
Rock Brown	0.25	0.87	26
Slate Gray	0.38	0.87	42
Terra Cotta	0.25	0.86	25
Patina Green	0.25	0.88	25

Solar Reflectance Index (SRI) is calculated per ASTM E1980. The SRI is a measure of the roof's ability to reject solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100. Materials with the highest SRI values are the coolest choices for roofing. Due to the way SRI is defined, particularly hot materials can even take slightly negative values and particularly cool materials can even exceed 100.

*ENERGY STAR recommends that using the Roof Savings Calculator (rsc.ornl.gov), which factors in both heating and cooling costs, to determine whether a cool roof will be an energy efficient choice for your geographic climate and building type.

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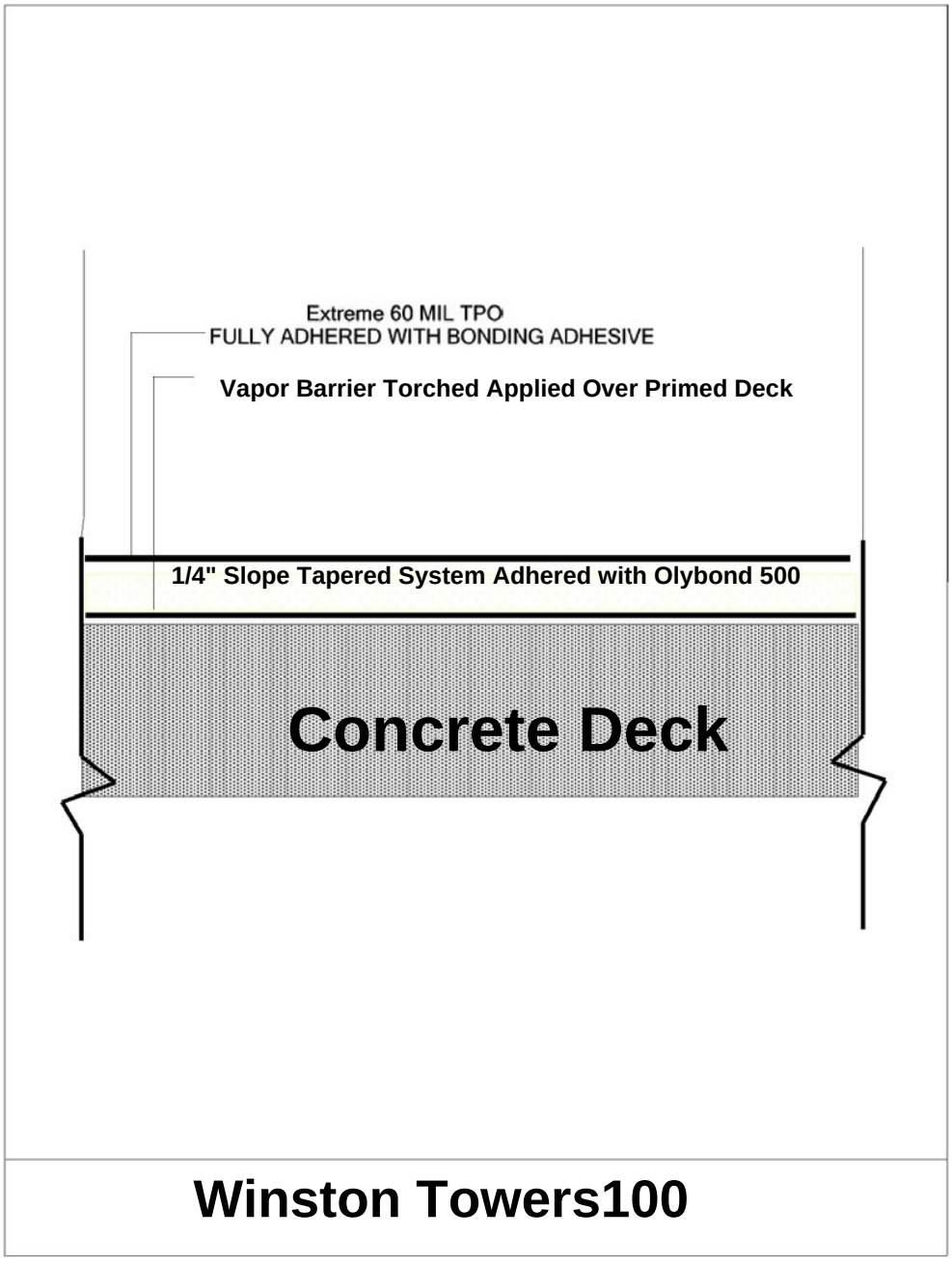
REPRINT CODE: 600515 - "Sure-Weld TPO Reinforced Membrane Product Data Sheet"

Detail Report

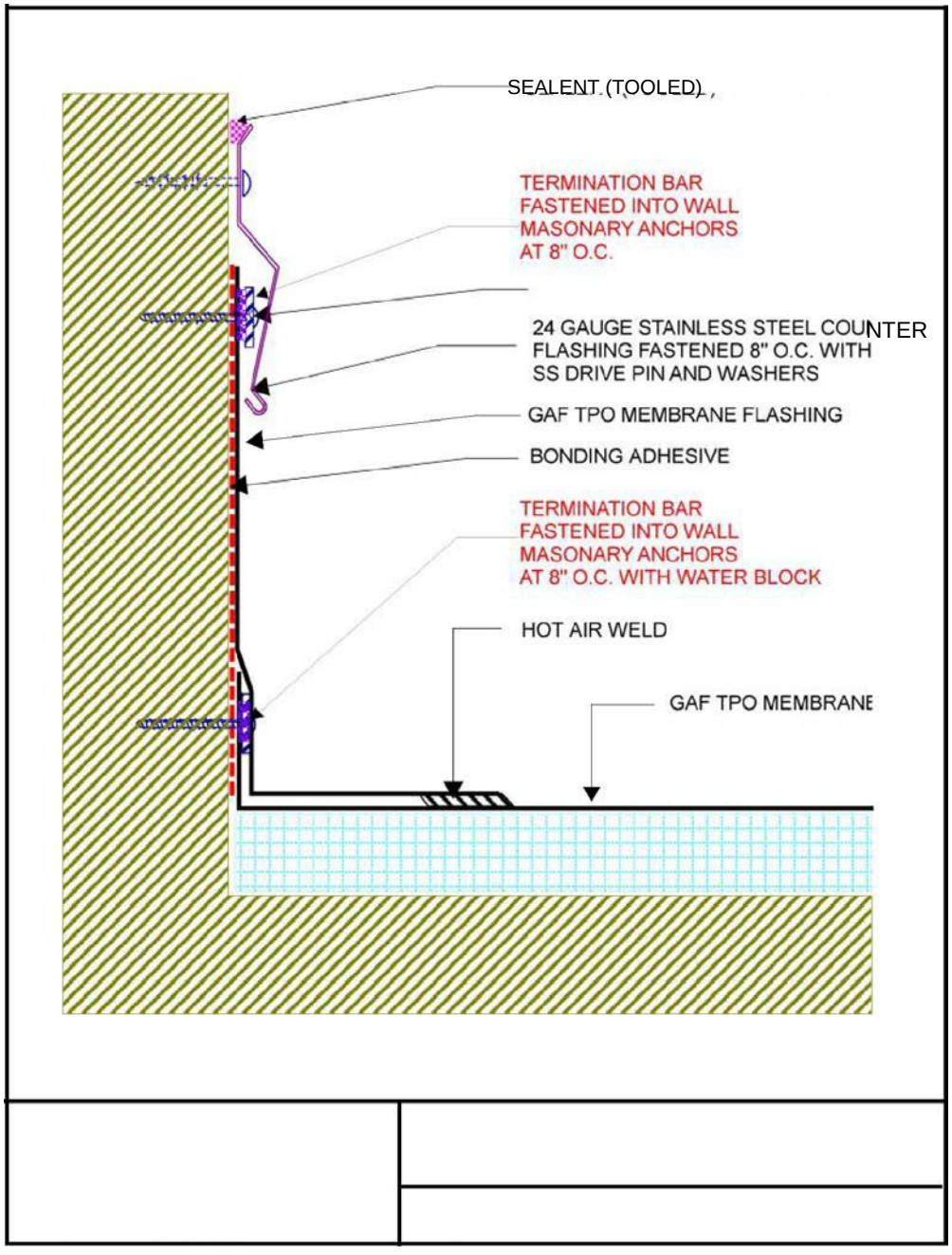
Winston Towers 100

Condition: TPO to Concrete Deck Insulated



Detail Report

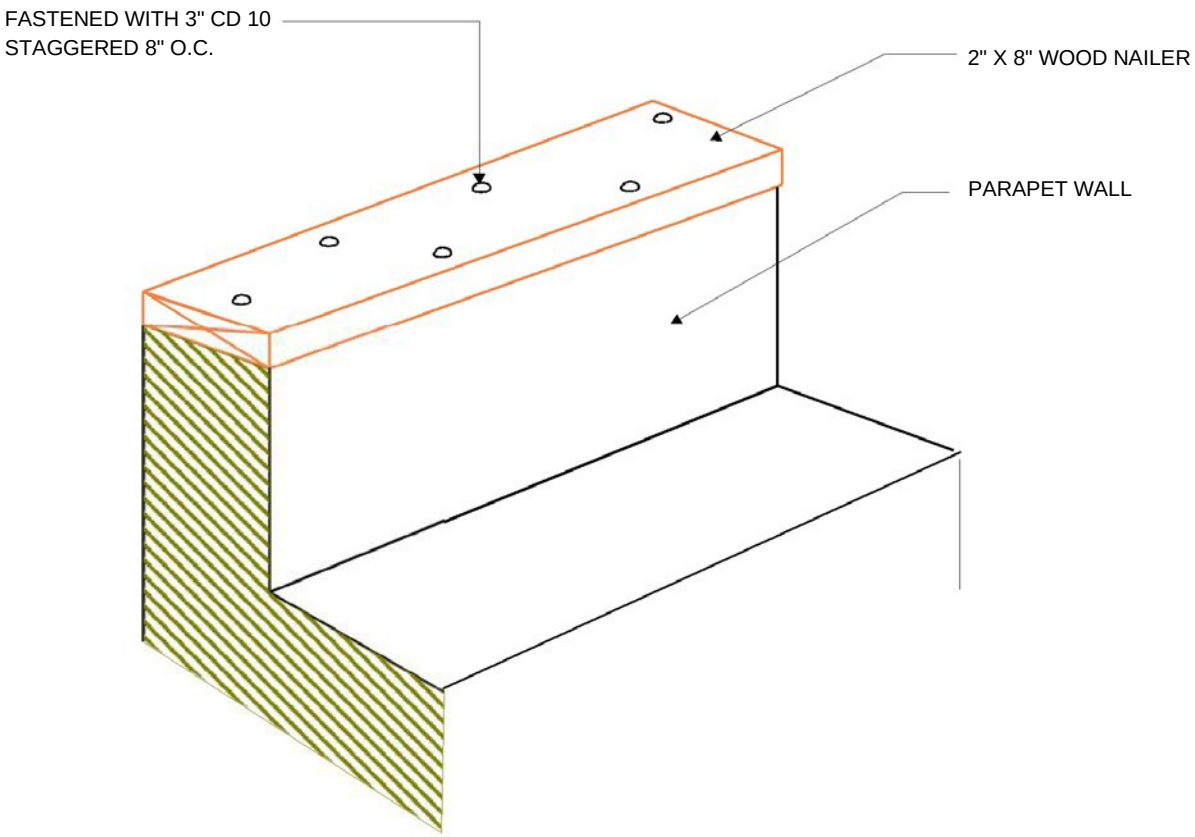
Winston Towers 100



Detail Report

Winston Towers 100

Condition: Wood Nailer

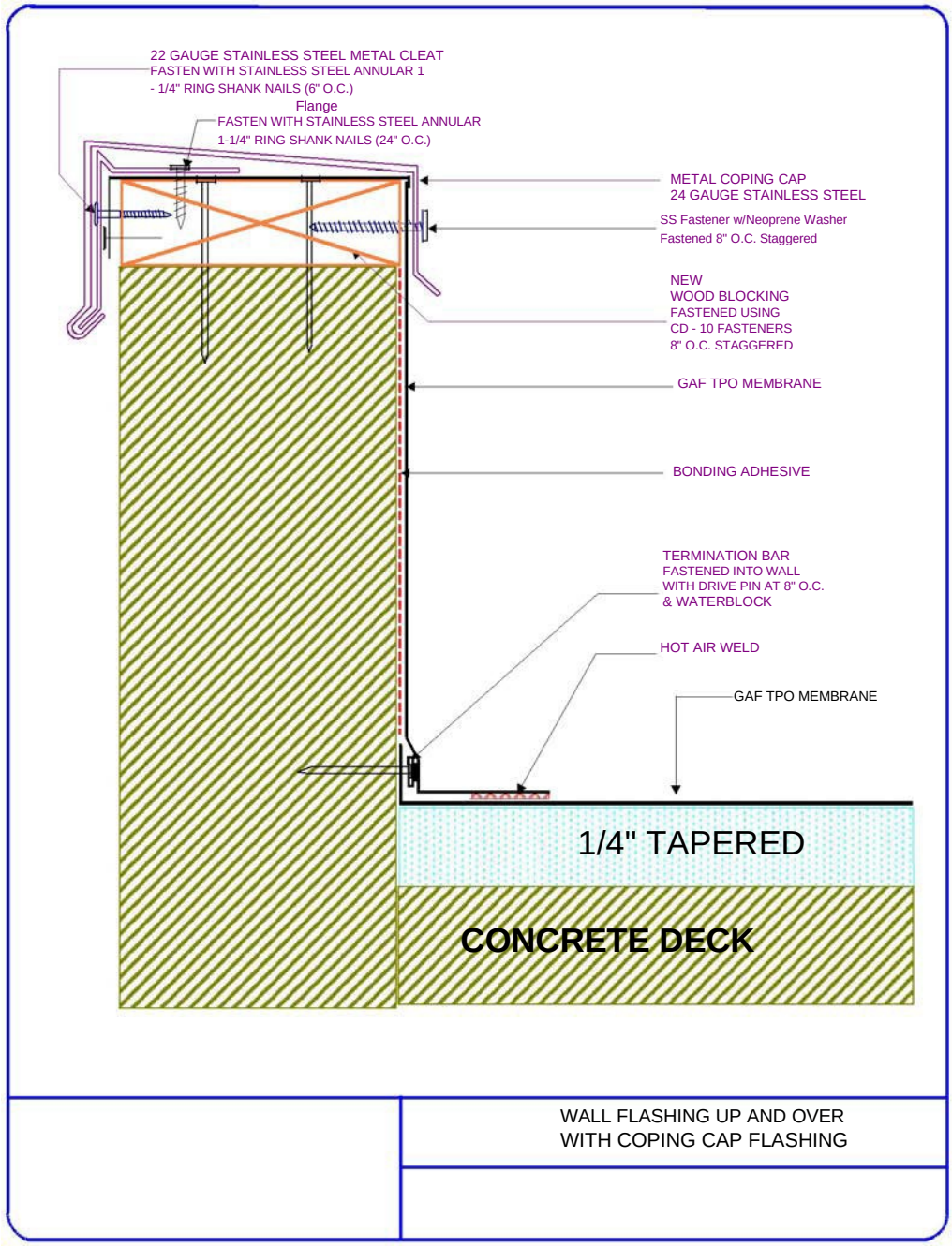


	WOOD NAILER AND FASTENER

Detail Report

Winston Towers 100

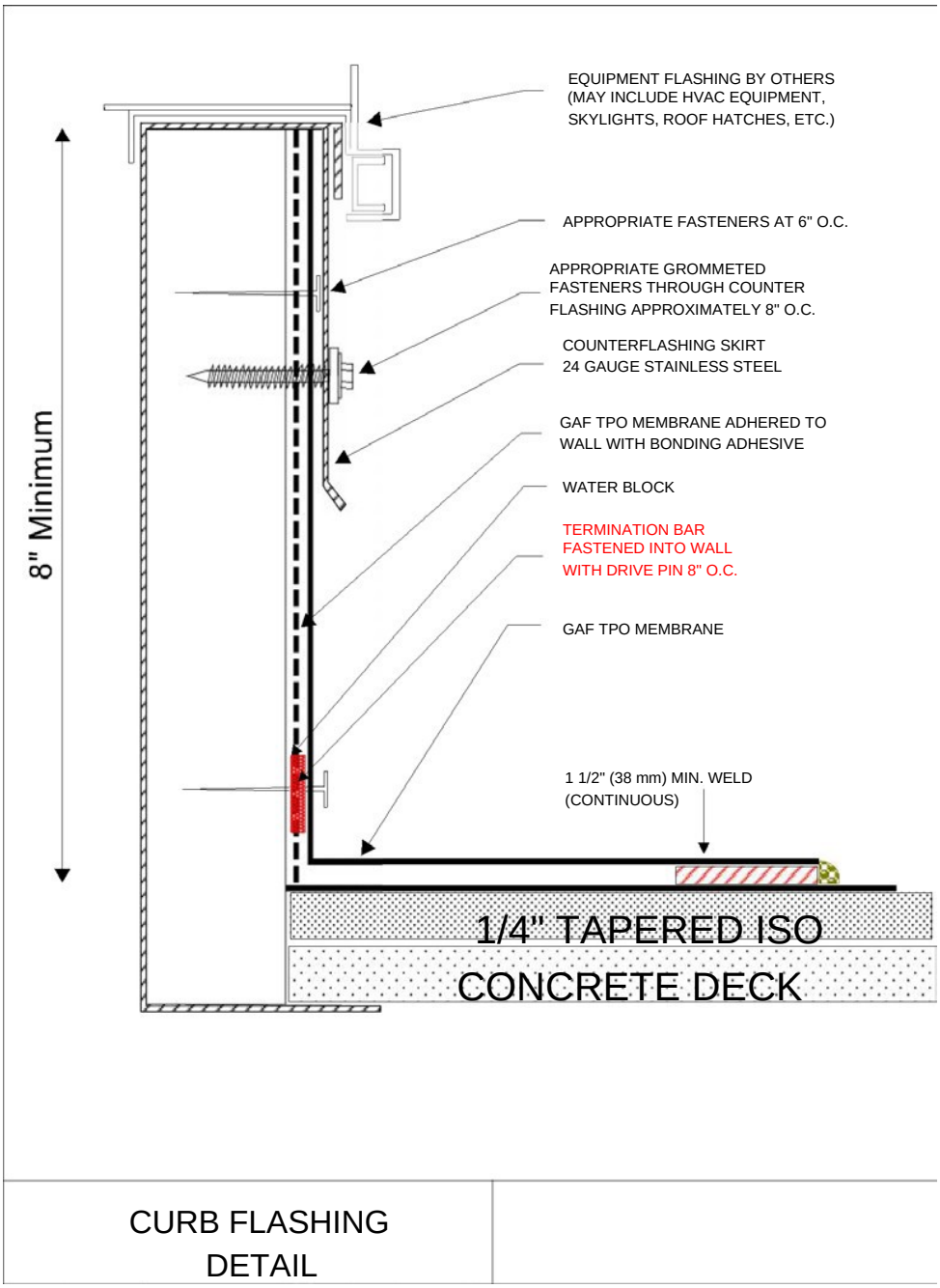
Condition: Wall Flashing Up And Over W/Coping Cap



Detail Report

Winston Towers 100

Condition: TPO 18" Curb Flashing with CF

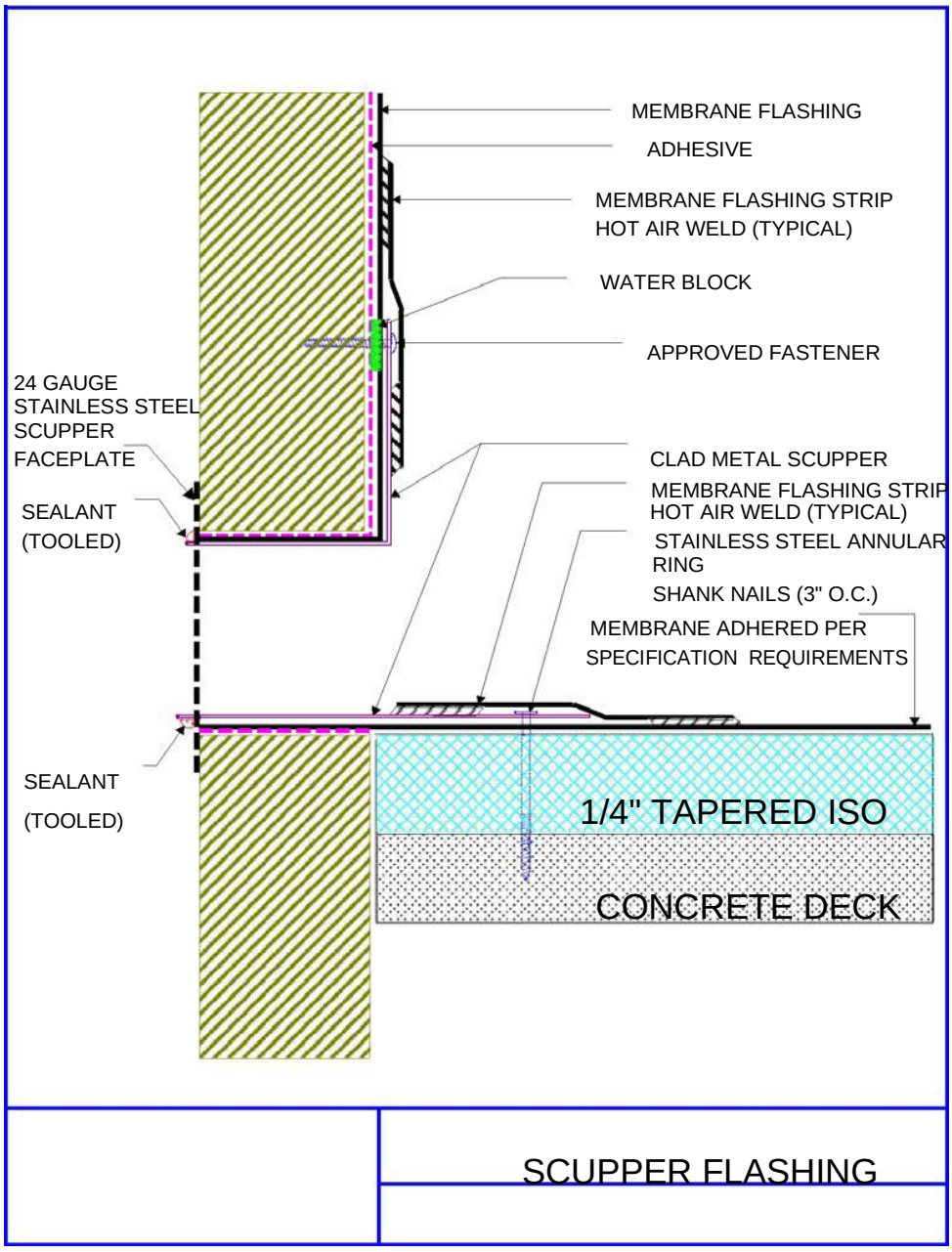


CURB FLASHING
DETAIL

Detail Report

Winston Towers 100

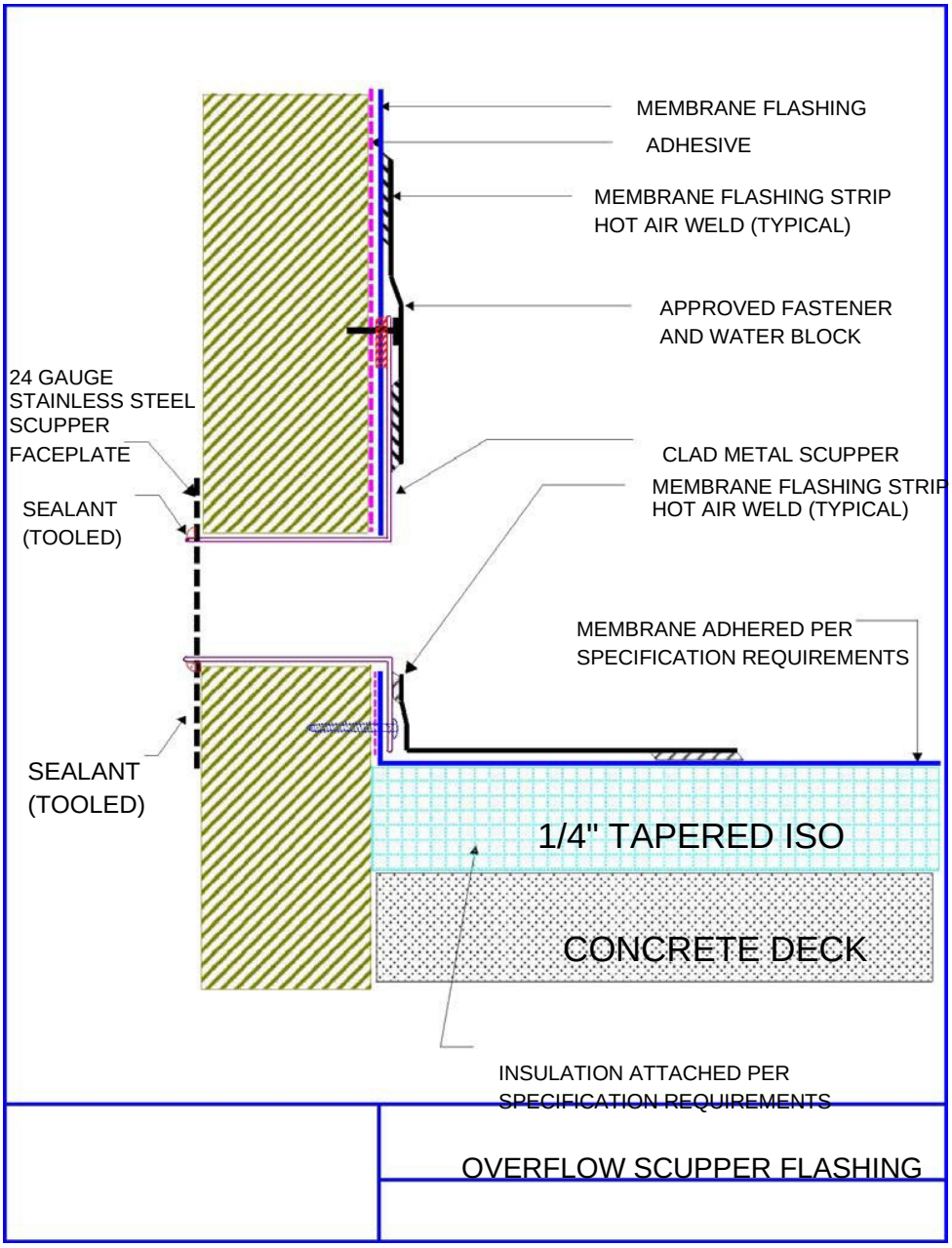
Condition: Re-Size TPO Coated Metal Wall Scupper



Detail Report

Winston Towers 100

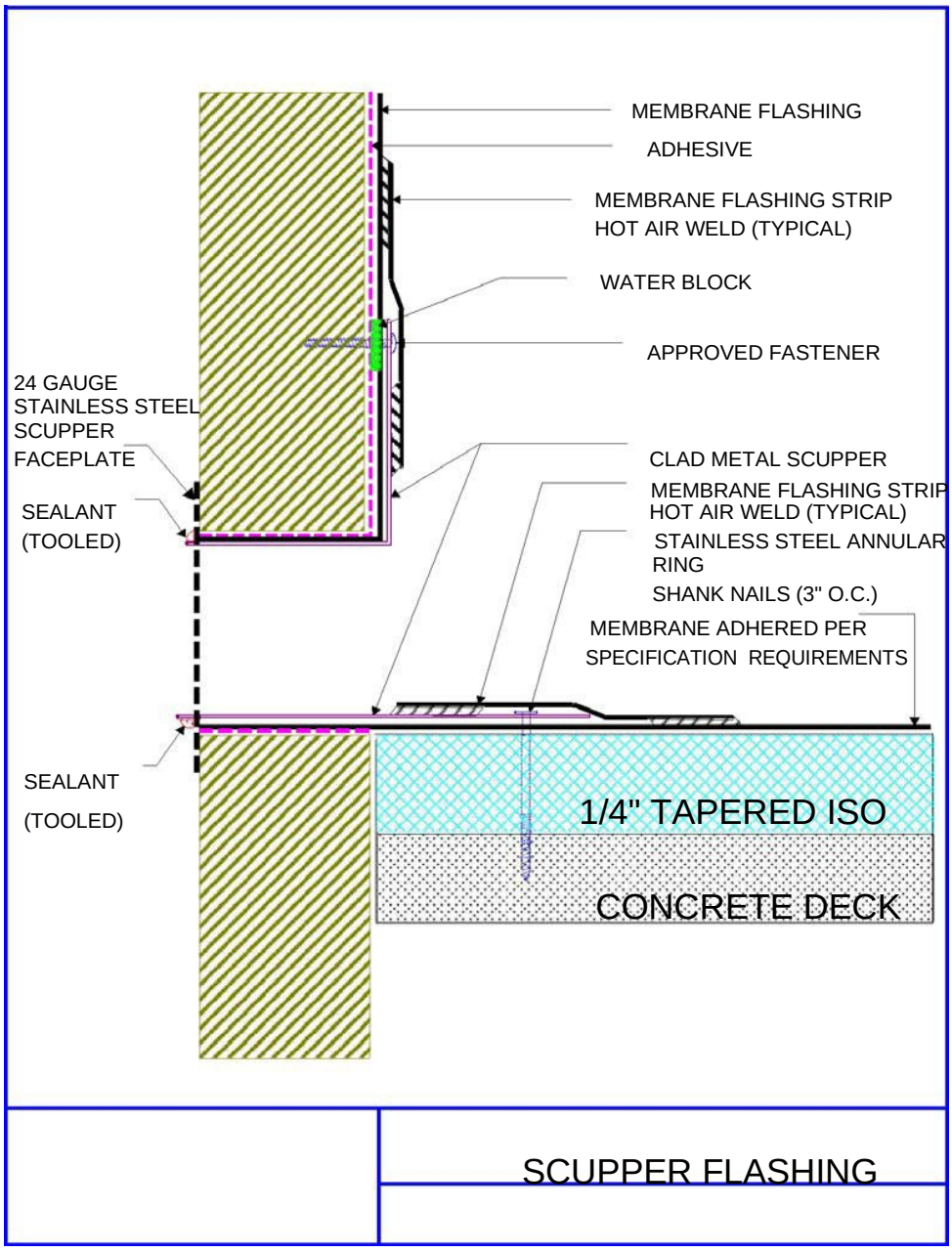
Condition: Cut New TPO Coated Metal Overflow Scupper



Detail Report

Winston Towers 100

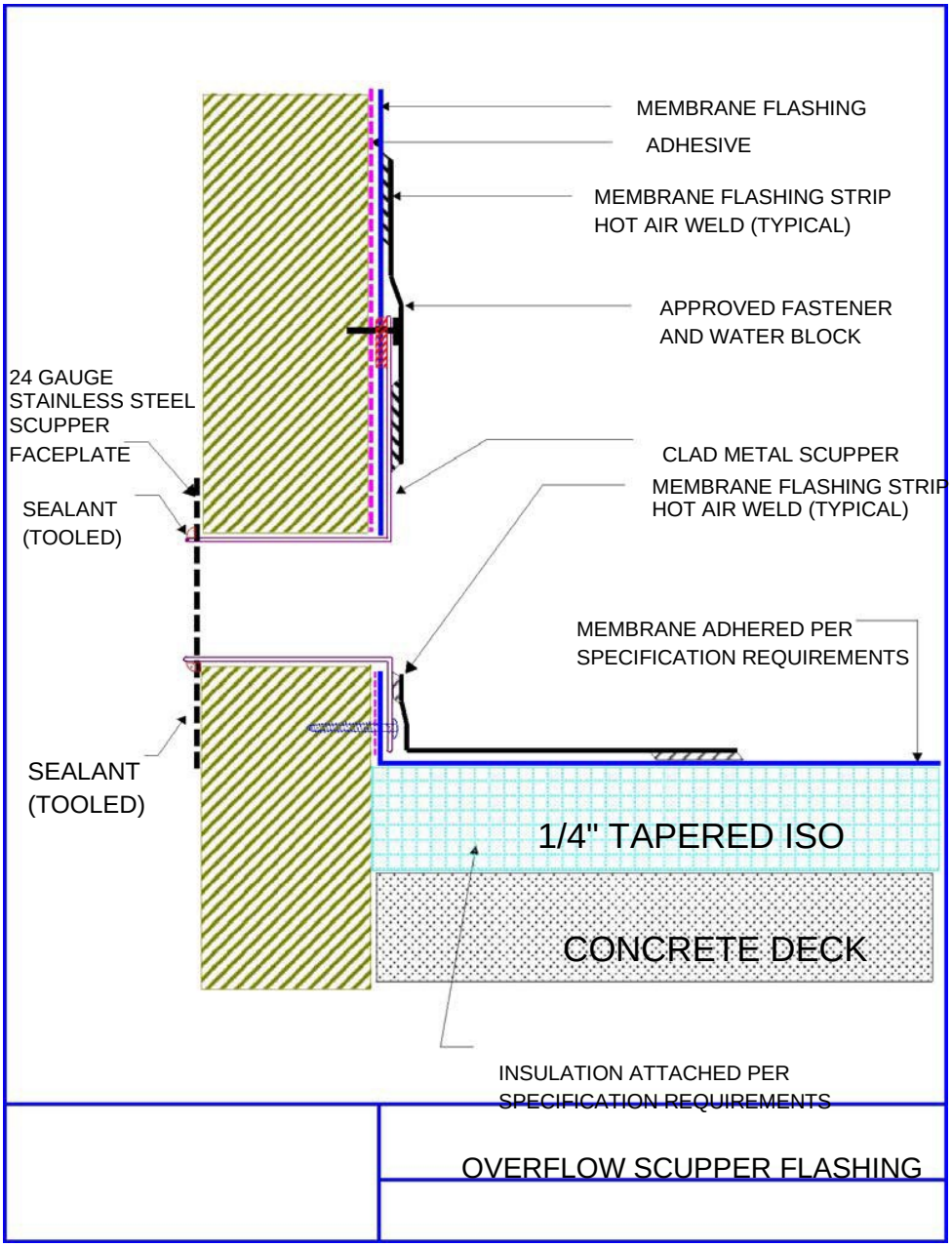
Condition: TPO Coated Metal Wall Scupper - ADD



Detail Report

Winston Towers 100

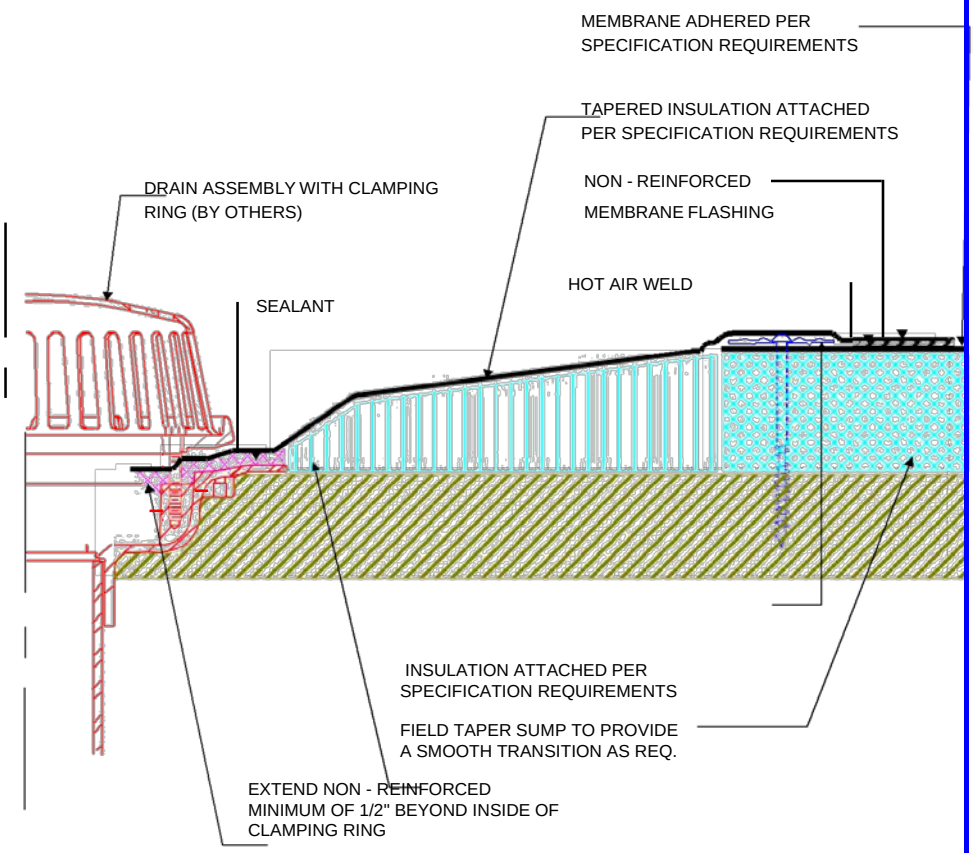
Condition: TPO Coated Metal Overflow Scupper - ADD



Detail Report

Winston Towers 100

Condition: TPO Drain Flashing w/ Tapered Edge



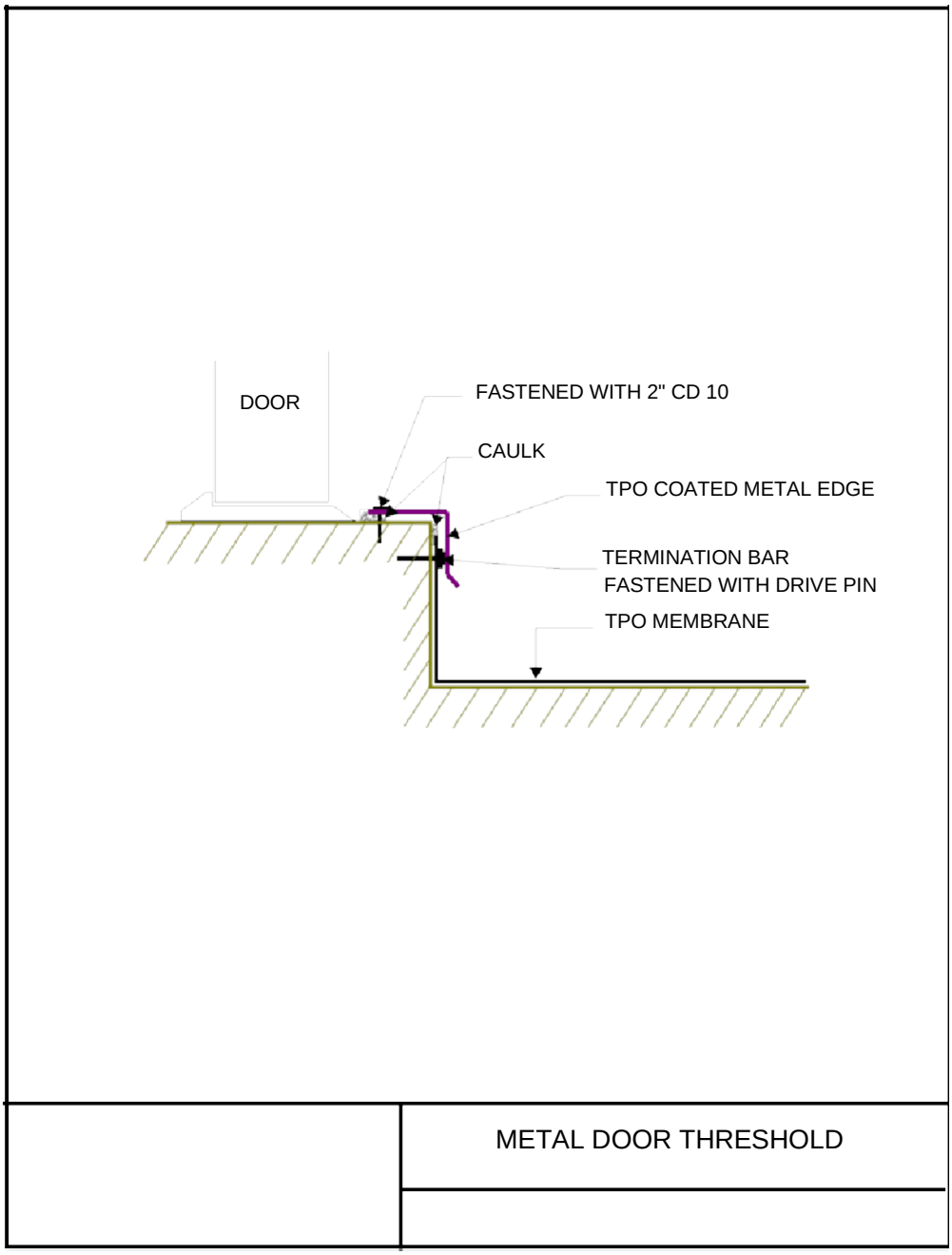
DRAIN FLASHING

TAPERED EDGE

Detail Report

Winston Towers 100

Condition: TPO Metal DOOR THRESHOLD



Detail Report

27383 Winston Towers 100