



SIKALASTIC PUMA TRAFFIC SYSTEMS

SIKALASTIC 2850/2900

BUILDING TRUST



AGENDA

01

Introduction to 2850FS,2900FS and MMA Chemistry

02

Surface Preparation / Detailing

03

Mixing Processes / Installation Tools

04

Installation Techniques

SIKALASTIC PUMA TRAFFIC SYSTEMS



Exceptional protection for traffic decks requiring superior long-term durability in challenging conditions

Sikalastic 2850 & Sikalastic 2900

PROJECT CHALLENGES OF VEHICULAR TRAFFIC BEARING AREAS

- Aggressive wear areas
- Return to service
 - Minimize project down time
 - Reduce revenue loss
- Wide temperature application
 - Reduce impact of project seasonality
- Sustainability
 - Ensure longer lasting solutions
 - Reduce installation complexity → reduce callbacks



Protecting and improving parking structures in a profitable way

PUMA TRAFFIC SYSTEMS

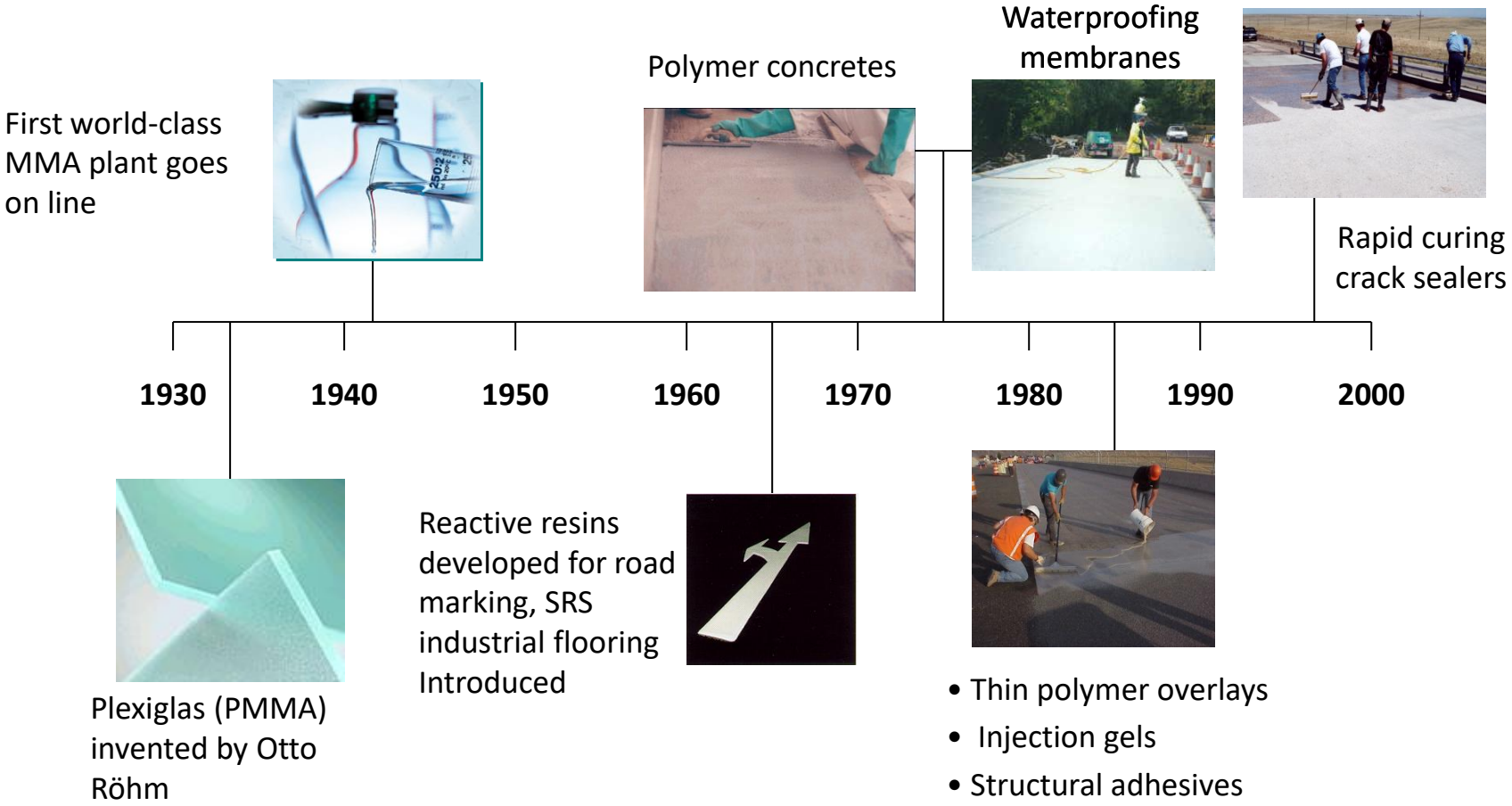
Common areas of aggressive wear

- Entrance and Exit ramps
- Helixes
- Ticket Spitter areas
- High turn radiuses
- Snow plowed decks
- Loading docks
- Utility rooms



Introduction to MMA

History



Introduction to MMA Systems

- Polymer Concrete
- Crack Sealer
- Flooring Systems
- Traffic Bearing Membranes



Introduction to MMA

Chemistry

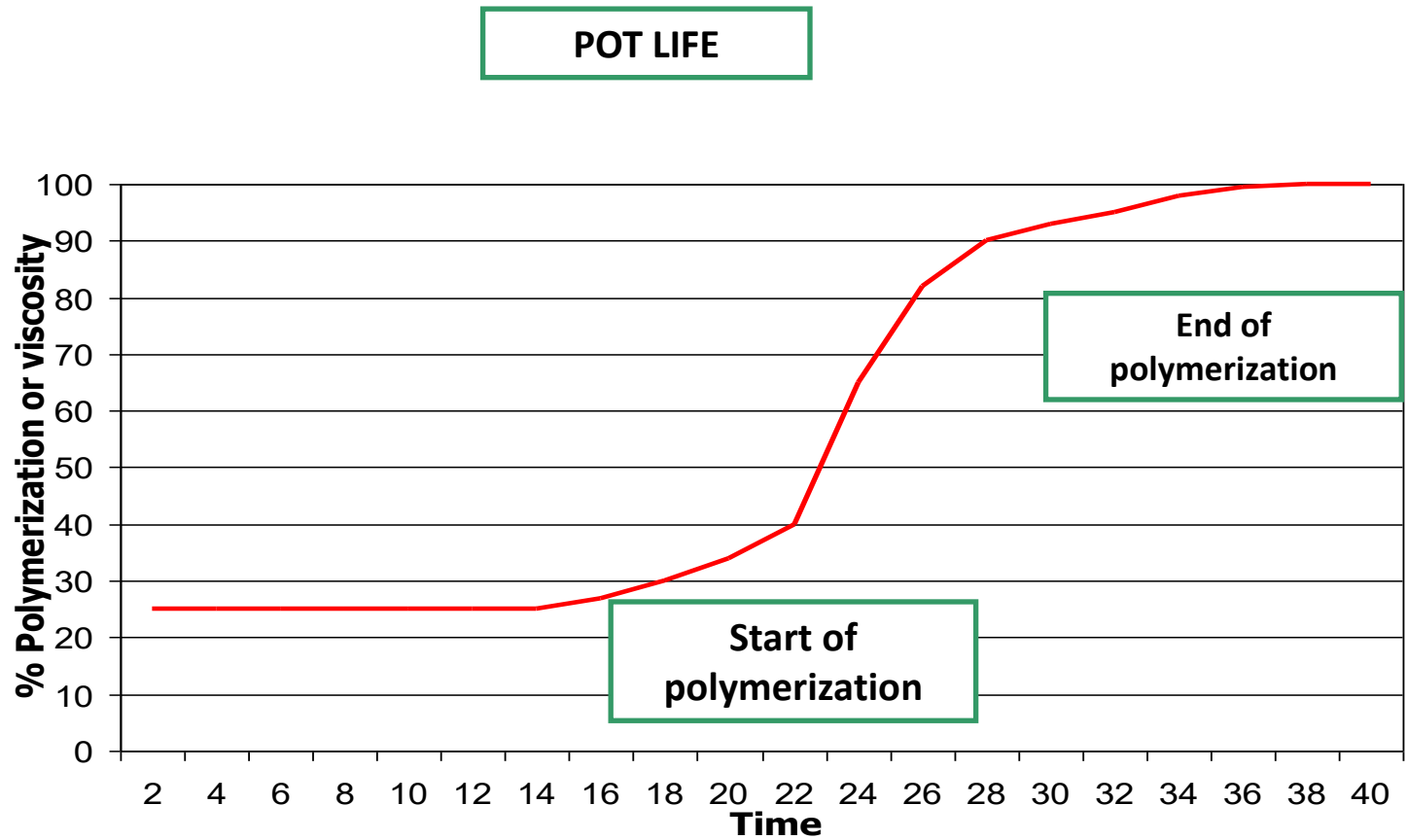
Powder Hardener (Dibenzoyl Peroxide) BPO

- One hardener for all materials
- Amounts based on substrate temperature
- Material Temperatures will influence

Sikalastic Traffic 2900 Mix Chart						
°F	°C	Sikalastic P 280FS with Sikalastic 908FS	Sikalastic P281FS with Sikalastic 908FS	Sikalastic M 290FS	Sikalastic TC 297FS	Sikalastic TC 299FS
°30	°-1	6	14.5	8	11	11
°33	°1	5.5	14	8	11	11
°35	°2	5.5	13.5	7.5	11	11
°40	°4	5.25	13	7	11	11
°45	°7	5	12.5	6.5	9	9
°50	°10	4.5	11.5	6	8.5	8.5
°55	°13	4.25	10	6	7.5	7.5
°60	°16	4	9	5	6.5	6.5
°65	°18	3.5	8	5	5.5	5.5
°70	°21	3.25	7	4.5	4.5	4.5
°76	°24	3	6	4.5	4	4
°80	°27	2.75	5.5	4.5	3	3
°85	°29	2.5	5	4.5	2.5	2.5
°90	°32	2.25	4.5	4.5	2	2

Introduction to MMA

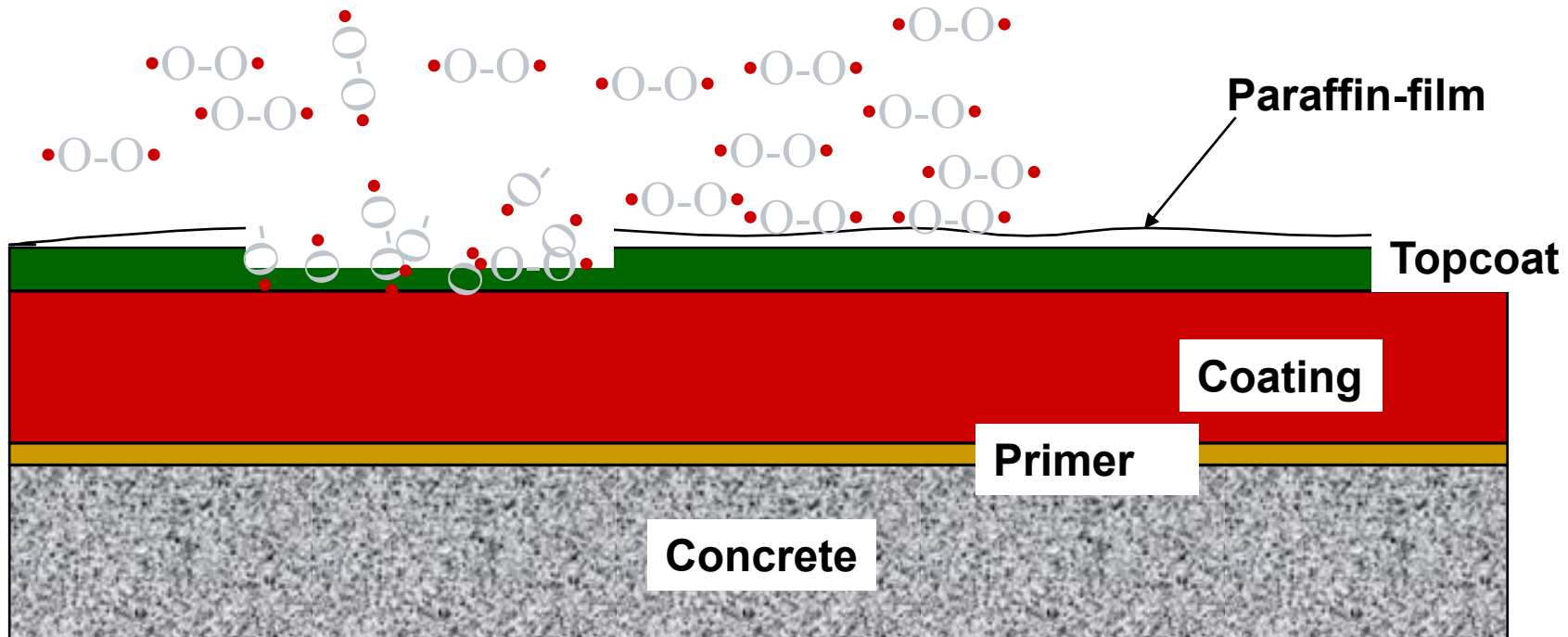
Chemistry



Introduction to MMA

Chemistry

THE EFFECT OF PARAFFIN IN MMA RESINS

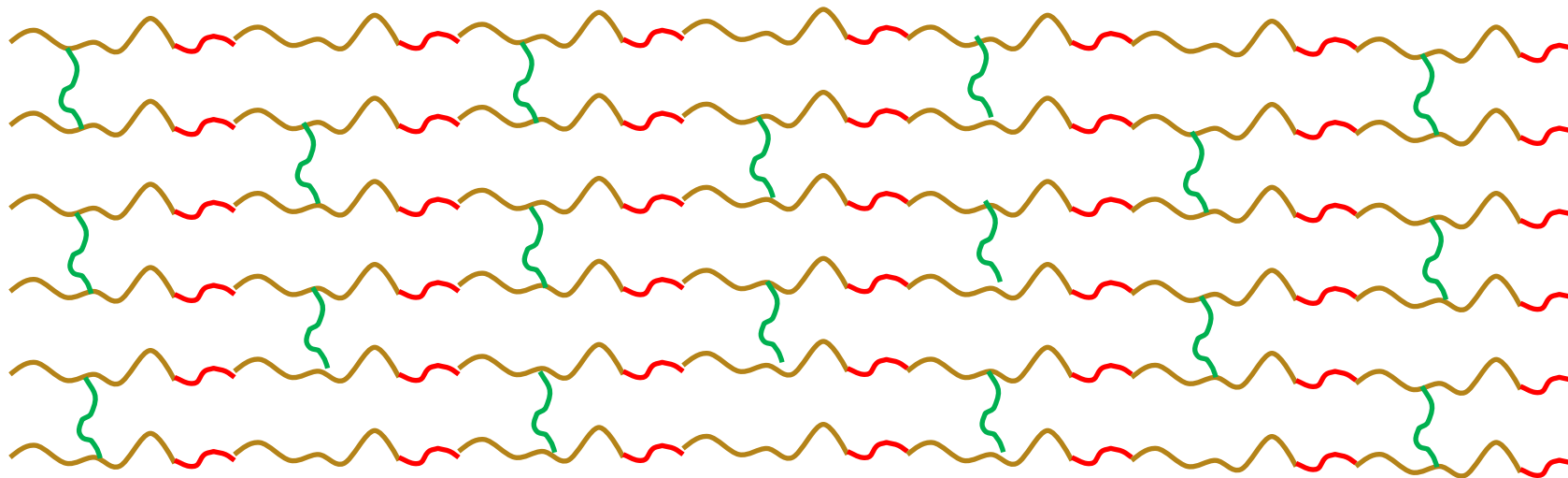


A Paraffin-film on top of every applied layer is essential to prevent redissolving of aerial oxygen into the resins.

Curing Process

Chemistry

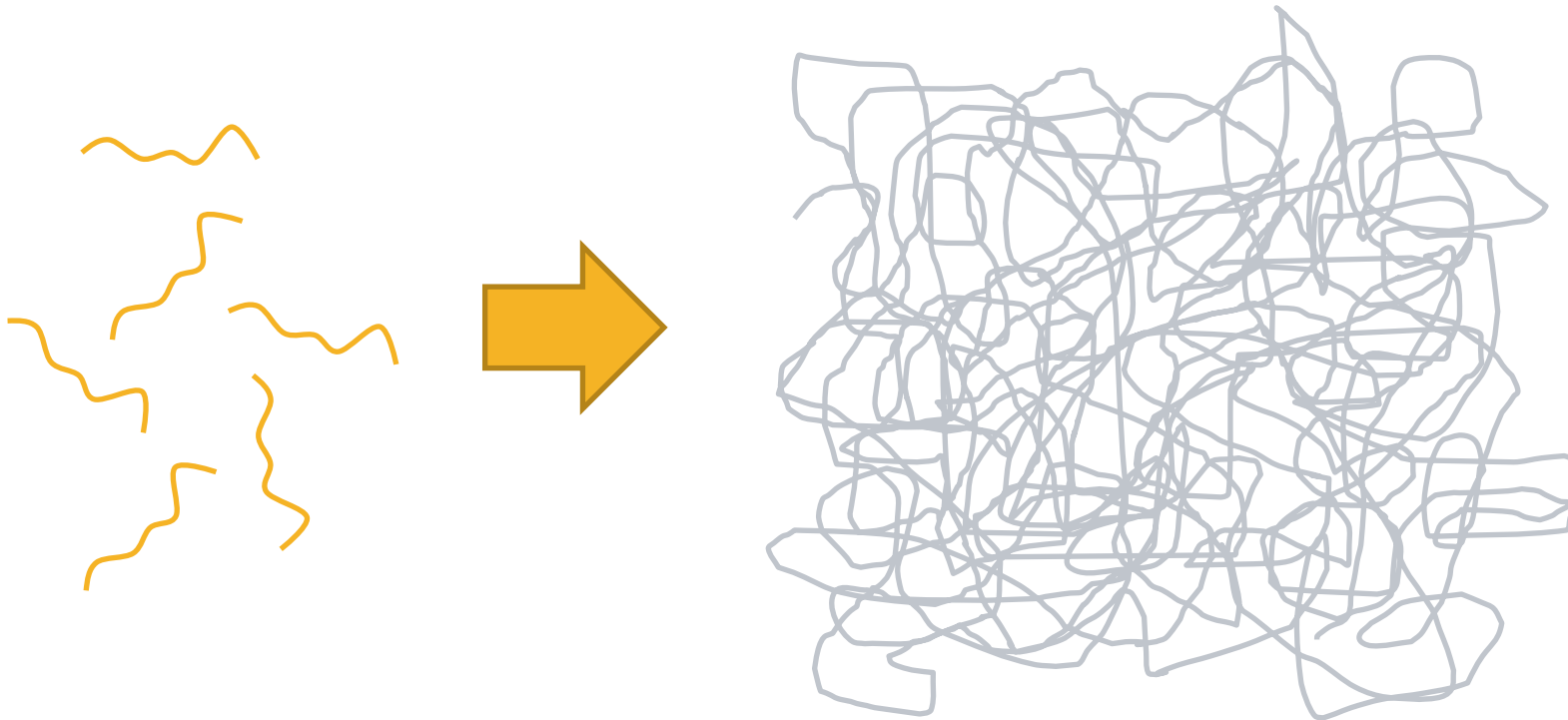
- Epoxies and polyurethanes cure via a cross-linking mechanism
- Long polymer chains are formed first
- A secondary reaction links the polymer chains together
- The more cross linking, the more chemical resistant and brittle



Curing Process

Chemistry

- MMA monomers are catalyzed using dibenzoyl peroxide (BPO)
- The BPO “activates” the MMA molecules
- Once “activated”, they seek their nearest neighbors and immediately polymerize



INTERNAL

Introduction to MMA

Chemistry

Chemical Bonding between coats means no bond lines.



Introduction to MMA

Chemistry

- Odor
- Methyl Methacrylates (MMA), as supplied, have a pungent odor
 - The odor threshold is very low – only 83 ppb
 - The odor is only present during curing process and is not harmful
- **Flammability:**
 - Flash Point of 50°F (10°C)
 - No open flames
 - No smoking!
 - Proper ventilation is required for interior application
 - Type “B” fire extinguishers required



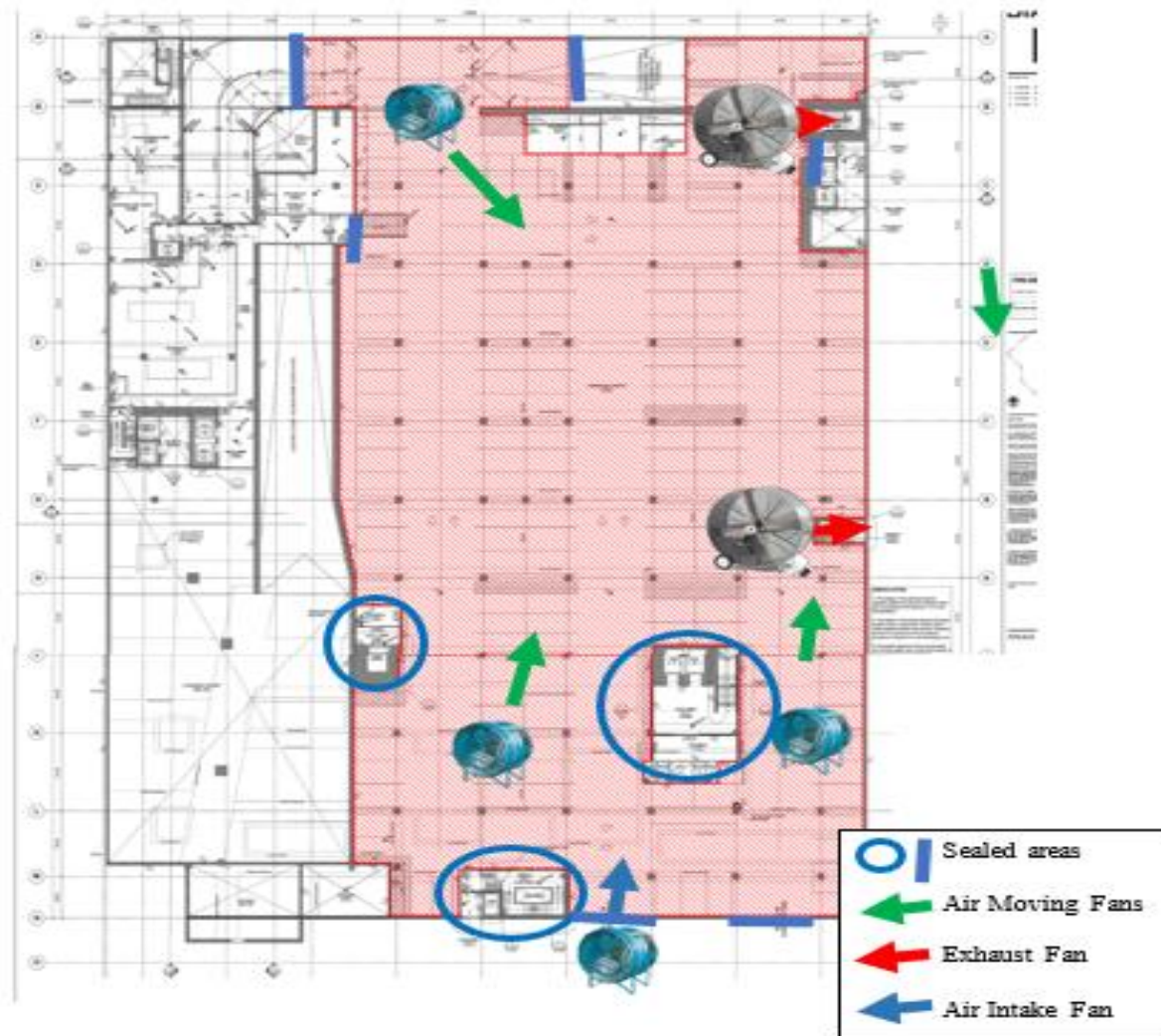
Safety awareness by installer ensures proper installation – bidders should be trained

SAFETY CONSIDERATIONS & ODOR MANAGEMENT

- **PPE:**
 - OSHA lists allowable MMA concentrations:
 - TWA, STEL, etc
 - Organic respirators required if levels are exceeded
- **Engineering Controls:**
 - High volume fans and tubing to evacuate work area
 - Plastic sheeting enclosures
 - Must be cognizant of air intakes and adjacent areas
- **How to Measure?**
 - Portable gas detection meters



SAFETY CONSIDERATIONS & ODOR MANAGEMENT



SAFETY CONSIDERATIONS & ODOR MANAGEMENT

■ Contractors Role:

- Have a documented safety plan with SDS's
- Have crew fit tested and organic respirators on site
- Have a portable gas detection meter with MMA tubes
- Ensure workers can effectively discuss safety if needed
- Have the owner post signage and communicate work being completed

MMA basic handling safety

Flammability MMA is classified as a flammable liquid by the U.S. D.O.T. It has a flash point of approximately 50° F. This is the temperature at which vapor directly above a liquid will ignite when exposed to an ignition source. In comparison, the flash point for acetone is 0° F. and gasoline is -35° F. Any sources of ignition must not be allowed in areas where Sikalastic MMA's is present. This includes lit cigarettes, open flame heaters, pilot lights, burners, and other equipment that would contain an open flame. Fire Extinguishers (Type B) should be stationed at both the mix station and any storage areas.

Toxicity Maximum exposure limits have been established by OSHA at 50 ppm over an 8 hour period (TWA) and short term (STEL) Safety tests of Sikalastic MMA's materials established that it is highly unlikely vapor concentrations will ever exceed the legally permitted values if used properly. Consult product MSDS for more information on exposure limits. If there is a concern about levels a, MMA gas detector should be used to measure exposure levels.

Odor Sikalastic MMA's resins have a discernible odor. This smell makes people aware of MMA's presence. It does not make Sikalastic MMA's products dangerous to humans or animals. Once the product is fully cured (one to three hours), this odor disappears completely. MMA has an extremely low odor threshold of 83 ppb (parts per billion). This means just a small amount of resin can give off a strong odor. In comparison many other commonly used solvents, for example acetone, have an odor threshold which is almost 1000 times higher. These materials require a larger amount of material to give off the same amount of odor.

On Site Precautions. The use of proper safety equipment is recommended to maintain a safe work site. Safety Glasses & Gloves should be worn when handling MMA materials. When working with fillers such as Aerosil, an approved dust mask should be worn. Contact lenses should be avoided when working with MMA. If lenses come into direct contact with MMA resin they can be subject to softening. An organic vapor mask can be worn if the odor threshold is surpassed.

SIKALASTIC PUMA TRAFFIC SYSTEMS

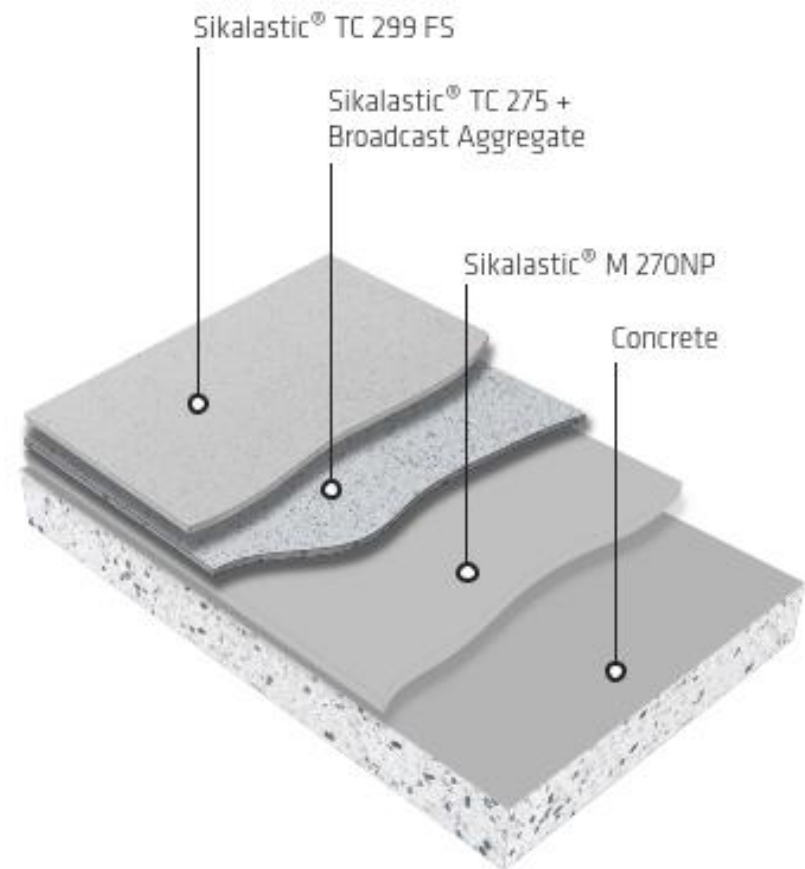


Exceptional protection for traffic decks requiring superior long-term durability in challenging conditions

Sikalastic 2850 & Sikalastic 2900

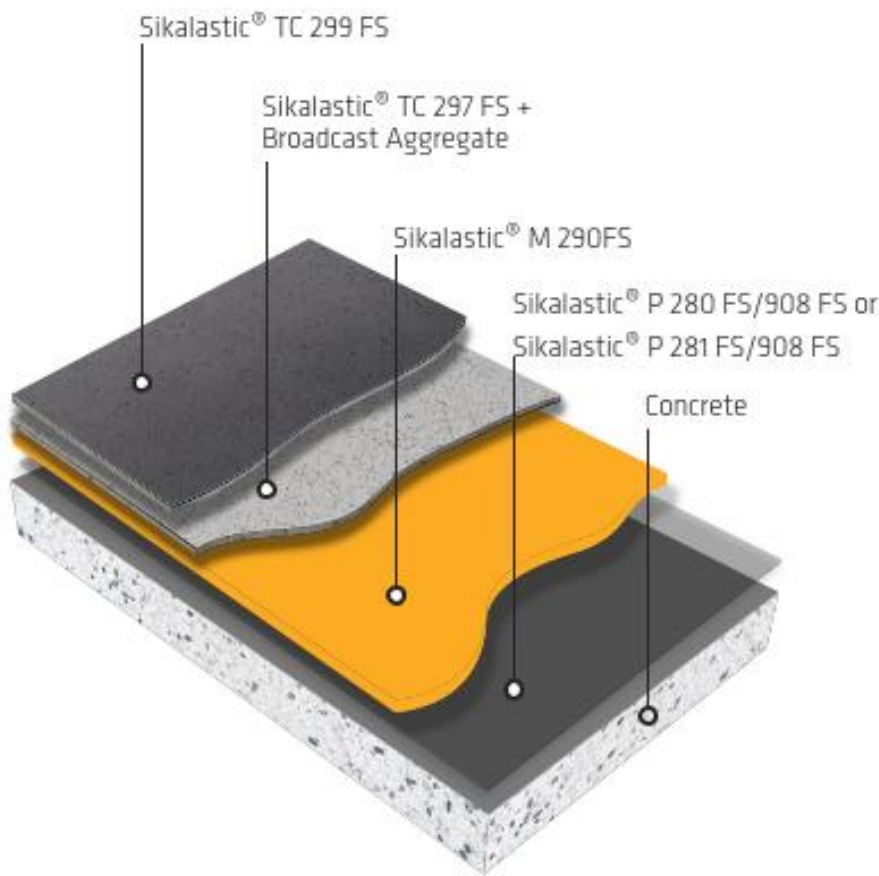
SIKALASTIC PUMA TRAFFIC SYSTEMS

SIKALASTIC® 2850



and

SIKALASTIC® 2900



Sikalastic 2850 & 2900 Surface Preparation



- Concrete Repair
- Mechanical Preparation
- Joints and Cracks
- Terminations

Sikalatic 2850 & 2900

Concrete Repair

Condition Assessment



Sikalastic 2850 & 2900

Concrete Repair

Cementitious

- SikaEmaco T 1060 Repair Mortar
- SikaEmaco T 1061 Repair Mortar
- SikaQuick -1000

MMA

- SikaEmaco -6000



Sikalastic 2850 & 2900

Concrete Repair

- **Cementitious**
 - Square cut edges with concrete saw
 - 1/2" minimum in depth
 - Avoid featheredges (no gypsum-based levelers)
 - Keep patches square or rectangular shaped



Sikalastic 2900

Concrete Repair

- **SikaEmaco -6000**
 - 15 -20-minute working time
 - Requires Primer
 - 2-part Liquid and Powder component
 - BPO/Initiator is in the powder
 - Must be primed
 - Chemical bond between coating and repair
 - Re-coat 1 hour
 - 1/8" to full depth



Sikalastic 2900

Concrete Repair

SikaEmaco -6000

Aggregate Extension

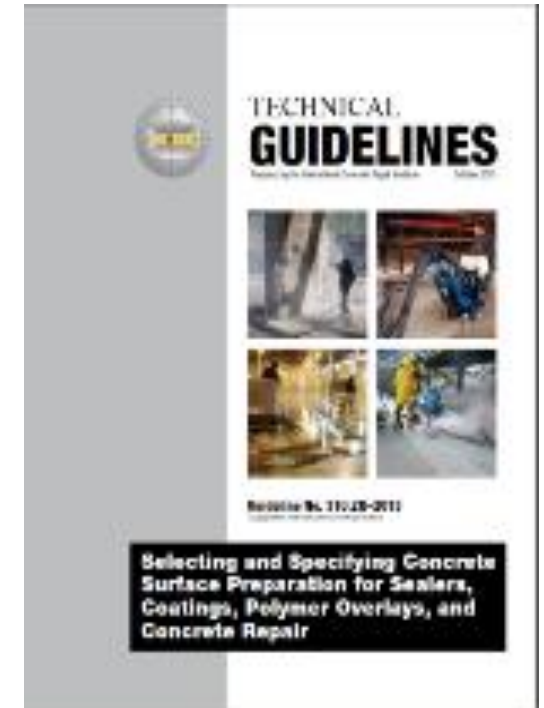
REPAIR THICKNESS FEET IN (MM)	EXTENSION % BY WEIGHT	AGGREGATE GRAIN SIZE	LBS OF AGGREGATE	SQUARE FEET	CUBIC
1/8 (3.2)	—	—	—	29.3	0.30
1/4 (6.4)	—	—	—	14.6	0.30
1/2 (12.7)	10	1/16" to 1/8"	4	7.9	0.33
3/4 (19)	25	1/16" to 1/8"	10	5.9	0.37
1 (25.4)	50	3/16" to 3/8"	20	5.4	0.45
1 1/2 (38)	75	3/16" to 3/8"	30	4.2	0.52
2 (50.8)	100	1/4" to 3/4"	40	3.5	0.59

Sikalatic 2850 & 2900

Surface Profile

CSP Standards From CSP-3 to CSP-5

- Refer to the ICRI Guideline 310.2R-2013.
International concrete repair institute
- Selecting and specifying concrete surface preparation for sealers, coatings, and polymer overlays.
- Website: www.icri.org



- CSP Profile chips

Sikalastic 2850 & 2900

Shot Blast / Grinding



- Ride on Shot-blaster



- Always remove excess shot from substrate surface

Sikalastic 2850 & 2900

Shot Blast / Grinding

Areas inaccessible to shot blasting must be prepared by:

- Grinding
- Needle gun
- Sand blasting



Sikalastic 2850 & 2900

Detailing

Cracks and Joints

- Always tool sealant flush with surface
- Sikaflex NP2/SL2
- Sikalastic M 290 FS – 2900 only
 - Sikalastic P 280FS/908FS needed



Sikalastic 2900

Detailing

Cracks and Joints

- Always receive stripe coat
- Must Prime with Sikalastic P 280FS/908FS
- 25 mils WFT of M 290FS Basecoat
- Typically, 4" wide Stripe coat



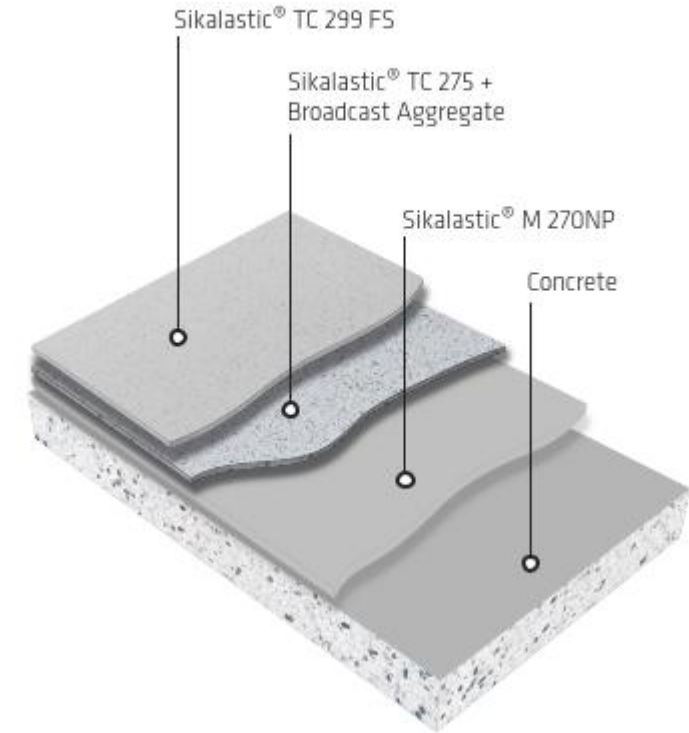
- Non-moving joints and cracks $> 1/16''$ require routing to a minimum $1/4''$ by $1/4''$

SIKALASTIC 2850 - SYSTEM COMPONENTS

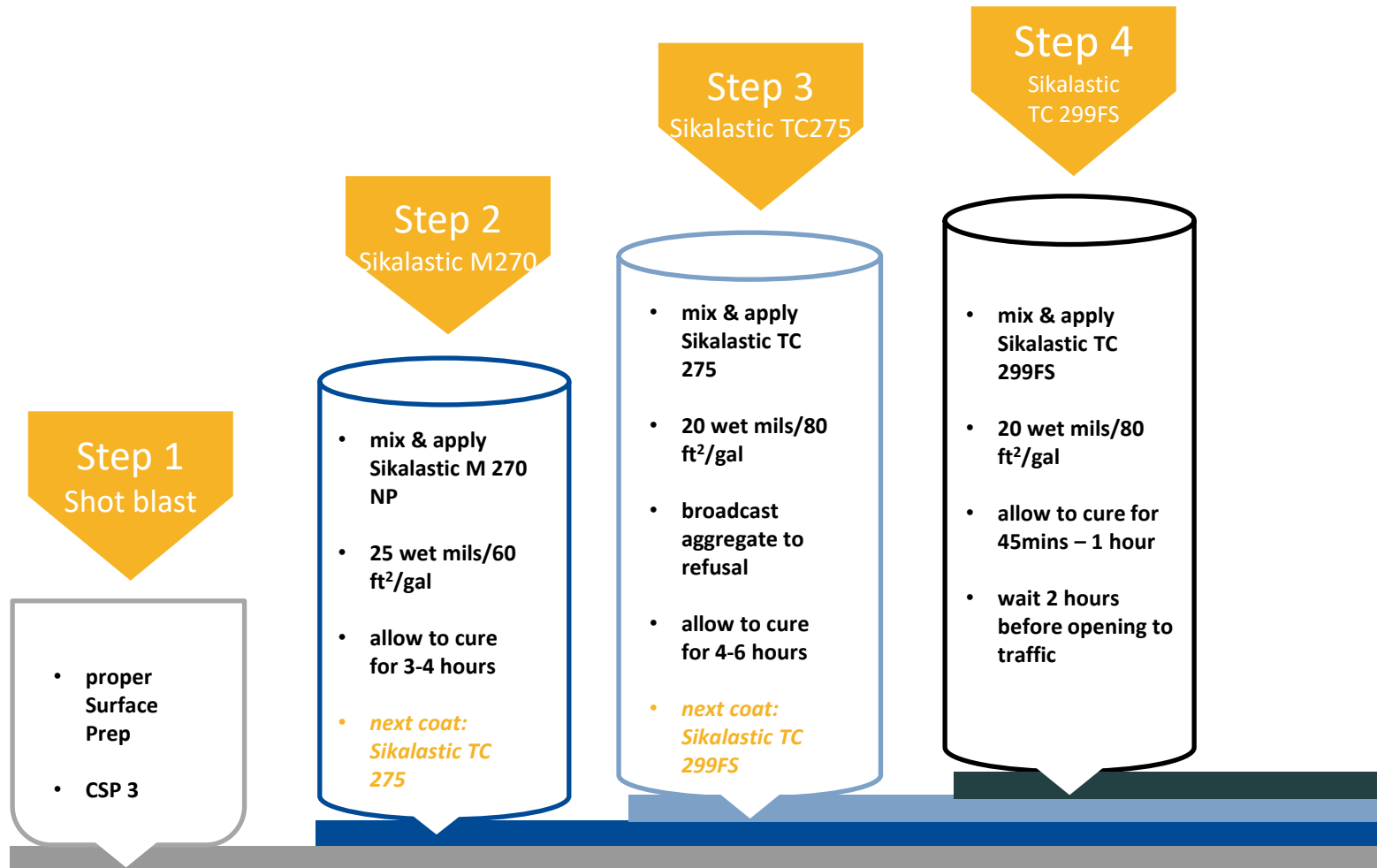
Sikalastic 2850

- **Sikalastic M 270 NP – *Primerless Basecoat (polyurethane)***
 - Incorporates Part A + Part B
- **Sikalastic TC 275 – *Intermediate Coat (polyurethane)***
 - Incorporates Part A + Part B
- **Sikalastic TC 299FS – *Top Coat (methyl methacrylate - MMA)***
 - Incorporates Sikalastic 918FS hardener + Pigment PGM 155 Series

SIKALASTIC® 2850



SIKALASTIC 2850 – APPLICATION STEPS

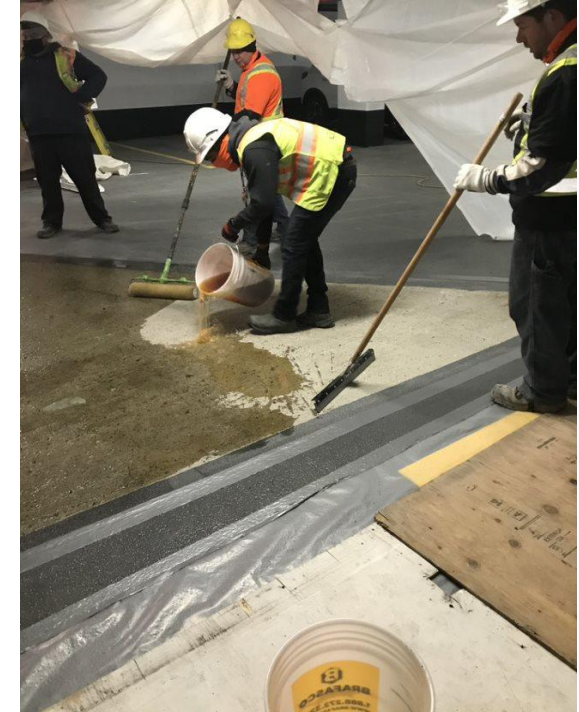


Sikalastic 2850 Installation

Basecoat

Sikalastic M 270 NP

- Appx 20-minute working time
- 25 wet mils / 60 sq.ft./gal.
- 3 – 4 hr cure
- Notched Squeegee and Backroll



Sikalastic 2850 Installation

Wear Coat

Sikalastic TC 275

- Appx 20-minute working time
- 20 wet mils / 80 sq.ft./gal.
- Notch Squeegee and Backroll to aggregate to refusal



Sikalastic 2850 Installation

Topcoat

Sikalastic TC 299FS

- 10 -15-minute working time
- 20 mils - 80 sqft/gal.
- Roller Applied, or notched squeegee, and backroll
- 45-60 Minute cure
- Open for traffic **2 hours after** topcoat has cured



Sikalastic® 918 FS is the catalyst for Sikalastic® TC 299 FS at all temperatures. Chart details amount of Sikalastic® 918 FS required, based on temperature, added to one (1) gallon of Sikalastic® TC 299 FS resin.

°F (°C)	Sikalastic® 918 FS (fl. oz.)
°30 (°-1)	11
°33 (°1)	11
°35 (°2)	11
°40 (°4)	11
°45 (°7)	9
°50 (°10)	8.5
°55 (°13)	7.5
°60 (°16)	6.5
°65 (°18)	5.5
°70 (°21)	4.5
°75 (°24)	4
°80 (°27)	3
°85 (°29)	2.5
°90 (°32)	2

TECHNICAL DATA GUIDE

BUILDING TRUST



SYSTEM DATA SHEET

Sikalastic® Vehicular Traffic 2850

HYBRID POLYURETHANE-METHYL METHACRYLATE WATERPROOFING, TRAFFIC-BEARING MEMBRANE SYSTEM

PRODUCT DESCRIPTION

Sikalastic® Vehicular Traffic 2850 is a fluid-applied, hybrid polyurethane-methyl methacrylate waterproofing system. It allows for fast turnaround time while maintaining durability.

Sikalastic® Vehicular Traffic 2850 is composed of:

- Sikalastic® M 270 NP - a two-component, fast-curing polyurethane base coat
- Sikalastic® TC 275 - a two-component fast curing aromatic polyurethane top coat
- Sikalastic® TC 299FS - a solvent-free, two-component, 100% reactive methyl methacrylate (MMA) resin
- Sikalastic® 918FS - a powder hardener that initiates the MMA cure
- Sikafloor PGM 155 Pronto - powder pigment

CHARACTERISTICS / ADVANTAGES

- Two-component system utilizes flexible polyurethane and world-class MMA technologies
- Hybrid system provides waterproofing capabilities as well as faster setting times, even in cooler climates, to help reduce downtime
- High strength with excellent bonding capabilities to a variety of concrete substrates
- Seamless waterproof membrane helps protect concrete from freeze/thaw damage; protects occupied spaces below from water damage and has no seams that may result in leaks
- Excellent chemical and chloride resistance helps protect against common parking deck chemicals including gasoline, diesel fuel, oil, alcohol, ethylene glycol, de-icing salt, bleach and cleaning agents as well as chloride intrusion

INTERNAL

BUILDING TRUST

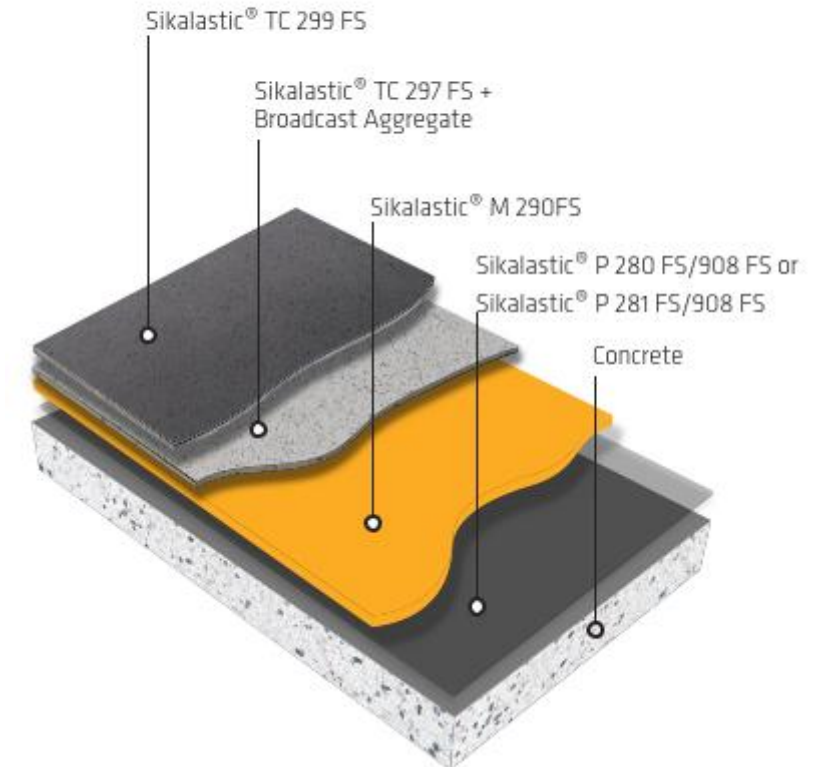


SIKALASTIC 2900 - SYSTEM COMPONENTS

Sikalastic 2900

- Sikalastic P 280FS or P 281FS – *Primer (methyl methacrylate - MMA)*
 - + Sikalastic 908 & incorporates Sikalastic 918FS hardener
- Sikalastic M 290FS – *Basecoat (Hybrid MMA/Polyurethane)*
 - + Sikalastic 918FS hardener
- Sikalastic TC 297FS – *Intermediate Coat*
 - + Sikalastic 918FS hardener + Pigment PGM 155 Series
- Sikalastic TC 299FS – *Top Coat*
 - + Sikalastic 918FS hardener + Pigment PGM 155 Series

SIKALASTIC® 2900



Sikalastic 2900 Installation

Mixing Tools



Measuring by volume



Surface thermometer



Jiffy, Shear mixing blades



Notched Squeegee

Sikalastic 2900 Installation

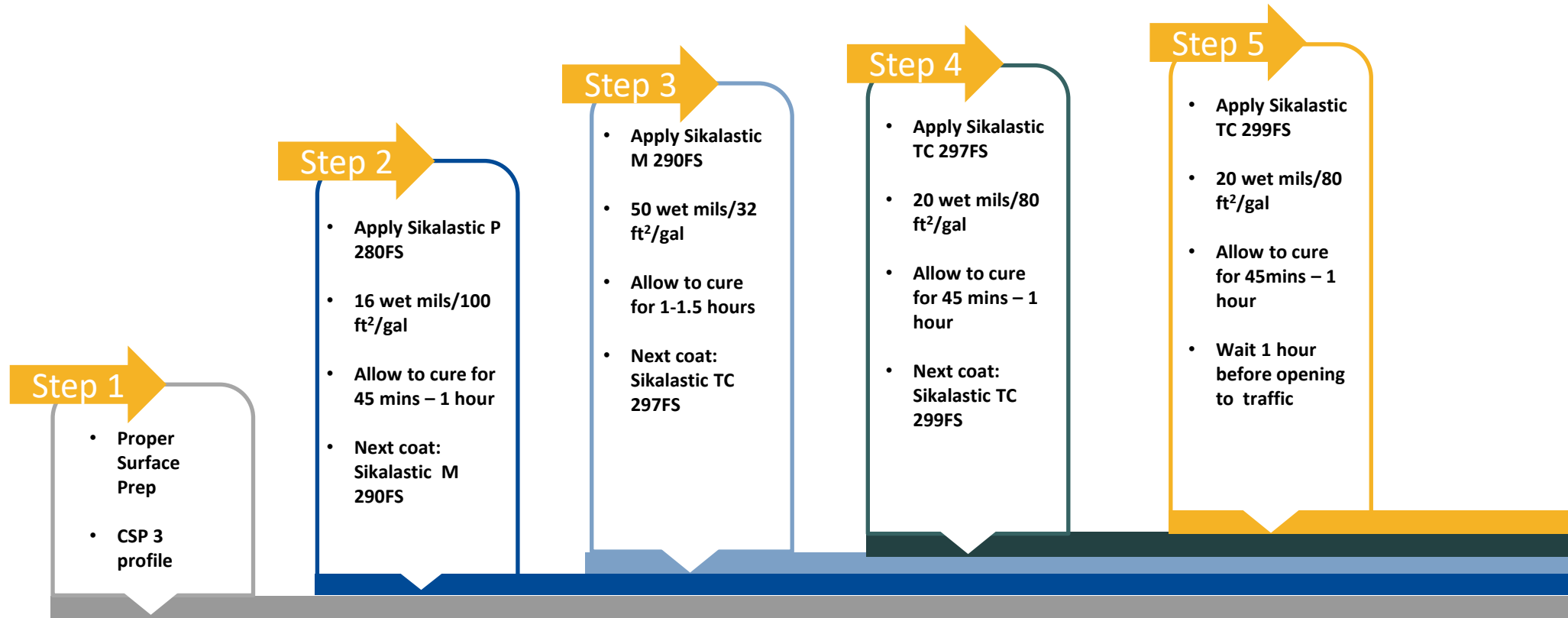
System Installation

Bond Tests

- Sand and resin Mix
- Pre-Priming
- Sand sieve size
- 4-5 parts sand
- Placed every 500 –1,000 sq.ft.
- Locate in strategic locations



SIKALASTIC 2900 – APPLICATION STEPS



Sikalastic 2900 Installation

Priming

Sikalastic P 280FS/908FS Additive or P 281FS/908 Additive + appropriate amount of Sikalastic 918FS

- 10 -15 minute working time
- 45 min – 1 hr cure
- Always use 908FS additive
- Cure to tack free satin finish
- Primer all detailed areas prior to installing base coat.
- MUST not exceed 100 sq ft/gallon or <16 wet mils



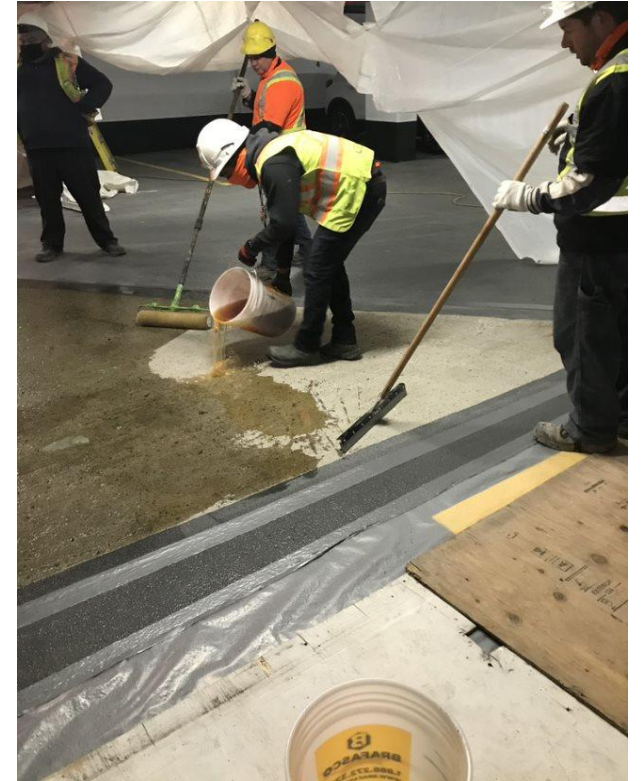
Sikalastic Traffic 2900 Mix Chart			
°F	°C	Sikalastic P 280FS with Sikalastic 908FS	Sikalastic P281FS with Sikalastic 908FS
°30	°-1	6	14.5
°33	°1	5.5	14
°35	°2	5.5	13.5
°40	°4	5.25	13
°45	°7	5	12.5
°50	°10	4.5	11.5
°55	°13	4.25	10
°60	°16	4	9
°65	°18	3.5	8
°70	°21	3.25	7
°76	°24	3	6
°80	°27	2.75	5.5
°85	°29	2.5	5
°90	°32	2.25	4.5

Sikalastic 2900 Installation

Basecoat

Sikalastic M 290FS

- 10 -15 minute working time
- 50 mils / 32 sqft/gal.
- 1 – 1.5 hr. cure
- Use notched Squeegee application
- Easy to Mix and place
- **Backroll only if necessary**
- **Do not walk in material with spikes**



Waterproofing innovation that does more with less

Sikalastic 2900 Installation

Wear – Intermediate Coat

Sikalastic TC 297FS

- 10 -15 minute working time
- 20 mils - 80 sq.ft./gal.
- 45 min – 1 hr cure
- Roller Applied, or Notched Squeegee / Back-Roll



Sikalastic 2900 Installation

Topcoat

Sikalastic TC 299FS

- 10 -15 minute working time
- 20 mils - 80 sq ft/gal.
- 45 min – 1 hr. cure
- Roller Applied, or notched squeegee, and Back-Roll



TECHNICAL DATA GUIDE

BUILDING TRUST



SYSTEM DATA SHEET

Sikalastic® Vehicular Traffic 2900

FAST CURING METHYL METHACRYLATE / POLYURETHANE WATERPROOFING, TRAFFIC-BEARING MEMBRANE SYSTEM FOR VEHICULAR AREAS

PRODUCT DESCRIPTION

Sikalastic® Vehicular Traffic 2900 is a fluid-applied polyurethane-modified methyl methacrylate waterproofing system. The rapid cure characteristic of the system allows for full system cure within a single day – minimizing facility down time. Sikalastic® Vehicular Traffic 2900 bridges cracks at low temperatures and can be opened to traffic in just one hour after final application.

CHARACTERISTICS / ADVANTAGES

- Blend of polyurethane and methyl methacrylate technologies provides extreme durability and abrasion resistance while maintaining crack-bridging properties
- Rapid cure allows for quick installation with minimal facility downtime
- Low temperature cure extends application season
- Seamless, impervious coating that is easy to clean and maintain
- Flexible system that withstands temperature swings



PROJECT TURNAROUND TIMELINES

Sikalastic 2500

- 5 hours primerless basecoat
- 5 hours intermediate coat
- 5 hours topcoat
- 24 hours to sit



Sikalastic 2850

- 4.5 hours primerless basecoat
- 4.5 hours intermediate coat
- 1 hour MMA topcoat
- 2 hours to sit



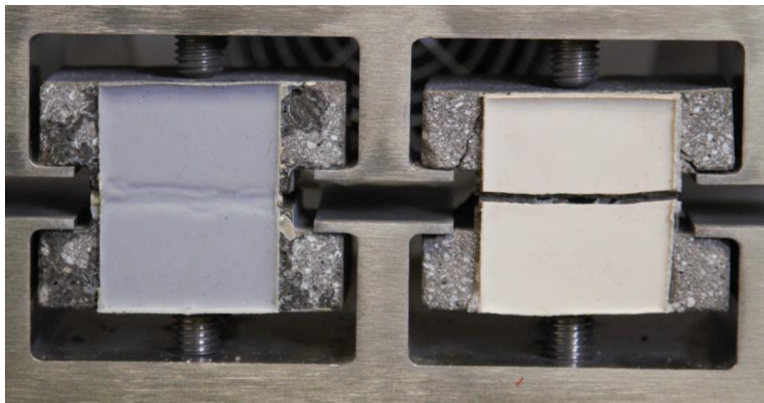
Sikalastic 2900

- 1 hour primer
- 1 hour basecoat
- 1 hour intermediate coat
- 1 hour topcoat
- 1 hour to sit



STRONG UVPS OF SIKALASTIC 2900

- The layers tell a story
 - Not all MMAs are equal
 - Layer/system thickness optimization
- Outstanding crackbridging capabilities (based on ASTM C 1305)
 - Not all competitor pass industry testing
- No field added fillers
- BPO / Pigment added by volume not weight
- Recoat opportunities – Sikalastic P 281 FS MMA-Primer
- 3rd party validation, resides within ASTM C-957



SWRI SEALANT • WATERPROOFING & RESTORATION INSTITUTE

Issued to: Master Builders Solutions
Product: MasterSeal 2850

ASTM D 412: Tensile Strength of Top Coat
MasterSeal TC 275 Top Coat: Tensile Strength: 3,270 psi / Elongation: 30% Pass ✓
MasterSeal TC 299FS Top Coat: Tensile Strength: 1,194 psi / Elongation: 35%

ASTM D 4541: Adhesion of Base Coat
MasterSeal M 270 NP Pull-off Adhesion: 418 psi Pass ✓

ASTM D 4060: Abrasion Resistance of Top Coat
MasterSeal TC 275 Top Coat: Abrasion Resistance: 61 mgms loss – mgms loss/1,000 cycles Pass ✓
MasterSeal TC 299 FS Top Coat: Abrasion Resistance: 50 mgms loss – mgms loss/1,000 cycles

Validation Date: 10/24/22-10/23/27

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DECK COATING VALIDATION
www.swrionline.org

SWRI SEALANT • WATERPROOFING & RESTORATION INSTITUTE

Issued to: Master Builders Solutions
Product: MasterSeal 2900

ASTM D 412: Tensile Strength of Top Coat
MasterSeal TC 297FS Top Coat: Tensile Strength: 1,778 psi / Elongation: 149% Pass ✓
MasterSeal TC 299FS Top Coat: Tensile Strength: 1,092 psi / Elongation: 38%

ASTM D 4541: Adhesion of Base Coat
MasterSeal P 200FS and MasterSeal M 290FS Pull-off Adhesion: 404 psi Pass ✓

ASTM D 4060: Abrasion Resistance of Top Coat
MasterSeal TC 297 FS Top Coat: Abrasion Resistance: 71 mgms loss – mgms loss/1,000 cycles Pass ✓
MasterSeal TC 299 FS Top Coat: Abrasion Resistance: 45 mgms loss – mgms loss/1,000 cycles

Validation Date: 10/24/22-10/23/27

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DECK COATING VALIDATION
www.swrionline.org

SIKALASTIC PUMA TRAFFIC SYSTEMS (OPTIONS)

Heavy Duty System

	Product	Coverage Rate	Wet Mils
1	Sikalastic P 280FS Primer	100 ft ² /gal	16
2	Sikalastic M 290FS Basecoat	32 ft ² /gal	50
3	Sikalastic TC 297FS Wearcoat	80 ft ² /gal	20

4 Sikalastic TC 299FS Topcoat 100 ft²/gal 20



106 mils

Extra Heavy Duty System

	Product	Coverage Rate	Wet Mils
1	Sikalastic P 280FS Primer	100 ft ² /gal	16
2	Sikalastic M 290FS Basecoat	32 ft ² /gal	80
3	Sikalastic TC 297FS Wearcoat	80 ft ² /gal	30

4 Sikalastic TC 299FS Topcoat 100 ft²/gal 40



176 mils

TECHNICAL EXPERTISE IN SIKA

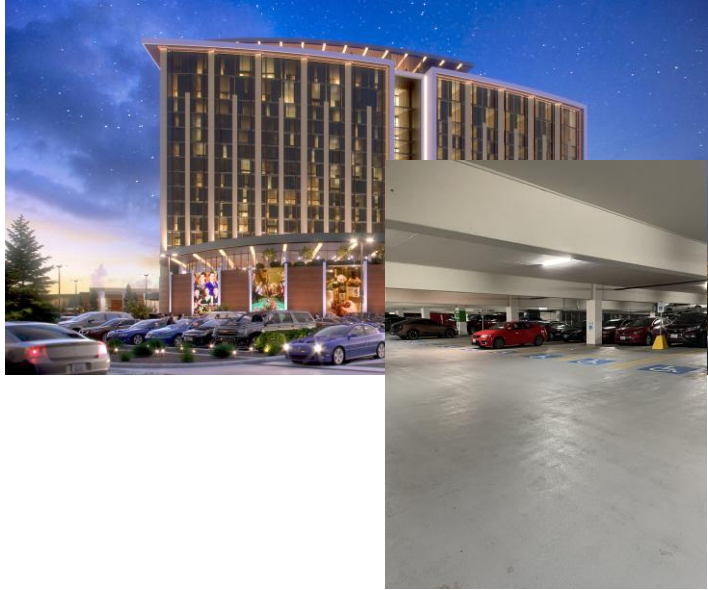
We have

- An understanding of industry needs around traffic coatings
- Established technologies that meet and exceed challenges
- Innovative research group pushing the boundaries of science
- Expert field service team meeting customer challenges
- In service projects spanning 10+ years utilizing methyl methacrylates (MMA) chemistry on parking garages



Over 30 years of proven performance

PUMA SYSTEMS



Muckleshoot Casino Parking Garage,
Auburn, WA

Sikalastic Traffic 2850

- L1 parking garage
- 38,000 ft²
- 2024



Karp Research Laboratories
Boston Children's Hospital,
Boston MA

Sikalastic Traffic 2900

- Phase 1 20,000 ft²
- Phase 2 20,000 ft²
- 2023 - 20244



Sound Transit - Issaquah Park & Ride,
Issaquah, WA

Sikalastic Traffic 2850

- Top level of garage
- 80,000 ft²
- 2023-2024

PUMA SYSTEMS



1201 3rd Street,
Seattle WA

Sikalastic Traffic 2850 & Sikalastic 2900

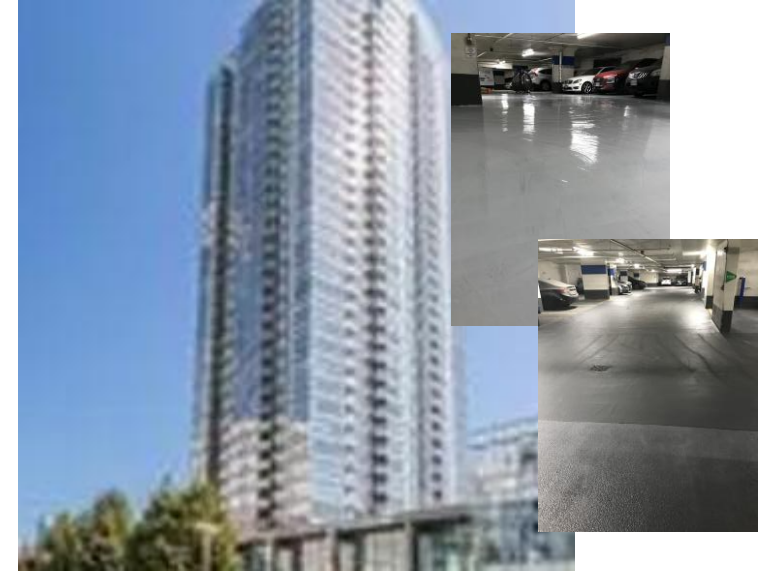
- 2900 - Trash rooms
- 2850 – loading docks
- 10,000 ft²
- 2022



Absolute Towers,
Mississauga Ontario

Sikalastic Traffic 2900

- Parking Garage – Primary Turns, Garbage laneways
- 15,000 ft²



11 Mariner Terrace,
Toronto Ontario

Sikalastic Traffic 2900

- Below grade Parking Garage
- 10,000 ft²
- Phase 1: 3000 ft²
- Phase 2: 2500 ft²

PUMA SYSTEMS



Kent Station,
Seattle WA

Sikalastic Traffic 2850

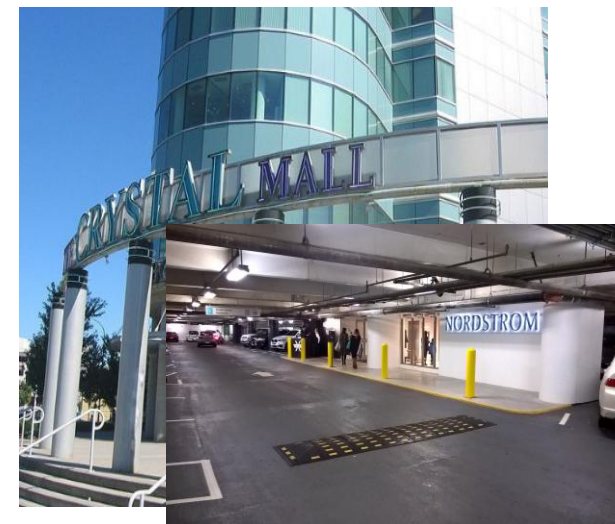
- Parking Garage



WSU Fine Arts Parking Garage
Pullman, WA

Sikalastic Traffic 2900

- Ramp Helixes
- 8,000 ft²



Crystal Mall,
Vancouver CA

Sikalastic Traffic 2850

- Parking Garage

PUMA SYSTEMS



1315 Bough Beeches Blvd.,
Mississauga, Ontario

Sikalastic Traffic 2900

- Garbage and move in rooms
- 1,200 ft²



363 Colborne St.,
London, Ontario

Sikalastic Traffic 2900 & Sikalastic
Traffic 2850

- Critical turn areas in parking garage (3,200 ft²)
- Mechanical Room (900 ft²)



Renaissance Hotel
Seattle, WA

Sikalastic Traffic 2900

- Garage Entry Ramp
- 2,000 sq ft
- 2024

QUESTIONS



BUILDING TRUST

