KEMPER SYSTEM

Technical Manual Division 7

More Than Waterproofing

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Kemper System America, Inc. reserves the right to change its materials, installation methods and requirements for warranty issuance at any time. Refer to the Kemper System America, Inc. website, www.kempersystem.net, for the most current, updated information.

Rev. 01/2020

Headquarters: **Kemper System America, Inc.** | 1200 North America Drive | West Seneca, NY 14224
Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

KEMPER SYSTEM

Policy Statement

General

Kemper System America, Inc. (KSA) manufacturers and distributes reinforced, cold liquid-applied waterproofing products. These products require integration into the design and construction process. Design and construction of any waterproofing or roofing system is typically accomplished through the input of the following team members, each of whom has specific expertise and related responsibilities:

Material Manufacturer:	Material manufacturing; material and installation technology; warranty;
Specifier/Owner's Representative:	Evaluation of existing conditions; scope of work; design and specifications; monitoring of installation;
Contractor:	Material and equipment procurement; acceptance of existing conditions; installation expertise and manpower;
Building Owner:	End user; identification of functional requirements; budgetary control; building maintenance and integrity.

Limitations

The general requirements and guide specifications within this document provided by KSA contain the latest information relating to the use and application of the products manufactured by KSA. They have been prepared and are offered as a general guide to assist architects, engineers, specifiers, contractors and owners in the design and application of the membrane products. As each project is unique, these recommendations are not intended as absolute. Regional or specific job variances and building code regulations may take priority in some cases; therefore, each project should be considered individually, with specifications tailored to the specific project conditions and consistent with good application practices.

For installation and use requirements and guide specifications of insulation, auxiliary components, structural deck and other products not offered or sold by KSA, contact the respective manufacturer or refer to published products and installation requirements and/or recommendations.

KSA as a manufacturer and distributor is not involved in the design or construction of buildings or structures. Furthermore, KSA has no control over the designer's decisions, changes or substitutions, or over the solicitation and issuance of contract documents containing specifications for KSA products, developed independent of the requirements, limitations and recommendations herein. KSA will under no circumstances accept responsibility for the performance of its products when damage to its products result from improper building design, deficiencies in the building structure, systems and components, vapor drive/moisture content within substrate and deck materials, vehicular and pedestrian traffic, or other similar conditions that are beyond the control of KSA.

Since exemplary workmanship in applying a reinforced waterproofing system is essential, qualified supervision during the installation of the various system components should be exercised. KSA recommends that the owner retail the services of a 3rd party inspector if full-time supervision of the system installation is required.

Good design and installation practices are the key to a functional waterproofing system. The contractor bears sole responsibility for the quality of the application and, with the specifier/architect/engineer, selection of the system components. KSA is dedicated to the promotion of good installation practices, and generally endorses the workmanship recommendations of the National Roofing Contractors Association (NRCA), the Sheet Metal Contractors Association (SMACNA), and related organizations.

KSA expressly disclaims any responsibility for the performance of surfacing materials, whether offered or sold by KSA or by others, including coatings, aggregate finishes, and non-warranted traffic surfacings. KSA considers all surfacing materials to be wearing surfaces and, by definition, in need of periodic maintenance, occasional repair, and eventual replacement.

KSA expressly disclaims any responsibility for the manner and method of design, plan, installation or any other aspect of construction of the waterproofing system other that is extended by expressed warranty.

Warranty

KSA provides a warranty to the owner for its waterproofing products in accordance with the terms and conditions of the Warranty. Changes to the warranty documents can only be effected by a written addendum, bearing the signature of an authorized officer of KSA.

Reference Standards

Waterproofing is a complex and dynamic task, where change is a constant concern. Therefore, the waterproofing team is advised and urged to review current materials published by the various industry associations, institutes and organizations, including, but not limited to the following:

NRCA	(National Roofing Contractor Association)
SPRI	(Single Ply Roofing Industry)
SMACNA	(Sheet Metal and Air Conditioning Contractor's National Association)
ARMA	(Asphalt Roofing Manufacturers Association)
NIST	(National Institute of Standards and Technology)
ASTM	(American Society for Testing and Materials)

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TRAFFIC COATING SYSTEM	**KEMPERDUR® TC** Polyurethane Traffic Coating System
	KEMPERDUR® AC Polymethylmethacrylate (PMMA) Traffic Coating System

NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW.KEMPERSYSTEM.NET.

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KEMPER SYSTEM

Application - Assembly Sheet

KEMPEROL® 2K-PUR MEMBRANE ROOFING SYSTEM

BASIC USE

The KEMPEROL® 2K-PUR, Polyurethane, membrane system is intended for use in roofing applications where an "odor-free" application is of paramount importance.

Typical applications include: green, white, and blue roofing, recover roofing, insulated roofing, IRMA roofing, and metal recover roofing.

PRODUCT DESCRIPTION

The KEMPEROL® 2K-PUR roofing system is a fully reinforced, cold liquid-applied membrane system.

The KEMPEROL® 2K-PUR system is based primarily upon advanced polyurethane, epoxy, and acrylic technology. Depending on the substrate, the primer component of the system is either a two-component epoxy or urethane. The membrane and flashing resin components of the system are two-component urethane. Depending on application, a two-component epoxy surfacing is applied when alkalinity resistant or adhesion key surfacing is required. A decorative urethane or acrylic finish can also be applied as either a smooth color coating or a textured aggregate surfacing

The KEMPEROL® 2K-PUR system includes the following components:

- KEMPERTEC® EP, EP5, D or R Primer
- KEMPEROL® 2K-PUR Resin with KEMPEROL® 165
  Polyester Fleece Reinforcement
- KEMPERTEC® EP Alkalinity Protection Surfacing (If Required)
- KEMPERDUR® DEKO 2KS-FR Finish
  or BSF-R Finish (If Required)

The KEMPEROL® 2K-PUR membrane system components average under 10 g/l VOC with a non-solvent-based option.

TECHNICAL ADVANTAGE

The KEMPEROL® 2K-PUR "odor-free" system is suitable for exterior applications where absence of odor during application is critical.

The KEMPEROL® 2K-PUR system is exceptionally durable, reliable, and long-lasting, and has a combination of physical properties that makes it ideal for an exceptionally wide range of applications.

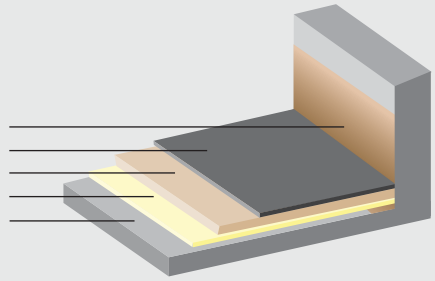
Unlike many other roofing systems, the KEMPEROL® 2K-PUR system incorporates flashings that are made of the same materials as the roofing membrane itself, essentially monolithic membrane that readily adapts to the contours of the substrate.

The KEMPEROL® 2K-PUR system bonds directly to the substrate, eliminating the possibility of water moving laterally beneath the roofing membrane. The system eliminates seams, pitch pockets, metal sleeves and termination bars, which are the locations where most leakage occurs.

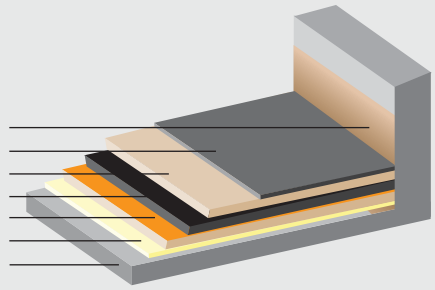
KEMPEROL® 2K-PUR bonds tenaciously to all common construction materials including concrete, CMU block, brick, wood, stainless steel, copper, galvanized steel, aluminum, cast iron, glass, fiberglass, cement board, treated gypsum board, and rigid PVC. The KEMPEROL® 2K-PUR system can be used to transition from one material to another without need of intermediate separation flashings.

TYPICAL ASSEMBLIES

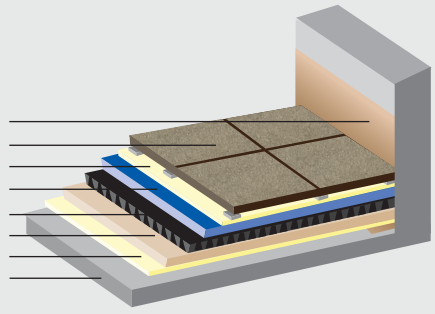
STANDARD ROOFING ASSEMBLY



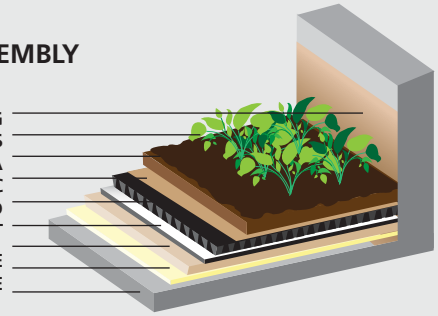
INSULATED ROOFING ASSEMBLY



IRMA ROOFING ASSEMBLY



GREEN/LANDSCAPED ROOFING ASSEMBLY



KEMPEROL® 2K-PUR is resistant to UV exposure, is root and rot resistant, and resists degradation by most oils, grease, and other common chemical substances. In addition, KEMPEROL® 2K-PUR is unaffected by standing water and ice, and can be left submerged indefinitely.

INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL FOR COMPLETE INSTALLATION INFORMATION.

- **Substrate Preparation:** Ensure that the substrate is clean and dry. Remove all contamines and existing coatings from all surfaces to allow proper adhesion of the KEMPEROL® system. Roughen all metal surfaces by grinding.

- **Substrate Repair:** Route out all moving cracks and fill with urethane sealant that is equal to or exceeding 1/8 inch. Non-moving cracks will be filled during priming application.

- **Temporary Roof / Vapor Retarder:** As required, install a layer of mineral-surfaced base sheet or comparable self adhhered vapor retarder to the strucural deck.

- **Insulation / Cover Board:** For insulated assemblies, install approved isocyanurate foam insulation/cover board to the structural deck, either with urethane foam adhesive or mechanical fasteners.

- **Primer:** Apply KEMPERTEC® EP / EP5 epoxy-based primer to concrete and masonry substrates. Apply KEMPERTEC® TD / R urethane-based primer to metal and wood substrates. Allow to fully cure.

- **Membrane:** Install KEMPEROL® 2K-PUR membrane and flashing system to primed surfaces. All moving cracks and joints between plywood, insulation and cover boards are to be stripped in prior to application of the full system.

- **Surfacing:** For all applications where concrete or other cementitious overburden is to be installed, apply KEMPERTEC® EP/EP5 primer over the entire area to be covered, and broadcast KSA Approved Aggregate into the wet primer at 50 lbs/100 ft^2.

- **Coating:** For applications where a colored or reflective coating or aggregated surfacing is desired, apply KEMPERDUR® DEKO 2KS-FR, or BSF-R Finish.

- **Overburden:** For IRMA and green/ landscaped assemblies, install extruded polystyrene insulation, drainage board, concrete pavers, water retainage mat, soil/ growing media, plantings, or other specified and approved overburden materials.

All Kemper System America, Inc. (KSA) products are intended for PROFESSIONAL USE ONLY.

WARRANTY INFORMATION

KSA warrants its products to be free of defects, and will provide replacement materials at no charge for any product proven to be defective.

KSA provides technical installation training to qualified contractors, who are then eligible to become Kemper System Authorized Applicators.

In addition, for qualified installations, Kemper System Approved Applicators are eligible to apply for (NDL) watertightness warranties issued by Kemper System that provide repair for leaking conditions through the KEMPEROL® system due to defects in products or installation workmanship. Projects must be registered, approved and inspected by the Technical Department prior to commencement of work. Typical warranty duration is twenty (20) years.

TECHNICAL AND SALES SUPPORT

KSA sales and technical representatives are available to support the proper specification and application of KSA products to ensure a long and successful performance life.

Services provided include: on-site evaluations; specification assistance; jobstart, interim and final completion inspections.

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Application - Assembly Sheet

KEMPEROL® 2K FR - Colors / Reflect 2K FR MEMBRANE ROOFING SYSTEM

BASIC USE

The KEMPEROL® 2K FR - Colors / Reflect 2K FR, Polyurethane, reflective membrane system is intended for use in roofing applications where an "odor-free" reflective application is of paramount importance.

Typical applications include: Cool roofing, recover roofing, insulated roofing, and metal recover roofing.

PRODUCT DESCRIPTION

The KEMPEROL® 2K FR - Colors / Reflect 2K FR is a cold liquid-applied, fully reinforced, highly reflective, fire rated Cool Roof membrane system.

The KEMPEROL® 2K FR - Colors / Reflect 2K FR system is based primarily upon advanced polyurethane and epoxy technology. Depending on the substrate, the primer component of the system is either a two-component epoxy or urethane. The membrane and flashing resin components of the system are two-component urethane. Depending on application, a two-component epoxy surfacing is applied when alkalinity resistant or adhesion key surfacing is required.

The KEMPEROL® 2K FR - Colors / Reflect 2K FR system includes the following components:

- KEMPERTEC® EP, EP5, D or R Primer
- KEMPEROL® Reflect 2K FR Resin

with KEMPEROL® 165 Polyester Fleece Reinforcement

- KEMPERTEC® EP Alkalinity Protection Surfacing (If Required)

The KEMPEOL® 2K-PUR membrane system components average under 10 g/l VOC with a non-solvent-based option.

TECHNICAL ADVANTAGE

The KEMPEROL® 2K FR - Colors / Reflect 2K FR "odor-free" system is suitable for exterior roofing applications where a reflective and fire-rated assembly with the absence of odor during application is critical.

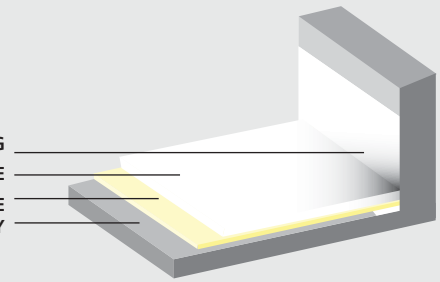
The KEMPEROL® 2K FR - Colors / Reflect 2K FR system is exceptionally durable, reliable, and long-lasting. The system has been tested and is listed by Cool Roof Rating Council (www.coolroofs.org). KEMPEROL® Reflect 2K FR boasts an initial SRI value of 110.

Unlike many other roofing systems, the KEMPEROL® 2K FR - Colors / Reflect 2K FR system incorporates flashings that are made of the same materials as the roofing membrane itself, essentially creating a seamless, self-terminating, monolithic membrane that readily adapts to the contours of the substrate. The KEMPEROL® 2K FR - Colors / Reflect 2K FR system bonds directly to the substrate, eliminating the possibility of water moving laterally beneath the roofing membrane. The system eliminates seams, pitch pockets, metal sleeves and termination bars, which are the locations where most leakage occurs.

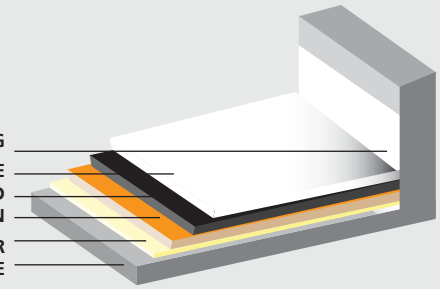
KEMPEROL® 2K FR - Colors / Reflect 2K FR bonds tenaciously to all common construction materials including concrete, CMU block, brick, wood, stainless steel, copper, galvanized steel, aluminum, cast iron, glass, fiberglass, cement board, treated gypsum board, and rigid PVC. The KEMPEROL® 2K FR - Colors / Reflect 2K FR system can be used to transition from one material to another without need of intermediate separation flashings.

TYPICAL ASSEMBLIES

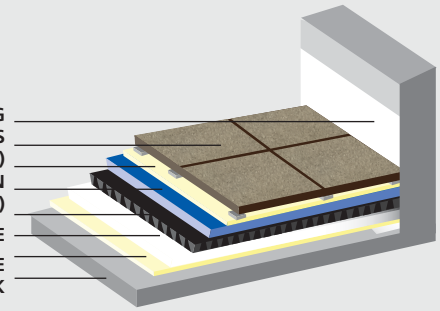
STANDARD ROOFING ASSEMBLY



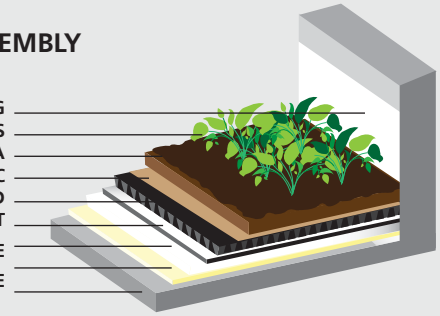
INSULATED ROOFING ASSEMBLY



IRMA ROOFING ASSEMBLY



GREEN/LANDSCAPED ROOFING ASSEMBLY



KEMPEROL® 2K FR - Colors / Reflect 2K FR is resistant to UV exposure, color stable, is root and rot resistant, and resists degradation by most oils, grease, and other common chemical substances.

INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL PRODUCT INFORMATION FOR COMPLETE INSTALLATION INFORMATION.

• **Substrate Preparation:** Ensure that the substrate is clean and dry. Remove all contaminants and existing coatings from all surfaces to allow proper adhesion of the KEMPEROL® system. Roughen all metal surfaces by grinding.

• **Substrate Repair:** Route out all moving cracks and fill with urethane sealant that is equal to or exceeding 1/8 inch. Non-moving cracks will be filled during priming application.

• **Temporary Roof / Vapor Retarder:** As required, install a layer of mineral-surfaced base sheet or comparable self-adhered vapor retarder to the structural deck.

• **Insulation / Cover Board:** For insulated assemblies, install approved isocyanurate foam insulation / cover board to the structural deck, either with urethane foam adhesive or mechanical fasteners.

• **Primer:** Apply KEMPERTEC® EP / EP5 epoxy-based primer to concrete and masonry substrates. Apply KEMPERTEC® D / R urethane-based primer to metal and wood substrates. Allow to fully cure.

• **Membrane:** Install KEMPEROL® 2K FR - Colors / Reflect 2K FR membrane and flashing system to primed surfaces. All moving cracks and joints between plywood, insulation and cover boards are to be stripped in prior to application of the full system.

• **Surfacing:** For all applications where concrete or other cementitious overburden is to be installed, apply KEMPERTEC® EP / EP5 primer over the entire area to be covered, and broadcast KSA Approved Aggregate into the wet primer at 50 lbs/100 ft^2.

• **Overburden:** For IRMA and green / landscaped assemblies, install extruded polystyrene insulation, drainage board, concrete pavers, water retainage mat, soil/ growing media, plantings, or other specified and approved overburden materials.

All Kemper System America, Inc. (KSA) products are intended for PROFESSIONAL USE ONLY.

WARRANTY INFORMATION

KSA warrants its products to be free of defects, and will provide replacement materials at no charge for any product proven to be defective.

KSA provides technical installation training to qualified contractors, who are then eligible to become Kemper System Authorized Applicators.

In addition, for qualified installations, Kemper System Approved Applicators are eligible to apply for (NDL) watertightness warranties issued by Kemper System that provide repair for leaking conditions through the KEMPEROL® system due to defects in products or installation workmanship. Projects must be registered, approved and inspected by the Technical Department prior to commencement of work. Typical warranty duration is twenty (20) years.

TECHNICAL AND SALES SUPPORT

KSA sales and technical representatives are available to support the proper specification and application of KSA products to ensure a long and successful performance life.

Services provided include: on-site evaluations; specification assistance; jobstart, interim and final completion inspections.

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Application - Assembly Sheet

KEMPEROL® AC SPEED FR MEMBRANE ROOFING SYSTEM

BASIC USE

The KEMPEROL® AC Speed FR, Polymethylmethacrylate (PMMA) membrane system is intended for use in roofing applications where the quick-curing speed is of paramount importance.

Typical applications include: green, white, and blue roofing, recover roofing, insulated roofing, IRMA roofing, and metal recover roofing

PRODUCT DESCRIPTION

The KEMPEROL® AC Speed FR roofing system is a fully reinforced, cold liquid-applied membrane system.

The KEMPEROL® AC Speed FR system is based primarily upon Polymethylmethacrylate (PMMA) technology, incorporating a liquid component and a powdered catalyst, with each component curing in approximately one hour. A decorative PMMA finish can be applied as either a smooth color coating or a textured aggregate surfacing.

The KEMPEROL® AC Speed FR system includes the following components:

- KEMPERTEC® AC Primer
- KEMPEROL® AC Speed FR Resin with KEMPEROL® 120 Polyester Fleece Reinforcement
- KEMPERDUR® AC Finish with KSA KEMPEROL® Approved Aggregate for adhesion key surfacing (If Required)

The KEMPEROL® AC Speed FR membrane system components average under 32 g/L VOC and are not solvent-based.

TECHNICAL ADVANTAGE

The KEMPEROL® AC Speed FR same-day application system is suitable for exterior applications only where the speed of system application is critical.

The KEMPEROL® AC Speed FR system is exceptionally durable, reliable, and long-lasting, and has a combination of physical properties that makes it ideal for an exceptionally wide range of applications.

Unlike many other roofing systems, the KEMPEROL® AC Speed FR system incorporates flashings that are made of the same materials as the roofing membrane itself, essentially creating a seamless, self-terminating, monolithic membrane that readily adapts to the contours of the substrate.

roofing membrane. The system eliminates seams, pitch pockets, metal sleeves and termination bars, which are the locations where most leakage occurs.

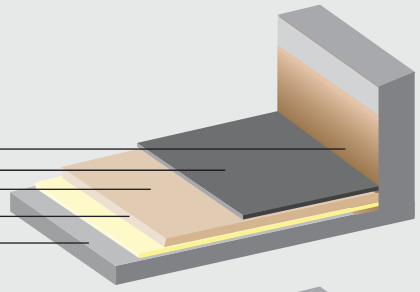
KEMPEROL® AC Speed FR bonds tenaciously to all common construction materials including concrete, CMU block, brick, wood, stainless steel, copper, galvanized steel, aluminum, cast iron, glass, cement board, treated gypsum board, and rigid PVC.

The KEMPEROL® AC Speed FR system can be to transition from one material to another without need of intermediate separation flashings.

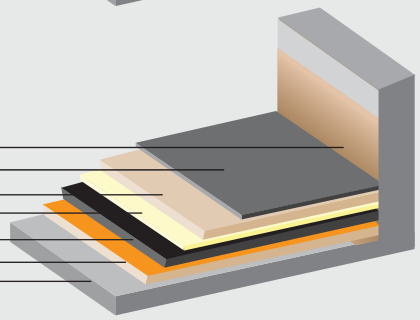
KEMPEROL® AC Speed FR is resistant to UV exposure, is root and rot resistant, and resists degradation by most oils, grease, and other common chemical substances. In addition, KEMPEROL® AC Speed FR is unaffected by standing water and ice, and can be left submerged indefinitely.

TYPICAL ASSEMBLIES

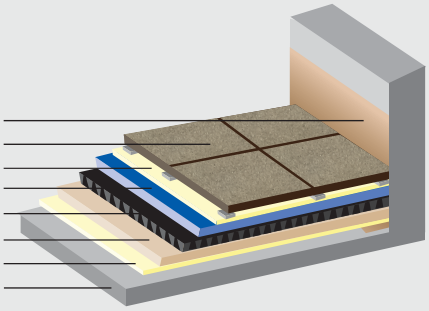
STANDARD ROOFING ASSEMBLY



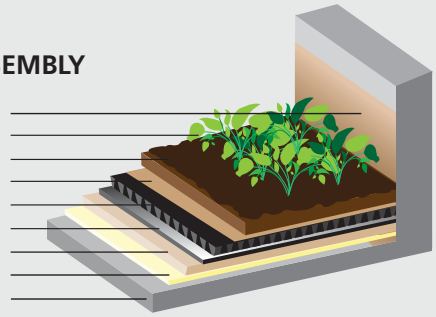
INSULATED ROOFING ASSEMBLY



IRMA ROOFING ASSEMBLY



GREEN/LANDSCAPED ROOFING ASSEMBLY



INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL PRODUCT INFORMATION FOR COMPLETE INSTALLATION INFORMATION.

• **Substrate Preparation:** Ensure that the substrate is clean and dry. Remove all contaminants and existing coatings from all surfaces to allow proper adhesion of the KEMPEROL® system. Roughen all metal flashing surfaces by grinding.

• **Substrate Repair:** Route out all moving cracks and fill with urethane sealant that is equal to or exceeding 1/8 inch. Non-moving cracks will be filled during priming application.

• **Temporary Roof / Vapor Retarder:** As required, install a layer of mineral-surfaced base sheet or comparable self-adhered vaper retarder to the structural deck.

• **Insulation / Cover Board:** Install approved isocyanurate foam insulation/cover board to the structural deck, either with urethane foam adhesive or mechanical fasteners.

• **Primer:** Apply KEMPERTEC® AC primer to all substrate surfaces. Allow to fully cure.

• **Membrane:** Install KEMPEROL® AC Speed FR membrane and flashing system to primed surfaces. All moving cracks are to be stripped in prior to application of the full system.

• **Surfacing:** For all applications where an adhered overburden is to be applied, such as concrete, tile, stucco, asphalt pavement, etc., you may apply KEMPERTEC® AC primer over the entire area to be covered, and broadcast KSA Approved Aggregate into the wet primer. This layer acts as an adhesion key and it not required.

• **Coating:** For applications where a colored coating or aggregated surfacing is desired, apply KEMPERDUR® AC finish.

• **Overburden:** For IRMA and green/landscaped assemblies, install extruded polystyrene insulation, drainage boards, concrete pavers, water retainage mat, soil/growing media, plantings, or other specified and approved overburden materials.

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WARRANTY INFORMATION

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In addition, for qualified installations, Kemper System Authorized Applicators are eligible to apply for watertightness warranties issued by Kemper System that provide for repair at no charge to address covered leaking conditions due to defects in products or installation workmanship. Standard warranty duration is twenty (20) years.

TECHNICAL AND SALES SUPPORT

KSA sales and technical representatives are available to support the proper specification and application of KSA products to ensure a long and successful performance life.

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Application - Assembly Sheet

KEMPEROL® 2K-PUR MEMBRANE WATERPROOFING SYSTEM

BASIC USE

The KEMPEROL® 2K-PUR, Polyurethane, membrane system is intended for use in waterproofing applications where an "odor-free" application is of paramount importance.

Typical applications include: plaza decks, interior, water features, below-grade, secondary containment, and many other related uses.

PRODUCT DESCRIPTION

The KEMPEROL® 2K-PUR waterproofing system is a fully reinforced, cold liquid-applied membrane system. It can be installed either as a complete edge-to-edge KEMPEROL® membrane system, or in discrete locations to address localized conditions.

The KEMPEROL® 2K-PUR system is based primarily upon polyurethane and epoxy technology. Depending on the substrate, the primer component of the system is either a two-component epoxy or urethane. The membrane and flashing resin components of the system are two-component urethane. Depending on application, a two-component epoxy surfacing is applied when alkalinity resistant or adhesion key surfacing is required. A decorative urethane or epoxy finish can also be applied as either a smooth color coating or a textured aggregate surfacing.

The KEMPEROL® 2K-PUR system includes the following components:

- KEMPERTEC® EP, EP5, D or R Primer
- KEMPEROL® 2K-PUR Resin with KEMPEROL® 165
Polyester Fleece Reinforcement
- KEMPERTEC® EP Alkalinity Protection Surfacing / Adhesion Key Surfacing (If Required)
- KEMPERDUR® EP-FR Finish (If Required)

The KEMPEROL® 2K-PUR membrane system components average under 10 g/l VOC and are not solvent-based.

TECHNICAL ADVANTAGE

The KEMPEROL® 2K-PUR "odor-free" system is suitable for both exterior and interior applications where absence of odor during application is critical.

The KEMPEROL® 2K-PUR system is exceptionally durable, reliable, and long-lasting, and has a combination of physical properties that makes it ideal for an exceptionally wide range of applications.

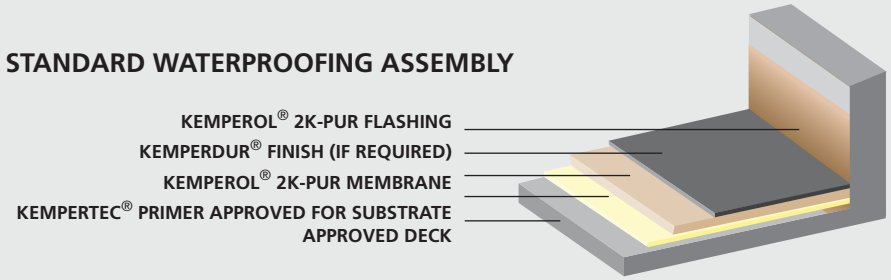
Unlike many other waterproofing systems, the KEMPEROL® 2K-PUR system incorporates flashings that are made of the same materials as the waterproofing membrane itself, essentially creating a seamless, self-terminating, monolithic membrane that readily adapts to the contours of the substrate.

The KEMPEROL® 2K-PUR system bonds directly to the substrate, eliminating the possibility of water moving laterally beneath the waterproofing membrane. The system eliminates seams, pitch pockets, metal flashings and termination bars - the locations where most leakage occurs.

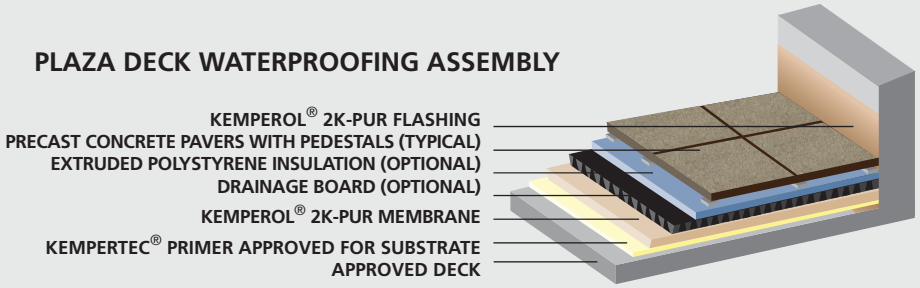
The KEMPEROL® 2K-PUR system adheres tenaciously to all common construction materials including concrete, CMU block, brick, wood, stainless steel, copper, galvanized steel, aluminum, cast iron, glass, fiberglass, cement board, treated gypsum

TYPICAL ASSEMBLIES

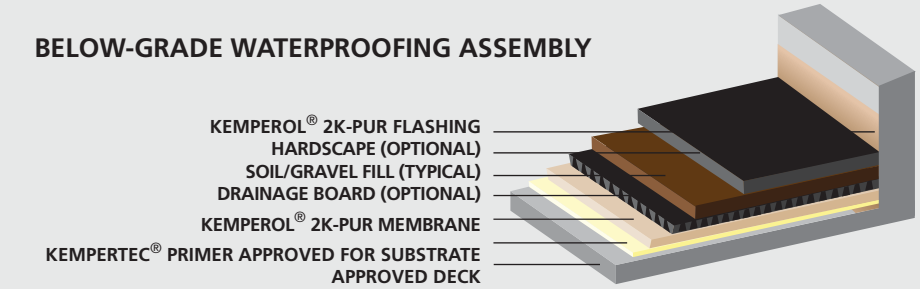
STANDARD WATERPROOFING ASSEMBLY



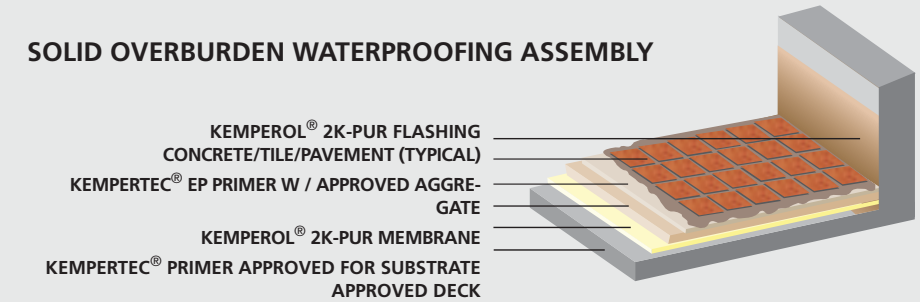
PLAZA DECK WATERPROOFING ASSEMBLY



BELOW-GRADE WATERPROOFING ASSEMBLY



SOLID OVERBURDEN WATERPROOFING ASSEMBLY



board, and rigid PVC. Because of its exceptional adhesion and flexibility, the KEMPEROL® 2K-PUR system can be used to transition from one type of material to another without need of intermediate separation flashings.

KEMPEROL® 2K-PUR is resistant to UV exposure, is root and rot resistant, and resists degradation by most oils, grease, and other common chemical substances. In addition, KEMPEROL® 2K-PUR is unaffected by standing water and ice, and can be left submerged indefinitely.

INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL PRODUCT INFORMATION FOR COMPLETE INSTALLATION INFORMATION.

• **Substrate Preparation:** Ensure that the substrate is clean and dry. Remove all contaminants and existing coatings from all surfaces to allow proper adhesion of the KEMPEROL® 2K-PUR system. Roughen all metal flashing surfaces by grinding.

• **Substrate Repair:** Route out all moving cracks and fill with urethane sealant that is equal to or exceeding 1/8 inch. Non-moving cracks will be filled during priming application.

• **Primer:** Apply KEMPERTEC® EP/EP5 epoxy-based primer to concrete and masonry substrates. Apply KEMPERTEC® D/R urethane-based primer to metal and wood substrates. Allow to fully cure.

• **Membrane:** Install KEMPEROL® 2K-PUR membrane and flashing system to primed surfaces. All moving cracks are to be reinforced with an initial strip of KEMPEROL® 2K-PUR membrane prior to application of the full system.

• **Surfacing:** For all applications where concrete or other cementitious overburden is to be installed, and for all applications where an adhered overburden is to be applied, (e.g. concrete, tile, stucco, asphalt pavement, etc.), apply KEMPERTEC® EP/EP5 primer over the entire area to be covered, and broadcast kiln-dried sand into the wet primer.

• **Coating:** For applications where a colored coating or aggregated surfacing is desired, please refer to the KEMPEROL® Technical Manual surfacing guide.

All Kemper System America, Inc. (KSA) products are intended for PROFESSIONAL USE ONLY.

WARRANTY INFORMATION

KSA warrants its products to be free of defects, and will provide replacement materials at no charge for any product proven to be defective.

KSA provides technical installation training to qualified contractors, who are then eligible to become Kemper System Authorized Applicators.

In addition, for qualified installations, Kemper System Approved Applicators are eligible to apply for (NDL) watertightness warranties issued by Kemper System that provide repair for leaking conditions through the KEMPEROL® system due to defects in products or installation workmanship. Projects must be registered, approved and inspected by the Technical Department prior to commencement of work. Typical warranty duration is twenty (20) years.

TECHNICAL AND SALES SUPPORT

KSA sales and technical representatives are available to support the proper specification and application of KSA products to ensure a long and successful performance life.

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KEMPER SYSTEM

Application - Assembly Sheet

KEMPEROL® AC SPEED FR MEMBRANE WATERPROOFING SYSTEM

BASIC USE

The KEMPEROL® AC Speed FR, Polymethylmethacrylate (PMMA) membrane system is intended for use in waterproofing applications where the quick-curing speed is of paramount importance.

Typical applications include: plaza decks, water features, below-grade, secondary containment, and many other related uses.

PRODUCT DESCRIPTION

The KEMPEROL® AC Speed FR waterproofing system is a fully reinforced, cold liquid-applied membrane system. It can be installed either as a complete edge-to-edge KEMPEROL®membrane system, or in discrete locations to address localized conditions.

The KEMPEROL® AC Speed FR system is based primarily upon Polymethylmethacrylate (PMMA) technology, incorporating a liquid component and a catalyst powder, with each component curing in approximately one hour.

The KEMPEROL® AC Speed FR system includes the following components:

- KEMPERTEC® AC Primer
- KEMPEROL® AC Speed FR Resin w / KEMPEROL® 120 Polyester Fleece Reinforcement
- KEMPERDUR® AC Finish w / KSA approved aggregate for adhesion key surfacing (If Required)

The KEMPEROL® AC Speed FR membrane system components average under 32 g/l VOC and are not solvent-based.

TECHNICAL ADVANTAGE

The KEMPEROL® AC Speed FR same-day application system is suitable for exterior applications only where the speed of system application is critical.

The KEMPEROL® AC Speed FR system is exceptionally durable, reliable, and long-lasting, and has a combination of physical properties that makes it ideal for an exceptionally wide range of applications.

Unlike many other waterproofing systems, the KEMPEROL® AC Speed FR system incorporates flashings that are made of the same materials as the waterproofing membrane itself, essentially creating a seamless, self-terminating, monolithic membrane that readily adapts to the contours of the substrate.

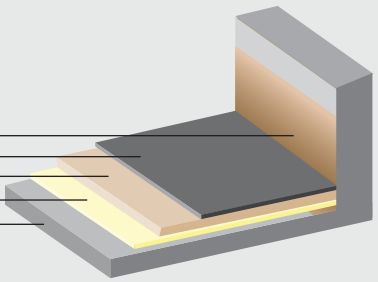
The KEMPEROL® AC Speed FR system bonds directly to the substrate, eliminating the possibility of water moving laterally beneath the waterproofing membrane. The system eliminates seams, pitch pockets, metal flashings and termination bars - the locations where most leakage occurs.

The KEMPEROL® AC Speed FR system adheres tenaciously to all common construction materials including concrete, CMU block, brick, wood, stainless steel, copper, galvanized steel, aluminum, cast iron, glass, fiberglass, cement board, treated gypsum board, and rigid PVC. Because of its exceptional adhesion and flexibility, the AC Speed FR system can be used to transition from one type of material to another without need of intermediate separation flashings.

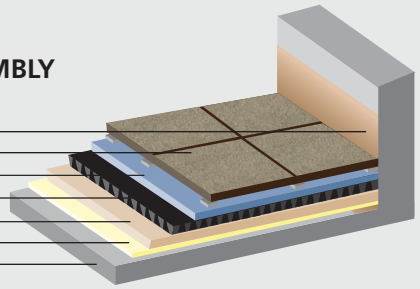
KEMPEROL® AC Speed FR is resistant to UV exposure, is root and rot resistant, and resists degradation by most oils, grease, and other common chemical substances.

TYPICAL ASSEMBLIES

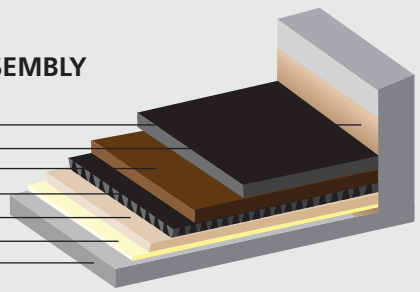
STANDARD WATERPROOFING ASSEMBLY



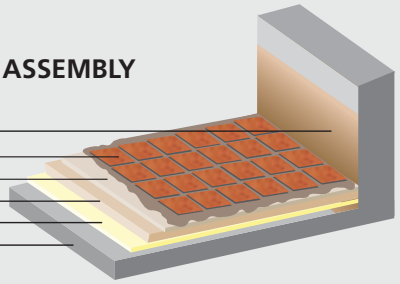
PLAZA DECK WATERPROOFING ASSEMBLY



BELOW-GRADE WATERPROOFING ASSEMBLY



SOLID OVERBURDEN WATERPROOFING ASSEMBLY



In addition, KEMPEROL® AC Speed FR is unaffected by standing water and ice, and can be left submerged indefinitely.

INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL PRODUCT INFORMATION FOR COMPLETE INSTALLATION INFORMATION.

• **Substrate Preparation:** Ensure that the substrate is clean and dry. Remove all contaminants, and existing coatings from all surfaces to allow proper adhesion of the KEMPEROL® AC Speed FR system. Roughen all metal flashing surfaces by grinding.

• **Substrate Repair:** Route out all moving cracks and fill with urethane sealant. Non-moving cracks will be filled during priming application.

• **Primer:** Apply KEMPERTEC® AC primer to all substrate surfaces. Allow to fully cure.

• **Membrane:** Install KEMPEROL® AC Speed FR membrane and flashing system to primed surfaces. All moving cracks are to be reinforced with an initial strip of KEMPEROL® AC membrane prior to application of the full system.

• **Surfacing:** For all applications where an adhered overburden is to be applied (e.g. concrete, tile, stucco, asphalt pavement, etc.), apply KEMPEROL® AC Speed FR or KEMPERDUR® AC finish over the entire area to be covered, and immediately broadcast KSA Approved Aggregate into the wet coating.

• **Coating:** For applications where a colored coating or aggregated surfacing is desired, apply KEMPERDUR® AC Finish.

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WARRANTY INFORMATION

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In addition, for qualified installations, Kemper System Approved Applicators are eligible to apply for (NDL) watertightness warranties issued by Kemper System that provide repair for leaking conditions through the KEMPEROL® system due to defects in products or installation workmanship. Projects must be registered, approved and inspected by the Technical Department prior to commencement of work. Typical warranty duration is twenty

TECHNICAL AND SALES SUPPORT

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Application - Assembly Sheet

KEMPERDUR® TC TRAFFIC COATING SYSTEM

BASIC USE

The KEMPERDUR® TC Traffc Coating, Polyurethane, system is intended for use as a surfacing system for vehicular and pedestrian applications where an "odor-free" application is of paramount importance.

PRODUCT DESCRIPTION

The KEMPERDUR® TC Traffic Coating system combines a heavy-duty, impact and abrasion-resistant aggregated surfacing system with a KEMPEROL® reinforced liquid-applied flashing system, or a complete edge-to-edge KEMPEROL® reinforced liquid-applied membrane and flashing system, to provide a unique combination of waterproofing and traffic-resistant surfacing over concrete substrates.

The KEMPERDUR® TC Traffic Coating system is based primarily upon polyurethane and epoxy technology. The primer component of the system is a two-component epoxy, and the membrane and surfacing resin components of the system are three-component urethane. Depending on application, the finish sealcoat is either a urethane, or a two-component epoxy.

The KEMPERDUR® TC Traffic Coating system includes the following components:

- KEMPERTEC® EP/EP5 Primer
- KEMPEROL® 2K-PUR Resin with KEMPEROL® 165
  Polyester Fleece Reinforcement
- KEMPERDUR® TC Coating with Aggregate
- KEMPERDUR® EP-FR Finish, Deko Finish, or Finish (Transparent)

The KEMPERDUR® TC Traffic Coating system components average under 10 g/l VOC with a non-solvent-based.

TECHNICAL ADVANTAGE

The KEMPERDUR® TC Traffic Coating "odor-free" system is suitable for both exterior and interior applications where absence of odor during application is critical.

Unlike typical traffic coating systems, the KEMPERDUR® TC Traffic Coating system incorporates a 80 mil thick reinforced waterproofing membrane/flashing at all critical areas. A complete edge-to-edge membrane and flashing system is used for exposed applications over occupied space, such as the top level of a parking garage or a terrace area.

A flashing-only system is used for protected applications or applications over unoccupied space, such as intermediate levels of a parking garage or an overhanging balcony.

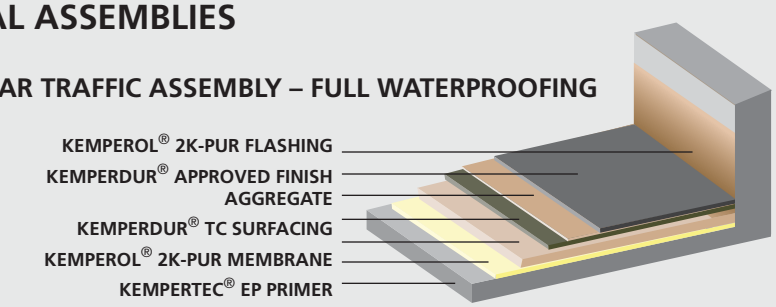
In addition, the KEMPERDUR® TC Traffic Coating system incorporates a self-leveling resin that is combined with a graded mineral filler to create a hard and durable high-build surfacing layer that also serves to bond the broadcasted surfacing aggregate, resulting in a typical finished surfacing thickness of 100 mils.

The traffic systems can incorporate a broadcast of Ceramaquartz aggregate or KSA approved aggregate with a sealcoat application of KEMPERDUR® EP-FR, Deko Finish or Finish (Transparent). Standard Ceramaquartz aggregate color blends are available.

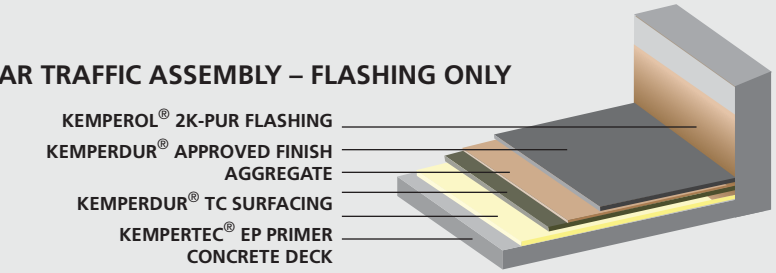
FM, UL, and other code approvals are available for specific assemblies and installations.

TYPICAL ASSEMBLIES

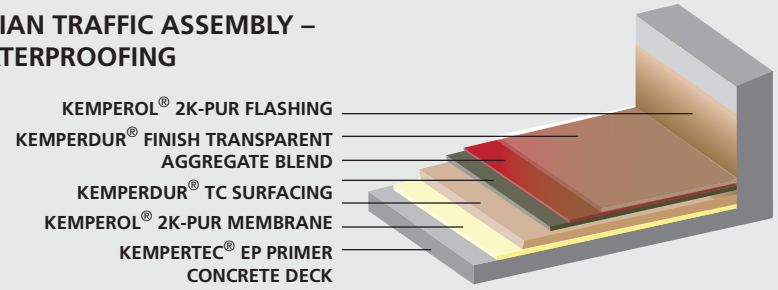
VEHICULAR TRAFFIC ASSEMBLY – FULL WATERPROOFING



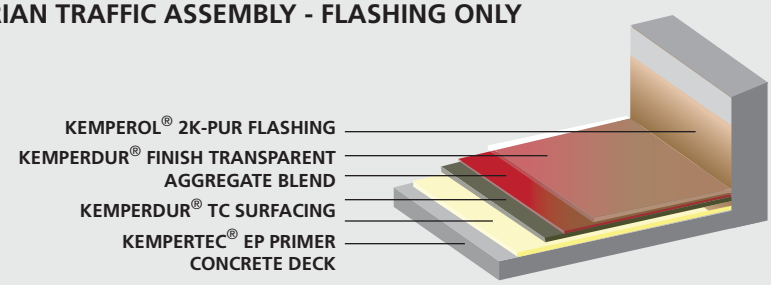
VEHICULAR TRAFFIC ASSEMBLY – FLASHING ONLY



PEDESTRIAN TRAFFIC ASSEMBLY – FULL WATERPROOFING



PEDESTRIAN TRAFFIC ASSEMBLY - FLASHING ONLY



INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL PRODUCT INFORMATION FOR COMPLETE INSTALLATION INFORMATION.

• **Substrate Preparation:** Ensure that the concrete substrate is clean and dry. Remove all contaminants and existing coatings from all surfaces to allow proper adhesion of the KEMPERDUR® system. Roughen all metal flashing surfaces by grinding.

• **Substrate Repair:** Route out all moving cracks and fill with urethane sealant. Non-moving cracks will be filled during priming application.

• **Primer:** Apply KEMPERTEC® EP / EP5 primer to the concrete substrate and all flashing surfaces at the perimeter, penetrations, expansion joints, and drain locations.

• **Membrane:** Install KEMPEROL® 2K-PUR membrane and flashings as required for application type. All moving cracks are to be treated w / urtheane sealant and to be reinforced with an initial strip of KEMPEROL® 2K-PUR membrane.

• **Surfacing:** Apply KEMPERDUR® TC Traffic Coating over the entire area and allow to self-level and de-aerate with an HDPE spiked roller immediately. Broadcast the selected aggregate into the wet surfacing resin so as to fully cover the surface.

• **Sealing:** Remove all loose aggregate from the applied surfacing. Apply selected KEMPERDUR® EP-FR Finish, KEMPERDUR® Deko Finish, OR KEMPERDUR® Finish to seal the aggregate surfacing.

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WARRANTY INFORMATION

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In addition, for qualified installations, Kemper System Approved Applicators are eligible to apply for (NDL) watertightness/surfacing performance warranties issued by Kemper System that provide repair for leaking conditions through the KEMPEROL® system due to defects in products or installation workmanship, and separation of surfacing from the membrane/substrate. Projects must be registered, approved and inspected by the Technical Department prior to commencement of work. Optional surfacing rider can be purchased for the term of ten (10) years.

TECHNICAL AND SALES SUPPORT

KSA sales and technical representatives are available to support the proper specification and application of KSA products to ensure a long and successful performance life.

Services provided include: on-site evaluations; specification assistance; jobstart, interim and final completion inspections.

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Application - Assembly Sheet

KEMPERDUR® AC TRAFFIC COATING SYSTEM

BASIC USE

The KEMPERDUR® AC Traffic Coating, Polymethylmethacrylate (PMMA), system is intended for use as a waterproofing and surfacing system for vehicular and pedestrian applications where the quick-curing speed is of paramount importance.

PRODUCT DESCRIPTION

The KEMPERDUR® AC Traffic Coating system combines a heavy-duty, impact and abrasion-resistant aggregated surfacing system with a KEMPEROL® reinforced liquid-applied flashing system, or a complete edge-to-edge KEMPEROL® reinforced liquid-applied membrane and flashing system, to provide a unique combination of waterproofing and traffic-resistant surfacing over concrete substrates.

The KEMPERDUR® AC Traffic Coating system is based upon Polymethylmethacrylate (PMMA) technology. Each component of the system incorporates a liquid component and a catalyst powder, with each component curing in approximately one hour.

The KEMPERDUR® AC Traffic Coating system includes the following components:

- KEMPERTEC® AC Primer
- KEMPEROL® AC Speed FR Resin with KEMPEROL® 120
  Polyester Fleece Reinforcement
- KEMPERDUR® AC Traffic Coating with Aggregate
- KEMPERDUR® AC Finish

The KEMPERDUR® AC Traffic Coating system components average under 35 g/l VOC and are not solvent-based, but there is a short-term odor associated with the materials until curing is achieved.

TECHNICAL ADVANTAGE

The KEMPERDUR® AC Traffic Coating same-day application system is suitable for exterior applications only where the speed of system application is critical.

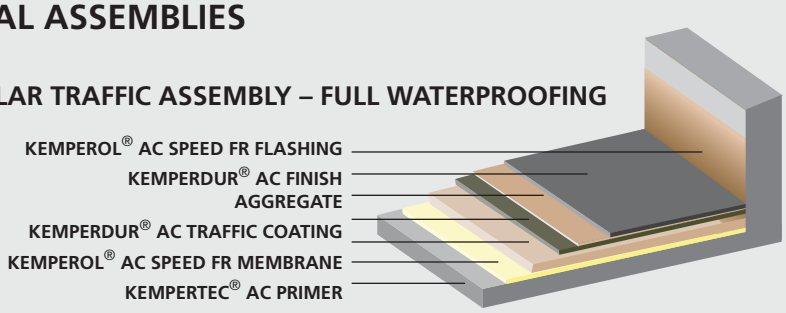
Unlike typical traffic coating systems, the KEMPERDUR® AC Traffic Coating system incorporates a 80 mil thick reinforced waterproofing membrane / flashing at all critical areas. A complete edge-to-edge membrane and flashing system is used for exposed applications over occupied space, such as the top level of a parking garage or a terrace area. A flashing-only system is used for protected applications or applications over unoccupied space, such as intermediate levels parking garage or an overhanging balcony.

In addition, the KEMPERDUR® AC Traffic Coating system incorporates a self-leveling resin that is combined with a graded mineral filler to create a hard and durable high-build surfacing layer that also serves to bond the broadcasted surfacing aggregate, resulting in a typical finished surfacing thickness of 100 mils.

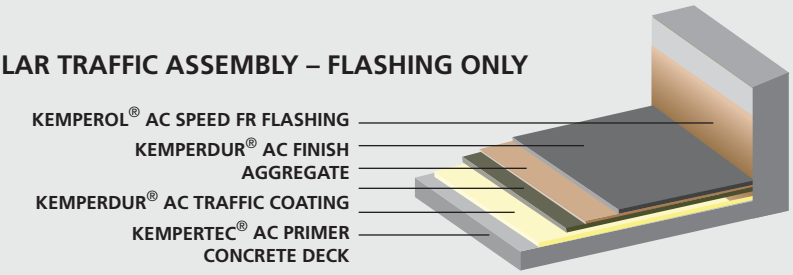
The traffic systems can incorporate a broadcast of Ceramaquartz aggregate or KSA approved aggregate with a sealcoat application of transparent or gray colored KEMPERDUR® AC Finish. Standard Ceramaquartz aggregate color blends are available.

TYPICAL ASSEMBLIES

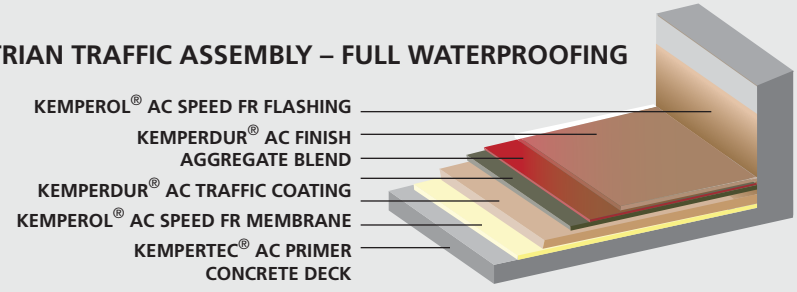
VEHICULAR TRAFFIC ASSEMBLY – FULL WATERPROOFING



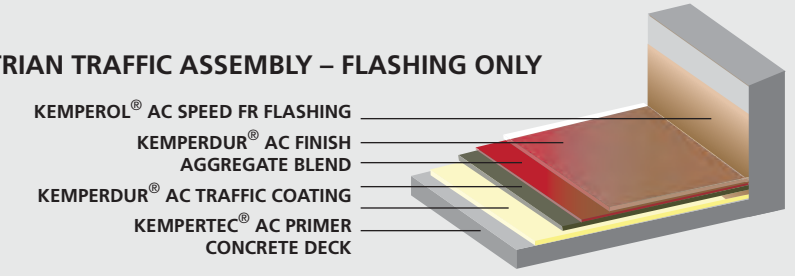
VEHICULAR TRAFFIC ASSEMBLY – FLASHING ONLY



PEDESTRIAN TRAFFIC ASSEMBLY – FULL WATERPROOFING



PEDESTRIAN TRAFFIC ASSEMBLY – FLASHING ONLY



INSTALLATION OUTLINE

REFER TO THE KEMPEROL® TECHNICAL MANUAL PRODUCT INFORMATION FOR COMPLETE INSTALLATION INFORMATION.

• **Substrate Preparation:** Ensure that the concrete substrate is clean and dry. Remove all contaminants and existing coatings from all surfaces to allow proper adhesion of the KEMPERDUR® system. Roughen all metal flashing surfaces by grinding.

• **Substrate Repair:** Route out all moving cracks and fill with urethane sealant. Non-moving cracks will be filled during priming application.

• **Primer:** Apply KEMPERTEC® AC primer to the concrete substrate and all flashing surfaces at the perimeter, penetrations, expansion joints, and drain locations.

• **Membrane:** Install KEMPEROL® AC Speed FR membrane and flashings as required for application type. All moving cracks are to be reinforced with an initial strip of KEMPEROL® AC membrane.

• **Surfacing:** Apply KEMPERDUR® AC Traffic Coating over the entire area and allow to self-level and de-aerate with an spiked roller immediately. Broadcast the selected aggregate into the wet surfacing resin so as to fully cover the surface.

• **Sealing:** Remove all loose aggregate from the applied surfacing. Apply KEMPERDUR® AC finish to seal the aggregate surfacing.

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TECHNICAL AND SALES SUPPORT

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Application Procedures

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NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON: WWW.KEMPERSYSTEM.NET.

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KEMPEROL® 2K-PUR SYSTEM APPLICATION PROCEDURES

Design Evaluation

Review project specification to ensure conformance with Kemper System America, Inc. (KSA) requirements. Notify design professional and KSA TECHNICAL DEPARTMENT of any discrepancies prior to the performance of any work.

Evaluate site and building conditions. It is recommended that test cuts and test cores be performed to determine the layer-by-layer composition of the substrate assembly that the KSA materials will be applied over.

A mock-up application is recommended if there is a question regarding substrate assembly moisture, or regarding adhesion to uncommon substrate surfaces. This will help ensure the best possible application method.

Material Storage

All KSA components will be delivered to the site in original sealed containers / packaging. Define a storage area for all components that is cool, dry, out of direct sunlight, and in accordance with recommendations of KSA and relevant regulatory agencies. Roll goods must be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls with damaged ends. Store solvent-bearing solutions, resins, additives, and adhesives in accordance with the SDS and/or local fire and regulatory authorities. Materials should not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.

Optimum storage of materials is between 65 – 70 °F (18 – 21 °C) in a controlled environment. DO NOT store materials outside in cold weather, as the cooled materials will be difficult to mix and apply due to their thick consistency. DO NOT store materials outside in hot weather, as the heated materials will react more quickly and may result in reduced working time.

Work Place Safety

Provide and maintain positive ventilation and protection to workers for concealed and/or interior application or applications lacking sufficient natural air movements. Coordinate protective measures with the Owner or his designated Representative.

Comply with requirements of OSHA, NIOSH or governing local authority for work place safety. When required, provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or his designated Representative.

NOTE: Copies of all current SDS for all components must be kept on site. Provide all crewmembers with appropriate safety data information and training as is related to the specific chemical compound he or she may be expected to deal with. Each crewmember shall be fully aware of first-aid measures to be undertaken in case of accidents.

Environmental Requirements

Application of KEMPEROL® 2K-PUR system may proceed while ambient temperature is between 41 – 90 °F (5 – 32 °C) providing the substrate is a minimum of 5 degrees above the dew point. Consult with KSA TECHNICAL DEPARTMENT outside of this temperature range. Do not commence with the application of any KSA material during or with the threat of inclement weather and ensure that substrate materials are dry and free of contaminants.

Application of KEMPERTEC® primer, KEMPEROL® 2K-PUR resin, and KEMPERDUR® surfacing materials in ambient temperatures below 41°F (5 °C) is not recommended. Storage of materials in a warm location until application will help accelerate cure, as will the use of cold weather additives.

Application of KEMPEROL® 2K-PUR system when ambient temperature is below 35 °F is not permitted due to the potential of a frozen deck and dew point issues. Application of KEMPEROL® 2K-PUR system in ambient temperature above 90 °F is possible, consult the KSA TECHNICAL DEPARTMENT for extreme weather application guidelines. Storage of materials in a cool location until application will retard cure, and application of materials in the late afternoon can alleviate the potential for blistering related to vapor drive.

Protection

Protect building adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Provide protection for Contractor personnel and occupants of the structure and surrounding buildings as required complying with requirements of OSHA, NIOSH and/or governing local authority.

Odor Control

Odor control and elimination measures are not typically necessary, but if required by the Owner or his designated Representative, implement odor control and elimination measures before and during the application of the roofing/waterproofing materials. Control/elimination measures must be field tested at off-hours and typically consists of one (1) or multiple of the following measures:

1. Sealing of air intakes with activated carbon filters, and at joints against building exterior walls to prevent leakage of unfiltered air into occupied spaces.

2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.

3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station equipped with mechanical air intake/exhaust openings, odor control air cleaners, and activated carbon filter at exhaust openings as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Placement of odor elimination stations inside and outside of the enclosure(s) as required.

System Application

The Kemper System is a four-step application:

1. Preparation and cleaning of the substrate;
2. Application of primer suitable for substrate;
3. Application of the membrane;
4. Application of surfacing, coating or overburden, if required.

Immediately before the application of any component of the system, the substrate shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.

NOTE: Before opening the containers of any Kemper System Product, protect hands, wrists and arms with gloves, and wear long sleeved ANSI / OSHA compliant or approved eye protection. Use respiratory equipment if recommended by SDS sheet for specific Kemper System material being applied.

System Assemblies

Kemper System materials are often installed in roofing and waterproofing assemblies that utilize additional materials not discussed in this Application Guide, including: asphaltic base and cap sheets; polyisocyanurate and extruded polyurethane foam insulation; high density polyisocyanurate foam and cementitious cover boards; drainage mats; water retention mats; concrete pavers; vegetated-type overburden. Please refer to individual Kemper System guide specifications for application information regarding the incorporation of these materials into a Kemper System assembly.

Substrate Preparation

Concrete

New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5.

When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley). The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Areas of minor surface deterioration of ¼ inch or greater in depth shall be repaired to prevent possible ponding of the system, leading to excessive use of primer and resin. For concrete materials with a compressive strength of less than 3,000 psi contact the KSA TECHNICAL DEPARTMENT for substrate preparation requirements. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.

Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

- ***ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.***
- ***ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. A maximum result is 3 lb/1,000 ft²/24-hour period.***
- ***ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A maximum result is 6% moisture content by weight.***
- ***ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter. Tramex Concrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the concrete slab. A maximum acceptable reading is 5%.***

Masonry

All masonry walls will need to be mechanically prepared to remove any contaminants and allow for proper pore sauration. Walls shall be built with hard kiln dried brick or waterproof concrete block construction. Areas of soft or scaling brick or concrete, recessed or faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired prior to placement of the primer coat. Repair in a manner previously described for structural concrete repair. Walls shall be dry in accordance with the above referenced methods.

Steel / Metal

Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean). Extend preparation a minimum of three (3) inches beyond the termination of the membrane flashing materials. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. **A WIRE BRUSH FINISH IS NOT ACCEPTABLE**. Wipe prepared metal surface with MEK or other acceptable solvent cleaner prior to application of primer.

Wood / Plywood

Moisture content in wood cannot exceed 18% or higher. Plywood must be fully dry. Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Fit plywood to all penetrations, projections, and nailers. Plywood shall be secured, with joints not greater than 1/4 inch. Fill all joints and gaps up to 1/2 inch with polyurethane KEMPERTEC® Joint Sealant. Strip all plywood joints with fleece reinforcement imbedded into the wet primer or resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.

Existing Modified Bitumen Waterproofing

Perform an adhesion test to evaluate the compatibility with the existing membrane. Existing flashings shall be removed down to the structural substrate/penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.

Granule-surfaced membrane shall have all loose granules removed from the surface by vacuuming and power brooming. Smooth-surfaced membrane with applied coating shall have all loose coating removed. Where the adhesion results dictate, adhere polyisocyanurate foam insulation (R=6 min.) and ½" cementitious cover board over the roof surface.

Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced in kind.

Existing Gravel Surfaced Bituminous and Coal Tar Pitch Waterproofing

Do not install KEMPEROL® membrane directly to coal tar pitch roofing systems. Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind. Gravel-surfaced membrane shall have all loose gravel removed. Adhere polyisocyanurate foam insulation (R=6 min. for bituminous or R=20 min. or greater for coal tar to prevent the pitch from reaching 85 ˚F and ½" cementitious cover board over the roof surface.

Existing Single Ply Roofing

Existing flashings shall be removed down to the structural substrate/penetration at all flashing areas. Damaged/ saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced in kind. Mechanically fasten or adhere polyisocyanurate foam insulation (R=6 min.) and ½" cementitious cover board over the roof surface.

Other Substrate Surfaces
Substrates not listed in the Primer Selection Table will require adhesion testing or approval by the KSA Technical and R&D Departments for acceptance and preparation procedures.

Substrate Leveling, Patching, and Repairing

KEMPERTEC® primer / sand mix are the preferred materials for all substrate leveling, crack and wall / deck repair and patching. KEMPERTEC® primer / sand mix is not intended to be used as a structural repair material.

Kemper System approved cementitious repair mortars can also be used to make surface repairs to concrete, masonry, stone, and terra-cotta substrate surfaces. Polyurethane KEMPERTEC® Joint Sealant can be used to fill and seal defects in wood and metal substrate surfaces. Gaps between materials are typically filled by the use of compressible backer rod, followed by application of polyurethane joint sealant.

A sound and even substrate surface shall be provided for all KSA material applications. Kemper System materials are not intended to span unsupported gaps and voids.

Primer / Sand Options
KEMPERTEC® EP or D primer / sand patching mix allows patching to be conducted as part of the priming operation. KEMPEROL® membrane may be applied following an 12-16 hour curing period, provided that primer is fully cured and tack free. EP Primer should be used for repairs to concrete and masonry surfaces; D Primer is recommended for repairs to metal and wood surfaces. In addition, primer slurry may be used for creating slope to drain to address localized drainage deficiencies.

KEMPERTEC® EP5 or R primer / sand patching mix allows patching to be conducted as part of the priming operation. KEMPEROL® membrane may be applied following a 3-4 hour curing period, provided that primer is fully cured and tack free. EP5 Primer should be used for repairs to concrete and masonry surfaces; R Primer is recommended for repairs to metal and wood surfaces. These primer slurries may be used for vertical repairs due to fast-set time. In addition, they may also be used for creating slope to drain to address localized drainage deficiencies.

Sand Aggregate Specification and Size
KEMPEROL® Sands are round / angular grain silica, washed, kiln-dried and dust-free. They are used for patching, broadcasting to increase the surface area to enhance adhesion or to create slip resistant surfaces. Silica sand must be kept absolutely dry during storage and handling.

- Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.
- Ceramaquartz (30 mesh) (S-Grade blend) for aesthetic color quartz finished surfacing.

Substrate Leveling, Sloping and Patching
Substrate conditions are to be evaluated by the Design Professional, Contractor, the Owner, or designated Representative.

NOTE: Any surface to be leveled or patched with primer/sand must first be primed with an appropriate KEMPERTEC® primer.

The ratio of primer to sand can be varied to create a mixture that provides the proper consistency for the intended application.

The leveling mixture typically consists of a slurry of primer and appropriate sand in a 1:2 resin / primer to sand ratio *by volume*. Spread and plane this compound with a squeegee or trowel to achieve an even surface.

The patching mixture typically consists of a slurry of primer and appropriate sand in a 1:4 resin / primer to sand ratio *by volume*. Fill cavities with this compound with a trowel to achieve an even surface.

The sloping mixture typically consists of a slurry of primer and appropriate sand in a 1:4 resin to sand ratio *by volume*. Create required slope (maximum 2" thickness in maximum 1" lifts) with a trowel to achieve an even surface.

Preparation of Joints and Cracks
Joints, cracks, and fractures in the structural deck shall be prepared before installation of waterproofing membrane. Clean out cracks by brushing and oil-free compressed air. Fill crack with KEMPERTEC® primer / sand slurry, or polyurethane KEMPERTEC® Joint Sealant. Allow to cure as required by Sealant Manufacturer.

Moving joints or cracks larger than 1/4" should be stripped in with a strip of membrane. Joints, cracks and fractures may telegraph through the waterproofing membrane.

Final Substrate Inspection

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, curing agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

After 72 hours the Contractor should perform random tests to determine tensile bond strength of membrane to substrate at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests on completely cured membrane at the beginning of the work, and at intervals as required assuring specified adhesion with a minimum of three (3) tests per 5000 ft^2 (464.5 m^2).

KSA requires a tested tensile bond strength of membrane to substrate greater than or equal to 150 psi (1.0 N/mm^2). Alternatively, a manual 135° peel bond strength of membrane to substrate must confirm that cohesive failure of substrate or membrane occurs before adhesive failure of primer/substrate interface.

This can be achieved through correct and proper surface preparation. Before priming of the surfaces, inspect and check the prepared substrate.

In the event the bond strengths are lower than the minimum specified and cohesive failure of the substrate is not the mode of failure, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation. Contractor shall immediately notify the KSA in the event tensile bond test results are below specified values.

KEMPERTEC Primer Selection, Mixing and Application

Selection of Primer

Determine proper primer and coverage for each substrate material/condition referencing the Primer Selection Table and appropriate technical data sheets. Listed coverage rates are estimates and may vary dependent upon substrate characteristics.

Mixing of D and EP / EP5 Primers

Step 1: Premix Component A thoroughly with a spiral agitator.

Step 2: Pour Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. DO NOT AERATE. DO NOT THIN PRIMER. The primer should be a uniform color, with no light or dark streaks present.

NOTE: DO NOT break down units into smaller quantities – mix the entire work pack.

Mixing of R and EP / EP5 Primer Sachets

Step 1: Remove bag from the aluminum packaging. Knead cream-colored resin Component A thoroughly until a uniform color is achieved.

Step 2: Pull away the rubber cord separating the two components so that Components A and B can be mixed together. Knead the bag quickly and thoroughly for approximately 1 minute so that a homogenous primer is formed. The primer should be a uniform color, with no light or dark streaks present.

NOTE: KEMPERTEC® R primer is extremely fast curing. Excessive mixing time reduces the available working time for the primer. Apply primer within 5 minutes.

Primer Application

After mixing, apply the primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Porous substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation.

Higher contents of moisture within a concrete substrate may cause pin-holing of the primers due to vapor drive. Application of primer after 4pm in the day, when temperatures subside can improve this condition. Where required, a second squeegee application of sand/primer slurry may be utilized. The primer slurry mixing ratio should be 25 lbs of KSA Approved Aggregate and 12.5 lbs of KEMPEROL® Mixing Sand per 5 kg unit of primer.

For EP and EP5 Primer applications, broadcast KSA Approved Aggregate (0, #18) to refusal, at the approximate rate of 50 lbs./100 ft^2 (2.4 kg/m^2) into the wet primer to increase surface area and enhance adhesion. **Remove excess sand after primer has fully cured prior to membrane application.**

Curing time is approximately 12 hours for D primer, 16 hours EP primer 3 hours for R and 4 hours for EP5 primer. KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

NOTE: Exposure of primer in excess of eight (8) days or premature exposure to moisture may require removal of contaminated surface and application of new primer coat.

Temporary Waterproofing: *Primers may be utilized to achieve temporary waterproofing. The contractor is responsible for ensuring proper night time tie-off and seal to prevent water infiltration into the new assembly.*

KEMPEROL® Resin Mixing and Application

Mixing of 2K-PUR Two-Component Resin

Step 1: Mix resin Component A (cream formulation) with a spiral agitator at low speed until the liquid is a uniform cream color.

Step 2: If the ambient temperature is below 60°F (15°C), A2K-PUR Accelerator, a cold weather additive, should be mixed into the Component A. The accelerator should be mixed with the spiral agitator for 2 minutes or until both liquids are thoroughly blended.

Step 3: Add hardener Component B (brown formulation) to Component A and mix with a spiral agitator at low speed for 2 minutes or until both liquids are thoroughly blended.

NOTE: DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Resin / Fleece Application

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke. Covering one working area at a time, between 10 - 15 ft^2.

Step 2: Roll the KEMPEROL® Fleece directly into the Resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece and no white color will be visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Tool Use and Care

KEMPEROL® brushes and roller naps will remain supple and usable if they are kept moving in liquid resin. If allowed to sit, they will harden quickly as resin begins to cure. Roller naps must be discarded once they stiffen.

Brushes may be discarded or cleaned with MEK or acetone-based solvent. Roller handles can also be cleaned with MEK or acetone-based solvent. If solvent is used, the tool must air dry for 60 minutes before being reused for mixing and/or application. To minimize cleaning, wipe handle with clean, dry cloth every fifteen (15) to twenty (20) minutes and schedule work to avoid stopping.

Laps, Seams and Tie-offs

At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints. At membrane tie-offs, clean in-place membrane with MEK when resin has cured. Allow solvents to fully evaporate before application of new resin. DO NOT APPLY PRIMER TO EXISTING KEMPEROL® MEMBRANE.

KEMPEROL® Flashing Application

Flashings

Install membrane flashings in accordance with the requirements/recommendations of KSA and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete edge-to-edge watertight system.

Curing and Staging
Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas. Protect finished membrane from damage by other trades by the use of a cushioning layer such as 1" thick extruded polystyrene insulation and an impact layer such as ½" thick exterior-grade plywood.

General
Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.

All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the KSA TECHNICAL DEPARTMENT. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.

Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and or poor slope.
Do not flash over existing through-wall flashings, weep holes or overflow scuppers.

Metal Flashing – General
Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.

Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the structural deck, or to treated wood nailers secured to the structural deck, six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue. Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.

Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base / curb flashing.

Membrane Flashing – General
Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.

Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise. Fleece shall overlap 2" (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

Pipes, Conduits, and Unusually Shaped Penetrations
Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Drains and Scuppers
Acceptable drain and scupper materials are galvanized, galvalum, cast iron, cast aluminum, copper, hard PVC, and ABS.

Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain / scupper body. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

Hot Stacks
Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 °F. In all such cases flash to an intermediate "cool" sleeve.

Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Flexible Penetrations
Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Walls, Curbs and Base Flashings
Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to cementitious stucco, synthetic stucco, wood siding or metal siding, and other similar materials is not acceptable. Reinforce all transition locations and other potential wear areas with a membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.

Reinforce all inside and outside corners with an additional reinforcing strip of membrane prior to installing the exposed flashing layer.

All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer. Extend flashing a minimum of six (6) inches onto the field substrate surface.

Drip Edges and Gravel Stops
Metal drip edges and gravel stops shall be installed to solid substrate surfaces or treated wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood siding or metal siding or coping, and other similar materials is not acceptable. Before installing drip edges and gravel stops extend the membrane all the way to the edge of the structure.

Prepare, prime and strip in the metal flange with a separate 8" wide strip of membrane adhered to both the securement flange and to the field membrane. Clean the field membrane prior to stripping in the flange. If the field membrane has been exposed for over 48 hour lightly abrade the surface of the membrane not to exeed 10 mils of cured membrane and clean with a solvent. **DO NOT APPLY PRIMER TO THE EXISTING FIELD MEMBRANE.**

For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane bottom layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.

Field Fabricated Control or Expansion Joint Flashing
Control or expansion joints in excess of two (2) inches in width and all joints subjected to vehicular traffic require the use of a separate engineered joint system.

Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece. Apply bond breaker tape on both sides of the joint.

Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fitted into the joint with half the compressible material protruding above the joint, and a membrane top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the field substrate on both sides of the joint. An alternate approach is to insert the compressible foam or rubber insert into the joint completely sitting in the membrane cradle and fill it with a urethane trafficable grade sealer.

For insulated assemblies, wood nailers of a thickness to match the insulation/cover board must be installed on either side of an expansion joint.

Electrical Conduit, Gas Lines and Lightning Protection
Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.

Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane or polyether sealant.

Urethane, acrylic, epoxy coatings and sealers, KSA Approved Aggregate or Cermaquartz aggregate may be applied to KEMPEROL® 2K-PUR membrane to achieve various performance and/or aesthetic purposes.

KEMPERDUR Surfacing & Finishes - General

Polyurethane-based membrane resins develop a hard and smooth membrane surface as the material cures over time. IS REQUIRED that coatings and sealers be applied within 48 hours following membrane application in order to achieve the best bond. Once the membrane has developed a hard and smooth surface, DO NOT apply coatings and sealers directly to this surface. The membrane surface must be sanded or otherwise lightly abraded before coatings and sealers are applied. An MEK solvent wipe may be required to remove any abraded particles that remain.

When mixing coatings and sealers prior to application, DO NOT AERATE the material as this will result in bubbles and pinholes in the applied finish.

KEMPERDUR Surfacing & Finishes - Mixing

Mixing of KEMPERDUR® BSF-R Finish (Water based acrylic)
Step 1: Premix resin with a clean spiral agitator at low speed until a uniform consistency is obtained.

Mixing of KEMPERDUR® Deko 2KS-FR Finish (Solvent based urethane)
Step 1: Premix resin Component B thoroughly with a spiral agitator at low speed. Resin solution should be a uniform color, with no light or dark streaks present.

Step 2: Pour entire contents of Mixed Component B into a clean empty five gallon pail and check the B side container for unmixed pigment. If unmixed pigment is present pour contents back and re-mix Component B.

Step 3: If unmixed pigment is not present split the Component B into two equal parts, using the new pail and the original container.

Step 4: Pour resin Component A equally into each pail of Component B and thoroughly mix the components with a clean spiral agitator. The resin solution should be a uniform color, with no light or dark streaks present.

Mixing of KEMPERDUR® Deko Transparent (Solvent based urethane)
Step 1: Premix resin with a spiral agitator on low speed.

Step 2: For aggregate bonding, apply resin directly to the membrane surface.

Step 3: For aggregate sealing only, add 250 ml, half of unit, of KEMPERTEC® 1K Thinner into a 5 kg unit of KEMPERDUR® Deko Transparent resin and mix for approximately two (2) minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. This will thin the resin and allow for an even sealer application.

Mixing of KEMPERDUR® Deko Finish (Solvent based urethane)
Step 1: Premix resin Component A thoroughly with a spiral agitator on low speed.

Step 2: Add Component B (color pack) to Component A and thoroughly mix for two (2) minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. During application continue to periodically mix the coating to avoid separation of resin and pigment.

Mixing of KEMPERDUR® Finish Glossy (Solvent based urethane)

Step 1: Agitate sealer in sealed container prior to use.

Smooth Coating Finish Surfacing

Coatings
For roof coating applications, the following are acceptable:

KEMPERDUR® BSF-R Finish.
KEMPERDUR® Deko 2KS-FR Finish.
For architectural detailing or submerged applications, apply KEMPERDUR® Deko Finish.

Smooth Coating Application
Roller-apply KEMPERDUR® coating over clean, cured membrane at the rate of approximately 80 ft^2/gal. For larger area application 9" roller naps are recommended. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Following minimum four (4) hour cure time for BSF-R finish and twelve (12) hour cure time for 2KS-FR Finish, apply an additional coat at the rate of approximately 100 ft^2/gal. Two coats are highly recommended to obtain uniform and full coverage, eliminating roller marks. For extended performance a third coat is required. After completion of coating, avoid any traffic for a minimum of two (2) days.

Aggregate Specification and Size
All surfacing aggregates shall be washed, kiln-dried, dust-free, suitable for broadcast, round grain or angular, and sized as follows:

- Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.
- Ceramaquartz (30 mesh) (S Grade blend) for aesthetic color quartz finished surfacing.

Aggregate Bonding and Sealing Resins
For roof surfacing applications, the following combinations of bonding resin, aggregate, and sealing resin are acceptable:

- KEMPEROL® 2K-PUR resin (w/o fleece) / aggregate / KEMPERDUR® BSF-R or 2KS-FR Finish (2 coats min).
- KEMPERDUR® BSF-R Finish / aggregate / BSF-R Finish (2 coats min).
- KEMPERDUR® 2KS-FR Finish / aggregate / 2KS-FR Finish (2 coats min).
- KEMPERDUR® Deko Finish / aggregate / Deko Finish (2 coats min, not fire-rated).

For a low foot traffic color quartz finish application, the following combinations of bonding resin, aggregate, and sealing resin are acceptable:

- KEMPEROL® 2K-PUR resin (w/o fleece) / Ceramaquartz / KEMPERDUR® Finish.
- KEMPERDUR® Deko Transparent / Ceramaquartz / KEMPERDUR® Deko Transparent or KEMPERDUR® Finish.

Aggregate Surfacing

Aggregate Surfacing Application
Broadcast KEMPEROL® Surfacing Sand or color quartz in excess into the wet resin coat applied over clean, cured membrane. Aggregate shall be applied at the rate of 50 lbs./100 ft^2. Obtain uniform and full coverage.

Following minimum 24 hour cure time remove loose / unembedded sand or color quartz by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean aggregate onto a wet resin as required to provide full embedment and coverage of membrane.

Seal aggregate surface with a sealing coat application of appropriate KEMPERDUR® coating, applied at the rate of approximately 80 ft^2/gal. After completion, avoid any traffic for a minimum of two (2) days to allow for surfacing to fully cure.

Alkalinity Protection Against Fresh Concrete
Where placement of concrete or other cementitious material is required over sections of the membrane and flashings, apply a coat of EP / EP5 primer at approximately 100 ft^2/5 kg unit, with broadcast of Surfacing Sand at the rate of 50 lbs./100 ft^2 into wet primer. This provides a protective surfacing for the membrane from the alkalinity of fresh concrete and other cementitious materials.

NOTE: Provide temporary surface protection and continuous cleaning with water and brush (high-pressure water if necessary) to eliminate settlement of concrete residues on in-place roofing / waterproofing membrane adjacent to area of concrete placement.

Adhesion Key Surfacing Application
Where placement of asphalt pavement or other adhered-type overburden is required over sections of the roofing/ waterproofing membrane and flashings, apply one coat of EP / EP5 primer at a 100 ft^2 /5 kg unit, with broadcast of Surfacing Sand at the rate of 50 lbs./100 ft^2 into wet primer. This provides a membrane surface profile for enhanced bonding capability.

Industrial Floor Surfacing

Mixing of KEMPERDUR® EP-FR Finish (epoxy)
Step 1: Premix resin Component A thoroughly with a spiral agitator. Resin solution should be a uniform color, with no light or dark streaks present.

Step 2: Pour Component B into Component A thoroughly mix the components with a clean spiral agitator. The resin solution should be a uniform color, with no light or dark streaks present.

NOTE: DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Application of KEMPERDUR® EP-FR Finish (epoxy)

Roller-apply KEMPERDUR® EP-FR Finish at the rate of approximately 120 ft²/6 kg unit evenly onto the clean, cured membrane or at the rate of approximately 80 ft²/6 kg directly over a primed substrate. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Broadcast KEMPEROL® Surfacing Sand into the wet resin at the rate of 50 lbs./100 ft². Obtain uniform and full coverage.

Following minimum 24 hour cure time remove loose/unembedded sand by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean aggregate onto a wet resin as required to provide full embedment and coverage of membrane.

Seal aggregate surface with a sealing coat application KEMPERDUR® EP-FR Finish, applied at the rate of approximately 80 ft²/6 kg. Ensure to lap each preceding path to erase squeeze out from the edge of roller. If necessary, a second coat may be applied after 6 hours.

After completion, avoid any traffic for a minimum of two (2) days to allow for surfacing to fully cure.

Mineral-Filled Aggregate Traffic Surfacing

Concrete surfaces to receive the TC Traffic Coating system must be properly designed and constructed in order to assure effective coating performance. Determine whether the concrete contains sufficient expansion / cold-joints. If the joint design is not adequate, additional joints must be created in the TC Traffic Coating system, at minimum every twenty (20') feet.

Mixing of KEMPERDUR® TC Traffic Coating

Step 1: Pre-mix Component A (white formulation) with a spiral agitator for one (1) minute at low speed, until the liquid is a uniform color and all solids that may have settled to the bottom of the can have been mixed.

Step 2: Pour Component A (white formulation) into a separate clean mixing pail, add Component B (dark brown formulation) and mix with a spiral agitator for one (1) minute at low speed, until the liquid is a uniform dark beige color without light or dark streaks.

Step 3: Gradually add Component C (white mineral filler) to the liquid while mixing continuously for an additional one (1) minute at low speed until a smooth, lump free mixture is produced.

NOTE: DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Application of KEMPERDUR® TC Traffic Coating and Aggregate

Step 1: Empty the pail of KEMPERDUR® TC Traffic Coating mixture onto the primed concrete surface or over fully cured membrane and spread with a ¼" x ¼" x ¼" square-notched steel trowel at the rate of approximately 40 ft²/12.5 kg unit. If applying over cured membrane follow membrane re-coating guidelines.

Incline Slope	TX Thixotropic Quantity to Add to Comp A
3 - 5%	10 g
5 - 7%	20 g
7 - 10%	30 g
11 - 20%	60 g

Step 1a: When applying the KEMPERDUR® TC traffic coating on an incline with the TX Thixotropic additive add the TX to Component A before adding Component B. Ensure that the coating does not run down the slope. If the coating shows signs of sag, add additional additive.

Step 1b: Due to the TX Thixotropic additive the coating will no longer self-level. The flat side of the trowel must be used to level out the coating on sloped surfaces.

Step 2: Immediately de-aerate the coating in a cross direction with a spiked roller in order to release the air bubbles that may develop within the coating.

Step 3: Allow the KEMPERDUR® TC Traffic Coating mix to self-level and reach an initial set for 10-20 minutes, depending on ambient and surface temperatures, until material will retain a peak after being touched by a finger.

Step 4: Broadcast selected aggregate to excess into TC Traffic Coating until a uniform aggregate layer has been achieved. Aggregate will initially sink into surfacing, requiring the application of additional aggregate. Sufficient aggregate application is achieved when there are no wet spots remaining. Aggregate application rate is typically 100 lbs./100 ft.

Step 5: Allow the aggregate-filled KEMPERDUR® TC Traffic Coating to cure for approximately 4 hours. Times may vary depending on temperatures. Remove excess aggregate by brooming and vacuuming.

Application of KEMPERDUR® EP-FR Finish (epoxy)

Roller-apply KEMPERDUR® EP-FR Finish at approximately 80 ft^2/6 kg unit evenly onto the surface. Ensure to lap each preceding path to erase squeeze out from the edge of roller. If necessary, a second coat may be applied after 6 hours.

Application of KEMPERDUR® Finish

Apply transparent KEMPERDUR® Finish over the desired Ceramaquartz aggregate at approximately 360 ft^2/10 kg unit evenly onto the surface.

Protection

Protect finished application from all other contractors and activities during and after completion. Any damage to the system must be repaired as recommended by KSA TECHNICAL DEPARTMENT.

Clean-Up & Disposal

Remove all masking, protection, equipment, materials, and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.

Cured Kemper System primers, resin, and surfacings may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.

NOTE: Uncured Kemper System primers, resins, and surfacings are considered hazardous materials and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured primer, resin and surfacings away.

Application Procedures

KEMPEROL® 2K FR - COLOR SYSTEM APPLICATION PROCEDURES

Design Evaluation

Review project specification to ensure conformance with Kemper System America, Inc. (KSA) requirements. Notify design professional and KSA TECHNICAL DEPARTMENT of any discrepancies prior to the performance of any work.

Evaluate site and building conditions. It is recommended that test cuts and test cores be performed to determine the layer-by-layer composition of the substrate assembly that the KSA materials will be applied over.

A mock-up application is recommended if there is a question regarding substrate assembly moisture, or regarding adhesion to uncommon substrate surfaces. This will help ensure the best possible application method.

All KSA components will be delivered to the site in original sealed containers/packaging. Define a storage area for all components that is cool, dry, out of direct sunlight, and in accordance with recommendations of KSA and relevant regulatory agencies. Roll goods must be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls with damaged ends. Store solvent-bearing solutions, resins, additives, inhibitors and adhesives in accordance with the SDS and/or local fire and regulatory authorities. Materials should not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.

Material Storage

Optimum storage of materials is between 65 – 70 °F (18 – 21 °C) in a controlled environment. DO NOT store materials outside in cold weather, as the cooled materials will be difficult to mix and apply due to their thick consistency. DO NOT store materials outside in hot weather, as the heated materials will react more quickly and may result in reduced working time.

Work Place Safety

Provide and maintain positive ventilation and protection to workers for concealed and/or interior application or applications lacking sufficient natural air movements. Coordinate protective measures with the Owner or designated Representative.

Comply with requirements of OSHA, NIOSH or governing local authority for work place safety. When required, provide barricades, retaining ropes, safety elements (active / passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or his designated Representative.

NOTE: Copies of all current SDS for all components must be kept on site. Provide all crewmembers with appropriate safety data information and training as is related to the specific chemical compound he or she may be expected to deal with. Each crewmember shall be fully aware of first-aid measures to be undertaken in case of accidents.

Environmental Requirements

Application of KEMPEROL® 2K FR - Color system may proceed while ambient temperature is between 41 – 90 °F (5 – 32 °C) providing the substrate is a minimum of 5 degrees above the dew point. Consult with KSA TECHNICAL DEPARTMENT outside of this temperature range. Do not commence with the application of any KSA material during or with the threat of inclement weather and ensure that substrate materials are dry and free of contaminants.

Application of KEMPERTEC® primer and KEMPEROL® 2K FR - Colors resin, and KEMPERDUR® surfacing materials in ambient temperatures between 41 – 90°F (5 – 32 °C) is not recommended. Storage of materials in a warm location until application will help accelerate cure, as will the use of cold weather additives.

Application of KEMPEROL® 2K FR - Colors system when ambient temperature is below 35 °F is not permitted due to the potential of a frozen deck and dew point issues.

Application of KEMPEROL® 2K FR - Colors system in ambient temperature above 90 °F is possible, consult the KSA TECHNICAL DEPARTMENT for extreme weather application guidelines. Storage of materials in a cool location until application will retard cure, and application of materials in the late afternoon can alleviate the potential for

blistering related to vapor drive.

Protection

Protect building adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Provide protection for Contractor personnel and occupants of the structure and surrounding buildings as required complying with requirements of OSHA, NIOSH and / or governing local authority.

Odor Control

Odor control and elimination measures are not typically necessary, but if required by the Owner or his designated Representative, implement odor control and elimination measures before and during the application of the roofing/waterproofing materials. Control/elimination measures must be field tested at off-hours and typically consists of one (1) or multiple of the following measures:

1. Sealing of air intakes with activated carbon filters, and at joints against building exterior walls to prevent leakage of unfiltered air into occupied spaces.

2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.

3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station equipped with mechanical air intake/exhaust openings, odor control air cleaners, and activated carbon filter at exhaust openings as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Placement of odor elimination stations inside and outside of the enclosure(s) as required.

System Application

The Kemper System is a four-step application:

1. Preparation and cleaning of the substrate;
2. Application of primer suitable for substrate;
3. Application of the membrane;
4. Application of surfacing, coating or overburden, if required.

Immediately before the application of any component of the system, the substrate shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.

NOTE: Before opening the containers of any Kemper System Product, protect hands, wrists and arms with gloves, and wear long sleeved ANSI / OSHA compliant or approved eye protection. Use respiratory equipment if recommended by SDS sheet for specific Kemper System material being applied.

System Assemblies

Kemper System materials are often installed in roofing and waterproofing assemblies that utilize additional materials not discussed in this Application Guide, including: asphaltic base and cap sheets; polyisocyanurate and extruded polyurethane foam insulation; high density polyisocyanurate foam and cementitious cover boards; drainage mats; water retention mats; concrete pavers; vegetated-type overburden. Please refer to individual Kemper System guide specifications for application information regarding the incorporation of these materials into a Kemper System assembly.

Substrate Preparation

Concrete

New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5.

When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley). The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Areas of minor surface deterioration of ¼ inch or greater in depth shall be repaired to prevent possible ponding of the system, leading to excessive use of primer and resin. For concrete materials with a compressive strength of less than 3,000 psi contact the KSA TECHNICAL DEPARTMENT for substrate preparation requirements. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.

Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

- ***ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.***
- ***ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. A maximum result is 3 lb/1,000 ft/24-hour period.***
- ***ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A maximum result is 6% moisture content by weight.***
- ***ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter. Tramex Concrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the concrete slab. A maximum acceptable reading is 5%.***

Masonry

All masonry walls will need to be mechanically prepared to remove any contaminents and allow for proper pore sauration. Walls shall be built with hard kiln dried brick or waterproof concrete block construction. Areas of soft or scaling brick or concrete, recessed or faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired prior to placement of the primer coat. Repair in a manner previously described for structural concrete repair. Walls shall be dry in accordance with the above referenced methods.

Steel / Metal

Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean). Extend preparation a minimum of three (3) inches beyond the termination of the membrane flashing materials. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. **A WIRE BRUSH FINISH IS NOT ACCEPTABLE**. Wipe prepared metal surface with MEK or other acceptable solvent cleaner prior to application of primer.

Wood / Plywood

Moisture content in wood cannot exceed 18% or higher. Plywood must be fully dry. Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Fit plywood to all penetrations, projections, and nailers. Plywood shall be secured, with joints not greater than 1/4 inch. Fill all joints and gaps up to 1/2 inch with polyurethane KEMPERTEC® Joint Sealant. Strip all plywood joints with fleece reinforcement imbedded into the wet primer or resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.

Existing Modified Bitumen Waterproofing

Perform an adhesion test to evaluate the compatibility with the existing membrane. Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.

Granule-surfaced membrane shall have all loose granules removed from the surface by vacuuming and power brooming. Smooth-surfaced membrane with applied coating shall have all loose coating removed. Where the adhesion results dictate, adhere polyisocyanurate foam insulation (R=6 min.) and ½"cementitious cover board over the roof surface.

Damaged / saturated areas of exsiting roofing membrane and underlying assembly shall be removed and replaced in kind.

Existing Gravel Surfaced Bituminous and Coal Tar Pitch Waterproofing

Do not install KEMPEROL® membrane directly to coal tar pitch roofing systems. Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind. Gravel-surfaced membrane shall have all loose gravel removed. Adhere polyisocyanurate foam insulation (R=6 min. for bituminous or R=20 min. or greater for coal tar to prevent the pitch from reaching 85˚F) and ½"cementitious cover board over the roof surface.

Existing Single Ply Roofing

Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced in kind. Mechanically fasten or adhere polyisocyanurate foam insulation (R=6 min.) and ½" cementitious cover board over the roof surface.

Substrate Leveling, Patching, and Repairing

Other Substrate Surfaces

Substrates not listed in the Primer Selection Table will require adhesion testing or approval by the KSA Technical and R&D Departments for acceptance and preparation procedures.

KEMPERTEC® primer / sand mix are the preferred materials for all substrate leveling, crack and wall/deck repair and patching. KEMPERTE®C primer / sand mix is not intended to be used as a structural repair material.

Kemper System Approved cementitious repair mortars can also be used to make surface repairs to concrete, masonry, stone, and terra cotta substrate surfaces. Polyurethane KEMPERTEC® Joint Sealant can be used to fill and seal defects in wood and metal substrate surfaces. Gaps between materials are typically filled by the use of compressible backer rod, application of polyurethane joint sealant. A sound and even substrate surface shall be provided for all KSA material all KSA material applications. Kemper System materials are not intended to span unsupported gaps and voids.

Primer / Sand Options

KEMPERTEC® EP or D primer / sand patching mix allows patching to be conducted as part of the priming operation. KEMPEROL® membrane may be applied following a 12-16 hour curing period, provided that primer is fully cured and tack free. EP Primer should be used for repairs to concrete and masonry surfaces; D Primer is recommended for repairs to metal and wood surfaces. In addition, primer slurry may be used for creating slope to drain to address localized drainage deficiencies. The application should not exceed 1" per lift.

KEMPERTEC® EP5 or R primer / sand patching mix allows patching to be conducted as part of the priming operation. KEMPEROL® membrane may be applied following a 3-4 hour curing period, provided that primer is fully cured and tack free. EP5 Primer should be used for repairs to concrete and masonry surfaces; R Primer is recommended for repairs to metal and wood surfaces. These primer slurries may be used for vertical repairs due to fast-set time. In addition, they may also be used for creating slope to drain to address localized drainage deficiencies. The application should not exceed 1" per lift.

Sand Aggregate Specification and Size

KEMPEROL® Sands are round / angular grain silica, washed, kiln-dried and dust-free. They are used for patching, broadcasting to increase the surface area to enhance adhesion or to create slip resistant surfaces. Silica sand must be kept absolutely dry during storage and handling.

- Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.
- Ceramaquartz (30 mesh) (S-Grade blend) for aesthetic color quartz finished surfacing.

Substrate Leveling, Sloping and Patching

Substrate conditions are to be evaluated by the Design Professional, Contractor, the Owner, or designated Representative.

NOTE: Any surface to be leveled or patched with primer / sand must first be primed with an appropriate KEMPERTEC® primer.

The ratio of primer to sand can be varied to create a mixture that provides the proper consistency for the intended application.

The leveling mixture typically consists of a slurry of primer and appropriate sand in a 1:2 resin / primer to sand ratio *by volume*. Spread and plane this compound with a squeegee or trowel to achieve an even surface.

The patching mixture typically consists of a slurry of primer and appropriate sand in a 1:4 resin/primer to sand ratio *by volume*. Fill cavities with this compound with a trowel to achieve an even surface.

The sloping mixture typically consists of a slurry of primer and appropriate sand in a 1:4 resin to sand ratio *by volume*. Create required slope (maximum 2" thickness in maximum 1" lifts) with a trowel to achieve an even surface.

Preparation of Joints and Cracks

Joints, cracks, and fractures in the structural deck shall be prepared before installation of waterproofing membrane. Clean out cracks by brushing and oil-free compressed air. Fill crack with KEMPERTEC® primer / sand slurry, or polyurethane KEMPERTEC® Joint Sealant. Allow to cure as required by Sealant Manufacturer. Moving joints or cracks larger than 1/4" should be stripped in with a strip of membrane. Joints, cracks and fractures may telegraph through the waterproofing membrane.

Final Substrate Inspection

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, curing agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

After 72 hours the Contractor should perform random tests to determine tensile bond strength of membrane to substrate at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests on completely cured membrane at the beginning of the work, and at intervals as required assuring specified adhesion with a minimum of three (3) tests per 5,000 ft^2 (464.5 m^2). KSA requires a tested tensile bond strength of membrane to substrate greater than or equal to 150 psi (1.0 N/mm2). Alternatively, a manual 135° peel bond strength of membrane to substrate must confirm that cohesive failure of substrate or membrane occurs before adhesive failure of primer / substrate interface.

This can be achieved through correct and proper surface preparation. Before priming of the surfaces, inspect and check the prepared substrate.

In the event the bond strengths are lower than the minimum specified and cohesive failure of the substrate is not the mode of failure, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation. Contractor shall immediately notify the KSA in the event tensile bond test results are below specified values.

KEMPERTEC Primer Selection, Mixing and Application

Selection of Primer

Determine proper primer and coverage for each substrate material / condition referencing the Primer Selection Table and appropriate product data sheets. Listed coverage rates are estimates and may vary dependent upon substrate characteristics.

Mixing of D and EP / EP5 Primers

Step 1: Premix Component A thoroughly with a spiral agitator.

Step 2: Pour Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. DO NOT AERATE. DO NOT THIN PRIMER. The primer should be a uniform color, with no light or dark streaks present.

NOTE: DO NOT break down units into smaller quantities – mix the entire work pack.

Mixing of R and EP / EP5 Primer Sachets

Step 1: Remove bag from the aluminum packaging. Knead cream-colored resin Component A thoroughly until a uniform color is achieved.

Step 2: Pull away the rubber cord separating the two components so that Components A and B can be mixed together. Knead the bag quickly and thoroughly for approximately 1 minute so that a homogenous primer is formed. The primer should be a uniform color, with no light or dark streaks present.

NOTE: KEMPERTEC® R primer is extremely fast curing. Excessive mixing time reduces the available working time for the primer. Apply primer within 5 minutes.

Primer Application

After mixing, apply the primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Porous substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation.

Higher contents of moisture or vapor within a concrete substrate may cause pin-holing of the primers due to vapor drive. Application of primer after 4pm in the day, when temperatures subside can improve this condition. Where required, a second squeegee application of sand / primer slurry may be utilized. The primer slurry mixing ratio should be 25 lbs of KEMPEROL® Surfacing Sand and 12.5 lbs of KEMPEROL® Mixing Sand per 5 kg unit of primer.

For EP and EP5 Primer applications, broadcast KEMPEROL® Surfacing sand (0, #18) to refusal, at the approximate rate of 50 lbs./100 ft^2 (2.4 kg/m^2) into the wet primer to increase surface area and enhance adhesion. **Remove excess sand after the primer has fully cured prior to membrane application.**

Curing time is approximately 12 hours for D primer, 16 hours EP primer 3 hours for R and 4 hours for EP5 primer. KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

NOTE: Exposure of primer in excess of eight (8) days or premature exposure to moisture may require abrasion of contaminated surface and application of new primer coat.

Temporary Waterproofing: *Primers may be utilized to achieve temporary waterproofing. The contractor is responsible for ensuring proper night time tie-off and seal to prevent water infiltration into the new assembly.*

KEMPEROL® Resin Mixing and Application

Mixing of 2K FR - Color Two-Component Resin

Step 1: Mix resin Component A (white formulation) with a spiral agitator at low speed until the liquid is a uniform white color.

Step 2: If the ambient temperature is below 60°F (15°C), A2K-PUR Accelerator, a cold weather additive, should be mixed into the Component A. The accelerator should be mixed with the spiral agitator at low speed for 2 minutes or until both liquids are thoroughly blended.

Step 3: Add hardener Component B (clear formulation) to Component A and mix with a spiral agitator at low speed for 2 minutes or until both liquids are thoroughly blended.

NOTE: DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Resin / Fleece Application

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke. Covering one working area at a time, between 10 - 15 ft^2.

Step 2: Roll the KEMPEROL® Fleece directly into the Resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. Dry spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece and no white color will be visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Tool Use and Care

KEMPEROL® brushes and roller naps will remain supple and usable if they are kept moving in liquid resin. If allowed to sit, they will harden quickly as resin begins to cure. Roller naps and brushes must be discarded once they stiffen.

Roller handles can be cleaned with MEK or acetone-based solvent. If solvent is used, the tool must air dry for 60 minutes before being reused for mixing and or application. To minimize cleaning, wipe handle with clean, dry cloth every fifteen (15) to twenty (20) minutes and schedule work to avoid stopping.

Laps, Seams and Tie-offs

At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints. At membrane tie-offs, clean in-place membrane with MEK when resin has cured. Allow solvents to fully evaporate before application of new resin. DO NOT APPLY PRIMER TO EXISTING KEMPEROL® MEMBRANE.

KEMPEROL® Flashing Application

Flashings

Install membrane flashings in accordance with the requirements / recommendations of KSA and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete edge-to-edge watertight system.

Curing and Staging

Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas. Protect finished membrane from damage by other trades by the use of a cushioning layer such as 1" thick extruded polystyrene insulation and an impact layer such as ½" thick exterior-grade plywood.

General
Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the KSA TECHNICAL DEPARTMENT. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.

Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. **Do not flash over existing through-wall flashings, weep holes or overflow scuppers.**

Metal Flashing – General
Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.

Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the structural deck, or to treated wood nailers secured to the structural deck, six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.

Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge.

Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base / curb flashing.

Membrane Flashing – General
Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise.

Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.

Fleece shall overlap 2" (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

Pipes, Conduits, and Unusually Shaped Penetrations
Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Drains and Scuppers
Acceptable drain and scupper materials are galvanized, galvalum, cast iron, cast aluminum, copper, hard PVC, and ABS.

Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain / scupper body. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

Hot Stacks
Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 °F. In all such cases flash to an intermediate "cool" sleeve.

Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Flexible Penetrations
Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate.

Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Walls, Curbs and Base Flashings

Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to cementitious stucco, synthetic stucco, wood siding or metal siding, and other similar materials is not acceptable. Reinforce all transition locations and other potential wear areas with a membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.

Reinforce all inside and outside corners with an additional reinforcing strip of membrane prior to installing the exposed flashing layer.

All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.

Extend flashing a minimum of four (4) to six (6) inches onto the field substrate surface.

Drip Edges and Gravel Stops

Metal drip edges and gravel stops shall be installed to solid substrate surfaces or treated wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood siding or metal siding or coping, and other similar materials is not acceptable.

Before installing drip edges and gravel stops extend the membrane all the way to the edge of the structure. Once the membrane has fully cured install the drip edge or gravel stop over membrane. Prepare, prime and strip in the metal flange with a separate 8" wide strip of membrane adhered to both the securement flange and to the field membrane. Clean the field membrane prior to stripping in the flange. If the field membrane has been exposed for over 48 hour lightly abrade the surface of the membrane and clean with a solvent.
DO NOT APPLY PRIMER TO THE EXISITING FIELD MEMBRANE.

For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane bottom layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.

Field Fabricated Control or Expansion Joint Flashing

Control or expansion joints in excess of two (2) inches in width and all joints subjected to vehicular traffic require the use of a separate engineered joint system.

Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece. Apply bond breaker tape on both sides of the joint.

Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fitted into the joint with half the compressible material protruding above the joint, and a membrane top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the field substrate on both sides of the joint. An alternate approach is to insert the compressible foam or rubber insert into the joint completely sitting in the membrane cradle and fill it with a urethane trafficable grade sealer.

For insulated assemblies, wood nailers of a thickness to match the insulation / cover board must be installed on either side of an expansion joint.

Electrical Conduit, Gas Lines and Lightning Protection

Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.

Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane or polyether sealant.

KEMPERDUR Surfacing & Finishes - General

Urethane, acrylic, epoxy coatings and sealers, surfacing sand, or Ceramaquartz aggregate may be applied to KEMPEROL® Reflect 2K FR membrane to achieve various performance and/or aesthetic purposes.

Polyurethane-based membrane resins develop a hard and smooth membrane surface as the material cures over time. **IT IS REQUIRED** that coatings and sealers be applied within **48 hours** following membrane application in order to achieve the best bond. Once the membrane has developed a hard and smooth surface, DO NOT apply coatings and sealers directly to this surface. The membrane surface must be sanded or otherwise lightly abraded before coatings and sealers are applied. An MEK solvent wipe may be required to remove any abraded particles that remain.

When mixing coatings and sealers prior to application, DO NOT AERATE the material as this will result in bubbles and pinholes in the applied finish.

KEMPERDUR Surfacing & Finishes - Mixing

Mixing of KEMPERDUR BSF-R Finish (water based acrylic)
Step 1: Premix resin with a clean spiral agitator at a low speed until a uniform consistency is obtained.

Mixing of KEMPERDUR Deko 2KS-FR Finish (solvent based urethane)
Step 1: Premix resin Component B thoroughly with a spiral agitator at a low speed. Resin solution should be a uniform color, with no light or dark streaks present.

Step 2: Pour entire contents of Mixed Component B into a clean empty five gallon pail and check the B side container for unmixed pigment. If unmixed pigment is present pour contents back and re-mix Component B.

Step 3: If unmixed pigment is not present split the Component B into two equal parts, using the new pail and the original container.

Step 4: Pour resin Component A equally into each pail of Component B and thoroughly mix the components with a clean spiral agitator at a low speed. The resin solution should be a uniform color, with no light or dark streaks present.

Smooth Coating Finish Surfacing

Coatings
For roof coating applications, the following are acceptable:

KEMPERDUR® BSF-R Finish.
KEMPERDUR® Deko 2KS-FR Finish.

Smooth Coating Application
Roller-apply KEMPERDUR® coating over clean, cured membrane at the rate of approximately 100 ft^2/gal. For larger area application 9" roller naps are recommended. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Following minimum four (4) hour cure time for BSF-R finish and (12) twelve hour cure time for 2KS-FR Finish, apply an additional coat at the rate of approximately 100 ft^2/gal. Two coats are highly recommended to obtain uniform and full coverage, eliminating roller marks. For extended performance a third coat is required.

After completion of coating, avoid any traffic for a minimum of two (2) days.

Aggregate Surfacing

Aggregate Specification and Size
All surfacing aggregates shall be washed, kiln-dried, dust-free, suitable for broadcast, round grain or angular, and sized as follows:

- Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.

Aggregate Bonding and Sealing Resins
For roof surfacing applications, the following combinations of bonding resin, aggregate, and sealing resin are acceptable

- KEMPEROL® 2K FR - Color resin (without fleece) / aggregate / KEMPERDUR BSF-R or 2KS-FR Finish (2 coats min).
- KEMPERDUR® BSF-R Finish / aggregate / BSF-R Finish (2 coats min).
- KEMPERDUR® 2KS-FR Finish / aggregate / 2KS-FR Finish (2 coats min).

For a low foot traffic color quartz finish application, the following combinations of bonding resin, aggregate, and sealing resin are acceptable.

- KEMPEROL® 2K FR- Color resin (without fleece) / Ceramaquartz / KEMPERDUR Finish.

Aggregate Surfacing Application
Broadcast KEMPEROL® Surfacing Sand or color quartz in excess into the bonding resin coat applied over clean, cured membrane. Aggregate shall be applied at the rate of 50 lbs./100 ft^2. Obtain uniform and full coverage.

Following minimum 24 hour cure time remove loose / unembedded sand or color quartz by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean aggregate into a wet resin as required to provide full embedment and coverage of membrane.

Seal aggregate surface with a sealing coat application of appropriate KEMPERDUR coating, applied at the rate of approximately 100 ft²/gal. After completion, avoid any traffic for a minimum of two (2) days to allow for surfacing to fully cure.

Alkalinity Protection Against Fresh Concrete

Where placement of concrete or other cementitious material is required over sections of the membrane and flashings, apply a coat of primer at approximately 100 ft²/5 kg unit, with broadcast of Surfacing Sand at the rate of 50 lbs./100 ft² into wet primer. This provides a protective surfacing for the membrane from the alkalinity of fresh concrete and other cementitious materials.

NOTE: Provide temporary surface protection and continuous cleaning with water and brush (high-pressure water if necessary) to eliminate settlement of concrete residues on in-place roofing / waterproofing membrane adjacent to area of concrete placement.

Protection

Protect finished application from all other contractors and activities during and after completion. Any damage to the system must be repaired as recommended by KSA TECHNICAL DEPARTMENT.

Clean-Up & Disposal

Remove all masking, protection, equipment, materials, and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.

Cured Kemper primers, resin, and surfacings may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.

NOTE: Uncured Kemper System primers, resins, and surfacings are considered hazardous materials and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured primer, resin and surfacings away.

Application Procedures

KEMPEROL® AC SPEED FR SYSTEM APPLICATION PROCEDURES

Design Evalutaion

Review project specification to ensure conformance with Kemper System America, Inc. (KSA) requirements. Notify design professional and KSA TECHNICAL DEPARTMENT of any discrepancies prior to the performance of any work.

Evaluate site and building conditions. It is recommended that test cuts and test cores be performed to determine the layer-by-layer composition of the substrate assembly that the KSA materials will be applied over.

A mock-up application is recommended if there is a question regarding substrate assembly moisture, or regarding adhesion to uncommon substrate surfaces. This will help ensure the best possible application method.

All KSA components will be delivered to the site in original sealed containers / packaging. Define a storage area for all components that is cool, dry, out of direct sunlight, and in accordance with recommendations of KSA and relevant regulatory agencies. Roll goods must be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls with damaged ends. Store solvent-bearing solutions, resins, additives, inhibitors and adhesives in accordance with the SDS and / or local fire and regulatory authorities. Materials should not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.

Material Storage

Optimum storage of materials is between 65 – 70 °F (18 – 21 °C) in a controlled environment to facilitate mixing and fleece saturation. DO NOT store materials outside in cold weather, as the cooled materials will be difficult to mix and apply due to their thick consistency. DO NOT store materials outside in hot weather, as the heated materials will react too quickly and reduce working times significantly.

Provide and maintain positive ventilation and protection to workers for concealed and / or interior application or applications lacking sufficient natural air movements. Protect air intake path(s) of the building to prevent odor infiltration to the building interior. Coordinate protective measures with the Owner or his designated Representative.

Work Place Safety

Comply with requirements of OSHA, NIOSH or governing local authority for work place safety. When required, provide barricades, retaining ropes, safety elements (active / passive) and any appropriate signage required by OSHA, NIOSH, and NSC and / or the Owner or his designated Representative. Contractor must be familiar with and observe OSHA Regulations CFR 1926 / 1910 (current issue) for use and handling of catalysts (organic peroxide).

NOTE: Copies of all current SDS's for all components must be kept on site. Provide all crewmembers with appropriate safety data information and training as is related to the specific chemical compound he or she may be expected to deal with. Each crewmember shall be fully aware of first-aid measures to be undertaken in case of accidents.

Application of KEMPEROL® AC Speed FR system may proceed while air temperature is between 23 – 95 °F (-5 – 35 °C) providing the substrate is a minimum of 5 degrees above the dew point. Consult with KSA outside of this temperature range. Do not commence with the application of any KSA material during or with the threat of inclement weather and ensure that substrate materials are dry and free of contaminants.

Environmental Requirements

Application of KEMPERDUR® mineral-filled surfacing materials in temperatures between 35 – 40 °F is possible but not recommended due to poor self-leveling properties. Storage of materials in a warm location until application will help accelerate cure somewhat, as will the use of cold weather additives.

Application of KEMPEROL® AC Speed FR system when ambient temperature is below 35 °F is not permitted due to the potential of a frozen deck and dew point issues. Application in temperatures above 95 °F is possible but not recommended due to the potential for blistering from substrate vapor drive and reduced working times.

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Provide and maintain positive airflow over freshly applied KEMPEROL® AC Speed FR materials during entire curing period to facilitate complete cure. Natural airflow is typically sufficient for exterior applications, but locations such as beneath large mechanical units, at inside corners, at the base of high walls, and other similar areas where stagnant air may occur should be provided with powered fans.

NOTE: Interior applications are not recommended due to odor and curing considerations.

Protection

Protect building adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Provide protection for Contractor personnel and occupants of the structure and surrounding buildings as required complying with requirements of OSHA, NIOSH and / or governing local authority.

Odor Control

Where required by the Owner or designated Representative, implement odor control and elimination measures before and during the application of the roofing / waterproofing materials. Control / elimination measures must be field tested at off-hours and typically consists of one (1) or multiple of the following measures:

1. Sealing of air intakes with activated carbon filters, and at joints against building exterior walls to prevent leakage of unfiltered air into occupied spaces.
2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.
3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station equipped with mechanical air intake / exhaust openings, odor control air cleaners, and activated carbon filter at exhaust openings as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Placement of odor elimination stations inside and outside of the enclosure(s) as required.

System Application

The Kemper System is a four-step application:

1. Preparation and cleaning of the substrate;
2. Application of primer suitable for substrate;
3. Application of the membrane;
4. Application of surfacing, coating or overburden, if required.

Immediately before the application of any component of the system, the substrate shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.

NOTE: Before opening the containers of any Kemper System Product, protect hands, wrists and arms with gloves, and wear long sleeved ANSI / OSHA compliant or approved eye protection. Use respiratory equipment if recommended by SDS sheet for specific Kemper System material being applied.

System Assemblies

Kemper System America, Inc. materials are often installed in roofing and waterproofing assemblies that utilize additional materials not discussed in this Application Guide, including: asphaltic base and cap sheets; polyisocyanurate and extruded polyurethane foam insulation; high density polyisocyanurate foam and cementitious cover boards; drainage mats; water retention mats; concrete pavers; vegetated-type overburden. Please refer to individual Kemper System America, Inc. guide specifications for application information regarding the incorporation of these materials into a Kemper System assembly.

Substrate Preparation

<u>Concrete</u>

New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5.

When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley). The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Areas of minor surface deterioration of ¼ inch (6 mm) or greater in depth shall be repaired to prevent possible ponding of the system, leading to excessive use of primer and resin. For concrete materials with a compressive strength of less than 3,000 psi contact the KSA TECHNICAL DEPARTMENT for substrate preparation requirements. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.

Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

- ***ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.***
- ***ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. A maximum result is 3 lb/1,000 ft²/24-hour period.***
- ***ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A maximum result is 6% moisture content by weight.***
- ***ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter. Tramex Concrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the concrete slab. A maximum acceptable reading is 5%.***

Masonry

All masonry walls will need to be mechanically prepared to remove any contaminents and allow for proper pore sauration. Walls shall be built with hard kiln dried brick or waterproof concrete block construction. Areas of soft or scaling brick or concrete, recessed or faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired prior to placement of the primer coat. Repair in a manner previously described for structural concrete repair. Walls shall be dry in accordance with the above referenced methods.

Steel / Metal

Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean). Extend preparation a minimum of three (3) inches beyond the termination of the membrane flashing materials. Notch steel surfaces to provide a rust-stop. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. **A WIRE BRUSH FINISH IS NOT ACCEPTABLE.** Wipe prepared metal surface with MEK or other acceptable solvent cleaner prior to application of primer.

Wood / Plywood

Moisture content in wood cannot exceed 18% or higher. Plywood must be fully dry. Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Fit plywood to all penetrations, projections, and nailers. Plywood shall be secured, with joints not greater than 1/4 inch. Fill all joints and gaps up to 1/2 inch with polyurethane KEMPERTEC Joint Sealant. Strip all plywood joints with fleece reinforcement imbedded into the wet primer or resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.

Existing Modified Bitumen Waterproofing

Perform an adhesion test to evaluate the compatibility with the existing membrane. Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.

Granule-surfaced membrane shall have all loose granules removed from the surface by vacuuming and power brooming. Smooth-surfaced membrane with applied coating shall have all loose coating removed. Where the adhesion results dictate, adhere polyisocyanurate foam insulation (R=6 min.) and ½"cementitious cover board over the roof surface.

Damaged / saturated areas of existing roofing memebrane and underlying assembly shall be removed and replaced in kind.

Existing Gravel Surfaced Bituminous and Coal Tar Pitch Waterproofing

Do not install KEMPEROL® membrane directly to coal tar pitch roofing systems. Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind. Gravel-surfaced membrane shall have all loose gravel removed. Adhere polyisocyanurate foam insulation (R=6 min. for bituminous or R=20 min. or greater for coal tar to prevent the pitch from reaching 85°F) and ½"cementitious cover board over the roof surface.

Existing Single Ply Roofing

Existing flashings shall be removed down to the structural substrate / penetration at all flashing areas. Damaged / saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced in kind. Mechanically fasten or adhere polyisocyanurate foam insulation (R=6 min.) and ½" cementitious cover board over the roof surface.

Other Substrate Surfaces

Substrates not listed in the Primer Selection Table will require adhesion testing or approval by the KSA Technical and R&D Departments for acceptance and preparation procedures.

Substrate Leveling, Patching, and Repairing

KEMPERTEC® primer / sand mix is the preferred material for all substrate leveling, crack and wall / deck repair and patching. KEMPERTEC primer/sand mix is not intended to be used as a structural repair material.

Kemper System approved NON-POLYMER MODIFIED cementitious repair mortars can also be used to make

surface repairs to concrete, masonry, stone, and terra cotta substrate surfaces. Kemper System approved two-component sealant can be used to fill and seal defects in wood and metal substrate surfaces. Gaps between materials are typically filled by the use of compressible backer rod, followed by application of polyurethane sealant. A sound and even substrate surface shall be provided for all KSA material applications. Kemper System materials are not intended to span unsupported gaps and voids.

Primer / Sand Options

KEMPERTEC® AC primer / sand patching mix allows patching to be conducted as part of the priming operation. KEMPEROL® AC Speed FR membrane may be applied following a 1 hour curing period. Recommended for vertical repairs due to fast-set time. In addition, recommended for creating slope to drain to address localized drainage deficiencies. Application should not exceed 1" per lift.

Sand Aggregate Specification and Size

Sands are round / angular grain silica, washed, kiln-dried and dust-free. They are used for patching, broadcasting to increase the surface area to enhance adhesion or to create slip resistant surfaces. Silica sand must be kept absolutely dry during storage and handling.

- Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.
- Ceramaquartz (30 mesh) (S-Grade blend) for aesthetic color quartz finished surfacing.

Substrate Leveling, Sloping and Patching

Substrate conditions are to be evaluated by the Design Professional, Contractor, the Owner, or designated Representative.

NOTE: Any surface to be leveled or patched with primer / sand must first be primed with KEMPERTEC® AC primer.

The ratio of primer to sand can be varied to create a mixture that provides the proper consistency for the intended application.

The patching mixture typically consists of a slurry of primer and appropriate sand in a 1:4 resin / primer to sand ratio *by volume*. Fill cavities with this compound with a trowel to achieve a even surface.

Preparation of Joints and Cracks

Joints, cracks, and fractures in the structural deck shall be prepared before installation of waterproofing membrane. Clean out cracks by brushing and oil-free compressed air. Fill crack with KEMPERTEC® primer / sand slurry, polyurethane KEMPERTEC® Joint Sealant. Allow for a minimum of twelve (12) hours cure or as required by Sealant Manufacturer. Moving joints or cracks larger than 1/4" should be stripped in with a strip of membrane. Joints, cracks and fractures may telegraph through the waterproofing membrane.

Final Substrate Inspection

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, curing agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

After 72 hours the Contractor should perform random tests to determine tensile bond strength of membrane to substrate at the job site using an Elcometer Adhesion Tester Model 106 or similar device, or by the performance of a manual pull test. Contractor shall perform tests on completely cured membrane at the beginning of the work, and at intervals as required assuring specified adhesion with a minimum of three (3) tests per 5,000 ft^2 (464.5 m^2).

KSA requires a tested tensile bond strength of membrane to substrate greater than or equal to 150 psi (1.0 N/mm^2). Alternatively, a manual 135° peel bond strength of membrane to substrate must confirm that cohesive failure of substrate or membrane occurs before adhesive failure of primer/substrate interface. This can be achieved through correct and proper surface preparation. Before priming of the surfaces, inspect and check the prepared substrate.

In the event the bond strengths are lower than the minimum specified and cohesive failure of the substrate

surface repairs to concrete, masonry, stone, and terra cotta substrate surfaces. Kemper System approved two-component sealant can be used to fill and seal defects in wood and metal substrate surfaces. Gaps between materials are typically filled by the use of compressible backer rod, followed by application of polyurethane sealant.

KEMPERTEC Primer Mixing and Application

Selection of Primer
Refer to the Substrate Primer Selection Table.

Mixing of AC Primer
Step 1: Premix Component A thoroughly with a clean spiral agitator on low speed.

Step 2: Determine the correct amount of catalyst powder, Component B, based upon ambient temperature (see table) add catalyst powder Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed. DO NOT AERATE. DO NOT THIN PRIMER.

For 5 kg primer work packs, the following catalyst quantities are recommended:

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst Powder (100g/bag)	Pot Life (min)	Completely Cured (min)
35°F - 50°F	2 bags	20	45
50°F - 65°F	2 bags	20	30
65°F - 80°F	1 bag	15	30
>80°F	1/2 bag	10	15

NOTE: KEMPERTEC AC PRIMER IS EXTREMELEY FAST CURING. EXCESSIVE MIXING TIME REDUCES THE AVAILABLE WORKING TIME FOR THE PRIMER. DO NOT BREAK DOWN UNITS IN SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Primer Application
Listed coverage rates are estimates and may vary dependent upon substrate characteristics.

After mixing, apply the primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Porous substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation.

Higher contents of moisture or vapor within a concrete substrate may cause pin-holing of the primers due to vapor drive. Application of primer after 4pm in the day, when temperatures subside can improve this condition.

Curing time is approximately 30 - 60 minutes for AC primer. KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Provide and maintain positive airflow over freshly applied KEMPEROL® AC Speed FR materials during entire curing period to facilitate complete cure.

NOTE: Exposure of primer in excess of 48 hours or premature exposure to moisture may require removal and application of new primer. Primer application past the KEMPEROL® membrane terminations requires surfacing with an approved material.

Temporary Waterproofing: *Primers may be utilized to achieve temporary waterproofing. The contractor is responsible for ensuring proper night time tie-off and seal to prevent water infiltration into the new assembly.*

KEMPEROL® Resin Mixing and Application

Mixing of AC Speed FR Resin
Step 1: Mix resin Component A with a spiral agitator on low speed, until the liquid is a uniform color, with no light or dark streaks present.

Step 2: Add the Catalyst Powder, Component B, to resin Component A and mix with the same agitator on low speed for 2-4 minutes or until the powder is completely dissolved throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the temperature (see table).

NOTE: KEMPEROL® AC Speed FR resin is extremely fast curing. Excessive mixing time reduces the available working time for the primer.

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst Powder (300g/bag)	Pot Life (min)	Completely Cured (min)
23°F - 35°F	2 bags	45	90
35°F - 50°F	2 bags	35	70
50°F - 70°F	1 1/2 bags	30	40
70°F - 80°F	1 bag	20	30
>80°F	1/2 bag	20	30

Resin / Fleece Application

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke.

Step 2: Roll the KEMPEROL® Fleece directly into the resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece and no white color will be visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Tool Use and Care

If allowed to sit, they will harden quickly as resin begins to cure. Brushes and rollers must be discarded once they stiffen. Roller handles can be cleaned with MEK or acetone-based solvent. To minimize cleaning, wipe handle with clean, dry cloth every fifteen (15) to twenty (20) minutes and schedule work to avoid stopping.

Laps, Seams and Tie-offs

At all fleece seams, allow a 2" (5 cm) overlap for all side joints and a 4" (10 cm) overlap for all end joints. At membrane tie-offs, clean in-place membrane with MEK when resin has cured. Allow solvents to fully evaporate before application of new resin. **DO NOT PRIME EXISTING KEMPEROL® MEMBRANE.**

KEMPEROL® Flashing Application

Flashings

Install membrane flashings in accordance with the requirements / recommendations of KSA and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Assure full resin saturation of fleece.

Curing and Staging

Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before two (2) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.

Protect finished membrane from damage by other trades by the use of a cushioning layer such as 1" thick extruded polystyrene insulation and an impact layer such as ½" thick exterior-grade plywood.

General

Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.

All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.

Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and / or poor slope. **Do not flash over existing through-wall flashings, weep holes and overflow scuppers.**

Metal Flashing – General
Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with standard drawings and project details.

Metal flashing flanges to which membrane is to be bonded shall be a minimum of four (4) inches in width, and secured to the structural deck, or to treated wood nailers, six (6) inches on center staggered with fasteners appropriate to the substrate type. The flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.Metal edges that will be overlaid with membrane shall be provided with a 1/4" min. hemmed edge. Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base / curb flashing.

Membrane Flashing – General
Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.

Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise. Fleece shall overlap two (2) inch (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

Pipes, Conduits, and Unusually Shaped Penetrations
Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Drains and Scuppers
Acceptable drain and scupper materials are galvanized, galvalum, cast iron, cast aluminum, copper, hard PVC, and ABS.

Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain / scupper body. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

Hot Stacks
Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 °F. In all such cases flash to an intermediate "cool" sleeve.

Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Flexible Penetrations
Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate. Acceptable gooseneck material is copper, of a sheet weight appropriate for the application.

Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Walls, Curbs and Base Flashings
Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.

Reinforce all transition locations and other potential wear areas with a four (4) inch wide membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.

Reinforce all inside and outside corners with a four (4) inch diameter conical piece of membrane prior to installing the exposed flashing layer. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.

Extend flashing a minimum of four (4) inches to (6) inches onto the field substrate surface.

Metal drip edges and gravel stops shall be installed to solid substrate surfaces or treated wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood siding or metal siding or coping, and other similar materials is not acceptable. Before installing drip edges and gravel stops extend the membrane all the way to the edge of the structure.

Prepare, prime and strip in the metal flange with a separate 8" wide strip of membrane adhered to both the securement flange and to the field membrane. Clean the field membrane prior to stripping in the flange. If the field membrane has been exposed for over 48 hour lightly abrade the surface of the membrane not to exeed 10 mils of cured membrane and clean with a solvent. **DO NOT APPLY PRIMER TO THE EXISTING FIELD MEMBRANE.**

For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane bottom layer positioned behind the face area and extending a minimum of four (4) inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.

Field Fabricated Control or Expansion Joint Flashing

Control or expansion joints in excess of two (2) inches in width and all joints subjected to vehicular traffic require the use of a separate engineered joint system.

Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece. Apply bond breaker tape on both sides of the joint.

Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25% compression fitted into the joint with half the compressible material protruding above the joint, and a membrane top layer applied over the joint. Extend both fleece layers four (4) inches minimum onto the field substrate on both sides of the joint. An alternate approach is to insert the compressible foam or rubber insert into the joint completely sitting in the membrane cradle and fill it with a urethane trafficable grade sealer.

For insulated assemblies, wood nailers of a thickness to match the insulation / cover board must be installed on either side of an expansion joint.

Electrical Conduit, Gas Lines and Lightning Protection

Supports for electrical conduit and gas lines greater than one (1) inch in diameter require the use of a separate engineered support system.

Supports for electrical conduit and gas lines one (1) inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, high quality polyurethane sealant.

Coatings, sealers, Surfacing Sand, or Ceramaqaurtz surfacing may be applied to KEMPEROL® AC Speed FR membranes to achieve various performance and / or aesthetic purposes.

IT IS REQUIRED that coatings and sealers be applied within 48 hours following membrane application in order to achieve the best bond. After 48 hours the membrane surface must be sanded or lightly abraded before the coatings may be applied. An MEK solvent wipe will be required to remove any abraded particles that remain.

When mixing coatings and sealers prior to application, DO NOT AERATE the material as this will result in bubbles and pinholes in the applied finish.

KEMPERDUR Surfacing & Finishes - General

Mixing of AC Finish Coating

Step 1: Mix Component A with a spiral agitator on low speed, until the liquid is a uniform color, with no streaks present.

Step 2: Add the Catalyst Powder, Component B, to Component A and mix with the same agitator on low speed for 2 minutes or until the powder is completely mixed throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the ambient temperature (see table). For 5 kg primer work packs, the following catalyst quantities are recommended:

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst Powder (100g/bag)	Pot Life (min)	Completely Cured (min)
35°F - 50°F	2 bags	20	45
50°F - 65°F	2 bags	20	30
65°F - 80°F	1 bag	15	30
>80°F	1/2 bag	10	15

NOTE: KEMPERDUR AC Finish is extremely fast curing. Excessive mixing time reduces the available working time for the primer. DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES - MIX THE ENTIRE WORK PACK.

Smooth Coating Finish Surfacing

Smooth Coating Application

Pour and spread the KEMPERDUR® AC finish with a roller or brush over clean, cured membrane at the rate of approximately 100 ft²/5 kg unit. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Following minimum one (1) hour cure time, apply an additional coat at the rate of approximately 100 ft²/5 kg unit. Two coats are highly recommended to obtain uniform and full coverage, eliminating roller marks.

After completion of coating, avoid any foot traffic for a minimum of 6 hours. Avoid any vehicular traffic for a minimum of 24 hours.

Provide and maintain positive airflow over freshly applied KEMPEROL® AC Speed FR materials during entire curing period to facilitate complete cure.

Aggregate Surfacing

Aggregate Specification and Size

All surfacing aggregates shall be washed, kiln-dried, dust-free, suitable for broadcast, round grain or angular, and sized as follows:

- Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.
- Ceramaquartz (30 mesh) (S Grade blend) for aesthetic color quartz finished surfacing

Aggregate Bonding and Sealing Resins

For roof surfacing applications, the following combinations of bonding resin, aggregate, and sealing resin are acceptable:

- KEMPEROL® AC Speed FR Resin (without fleece) / aggregate / KEMPERDUR® AC Finish.
- KEMPERDUR® AC Finish / aggregate / AC Finish.

Roofing and Flashing Aggregate Surfacing Application

Step 1: Apply a bonding coat of KEMPEROL® AC Speed FR resin or KEMPERDUR® AC Finish at the rate of approximately 100 ft²/5 kg unit.

Step 2: Broadcast Surfacing Sand or Ceramaquartz in excess into a bonding coat application at the rate of 50 lbs./100 ft².

Step 3: Following minimum 1 hour cure time remove loose / unembedded mineral aggregate by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean mineral aggregate into wet resin as required to provide full embedment and coverage of membrane.

Step 4: Seal aggregate surface with a sealing coat application of KEMPERDUR® AC Finish at the rate of approximately 100 ft²/5 kg unit. After completion of mineral aggregate broadcasting, avoid any traffic for a minimum of six (6) hours to allow for surfacing to cure.

Alkalinity Surfacing System Against Fresh Concrete

KEMPEROL® AC Speed FR is resistant to the alkalinity of fresh concrete and other cementitious materials. An additional protective surfacing treatment is not required.

Adhesion Key Surfacing Application

Where placement of asphalt pavement or other adhered-type overburden is required over sections of the roofing / waterproofing membrane and flashings, apply one (1) coat of AC Finish or Primer at 125 ft²/5 kg unit, with broadcast of kiln-dried silica sand at the rate of 50 lbs./100 ft² into the wet resin. This provides a membrane surface profile for enhanced bonding capability.

Mixing of AC Traffic Coating

Step 1: Mix resin Component A with a spiral agitator on low speed, until the liquid is a uniform color, with no light or dark streaks present. For application on ramps and other sloped surfaces only, KEMPEROL® TX Thixotropic additive shall be added directly into Component A and mixed in. The amount of Thixotropic additive is to be adjusted based on percent of the incline (see table).

Incline Slope	TX Thixotropic Quantity to Add to Comp A
3 - 5%	10 g
5 - 7%	20 g
7 - 10%	30 g
11 - 20%	60 g

Step 2: Add the Catalyst Powder, Component B, to resin Component A and mix with the same agitator on low speed for 1 minutes. The amount of Catalyst Powder must be adjusted according to the temperature (see table).

For 10 kg resin/23 kg mineral filler work packs, the following catalyst quantities are recommended:

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst	Pot Life (min)	Completely Cured (min)
23°F - 35°F	4 bags	45	90
35°F - 50°F	4 bags	30	60
50°F - 70°F	3 bags	20	35
70°F - 80°F	2 bags	20	30
>80°F	1 bag	10	20

Step 3: Transfer the catalyzed mixture in to a large clean separate pail and gradually add Component C (23 kg filler) to the liquid while mixing continuously with a spiral agitator on low speed for an additional 1 minute until a smooth, lump free mix is produced.

NOTE: KEMPERDUR® AC traffic coating is extremely fast curing. Excessive mixing time reduces the available working time for the primer. DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Step 1: Empty the pail of KEMPERDUR® AC Traffic Coating mixture onto the primed concrete surface or over fully cured membrane and spread with a ¼" x ¼" x ¼" square-notched steel trowel at the rate of approximately 100 ft²/33 kg unit. If applying over cured membrane follow membrane re-coating guidelines.

Step 1a: When applying the KEMPERDUR® AC traffic coating on an incline with the TX Thixotropic additive ensure that the coating does not run down the slope. If the coating shows signs of sag add additional additive.

Step 1b: Due to the TX Thixotropic additive the coating will no longer self-level. Use the flat side of the trowel to level out the coating on sloped surfaces.

Step 2: Immediately de-aerate the coating in a cross direction with a porcupine (spiked) roller in order to release the air bubbles that may develop within the coating.

Step 3: Broadcast selected aggregate to excess into AC Traffic Coating until a uniform dry aggregate layer has been achieved. Aggregate will initially sink into surfacing, requiring the application of additional aggregate. Sufficient aggregate application is achieved when there are no wet spots remaining. Aggregate application rate is typically 100 lbs./100 ft.

- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for coarse surfaces.
- Ceramaquartz (30 mesh) (S-Grade blend) for aesthetic color quartz finished surfacing.

Step 4: Allow the aggregate-filled KEMPERDUR® AC Traffic Coating to cure for approximately 60 minutes. Times may vary depending on temperatures. Remove excess aggregate by brooming and vacuuming.

Step 5: Roller-apply KEMPERDUR® AC FINISH evenly onto the surface at the rate of approximately 60 ft²/5 kg unit. Ensure to lap each preceding path to erase squeeze out from the edge of roller. If necessary, a second coat may be applied

Protection

Protect finished application from all other contractors and activities during and after completion. Any damage to the system must be repaired as recommended by KSA TECHNICAL DEPARTMENT. Remove all masking, protection, equipment, materials, and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.

Clean-Up & Disposal

Cured Kemper primers, resin, and surfacing may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured Kemper primers, resins and surfacings are considered hazardous materials and must be handled as such, in accordance with local state and federal regulations. Do not throw uncured primer, resin and surfacing away.

Application Procedures

KEMPEROL® 022 SYSTEM APPLICATION PROCEDURES

Design Evaluation

Review project specification to ensure conformance with Kemper System America, Inc. (KSA) requirements. Notify design professional and KSA TECHNICAL DEPARTMENT of any discrepancies prior to the performance of any work. Evaluate site and building conditions.

The performance of a mock-up application is recommended if there is a question regarding substrate assembly moisture, or regarding adhesion to uncommon substrate surfaces. This will help ensure the best possible application method.

Material Storage

All KSA components will be delivered to the site in original sealed containers/packaging. Define a storage area for all components that is cool, dry, and in accordance with recommendations of KSA and relevant regulatory agencies. Roll goods must be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls with damaged ends. Store solvent-bearing solutions, resins, additives, and adhesives in accordance with the SDS and/or local fire and regulatory authorities. Materials should not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.

Optimum storage of materials is between 65 – 70 °F (18 – 21 °C) in a controlled environment. DO NOT store materials outside in cold weather, as the cooled materials will be difficult to mix and apply due to their thick consistency. DO NOT store materials outside in hot weather, as the heated materials will react more quickly and may result in reduced working time.

Work Place Safety

Provide and maintain positive ventilation and protection to workers for concealed and/or interior application or applications lacking sufficient natural air movements. Coordinate protective measures with the Owner or his designated Representative.

Comply with requirements of OSHA, NIOSH or governing local authority for work place safety. When required, provide barricades, retaining ropes, safety elements (active / passive) and any appropriate signage required by OSHA, NIOSH, and NSC and / or the Owner or his designated Representative.

NOTE: Copies of all current SDS for all components must be kept on site. Provide all crewmembers with appropriate safety data information and training as is related to the specific chemical compound he or she may be expected to deal with. Each crewmember shall be fully aware of first-aid measures to be undertaken in case of accidents.

Environmental Requirements

Application of KEMPEROL® 022 system may proceed while ambient temperature is between 41 – 90 °F (5 – 32 °C) providing the substrate is a minimum of 5 degrees above the dew point.

Protection

Protect building adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Provide protection for Contractor personnel and occupants of the structure and surrounding buildings as required complying with requirements of OSHA, NIOSH and / or governing local authority.

System Application

The KEMPEROL® 022 System is a two-step application:

1. Preparation and cleaning of the substrate;
2. Application of fully reinforced membrane.

Immediately before the application of any component of the system, the substrate shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.

NOTE: Before opening the containers of any Kemper System Product, protect hands and wrists with gloves, and wear OSHA-approved eye protection. Use respiratory equipment if recommended by SDS sheet for specific Kemper System material being applied.

System Assemblies

Kemper System materials are installed in waterproofing assemblies that utilize additional materials not discussed in this Application Guide, including: tile, stone, poured concrete, resinous flooring systems, wood decking, and other types of solid overburden.

Substrate Preparation

Concrete

New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. New or existing concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous waterproofing materials. Concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5.

When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed ¼ inch (peak to valley). The substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired. Areas of minor surface deterioration of ¼ inch or greater in depth shall be repaired to prevent possible ponding of the system, leading to excessive use of resin. For concrete materials with a compressive strength of less than 3,000 psi contact the KSA TECHNICAL DEPARTMENT for substrate preparation requirements. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.

Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

1. ***ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.***
2. ***ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. A maximum result is 3 lb/1,000 ft2/24-hour period.***
3. ***ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A maximum result is 6% moisture content by weight.***
4. ***ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter. Tramex Concrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the concrete slab. A maximum acceptable reading is 5%.***

Steel / Metal

Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean). Extend preparation a minimum of three (3) inches beyond the termination of the membrane flashing materials. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. **A WIRE BRUSH FINISH IS NOT ACCEPTABLE.** Wipe prepared metal surface with MEK or other acceptable solvent cleaner prior to application of primer.

Wood / Plywood

Plywood shall be identified with American Plywood Association (APA) grade trademarks and shall meet the requirements of product standard PS1. Fit plywood to all penetrations and projections Plywood shall be secured, with joints not greater than 1/4 inch. Fill all joints and gaps up to 1/2 inch with polyurethane KEMPERTEC® Joint Sealant . Strip all plywood joints with fleece reinforcement imbedded into the wet resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.

Gypsum / Mold Resistant or Cement Board

Fit boards to all penetrations and projections. The board shall be secured, with joints not greater than 1/4 inch. Fill all joints and gaps up to 1/2 inch with polyurethane KEMPERTEC® Joint Sealant . Strip all joints with fleece reinforcement imbedded into the wet resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.

Substrate Leveling, Patching, and Repairing

Substrate Leveling, Sloping and Patching

Substrate conditions are to be evaluated by the Design Professional, Contractor, the Owner, or designated Representative. A sound and even substrate surface shall be provided for all KSA material applications. Kemper System materials are not intended to span unsupported gaps and voids.

KEMPEROL® 022 resin / sand mix slurry materials can be used for substrate leveling, crack and wall/deck repair and patching. The slurry mix is not intended to be used as a structural repair material.

NOTE: Any surface to be leveled or patched with the 022 resin / sand must first be 'primed' with a 10 mil coat of 022 resin.

The ratio of resin to sand can be varied to create a mixture that provides the proper consistency for the intended application.

The leveling mixture typically consists of a slurry of resin and appropriate sand in a 1:2 resin to sand ratio by volume. Spread and plane this compound with a squeegee or trowel to achieve an even surface.

The patching / sloping mixture typically consists of a slurry of resin and appropriate sand in a 1:4 resin to sand ratio by volume. Fill cavities with this compound with a trowel to achieve an even surface. Create required slope (maximum 2" thickness in maximum 1" lifts) with a trowel to achieve an even surface.

Kemper System approved cementitious repair mortars can also be used to make surface repairs to concrete, masonry, and stone, surfaces. Polyurethane KEMPERTEC® Joint Sealant can be used to fill and seal defects in wood and metal substrate surfaces. Gaps between materials are typically filled by the use of compressible backer rod, followed by application of polyurethane joint sealant.

Resin / Sand Slurry

KEMPEROL® 022 / sand patching mix allows patching to be conducted as part of surface prep. KEMPEROL® 022 membrane may be applied directly over the wet slurry mix, unless foot traffic is required over the patched area, in which case a 16 hour curing period is required for the slurry. In addition, the slurry may be used for creating slope to drain to address localized drainage deficiencies.

Sand Aggregate Specification and Size

KEMPEROL® sands are round / angular grain sand, washed, kiln-dried and dust-free. They are used for patching, broadcasting to increase the surface area to enhance adhesion. Sand must be kept absolutely dry during storage and handling.

Mixing Sand (00) #35 (0.3 – 0.6 mm) for patching voids less than 1".
Surfacing Sand (0) #18 (0.5 – 1.2 mm) for patching voids from 1" – 2" or broadcasting purposes.

Preparation of Joints and Cracks

Joints, cracks, and fractures in the structural deck shall be prepared before installation of waterproofing membrane. Clean out cracks by brushing and oil-free compressed air. Fill crack with KEMPERTEC® resin / sand slurry, or polyurethane KEMPERTEC® Joint Sealant, allow to cure as required. Moving joints or cracks larger than 1/4" should be stripped in with a strip of 022 membrane.

Final Substrate Inspection

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, curing agents, lacquers, or any other condition that would be detrimental to adhesion of the resin and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

KEMPEROL® Resin Mixing and Application

Mixing of 022 Two-Component Resin

Step 1: Mix resin Component A (gray formulation) with a spiral agitator on low speed until the liquid is a uniform color.

Step 2: Add hardener Component B (brown formulation) to Component A and mix with a spiral agitator on low speed for 2 minutes or until both liquids are thoroughly blended.

NOTE: DO NOT BREAK DOWN UNITS INTO SMALLER QUANTITIES – MIX THE ENTIRE WORK PACK.

Resin / Fleece Application

Step 1: After the resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke.

Step 2: Roll the KEMPEROL® 500 Fleece directly into the resin, avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece and no white color will be visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Step 4: While the resin is still wet broadcast KEMPEROL® Surfacing Sand (0) #18 and / or (1) #14 on both horizontal and vertical surfaces at the approximate rate of 30 lbs./100 ft2 (1.5 kg/m2).

NOTE: KEMPEROL® 022 membrane does not require a protective alkalinity barrier.

Tool Use and Care

KEMPEROL® brushes and roller naps will remain supple and usable if they are kept moving in liquid resin. If allowed to sit, they will harden quickly as resin begins to cure. Roller naps and brushes must be discarded once they stiffen.

Roller handles can be cleaned with MEK or acetone-based solvent. To minimize cleaning, wipe handle with clean, dry cloth every fifteen (15) to twenty (20) minutes and schedule work to avoid stopping.

Laps, Seams and Tie-offs

At all fleece seams, allow a two (2) inch (5 cm) overlap for all side joints and a four (4) inch (10 cm) overlap for all end joints.

KEMPEROL® Flashing Application

Flashings

Install membrane flashings in accordance with the requirements / recommendations of KSA and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, and all other flashings required for a complete edge-to-edge watertight system.

All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.

Curing and Staging

Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before forty-eight (48) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas. Protect finished membrane from damage by other trades by the use of a cushioning layer such as 1" thick extruded polystyrene insulation and an impact layer such as ½" thick exterior-grade plywood.

General

Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.

Membrane Flashing – General

Resin and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.

Membrane flashings shall be fabricated with KEMPEROL® 022 resin and KEMPEROL® 500. Fleece shall overlap two (2) inch (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

Pipes, Conduits, and Unusually Shaped Penetrations
Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Drains and Scuppers
Acceptable drain and scupper materials are galvanized, galvalum, cast iron, cast aluminum, copper, hard PVC, and ABS.

Flashing material shall extend four (4) inches minimum onto drain or scupper flange and into drain / scupper body. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

Hot Stacks
Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 °F. In all such cases flash to an intermediate "cool" sleeve.

Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Flexible Penetrations
Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate.

Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

Walls, Curbs and Base Flashings
Wall, curb and base flashings shall be installed to solid substrate surfaces only. .

Reinforce all inside and outside corners with an additional reinforcing strip of membrane prior to installing the exposed flashing layer.

All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer. Extend flashing a minimum of four to six (4 - 6) inches onto the field substrate surface.

Clean-Up & Disposal

Remove all masking, protection, equipment, materials, and debris from the work and storage areas and leave those areas in an undamaged and acceptable condition.

Cured KEMPEROL® 022 resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPEROL® 022 resin is considered hazardous materials and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin away.

KEMPEROL® MEMBRANE TIE-IN, PATCHING AND REPAIR GUIDELINES

General

When two plies of KEMPEROL® membrane overlap, the membrane plies should be installed wet-in-wet wherever possible. This principle applies to all membrane overlaps including two-ply applications, overlaps, joints, seams, patches and repairs. When this is not possible due to weather, jobsite conditions or other unforeseen circumstances, or damage to an existing in-place KEMPEROL® membrane system, a second ply of membrane may be installed as follows:

Original Installation

New KEMPEROL® membrane can be adhered directly to in-place membrane to accomplish overnight tie-ins, allow completion of flashings prior to field membrane installation, and other similar installation conditions, by means of the following procedure:

Step 1: Thoroughly clean the in-place membrane with KEMPERTEC® Klean or MEK (methyl ethyl ketone) to achieve a minimum four (4) inch (10 cm) overlap area.

Step 2: After the solvent has been allowed time to fully evaporate, apply the new KEMPEROL® membrane directly to the in-place membrane.

NOTE: DO NOT apply primer to the in-place KEMPEROL® membrane surface.

Membrane Patching and Repairs

Step 1: Check the membrane area to determine the extent of repair. Cut and remove the blistered / damaged membrane back to a securely bonded point to the substrate.

Step 2: Mechanically grind off any remaining resin and primer and prepare the substrate.

Step 3: Apply tape around the area to be primed and apply the appropriate KEMPERTEC® primer to the exposed substrate surface.
DO NOT apply primer to the existing KEMPEROL® membrane.

Step 4: Cut a circular piece of KEMPEROL® fleece a minimum of four (4) inch (10 cm) larger in all directions of the repair area.

Step 5: Thoroughly pre-clean the existing membrane with KEMPERTEC® Klean or MEK to remove dirt and other similar contaminants and mechanical abrade the area. Allow the solvent to fully evaporate.

Step 6: Apply tape to the existing membrane around the area to receive the new membrane patch.

Step 7: Fill the void left by a blister with compatible materials before applying KEMPEROL® resin.

Step 8: Apply the KEMPEROL® resin to the taped-off area, imbed the fleece and complete the membrane saturation.

Step 9: After the patch has thoroughly cured, re-apply membrane coating / surfacing as needed to match the existing in-place system.

Application Procedures

KEMPER SYSTEM APPLICATION TIPS

General Installation DO'S

1. **Do** mask off and protect all areas not scheduled to receive the membrane system. Primers and Resins may not be removed from porous surfaces.
2. **Do** use personal protection equipment, such as gloves, safety glasses, long sleeves, respirators and others required by local, state and federal regulations.
3. **Do** make sure the temperature is always five (5) degrees above the dew point before application.
4. **Do** use Kemper System supplied tools and naps, as they are engineered for the application.
5. **Do** keep mixing area fully shaded from sun throughout the day and protected from extreme heat and cold.
6. **Do** keep tools moving in the liquid resins. If the tools sit still for even a short while, they will quickly stiffen and have to be discarded.
7. **Do** wipe tools, power drills and hands frequently with clean, dry rags to maintain tools and avoid messy work.

General Installation DONT'S

1. **Do Not** store product in extreme temperatures and direct sunlight, as that may affect the curing.
2. **Do Not** apply product in inclement weather, including fog, or when any moisture source is present.
3. **Do Not** break work packs. The product comes pre-packed and all components must be fully mixed.
4. **Do Not** store any foreign materials near the mixing area.
5. **Do Not** throw uncured resins away. Uncured resins must be handled as a hazardous material, in accordance with local, state and federal regulations.

Primer Installation DO'S

1 . **Do** conduct a substrate moisture test before priming. If there is moisture present, primer may bubble and vapor drive may cause pin holes. If this happens, primer will have to be re-applied.
2. **Do** apply primer in a cross directional method to fully cover and saturate the surface
3. **Do** extend primer a maximum of 1/4"beyond where the membrane will terminate.
4. **Do** allow primer to cure fully before applying membrane. In cold temperatures, primer may require a longer time to cure.
5. **Do** allow all remaining primer to cure in their original containers before disposing of the cans.
6. **Do** use KEMPERTEC® primer / sand mix for substrate repair, patching and leveling.

Primer Installation DONT'S

1. **Do not** allow primed surface to become dirty or dusty because it will greatly reduce adhesion to the membrane, requiring re-priming.

2. **Do not** leave primed surfaces exposed for more than 8 days.

Membrane Installation DO'S

1. **Do** pre-cut fleece as much as practical to provide a consistent treatment of similar items and to maximize an overall uniform appearance.

2. **Do** add weather-related additives, when required. A2K-PUR Accelerator for 2K-PUR and Reflect 2K FR when ambient temperature is below 50 ºF (10 ºC). Adjust the catalyst powder for all AC (PMMA) products.

3. **Do** install all flashings and detail work first, then do the field.

4. **Do** use a chalk line to mark fleece sections parallel to each other, and ensure even 4" (10 cm) overlaps and straight edges at the terminations. The minimum laps onto the substrate are 4"- 6" (10 cm to 15 cm) for horizontal terminations and 8" (20 cm) for vertical terminations.

5. **Do** make sure all air bubbles are worked out and no under-saturated dry spots remain. Correct saturation will leave no dry spots and a slight texture of the fleece. Pay careful attention to corners and junctions to avoid air pockets and small openings. It is easier to check your work as you go and correct deficiencies be fore the resin begins to cure, than to cut out and re-apply membrane later.

6. **Do** flood the fleece edges at terminations with enough additional resin to provide a resin cant (without dripping).

7. **Do** allow membrane to cure completely before applying a topcoat. In cold temperatures membrane may require a longer time to cure.

Membrane Installation DONT'S

1. **Do not** store catalyst powder outside, indirect sunlight or near water. The combination of the materials will result in a violent, corrosive chemical reaction. Do not store in temperatures below 35 ºF (1.7 ºC) or above 80 ºF (27 ºC).

2. **Do not** cut the fleece with dull or inadequate scissors. This results in distorted edges and sloppy details. Use a straight edge and pencil to provide clean, straight lines for cutting.

3. **Do not** apply membrane to a moist surface -- this will lead to membrane failure.

4. **Do not** use wet or soiled fleece. Wet or soiled fleece will need to be immediately discarded once contaminated.

5. **Do not** use resin that has started to gel. Once it begins to gel, it will not saturate the fleece properly.

KEMPEROL® MAINTENANCE AND REPAIR CONSIDERATIONS

Maintenance Program

The majority of Kemper System America (KSA) products are maintenance-free and maintenance is not required by the warranties. However, there are various roofing, plaza deck, parking deck components and items that are closely associated that may impact the Kemper System material.

Additionally, as part of LEED v4, in order to maintain the solar reflectance index (SRI) of reflective surfaces, the owner is to implement a maintenance program that ensures these surfaces are cleaned at least every two years. Kemper System America offers KEMPERTEC® Klean, a citrus based PH neutral cleaner designed for the white reflective KEMPEROL® membranes.

It is the responsibility of the Owner to regularly maintain the property and the areas where Kemper System products are applied. For roofing applications, Kemper System America suggests for the Owner to maintain a log of all inspections and activities, as it will help protect the owner. Most Kemper System Authorized Applicator offer an inspection service, if the Owner doesn't have the designated staff. These preventative actions may benefit the Owner and if a concern is located it allows for a prompt claim with Kemper System Warranty Department. All claims are to be made within 30 days on a claim form found on the Kemper System website at www.kempersystem.net.

The following guidelines are to help ensure long-term performance, the expected life cycle, and integrity of the products:

1. Inspect the portion of the building where Kemper System waterproofing, roofing and coating materials have been installed at least twice a year to remove debris from drains and scuppers and ensure proper drainage and performance of expansion joints.

2. For applications where physical or chemical exposure of the Kemper System materials is anticipated, inspect all visible materials for indications of damage.

3. Inspect metalwork, masonry walls, copings, sealants, expansion joints, mechanical equipment, etc., for deterioration and make repairs as required.

General Installation DO'S

1. **Do** mask off and protect all areas not scheduled to receive the membrane system. Primers and Resins may not be removed from porous surfaces.
2. **Do** use personal protection equipment, such as gloves, safety glasses, long sleeves, respirators and others required by local, state and federal regulations.
3. **Do** make sure the temperature is always five (5) degrees above the dew point before application.
4. **Do** use Kemper System supplied tools and naps, as they are engineered for the application.
5. **Do** keep mixing area fully shaded from sun throughout the day and protected from extreme heat and cold.
6. **Do** keep tools moving in the liquid resins. If the tools sit still for even a short while, they will quickly stiffen and have to be discarded.
7. **Do** wipe tools, power drills and hands frequently with clean, dry rags to maintain tools and avoid messy work.

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1. **Do Not** store product in extreme temperatures and direct sunlight, as that may affect the curing.
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1 . **Do** conduct a substrate moisture test before priming. If there is moisture present, primer may bubble and vapor drive may cause pin holes. If this happens, primer will have to be re-applied.
2. **Do** apply primer in a cross directional method to fully cover and saturate the surface
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5. **Do** allow all remaining primer to cure in their original containers before disposing of the cans.
6. **Do** use KEMPERTEC primer / sand mix for substrate repair, patching and leveling.

Primer Installation DONT'S

1. **Do not** allow primed surface to become dirty or dusty because it will greatly reduce adhesion to the membrane, requiring re-priming.
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Membrane Installation DO'S

1. **Do** pre-cut fleece as much as practical to provide a consistent treatment of similar items and to maximize an overall uniform appearance.
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6. **Do** flood the fleece edges at terminations with enough additional resin to provide a resin cant (without dripping).
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1. **Do not** store catalyst powder outside, indirect sunlight or near water. The combination of the materials will result in a violent, corrosive chemical reaction. Do not store in temperatures below 35 ºF (1.7 ºC) or above 80 ºF (27 ºC).

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3. **Do not** apply membrane to a moist surface -- this will lead to membrane failure.

4. **Do not** use wet or soiled fleece. Wet or soiled fleece will need to be immediately discarded once contaminated.

5. **Do not** use resin that has started to gel. Once it begins to gel, it will not saturate the fleece properly.

Maintenance Program

Kemper System branded products are tough and durable, and are chemically resistant to most materials encountered in normal building environments, for a complete list of chemicals please refer to the Chemical Resistance Table.

The following conditions can result in damage to the KEMPEROL® membrane:

1. Vehicular traffic directly over unprotected KEMPEROL® membrane, dragging of equipment and materials over the KEMPEROL® membrane, and other types of similar physical abuse may damage KEMPEROL® membrane. Patching of the membrane may be sufficient, but replacement of the membrane for aesthetic considerations may be necessary.

2. KEMPERDUR® mineral-filled coatings are generally unaffected by normal rubber-tired vehicular and pedestrian traffic, provided that the entire waterproofing and substrate assembly has been specifically designed for this type of service. Deterioration of the surfacing aggregate by fracturing, crushing, or erosion is considered normal wear and tear and is not indicative of surfacing failure. Even mineral-filled coatings can be damaged; mechanical abuse is excluded from warranty coverage.

3. The use of a separating layer such as rubber pads or feet is recommended when furniture, planters, mechanical equipment, etc. will be placed directly onto mineral-filled surfacing. Prior to placement of planters consult the building engineer to ensure the structure has sustain additional loads.

4. Depending on concentration and dwell time, alkaline and acidic solutions, and aggressive solvents can damage Kemper System materials. Replacement of the damaged area will be required in these instances. Kemper System will need to be notified to ensure avoid interruption to warranty. All repairs are to be completed by an Authorized Applicator.

5. Kemper System materials will not be affected by incidental contact with ethylene glycol, machine oil, lubricating grease, cooking grease, fuel oil, gasoline and aviation fuel, and low-solvent pH neutral cleaning materials. Pooling of contaminants on the KSA materials may result in deterioration depending on concentration, dwell time, and contaminant type, so prompt removal of spilled contaminants is always recommended. Chemical damage due to prolonged contact is excluded from warranty coverage.

Repair Methods

In the event that repairs to Kemper System materials are required, the following repair methods are recommended:

1. In an emergency, if it is obvious that water infiltration through the Kemper System materials is occurring, temporary repairs can be made by building maintenance personnel with urethane sealant/caulking without affecting warranty coverage.

2. Permanent repairs, flashing of new penetrations, and other building modifications that require work to the KEMPEROL® membrane system must be performed by an Authorized Applicator.

3. Surfacing materials are considered to be wearing surfaces, and are expected to require periodic maintenance, repair, and possible reapplication depending on the extent of traffic to which the system is exposed. This type of work must be performed by an Authorized Applicator

Surfacing Maintenance

Maintenance of KEMPERDUR® coatings can be required to address one of the following two conditions - staining, and localized damage.

Stains can be caused by food, wine, flower blossoms, rusting furniture, airborne contaminants, etc. Some stains can be removed in their entirety, but others can only be partially removed or lightened. Whenever practical, stain-causing materials should not be placed directly on the surfacing.

Of course, stains will eventually occur. When they do, the following cleaning procedure is suggested:

1. Use a solution of a pH-neutral / KEMPERTEC® Klean. Follow manufacturer's instructions regarding dilution ratio. DO NOT use highly concentrated cleaning agents and caustic cleaners as they may damage the coating.

2. Pretreat problem stains with a full-strength cleaner application; allow cleaner to remain on the stained area or a few minutes.

3. Lightly scrub the surfacing with a medium-stiff natural bristle brush to loosen contaminants. DO NOT scrub so hard as to remove surfacing aggregate or coating. DO NOT use metal brushes and scrapers.

4. Thoroughly rinse the coating to remove all cleaner residue and contaminants with clean water.

5. Pressure washing will enhance this cleaning procedure, but care must be taken to not damage the coating or membrane. The maximum pressure for cleaning a waterproofing membrane is 1,200 psi and for coatings 600 psi.

As with all cleaning methods, excessive chemical, mechanical or abrasive cleaning methods can bleach or damage the coating materials, so reasonable care is required.

KEMPERDUR® coatings that are scraped, chipped, or otherwise damaged are best repaired by the use of KEMPERDUR sealers or coatings. Repair must be performed by an Authorized Applicator.

Even with the best cleaning and repair methods, it is often difficult to blend cleaned/repaired areas into the surrounding surfacing material so that there is no difference in appearance.

Snow Removal

Caution needs to be taken when removing snow from any Kemper System waterproofing, roofing or coating product. In general the use of plastic shovels is recommended. If a snow plow or a snow blower are used, the metal edge needs to have a rubber protective tip on the blade to prevent damaging the coating surface. Damage caused by any snow removal process is not covered by the warranty.

Extra precaution should also be taken around expansion joints whether they are done with Kemper System products or a third party joint systems, to ensure the integrity of the joint. Additionally, avoid storing or piling snow over joints.

Polyurethane and Epoxy based materials are resistant to Calcium Chloride snow melts.

Product Information

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NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW.KEMPERSYSTEM.NET

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Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

KEMPER SYSTEM

Product Information

SUBSTRATE PREPARATION MATERIALS

Cementitious Repair Mortars

Quick-dry modified Portland cement-based mortars are typically used to repair surface defects in concrete and masonry substrates, and to re-pitch substrate surfaces. Repairs in excess of 1" in depth often utilize pea gravel mixed with the mortar. Similar products are available that can be used to repair stone, terra cotta, and brick. A selection of materials is listed.

KEMPERTEC® Joint Sealant

One-component, polyurethane sealant used to seal joints and voids in a variety of substrates, including plywood and cover boards. Sealant can also be used with backer rod to fill gaps between building components, and to achieve a smooth transition at uneven locations.

KEMPERTEC® EP and EP5 Primers With Kiln-Dried Sand

A repair mortar or slurry can be created by mixing KEMPERTEC® epoxy-based primers with kiln-dried mixing sand. The mix ratio can be varied to suit the site condition, eg., from 1:4 (1 part primer to 4 parts sand) for repair of surface defects such as spalls, to a ratio of 1:1 for a slurry repair over an uneven substrate surface.

NOTE: Intended for use with concrete, masonry, and stone substrates.

KEMPERTEC® D and R Primers With Kiln-Dried Sand

A repair mortar or slurry can be created by mixing KEMPERTEC® urethane-based primers with kiln-dried mixing sand. The mix ratio can be varied to suit the site condition, eg., from 1:4 (1 part primer to 4 parts sand) for repair of deep surface defects such as gaps and gouges, to a ratio of 1:1 for a slurry repair over an uneven substrate surface.

NOTE: Intended for use with metal and wood substrates.

Mixing Sand

Kiln-dried #00 / 35, (0.3 – 0.6 mm) graded sand suitable for mixing with epoxy and urethane primers to create repair mortars and slurries for use in substrate preparation.

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SUBSTRATE REPAIR & PATCHING MATERIALS

Substrate damage that may be structural in nature must be evaluated by a licensed professional architect or engineer. Repair of structural damage is not addressed by this manual and is not the responsibility of Kemper System America, Inc.

The substrate repair and patching materials described below have been used by the trade in the field in conjunction with KEMPEROL® materials, and been found to be acceptable for substrate leveling and patching. The cure times shown are minimum days required, and may vary depending upon temperature and relative humidity. This is not intended to be a comprehensive list; other repair materials of similar composition are likely to provide acceptable results. After placement of the patch or infill materials, most surfaces must be mechanically ground, sandblasted or scarified to remove any cementitious laitance (the weak surface which occurs during the placement and setting process) and other contaminants.

Repair of concrete substrate is dependent on the type of extent of the deterioration. The following are basic types of repair materials, a combination of which may be required to achieve proper repair.

Cementitious Patching Materials

Bonding Agent / Rebar Coating

MasterEmaco P124 (BASF)

Requires subsequent application of manufacturer's surfacing or repair mortar. Refer to MasterEmaco Technical Data Sheet.

Profiling / Surface Repair Mortar

MasterEmaco N 300CI (BASF)

Single-component polymer modified repair mortar for surface repairs of minimum 1/8", maximum 1/4" thickness. Typical 3-7 day curing required prior to KEMPERTEC® primer application. Refer to the MasterEmaco Technical Data Sheet.

Horizontal / Vertical Repair Mortar

MasterEmaco T 310CI (BASF)

Single-component polymer modified repair mortar for surface repairs of minimum 1/4", maximum 1" (per lift) thickness. Can be extended 3/8" pea gravel for repairs of greater depth. Typical 3-7 day curing required prior to KEMPERTEC® primer application. Refer to MasterEmaco Technical Data Sheet.

MasterEmaco T 1061 Rapid Mortar (BASF)

Single-component modified repair mortar for surface repairs of minimum 1/2", maximum 2" (per lift) thickness. Can be extended 3/8" pea gravel for repairs of greater depth. Typical 24 hour curing required prior to KEMPERTEC® primer application. Refer to MasterEmaco Technical Data Sheet.

Vertical / Overhead Repair Mortar

MasterEmaco N 425 (BASF)

Single-component polymer modified repair mortar for surface repairs of minimum 1/4", maximum 2" (per lift) thickness. Typical 7 day curing required prior to KEMPERTEC® primer application. Refer to MasterEmaco Technical Data Sheet.

Repair of brick, stone, and terra cotta substrate is dependent on the type of substrate material, the extent of the deterioration, and whether or not the repair needs to match the appearance of the substrate.

Repair materials indeed for use with concrete substrates are normally not appropriate for use with brick, stone, and terra cotta.

The following are basic types of repair and restoration materials recommended by the listed manufacturers for each substrate type. However, as these are specialty materials, close consultation with the material manufacturers is recommended. The use of associated surface cleaners and bonding agents may be required to achieve satisfactory results.

Brick, Stone, & Terra Cotta Patching Materials

Limestone / Sandstone Repair Mortar

Restauro Stone Repair Mortar (Keim Coatings)
Jahn M70 (Cathedral Stone Products)
Custom System 45 (Edison Coatings)
* Refer to the appropriate Manuafacturer's Technical Data Sheet.

Brick / Terra Cotta Repair Mortar

Restauro Masonry Repair Mortar (Keim Coatings)
Jahn M100 (Cathedral Stone Products)
Custom System 45 (Edison Coatings)
* Refer to the appropriate Manuafacturer's Technical Data Sheet.

Marble Repair Mortar

Restauro Marble Repair Mortar (Keim Coatings)
Jahn M120 (Cathedral Stone Products)
Custom System 45 (Edison Coatings)
* Refer to the appropriate Manuafacturer's Technical Data Sheet.

Granite / Bluestone Repair Mortar

Restauro Granite Repair Morta (Keim Coatings)
Jahn M160 (Cathedral Stone Products)
Custom System 45 (Edison Coatings)
* Refer to the appropriate Manuafacturer's Technical Data Sheet.

Repair of small cracks, gaps and joints in most substrate materials can be made by using KEMPERTEC® Joint Sealant or using a high-quality single component gun grade urethane sealant. Silicone-based sealants are not acceptable.

Deep cracks will require the use of a backer rod prior to the application of KEMPERTEC® Joint Sealant or of a high-quality single component gun grade urethane sealant. The sealant must be smoothed out flush with the substrate.

The intent is to prevent the loss of liquid primer and resin materials, and to achieve a continuous substratesurface that will provide full support of the Kemper membrane system.

Universal Repair Materials / Sealant

Urethane Sealant
KEMPERTEC® Joint Sealant for cover board joints beneath the KEMPEROL® membrane system.

Polyether Sealant
GreatSeal PE-150 is a mulitpurpose sealant for use in moving and non-moving joint applications.

Note: Any products not listed above must be reviewed and approved by KSA TECHNICAL DEPARTMENT.

SURFACING AND MIXING SAND

Product Description

The Surfacing and Mixing Sands are the standard kiln-dried silica aggregate intended for use with KEMPEROL® cold liquid-applied roofing, waterproofing and surfacing applications.

Sieve Analysis (U.S. Sieve Series and Screen Scale)

		Mixing Sand 00 or 35		Surfacing Sand 0 or 18		Surfacing Sand 1 or 14	
U.S. Sieve No.	Sieve Opening mm/inch	% RET	% PASS	% RET	%PASS	% RET	%PASS
							98.4
12	1.68/	-	-	-	-	1.1	75.5
14	1.4/.0555	-	-	0	100.0	23.4	27.4
16	1.18/.0469	-	-	1.6	98.4	48.1	13.1
18	1.00/.0394	-	-	22.8	75.5	14.3	6.2
20	0.850/.0331	-	-	32.3	27.4	6.9	-
25	0.710/.0278	0	100.0	28.2	13.1	-	-
30	0.600/0.0234	2.3	97.7	8.8	6.3	-	-
35	0.500/0.0197	33.8	63.9	3.1	3.2	-	-
40	0.425/0.0165	23.3	40.6	1.1	2.1	-	-
45	0.355/0.0139	24.9	15.7	.7	1.5	-	-
50	0.300/0.0117	11.6	4.1	.8	.7	-	

Hardness on Moh's scale: 6-8,
Specific Gravity: 2.65

Composition (Wt%)	
SiO_2	99.40
Al_2O_3	0.13
CaO	0.03
Fe_2O_3	0.03
K_2O	0.02
TiO_2	0.02
Na_2O	0.01
MgO	0.01
L.O.I.	0.21

Use

Priming: Surfacing Sand #0 / 18 (0.5 – 1.2 mm) aggregate broadcast into wet KEMPERTEC® Primers to enhance adhesion with the KEMPEROL® membranes. The sand is required when applying KEMPERTEC® EP / EP5 Primers.

Adhesion Key / Alkalinity Barrier: KEMPERTEC® EP / EP5 primers with sand can also serve as an adhesion key for various overburdens and as well as an Alkalinity barrier when required by the membrane, due to high pH levels. Refer to the Primer and Resin data sheet for application details and rates.

Coatings / Surfacings: Surfacing Sand #0/18 (0.5 – 1.2 mm) and #1 / 14 (0.8 to 1.5 mm), are used with KEMPERDUR® coating systems to provide traction. Refer to individual coating data sheets for application details and rates

Patching / Leveling: Mixing Sand #00/35 (0.3 – 0.6 mm) and Surfacing Sand #0 / 18 (0.5 – 1.2 mm) can be mixed with a variety of primers and resins to create a slurry for patching and leveling. Refer to individual data sheets for application details and rates

Storage

Store in a dry and cool environment.

Ordering Information

Item #:	Size:
700-AG-001	50 lb bag • Surfacing Sand #0
700-AG-106	50 lb bag • Surfacing Sand #1
700-AG-002	50 lb bag • Mixing Sand #00

Headquarters: **Kemper System America, Inc.** | 1200 North America Drive | West Seneca, NY 14224
Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

Rev. 07/2019

Product Information

KEMPERTEC® PRIMERS

KEMPERTEC® D PRIMER	Two-component polyurethane primer intended for use with metal, wood, and mineral-surfaced cap sheet substrates. Provides typical 30 minute pot life and 12 hour cure time.
KEMPERTEC® R PRIMER	Two-component, quick-cure, polyurethane primer intended for use with metal, wood, and mineral-surfaced cap sheet substrates. Provides typical 5-10 minute pot life and 3 hour cure time.
KEMPERTEC® EP PRIMER	Two-component epoxy primer intended for use with concrete, masonry, and stone substrates. Requires broadcast of kiln-dried surfacing sand. Provides typical 30 minute pot life and 16 hour cure time.
KEMPERTEC® EP5 PRIMER	Two-component, quick-cure, epoxy primer intended for use with concrete, masonry, and stone substrates. Requires broadcast of kiln-dried surfacing sand. Provides typical 20 minute pot life and 4 hour cure time.
KEMPERTEC® FPO Primer	Single component, quick-cure, solvent based, high bonding primer intended for use on TPO surfaces and certain types of EPDM membranes. Provides a 30 minute cure time.
KEMPERTEC® AC PRIMER	Two-component, quick-cure, Polymethylmethacrylate (PMMA) primer intended for use with concrete, masonry, stone, metal and wood substrates. Provides typical 15 minute pot life and 30 minute cure time.

NOTE: Times will be shorter in hot weather and longer in cold weather.

NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW.KEMPERSYSTEM.NET

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Product Information

SUBSTRATE PRIMER SELECTION TABLE

The following table provides recommendations for priming of properly prepared substrates, and should be used as a guideline when specifying KEMPERTEC® primer. KEMPERTEC® primers are used to improve the adhesion of KEMPEROL® membranes to substrate surfaces. The primer application rate will vary and should be adjusted depending on the substrate absorbency. See individual KSA technical data sheets, safety data sheets, guide specifications and details for complete information regarding the suitability, application and handling of KSA primers.

Note: All substrates must be prepared as necessary prior to the application of primers. Surface must be free from gross irregularities, loose, unsound or foreign materials such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate.

Substrate Preparation For Priming	**D/R Primers**	**EP/EP5 Primers**	**AC Primer**
Cementitous and Masonry Substrates			
Structural Concrete, Lightweight Structural Concrete Scarify, shot blast, grind to remove laitance and open up pores	N	Y	Y
Granite, Marble Scarify, shot blast, grind to remove polished surface and open up pores	N	Y	Y
Sandstone, Limestone, Synthetic Stone Scarify, shot blast, grind to open up pores	N	Y	Y
Porous/Air-Entrained Concrete, Concrete Masonry Block Scarify, shot blast, grind to open up pores	N	Y	Y
Repair and Leveling Mortars Scarify, shot blast, grind to open up pores	N	Y	Y
Clay Brick, Terra Cotta, Tile Scarify, shot blast, grind to remove glazed surface and open up pores	N	Y	Y
Metal Substrates			
Bare Aluminum, Lead, Copper, Zinc Grind to remove corrosion, then MEK / Acetone Wipe	Y	T	Y
Patina Copper MEK / Acetone Wipe	Y	Y	Y
De-Rusted Steel, Galvanized Steel Grind to remove corrosion, then MEK / Acetone Wipe	Y	T	Y
Black Pipe, Cast Iron Grind to remove corrosion and coating, then MEK / Acetone Wipe	Y	Y	Y
Stainless Steel Grind to open up pores, then MEK / Acetone Wipe	Y	Y	Y
Kynar Finish, Ceramic Coated, and Painted Metal Grind to remove coating, then MEK / Acetone Wipe	Y	Y	Y
Wood Substrates			
Plywood, Marine Grade, AdvanTech Exterior grade only	Y	Y	Y
Wood Plank Requires insulation, cover board, or cap sheet	Y	Y	Y
Dimensional Lumber Direct application for flashings only	Y	Y	Y

Y - Recommended
N - Not Recommended
T - Adhesion Test Required
O - Optional with PUR for Most Applications

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Substrate Preparation for Priming	D/R Primers	EP/EP5 Primers	AC Primer
Glass and Plastic Substrates			
Glass Sand to roughen surface, then MEK / Acetone Wipe	Y	Y	T
Acrylic Sand to roughen surface, then Dry Wipe	T	T	N
Fiberglass Sand to roughen surface, then MEK / Acetone Wipe	Y	Y	N
ABS, PVC - Rigid Sand to roughen surface, then MEK / Acetone Wipe	Y	Y	Y
Existing Bituminous Roofing			
Modified Bitumen Roofing - Smooth APP Surfaced Power wash to remove contaminants	N	Y	N
Modified Bitumen Roofing - Smooth SBS Surfaced Power wash to remove contaminants	N	Y	N
Bituminous Roofing - Aluminum Coated Power wash to remove contaminants and loose coating	N	N	N
Bituminous Roofing - Granular Surfaced Power wash to remove contaminants and loose granules	Y (O)	Y (O)	T
Bituminous Roofing - Flood Coat and Aggregate Requires insulation or cover board	N	N	N
Coal Tar Pitch Roofing - Flood Coat and Aggregate Requires insulation or cover board	N	N	N
Hot-Melt Bituminous Waterproofing Requires application of compatible mineral-surfaced cap sheet	N	N	N
Ethylene-Faced Bituminous (Bituthane) Roofing Requires torch-application of compatible mineral-surfaced cap sheet	N	N	N
Existing Membrane Roofing			
PVC Single-Ply Roofing (weathered) Power wash to remove contaminants, then MEK / Acetone Wipe	T	N	T
EPDM Single-Ply Roofing (weathered) EPDM Manufacturer's splice cleaner and splice adhesive	T	N	N
TPO Single-Ply Roofing (weathered) Special order TPO Primer Available or TPO Manufacturer's splice cleaner and splice adhesive	T	N	N
Insulation and Cover Boards			
Isocyanurate Foam Insulation - Coated Glass Facer, non-perforated	Y	Y	N
Isocyanurate Foam Insulation - Standard Felt Facer Requires cover board or cap sheet	N	N	N
EPS / XEPS Foam Insulation Requires cover board or cap sheet	N	N	N
Cement Board (Securock, PermaBase, DexCell)	N	Y	Y
Silicone Treated Gypsum Board - Fiberglass-faced (Dens-Deck Prime, Dens-Glass Gold) Not acceptable over existing roofing or direct to concrete	N	Y	N
Silicone Treated Gypsum Board - Unfaced (SecureRock) Not acceptable over existing roofing or direct to concrete	Y	Y	N

Y - Recommended
T - Adhesion Test Required
N - Not Recommended
O - Optional with PUR for Most Applications

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® D Primer

Two component work pack includes:
Component A: Base Resin, Component B: Hardener

Product Description	**KEMPERTEC® D Primer** is a low VOC, high bonding primer used between acceptable prepared substrates and KEMPEROL® cold liquid-applied reinforced membrane and coating systems.
Composition & Materials	KEMPERTEC® D Primer is a solvent-free, "odor-free", high solids, 2-part, polyurethane primer.
Use	KEMPERTEC® D Primer is used to prime a wide range of substrates including modified bitumen roofing, coated-glass faced high density polyiso cover board, plywood, steel, galvanized steel, aluminum, lead, copper, zinc, glass and other substrates. Please refer to the Substrate Primer Selection Table for a complete list.
Limitations	Primer may be applied only when the ambient temperature is 41 ºF (5 ºC) or rising, and the substrate temperature is a minimum of 5 ºF (3 ºC) above the dew point. KEMPEROL® membrane must be applied to primer within 7 days of primer application. Primer exposed for more than 7 days must be re-primed in accordance with KSA TECHNICAL DEPARTMENT requirements.
Yield	125 ft^2 (11.6 m^2) / 5 kg work pack. *Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.*
Storage	Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 80 ºF (27 ºC). Approximate shelf life 24 months with proper storage. For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).
Precautions	**Review Safety Data Sheets before handling, available online at www.kempersystem.net.**
Surface Preparation	All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to SSPC-SP3 standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate. *Note: Prior to opening the containers of KEMPERTEC® D Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.*
Mixing of Primer	**Step 1:** Premix Component A thoroughly with a spiral agitator. **Step 2:** Pour Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. DO NOT AERATE. DO NOT THIN PRIMER. The primer solution should be a uniform color, with no light or dark streaks present. ***NOTE: DO NOT break down units into smaller quantities – mix the entire work pack.***

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Sustainability Information	
% Biobased Carbon Content ASTM D6866-21	51%
Recycled content % (post / pre)	0/0
Manufacture location	Buffalo, NY

Primer Properties	
Physical Property	**Value**
Color	Translucent / Amber
Physical State	Cures To Solid
VOC Contents	3 g/l
Usage Time*	30 Minutes
Water Resistant After*	3 Hours
Cures After*	12 Hours
Apply Membrane / Coating after*	12 Hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application

After the Primer is mixed, apply per recommended coverage rate. The primer should be rolled or brushed evenly onto the surface in a cross directional method to fully cover the substrate in one application. Allow primer to set approximately 12 hours prior to application of the membrane or coating system.

Note: KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Disposal

Cured KEMPERTEC® D Primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPERTEC® D Primer must be disposed of in accordance with local, state and federal regulations. Do not throw uncured primer away.

Ordering Information

KEMPERTEC® D Primer work pack:

Item #:	Size:
525-00-055	1.23 US GAL (4.67 L) • 5.0 kg

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® R Primer

USDA CERTIFIED BIOBASED PRODUCT PRODUCT 54%

Two component work pack includes:
Component A: Base Resin, Component B: Hardener

Product Description

KEMPERTEC® R Primer is a quick-cure, low VOC, high bonding primer used between acceptable prepared substrates and KEMPEROL®® cold liquid-applied reinforced membrane and coating systems.

Composition & Materials

KEMPERTEC® R Primer is a solvent-free, "odor-free", high solids, 2-part, polyurethane substrate primer.

Use

KEMPERTEC® R Primer is used to prime a wide range of substrates including bitumen roofing, coated-glass faced high-density polyiso cover board, plywood, steel, galvanized steel, aluminum, lead, copper, zinc, glass and other substrates. Please see the Substrate Primer Selection Table for a complete list.

Limitations:

Primer may be applied only when the ambient temperature is 41 ºF (5 ºC) or rising, and the substrate temperature is a minimum of 5 ºF (3 ºC) degrees above the dew point.

KEMPEROL® membrane must be applied to primer within 7 days of primer application. Primer exposed for more than 7 days must be re-primed in accordance with KSA TECHNICAL DEPARTMENT requirements.

Yield

25 ft^2 (2.3 m^2) per 1 kg work pack.

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 80 ºF (27 ºC). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrmental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to SSPC-SP3 standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

Note: Prior to opening the containers of KEMPERTEC® R Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Mixing of Primer

Step 1: Remove bag from the aluminum packaging. Knead cream-colored resin Component A thoroughly until a uniform color is achieved.

Step 2: Pull away the rubber cord separating the two components so that Components A and B can be mixed together. Knead the bag quickly and thoroughly for approximately 1 minute so that a homogenous primer is formed. The primer should be a uniform color, with no light or dark streaks present.

NOTE: KEMPERTEC® R primer is extremely quick-curing. Apply immediately after mixing.

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Sustainability Information	
% Biobased Carbon Content ASTM D6866-21	54%
Recycled content % (post / pre)	0/0
Manufacture location	Buffalo, NY

Primer Properties	
Physical Property	**Value**
Color	Translucent / Amber
Physical State	Cures To Solid
VOC Contents	3 g/l
Usage Time*	5-10 minutes
Water Resistant After*	2 hours
Cures After*	3 hours
Apply Membrane / Coating after*	3 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application

After the KEMPERTEC® R Primer is mixed, cut off one corner of the bag and pour all of the primer onto the substrate surface or into a clean new mixing pail. Working quickly, apply at the recommended coverate rate. The primer should be rolled or brushed evenly onto the surface in a cross directional method to fully cover to the substrate in one application. Allow to set approximately 3 hours prior to application of the *KEMPEROL®* membrane or coating system.

Note: KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Disposal

Cured KEMPERTEC® R Primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPERTEC® R Primer must be disposed of in accordance with local, state and federal regulations. Do not throw uncured primer away.

Ordering Information

KEMPERTEC® R Primer work pack:

Item #:	Size:
326-00-010	0.25 US GAL (0.95 L) • 1.0 kg

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® EP Primer

Two component work pack includes:
Component A: Base Resin, Component B: Hardener

Product Description

KEMPERTEC® EP Primer is a low VOC, penetrating, high bonding primer used between acceptable prepared substrates and KEMPEROL®® cold liquid-applied reinforced membrane and coating systems.

Composition & Materials

KEMPERTEC® EP Primer is a solvent free, high solids, 2-part, epoxy based substrate primer.

Use

KEMPERTEC® EP Primer is used to prime a wide range of substrates including bitumen roofing, concrete, brick, plywood, steel, glass and other substrates. Adhesion test is required to confirm adequate adhesion for aluminum, lead, copper, or zinc. Please see the Substrate Primer Selection Table for a complete list. Primer is also used to provide alkalinity protection for KEMPEROL® PUR membrane prior to concrete or cementitious mortar/adhesive application.

Limitations

Primer may be applied only when the ambient temperature is 50 ºF (10 ºC) and rising, and the substrate temperature is a minimum of 5 ºF (-15 ºC) degrees above the dew point. KEMPEROL® membrane or coating must be applied to primer within 7 days of primer application. Primer exposed for more than 7 days must be re-primed in accordance with Kemper System Technical Department requirements.

Yield

85 ft^2 (7.9 m^2) per 5 kg work pack.
Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 80 ºF (27 ºC). Approximate shelf life 24 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to SSPC-SP3 standards.

New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5 by means of scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

- ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.

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- ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Annydrous Calcium Chloride. A maximum requirement is 3 lb/1,000 ft²/24-hour period.

- ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A maximum requirement is 6% moisture content by weight.

- ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a destrcutive Electronic Moisture Meter. Tramex Conrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the conrete slab **only**. A maximum requirement is a 5% reading.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Packaged Location	Buffalo, NY, USA

Primer Properties		
Physical Property	**Test Method**	**Value**
Color		Translucent / Amber
Physical State		Cures to Solid
VOC Contents		8 g/l
Viscosity - Stormer-Type (25°C) *D562*	*D562*	104 KU (Comp. A) 52 KU (Comp. B)
Density *D1475*	*D1475*	1007 g/L (Comp. A) 1120 g/L (Comp. B)
Usage Time*		25 minutes
Water Resistant After*		6 hours
Cures After*		16 hours
Apply Membrane / Coating After*		16 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Note: Prior to opening the containers of KEMPERTEC® EP Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Mixing of Primer

Step 1: Pour Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. DO NOT AERATE. DO NOT THIN PRIMER. The primer should be a uniform clear color, with no streaks present.

NOTE: DO NOT break down units into smaller quantities – mix the entire work pack.

Application

After mixing, apply the primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Porous substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation.

In warm climates, higher contents of moisture or vapor within a concrete substrate may cause pin-holing of the primer due to vapor drive. Application of primer during a later portion of the day, when temperatures subside can improve this condition. Where required, a second squeegee application of sand / primer slurry may be utilized. The primer slurry mixing ratio should be 25 lbs of KEMPEROL® Surfacing Sand and 12.5 lbs of KEMPEROL® Mixing Sand per 5 kg unit of primer.

After applying the primer, immediately broadcast Surfacing Sand (0), #18, (0.5 – 1.2 mm) to refusal, at the approximate rate of 50 lbs./100 ft². (2.4 kg/m²). Allow to set approximately 16 hours prior to application of the KEMPEROL® membrane.

Note: KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Alkalinity Barrier

KEMPERTEC® EP Primer is used as an alkalinity barrier / adhesion key over completed membrane and flashing systems. Refer to specific application procedures and project requriements.

Disposal

Cured KEMPERTEC® EP Primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPERTEC® EP Primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPERTEC® EP Primer work pack:

Item #:	Size:
523-00-010	.24 US GAL (0.95L) • 1 kg
523-00-055	1.24 US GAL (4.69L) • 5 kg

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® EP5 Primer

Two component work pack includes:
Component A: Base Resin, Component B: Hardener

Product Description

KEMPERTEC® EP5 Primer is a quick-cure, low VOC, penetrating, high bonding primer used between acceptable prepared substrates and KEMPEROL® cold liquid-applied reinforced membrane and coating systems.

Composition & Materials

KEMPERTEC® EP5 Primer is a solvent free, high solids, 2-part, epoxy based substrate primer.

Use

KEMPERTEC® EP5 Primer is used to prime a wide range of substrates including bitumen roofing, concrete, brick, plywood, steel, glass and other substrates. Adhesion test is required to confirm adequate adhesion for aluminum, lead, copper, or zinc. Please see the Substrate Primer Selection Table for a complete list. Primer is also used to provide alkalinity protection for KEMPEROL® PUR membrane prior to concrete or cementitious mortar/adhesive application.

Limitations

Primer may be applied only when the ambient temperature is 41 °F (5 °C) and rising, and the substrate temperature is a minimum of 5 °F (-15 °C) degrees above the dew point. KEMPEROL® membrane must be applied to primer within 7 days of primer application. Primer exposed for more than 7days must be re-primed in accordance with KSA TECHNICAL DEPARTMENT requirements.

Yield

85 ft^2 (7.9m^2) per 5 kg work pack.
Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 °F (10 °C) or above 80 °F (27 °C). Approximate shelf life 24 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to SSPC-SP3 standards.

New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5 by means of scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

- ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.

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- ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. A maximum requirement is 3 lb/1,000 ft²/24-hour period.
- ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A minimum requirement is 6% moisture content by weight.
- ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter. Tramex Conrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the conrete slab **only**. A minimum requirement is a 5% reading.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Packaged Location	Buffalo, NY, USA

Primer Properties	
Physical Property	**Value**
Color	Translucent / Amber
Physical State	Cures To Solid
VOC Contents CDPH Standard Method V1.2 TVOC Concentration	8 g/l Pass ≤ 0.5 mg/m³
Usage Time*	20 minutes
Water Resistant After*	3 hours
Cures After*	4 hours
Apply Membrane / Coating After*	4 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Note: Prior to opening the containers of KEMPERTEC® EP5 Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Mixing of Primer

Step 1: Pour Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. DO NOT AERATE. DO NOT THIN PRIMER. The primer should be a uniform clear color, with no light or dark streaks present.

NOTE: DO NOT break down units into smaller quantities – mix the entire work pack.

Application

After mixing, apply the primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Porous substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation.

In warm climates, higher contents of moisture or vapor within a concrete substrate may cause pin-holing of the primer due to vapor drive. Application of primer during a later portion of the day, when temperatures subside can improve this condition. Where required, a second squeegee application of sand / primer slurry may be utilized. The primer slurry mixing ratio should be 25 lbs of KEMPEROL® Surfacing Sand and 12.5 lbs of KEMPEROL® Mixing Sand per 5 kg unit of primer.

After applying the primer, immediately broadcast Surfacing Sand (0), #18, (0.5 – 1.2 mm) to refusal, at the approximate rate of 50 lbs./100 ft². (2.4 kg/m²). Allow to set approximately 4 hours prior to application of the KEMPEROL® membrane.

Note: KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Alkalinity Barrier

KEMPERTEC® EP Primer is used as an alkalinity barrier / adhesion key over completed membrane and flashing systems. Refer to specific application procedures and project requriements.

Disposal

Cured KEMPERTEC® EP5 Primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPERTEC® EP5 Primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPERTEC® EP5 Primer work pack:

Item #:	Size:
520-00-033	0.25 US GAL (0.95L) • 1 kg
520-00-055	1.18 US GAL (4.47L) • 5 kg

Technical Data Sheet

KEMPERTEC® FPO Primer

Single component primer

Product Description

KEMPERTEC® FPO Primer is a quick-curing, high bonding primer providing adhesion between prepared acceptable substrates and approved KEMPEROL® cold liquid-applied reinforced membranes.

Composition & Materials

KEMPERTEC® FPO Primer is a single component, solvent based primer.

Use

KEMPERTEC® FPO Primer is used to prime most TPO surfaces and certain types of EPDM membranes. Please check the Substrate Primer Selection Table for a complete list of approved substrates.

Limitations

KEMPERTEC® FPO Primer may be applied only when the ambient temperature is 41 °F (5 °C) and rising, and the substrate temperature is a minimum of 5 degrees above the dew point. If the dew point is not reached, the surface to be primed can form a moisture film and cause separation.

KEMPERTEC® FPO Primer cannot be left exposed for more than 6 hours. Primer exposed for more than 6 hours must be re-primed in accordance with Kemper System Technical Department requirements.

Yield

80 ft^2 (7.4 m^2) per 0.75 kg work pack depending on substrate and temperature. An increased level of consumption must be considered at higher temperatures.

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store unopened in a cool and dry location in tightly closed original containers. Do not store in direct sunlight or in temperatures below 41 °F (5 °C) or above 85 °F (30 °C). Approximate shelf life is 12 months with proper storage.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Packaged Location	Germany

Note: Prior to opening the containers of KEMPERTEC® FPO Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Primer Properties	
Physical Property	**Value**
Color	Light Yellow
Physical State	Cures To Solid
VOC Contents	818 g/l
Usage Time*	5 Minutes
Water Resistant After*	30 Minutes
Cures After*	30 Minutes
Apply Membrane / Coating After*	30 Minutes

** Values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

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Mixing of Primer

The single component KEMPERTEC® FPO Primer does not require mixing.

Application

Apply KEMPERTEC® FPO Primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Apply the primer in single coat, ensuring the pores are closed and the material does not pond.

A KEMPEROL® membrane should be applied as soon as the primer has cured, or tack free within 1-2 hours.

Note: KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Disposal

Uncured KEMPERTEC® FPO Primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw un-cured primer away.

Ordering Information

KEMPERTEC® FPO Primer work pack:

Item #:	Size:
526-00-001	0.22 GAL (1.2L) - 0.75 KG

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® AC Primer

Work pack includes:
Component A: Base Resin, Component B: Catalyst Powder

Product Description	**KEMPERTEC® AC PRIMER** is a quick-cure, high bonding Polymethylmethacrylate (PMMA) primer used between acceptable prepared substrates and KEMPEROL® cold liquid-applied reinforced membrane and coating systems.
Composition & Materials	KEMPERTEC® AC Primer is a 2-part Polymethylmethacrylate (PMMA) substrate primer.
Use	KEMPERTEC® AC Primer is used to prime a variety of substrates. Please check the current Substrate Primer Selection Table for a complete list of approved substrates.
Limitations	KEMPEROL® AC Primer may be applied when the ambient temperature is 35°F (2°C) and rising. The substrate temperature must be a minimum of 5 °F (-15°C) degrees above the dew point. KEMPEROL® membrane must be applied to primer within 48 hours of primer application. Primer exposed for more than 48 hours must be re-primed. Provide and maintain positive airflow over freshly applied KEMPEROL® AC materials during entire curing period to facilitate complete cure. Natural airflow is typically sufficient for exterior applications, but locations such as beneath large mechanical units, at inside corners, at the base of high walls, and other similar areas where stagnant air may occur should be provided with powered fans.
Yield	125 ft^2 (11.6 m^2) per 5 kg work pack. *Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.*
Storage	Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50°F (10°C) or above 80°F (27°C). Approximate shelf life 12 months with proper storage. Catalyst Powder must be stored seperately. For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70°F (18-21°C).
Precautions	**Review Safety Data Sheets before handling, available online at www.kempersystem.net.**
Surface Preparation	All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and substrate. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to SSPC-SP3 standards. New concrete shall have cured a minimum of 28 days in accordance with ACI-308, or as approved by the KSA TECHNICAL DEPARTMENT. Where required, concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5 by means of scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

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Concrete shall be dry and confirmed by measuring the moisture level with the following methods:

- ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes. A 75% or greater is an indication of high moisture content and will require additional priming.
- ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. A maximum requirement is 3 lb/1,000 ft^2/24-hour period.
- ASTM D2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass. A minimum requirement is 6% moisture content by weight.
- ASTM F2659: Standard Guide for Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and other Floor Slabs and Screeds Using a Non-Destructive Electronic Moisture Meter. Tramex Conrete Moisture Encounter Meter CME4 may be used to determine the moisture content of the top 3/4" of the conrete slab **only**. A minimum requirement is a 5% reading.

Note: Prior to opening the containers of KEMPERTEC® AC Primer, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Mixing of Primer

Step 1: Mix Component A with a spiral KEMPEROL® agitator or stir stick, until the liquid is a uniform color, with no streaks present.

Step 2: Add the Catalyst Powder, Component B, to Component A and mix with the same agitator for 2 minutes or until the powder is completely mixed throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the ambient temperature (see table).

NOTE: KEMPERTEC® AC Primer is extremely fast curing. Excessive mixing time reduces the available working time for the Primer.

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst	Pot Life (min)	Completely Cured (min)
35°F - 50°F	2 bags	20	45
50°F - 65°F	2 bags	20	30
65°F - 80°F	1 bag	15	30
>80°F	1/2 bag	10	15

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Germany

Primer Properties

Physical Property	Test Method	Value
Color		Transparent
Physical State		Cures To Solid
Impact Resistance		Shore A: 95 +/-5
VOC Contents		54 g/l
Viscosity - Stormer-Type (KU)* *D562*	*D562*	61 KU
Viscosity - Brookfield-Type (cps)* *D2196*	*D2196*	210 cps
Specific Gravity *D70*	*D70*	0.998
Liquid Density (lbs/gal) *D1475*	*D1475*	8.3
Usage Time*		15 Minutes
Water Resistant After*		30 Minutes
Cures After*		30 Minutes

** values obtained at 73+/-4°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application

After mixing, apply the primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate. Porous substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation.

Note: KEMPEROL® membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL® membrane to tacky or wet primer.

Disposal

Cured KEMPERTEC® AC Primer may be disposed of in standard landfills. This is accomplished by thoroughlymixing all components. Uncured KEMPERTEC® AC Primer resin and hardener are considered hazardous materials and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin or hardener away.

Ordering Information

KEMPERTEC® AC Primer work pack:

Item #:	Size:
524-00-005	1.32 US GAL (5.00 L) • 5.0 kg **(Includes 100g Catalyst Powder plastic bag)**

Additional Catalyst Powder:

AKZO-77-251	100 g Catalyst Powder plastic bag

Product Information

KEMPEROL® WATERPROOFING AND ROOFING RESINS

KEMPEROL® 2K-PUR RESIN	Two-component reactive cure polyurethane resin, gray-yellow color, low VOC, solvent-free and "odor-free". Intended for waterproofing, roofing, flashings and interior use where "odor-free" application is required. Provides an excellent substrate for the application of finish surfacing, both coating and aggregated finishes. Provides an approximate 30 minute pot life, 16 hour cure time and rain-resistant in 2 hours. Applied as a system with KEMPEROL® 165 Fleece.
KEMPEROL® 2K FR - *Color Series* RESIN	Two-component polyurethane resin, highly reflective, color stable, low VOC, solvent-free and "odor-free". Intended for reflective roofing, waterproofing and flashing use where highly reflective and "odor-free" application is required. Provides an approximate 30 minute pot life, 16 hour cure time and rain-resistant in 2 hours. Applied as a system with KEMPEROL® 165 Fleece. Colors: Light Gray, Military Beige, Patina Green, Reflect White and Stone Gray.
KEMPEROL® AC SPEED FR RESIN	Two-component polymethylmethacrylate (PMMA) resin including a catalyst, available in gray and white colors. Intended for exterior use; waterproofing, roofing and flashings, where same day application is required. Can be topcoated with smooth and aggregated finishes. Provides an approximate 15 minute pot life, 60 minutes cure time and rain-resistant in 30 minutes. Applied as a system with KEMPEROL® 120 Fleece.
KEMPEROL® 022 RESIN	Two-component epoxy / polyurethane hybrid resin. Solvent-free and low VOC. Gray color. Intended for interior waterproofing use beneath tile or stone; bathrooms, kitchens, and other wet room applications. One day application with ability to install tile the next day. Provides 25 minute pot life and 16 hour cure time. Applied as a system with KEMPEROL® 500 Fleece.
KEMPEROL® 1K - LF FLASHING RESIN	Single-component, cold liquid-applied silane based moisture-cure resin with KEMPEROL® premium polyester reinforcing fleece. Intended for patching, repairs and flashings of roofing and waterproofing systems. Designed for easy application under difficult circumstances such as application to damp surfaces, or where alkali resistance is required. Applied as a flashing system with KEMPEROL® Premium 165 Fleece.

NOTE: Times will be shorter in hot weather and longer in cold weather.

NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW. KEMPERSYSTEM.NET.

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KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® 2K-PUR

Work Pack includes:
Component A: Beige Formulation, Component B: Brown Formulation

Product Description

KEMPEROL® 2K-PUR is a two-component, UV-stable, "odor-free," solvent free, Low VOC, high performance cold liquid-applied waterproofing and roofing resin.

KEMPEROL® 2K-PUR reinforced membrane system can be surfaced with traffic coatings, reflective coatings, aggregate surfacing coatings and other granular materials to achieve a desired function and appearance.

Composition & Materials

A monolithic membrane is created in the field by combining the KEMPEROL® 2K-PUR two-part, cold liquid-applied reactive-cure polyurethane resin with KEMPEROL® polyester reinforcing fleece.

Use

KEMPEROL® 2K-PUR membrane is suitable for a wide range of interior and exterior applications including roofs, plazas, balconies, terraces, planters, foundations, mechanical rooms, water features, and other waterproofing applications.

Interior or exterior applications of KEMPEROL® 2K-PUR membrane exposed to UV-light may yellow or discolor. Use of a coating or aggregate surfacing systems are recommended where colorfast applications are required.

Limitations

KEMPEROL® 2K-PUR may be applied when the ambient temperature is 41 °F (5 °C) and rising, and the substrate temperature is a minimum of 5 degrees above the dew point. The maximum application temperature is approximately 90 °F (32 °C).
Note: Viscosity increases with falling temperature. For temperatures below 50 °F (10 °C), KEMPEROL® A 2K-PUR Accelerator should be added to component A to reduce set time.

Yield

KEMPEROL® 165 Fleece: 38 ft^2 (3.53 m^2) per 12.5 kg work pack.
KEMPEROL® 120 Fleece: 45 ft^2 (4.20 m^2) per 12.5 kg work pack.
Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 °F (10 °C) or above 80 °F (27 °C). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

Priming

After substrate preparation, temporary watertightness may be achieved with the application of KEMPERTEC® D Primer or EP Primer and Joint Sealant. Alternatively, the use of quick-cure KEMPERTEC® R or EP5 Primer may allow same-day membrane application. Refer to the appropriate KEMPERTEC® primer technical data sheet for application instructions.

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Sustainability Information	
% Biobased Carbon Content ASTM D6866-21	51%
Recycled content % (post / pre)	0/0
Manufacture location	Buffalo, NY

Allow primer to cure completely prior to application of the KEMPEROL® membrane.
Note: Prior to opening the containers of KEMPEROL® 2K-PUR Resin.

Membrane Properties		
Physical Property	**Test Method**	**Value**
Color		Yellow-Gray
Physical State		Cures to Solid
Thickness (165 Fleece)	D5147	80 mils
VOC Content CDPH Standard Method V1.2 TVOC Concentration		6 g/l Pass ≤ 0.5 mg/m³
Peak Load @ 73 ºF, avg.	D5147	>70 lbf/in
Elongation	D5147	Min 30%
Tearing Strength	D5147	90 lbf
Puncture Resistance	D5602	56 lbs.
Dimensional Stability	D1204	0.15%
Water Absorption	D570	< 1%
Impact Resistance	D2240	Shore A:75 +/- 5
Water Vapor Transmission	E96	0.08 Perms
Crack Spanning		2 mm/0.08 inch
Short-Term Temperature Resistance		250 ºC / 482 ºF
Usage Time*		30 minutes
Water Resistant After*		2 hours
Solid To Walk On After*		24 hours
Can Be Driven On After*		48 hours
Apply Coating/Surfacing After*		16-48 hours
Apply Overburden After*		48 hours
Completely Hardened*		3 days

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Mixing of Resin

Step 1: Mix resin Component A (beige formulation) with a spiral agitator until the liquid is a uniform cream color.

Step 2: If the ambient temperature is below 50°F (10°C), A2K-PUR Accelerator, a cold weather additive, should be mixed into the Component A. The accelerator should be mixed with the spiral agitator for 2 minutes or until both liquids are thoroughly blended.

Step 3: Add hardener Component B (brown formulation) to Component A and mix with a spiral agitator for 2 minutes or until both liquids are thoroughly blended.

NOTE: DO NOT break down workpacks into smaller quantities – mix the entire workpack.

Application (165 Fleece)

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush, apply 1/2 of the resin liberally and evenly onto the surface in even stroke; covering one working area at a time, between 10 - 15 ft^2.

Step 2: Roll the KEMPEROL® Fleece directly into the resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. The appearance of the fleece should be opaque yellow/gray with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece with no dry fleece visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Surfacing

KEMPEROL® 2K-PUR Membrane accepts a wide variety of KEMPERDUR® topcoats and aggregate surfacings for aesthetic or mechanical wear. The KEMPEROL® 2K-PUR membrane must be surfaced within 16-48 hours of membrane application to ensure proper bond between the membrane and surfacing. After the 48 hour window the membrane will require surface abrasion.

Disposal

Cured 2K-PUR resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured 2K-PUR resin must be handled in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® 2K-PUR work pack:

Item#:	Size:
327-47-025	0.49 US GAL (1.93L) • 2.5 kg
327-47-055	0.98 US GAL (3.90L) • 5.0 kg
327-47-105	2.46 US GAL (9.12L) • 12.5 kg

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® 2K FR

COLOR SERIES

Work pack includes: Component A: 'Color' Formulation, Component B: Clear Formulation

Product Description	**KEMPEROL® 2K FR** is a two-component, high performance, UV and color stable, odor-free and solvent free, Low VOC, fire-rated, cold liquid-applied roofing resin. Available colors: Light Gray, Military Beige, Patina Green, Reflect White (Reflect 2K FR), Stone Gray.
Composition & Materials	A monolithic membrane is created in the field by combining the KEMPEROL® 2K FR two-part, cold liquid-applied reactive-cure polyurethane resin with KEMPEROL® polyester reinforcing fleece.
Use	KEMPEROL® 2K FR membrane is for roofing and flashing applications and it achieves Class A fire rating as part of an assembly in accordance with ASTM E 108 / UL 790.
Limitations	KEMPEROL® 2K FR may be applied when the ambient temperature is 41ºF (5ºC) and rising, and the substrate temperature is a minimum of 5 degrees above the dew point. The maximum application temperature is approximately 90ºF (32ºC). Note: Viscosity increases with falling temperature. For temperatures below 50ºF (10ºC), KEMPEROL® A 2K-PUR Accelerator should be added to component A to reduce set time.
Yield	KEMPEROL® 165 Fleece: 33 ft^2 (3 m^2) per 12.5 kg work pack. Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.
Storage	Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 80 ºF (27 ºC). Approximate shelf life 12 months with proper storage. For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).
Precautions	**Review Safety Data Sheets before handling, available online at: www.kempersystem.net**
Surface Preparation	All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.
Priming	After substrate preparation, temporary watertightness may be achieved with the application of KEMPERTEC® D Primer or EP Primer and Joint Sealant. Alternatively, the use of quick cure KEMPERTEC® R or EP5 Primer may allow same-day membrane application. Refer to the appropriate KEMPERTEC® primer data sheet for application instructions. Allow primer to cure completely prior to application of the KEMPEROL® membrane.

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Sustainability Information	
% Biobased Carbon Content ASTM D6866-21	43%
Recycled content % (post / pre)	0/0
Manufacture location	Buffalo, NY

	Initial	Weathered
Solar Reflectance	**0.87**	**0.79**
Thermal Emittance	**0.90**	**0.89**
Rated Product ID Number	**0662-0048**	
CRRC Lincensee ID Number	**0662**	
Classification	Production Line	

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.

CRRC Product Rating for KEMPEROL® 2K FR - Reflect White (also known as KEMPEROL® Reflect 2K FR.)

Membrane Properties		
Physical Property	**Test Method**	**Value**
Colors		Light Gray / Military Beige / Patina Green / Reflect White / Stone Gray
Physical State		Cures To Solid
SRI Light Gray Military Beige Patina Green Reflect White (Reflect 2K FR) Stone Gray		Intial / 3 Year Aged 51 / 61 57 / 63 48 / 57 110 / 98 25 / 25
Thickness (165 Fleece)		80 mils
VOC Content		2 g/l
Peak Load @ 73 °F, avg.	D5147	90 lbf/in
Elongation	D5147	Min 30%
Tearing Strength (Reflect White Only)	D5147	90 lbf
Tearing Strength (Other Colors)	D5147	75 lbf
Puncture Resistance (Reflect White Only)	D5602	56 lbs.
Puncture Resistance (Reflect White Only)	FTMS 101-2031	140 lbs.
Dimensional Stability (Reflect White Only)	D1204	0.15%
Water Absorption (Reflect White Only)	D570	max 1%
Impact Resistance	D2240	Shore A:70 +/- 5
Water Vapor Transmission	E96	0.08 Perms
Hydrostatic Resistance	D751	400 psi
Low Temperature Crack Bridging (Reflect White Only)	C957 / C1305	Pass
Crack Spanning		2 mm/0.08 inch
Short-Term Temperature Resistance		250 °C/482 °F
Usage Time*		30 minutes
Water Resistant After*		2 hours
Solid To Walk On After*		24 hours
Can Be Driven On After*		48 hours
Apply Coating / Surfacing After*		16-48 hours
Apply Overburden After*		48 hours
Completely Hardened*		3 days

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Mixing of Resin

Note: Prior to opening the containers of KEMPEROL® 2K FR Resin, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Mix resin Component A (color formulation) with a spiral agitator until the liquid is a uniform color.

Step 2: If the ambient temperature is below 50°F (10°C), A2K-PUR Accelerator, a cold weather additive, should be mixed into the Component A. The accelerator should be mixed with the spiral agitator for 2 minutes or until both liquids are thoroughly blended.

Step 3: Add hardener Component B (clear formulation) to Component A and mix with a spiral agitator for 2 minutes or until both liquids are thoroughly blended.

NOTE: DO NOT break down workpacks into smaller quantities – mix the entire workpack.

Application

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush apply the resin liberally and evenly onto the surface in even stroke. Covering one working area at a time, between 10 - 15 ft^2.

Step 2: Roll the KEMPEROL® Fleece directly into the Resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. The appearance of the fleece should be the color of the resin with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece with no dry fleece visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Disposal

Cured KEMPEROL® 2K FR resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPEROL® 2K FR resin must be handled in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® 2K FR **Light Gray** Work Pack:

Item#	Size:
329-50-025	0.51 US GAL (1.93L) • 2.5 kg
329-50-055	1.03 US GAL (3.90L) • 5.0 kg
329-50-105	2.41 US GAL (9.12L) • 12.5 kg

KEMPEROL® 2K FR **Military Beige** Work Pack:

Item#	Size:
329-51-025	0.51 US GAL (1.93L) • 2.5 kg
329-51-055	1.03 US GAL (3.90L) • 5.0 kg
329-51-105	2.41 US GAL (9.12L) • 12.5 kg

KEMPEROL® 2K FR **Patina Green** Work Pack:

Item#	Size:
329-49-025	0.51 US GAL (1.93L) • 2.5 kg
329-49-055	1.03 US GAL (3.90L) • 5.0 kg
329-49-105	2.41 US GAL (9.12L) • 12.5 kg

KEMPEROL® 2K FR **Reflect White (Reflect 2K FR)** Work Pack:

Item#	Size:
329-47-025	0.51 US GAL (1.93L) • 2.5 kg
329-47-055	1.03 US GAL (3.90L) • 5.0 kg
329-47-105	2.41 US GAL (9.12L) • 12.5 kg

KEMPEROL® 2K FR **Stone Gray** Work pack:

Item#	Size:
329-48-025	0.51 US GAL (1.93L) • 2.5 kg
329-48-055	1.03 US GAL (3.90L) • 5.0 kg
329-48-105	2.41 US GAL (9.12L) • 12.5 kg

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® AC SPEED FR

Work pack includes:
Component A: Gray or White Resin, Component B: Catalyst Powder

Product Description

KEMPEROL® AC SPEED FR is a two component, quick-curing, UV-stable, high performance, fire-rated, cold liquid-applied Polymethylmethacrylate (PMMA) roofing and waterproofing resin that can achieve same day application.

KEMPEROL® AC SPEED FR reinforced membrane system can be surfaced with a KEMPERDUR® AC Traffic Coating and KEMPERDUR® AC FINISH to achieve desired function and appearance.

Composition & Materials

A monolithic membrane is created in the field by combining the KEMPEROL® AC SPEED FR two-part, cold liquid-applied PMMA resin with KEMPEROL® 120 polyester reinforcing fleece.

Use

KEMPEROL®AC SPEED FR membrane is suitable for exterior roofing and waterproofing applications including green, white, and blue roofs, plazas, balconies, terraces, park decks, and flashings. The membrane achieves Class A fire rating as part of an assembly in accordance with ASTM E 108 / UL 790.

Limitations

KEMPEROL® AC Speed FR membrane may be applied when the ambient temperature is between 23° F (-5° C) and a maximum of 95° F (35° C). The substrate temperature must be a minimum of 5 degrees above the dew point.

Note: Extra caution should be taken in below freezing temperatures. The viscosity increases with falling temperature. Ensure sufficient positive airflow over freshly applied AC Speed FR material during entire curing period to facilitate complete cure.

Yield

KEMPEROL® 120 Fleece: 60 ft^2 (5.6 m^2) per 15 kg work pack

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in a temperature below 50°F (10°C) or above 80°F (27°C). Approximate shelf life 18 months with proper storage.
Catalyst Powder must be stored separately. For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

Priming

After substrate preparation, temporary watertightness can be achieved with the application of KEMPERTEC® AC Primer and Joint Sealant, and proper tie offs. KEMPERTEC® AC Primer may be brushed or rolled onto any clean and prepared surface. Allow primer to cure completely prior to application of the KEMPEROL® membrane.

Headquarters: **Kemper System America, Inc.** | 1200 North America Drive | West Seneca, NY 14224
Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Germany

	Initial	Weathered
Solar Reflectance	**0.86**	**0.71**
Thermal Emittance	**0.88**	**0.88**
Rated Product ID Number	**0950-0011**	
CRRC Lincensee ID Number	**0950**	
Classification	Production Line	

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.

CRRC Product Rating for KEMPEROL® AC Speed FR - White

Membrane Properties		
Physical Property	**Test Method**	**Value**
Color		White or Gray
Physical State		Cures to Solid
Initial SRI (White / Gray)		108 / 27
Thickness (120 Fleece)		90 mils
VOC Content		32 g/l
Peak Load @ 73 F, avg.	D5147	70 lbf/in
Elongation	D5147	Min 30%
Tearing Strength	D5147	80 lbf
Dimensional Stability	D1204	0.05%
Water Absorption	D570	0.05% (7 days)
Impact Resistance	D2240	Shore A:75 +/- 5
Permeance	E96	0.28
Crack Spanning		2 mm/0.08 inch
Low Temperature Deflection	D7264	Pass
Combustibility Classification	D635	CC-2[2]
Self-Ignition Temperature	D1929	>650ºF
Max. ave. Smoke Density	D2843	7
Short-Term Temperature Resistance		250ºC / 482ºF
Usage Time*		20 minutes
Rainproof After*		35 minutes
Solid To Walk On After*		35 minutes
Apply Coating After*		60 minutes
Apply Overburden After*		60 minutes
Completely Hardened*		6 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Mixing of Resin

Note: Prior to opening the containers of KEMPEROL® AC SPEED FR, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Mix resin Component A with a spiral KEMPEROL® agitator, until the liquid is a uniform color, with no light or dark streaks present.

Step 2: Add the Catalyst Powder, Component B, to resin Component A and mix with the same agitator for 2 minutes or until the powder is completely mixed throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the temperature (see table).

NOTE: KEMPEROL® AC SPEED FR is extremely fast curing. Excessive mixing time reduces the available working time for the resin.

Catalyst Powder Requirements			
Material Temp °F	**KEMPEROL® Cat Powder (300g/bag)**	**Pot Life (min)**	**Rainproof After (min.)**
23ºF - 35ºF	2 bags	45	90
35ºF - 50ºF	2 bags	35	70
50ºF - 70ºF	1 1/2 bags	30	40
70ºF - 80ºF	1 bag	20	35
>80ºF	1/2 bag	20	30

Application

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke.

Step 2: Roll the KEMPEROL® Fleece directly into the resin, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece and no dry spots should be visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

Surfacing

KEMPEROL® AC SPEED FR Membrane accepts KEMPERDUR® AC Finish in a smooth or aggregate finish for aesthetic or mechanical wear. Additionally, KEMPERDUR® AC Traffic Coating system with an aggregate finish is available for pedestrian and vehicular traffic. KEMPEROL® AC Speed FR membrane must be fully cured prior to the application of a coating.

Disposal

Cured KEMPEROL® AC Speed FR may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured resin is considered a hazardous material and must be handled in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® AC SPEED FR Work pack:

Item #:	Size:
338-77-005	3.22 US GAL (12.19L) • 15 kg White Resin **(includes 300 g Catalyst Powder)**
338-78-005	3.22 US GAL (12.19L) • 15 kg Gray Resin **(includes 300 g Catalyst Powder)**

Additional Catalyst Powder:

AKZO-44-254	300 g Catalyst Powder

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® 022

Pack includes:
Component A: Gray Formulation, Component B: Amber Formulation

Product Description

KEMPEROL® 022 is a two-component, high performance, cold-liquid applied, solvent-free, low VOC, crack-spanning resin for waterproofing beneath tile and stone applications.

Composition & Materials

A seamless and monolithic crack isolation membrane is created in the field by combining the KEMPEROL® 022, a solvent free, cold liquid-applied, 2-part polyurethane / epoxy hybird resin with the KEMPEROL® 500 fleece, a non-woven polyester reinforcement.

Use

KEMPEROL® 022 fully reinforced membrane is suitable for interior waterproofing applications for a variety of substrates beneath tile and stone, shower pans, bathrooms, water features, kitchens, mechanical rooms and other wet room applications. TCNA tested, exceeds ANSI A118.10 and A118.12 specification standards.

Listed with **IAPMO** (certificate # 10470) for shower pan liners.

Limitations

KEMPEROL® 022 membrane is not intended for exterior applications and UV exposure. The membrane must be covered up with a thin-set or a setting bed and tile within eight (8) days of application.

KEMPEROL® 022 may be applied when the ambient temperature is 50° F (10° C) and rising, and the substrate temperature is a minimum of 5° F (-15° C) degrees above the dew point. The maximum application temperature is approximately 95° F (35° C).

Yield

KEMPEROL® 500 fleece: 30 s.f. (2.8 kg/m^2) per 6 kg work pack
Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50° F (10° C) or above 80° F (27° C). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70° F (18-21° C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

Ensure that new cement board and plywood has had an opportunity to dry before applying Resin. All cover board and plywood joints, and pipe penetrations should be treated with KEMPERTEC® Joint Sealant and stripped with the 6" wide KEMPEROL® 500 fleece and KEMPEROL® 022 resin.

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Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Buffalo, NY, USA

Membrane Properties

Physical Property	Test Method	Values
Color		Stone Gray
Physical State		Cures To Solid
Nominal Thickness		40 mils
Mold Resistance	A118.10	Pass
Seam Strength	D751-06	113 lbs / 2"width
Breaking Strength	D751-06	445 psi
Dimensional Stability	A118.10	Pass
Waterproofness	A118.10	Pass
Shear Strength (4 Weeks)	A118.10	106 psi
Shear Strength (100 Day Water Immersion)	A118.10	60 psi
VOC Content		35 g/l
Hardness	C661	>40
Elongation	D751-06	40%
System Performance	C627	14 Cycles - Extra Heavy Rating
Anti-Fracture crack spanning		1/16"
Water Vapor Transmission	E96	0.1 Perms
Usage Time*		25 mins
Moisture Resistant*		1 hour
Water/EFVM Test*		16 hours
Apply Thinset*		16 hours
Temperature Resistance		158 ºF (70ºC)

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Mixing of Resin

Note: Prior to opening the containers of KEMPEROL® 022 resin wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Premix resin Component A thoroughly with a spiral agitator.

Step 2: Pour resin Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. The resin solution should be a uniform color, with no light or dark streaks present.
NOTE: DO NOT break down units into smaller quantities - mix the entire work pack.

Application

Step 1: After the resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke.

Step 2: Roll the KEMPEROL® 500 fleece directly into the Resin, avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Add the remaining 1/2 of the resin to the top of the fleece and finish the fleece's saturation. Roll this final coating into the fleece, which will result in a glossy appearance. Ensure a two (2) inch (5cm) overlap between rolls of fleece. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these faults before the resin cures.

Step 4: While the resin is still wet broadcast KEMPEROL® Surfacing Sand (#0 / 18 mm) on both horizontal and vertical surfaces at the approximate rate of 30 lbs./100 ft^2 (1.5 kg/m^2).

NOTE: KEMPEROL® 022 membrane does not require a protective alkalinity barrier.

Step 5: Once the KEMPEROL® 022 membrane has cured the tile adhesive application may begin. Please follow the tile adhesive manufacturer's application guidelines.

Disposal

Cured KEMPEROL® 022 resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPEROL® 022 resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® 022 work pack

Item#:	Size:
601-78-055	1.14 GAL (4.32L) - 6 kg work pack

500 Fleece Reinforcement

Item #:	
112-115-01	41.3" Wide
112-115-02	27.6" Wide
112-115-03	6" Wide

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® 1K-LF Flashing

Product Description

KEMPEROL® 1K-LF Flashing is a single-component, UV-stable, "low-odor" solvent free, Low VOC, high performance cold liquid-applied resin for patching, repairs and flashings of roofing and waterproofing systems. KEMPEROL® 1K-LF Flashing reinforced membrane system was designed for easy application under difficult circumstances such as application to damp surfaces, or where alkali resistance is required.

Composition & Materials

A monolithic membrane is created in the field by applying the KEMPEROL® 1K-LF Flashing single-component, cold liquid-applied silane based moisture-cure resin with KEMPEROL® premium polyester reinforcing fleece. Membrane must be applied using premium fleece (available with a 13 inch nominal width).

Use

KEMPEROL® 1K-LF Flashing membrane is suitable for flashing and repair in both interior and exterior applications including roofs, plazas, planters, foundations, mechanical rooms and other waterproofing applications.

Limitations

KEMPEROL® 1K-LF Flashing may be applied when the ambient temperature is 41 °F (5 °C) and rising, and the substrate temperature is a minimum of 5 degrees above the dew point. The maximum application temperature is approximately 104 °F (40 °C).

Note: Viscosity increases with falling temperature.

Yield

KEMPEROL® Premium 165 Fleece: 25 ft^2 (2.32 m^2) per 6.5 kg work pack
Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 41 °F (5 °C) or above 80 °F (27 °C). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at: www.kempersystem.net

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material, such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to the adhesion of the membrane. This requires careful cleaning and preparation of existing surfaces. Existing membranes should first be cleaned with a solvent cleaner, such as KEMPERTEC® Klean or MEK, and abraded with a 60 grit sand paper. Concrete and metal surfaces should be thoroughly cleaned and abraded with a hand grinder.

Priming

After surface preparation, the following substrates do not require priming; Existing cold fluid-applied membranes, Modified Bitumen membranes, PVC single-ply membranes, concrete, brick, CMU, wood and metal. For all other surfaces please refer to the Kemper System Substrate Primer Selection Table, found in the Technical Manual.

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Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Germany

Note: Prior to opening the containers of KEMPEROL® 1K-LF Flashing Resin, wear appropriate safety glasses and protect hands and wrists by wearing gauntlet-type neoprene gloves.

Mixing of Resin

Mix resin with a spiral agitator until the liquid is a uniform color.

Application

Step 1: After the Resin is mixed, using a KEMPEROL® roller nap or brush apply 1/2 of the resin liberally and evenly onto the surface in even stroke. Covering one working area at a time.

Step 2: Roll the KEMPEROL® Premium 165 Fleece directly into the Resin, making sure the perforations are facing upward (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. The appearance of the fleece should be saturated with no white spots. White spots are indications of unsaturated fleece or the lack of adhesion. It is important to correct these areas before proceeding.

Step 3: Apply the remaining 1/2 of the resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated portion of the fleece. The correct amount of resin will completely saturate the fleece with no dry fleece visible. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions. Always assure full resin saturation of fleece.

NOTE: On flashing applications use the 13.8" fleece with 6" of the reinforcement fleece on the horizontal surface.

Membrane Properties		
Physical Property	**Test Method**	**Values**
Colors		Anthracite / Light Gray
Physical State		Cures to Solid
SRI Anthracite Light Gray		Initial / 3 Year Aged 5.5 / - 58 / -
Thickness (Pr. 165 Fleece)		90 mils
VOC Content		3 g/l
Peak Load @ 73 F, avg.	D5147	>60lbf/in
Elongation	D5147	>40%
Tearing Strength	D5147	82 lbf
Puncture Resistance	D5602	-
Dimensional Stability	D1204	0.00%
Water Absorption (48 Hours)	D570	1.4%
Impact Resistance	D2240	Shore A:60 ±5
Water Vapor Transmission	E96	-
Crack Spanning		2 mm / 0.08 inch
Short Term Temperature Resistance		194 °F (90 °C)
Usage Time*		90 minutes
Water Resistant After		2 hours
Solid To Walk On After*		16 hours
Can Be Re-Coated After*		24 hours
Apply Overburden After		16 hours
Completely Hardened*		16 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Surfacing

KEMPEROL® 1K-LF Flashing membrane may be recoated after a minimum of 24 hours. Ensure the membrane is fully cured before recoating.

Disposal

Cured KEMPEROL® 1K-LF Flashing resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing the product with 1/4 cup (60ml) of water and waiting until fully cured. Uncured KEMPEROL®1K-LF Flashing resin must be handled in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® 1K-LF Flashing - **Anthracite** work pack

Item#:	Size:
105-41-070	6.5kg 1.03 US GAL (5L)

KEMPEROL® 1K-LF Flashing - **Light Gray** work pack

Item#:	Size:
105-42-070	6.5kg 1.03 US GAL (5L)

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® 1K-AQUA

Single Component White Resin

Product Description

KEMPEROL® 1K Aqua is a single-component, UV-resistant, light-stable, low-odor, solvent-free, low VOC, ponding water resistant, cold liquid-applied white roofing resin. KEMPEROL® 1K Aqua is used as a maintenance coating over existing roofs or a fully reinforced membrane.

Composition & Materials

KEMPEROL® 1K Aqua is a water-based acrylic-polyurethane hybrid polymer with a highly reflective white finish, achieving a SRI value of 101. A monolithic membrane is created in the field by combining the resin with KEMPEROL® 90 polyester reinforcing fleece or as a non-reinforced coating.

Use

KEMPEROL® 1K Aqua is used to coat existing roofs to provide a highly reflective finish or applied as a Class A fire-rated new roof assembly. Reinforcement fleece should be used when coating over heavily alligatored surfaces and surface irregularities. For unreinforced application, fleece must be used at seams, laps, joints, penetrations and details. As a roofing membrane the fleece is required over the entire roof surface.

KEMPEROL® 1K Aqua may be applied using an airless spray pump or by roller/brush.

Limitations

KEMPEROL® 1K Aqua may be applied when the ambient temperature is 50 °F (10 °C) and rising with a relative humidity of < 75% and the substrate temperature is a minimum of 5 degrees above the dew point. The maximum application temperature is approximately 104 °F (40 °C). KEMPEROL® 1K Aqua was developed for use in warmer temperatures and climates.

Note: Viscosity increases with falling temperature.

Yield

Coating:	200 ft^2 (18.6 m^2) per 15 kg work pack
KEMPEROL® 90 Fleece:	125 ft^2 (11.6 m^2) per 15 kg work pack

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 °F (10 °C) or above 80 °F (27 °C). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at: www.kempersystem.net

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. This requires careful preparation of existing horizontal and vertical substrates; cracks are filled, expansion joints are prepared, flashings are removed or modified, and termination points are determined. Substrates and penetrations are prepared to rigorous industry standards, and may require scarifying, sandblasting or grinding in some cases to achieve a suitable substrate.

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Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Germany

Priming

After surface preparation, the following substrates do not require priming; existing cold fluid applied membranes, APP Modified Bitumen membranes, wood and metal. For all other surfaces please refer to the Kemper System Substrate Primer Selection Table, found in the Technical Manual.
Note: Prior to opening the containers of KEMPEROL® 1K Aqua, wear appropriate safety glasses and protect hands and wrists by wearing gauntlet-type neoprene gloves.

Mixing of Resin

Mix resin with a spiral agitator until the liquid is a uniform white color.

Application (Spray Coating)

Using airless spray equipment, recommended air pressure of 2,700 to 3,000 psi at the tip and must be able to handle high viscosity liquids. Tip size of .47 and hose size 3/4" to 1/2". This product has excellent suspension and requires minimal mixing. May be applied over damp surfaces, not wet to the touch. DO NOT THIN.

Application (Roller)

Roller-apply 1K Aqua over a clean and prepared surface at the rate of approximately 67 ft2 / gal achieving 30 wet mils. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge.

Membrane Properties		
Physical Property	**Test Method**	**Values**
Colors		White
Physical State		Cures to Solid
SRI (Initial / 3 Year Aged)		101 / n/a
Membrane Thickness (90 Fleece)		40 mils
VOC Content		3 g/l
Peak Load @ 73 F, avg.	D5147	- lbf/in
Elongation	D5147	-%
Tearing Strength	D5147	- lbf
Puncture Resistance	D5602	-
Dimensional Stability	D1204	- %
Water Absorption (48 Hours)	D570	-%
Impact Resistance	D2240	Shore A:-
Water Vapor Transmission	E96	-
Crack Spanning		- mm / - inch
Short Term Temperature Resistance		- °F (- °C)
Usage Time*		30 minutes
Water Resistant After		5 hours
Solid To Walk On After*		12 hours
Can Be Re-Coated After*		24 hours
Completely Hardened*		48 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application (90 Fleece)

Step 1: After the resin is mixed, apply the resin liberally and evenly onto the surface, covering one working area at a time, between 10 – 15 ft2.
Step 2: Roll the KEMPEROL® 90 Fleece directly into the resin (natural unrolling procedure), avoiding folds and wrinkles. Use the roller or brush to work the resin into the fleece, saturating from the bottom up. The appearance of the fleece should be saturated with no white spots. White dry spots are indications of unsaturated fleece or the lack of adhesion. It is important to correct these areas before proceeding.
Step 3: Apply an additional coat of resin to the top of fleece to complete the saturation. Rolling the final coat of resin onto the fleece should result in a wet and saturated appearance. All excess resin should be rolled forward to the unsaturated portion of the fleece. Work wet membrane to avoid any blisters, openings, or lifting at corners, junctions, and transitions.

Disposal

Cured KEMPEROL® 1K Aqua resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing the product with 1/4 cup (60ml) of water and waiting until fully cured. Note: Uncured KEMPEROL® 1K Aqua resin must be handled in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® 1K Aqua

Item#:	Size:
330-47-115	15 kg 2.96 US GAL (11.2L)

Product Information

KEMPEROL® ADDITIVES

KEMPEROL® CP CATALYST POWDER

Peroxide-based catalyst powder required for use with all PMMA-based products. Added directly to the base material as Component B. Pre-measured quantities available but may require adjustment based on ambient temperature and desired cure rate.

NOTE: Do not use with other resins.

KEMPEROL® A2K-PUR ACCELERATOR

Weather-related additive for use with KEMPEROL® two component polyurethane-based resins when the air temperature is 50 ºF and dropping. Reactive agent used to accelerate curing in cold weather. Added to resin Component A prior to adding Component B.

NOTE: Do not use with other resins.

KEMPERTEC® 1K THINNER

Solvent blend used to reduce viscosity of KEMPERDUR® Deko Transparent resin **ONLY,** during sealing of aggregate surfacing.

KEMPERTEC® TX THIXOTROPIC ADDITIVE

Amorphous silicone dioxide powder. Thickening agent to be used with mineral-filled self-leveling TC, FC and AC surfacing materials to facilitate installation on inclined substrate surfaces from 3% - 20% slope.

NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW.KEMPERSYSTEM.NET.

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KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® CP Catalyst Powder

To be used with PMMA products

Product Description

KEMPEROL® CP Catalyst Powder is a reactive agent used to induce curing of Polymethalmythacrylate (PMMA) products.

Materials

A reactive agent based on 50% dibenzoyl peroxide.

Use

To be used in pre-measured quantity with KEMPERTEC® AC Primer, KEMPEROL® AC Speed FR, and KEMPERDUR® AC Traffic Coating, AC Finish products and other AC products only.

Yield

Refer to the technical data sheet of the corresponding product to determine the quantity of Catalyst Powder to be added.

Storage

Always store in a dry location. **[Do not store in direct sunlight, outside or in temperatures below 35 °F (1.7 °C) or above 80 °F (27 °C).]** Approximate shelf life 36 months with proper storage.
Store seperately from the other products.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Mixing of Resin

Note: Prior to opening the containers of KEMPEROL® CP Catalyst Powder, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Mix resin Component A with a spiral KEMPEROL® agitator, until the liquid is a uniform color.

Step 2: Add the Catalyst Powder to resin Component A and mix with the same agitator for 2 minutes or until the powder is completely mixed.
NOTE: Review individual product data sheets for additional mixing instructions.

Disposal

KEMPEROL® CP Catalyst Powder is considered a hazardous material and must be handled as such, dispose of in accordance with local, state and federal regulations. Do not throw the powder away on its own.

Ordering Information

KEMPEROL® CP Catalyst Powder (when ordered separately):

Item #	Size:
AKZO-44-254	300 g bag
AKZO-77-251	100 g bag

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Rev. 08/2019

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® A2K-PUR Accelerator

To be used with KEMPEROL® two component polyurethane resins

Product Description

KEMPEROL® A2K-PUR Accelerator is a reactive agent used to accelerate setting of KEMPEROL® two component polyurethane resins when the air temperature is 50 °F (10 °C) and dropping.

Materials

Accelerator based on a special activator.

Limitations

To be used in pre-measured quantity with KEMPEROL® two component polyurethane resins.

Yield

One pre-measured unit per 12.5 kg work pack.

Storage

Always store in dry location. Do not store in direct sunlight or in temperatures below 50 °F (10 °C) or above 85 °F (29°C). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Mixing Accelerator

Note: Prior to opening the containers of KEMPEROL® Resin, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Mix Component A of the KEMPEROL® two component polyurethane resin with a spiral KEMPEROL®® agitator, until the liquid is a uniform color.

Step 2: Add the A2K-PUR Accelerator to Component A and mix with the same agitator for 2 minutes or until completely mixed. Once mixed, component B may be added immediately.

Disposal

Uncured KEMPEROL® A2K-PUR Accelerator must be handled in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPEROL® A2K-PUR Accelerator:

Item #	Size:
562-03-127	41.5 g/can (12/pack)

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Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® 1K Thinner

To be used with KEMPERDUR® DEKO TRANSPARENT ONLY

Product Description

KEMPERTEC® 1K Thinner is a specially formulated solvent blend used to reduce viscosity and improve workability of KEMPERDUR® Deko Transparent polyurethane resin during sealing of aggregate surfacing.

Materials

A combination of organic solvents based on naphtha and 1,2,4-trimethylbenzene.

Limitations

To be used in pre-measured quantity with KEMPERDUR® Deko Transparent resin **ONLY**.

Yield

250 ml per KEMPERDUR® Deko Transparent 5 kg container.

Storage

Always store in dry location. Do not store in direct sunlight or in temperatures below 35 °F (1.7 °C) or above 80 °F (27 °C). Approximate shelf life 24 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Mixing of Thinner & Resin

Note: Prior to opening the containers of KEMPEROL® *Resin, wear appropriate safety glasses and protect hands and wrists by wearing gauntlet-type neoprene gloves.*

Add 250 ml of 1K Thinner to the KEMPERDUR® Deko Transparent and manually stir to thoroughly mix together until a uniform consistency is achieved. The resin may be used immediately after mixing.

Do not use mechanical mixing equipment such as spiral KEMPEROL® agitators as this will introduce moisture into the resin, causing it to thicken and cure prematurely.

Disposal

Cured KEMPERDUR® resin may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPEROL® resin and KEMPERTEC® thinner are considered hazardous materials and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin or thinner away.

Ordering Information

KEMPERTEC® 1K Thinner:

Item #:	Size:
366-00-050	500 ml/can

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Rev. 08/2019

KEMPERTEC® TX Thixotropic Additive

To be used with KEMPERDUR® TC and AC Traffic Coatings ONLY

Product Description

KEMPERTEC® TX Thixotropic Additive is a thickening agent to be used with KEMPERDUR® TC and AC Traffic Coatings to facilitate installation on inclined substrate surfaces from 3% - 20% slope.

Composition & Materials

KEMPERTEC® TX Thixotropic Additive is a highly dispersable, amorphous silicone dioxide powder.

Limitations

To be used in pre-measured quantity with KEMPERDUR® TC and AC Traffic Coatings **ONLY**.

Yield

KEMPERTEC® TX Thixotropic Additive will allow the KEMPERDUR® trowel applied coatings to be applied without running or sagging down the inclined substrate surface. The following quantities are suggested as a guideline, but may vary depending on exact incline, ambient and substrate temperature, and applicator preference.

KEMPERDUR® TC – 12.5 kg Workpack - Appoximately 90 g

KEMPERDUR® AC – see table

Incline Slope	TX Thixotropic Approx. Quantity
3 - 5%	10 g (0.35 oz)
5 - 7%	20 g (0.71 oz)
7 - 10%	30 g (1.06 oz)
11 - 20%	60 g (2.12 oz)

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 40 °F (5 °C) or above 80 °F (27 °C). Keep packages tightly closed and protect from humidity. Approximate shelf life 60 months in sealed original containers.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Note: Prior to opening the containers of KEMPERTEC® TX Thixotropic Additive, TC and AC Traffic Coatings, wear appropriate safety glasses, masks and protect hands and wrists by wearing gloves.

KEMPERTEC® TX Thixotropic Additive is very light and is easily blown about. Take care to shield the mixing location from winds during the use of this product.

Mixing of Thixotropic Additive & Surfacing

Step 1: Add the calculated quantity of KEMPERTEC® TX Thixotropic Additive into Component A of the KEMPERDUR® TC / AC Traffic Coating, and mix on low speed with a spiral KEMPEROL® agitator until the Additive is incorporated into Component A, without streaks.

Step 2: Complete the mixing of all components of the coating in accordance with standard instructions.

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Disposal

KEMPERTEC® TX Thixotropic Additive mixed with TC / AC Traffic Coating material may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components together. Note: Unmixed KEMPERTEC® TX Thixotropic Additive in incidental quantities may be disposed of in standard landfills, in accordance with local, state and federal regulations.

Ordering Information

KEMPERTEC® TX Thixotropic Additive:

Item #:	Size:
562-10-109	Box of 4 (150g) bags

Product Information

KEMPEROL® REINFORCING FLEECE

KEMPEROL® 500 FLEECE

Non-woven polyester fabric reinforcement. 50 g/m^2 weight. Used with KEMPEROL® 022 cold liquid-applied interior waterproofing system and KEMPERDUR® FGC Facade Glass Coating. The 6" width may be used for reinforcing joints in cover boards, as well as over butt joints applications, where visible overlaps of membrane reinforcement is not desirable, such as balconies and terraces. Also can be used to strip over membrane repairs where the repair membrane is set into the existing membrane and not overlapped onto it.

KEMPEROL® 120 FLEECE

Non-woven needle-punched polyester reinforcing fabric. 120 g/m^2 weight. Standard weight reinforcement, suitable for use with KEMPEROL® AC Speed FR resin. Multiple widths available to accommodate a variety of flashing conditions and minimize the need for field cutting. Also used as 4" wide reinforcement strip over cracks, gaps, and plywood and cover board joints.

KEMPEROL® 165 FLEECE

Non-woven needle-punched polyester reinforcing fabric two component polyurethane resin 165 g/m^2 weight. Standard weight reinforcement, suitable for use with KEMPEROL® resins for all applications. Multiple widths available to accommodate a variety of flashing conditions and minimize the need for field cutting.

KEMPEROL® PREMIUM 165 FLEECE

Non-woven waterjet bonded polyester reinforcing fabric. 165 g/m^2 weight. Standard weight reinforcement, suitable for use with KEMPEROL® resins for all applications.

NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW.KEMPERSYSTEM.NET.

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KEMPEROL® 500 Fleece

Polyester Reinforcement Fleece for use with KEMPEROL®® 022 Resin

Product Description

KEMPEROL® 500 Fleece is a fabric reinforcement used with KEMPEROL® 022 cold liquid-applied reinforced waterprofing system and KEMPERDUR® FGC facade glass coating.

Composition & Materials

KEMPEROL® 500 fleece is a non-woven polyester fabric reinforcement.

Use

KEMPEROL® fleece is used as a fabric reinforcement in KEMPEROL® 022 cold fluid-applied reinforced waterproofing system and KEMPERDUR® FGC facade glass coating.

Limitations

Fleece must be kept clean and dry prior to and during application.

Yield

110 s.f. (10.2 m^2) of fleece per 100 s.f. (9.3 m^2) of surface coverage.

Note: Allow 10% for 2" (5 cm) over-laps and for flashings and waste.

Storage

Always store in cool and dry location. Store flat to avoid deforming rolls and creasing fabric. Shelf life indefinite with proper storage.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Application

Please refer to the KEMPEROL® 022 interior waterproofing and KEMPERDUR® FGC facade glass coating technical data sheets for application instructions.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Germany

Disposal

KEMPEROL® Fleece may be disposed of in standard landfills in accordance with local, federal and state regulations.

Ordering Information

KEMPEROL® 500 Fleece

Item#:	Size:
112-115-01	41.3" (105 cm) Roll
112-115-02	27.6" (70 cm) Roll
112-115-03	6" (10 cm) Roll

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KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® 165 / 120 Fleece

Polyester Reinforcement Fleece for use with KEMPEROL® Membranes

FM APPROVED

Product Description	**KEMPEROL® Fleece** is a non-woven, needle-punched fabric reinforcement used with KEMPEROL®® cold liquid-applied reinforced polyurethane and PMMA waterproofing and roofing systems.
Composition & Materials	KEMPEROL® fleece is a non-woven, needle-punched polyester fabric.
Use	KEMPEROL® fleece is used as the integral fabric reinforcement of the KEMPEROL® cold liquid-applied reinforced polyurethane and PMMA waterproofing and roofing systems.
Limitations	Fleece must be kept clean and dry prior to and during application.
Yield	110 s.f. (10.2 m^2) of fleece per 100 s.f. (9.3 m^2) of surface coverage. *Note: Allow 10% for 2" (5 cm) over-laps and for flashings and waste.*
Storage	Always store in cool and dry location. Store flat to avoid deforming rolls and creasing fabric. Shelf life indefinite with proper storage. For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).
Precautions	**Review Safety Data Sheets before handling, available online at www.kempersystem.net.**
Application	Please refer to the KEMPEROL® waterproofing and roofing resin technical data sheets for application instructions.
Disposal	KEMPEROL® Fleece may be disposed of in standard landfills.

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Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Canada, Germany

Fleece Properties		
Physical Property	**165**	**120**
Color	White	White
Physical State	Solid	Solid
Thickness (165 / 120 fleece)	50 mils	40 mils
Weight (g/m2)	165	120
Tensile Strength @ Break	>1,775 lbs.	>1,550 lbs.
Elongation	>45%	>50%
Tear Resistance	>665 lbs.	>530 lbs.
Puncture Strength	>1,110 lbs.	>1,065 lbs.

Ordering Information

KEMPEROL® Fleece is available in 164 lineal foot (50 m) rolls, in a variety of widths, see below table.

Fleece Width	165 Fleece	120 Fleece
41.3" (105 cm)	112-116-01	312-111-21
27.6" (70 cm)	112-116-02	
20.7" (53 cm)	112-116-03	312-111-23
13.8" (35 cm)	112-116-04	312-11-04
10.3" (26 cm)	112-116-05	312-11-05
8.3" (21cm)	112-116-06	
4.1" (10 cm)	112-116-07	312-111-27

KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® Premium 165 Fleece

Premium Polyester Reinforcement Fleece for use with KEMPEROL® Membranes

Product Description

KEMPEROL® Premium 165 Fleece is a non-woven, waterjet bonded fabric reinforcement used with KEMPEROL® cold liquid-applied reinforced polyurethane, silane resins and PMMA waterproofing and roofing systems.

Composition & Materials

KEMPEROL® Premium 165 fleece is a non-woven, waterjet bonded polyester fabric.

Use

KEMPEROL® Premium 165 fleece is used as the integral fabric reinforcement of the KEMPEROL® cold liquid-applied reinforced polyurethane, silane resins and PMMA waterproofing and roofing systems.

Limitations

Fleece must be kept clean and dry prior to and during application.

Yield

110 s.f. (10.2 m^2) of fleece per 100 s.f. (9.3 m^2) of surface coverage.

Note: Allow 10% for 2" (5 cm) over-laps and for flashings and waste.

Storage

Always store in cool and dry location. Store flat to avoid deforming rolls and creasing fabric. Shelf life indefinite with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Application

Please refer to the applicable KEMPEROL® resin technical data sheets for application instructions.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Germany

Fleece Properties	
Physical Property	**Value**
Color	White
Physical State	Solid
Thickness (165 / 120 fleece)	1.3 mm
Weight (g/m2)	165
Tensile Strength @ Break	250 N/50mm
Elongation	>40%
Tear Resistance	TBD
Puncture Strength	TBD

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Disposal

KEMPEROL® Premium 165 Fleece may be disposed of in standard landfills.

Ordering Information

KEMPEROL® Premium 165 Fleece is available in 164 lineal foot (50 m) rolls.

Fleece Width	Premium 165 Fleece
13.8" (35 cm)	114-116-04

Product Information

KEMPERDUR® SURFACING MATERIALS

KEMPERDUR® BSF-R FINISH	Single-component fire-rated, water-borne, acrylic coating for use as a smooth coating, an aggregate bonding and sealing resin. Low VOC. CRRC listed. Standard colors available. Two coats recommended for best appearance. ***NOTE: All colors made to order, allow three week lead time. Do not apply if freezing temperatures or precipitation is anticipated within 4 hours.***
KEMPERDUR® DEKO 2KS-FR FINISH	Two-component, fire-rated, solvent-based polyurethane coating for use as a smooth coating, an aggregate bonding and sealing resin. CRRC listed. Standard colors available. ***NOTE: All colors made to order, allow three week lead time. Do not apply if freezing temperatures or precipitation is anticipated within 4 hours.***
KEMPERDUR® DEKO FINISH	Two-component, solvent-based polyurethane coating for use as a decorative and traffic topcoat. Suitable for submerged applications; fountains and water features. Two coats recommended for best appearance. Standard colors available. ***NOTE: All colors made to order, allow three week lead time.***
KEMPERDUR® TC TRAFFIC COATING	Three-component polyurethane, mineral-filled, self-leveling traffic coating system for use with mineral aggregates to create a heavy-duty traction-enhanced surfacing. For application direct to primed concrete substrate or over KEMPEROL® two component polyurethane waterproofing and roofing membranes. Fire-rated assemblies available. Low VOC. ***NOTE: For use over concrete substrates only. MInor yellowing will occur under UV exposure without approved KEMPERDUR® Sealants.***
KEMPERDUR® EP-FR FINISH	Two-component, fire-rated epoxy coating for use as a smooth coating, an aggregate bonding and sealing resin. Coating for parking decks and mechanical rooms. Standard color stone gray. ***NOTE: Minor yellowing will occur under UV exposure.***
KEMPERDUR® DEKO TRANSPARENT	Single-component, transparent, solvent-based polyurethane sealer for use as an aggregate bonding and aggregate sealing resin. Used on vertical aggregate finish applications in association with KEMPERDUR® TC Traffic Coating.
KEMPERDUR® FINISH GLOSSY	Single-component, transparent, solvent based polyurethane sealer over Ceramaquartz granules and other coatings.

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KEMPERDUR® FGC GLASS & FACADE COATING	Single component, UV-stable, solvent based polyurethane coating used to coat glass skylights. The KEMPEROL® 500 fleece reinforcement is used for cracks and transitions.
KEMPERDUR® AC TRAFFIC COATING	Three-component, quick-cure, mineral-filled, self-leveling, polymethylmethacrylate (PMMA) traffic coating system for outdoor use only. To be used with mineral aggregates to create a heavy-duty traction-enhanced surfacing. For application direct to primed concrete substrate or to KEMPEROL®® AC Speed FR waterproofing and roofing membrane. ***NOTE: For use over concrete substrates only.***
KEMPERDUR® AC FINISH	Two-component, quick-cure Polymethylmethacrylate (PMMA) coating for use as a smooth coating or aggregate sealing resin for outdoor applications only. Two standard colors; transparent and stone gray. Finish coat for KEMPEROL® AC Speed FR membrane and KEMPERDUR® AC Traffic Coating.
KEMPERDUR® SURFACING SAND	Kiln-dried silica sand used to with epoxy primers to increase surface area and enhance adhesion. Used as part of the alkalinity protective surfacing and adhesion key surfacing. Also, suitable for broadcast into colored coatings and KEMPEROL® membranes for granulated finishes and traction-enhanced surfacing.
CERAMAQUARTZ S-GRADE AGGREGATE BLENDS	Ceramic-coated rounded aggregate suitable for broadcast into TC, AC Traffic Coating and other aggregate bonding resins for pedestrian traffic areas such as balconies and terraces. Standard color blends are available. ***NOTE: Aggregate blends are made to order -- allow a minimum two week lead time.***

NOTE: SAFETY DATA SHEETS FOR ALL KEMPER SYSTEM AMERICA, INC. PRODUCTS ARE AVAILABLE ON WWW.KEMPERSYSTEM.NET.

Product Information

SURFACING SELECTION TABLE

The following tables provide recommendations for the selection of surfacings for application to KEMPEROL® membranes and other substrates, and should be used as a guideline when specifying surfacing systems. Surfacings are applied for various purposes, including: aesthetics, skid resistance, fire resistance, durability, adhesion key, and alkalinity protection. The application rates and procedures are different for each surfacing system. See individual Kemper System product data sheets, guide specifications and details for complete information regarding the suitability, application and handing of KEMPERDUR® surfacing options.

ROOF COATING APPLICATIONS

Surfacing Selection Table For KEMPEROL® 2K-PUR, KEMPEROL® 2K FR	RECOMMENDED SURFACING SYSTEM
REFLECTIVE ROOF COATING Requirement: Fire-Rated, Odor-free and Low VOC (Matte)	KEMPERDUR® BSF-R Finish
REFLECTIVE ROOF COATING Requirement: Fire-Rated (Glossy)	KEMPERDUR® Deko 2KS-FR Finish
REFLECTIVE AGGREGATE ROOF COATING Requirement: Fire-Rated, Odor-Free and Low VOC (Matte)	KEMPEROL® 2K-PUR resin (10 mils) or BSF-R Finish / Surfacing Sand / BSF-R Finish (2 Coats Min)
REFLECTIVE AGGREGATE ROOF COATING Requirement: Fire-Rated (Glossy)	KEMPEROL® 2K-PUR Resin (10 mils) or 2KS - FR Finish / Surfacing Sand / 2KS-FR Finish (2 coats min)

TRAFFIC SURFACING APPLICATIONS

Surfacing Selection Table for KEMPEROL® 2K-PUR, KEMPEROL® 2K FR	RECOMMENDED SURFACING SYSTEM
CONCRETE BALCONY / TERRACE SURFACING Requirement: Color Aggregate, S-grade Ceramaquartz, Klin-Dried Surfacing Sand	KEMPERDUR® TC / Ceramaquartz / Finish
WOOD DECK BALCONY / TERRACE SURFACING Requirement: Color Aggregate S-grade Ceramaquartz, Klin-Dried Surfacing Sand	Deko Trans / Ceramaquartz / Finish
PARKING DECK SURFACING Requirement: Gray Finish, Fire-rated and Low VOC	KEMPERDUR® TC / Surfacing Sand / EP-FR Finish
PARKING DECK SURFACING Requirement: Color Aggregate S-grade Ceramaquartz, Klin-Dried Surfacing Sand	KEMPERDUR® TC / Ceramaquartz / Finish
SMOOTH INTERIOR FLOOR COATING Requirement: Low VOC	KEMPERDUR® FC or KEMPERDUR® TC / KEMPERDUR® EP-FR

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COATING APPLICATIONS

Surfacing Selection Table for KEMPEROL® 2K-PUR, KEMPEROL® 2K FR	RECOMMENDED SURFACING SYSTEM
SMOOTH FLASHING COATING	KEMPERDUR® Deko Finish, 2KS-FR Finish / BSF-R Finish
AGGREGATE FINISH FLASHING COATING	KEMPERDUR® Deko Transparent / Ceramaquartz / Finish
DECORATIVE COATING	KEMPERDUR® Deko Finish, 2KS-FR Finish or BSF-R Finish
SUBMERSIBLE COATING	KEMPERDUR® Deko Finish
ALKALINITY PROTECTION COATING	KEMPERTEC® EP / EP5 Primer / Surfacing Sand

ROOF COATING APPLICATIONS

Surfacing Selection Table for KEMPEROL® AC SPEED FR	RECOMMENDED SURFACING SYSTEM
SMOOTH ROOF COATING	KEMPERDUR® AC Finish Colored
AGGREGATE ROOF COATING	KEMPERDUR® AC Finish / Surfacing Sand / AC Finish Colored
AGGREGATE FINISH ROOF COATING Requirement: Color Aggregate, S-Grade cermaquartz, Surfacing Sand.	KEMPERDUR® AC Finish / Ceramaquartz / AC Finish Transparent

SPECIALTY SURFACING APPLICATIONS

Surfacing Selection Table for KEMPEROL® AC SPEED FR	RECOMMENDED SURFACING SYSTEM
CONCRETE BALCONY / TERRACE SURFACING Requirement: Color Aggregate S-grade Ceramaquartz, Klin-Dried	KEMPERDUR® AC Traffic Coating / Ceramaquartz / AC Finish Transparent
WOOD DECK BALCONY / TERRACE SURFACING Requirement: Color Aggregate S-grade Ceramaquartz, Klin-Dried Surfacing Sand	KEMPERDUR® AC Finish / Ceramaquartz / AC Finish Transparent
PARKING DECK SURFACING	KEMPERDUR® AC Traffic Coating / Surfacing Sand / AC Finish Colored

KEMPER SYSTEM

Technical Data Sheet

KEMPERDUR® BSF-R Finish

One-Component Coating

Product Description

KEMPEROL® BSF-R Finish is a high performance, "odor-free" elastomeric coating that provides a UV-stable colored finish.

Composition & Materials

KEMPERDUR® BSF-R Finish is a water-based, one-part acrylic coating. BSF-R Finish is available in a variety of highly reflective standard colors that are CRRC listed. Please refer to the Color Selection Guide for standard and custom color information.

Use

KEMPERDUR® BSF-R Finish is used as a topcoat and an aggregate finish bonding and sealing resin over the two-componet polyurethane. It can also be used as a stand alone coating to extend the life of a variety of existing standard roofing systems, such as asphlat BUR, modified bitumen, single-ply, slate / tile and others. BSF-R Finish achieves Class A fire rating as part of an assembly in accordance with ASTM E 108 / UL 790.

Limitations

KEMPERDUR® BSF-R Finish may be applied only when the ambient temperature is 50ºF (10ºC) or above, and the substrate temperature is a minimum of 5 ºF (-15ºC) above the dew point.

DO NOT apply KEMPERDUR® BSF-R Finish if the temperature will fall below 35 ºF (2 ºC) or if precipitation is forecasted within 4 hours of completion of applications, as this will damage the product and require its removal and reapplication.

Yield

Membrane Coating:	100 ft²/gallon/coat
Aggregate Sealing/Coating:	80 ft²/gallon/coat

Note: All yields are approximate and may vary depending upon the smoothness of the surface.

Storage

Always store in cool and dry location. Do not store in direct sunlight or at temperatures below 50 ºF (10 ºC) or above 85 ºF (29 ºC). Approximate shelf life 24 months with proper storage. **DO NOT ALLOW TO FREEZE.**

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign materials such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the sealer.

Mixing of Coating

Note: Prior to opening the containers of KEMPERDUR® BSF-R Finish*, wear appropriate safety glasses and protect hands and wrists by wearing gloves.*

Premix resin with a clean spiral agitator for two minutes until a uniform color and consistency is obtained.

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Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture Location	Bristol, PA, USA

	Initial	Weathered
Solar Reflectance	**0.75**	**0.84**
Thermal Emittance	**0.66**	**0.88**
Rated Product ID Number	**0950-0001**	
CRRC Lincensee ID Number	**0950**	
Classification	Production Line	

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.

Above values are for KEMPERDUR® BSF-R Finish in "Cool/Bright White", initial SRI: 92 / weathered: 80. Refer to Color Selection Guide or www.coolroofs.org for information on other colors.

Coating Properties		
Physical Property		**Value**
Color		Varies
Physical State		Cures To Solid
SRI Cool White (Initial / 3-Year Aged		92 / 80
Thickness		11 mils dry / coat
VOC Contents		0 g/l
Tensile Strength	D412	250 psi
Elongation	D412	750%
Solids	D1044	73% (BW), 67% (BV)
Shore A Hardness	D2240	60
Accelerated Weather (5000 hr)	G152	Pass
Usage Time*		n/a
Water Resistant / Recoat After*		4 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application

Roller-apply BSF-R coating over clean, cured membrane at the rate of approximately 100 ft²/gal. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Following minimum 4 hour cure time, apply an additional coat of BSF-R coating. Two coats are recommended quired to obtain uniform and full coverage, eliminating roller marks. A third coat is recommended.

To achieve an aggregated finish surfacing, broadcast KEMPEROL® Surfacing sand or color quartz to refusal into the bonding coat. Aggregate shall be applied at the rate of 50 lbs./100 ft². Obtain uniform and full coverage. Following minimum 4 hour cure time remove loose / un-embedded sand or color quarz by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean aggregate as required to provide full embedment and coverage of membrane.

Seal aggregate surface with a sealing coat application of KEMPERDUR® BSF-R coating, applied at the rate of approximately 80 ft²/gal.

After completion, avoid any traffic for a minimum of two (2) days to allow for surfacing to fully cure.

Disposal

KEMPERDUR® BSF-R Finish may be disposed of in standard landfills. This is accomplished by allowing unused sealer to cure in container. Uncured KEMPERDUR® BSF-R Finish must be handled as such in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPERDUR® BSF-R Finish

Item #:	Size:
347-AN-50	1 gallon can
347-AN-51	5 gallon can

KEMPERDUR® Deko 2KS-FR Finish

Work pack includes:
Component A: Resin, Component B: Hardener with Color

Product Description

KEMPERDUR® Deko 2KS-FR Finish is a high performance glossy colored coating that provides a UV-stable, hard-wearing and color stable surfacing.

Composition & Materials

KEMPERDUR® Deko 2KS-FR is a solvent-based, two-component, cold liquid-applied aliphatic polyurethane coating. KEMPERDUR® Deko 2KS-FR Finish is available in a variety of standard colors, inlcuding CRRC rated for reflectivity and thermal emittance. Please refer to the Color Selection Guide for all available standard colors and information. Deko 2KS-FR achieves Class A fire rating as part of an assembly in accordance with ASTM E 108 / UL 790.

Use

KEMPERDUR® Deko 2KS-FR Finish may be used as an aggregate finish bonding and sealing coating, and for topcoating KEMPEROL®. It may also be used to extend the life of existing roofing systems, such as asphlat BUR, modified bitumen, single-ply, slate / tile and others.

Limitations

KEMPERDUR® Deko 2KS-FR Finish may be applied only when the ambient temperature is 41 ºF (5 ºC) or above, and the substrate temperature is a minimum of 5 ºF (-15 ºC) above the dew point.

Yield

Membrane Coating: 100 ft^2 / gallon / coat
Aggregate Sealing / Coating: 80 ft^2 / gallon / coat

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 85 ºF (29 ºC). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the coating.

Mixing of Coating

Note: Prior to opening the containers of KEMPERDUR® Deko 2KS-FR Finish, wear appropriate safety glasses and protect hands and wrists by wearing gauntlet-type neoprene gloves.

Step 1: Premix Component B thoroughly with a spiral agitator. Resin solution should be a uniform color, with no light or dark streaks present.

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Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Bristol, PA, USA

	Initial	Weathered
Solar Reflectance	**0.83**	**0.80**
Thermal Emittance	**0.88**	**0.88**
Rated Product ID Number	**0950-0002**	
CRRC Lincensee ID Number	**0950**	
Classification	Production Line	

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.

Above values are for KEMPERDUR® 2KS-FR Finish in "Bright/Cool White", initial SRI: 104 / weathered: 100. Refer to Color Selection Guide or www.coolroofs.org for information on other colors.

Coating Properties		
Physical Property		**Value**
Color		Varies
Physical State		Cures To Solid
SRI Cool White (Initial / 3-Year Aged)		104 / 100
Thickness		10 mils dry / coat
VOC Contents		330 g/l
Tensile Strength	D412	4,000 psi
Elongation	D412	20%
Solids	D1044	72% (BW), 66% (BV)
Shore A Hardness	D2240	90
Accelerated Weather (5000 hr)	G152	Pass
Usage Time*		12 hours
Water Resistant*		4 hours
Recoat After*		12 hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Step 2: Pour entire contents of Mixed Component B into a clean empty five gallon pail and check the B side container for unmixed pigment. If unmixed pigment is present pour contents back and re-mix Component B.

Step 3: If unmixed pigment is not present split the Component B into two equal parts, using the new pail and the original container.

Step 4: Pour resin Component A equally into each pail of Component B and thoroughly mix the components with a clean spiral agitator. The Resin solution should be a uniform color, with no light or dark streaks present.

Application

Roller-apply KEMPERDUR® 2KS-FR coating over clean, cured membrane at the rate of approximately 100 ft²/gal. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceeding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Following minimum 12 hour cure time apply an additional coat at the rate of approximately 100 ft²/gal. Two coats are highly recommended to obtain uniform and full coverage, eliminating roller marks. A third coat is recommended.

After completion of coating, avoid any traffic for a minimum of two (2) days.

To achieve an aggregated finish surfacing, broadcast KEMPEROL® Surfacing Sand to refusal into the bonding coat. Aggregate shall be applied at the rate of 50 lbs./100 ft². Obtain uniform and full coverage. Following minimum 12 hour cure time remove loose / un-embedded sand by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean aggregate as required to provide full embedment and coverage of membrane.

Seal aggregate surface with a sealing coat of KEMPERDUR® DEKO 2KS-FR FINISH applied at the rate of approximately 80 ft²/gal.

Disposal

Cured KEMPERDUR® Deko 2KS-FR Finish may be disposed of in standard landfills. This is accomplished by allowing unused product to cure in container. Uncured KEMPERDUR® Deko 2KS-FR Finish is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured product away.

Ordering Information

KEMPERDUR® Deko 2KS-FR Finish Work pack:

Item #:	Size:
347-AN-3145	2.0 US Gallons (Part A - 1 Gal. and Part B - 1 Gal.)
347-AN-3146	10.0 US Gallons (Part A - 5 Gal. and Part B - 5 Gal.)

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KEMPERDUR® Deko Finish

Work pack includes:
Component A: Clear Resin, Component B: Hardener with color

Product Description

KEMPERDUR® Deko Finish is a high performance colored coating that provides a resilient, glossy, UV-resistant, decorative, aesthetic surfacing.

Composition & Materials

KEMPERDUR® Deko Finish is a solvent-based, cold liquid-applied aliphatic polyurethane coating with separate color pack.

Use

KEMPERDUR® Deko Finish is used as a colored coating over KEMPEROL® two-component polyurethane resins cold liquid-applied membrane system, as a topcoat over KEMPERDUR® TC Traffic Coating and as a coating over concrete and other substrates. Please refer to the Color Selection Guide for standard colors and information.

Limitations

KEMPERDUR® Deko Finish may be applied only when the ambient temperature is 41 ºF (5 ºC) or rising, and the substrate temperature is a minimum of 5 ºF (-15 ºC) above the dew point.

Yield

Membrane Coating:	100 ft^2 / gallon / coat
Aggregate Sealing/Coating:	80 ft^2 / gallon / coat

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 85 ºF (29 ºC). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the coating.

Mixing of Coating

Note: Prior to opening the containers of KEMPERDUR® Deko Finish, wear appropriate safety glasses and protect hands and wrists by wearing gloves. Agitate coating in sealed container prior to use.

Step 1: Premix Component A thoroughly with a spiral agitator on low speed or stir stick.

Step 2: Add Component B to Component A and thoroughly mix for two (2) minutes with a clean spiral agitator on low speed or stir stick without creating any bubbles or streaks. During application continue to periodically mix the coating to avoid separation of resin and pigment.

Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Bristol, PA, USA

Coating Properties		
Physical Property	**Method**	**Values**
Color		Per Color Pack
Physical State		Cures To Solid
Thickness		7 mils (dry) per coat
VOC Content		300 g/L
Shore A Hardness	D2240	95
Tensile Strength	D412	4,500 psi
Elongation	D412	10%
Water Absorption	D570	0
Usage Time*		3 hours
Water Resistant After*		4 hours
Solid to Walk on After*		24 hours
Full Cure After*		24 hours
values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.		

Application

Roller-apply KEMPERDUR® Deko Finish coating over clean, cured membrane at the rate of approximately 100 ft²/gal. Do not press hard when using a roller as that will contribute to roller marks. Ensure to lap each preceeding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

Following minimum 12 hour cure time apply an additional coat at the rate of approximately 100 ft²/gal. Two coats are highly recommended to obtain uniform and full coverage, eliminating roller marks. A third coat is recommended.

After completion of coating, avoid any traffic for a minimum of two (2) days.

To achieve an aggregated finish surfacing, broadcast KEMPEROL® Surfacing Sand to refusal into the bonding coat. Aggregate shall be applied at the rate of 50 lbs./100 ft². Obtain uniform and full coverage. Following minimum 12 hour cure time remove loose / un-embedded sand by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean aggregate as required to provide full embedment and coverage of membrane.

Seal aggregate surface with a sealing coat of KEMPERDUR® Deko Finish applied at the rate of approximately 80 ft²/gal.

Disposal

Cured KEMPERDUR® Deko Finish may be disposed of in standard landfills. This is accomplished by allowing unused product to cure in container. Uncured KEMPERDUR® Deko Finish is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured product away.

Ordering Information

KEMPERDUR® Deko Finish:

Item #:	Size:
347-AN-3143	1.0 US gal (Part A - .75 gal. / Part B - .25 gal)
347-AN-3144	5.0 US gal (Part A - 3.75 gal. / Part B - 1.25 gal)

KEMPER SYSTEM

Technical Data Sheet

KEMPERDUR® TC Traffic Coating

USDA CERTIFIED BIOBASED PRODUCT PRODUCT 59%

FM APPROVED

Work pack includes:
Comp. A: White Formulation, Comp. B: Dark Brown Formulation, Comp. C: Mineral Filler

Product Description

KEMPERDUR® TC Traffic Coating is a high performance, "odor-free", self-leveling, mineral-filled pedestrian and vehicular traffic coating for use with Surfacing Sand or Ceramaquartz aggregate to provide a heavy-duty traction-enhanced surfacing. Concrete Substrate applications ONLY.

Composition & Materials

KEMPERDUR® TC Traffic Coating is a solvent-free, three component, cold-liquid applied aromatic polyurethane coating consisting of Component A (resin), Component B (hardener), and Component C (the mineral filler).

Use

KEMPERDUR® TC Traffic Coating is used as a heavy-duty coating for balconies, terraces, parking decks, walkways, and other traffic locations. The system may be used in conjunction with a fully reinforced KEMPEROL® cold liquid-applied, two component polyurethane resin waterproofing membrane or directly to a primed concrete substrates where a full reinforced waterproofing membrane is not required. Applications over unoccupied spaces may utilize the KEMPEROL® waterproofing flashing membrane at perimeter and penetration only.

Limitations

Concrete surfaces to receive the TC Traffic Coating system must be properly designed and constructed in order to assure effective coating performance. Determine whether the concrete contains sufficient expansion/cold-joints prior to the application of the coating.

Note: If the concrete substrate does not contain adequate cold joints, additional cold joints must be created in the TC Traffic Coating system, at minimum every 20'. Contact manufacturer for the cold joint application process.

Minor yellowing will occur under UV exposure without approved KEMPERDUR® sealants.

KEMPERDUR® TC Traffic Coating may be applied only when the ambient temperature is 41 ºF (5 ºC) to 90 ºF (32 ºC), and the substrate temperature is a minimum of 5 degrees above the dew point.

KEMPERDUR® TC Traffic Coating is intended for application on horizontal surfaces and inclines of up to 3%. A TX Thixotropic additive must be used on inclines from 3-20%.

Yield

40 ft^2 (3.7 m^2) / 12.5 kg work pack

Note: All yields are approximate and may vary depending upon smoothness of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 85 ºF (29 ºC). Approximate shelf life 12 months in sealed original containers.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and surfacing.

Remove or grind down all fasteners, anchors, studs, or other protrusions to achieve a smooth surface.

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Sustainability Information	
% Biobased Carbon Content ASTM D6866-21	59%
Recycled content % (post / pre)	0/0
Manufacture location	Buffalo, NY

Coating Properties	
Physical Property	**Values**
Standard Color	Beige
Physical State	Cures To Solid
Thickness	120 mils (3mm) w/ Sand
VOC Content	6 g/l
Usage Time*	15 Minutes
Water Resistant After*	4 Hours
Solid to Walk on After*	4 Hours
Completely Hardened After*	8 Hours
Water Absorption	<1%
Water Vapor Transmission	0.001 perms

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Priming

When applying directly to the concrete substrate, the surface must be prepared in accordance with the current application procedures. All cracks, holes, spalls, and other surface defects must be be sealed / repaired prior to the coating application. Review the current Substrate Repair and Patching Materials as well as the EP / EP5 primer slurry patching procedures. Once the substrate is prepared, primed, and all cracks are stripped in with KEMPEROL® 2K-PUR reinforced membrane, the KEMPERDU® TC application may commence.

Mixing of Coating

When applying directly to KEMPEROL® two component polyurethane resin, TC traffic coating must be applied within a 48 hour window. If that is not possible due to the logistics of the projects the surface of the membrane must be first be lightly abraded. KEMPEROL® two component polyurethane resin must not be primed prior to the application of the coating.

Step 1: Pre-mix Component A (white formulation) with a spiral KEMPEROL® agitator for 1 minute, until the liquid is a uniform color and all solids that may have settled to the bottom of the can have been mixed. When working on a sloped area, from 3-20%, such as a ramps, add approximatly 90 g of KEMPERTEC® TX Thixotropic additive to Component A before adding Component B.

Step 2: Add Component B (dark brown formulation) and mix with a spiral agitator for 1 minute, until the liquid is a uniform dark beige color without light or dark streaks.

Step 3: Gradually add Component C (white mineral filler) to the liquid while mixing continuously for an additional 1 minute until a smooth, lump free mixture is produced.

NOTE: DO NOT break down units into smaller quantities – mix the entire work pack.

Coating Application

Step 1: Empty the pail of KEMPERDUR® TC Traffic Coating mixture onto the primed concrete surface or over fully cured membrane and spread with a ¼" square-notched steel trowel at the rate of approximately 40 ft^2/12.5 kg unit. If applying over cured membrane follow membrane re-coating guidelines.

Step 1a: When applying the KEMPERDUR® TC traffic coating on an incline with the TX Thixotropic additive ensure that the coating does not run down the slope. If the coating shows signs of sag add additional additive.

Step 1b: Due to the TX Thixotropic addive the coating will no longer self level. Use the flat side of the trowel to level out the coating on sloped surfaces.

Step 2: Immediately de-aerate the coating in a cross direction with a porcupine (spiked) roller in order to release the air bubbles that may develop within the coating.

Step 3: Allow the KEMPERDUR® TC Traffic Coating mix to self-level and reach an initial set for 10-20 minutes, depending on ambient and surface temperatures, until material will retain a peak after being touched by a gloved finger.

Step 4: Broadcast selected aggregate to excess into TC Traffic Coating until a uniform dry aggregate layer has been achieved. Aggregate will initially sink into surfacing, requiring the application of additional aggregate. Sufficient aggregate application is achieved when there are no wet spots remaining. Aggregate application rate is typically 100 lbs./100 ft.

- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for applications utilizing a colored finish top coat
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for a more coarse surfaces, such as ramps
- Ceramaquartz (30 mesh) (0.3-0.6mm) (S-Grade blend) for aesthetic color quartz finished surfacing

Step 5: Allow the aggregate-filled KEMPERDUR® TC Traffic Coating to cure for approximately 4 hours. Times may vary depending on temperatures. Remove excess aggregate by brooming and vacuuming.

Step 6: Roller-apply appropriate sealer or finish evenly onto the surface. Ensure to lap each preceding path to erase squeeze out from the edge of roller.

- KEMPERDUR® EP-FR FINISH (NOT UV-STABLE) at the rate of approximately 80 ft^2/6 kg.
- KEMPERDUR® DEKO FINISH at the rate of approximately 80 ft^2/6 kg.
- KEMPERDUR® FINISH at the rate of approximately 360 ft^2/10 kg.

Disposal

Cured KEMPERDUR® TC Traffic Coating may be disposed of in standard landfills. This is accomplished by thoroughly mixing all surfacing components together. Uncured KEMPERDUR® TC Traffic Coating resin must be handled as such, in accordance with local, state and federal regulations. Do not throw away uncured resin.

Ordering Information

KEMPERDUR® TC Traffic Coating:

Item #:	Size:
325-77-125	12.5 kg Work pack (Components A, B and C)

KEMPER SYSTEM

Technical Data Sheet

KEMPERDUR® EP-FR Finish

FM APPROVED

Two component workpack includes:
Component A: Base Resin, Component B: Hardener

Product Description

KEMPERDUR® EP-FR Finish is a high performance, solvent-free, impact, abrasion and chemically-resistant, glossy stone gray finish topcoat, providing a Class A fire rating. Concrete Substrate applications ONLY.

Composition & Materials

KEMPERDUR® EP-FR Finish is a two-component, solvent-free, cold liquid-applied, stone gray and epoxy coating.

Use

KEMPERDUR® EP-FR Finish can be used as a coating in mechanical rooms, parking decks, and other areas where a chemically resiliant class A fire rated coating is required. The coating may be applied directly over a primed concrete substrate, over KEMPEROL® two component polyurethane resin and as a topcoat surface sealer for the KEMPERDUR® TC Traffic Coating system.

Limitations

KEMPERDUR® EP-FR Finish may be applied only when the ambient temperature is 50 ºF (10 ºC) and rising, and the substrate temperature is a minimum of 5 ºF (-15 ºC) above the dew point.
Minor yellowing may occur in UV exposure.

Yield

Membrane Coating: 120 ft²/6kg work pack
Aggregate Sealing / Coating: 80 ft²/6kg work pack

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 80 ºF (29 ºC). Approximate shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the coating.

Mixing of Coating

Note: Prior to opening the containers of KEMPERDUR® EP-FR Finish, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Premix resin Component A thoroughly with a spiral agitator. Resin solution should be a uniform color, with no light or dark streaks present.

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Sustainability Information	
Bio-Based Material	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Germany

Step 2: Pour Component B into Component A thoroughly mix the components with a clean spiral agitator. The Resin solution should be a uniform color, with no light or dark streaks present.

NOTE: DO NOT break down units into smaller quantities mix the entire work pack.

Coating Properties	
Physical Property	**Values**
Color	Stone Gray
Physical State	Cures To Solid
VOC Content	40 g/l
CDPH Standard Method V1.2	Pass
TVOC Concentration	≤ 0.5 mg/m³
Thickness	10 mils Per Coat
Usage Time	25 Minutes
Water Resistant After*	6 Hours
Recoat After*	6 Hours
Solid to Walk on After*	24 Hours
Solid to Drive on After*	48 Hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application

Roller-apply KEMPERDUR® EP-FR Finish at the the recommened coverage rate. Do not press hard when using a roller as that may contribute to roller marks. Ensure to lap each preceding path to erase squeeze out from the edge of roller. Always maintain a wet edge. Care must be taken to avoid creating foam or trapping air which may result in pinholes or hazing.

When applying as a bonding coat, broadcast KEMPEROL® Surfacing Sand into the wet EP-FR finish at the rate of 50 lbs./100 ft². Obtain uniform and full coverage.

Following minimum 24 hour cure time remove loose / unembedded sand by blowing with oil-free compressed air or with a vacuum.

Seal aggregate surface with an application of KEMPERDUR® EP-FR Finish, applied at the the recommened coverage rate. Ensure to lap each preceding path to erase squeeze out from the edge of roller. If necessary, a second coat may be applied after 6 hours.

After completion, avoid any traffic for a minimum of two (2) days to allow for surfacing to fully cure.

Disposal

Cured KEMPERDUR® EP-FR Finish may be disposed of in standard landfills. This is accomplished by allowing unused product to cure in container. Uncured KEMPERDUR® EP-FR Finish is considered a hazardous material and must be handled as such, in accordance with local, state, and federal regulations. Do not throw uncured product away.

Ordering Information

KEMPERDUR® EP-FR Finish Work pack:

Item #:	Size:
531-78-055	1.19 US GAL (4.49 L) • 6.0 kg

KEMPERDUR® Deko Transparent

One-Component Coating for use with Color Aggregate, S-Grade Ceramaquartz, Klin-Dried Surfacing Sand

Product Description

KEMPERDUR® Deko Transparent is a high performance topcoat bonding / sealing agent for use with Ceramaquartz aggregate to provide a traction-enhanced aesthetic surfacing.

Composition & Materials

KEMPERDUR® Deko Transparent is a solvent-based, 1-part, cold-applied liquid aliphatic polyurethane coating.

Use

KEMPERDUR® Deko Transparent is used as both an initial bonding agent over KEMPEROL® cold liquid-applied polyurethane membrane systems, and as a sealing agent over the Ceramaquartz aggregate.

Limitations

KEMPERDUR® Deko Transparent may be applied only when the ambient temperature is 41 °F (5 °C) or rising, and the substrate temperature is a minimum of 5 degrees above the dew point.

Yield

Membrane Coating:	130 ft²/5kg work pack
Aggregate Sealing:	130 ft²/5kg work pack (with 1K Thinner)

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 °F (10 °C) or above 85 °F (29 °C). Approximate shelf life 9 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 °F (18-21 °C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the sealer.

Mixing of Sealer

Note: Prior to opening the containers of KEMPERDUR® Deko Transparent*, wear appropriate safety glasses and protect hands and wrists by wearing gloves.*

Premix KEMPERDUR® Deko Transparent in a sealed container with a spiral agitator on low speed or stir stick. Do not introduce air into the material.

Application

Step 1: Apply KEMPERDUR® Deko Transparent bonding coat to the fully cured membrane at the recommended coverage rate. The material should be rolled or brushed evenly onto the surface.

Step 2: Immediately broadcast Ceramaquartz aggregate in excess into the bonding coat at the approximately rate of 60 lbs./100 ft². Allow to dry thoroughly, approximately 24 hours, then remove excess granules.

Step 3: Apply KEMPERDUR® Deko Transparent mixed with 250 ml of KEMPERTEC® 1K Thinner at the recommended coverage rate. KEMPERDUR® Finish Glossy may also be used as a sealer. Allow to cure approximately 24 hours before exposing the surface to traffi

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Sustainability Information	
Bio-Based Materials	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Germany

Coating Properties	
Physical Property	**Values**
Color	Clear
Physical State	Cures To Solid
Thickness	10 mils (dry) per coat
VOC Content	274 g/l
Usage Time*	N/A**
Water Resistant After*	3 hours
Solid to Walk on After*	24 hours
Full Cure After*	3 days

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

*** skins over but remains usable.*

Disposal

Cured KEMPERDUR® Deko Transparent may be disposed of in standard landfills. This is accomplished by allowing unused product to cure in container. Uncured KEMPERDUR® Deko Transparent is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured product away.

Ordering Information

KEMPERDUR®® Deko Transparent:

Item #:	Size:
347-00-050	5 kg (1.29 gal) unit

Technical Data Sheet

KEMPERDUR® Finish Glossy

One Component Sealer

Product Description

KEMPERDUR® Finish Glossy is a high performance, light-stable, transparent, sealer for s-grade ceramaquartz aggregate, color aggregate or klin-dried surfacing sand.

Composition & Materials

KEMPERDUR® Finish Glossy is a solvent based one component, cold liquid-applied aliphatic polyurethane sealer.

Use

KEMPERDUR® Finish Glossy is used as a Ceramaquartz aggregate sealer for KEMPERDUR® TC and KEMPERDUR® Deko Transparent coating systems.

Limitations

Sealer may be applied only when the ambient temperature is 41 ºF (5 ºC) or rising, and the substrate temperature is a minimum of 5º above the dew point.

Yield

Aggregate Sealing: 360 ft^2/10 kg unit

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 85 ºF (29 ºC). Approx. shelf life 12 months with proper storage.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70 ºF (18-21 ºC).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the sealer.

Mixing of Sealer

Note: Prior to opening the containers of KEMPERDUR® Finish Glossy, wear appropriate safety glasses and protect hands and wrists by wearing gauntlet-type neoprene gloves. Agitate coating in sealed container prior to use.

Application

Apply sealer at a rate of approximately 360 ft^2/10 kg over aggregate. The sealer should be rolled or brushed evenly onto the surface. Allow to set approximately 12 hours before walking on surface and 3 days between applying optional additional coats of sealer.

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Sustainability Information	
Bio-Based Materials	0%
Recycled content % (post / pre)	0 / 0
Manufacture location	Germany

Sealer Properties	
Physical Property	**Values**
Color	Clear
Physical State	Cures To Solid
Thickness	3-5 mils (dry)
VOC Content	490 g/l
Usage Time*	-
Water Resistant After*	3 hours
Solid To Walk On After*	12 hours
Full Cure After**	3 days

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Disposal

Cured KEMPERDUR® Finish Glossy may be disposed of in standard landfills. This is accomplished by allowing unused sealer to cure in container. Uncured KEMPERDUR® Finish Glossy is considered a hazardous material and must be handled as such in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPERDUR® Finish Glossy:

Item #:	Size:
546-00-100	10 kg (2.72 gal) unit

KEMPER SYSTEM

Technical Data Sheet

KEMPERDUR® FGC Facade and Glass Coating

One-Component Clear Coating

Product Description

KEMPERDUR® FGC is a UV and light-stable, high performance, clear, cold liquid-applied renovation coating for glass skylights or windows.

Composition & Materials

KEMPERDUR® FGC is a one component, cold liquid-applied aliphatic polyurethane coating.

Use

KEMPERDUR® FGC is a glass skylight / window coating that may be used with a reinforcing fleece over cracks and transitions.

Limitations

KEMPERDUR® FGC may be applied when the ambient temperature is 41 °F (5 °C) and rising, and the substrate temperature is a minimum of 5 °F (-15 °C) above dew point. The maximum application temperature is approximately 90 °F (32 °C).

KEMPERDUR® FGC requires a regular maintenance cleaning, which can be accomplished by normal wiping with neutral cleaners or KEMPERTEC® Klean. Solvent and chloride containing products, as well as abrasive cleaners are not suitable for KEMPERDUR® FGC.

Yield

65 ft^2/5 kg unit

Note: All yields are approximate and may vary depending upon smoothness of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in a temperature below 50 °F (10 °C) or above 85 °F (29 °C). Approximate shelf life is 9 months with proper storage.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and membrane. Cleaning and grinding of metal frames to near-white metal. Sanding of glass surfaces to remove hard gloss surface. No mechanical preparation of acrylic and polycarbonate panels normally required.

The skylights should be pressure washed or hand washed with KEMPERTEC® KLEAN or pH neutral cleaner then a thorough rinse so that the panels are clean and dry.

Fill the gaps in the skylight frame as required with ASTM C-920 Type S, Grade NS, Class 25 polyurethane sealant or KEMPERTEC® Joint Sealant to fill gaps in the skylight frame.

Priming

After substrate preparation, use KEMPEROL® D or R Primer on metal frames. No primer required on glass, acrylic and polycarbonate panels.

Mixing of Resin

Note: Prior to opening the containers of KEMPERDUR® FGC Resin, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Mix the resin with a stir stick prior to use. Do not introduce air into the material.

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Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Germany

Coating Properties	
Physical Property	**Values**
Color	Clear
Physical State	Cures To Solid
Nominal Thickness (500 fleece)	20 mils
VOC Content	302 g/l
Rainproof After*	15 Minutes
Usage Time*	2-6 Hours
Solid To Walk On After*	12 Hours
Completely Hardened	3 Days

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Application

Using a nylon roller, apply a coat of FGC coating to the glass surface. The initial coat should be 10 wet mils. After 12 hours apply a second coat of FGC at an additional 10 wet mils.

Over glass transitions and joints, a strip of KEMPEROL® 500 Fleece is to be used. Roller apply the first coat of FGC at 10 wet mils, immidiately imbed the fleece reinforcement into the coating while still wet, avoiding any folds and wrinkles. Apply a top coat of FGC coating over the fleece, while working out any air pockets from the bottom up. It is important to correct these faults before the coating cures.

When required, the system may also be applied fully reinforced, following the above guidelines. Full dry film coating thickness will be 20 mils, requiring approximately 65 ft^2/5 kg unit. Adjust coating application rate such that the coating does not run down the skylight surface. Depending on slope of the skylight surface, multiple application coats may be required.

Disposal

Cured KEMPERDUR® FGC coating may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured Kempedur® FGC coating is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPERDUR® FGC Coating

Item #:	Size:
Liquid Component -	
332-00-050	5 kg (1.26 gal) unit
500 Fleece	
112-115-01	41” Wide
112-115-02	27.6” Wide
112-115-03	6” Wide

KEMPER SYSTEM

Technical Data Sheet

KEMPERDUR® AC Traffic Coating

Work pack includes:
Component A: AC Traffic Coating Resin, Component B: Catalyst Powder, Component C: Mineral Filler

Product Description

KEMPERDUR® AC Traffic Coating is a high performance, quick-curing, self-leveling, mineral-filled, pedestrian and vehicular traffic coating that is UV resistant. Used with Surfacing Sand or Ceramaquartz aggregate, KEMPERDUR® AC Traffic Coating provides a heavy-duty, traction-enhanced surfacing. Concrete substrate applications ONLY.

Composition & Materials

KEMPERDUR® AC Traffic Coating is a three component, cold liquid-applied Polymethyl Methacrylate (PMMA) coating, consisting of a Component A, a clear resin, Component B, a catalyst powder, and Component C, a mineral filler.

Use

KEMPERDUR® AC Traffic Coating is used as a heavy-duty coating for balconies, terraces, parking decks, walkways, and other traffic locations. The system may be used in conjunction with a fully reinforced KEMPEROL® AC Speed FR cold liquid-applied waterproofing membrane. The system can also be applied directly to a concrete substrate primed with KEMPERTEC® AC Primer where a full reinforced waterproofing membrane is not required. Applications over unoccupied spaces may utilize the waterproofing flashing membrane at perimeter and penetration only.

Concrete surfaces to receive the KEMPERDUR® AC Traffic Coating system must be properly designed and constructed in order to assure effective coating performance. Determine whether the concrete contains sufficient expansion/cold-joints before using.

Limitations

KEMPERDUR® AC Traffic Coating may be applied when the ambient temperature is between 23°F (-5°C) and 95°F (35°C) . The substrate temperature must be a minimum of 5 degrees above the dew point. Note: Extra caution should be taken in below freezing temperatures. The viscosity increases with falling temperature. Provide and maintain positive airflow over freshly applied AC materials during entire curing period to facilitate complete cure. Natural airflow is typically sufficient for exterior applications, but locations such as beneath large mechanical units, at inside corners, at the base of high walls, and other similar areas where stagnant air may occur should be provided with powered fans.

KEMPERDUR® AC Traffic Coating is intended for application on horizontal surfaces and inclines of up to 3%. KEMPERTEC® TX Thixotropic additive must be used on inclines from 3-20%.

Yield

100 ft^2 (9.2 m^2) / 33 kg work pack

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store unopened units in a cool and dry location. Do not store in direct sunlight or in temperatures below 35°F (1.7°C) or above 86°F (30°C). Approximate shelf life is 18 months with proper storage. Catalyst powder must be stored separately.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 50-86°F (10-30°C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the primer and coating.

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Remove or grind down all fasteners, anchors, studs, or other protrusions to achieve a smooth surface.

When applying directly to the concrete substrate, the surface must be prepared in accordance with the current application procedures.

All cracks, holes, spalls, and other surface defects must be sealed/repaired prior to the coating application. Review the current Substrate Repair and Patching Materials form as well as the AC primer slurry patching procedures.

Note: If the concrete substrate does not contain adequate cold joints, additional joints must be created in the AC Traffic Coating system, at minimum every 20'. Contact manufacturer for the cold joint application process.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (Post / Pre)	0 / 0
Manufacture Location	Germany

Coating Properties	
Physical Property	**Values**
Color	Beige
Physical State	Cured To Solid
Thickness	120 mils
VOC Content (without mineral filler)	32 g/l
Usage Time*	15 Minutes
Water Resistant After*	35 Minutes
Solid To Walk On After*	35 Minutes
Can Be Driven On After*	6 Hours
Overburden May Be Applied After*	60 Minutes
Completely Hardened	6 Hours

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Priming

Apply KEMPERTEC® AC Primer to the concrete substrate and all flashing surfaces at the perimeter, penetrations, expansion joints, and drain locations.

Once the substrate is prepared, primed, and all cracks are stripped in with KEMPEROL® AC Speed FR reinforced membrane, the KEMPERDUR® AC Traffic Coating application may commence.

When applying directly to KEMPEROL® AC Speed FR membrane, KEMPERDUR® AC Traffic Coating must be applied within a 48 hour window. If that is not possible due to the logistics of the project, the surface of the membrane must be lightly abraded to receive the coating system. Do not prime the KEMPEROL® AC Speed FR membrane prior to the application of the coating.

Note: Prior to opening the containers of KEMPERDUR® AC Traffic Coating, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Mixing of Coating

Step 1: Mix Component A with a spiral agitator or stir stick until no streaks are present. For applications on ramps and other sloped surfaces only, KEMPEROL® TX Thixotropic additive shall be mixed directly into Component A. The amount added is to be adjusted based on percent of the incline (see table).

Incline of Slope	Quantity to Add to Comp A
3 - 5%	60 g (2.12 oz)
5 - 7%	100 g (3.53 oz)
7 - 10%	120 g (4.23 oz)
11 - 20%	160 g (5.64 oz)

Step 2: Add Catalyst Powder (Component B) to Component A and mix with the same agitator until completely dissolved (at least 1 minute). The amount of Catalyst Powder must be adjusted according to material temperature (see table).

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst Powder (100g/bag)	Pot Life (Min)	Completely Cured (Min)
23°F - 35°F	4 bags	45	90
35°F - 50°F	4 bags	30	60
50°F - 70°F	3 bags	20	35
70°F - 80°F	2 bags	20	30
>80°F	1 bag	10	20

Step 3: Transfer the catalyzed mixture in to a large (10 gal), clean pail and gradually add Component C (23 kg filler) while mixing continuously with a spiral agitator until a smooth, lump free mix is produced.

NOTE: KEMPERDUR® AC Traffic Coating is extremely fast curing. Excessive mixing time reduces the available working time for the primer. DO NOT break down units into smaller quantities – mix the entire work pack.

Surfacing Application

Step 1: Empty the mixed pail of KEMPERDUR® AC Traffic Coating mixture onto the primed concrete surface or over fully cured membrane. Spread with a ¼" square-notched steel trowel. If applying over cured membrane follow membrane re-coating guidelines.

Step 1a: When applying the KEMPERDUR® AC Traffic Coating on an incline follow the KEMPERTEC® TX Thixotropic additive table, ensuring that the coating does not run down the slope. If the coating shows signs of sag, increase the amount of additive.

Step 1b: Due to the addition of KEMPERTEC® TX Thixotropic additive, the coating will no longer self-level. Use the flat side of the trowel to level out the coating on sloped surfaces.

Step 2: Immediately de-aerate the coating in a cross direction with a porcupine (spiked) roller to release air bubbles that may develop within the coating.

Step 3: Allow the KEMPERDUR® AC Traffic Coating mix to reach an initial set until material will retain a peak after being touched by a finger. Set time will vary depending on ambient and surface temperatures.

Step 4: Broadcast selected aggregate to excess into KEMPERDUR® AC Traffic Coating until a uniform dry aggregate layer has been achieved. Aggregate will initially sink into surfacing, requiring the application of additional aggregate. Sufficient aggregate application is achieved when there are no wet spots remaining. Aggregate application rate is typically 100 lbs. /100 ft^2.

- Surfacing Sand (0) #18 (0.5 – 1.2 mm) for general broadcasting purposes.
- Surfacing Sand (1) #14 (0.8 – 1.5 mm) for higher coarse surfaces such as ramps.
- Ceramaquartz (30 mesh) (0.3 - 0.6 mm) (S-Grade blend) for aesthetic color quartz finished surfacing.

Step 5: Allow the aggregate-filled KEMPERDUR® AC Traffic Coating to cure for approximately 60 minutes. Times may vary depending on temperatures. Remove excess aggregate by sweeping and/or vacuuming.

Step 6: Roller-apply KEMPERDUR® AC Finish, in the desired color, evenly over the aggregate surface at an approximate rate of 60 ft^2 / 5 kg unit. Ensure to lap each preceding path to erase squeeze out from the edge of roller. If necessary, a second coat may be applied.

Disposal

Cured KEMPERDUR® AC Traffic Coating may be disposed of in standard landfills. This is accomplished by thoroughly mixing all surfacing components together. Note: Uncured KEMPERDUR® AC Traffic Coating resin, hardener, primer components, and sealer are considered hazardous materials and must be handled as such, in accordance with local, state and federal regulations. Do not throw away uncured resin, hardener, primer or sealer.

Ordering Information

KEMPERDUR® AC Traffic Coating Work Pack:

Item #	Size:
336-77-105	Component A KEMPEROL® AC Traffic Coating (Resin) 2.54 US GAL • 10 kg
	Component B Mineral Filler 23 kg
	Component C Catalyst Powder 2 (100g) plastic bags

Additional Components:

Catalyst Powder AKZO-77-251	100g plastic bag
KEMPERTEC TX Thixotropic Additive 562-10-109	150g plastic bag

KEMPERDUR® AC Finish

Work pack includes:
Component A: Base Resin, Component B: Catalyst Powder

Product Description

KEMPERDUR® AC Finish is a high performance, quick-curing, abrasion-resistant topcoat/sealer that provides a UV-resistant, aesthetic surfacing. Custom colors are: Transparent, Stone Grey, White, Beige, Blue, Brick, Charcoal Grey, Ivory, Light Grey, Pebble Grey, Traffic Blue, Traffic Red, Traffic Yellow.

Composition & Materials

KEMPERDUR® AC Finish is a two-component, cold liquid-applied Polymethylmethacrylate (PMMA) finish coating. Standard colors are stone gray and transparent.

Use

KEMPERDUR® AC Finish is used as a colored or transparent topcoat over KEMPEROL® AC Traffic Coating and KEMPEROL® AC SPEED FR membrane waterproofing systems.

Limitations

KEMPEROL® AC Finish may be applied when the ambient temperature is between 23°F (-5°C) and a maximum of 95°F (35°C). The substrate temperature must be a minimum of 5 degrees above the dew point. The viscosity increases with falling temperature.

Provide and maintain positive airflow over freshly applied KEMPERDUR® AC Finish materials during entire curing period to facilitate complete cure. Natural airflow is typically sufficient for exterior applications, but locations such as beneath large mechanical units, at inside corners, at the base of high walls, and other similar areas where stagnant air may occur should be provided with powered fans.

Yield

Membrane Coating:	100 ft^2/coat/5kg work pack
Aggregate Sealing/Coating:	60 ft^2/coat/5kg work pack

Note: All yields are approximate and may vary depending upon smoothness and absorbency of substrate.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 35°F (1.7°C) or above 80°F (27°C). Approximate shelf life 12 months with proper storage rate.

For best use, 24 hours before application, the material is to be acclimated at temperatures between 65-70°F (18-21°C).

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the sealer.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Germany

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KEMPERDUR® AC Finish Color	SRI Value - Initial
Stone Gray	29
Light Gray	77
Pebble Gray	42
Anthracite / Traffic Gray	9
Blue	54
Orange Brown	30
Yellow	70
Red	45
Beige	64
White	106
Light Ivory	74

Sealer Properties	
Physical Property	**Values**
Physical State	Cures To Solid
Thickness	3-5 mils (dry) per coat
VOC Content	48 g/l / 39 g/l
Usage Time*	20 Minutes
Water Resistant After*	30 Minutes
Solid To Walk On After*	60 Minutes
Solid To Drive On After*	6 Hours
Apply Coating/Surfacing After	60 Minutes

** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*

Mixing of Coating

Note: Prior to opening the containers of KEMPERDUR® AC Finish, wear appropriate safety glasses and protect hands and wrists by wearing gloves.

Step 1: Mix Component A with a spiral KEMPEROL® agitator, until the liquid is a uniform color, with no light or dark streaks present.

Step 2: Add Component B to resin Component A and mix with the same agitator for 2 minutes or until the powder is completely mixed throughout the liquid resin. The amount of Catalyst Powder must be adjusted according to the temperature (see table below).

Catalyst Powder Requirements

Material Temperature °F	KEMPEROL® Catalyst Powder (100g/bag)	Pot Life (Min)	Completely Cured (Min)
23°F - 35°F	2 bags	45	90
35°F - 50°F	2 bags	35	60
50°F - 60°F	2 bags	30	45
60°F - 80°F	1 bag	20	30
>80°F	1/2 bag	20	30

Application

Step 1: After the Sealer is mixed, apply approx. 0.8 gallons per 100 square feet (9 m2). Obtain uniform and full coverage, eliminating roller marks, but do not overwork. Cover one working area at a time between 15 – 20 sq. ft.

Step 2: Following minimum 1 hour cure time, apply an additional coat of KEMPERDUR® AC Finish coating at the rate of approximately 0.8 gal. per 100 square feet per coat. The application of two coats of all colored coatings is recommended to achieve best appearance and longest performance life.

After completion of coating, avoid any traffic for a minimum of six (6) hours.

Disposal

Cured KEMPERDUR® AC Finish may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components. Uncured KEMPERDUR® AC Finish is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulations. Do not throw uncured resin away.

Ordering Information

KEMPERDUR® AC Finish Work Pack:

Item #	Size:
346-00-005 Transparent	1.33 US GAL • 5 kg (Includes Catalyst Powder)
346-79-005 Stone Gray	1.18 US GAL • 5 kg (Includes Catalyst Powder)
Additional Catalyst Powder	
AKZO-77-251	100 g plastic bag

SURFACING AND MIXING SAND

Product Description

The Surfacing and Mixing Sands are the standard kiln-dried silica aggregate intended for use with KEMPEROL® cold liquid-applied roofing, waterproofing and surfacing applications.

Sieve Analysis (U.S. Sieve Series and Screen Scale)

		Mixing Sand 00 or 35		Surfacing Sand 0 or 18		Surfacing Sand 1 or 14	
U.S. Sieve No.	Sieve Opening mm/inch	% RET	% PASS	% RET	%PASS	% RET	%PASS
							98.4
12	1.68/	-	-	-	-	1.1	75.5
14	1.4/.0555	-	-	0	100.0	23.4	27.4
16	1.18/.0469	-	-	1.6	98.4	48.1	13.1
18	1.00/.0394	-	-	22.8	75.5	14.3	6.2
20	0.850/.0331	-	-	32.3	27.4	6.9	-
25	0.710/.0278	0	100.0	28.2	13.1	-	-
30	0.600/0.0234	2.3	97.7	8.8	6.3	-	-
35	0.500/0.0197	33.8	63.9	3.1	3.2	-	-
40	0.425/0.0165	23.3	40.6	1.1	2.1	-	-
45	0.355/0.0139	24.9	15.7	.7	1.5	-	-
50	0.300/0.0117	11.6	4.1	.8	.7	-	

Hardness on Moh's scale: 6-8,
Specific Gravity: 2.65

Use

Priming: Surfacing Sand #0 / 18 (0.5 – 1.2 mm) aggregate broadcast into wet KEMPERTEC® Primers to enhance adhesion with the KEMPEROL® membranes. The sand is required when applying KEMPERTEC® EP / EP5 Primers.

Adhesion Key / Alkalinity Barrier: KEMPERTEC® EP / EP5 primers with sand can also serve as an adhesion key for various overburdens and as well as an Alkalinity barrier when required by the membrane, due to high PH levels. Refer to the Primer and Resin data sheet for application details and rates.

Coatings / Surfacings: Surfacing Sand #0 / 18 (0.5 – 1.2 mm) and #1 / 14 (0.8 to 1.5 mm), are used with KEMPERDUR® coating systems to provide traction. Refer to individual coating data sheets for application details and rates.

Patching / Leveling: Mixing Sand #00 / 35 (0.3 – 0.6 mm) and Surfacing Sand #0 / 18 (0.5 – 1.2 mm) can be mixed with a variety of primers and resins to create a slurry for patching and leveling. Refer to individual data sheets for application details and rates.

Storage

Store in a dry and cool environment.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Ordering Information

Item #:	Size:
700-AG-001	50 lb bag • Surfacing Sand #0
700-AG-106	50 lb bag • Surfacing Sand #1
700-AG-002	50 lb bag • Mixing Sand #00

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KEMPER SYSTEM

Technical Data Sheet

KEMPERDUR® S-Grade Ceramaquartz

Ceramic Coated Aggregate

Product Description

KEMPERDUR® S-Grade Ceramaquartz is a UV-stable, ceramic coated, rounded colored aggregate. Available in five standard blends, see color guide for reference.

Composition & Materials

KEMPERDUR® S-Grade Ceramaquartz is a ceramic coated, rounded colored aggregate.

Use

KEMPERDUR® S-Grade Ceramaquartz color aggregate is used to create an aesthetically pleasing and functional traffic bearing surface for balconies, terraces, walkways, parking decks and other architectural applications. The aggregate is broadcast into a base coat and sealed with a transparent or clear sealer.

Yield

Reference individual KEMPERDUR® coating product data sheets for coverage rates.

Storage

Always store in cool and dry location.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the sealant.

Note: Wear appropriate safety glasses prior to opening bags KEMPERDUR® S-Grade Ceramaquartz.

Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	N/A

Application

KEMPERDUR® S-Grade Ceramaquartz color aggregate may be broadcast into a variety of KEMPERDUR® and COELAN® Coatings. Refer to individual coating technical data sheets for aggregate application rates. Once the base coat has cured remove loose aggregate. If areas require addional aggregate follow the patching recommendations. After removing the loose aggregate a transparent or clear sealer is to be applied to provide a resilient finish and prevent aggregate lose.

Sieve Analysis (U.S. Sieve Series and Screen Scale)	
US Standard Sieve Size	S-Grade % Retained
12	-
16	-
20	-
30	9
40	54
50	32
70	4
100	1
140	0

Disposal

Disposal of KEMPERDUR® S-Grade Ceramaquartz color aggregate must be handled in accordance with local, state and federal regulations.

Ordering Information

KEMPERDUR® S-Grade Ceramaquartz

Item #:	Size:
700-AG-108	50 lb bag • 10 bags minimum order • 48 bags / pallet

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Product Information

APPLICATION TOOLS / ACCESSORIES

APPLICATION TOOLS

KEMPEROL® SPIRAL AGITATOR/MIXER

Specially-designed helical mixing paddle for thoroughly mixing resins, leveling compounds, and sand mixtures prior to application. Prevents air entrapment. Two sizes -- 3" and 4" -- available.

KEMPEROL® ROLLER HANDLES

Specially-designed roller handles for use with KEMPEROL® roller naps. Rod style limits resin penetration into roller core so that roller naps do not quickly gum up with curing resins. Two sizes -- 4" and 9" -- available.

KEMPEROL® RESIN AND SAND ROLLER NAPS

Specially-designed roller naps for use with KEMPEROL® roller handles. Closed-end nylon cores. Perlon nap material will not soften, shed, or dissolve in resins and primers. Two sizes -- 4" and 9" -- available.

KEMPEROL® DETAIL BRUSHES

Specially-designed long-handled china bristle brushes for application of KEMPEROL® resins and primers in limited-access areas. 2.5" brush width.

KEMPEROL® NOTCHED TROWELS

Specially-designed 1/4" x 1/4" x 1/4" notched trowels for application of KEMPEROL® mineral-filled self-leveling surfacings. 11" x 4-1/2" trowel size.

ACCESSORIES

KEMPERTEC® JOINT SEALANT

One component, quick-curing, UV stable, gun-grade polyurethane joint sealant designed for use beneath KEMPEROL® membranes. Used in both interior and exterior applications.

KEMPERTEC® KLEAN

Membrane cleaner used as part of a roof maintenance program for KEMPEROL® Roofs. Keeping the membrane clean maintains maximum reflectivity and its associated energy conservation benefits. Removes grease, dirt and rust from the surface of the membrane without causing damage and impacting the integrity of the material.

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KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® Spiral Agitator/Mixer

Product Description

KEMPEROL® Spiral Agitator is a mixer specially designed for mixing resins, leveling compounds and sand mixtures.

Tool Component

Steel spiral agitator with 1/2" (12.8 mm) hex drive for use with hand-held drills and mixers.

Use

Used to mix all KEMPEROL® resin materials and components. KEMPEROL® spiral agitator prevents air-entrapment and mixes heavy liquids evenly.

Clean-up and Storage

Immediately after use, clean with MEK or acetone. Store dry with other tools and keep from rusting.

Ordering Information

KEMPEROL® Spiral Agitator:

Item #:	Size:
579-EX-100	3" (7.5 cm) agitator
579-EX-080	4" (10 cm) agitator

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KEMPEROL® Roller Handles

Specifically designed for KEMPEROL® resin rollers

Product Description	**KEMPEROL® Roller Handles** are specially designed for mounting KEMPEROL® resin rollers.
Tool Component	Plastic handle with metal shaft. Roller handle can be mounted on a broomstick or extension handle.
Use	Used to apply KEMPEROL® primers, resins, and coatings.
Clean-up and Storage	Immediately after use, clean with MEK or acetone thinner. Store dry with other tools and keep from rusting.
Ordering Information	KEMPEROL® Roller Handles: Item #: Size: 579-00-132 9" (23 cm) roller 579-00-182 4" (10 cm) roller

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KEMPER SYSTEM

Technical Data Sheet

KEMPEROL® Resin Roller Naps

Product Description

KEMPEROL® Resin Roller Naps are specially designed for applying KEMPEROL® resins, primers and coatings.

Tool Component

Closed-end nylon rollers with ball-bearing insert.

Use

Resin rollers used to apply KEMPEROL® resin materials and components. Use of non-KEMPEROL® naps is prohibited.

Clean-up and Storage

Immediately after use, clean with MEK or acetone. Store dry with other tools. Keep clean and dry.

Ordering Information

KEMPEROL® Resin Rollers:

Item #	Size:
579-00-131	9" (23 cm) roller
579-00-181	4" (10 cm) roller

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KEMPEROL® Detail Brushes

Long-handled china bristle brushes

Product Description	**KEMPEROL® Detail Brushes** are specially designed for applying KEMPEROL® resins and primers.
Tool Component	Long wooden-handled china bristle brushes.
Use	Used to apply KEMPEROL® resin materials and components on flashings and small details.
Clean-up and Storage	Immediately after use, clean with MEK or acetone. Store dry with other tools and keep clean.
Ordering Information	KEMPEROL® Detail Brushes: Item # Size: 604-04-007 2.5" (6 cm) brush (12 / carton)

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KEMPEROL® 1/4“ Notched Trowel

Product Description	**KEMPEROL® Notched Trowel** is required for the application or spreading the proper amount of KEMPERDUR® self leveling mineral-filled topcoat systems.
Tool Component	Steel Blade, 1/4“ x 1/4“ x 1/4“ square notch.
Use	Used to apply KEMPERDUR® self leveling topcoat systems on an even substrate surface or on top of the KEMPEROL® membrane. The notch size helps to control the thickness of the topcoat system.
Clean-up and Storage	Immediately after use, clean with MEK or acetone. Store dry with other tools and keep from rusting.

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KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® Joint Sealant

One Component Sealant

Product Description

KEMPERTEC® Joint Sealant is a one component, quick-curing, UV stable, gun-grade polyurethane joint sealant designed for use beneath KEMPEROL® membranes.

Composition & Materials

KEMPERTEC® Joint Sealant is a one component moisture curing polyurethane sealing compound.

Use

KEMPERTEC® Joint Sealant may be used in both interior and exterior applications. It is used to seal the joints, gaps and transitions of plywood, gypsum and cement cover boards, and around metal, pvc glass and other penetrations prior to the application of a primer and / or a waterproofing system.

Limitations

Sealant may be applied only when the ambient temperature is 41 ºF (5 ºC) to 95 ºF (35 ºC), and the substrate temperature is a minimum of 5º above the dew point.

Yield

1/4" Wide Joint: 26 lf/cartridge
1/2" Wide Joint: 13 lf/cartridge

Note: All yields are approximate and may vary depending upon usage and depth of joint.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 50 ºF (10 ºC) or above 77 ºF (25 ºC). Approx. shelf life 12 months with proper storage.

Precautions

Review Safety Data Sheets before handling, available online at www.kempersystem.net.

Surface Preparation

All surfaces must be free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, lacquers, or any other condition that would be detrimental to adhesion of the sealant.

Note: Prior to opening the containers of KEMPERTEC® Joint Sealant, wear appropriate safety glasses and protect hands and wrists by wearing gauntlet-type neoprene gloves. .

Application

Remove the aluminum cover at the end of the cartridge. Puncture a hole at the top, screw on the plastic nozzle and cut off the tip to generate a desired bead diameter. Insert cartridge into a manual or pneumatic caulking gun. Apply sealant to completely fill the joint or transition. Strike flush with a putty knife. In applications in excess of ½" deep – use a backer rod. Sealant to be tack-free prior to the application of a primer and/or waterproofing system, approximately 2.5 hours. Equipment may be cleaned with mineral spirits while the sealant is still wet.

Disposal

Cured KEMPERTEC® Joint Sealant may be disposed of in standard landfills. This is accomplished by allowing unused sealant to fully cure. Uncured Joint Sealant is considered a hazardous material and must be handled as such in accordance with local, state and federal regulations. Do not throw uncured resin away.

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Sustainability Information	
Bio-Based Material	0%
Recycled Content % (post / pre)	0 / 0
Manufacture Location	Germany

Sealant Properties		
Physical Property	**Test Method**	**Values**
Color		Gray
Physical State		Cures To Solid
VOC Content		78 g/l
Hardness	C661	>40
Elongation	D412	600%
Tensile Strength	D412	319 psi
Tear Strength		45 pli
Skin Time*		25 Mins
Tack-Free Time*		2.5 Hours
Primer / Waterproofing Application*		2.5 Hours
Full Cure After*		24 Hours
Temperature Resistance	194 °F	-40 °F (-40 °C) to 194 °F (90 °C)
** values obtained at 73°F, 50% relative humidity, may vary depending upon air flow, humidity and temperature.*		

Ordering Information

KEMPERTEC® Joint Sealant

Item #:	Size:
510-10-002	10.5 fl oz (310 ml) • 12 cartridges / carton

KEMPER SYSTEM

Technical Data Sheet

KEMPERTEC® KLEAN

Product Description

KEMPERTEC® KLEAN is a solvent-free, VOC free and biodegradable membrane cleaner for all KEMPEROL® cold liquid-applied membranes. KEMPERTEC® Klean utilizes green chemicals listed in EPA's safer choice chemical listing.

Composition & Materials

Water-based, non-acidic, non-corrosive, surfactant cleaner.

Use

KEMPERTEC® Klean membrane cleaner can be used as part of a roof maintenance program for KEMPEROL® Roofs. Keeping the membrane clean maintains maximum reflectivity and its associated energy conservation benefits. KEMPERTEC® Klean removes grease, dirt and rust from the surface of the membrane without causing damage and impacting the integrity of the material.

Limitations

Thoroughly rinse the cleaner off the membrane after cleaning process.

Yield

Rates may vary, but approximately 200 - 400 ft² (19 - 37 m²) per gallon. Usage rate may depend on the contamination and the amount of dirt/debris on the surface of the membrane.

Storage

Always store in cool and dry location. Do not store in direct sunlight or in temperatures below 35 ºF (15 ºC) or above 80 ºF (25 ºC). Approx. shelf life 5 years with proper storage.

Precautions

Review Safety Data Sheets before handling, available online at: www.kempersystem.net

Where the run-off may come in contact with exterior facades, test a small area to make sure there are no deleterious effects to the façade from the cleaning solution.

Be sure to make accommodations for the run-off cleaning solution to avoid damage to plants and contamination of ground water. Always comply with all local, state, and federal requirements for water run-off.

Application

Step 1: Remove any loose debris with a broom from the area to be cleaned.

Step 2: Apply KEMPERTEC® Klean to a 10 – 15 ft² area and allow it to sit for approximately 5 mins, but do not allow it to dry.

Step 3: Scrub the area with a soft-bristled, long-handled brush or floor broom.

Step 4: Thoroughly rinse the area with water, a low pressure washer may be used, not to exceed 1,200 psi. Avoid walking on surfaces where the cleaning solution has not been rinsed away.

Note: Proper maintenance and cleaning should be offered to a building owner after every installation to help extend the life of their investment.

Ordering Information

KEMPERTEC® KLEAN Work pack:

Item#	Size:
KK-1G	1.0 US GAL (3.78L)
KK-5G	5.0 US GAL (18.93L)

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KEMPER SYSTEM

Product Information

Kempertec Asphalt Cold Adhesive

Asphaltic Based, Cold Process Adhesive for SBS Membranes

Product Description

Kempertec Asphalt Cold Adhesive is a cold-applied, single component, asphaltic based adhesive specially formulated for adhering Kemperol SBS modified bitumen membranes. The adhesive has flexible cohesive characteristics and eliminates the need for kettles and torches. Asbestos free – 100% recycled cellulose fibers.

Use

Kempertec Asphalt Cold Adhesive is the only acceptable adhesive to adhere Kemperol SBS modified bitumen base and cap sheet membranes. Apply by spray or notched squeegee to approved substrates then adhere Kemperol modified bitumen membranes per specification. The adhesive can be used to bond gravel and mineral granules to BUR roof systems and modified cap sheets. Not recommended for use with thermoplastic or thermoset membranes.

Yield

1.5 - 2.0 gal/100 s.f. (.06 - .08 L/m2). Coverage may vary with absorption rate.

Storage

Store pails in a well-ventilated area far away from any heat source. Shelf life is 18 months from date of manufacture.

Product Information

Sustainability Information	
Rapidly renewable resource	n/a
Recycled content % (post / pre)	n/a / 13.3
Manufacture location	Mississippi

Adhesive Properties		
Physical Properties	**Test Value**	**Test Procedure**
Weight/gal (lb)	9.5	ASDM D2939
Solids Weight (%)	>80	ADM D1644
Flash Point (° F)	>105	PMCC
VOC (gm/L)	<250	Calculated
Viscosity - DSR	18,000 cps.	Shear 5/sec, 25 C,1mm gap
Lap Shear Adhesion	45	ASTM D3019, Type III

Surface Preparation

1. Surfaces to receive coating must be clean, dry and free from any foreign matter such as dirt,oils, grease or other debris that could inhibit adhesion.
2. Kempertec Asphalt Primer is to be applied on appropriate substrates. Allow primer to dry priorto application of Kempertec Asphalt Cold Adhesive.
3. On recoveries, inspect the existing roof substrate for blisters, buckles, and raised edges. Checkall flashings, edges, drains, valleys and vents. Repairs should be made as needed prior to the application.
4. Do not use on wet or damp surfaces, directly over wood or on surfaces previously covered with coal tar based products.

Application

1. Do not apply if inclement weather is expected within 24 hours.
2. Do not use with organic saturated felts.
3. Do not use on TPO, EPDM, PVC, or other single ply membranes.
4. Not to be installed over or under polystyrene insulation.
5. Not recommended for applications on substartes that exceed 140 °F.
6. Close air intakes on roof until the solvent dissipates.
7. The Kemperol SBS membranes may be installed over the approved substrates in acontinuous layer of adhesive in lieu of heat welding. The Kempertec Asphalt Cold Adhesive shall be applied by spray or notched squeegee in a uniform layer at an approximate rate of 1.5 - 2 gallons per 100 s.f. (0.6 - 0.8 L/m2). Coverage rate may vary depending on ambient temperature, surface porosity, as well as applicator and/or application technique. Apply adhesive in 35° F and rising ambient temperature. Store the product at room temperature for 24 hours prior to application.
8. Apply the Kemperol SBS base sheet membrane into the adhesive layer within 15 minutes of the adhesive application. Ensure the membrane was allowed to relax and re-rolled. Make sure the

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membrane is lying flat and making full contact with adhesive. Roll all side and end laps making sure sufficient amount of adhesive is applied so that a bead is visible at all lap edges.

9. For two layer applications, after installing the base sheet, wait 3 to 7 hours to allow adhesive to set before installing the SBS Cap membrane.
10. The adhesive may be used on slopes up to 1.5”/ft, greater slopes will require back-nailing.

Disposal

Use all product before discarding empty container. Uncured Kempertec Asphalt Cold Adhesive must be handled accordance with local, state and federal regulations.

Ordering Information

Kempertec Asphalt Cold Adhesive

Item#:	Size:
KMB-CAA-5	4.75 gal GAL (18 L); 36 pails/pallet, approx. 1,686 lbs (764.76 kg)

KEMPER SYSTEM

Product Information

Kempertec Asphalt Primer

Asphalt Primer

Product Description

Kempertec Asphalt Primer is a general purpose, single component, asphalt primer to promote adhesion of the Kemperol Modified Bitumen membranes to approved substrates.

Use

Kempertec Asphalt Primer is used for hot-mopped, cold-applied, and self-adhered membrane applications. The primer may be used for damp proofing on below grade walls.

Yield

0.5 gal/100 s.f. Coverage may vary with absorption rate.

Storage

Store pails in a well-ventilated area far away from any heat source. Shelf life is 24 months from date of manufacture.

Product Information

Sustainability Information	
Rapidly renewable resource	n/a
Recycled content % (post / pre)	n/a / 13.3
Manufacture location	Mississippi

Adhesive Properties		
Physical Properties	**Test Value**	**Test Procedure**
Weight/gal (lb)	7.5	ASDM D1475
Flash Point (° F)	>105	PMCC
VOC (gm/L)	<350	Calculated

Surface Preparation

1. Surfaces to receive primer must be clean, dry and free from any foreign matter such as dirt, oils, grease or other debris that could inhibit adhesion.
2. On recoveries, inspect the existing roof substrate for blisters, buckles, and raised edges. Check all flashings, edges, drains, valleys and vents. Repairs should be made as needed prior to the application.
3. Do Not use on wet or damp surfaces, on surfaces previously covered with coal tar based products, or Kynar® finishes.

Application

1. Do not apply if inclement weather is expected within 24 hours.
2. Do not heat with an open flame.
3. Not recommended for applications on substartes that exceed 140 °F.
4. Mix well prior to application.
5. Kempertec Asphalt Primer may be applied with a high pressure spray or roller.
6. Avoid applying the product too thick.
7. The Kempertec Asphalt primer can be applied by a high pressure spray or roller in a uniform layer at an approximate rate of 0.5 gallons per 100 s.f. Coverage rate may vary depending on ambient temperature, surface porosity, as well as applicator and/or application technique. Apply adhesive in 45 °F and rising ambient temperature. Store the product at room temperature for 24 hours prior to application.
8. Wait 2 to 8 hours to allow primer to set before installing other products over it.

Disposal

Use all product before discarding empty container. Uncured Kempertec Asphalt Primer must be handled accordance with local, state and federal regulations.

Ordering Information

Kempertec Asphalt Primer

Item#:	Size:
KMB-AP-5	4.75 US GAL (18 L); 36 pails/pallet, approx. 1,542 lbs (699.44 kg)

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KEMPER SYSTEM

Product Information

Kemperol SBS Base Torch

SBS Modified Bitumen Fiberglass Reinforced Base Sheet

FM APPROVED

CLASSIFIED C UL US

Product Description

Kemperol SBS Base Torch is a high quality 2.4 mm (94 mil) Styrene-Butadiene-Styrene (SBS) modified bitumen asphalt roofing membrane. The membrane is reinforced with a fiberglass mat to provide strength and superior dimensional stability. The membrane is coated with asphaltic bitumen and SBS elastomers for durability, flexibility and ease of maintenance. The top surface is sanded and the bottom has a factory applied burn-off film.

Use

Kemperol SBS Base Torch sheet is a base ply or interply membrane for mechanically attached, hot asphalt, or heat-welded applications. Must be covered with a Kemperol SBS Cap Sheet.

Yield

1.5 square roll - 161ft^2 (1.5 m^2) net coverage

Storage

Rolls shall be stored on end on raised platforms and protected from the weather. Store rolls in a well-ventilated area far away from any heat source.

Product Information

Sustainability Information	
Rapidly renewable resource	n/a
Recycled content % (post / pre)	n/a / 13.3
Manufacture location	Texas

Membrane Properties		
Physical Properties	**Temp**	**Values MD/XMD**
Tensile Strength	0 °F 73 °F	120 / 110 lbf/in 97 / 67 lbf/in
Enlongation	0 °F 73 °F	4% 3%
Ultimate Elongation	73 °F	5 / 7
Tear Resistance	73 °F	105 / 75 lbf
Cold Flex	0 °F	0 °F (-18 °C)
Dimensional Stability [max]		<0.2%
High Temp. Stability [max]	250 °F	Pass

Test Method: ASTM D 5147

Application

1. Apply over clean, dry, dust and debris-free substrates. Prime concrete decks prior to application with Kempertec Asphalt Primer.
2. Install the Kemperol SBS Base Torch sheet membrane by shingling from the low point on the roof or by strapping with the slope of the roof deck.
3. Unroll the material and allow to relax then re-roll the membrane once relaxed.
4. The Base sheet membrane shall be installed by torch applying the polyethylene burn-off film. Install with traditional torch roofing techniques ensuring proper heating of the roofing material. Do not overheat to expose or compromise the reinforcement.
5. Position successive rolls providing a minimum 6" end lap and 3" side lap. Bleed out of SBS asphalt should be 1/8" to 1/4" at all seams.
6. Laps may be lightly rolled with a minimum 20 lb., 4" to 6" wide, steel roller, roller to ensure lap is fused.
7. Details and flashings are to be done with the Kemperol cold liquid-applied, fully reinforced membranes.

Disposal

Kemperol SBS Base Torch sheet may be disposed of in standard landfills.

Certifications

ASTM D6163, Type 1, Grade S

Ordering Information

Kemperol SBS Base Torch

Item#:	Item Description:
KMB-SBS-T2	1.5 square roll, 20 rolls/pallet; Approx. 1,900 lbs (860 kg)

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KEMPER SYSTEM

Product Information

Kemperol SBS Cap

SBS Modified Bitumen Polyester Reinforced Granulated Cap Sheet

FM APPROVED

CLASSIFIED C UL US

Product Description

Kemperol SBS Cap is a high quality 3.0 mm (120 mils) granule surfaced Styrene Butadiene Styrene (SBS) modified bitumen asphalt roofing membrane. The membrane is reinforced with a non-woven polyester mat and fiberglass strands for enhanced dimensional stability, high tear strength and puncture resistance. The SBS asphalts and product composition offer long-term dimensional stability and flexibility. Standard granule color is white. Cap sheet is available with a sand backed finish for adhered applications or a burn-off polyethylene film for heat welded applications.

Use

Kemperol SBS Cap sheet is intended for new roofing and recover applications. Intended as the top layer in a multi-ply assembly, or beneath the Kemperol cold liquid-applied, fully reinforced membrane system. The membrane is free of granules along the selvage edge.

Yield

1 square roll - 100ft^2 (9.3m^2) net coverage; Roll size: 39′ 3/8″ x 32′ 9″ (1m x 10m)

Storage

Rolls shall be stored on end on raised platforms and protected from the weather. Store rolls in a well-ventilated area far away from any heat source.

Product Information

Sustainability Information	
Rapidly renewable resource	n/a
Recycled content % (post / pre) Torch Mop	 11.9% / N/A 2.9% / 16.7%
Manufacture location	Texas

Membrane Properties		
Physical Properties	**Temp**	**Values MD/XMD**
Tensile Strength	0 °F 73 °F	114 / 99 lbf/in 103 / 74 lbf/in
Enlongation	0 °F 73 °F	45 / 59% 54 / 61%
Ultimate Elongation	73 °F	57 / 68%
Tear Resistance	73 °F	115 / 92 lbf
Cold Flex	0 °F	0°F (-18 °C)
Dimensional Stability [max]		<0.2%
High Temp. Stability [max]	250 °F	Pass

Test Method: ASTM D 5147

Application

1. Apply over clean, dry, dust and debris-free substrates. Prime concrete decks prior to application with Kempertec Asphalt Primer.
2. Install the Kemperol SBS Cap sheet from the low point on the roof. When applying over a base ply, install in the same direction by shingling or by strapping with the slope of the roof deck.
3. Unroll the material and allow to relax then re-roll the membrane once relaxed.
4. The sand backed Cap sheet shall be installed by mopping a solid layer of Type III or Type IV asphalt or Kempertec Asphalt Cold Adhesive at a minimum rate of 1.5 gal/square. The polyethylene film backed sheet shall be torch applied. Install with traditional torch roofing techniques ensuring proper heating of the roofing material. Do not overheat to expose or compromise the reinforcement.
5. Position successive rolls providing a minimum 6″ end lap and 3″ side lap. Bleed out of SBS asphalt should be 1/8″ to 1/4″ at all seams. Embed matching granules prior to making the end lap seam.
6. Kempertec Asphalt Cold Adhesive shall not be applied to lap and seam areas.
7. Details and flashings are to be done with the Kemperol cold liquid-applied, fully reinforced membranes.
8. Being the exposed roofing surface, protect completed areas and minimize roof traffic to prevent discoloration and other construction damage. Stage roofing work and work by other trades accordingly.

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Disposal

Kemperol SBS Cap may be disposed of in standard landfills.

Certifications

ASTM D6164 Type I, Grade S

Ordering Information

Kemperol SBS Cap Torch

Item#:	Item Description:
KMB-SCS-T1	1 square roll, 20 rolls/pallet; Approx. 1,800 lbs (820 kg)

Kemperol SBS Cap Mop

Item#:	Item Description:
KMB-SCS-M1	1 square roll; 20 rolls/pallet; Approx. 1,760 lbs (800 kg)

KEMPER SYSTEM

Product Information

Kemperol SBS Cap FR (Ultra White)

SBS Modified Bitumen Polyester Reinforced Granulated Cap Sheet

FM APPROVED

CLASSIFIED C UL US

Product Description

Kemperol SBS Cap FR (Ultra White) is a high quality fire-resistant, 4.2 mm (166 mils) (Torch Applied) / 4.3 mm (166 mils) (Mop Applied) Styrene Butadiene Styrene (SBS) modified bitumen asphalt roofing membrane with highly reflective granules. The membrane is reinforced with a non-woven polyester mat and fiberglass strands for enhanced dimensional stability, high tear strength and puncture resistance. The SBS asphalts and product composition offer long-term dimensional stability and flexibility. Granule color is a reflective Ultra White. Cap sheet is available with a sand backed finish for adhered applications or a burn-off polyethylene film for heat welded applications.

Use

Kemperol SBS Cap FR (Ultra White) sheet is heat-welded for new roofing and recover applications. Intended as the top layer in a multi-ply assembly, or beneath the Kemperol cold liquid-applied, fully reinforced membrane system. The membrane is free of granules along the selvage edge.

Yield

1 square roll - 100ft^2 (9.3m^2) net coverage; Roll size: 39′ 3/8″ x 32′ 9″ (1m x 10m)

Storage

Rolls shall be stored on end on raised platforms and protected from the weather. Store rolls in a well-ventilated area far away from any heat source.

Product Information

Sustainability Information	
Rapidly renewable resource	n/a
Recycled content % (post / pre)	
Torch	2.4% / N/A
Mop	2.4% / 6.4%
Manufacture location	Texas

Membrane Properties		
Physical Properties	**Temp**	**Values MD/XMD**
Tensile Strength	0 °F 73 °F	118 / 97 lbf/in 105 / 78 lbf/in
Enlongation	0 °F 73 °F	30 / 26% 55 / 57%
Ultimate Elongation	73 °F	57 / 68%
Tear Resistance	73 °F	116 / 92 lbf
Cold Flex	0 °F	0 °F (-18 °C)
Dimensional Stability [max]		<0.2%
High Temp. Stability [max]	250 °F	Pass
Granule Embedment		1.3 g/m² avg. loss
Solar Reflectance Information:	Initial	3-Year Aged
Solar Reflectance	0.84	0.57
Thermal Emittance	0.90	0.91
Solar Reflectance Index	106	68

Test Method: ASTM D 5147

Application

1. Apply over clean, dry, dust and debris-free substrates. Prime concrete decks prior to application with Kempertec Asphalt Primer.
2. Install the Kemperol SBS Cap FR (Ultra White) membrane from the low point on the roof. When applying over a base ply, install in the same direction by shingling or by strapping with the slope of the roof deck.
3. Unroll the material and allow to relax then re-roll the membrane once relaxed.
4. The sand backed Cap sheet membrane shall be installed by mopping a solid layer of Type III or Type IV asphalt or Kempertec Asphalt Cold Adhesive at a minimum rate of 1.5 gal/square. The polyethylene film backed sheet shall be torch applied. Install with traditional torch roofing techniques ensuring proper heating of the roofing material. Do not overheat to expose or compromise the reinforcement.
5. Position successive rolls providing a minimum 6″ end lap and 3″ side lap. Bleed out of SBS asphalt should be 1/8″ to 1/4″ at all seams. Embed matching granules prior to making the end lap seam.

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Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

6. Kempertec Asphalt Cold Adhesive shall not be applied to lap and seam areas.
7. Details and flashings are to be done with the Kemperol cold liquid-applied, fully reinforced membranes.
8. Being the exposed roofing surface, protect completed areas and minimize roof traffic to prevent discoloration and other construction damage. Stage roofing work and work by other trades accordingly.

Disposal

Kemperol SBS Cap FR (Ultra White) may be disposed of in standard landfills.

Certifications

ASTM D6164 Type I

Ordering Information

Kemperol SBS Torch FR (Ultra White)

Item#:	Item Description:
KMB-SCS-TFRW	1 square roll, 20 rolls/pallet; Approx. 2,100 lbs (960 kg)

Kemperol SBS Mop FR (Ultra White)

Item#:	Item Description:
KMB-SCS-MFRW	1 square roll; 20 rolls/pallet; Approx. 2,100 lbs (960 kg)

KEMPER SYSTEM

Product Information

Kemperol SBS Cap SA

SBS Modified Bitumen Fiberglass Reinforced Self-Adhered Granulated Cap Sheet

FM APPROVED

CLASSIFIED C UL US

Product Description

Kemperol SBS Cap SA is a high quality 3.0 mm (120 mil) self-adhered granule surfaced Styrene Butadiene Styrene (SBS) modified bitumen asphalt roofing membrane. The membrane is reinforced with a fiberglass mat reinforcement. The SBS asphalts and product composition offer long-term dimensional stability and flexibility. Standard granule color is white. The bottom surfaces of the cap sheet contains a proprietary self-adhesive compound.

Use

Kemperol SBS Cap SA sheet provides a cleaner application, improved application speed and removes the need for torches, hot asphalt or bonding adhesives on the job site. Intended as the top layer in a multi-ply assembly, or beneath the Kemperol cold liquid-applied, fully reinforced membrane system. The membrane is free of granules along the selvage edge.

Yield

1 square roll - 100ft^2 (9.3 m^2) net coverage

Storage

Rolls shall be stored on end on raised platforms and protected from the weather. Store rolls in a well-ventilated area far away from any heat source.

Product Information

Sustainability Information	
Rapidly renewable resource	n/a
Recycled content % (post / pre)	n/a / n/a
Manufacture location	Texas

Membrane Properties		
Physical Properties	**Temp**	**Values MD/XMD**
Tensile Strength	0 °F 73 °F	ND 65 / 55 lbf/in
Enlongation	0 °F 73 °F	3% / 3% 3% / 3%
Ultimate Elongation	73 °F	>50%
Tear Resistance	73 °F	>50%
Cold Flex	0 °F	0 °F (-18 °C)
Dimensional Stability [max]		0.1 / 0.5%
High Temp. Stability [max]	250 °F	Pass
Adhesion to Plywood	40 °F 75 °F	6 lbs/ft 28 lbs/ft

Test Method: ASTM D 5147

Application

1. Apply Kemperol SBS Cap SA membrane only in dry weather and when air and surface temperature are between 50°F (10°C) and 100°F (38°C), best results are achieved at temperatures of 75°F (24°C).
2. Apply over clean, dry, dust and debris-free substrates. Prime concrete decks prior to application with Kempertec Asphalt Primer.
3. Install the Kemperol SBS Cap SA membrane from the low point on the roof. When applying over a base ply, install in the same direction by shingling or by strapping with the slope of the roof deck.
4. Unroll the material and allow to relax then re-roll the membrane once relaxed.
5. Start by removing the first 12-18" of release film and press the membrane into place with firm and even pressure. Roll the edges with a silicone hand roller to ensure complete adhesion.
6. Gradually remove the remaining release film applying pressure from the center to the edges as you go.
7. Position successive rolls providing a minimum 5" end lap and 3" granule free side lap.
8. After installation of the entire roof surface, roll with an 80# split-face linoleum roller. Take care on sloped roofs by securing the roller and applicator with the appropriate safety equipment.
9. Details and flashings are to be done with the Kemperol cold liquid-applied, fully reinforced membranes.

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Disposal

Kemperol SBS Cap SA may be disposed of in standard landfills.

Certifications

ASTM 6163 Type I, Grade G

Ordering Information

Kemperol SBS Cap SA

Item#:	Item Description:
KMB-SCS-SA1	1 square roll, 25 rolls/pallet; Approx. 1,875 lbs (850 kg)

Guide Specifications

THE MASTER GUIDE SPECIFICATION CONTAINED IN THIS MANUAL PROVIDES AN OVERVIEW OF KEMPER SYSTEM AMERICA, INC. SPECIFICATION INFORMATION.

KEMPER SYSTEM AMERICA, INC. 3-PART GUIDE SPECIFICATIONS INTENDED FOR SPECIFIC TYPES OF APPLICATIONS ARE AVAILABLE IN EDITABLE MICROSOFT WORD FORMAT THROUGH THE KEMPERSYSTEM.NET WEBSITE AND THE ARCAT.COM, THE FREE ONLINE PRODUCT LIBRARY WEBSITE.

FOR ADDITIONAL ASSISTNACE CONTACT YOUR LOCAL KEMPER SYSTEM AMERICA, INC. REPRESNTATIVE ON OUR WEBSITE OR BY CALLING 800-541-5455.

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Guide Specifications

KEMPEROL® 2K-PUR ROOFING & WATERPROOFING SYSTEM MASTER GUIDE SPECIFICATION

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

A. The following specification outlines the requirements for a fully reinforced cold liquid-applied polyurethane resin roofing, waterproofing and flashing membrane system, and all other ancillary waterproofing work including but not limited to installation of insulation, cover boards, overburden, sealants and metal work as specified.

1.2 SECTION INCLUDES

A. Adhered fully reinforced, cold liquid-applied, polyurethane resin waterproofing membrane system including membrane, penetration flashings, base flashings, and expansion joints.
B. Substrate preparation, cleaning, leveling and patching
C. Insulation/cover board/cap sheet installation
D. Temporary waterproofing and priming
E. Waterproofing membrane installation
F. Flashing installation and expansion joint installation
G. Protective surfacing
H. Alkalinity protection
I. Preparation for overburden installation

1.3 RELATED SECTIONS

A. Supplementary General Conditions
B. Basic Requirements
C. Wood Blocking and Nailers
D. Sheet Metal Flashing and Trim
E. Overburden Installation

1.4 REFERENCES

A. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
B. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants
D. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
E. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
F. ASTM D 312 - Standard Specification for Asphalt Used in Roofing
G. ASTM D 471 - Standard Test Method for Rubber Property—Effect of Liquids
H. ASTM D 570 - Standard Test Method for Water Absorption of Plastics
I. ASTM D 751 - Standard Test Methods for Coated Fabrics
J. ASTM D 1204 - Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
K. ASTM D 2240 - Standard Test Method for Rubber Property—Durometer Hardness
L. ASTM – D 4259 - Standard Practice for Abrading Concrete
M. ASTM D 5147 - Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material
N. ASTM D 6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements
O. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
P. ASTM D 6222 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements

Q. ASTM E 96 - Tests for Water Vapor Transmission of Materials in Sheet Form
R. ASTM F 1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
S. ASTM 2420 – Standard Test Method for Determining Relative Humidity on the Surface of Concrete Floors Slabs using Relative Humidity Probe Measurement and Insulated Hood
T. APA PS-1 - Structural Plywood
U. FTMS 101-2031 – Puncture Test.
V. ACI-308 - Recommended Practice for Curing Concrete
W. FM – FM Approvals Guide
X. FM Loss Prevention Bulletin 1-49
Y. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
Z. Steel Structures Painting Council (SSPC) – SP3, Power Tool Cleaning.
AA. SMACNA - Architectural Sheet Metal Manual

1.5 SUBMITTALS FOR REVIEW

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Safety Data Sheets (SDS) for all components.

C. Shop Drawings: Show including plans and details of cold fluid-applied two-component polyurethane waterproofing membrane system including membrane, penetration flashings, base flashings, and expansion joints size, flashing details, and attachment.

D. Verification Samples: For each product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, thickness, color, texture and surfacing.

E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

F. On Site Testing: Submit on site test reports of Substrate Moisture Content and Bond Strength test results as specified.

G. Closeout Submittals: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products system specified with a minimum of 20 years of documented experience with applications in the United States.

B. Installer Qualifications: Company specializing in performing the work of this section with a minimum of 3 years documented experience and approved by system manufacturer for warranted membrane installation.

C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress

D. Manufacturer's Field Service: Membrane manufacturer shall provide the services of a competent field representative on-site to provide the following inspections:
1. Job start inspection at the beginning of each phase of the project, to review special detailing conditions and substrate preparation.
2. Periodic in-progress inspections throughout duration of the project to evaluate membrane and flashing application.
3. Final punch-list inspection at the completion of each phase of the project prior to installation of any surfacing or overburden materials.
4. Warranty inspection to confirm completion of all punch list items, surfacing, and overburden application.

E. Source Limitations: Obtain all principal components of waterproofing system from a single manufacturer. Secondary products that are required shall be as recommended and approved in writing by the waterproofing system manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the manufacturer.

F. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Prepare and clean a 3 foot (0.9 m) by 3 foot (0.9 m) area of each substrate material type anticipated and located in areas designated by Architect.
   2. Test each area to verify that substrate preparation meets specified requirements. Tests shall include tensile bond strength and moisture content of substrate.
   3. Do not proceed with the work until test results and workmanship are approved by Architect.
   4. Rework mock-up area as required to produce acceptable work.
   5. Maintain mock-up for quality control during the progress of the remaining work.

G. Field Quality Control: Electronic Field Vector Mapping (EFVM) is required on the completed membrane prior to installation of overburden. EFVM testing shall be obtained through the membrane manufacturer and performed by International Leak Detection (ILD) or other approved independent testing company. Verify project compatibility with the membrane manufacture and ensure that all necessary components for the EFVM testing are included in the design. Notify the Architect of and conflicts prior to start of waterproofing work.

H. Field Quality Control Flood Test: A flood test of the completed membrane and flashing system shall be conducted prior to the installation of any overburden/surfacing. Test shall be of a 24 hr. minimum duration, and shall apply a water head of 2 inches over the entire application area. Any incidents of water entry shall be evaluated and all necessary repairs conducted, followed by an additional flood test until all repairs are completed successfully.

1.7 PRE-INSTALLATION MEETING

A. Convene a pre-roofing conference approximately two weeks before scheduled commencement of waterproofing system installation and associated work.

B. Require attendance of installers of substrate construction to receive waterproofing, installers of work in and around waterproofing which must precede or follow waterproofing work including mechanical and electrical penetration, equipment openings, subsequent finish work, and the Architect, Owner, and waterproofing system manufacturer's representative.

C. Objectives include:
   1. Review foreseeable methods and procedures related to waterproofing work, including set up and mobilization areas for stored material and work area.
   2. Tour representative areas of waterproofing substrates, inspect and discuss condition of substrate, penetrations and other preparatory work.
   3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
   4. Review waterproofing system requirements, Drawings, Specifications and other Contract Documents.
   5. Review and finalize schedule related to waterproofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
   6. Review required inspection, testing, certifying procedures.
   7. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
   8. Record conference including decisions and agreements reached. Furnish a copy of records to each party attending.

1.8 DELIVERY, STORAGE, AND PROTECTION

A. Store products in manufacturer's unopened packaging with labels intact until ready for installation.

B. Store materials off the ground or on pallets, under cover and in a cool, dry location, out of direct sunlight, in accordance with manufacturer's recommendations. Store roll goods horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. Do not use rolls that are wet, dirty or have damaged ends. Materials must be kept dry at all times.

C. Do not store materials in quantities that exceed design loads, damage substrate materials, hinder installation or drainage.

D. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.

E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

F. Maintain copies of all current SDS for all components on site. Provide personnel with appropriate safety data information and training as it relates to the specific chemical compounds to be utilized.

1.9 SEQUENCING

A. Apply waterproofing in a timely manner in conjunction with work of other trades. Coordinate with other trades to avoid traffic over or against completed membrane surfaces.

B. Coordinate with installation of drains as shown on Drawings, including flashing, and associated waterproofing work.

C. Field Quality Control:
   1. On-Site Substrate Testing of substrates shall be successfully completed prior to installation of roofing/ waterproofing membrane.
   2. Field Quality Control Tests of completed sections of waterproofing membrane shall be successfully completed before proceeding with protection layers and overburden. Schedule tests promptly to allow timely installation of protection layers.

1.10 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not apply roofing/waterproofing membrane during or with the threat of inclement weather.

C. Application of waterproofing membrane may proceed while air temperature is between 40 degrees F (5 degrees C) and 90 degrees F (30 degrees C) providing the substrate is a minimum of 5 degrees F above the dew point.

D. When ambient temperatures are at or expected to fall below 50 degrees F (10 degrees C), or reach 85 degrees F (30 degrees C) or higher, follow Membrane System Manufacturer's recommendations for weather related additives and application procedures.

E. Ensure that substrate materials are dry and free of contaminants. Do not commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the application of the materials.

F. Where required by the Architect, implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of 1 or a multiple of the following measures
   1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air.
   2. Sealing of doorways, windows, and skylights with duct tape and polyethylene sheeting to prevent leakage of air into the building.
   3. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local requirements in accordance with requirements of the Owner or his designated Representative. Provide enclosure(s) with mechanical air intake/ exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter
   4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority

1.11 WARRANTY

A. Manufacturer's Material Warranty: Provide [(5) (10)] year manufacturer's material only warranty under provisions of this section. This warranty provides for supply of membrane only, limited to amounts necessary to effect repairs necessitated solely by material defective in content and composition.

B. Manufacturer's Select Labor and Material Warranty: Provide [(10) (20)] year manufacturer's select warranty under provisions of this section. This warranty provides for cost of labor and materials required to address loss of watertightness, limited to amounts necessary to affect repairs necessitated by defective material,

with total expenditure limited to the original cost to the Owner of KEMPEROL materials.

C. Manufacturer's Premier Warranty: Provide [(10) (15) (20)] year manufacturer's premier warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").

D. Waterproofing Contractor's Warranty: Provide [(2) (5)] year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.

PART 2 PRODUCTS

2.1 PRODUCTS GENERAL

A. Materials shall be products of a single manufacturer or items specified that are standard with manufacturer of cold fluid-applied polyurethane liquid resin roofing and waterproofing membrane and flashing system. Provide primers and other secondary materials that are produced or are specifically recommended by manufacturer of membrane waterproofing system to ensure compatibility.

B. Membrane: Kemper System America's monolithic membrane is created in the field by combining the KEMPEROL® 2K-PUR two-part, cold fluid-applied reactive cure polyurethane resin with KEMPEROL® polyester reinforcing fleece. KEMPEROL® polyester reinforcing fleece is a 360 degree needle punched non-woven 165 g/m2 polyester reinforcing fleece, for a finished dry film membrane thickness of .080 inch nominal per ply.
   1. Physical Properties:

      a. Color: Gray-Green
      b. Physical state: Cures to solid
      c. Thickness: (165 fleece) 80 mils
      d. VOC in grams/liter: 6.0 g/l
      e. Peak Load @ break: 70 lbf CMD. 100 lbf MD, ASTM D 4073
      f. Elongation: 30 percent, ASTM D 5147
      g. Tearing strength: 60.0 lbs/in., ASTM D 4073
      h. Dimensional stability: 0.15 percent, ASTM D 1204
      i. Puncture resistance: 140 lbf, FTMS 101-2031
      j. Water absorption: Less than 3 percent, ASTM D 570
      k. Water vapor transmission: 0.08 perms, ASTM E 96
      l. Rapidly Renewable Resources: 80 percent
      m. Impact Resistance: Shore A 75 plus or minus 15, ASTM D 2240
      n. Crack spanning: 0.08 inch (2 mm)
      o. Usage time: After 30 minutes at 73 degrees F, 50 percent relative humidity.
      p. Rain Proof After: 2 hours at 73 degrees F, 50 percent relative humidity.
      q. Solid to walk on: After 24 hours at 73 degrees F, 50 percent relative humidity.
      r. Solid to drive on: After 48 hours at 73 degrees F, 50 percent relative humidity with rubber pneumatic tires.
      s. Surfacing: To be applied between 16-48 hours after application at 73 degrees F, 50 percent relative humidity.
      t. Apply overburden: After 2 days
      u. Completely hardened: After 3 days
      v. Short-term temperature resistance: 250 degrees C/482 degrees F.

C. Membrane Flashings: A composite of the same resin material as field membrane with 165 g/m^2 fleece reinforcement.

D. Substrate Primer and Resin Additives:
   1. Polyurethane Primer: Two-component, solvent-free polyurethane resin for use in improving adhesion of membrane to wood, metal and bituminous substrate surfaces, as provided by the following manufacturer:

      a. Kemper System's KEMPERTEC® D/R primer.

   2. Epoxy Primer: Two-component, solvent-free epoxy resin for use in improving adhesion of membrane to cementitious/masonry substrate surfaces, as provided by the following manufacturer:

      a. Kemper System's KEMPERTEC® EP/EP5 primer.

3. Cold Weather Additive: Additive specifically designed to accelerate the resin reaction time at ambient temperatures below 50ºF (10ºC). Accelerator to be used with cream resin Component A prior to mixing of multi-component resin, as provided by the following manufacturer:

   a. Kemper System's KEMPEROL® A 2K-PUR Accelerator.

E. Cap Sheet:
1. APP Cap Sheet: KEMPER APP CAP FR, Mineral-surfaced polyester-reinforced APP-modified bitumen cap sheet conforming to ASTM D 6222, suitable for torch application.
   a. Properties:
      1)Granule colors: White, Black
      2)Physical state: Granulated surface
      3)Nominal thickness: 4.1 mm (160 mils)
      4)Tensile strength (0 degrees F): 150 lbf CMD. 95 lbf MD, ASTM D 6222
      5)Tensile strength (77 degrees F): 100 lbf CMD. 75 lbf MD, ASTM D 6222
      6)Elongation (0 degrees F): 50 percent CMD. 40 percent MD, ASTM D 6222
      7)Elongation (77 degrees F): 85 percent CMD. 60 percent MD, ASTM D 6222
      8)Tear resistance (77 degrees F): 100 lbf CMD. 140 lbf MD, ASTM D 6222
      9)Cold flexibility: minus 30 degrees C, ASTM D 6222
2. SBS Cap Sheet: Mineral-surfaced fiberglass or polyester-reinforced SBS-modified bitumen cap sheet conforming to ASTM D 6163 (fiberglass) or ASTM D 6164 (polyester), suitable for torch, hot asphalt, or self- adhered application.

F. Insulation Cover Board:
1. Cement Roof Board: USG - SECUROCK Cement Board, high compressive strength, non-combustible, roof underlayment board consisting of aggregated Portland cement slurry with polymer-coated glass-fiber mesh, with the following characteristics:
   a. Board Weight: 2.4 lbs/sq.ft.
   b. Board Size: 48 by 48 inches and 48 by 96 inches
   c. Board Thickness: 1/2 inch
   d. Flexural Strength: > 750 psi, parallel, per ASTM C 947
   e. Compressive Strength: > 1000 psi nominal
   f. Flute Spannability: 12 inches, per ASTM E 661
   g. Permeance: 5.84 perms, per ASTM E 96
   h. Thermal Conductivity: R-value of 0.39 as determined by ASTM C 518
   i. Coefficient of thermal expansion: 4.5 by 106 per ASTM E 831
   j. Linear variation w change in moisture: < 0.07 percent maximum per ASTM D 1037
   k. Water absorption: < 15 percent maximum per ASTM C 473
   l. Mold resistance: 10 per ASTM D 3273
   m. Board Edges: Square

2. Polyisocyanurate Insulation Cover Board: Hunter Panels H-Shield HD, High compressive strength (100 psi) underlayment board with heavy-duty coated glass non-perforated facers with the following characteristics:
   a. Board Weight: 0.34 lb/sq. ft
   b. Board Size: 48 inches by 96 inches
   c. Board Thickness: 1/2 inch
   d. Thermal Conductivity: R-value of 2, ASTM C 518
   e. Board Edges: Square

3. Plywood Cover Board (APA-rated C-C Plugged): Exterior-grade plywood sheathing board, installed plugged side up, with the following characteristics:
   a. Board Weight: 2.1 lb/sq. ft
   b. Board Size: 48 by 48 inches
   c. Board Thickness: 5/8 inch
   d. Thermal Conductivity: R-value of 0.77 as determined by ASTM C 518
   e. Board Edges: Tongue and groove

G. Insulation:
1. Flat Foam Insulation Polyisocyanurate Insulation with Non-asphaltic Fiber Reinforced Facers (Hunter Panel - H-Shield): Meeting or exceeding the requirements for ASTM C 1289, Type II with the following characteristics:
   a. ASTM C 1289, Type II, Class 2:

1)Grade 2 (20 psi)
2)Grade 3 (25 psi)
b. Board Size:
1)48 by 48 inches
2)48 by 96 inches
c. Minimum Board Thickness: 1.5 inches.
d. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289
e. Board Edges: Square

2. Flat Foam Polyisocyanurate Insulation with Coated Glass Fiber Facers: Hunter Panels -H-Shield CG, 1.0 inch minimum thickness, with the following characteristics:
a. ASTM C 1289, Type II, Class 2:
1) Grade 2 (20 psi)
2) Grade 3 (25 psi)
b. Board Size:
1) 48 by 48 inches
2) 48 by 96 inches
c. Board Thickness: ___
d. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289.
e. Board Edges: Square

3. Tapered Polyisocyanurate Insulation with Non-Asphaltic Fiber Reinforced Facers: Hunter Panel-H-Shield, 1.0 inch minimum thickness, with the following characteristics:
a. ASTM C 1289, Type II, Class 1:
1) Grade 2 (20 psi)
2) Grade 3 (25 psi)
b. Board Size:
1) 48 by 48 inches
2) 48 by 96 inches
c. Total Thickness: As required to achieve an average R value of ___ for tapered insulation system.
d. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289
e. Board Edges: Square
f. Slope of tapered board shall be:
1) 1/16 inch (2 mm) per foot.
2) 1/8 inch (3 mm) per foot.
3) 3/16 inch (5 mm) per foot.
4) 1/4 inch (6 mm) per foot.
5) 3/8 inch (10 mm) per foot.
6) 1/2 inch (12.5 mm) per foot.
7) Slope as indicated on the Drawings

4. Tapered Polyisocyanurate Insulation with Coated Glass Fiber Facers: Hunter Panels-Tapered H-Shield, 1.0 inch minimum thickness, with the following characteristics:
a. ASTM C 1289, Type II, Class 2:
1) Grade 2 (20 psi)
2) Grade 3 (25 psi)
b. Board Density: 2.0 lb/cu ft
c. Board Size: 48 by 48 inches
d. Total Thickness: As required to achieve an average R value of ___ for tapered insulation system.
e. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289
f. Board Edges: Square
g. Slope of tapered board shall be:
1) 1/16 inch (2 mm) per foot.
2) 1/8 inch (3 mm) per foot.
3) 3/16 inch (5 mm) per foot.
4) 1/4 inch (6 mm) per foot.
5) 3/8 inch (10 mm) per foot.
6) 1/2 inch (12.5 mm) per foot.
7) Slope as indicated on the Drawings.

H. Insulation and Cover Board Securement:

1. Mechanical Fasteners: Trufast FM-approved corrosion resistant insulation fasteners of appropriate length with plates. Securement pattern shall be in accordance with specified wind uplift rating for system application. Roofing fasteners shall be a type approved by membrane and insulation manufacturer.
2. Foamable Adhesive: Millennium One Step Foamable Adhesive is a highly elastomeric, one-step, all-purpose, foamable adhesive that contains no solvents. It is designed for use as an adhesive for bonding approved roof insulation and cover board to a building's structural roof deck, base sheets, and smooth or properly prepared graveled built-up roof surfaces. Roofing adhesive shall be a type approved by membrane and insulation manufacturer.

I. Surfacings and Coatings:
1. Aggregate Finish Bonding Resin: Two-component polyurethane-based coating suitable for bonding aggregate, as follows: KEMPEROL® 2K-PUR Resin (without fleece).
2. Aggregate Finish Coating: Polyurethane-based clear coating suitable for use to both bond and/or seal aggregate, as follows:
   a. KEMPERDUR® DEKO Transparent
3. Aggregate Finish Coating: Colored coating suitable for use as bonding resin and/or aggregate sealing coating, as follows:
   a. KEMPERDUR® BSF-R Finish
   b. KEMPERDUR® Deko 2KS-FR Finish
4. Color Coating: Colored topcoat, as follows:
   a. KEMPERDUR® BSF-R Finish
   b. KEMPERDUR® Deko 2KS-FR Finish
   c. KEMPERDUR® Deko Finish, acceptable for submerged applications

J. Traffic-Bearing Aggregate Surfacing:
1. Coating: Three-component polyurethane-based resin with graded mineral filler, as follows: KEMPERDUR® TC Traffic Coating, Components A, B and C.
2. Sealer: Single component polyurethane-based clear sealer, as follows:
   a. KEMPERDUR® Finish Glossy
3. Sealer: Two component epoxy-based or polyurethane based colored sealer, as follows:
   a. KEMPERDUR® EP-FR Finish
   b. KEMPERDUR® 2KS-FR Finish
4. Horizontal Surfacing Profile Joint: Movement joint with integrated trapezoid-perforated anchoring legs, connected by a 7/16 inch (11 mm) wide replaceable thermoplastic rubber movement zone, which together form the visible surface.
   a. Product: Schluter DILEX-KSN or equal
   b. Anchoring Legs Material: Aluminum
      1) Height: 5/16 inch
      2) Width: 11/16 inch
   c. Movement zone color: Gray

2.2 ACCESSORIES

A. Solvent-Based Cleaner for Tools and Membrane Tie-Ins: Methyl Ethyl Ketone (MEK) or acetone.

B. Citrus-Based Cleaner for Membrane: KEMPERTEC® Klean.

C. Water-Based Cleaner for Membrane: Simple Green HD.

D. Aggregate Specification and Size: All surfacing aggregates shall be washed, kiln-dried, dust-free, suitable for broadcast, round grain or angular, and sized as follows:
1. KEMPEROL Mixing Sand (00) #35 (0.3 - 0.6 mm) for patching voids less than 1 inch.
2. KEMPEROL Surfacing Sand (0) #18 (0.5 - 1.2 mm) for patching voids from 1 to 2 inches or surfacing.
3. KEMPEROL Surfacing Sand (1) #14 (0.8 to 1.5 mm) for coarse surfacing.
4. KEMPEROL Ceramaquartz (30 mesh) (S Grade blend) for aesthetic color quartz finished surfacing.
5. Mixing Proportions shall be a ratio of resin to sand at 1:2 by volume for leveling, 1:4 by volume for patching, or as approved by membrane manufacturer.

E. Backer Rod: Expanded, closed-cell polyethylene foam designed for use with cold-applied joint sealant.

F. Joint Sealant:
1. Cover Board/Insulation: KEMPERTEC® Joint Sealant, single component, non-sag elastomeric polyurethane sealant for use in sealing joints, cracks, gaps, and transitions in cover boards, insulation and plywood.
2. Multipurpose Sealant: GreatSeal PE-150, a single component, polyether, multi-purpose sealant for use

above the roofing/waterproofing membrane, doors and windows, masonry, siding, concrete, and more. Can be applied on a damp surface and in cold weather. Bonds aggressively to wood, Modified Bitumen, asphalt, EPDM, PVC & PIB, vinyl, fiberglass, glass, painted, galvanized and anodized metals and Kynar finish.

G. Wood Nailers and Cant Strips: New wood nailers and cant strips shall be pressure treated for rot resistance using Wolmanized or Osmose K-33, #2 or better lumber. Asphaltic or creosote treated lumber is not acceptable.

H. Expansion Joints in Excess of 2 Inches: Provide flat, vulcanized waterproofing joint integral with the waterproofing membrane to accommodate movements over 2 inches (50 mm) and capable of 500 percent elongation at minus 40 degrees F (minus 40 degrees C) across its length and at all vulcanized points.
   1. Joint Material: SITURA INC. RedLINE.
   2. All connections factory fabricated by vulcanization.

2.4 PROTECTED MEMBRANE, PLAZA DECK, AND VEGETATED ROOF ASSEMBLIES

A. Tile Mortar Adhesive
   1. Latex/Polymer Modified Cementitious Mortar Adhesive: Portland cement-based mortar tile adhesive modified with liquid latex additive for improved adhesion and freeze-thaw resistance, as per ANSI A118.4, A118.5, or in accordance with ISO 13007.
   2. Epoxy Setting Mortar: Two-component, solvent-free epoxy resin tile adhesive for improved adhesion and freeze-thaw resistance, as per ANSI A118.3, A118.6, or in accordance with ISO 13007.

B. Drainage/Protection Board:
   1. Low and Bonar Enkadrain W 3601 entangled filament polypropylene core with nonwoven geotextile filtering fabric suitable for all overburden applications, with the following characteristics:
      a. Minimum Core Weight: 16 oz/sq.yd.
      b. Core Thickness: 0.30 in.
      c. Minimum Flow Rate: 9.7 gpm/ft @ 1000 psf, 1.0 gradient
   2. ZinCo/Drainage Mat PP11 high compressive strength dimpled polystyrene or polyethylene core with nonwoven geotextile filtering fabric suitable for use below Extruded Polystyrene Insulation, with the following characteristics:
      a. Compressive Strength: > 15,000 psf
      b. Material Core Weight: 0.4 oz/yd2
      c. Dimple Height: 0.4 in.
      d. Water Flow Rate: 140 gal/min./ft.2

C. Flat Overburden Insulation:
   1. Dow Chemical Company STYROAM Rigid extruded polystyrene board with natural skin surfaces; 2 inch minimum thickness:
      a. ASTM C 578 Type:
         1) Type VI: HIGHLOAD 40
         2) Type VII: HIGHLOAD 60
      b. Compressive Strength ASTM D 1621
         1) 40 PSI: HIGHLOAD 40
         2) 60 PSI: HIGHLOAD 60
      c. Board Size: __x__ inches
      d. Board Thickness: _____ inches
      e. Aged Thermal Resistance in Accordance with ASTM C518: R-5 per inch (RSI 0.87 per 25 mm).
      f. Board Edges: square

D. Tapered Overburden Insulation:
   1. Dow Chemical Company STYROAM DECKMATE Rigid extruded polystyrene board with natural skin surfaces; 2 inch minimum thickness.
      a. ASTM C 578 Type:
         1) Type VI: HIGHLOAD 40
         2) Type VII: HIGHLOAD 60
      b. Compressive Strength ASTM D 1621
         1) 40 PSI: HIGHLOAD 40
         2) 60 PSI: HIGHLOAD 60
      c. Board Size: __x__ inches
      d. Total Thickness: As required to achieve an average R value of ___ for tapered insulation system.
      e. Aged Thermal Resistance in Accordance with ASTM C 518: R-5 per inch (RSI 0.87 per 25 mm).

f. Board Edges: square
g. Slope of tapered board shall be a minimum 1/8 inch (3 mm) per foot or as designed by tapered fabricator.

E. Plaza Assembly Filter Fabric: Low & Bonar GEO 120, Non-woven polyester fabric, minimum 4.0 oz/sq.yd., for use under stone ballast, sand setting bed, and similar overburden; as supplied or approved by membrane manufacturer.

F. Precast Concrete Pavers
1. Concrete Pavers: Hanover Architectural Products, freeze-thaw resistant precast concrete pavers, minimum 2 inch thickness, with the following characteristics:
a. Compressive Strength: 8,500 psi average minimum ASTM C 140.
b. Flexural Strength: 1,100 psi average minimum ASTM C 293.
c. Water Absorption: 5 percent maximum ASTM C 140.
d. Freeze/Thaw: 1 percent maximum loss of dry weight, 50 cycles ASTM C 67.
e. Center Load: 1,750 lbs. average minimum WTCL 99.
f. Weight: 25 lbs./sq.ft. average minimum based on 2 inch thickness.
g. Dimensions: ___ by ___ inches
h. Style: _____
i. Color: _____
2. Hanover/Compensator Paver Pedestal System: Heavy-duty polyethylene pedestals specifically designed for use with specified precast concrete pavers. Provide with shim system or integral height adjustment mechanism. Provide with drainage channels within the pedestal base.

G. Separation Membrane: ZinCo USA, Inc.'s Separation Membrane TGV 21 specifically designed for use over XPS insulation suitable for landscaped applications with an overburden of water retention/drainage board and topping of soil or other growing media with extensive-type vegetation such as sedums and semi-intensive-type vegetation such as grasses and wildflowers.

H. Water Retention/Protection Board:
1. ZinCo USA, Inc.'s Floradrain FD 25 extensive Assembly Water Retention Board: Molded polyethylene core with water retaining troughs and openings for ventilation and evaporation, and multidirectional drainage channel system on the underside. Suitable for landscaped applications where a direct topping of soil or other growing media with extensive-type vegetation such as sedums will be planted.
2. ZinCo USA, Inc.'s Floradrain FD 40-E Semi-Intensive Assembly Water Retention Board: Molded polyethylene core with water retaining troughs and openings for ventilation and evaporation, and multidirectional drainage channel system on the underside. Suitable for landscaped applications where a direct topping of soil or other growing media with semi-intensive-type vegetation such as grasses and wildflowers will be planted.
3. ZinCo USA, Inc.'s Floradrain FD 60 Intensive Assembly Water Retention Board: Molded ABS core with water retaining troughs and openings for ventilation and evaporation, and multidirectional drainage channel system on the underside. Suitable for landscaped applications where a direct topping of soil or other growing media with intensive-type vegetation such as turf/lawn, bushes and small trees will be planted.
4. Low and Bonar EnkaRetain & Drain 3111 entangled filament polypropylene core with synthetic water absorbent mat and nonwoven geotextile filtering fabric suitable for all overburden applications, with the following characteristics:
a. Minimum Core Weight: 16 oz/sq.yd.
b. Core Thickness: 0.40 in.
c. Total Thickness: 0.60 in.
d. Water Storage Capacity: 0.11 gal/sf
e. Minimum Flow Rate: 23.0 gpm/ft @ 1000 psf, 1.0 gradient

I. Filter Layer:
1. ZinCo USA, Inc.'s Filter Sheet SF Landscaped Assembly Filter Layer: Non-rotting thermal consolidated polypropylene filter sheet installed over all water retention/drainage boards prior to application of soil or other growing media.
2. Plaza Assembly Filter Fabric: Non-woven polyester fabric, minimum 4.0 oz/sq.yd., for use under stone ballast, sand setting bed, and similar overburden; as supplied or approved by membrane manufacturer.

J. Growing Media
1. ZinCo USA, Inc.'s Zincoblend E Extensive-Type Growing Media: Special blend of recycled materials, mineral aggregate, and organic compost elements, intended for use with landscaped applications with extensive-type vegetation such as sedums, to be installed in a 3 inch thick bed.

2. ZinCo USA, Inc.'s Zincoblend I Intensive-Type Growing Media: Special blend of recycled materials, mineral aggregate, and organic compost elements, intended for use with landscaped applications with semi-intensive and intensive-type vegetation such as grasses, wildflowers, turf/lawn, bushes and small trees, to be installed in a 5 to 14 inch thick bed.
3. ZinCo USA, Inc.'s Zincoblend M Mineral Fill Base Media: Special blend of recycled materials and mineral aggregate, intended for use with landscaped applications with intensive-type vegetation such as turf/lawn, bushes and small trees, to be installed as a stabilizing infill within the Floradrain FD 60 prior to Filter Sheet SF installation, and as a base layer in areas where the fill thickness will exceed 14 inches.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared and conditions are suitable to proceed with the Work of this specification.
   1. Substrates shall be inspected and repaired as needed to provide a proper surface to receive waterproofing system.
   2. Verify substrate surface slopes to drain for horizontal waterproofing applications.
   3. Identify incompatible substrates, if any.

B. Verify substrate openings, curbs, and protrusions through deck/substrate, wood cant strips and reglets are in place and solidly set.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. General: Surfaces to be prepared as a substrate for the new roofing/waterproofing system as follows:
   1. Determine the condition of the existing structural deck/substrate. All defects in the deck or substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.
   2. Prepare flashing substrates as required for application of new waterproofing membrane flashings.
   3. Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.
   4. Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.
   5. Final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.

B. On-Site Substrate Testing: Perform tests at the beginning of the Work, and at intervals as required to assure specified substrate conditions with a minimum of 3 tests per 5000 SF area to be waterproofed. Smaller areas shall receive a minimum of 3 tests. Submit test results to the Architect promptly as they are completed. Notify the Architect immediately in the event the test results are below specified values. Do not begin application of waterproofing until acceptable conditions are achieved.
   1. Cementitious Substrates:
      a. Evaluate Surface moisture content by means of an Tramex Concrete Moisture Encounter Meter CME4 in accordance with ASTM F 2659. A surface moisture content of under 5 percent is required to allow for proper primer penetration into the substrate.
      b. Frothing, bubbling, or pinholes within the primer indicates excessive moisture content within the substrate, beneath the surface. Blistering of membrane may result from excessive substrate moisture. Primer application during late afternoon/early evening will reduce vapor pressure within the substrate and may alleviate these conditions.
      c. Continued frothing, bubbling, or pinholes indicates excessive moisture content that requires more substantial measures. Evaluate substrate moisture content by:
         1) Relative Humidity (RH) test in accordance with ASTM F 2420: Relative moisture content of 75 percent or greater indicates the need for more extensive substrate priming and sealing.
         2) Anhydrous Calcium Chloride Test in accordance with ASTM F 1869: Maximum result 3 lb / 1,000 ft2 of area per 24-hour period, greater values indicates the need for more extensive substrate priming and sealing
         3) Where results exceed the maximum acceptable reading contact Membrane Manufacturer for recommendations.
   2. Substrate Bond Strength:
      a. Evaluate bond strength by means of Elcometer Adhesion Tester Model 106 or similar device, or by

the performance of a manual pull test.
b. Tensile bond strength of membrane to substrate must be greater than or equal to 150 psi (1.0 N/mm2).
c. Adequate surface preparation will be indicated by 135 degree peel bond strength of membrane to substrate such that cohesive failure of substrate or membrane occurs before adhesive failure of membrane/ substrate interface.
d. In the event the bond strengths are less than the minimum specified, additional substrate preparation and testing is required. Repeat testing to verify suitability of substrate preparation.
e. Where results exceed the maximum acceptable reading contact Membrane Manufacturer for recommendations.

C. Existing Asphaltic Bituminous Waterproofing:
1. Remove existing flashings down to the structural substrate/penetration at all flashing areas.
2. Damaged/saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.
3. Smooth-surfaced membrane with applied coating shall have all loose coating removed, and an adhesion test performed by Waterproofing Manufacturer's Technical representative to confirm acceptable adhesion.
4. Granule-surfaced membrane shall have all loose granules removed from the surface by vacuuming and power brooming.
5. Gravel-surfaced membrane shall have all loose gravel removed and the roof surface thoroughly cleaned with all ridges and high points removed. A layer of coated glass-faced polyisocyanurate foam insulation with cementitious cover board shall be adhered in foam roof adhesive over the roof surface, or mechanically attached through the existing roof assembly into the structural deck.

D. Existing Coal Tar Pitch Bituminous Waterproofing:
1. Remove existing flashings down to the structural substrate/penetration at all flashing areas.
2. Damaged/saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.
3. Gravel-surfaced membrane shall have all loose gravel removed and the roof surface thoroughly cleaned with all ridges and high points removed. A layer of coated glass-faced polyisocyanurate foam insulation (R=20 min. or greater as required to prevent the pitch from reaching 85 degrees F) with cementitious cover board shall be adhered in foam roof adhesive over the roof surface.

E. Existing Polymeric Single Ply Waterproofing:
1. Remove existing flashings down to the structural substrate/penetration at all flashing areas.
2. Damaged/saturated areas of existing roofing membrane and underlying assembly shall be removed and replaced, or repaired in kind.
3. A layer of coated glass-faced polyisocyanurate foam insulation with cementitious cover board shall be adhered in foam roof adhesive over the roof surface, or mechanically attached through the existing roof assembly into the structural deck.

F. Structural Concrete:
1. New concrete shall be cured a minimum of 28 days in accordance with ACI-308.
2. Concrete shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, bituminous products and previous roofing/waterproofing materials.
3. Concrete shall have a maximum surface moisture content of 5 percent determined by periodic surface moisture testing during the work.
4. Concrete shall be abrasively cleaned in accordance with ASTM D 4259 to provide a sound substrate free from laitance. Achieve an open concrete surface in accordance with ICRI surface profiles CSP 3-5. When using mechanical methods to remove existing roofing/waterproofing products or surface deterioration, the surface profile is not to exceed 1/4 inch (peak to valley).
5. Substrate shall be sound and all spalls, voids and blow holes on vertical or horizontal surfaces must be repaired prior to placement of the primer coat. Spalls and other deterioration shall be repaired in accordance with the requirements of the Architect and Membrane manufacturer.
6. Areas of minor surface deterioration of 0.25 inch (6 mm) or greater in depth shall be repaired to prevent possible pooling of the liquid applied materials, leading to excessive usage of primer and resin.
7. Hollow-core panels, T-panels, and Twin-T panels shall have grouted joints between panels and shall be provided with mechanical securement from panel to panel.
8. For concrete materials with a compressive strength of less than 3,000 psi contact Roofing/waterproofing Manufacturer's Technical Department for substrate preparation requirements.

G. Masonry:

1. Masonry walls hard kiln dried brick or waterproof concrete block construction.
2. Areas of soft or scaling brick or concrete, faulty mortar joints, or walls with broken, damaged or leaking coping shall be repaired in accordance with the requirements of the Architect and Waterproofing Manufacturer.

H. Steel/Metal:
   1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3, Power Tool Cleaning, or as required by Waterproofing Manufacturer. Extend preparation a minimum of 1 inch beyond the termination of the membrane flashing materials.
   2. In addition to cleaning, all metal surfaces shall be abraded to provide a rough open surface. A wire brush finish is not acceptable.

I. Wood/Plywood: Plywood shall be identified with American Plywood Association (APA) grade trade marks and meet the requirements of Product Standard PS1.
   1. Fit plywood to all penetrations, projections, and nailers. Plywood shall be secured, with joints not greater than 1/4 inch. Fill all joints and gaps up to 1/2 inch with polyurethane joint sealant
   2. Strip all plywood joints with fleece reinforcement imbedded into the wet primer or resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.

J. Other Flashing Surfaces:
   1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by Architect and Roofing/waterproofing Manufacturer.

K. Finish Leveling, Patching and Crack Preparation:
   1. General: epoxy primer/sand mix is the preferred material for all concrete and masonry substrate finish leveling, crack and wall/deck preparation and patching. Epoxy primer/sand patching mix provides a set time of approximately twelve hours and does not require surface grinding when the membrane is applied within the appropriate recoat time. KEMPEROL primer/sand mix can be applied in conjunction with general surface priming.
   2. Concrete and Masonry Substrate Leveling and Patching: Substrate conditions are to be evaluated by the installer, the Architect, and Membrane manufacturer. Perform leveling and patching operations as follows:
      a. Level uneven surfaces with a leveling mixture of primer and approved kiln-dried silica sand in a 1:2 primer to sand ratio by volume. Spread and plane this compound with a squeegee and trowel to achieve a flat surface.
      b. Fill cavities with a patching mixture of primer and approved kiln-dried sand in a 1:4 primer to sand ratio by volume.
      c. Silica sand must be kept absolutely dry during storage and handling.
      d. Any surface to be leveled or filled must first be primed with an appropriate primer.
   3. Joint and Crack Preparation: Joints, cracks and fractures in the structural deck/ substrate shall be prepared prior to installation of the waterproofing membrane to prevent telegraphing through the waterproofing membrane.
      a. Non-Moving Cracks, Joints, and Voids: Clean out crack/ joint by brushing and oil-free compressed air. Fill crack/joint with polyurethane joint sealant. Voids require the installation of backer rod or other backing material prior to application of the polyurethane joint sealant. Allow to cure as required by joint sealant manufacturer.
      b. Moving Cracks: Clean out crack by brushing and oil-free compressed air. Fill crack with polyurethane joint sealant. Allow to cure as required by joint sealant manufacturer. Following full curing of primer, apply waterproofing resin and a 4 inch (10 cm) wide strip of membrane (resin and fleece) in strict accordance with Membrane manufacturer's written instructions.

3.3 WOOD NAILER INSTALLATION

A. Install pressure-treated wood nailers as specified, and as required by the Membrane manufacturer. Wood nailers are required to match the thickness of insulation and cover board, and are to be secured directly to the structural deck. Wood nailers shall be installed at all roof edges and on either side of expansion joints, as well as beneath any equipment flanges.

B. Secure Wood Nailer: Wood nailers shall be firmly fastened to the deck. The wood nailer attachment must be able to resist a minimum force of 200 lbs. per lineal foot, in any direction. Mechanically fasten wood nailers as required to resist a force of 200 lbs per lineal foot, but with no less than 5 fasteners per 8 foot or 6 fasteners per 10 foot length of nailer. Refer to current FM Loss Prevention Bulletin 1-49 for additional attachment recommendations.

3.4 CAP SHEET TEMPORARY WATERPROOFING/ VAPOR RETARDER INSTALLATION

A. Install mineral-surfaced cap sheet in accordance with sheet manufacturer's current published specifications and recommendations for use with adhered roofing.

1. Mineral Surfaced Cap Sheet Torch-Applied Attachment: Follow cap sheet manufacturer's recommendations for the appropriate application procedure. Roll each cap sheet into molten bitumen. Limit bitumen bleed-out at laps to 1/4" or less.

2. Mineral Surfaced Cap Sheet Solid-Adhered Attachment: Follow cap sheet manufacturer's recommendations for the appropriate asphalt application rate and application procedure. Roll each cap sheet into a full mopping of hot steep asphalt (Type III) at the recommended EVT range. Broom in the cap sheet to spread the roofing asphalt for maximum contact. Limit bitumen bleed-out at laps to 1/4" or less.

3. Mineral Surfaced Cap Sheet Self-Adhered Attachment: Follow cap sheet manufacturer's recommendations for the appropriate application procedure.

B. Neatly fit cap sheet to all penetrations, projections, curbs, and walls. Extend over all nailers. Cap sheet shall be overlapped a minimum of 3" for side laps and 6" for end laps. Seal at penetrations, projections, curbs and walls with urethane-based sealant.

3.5 INSULATION AND COVER BOARD INSTALLATION

A. Install insulation and cover board accordance with the manufacturer's current published specifications and recommendations for use with adhered roofing.
   1. Install only as much insulation and cover board as can be primed, sealed, and protected before the end of the day's work or before the onset of inclement weather.
   2. Fit insulation and cover board at all penetrations, projections, and nailers. Insulation shall be loosely butted, with joints not greater than 1/4 inch. All joints greater than 1/2 inch shall be filled with acceptable insulation. Cover board shall be loosely butted, with joints not greater than 1/4 inch. All joints from up to 1/2 inch shall be filled with polyurethane joint sealant.
   3. Strip all insulation and cover board joints with polyester fleece reinforcement imbedded into the wet primer or resin. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4 inch.
   4. Stagger multiple layers of insulation and cover board a minimum of 6 inches in each direction.
   5. Place boards perpendicular to steel deck flutes with edges over flute surface for bearing support. Edges shall be checked so that no edges are left substantially unsupported along the flutes.
   6. Insulation shall be feathered or tapered to provide a sump area a minimum of 36 inches by 36 inches where possible at all drains. Taper insulation around roof drains so as to provide proper slope for drainage. In areas where feathered or tapered insulation leaves insulation core exposed, cover with an appropriate cover board or base sheet/cap sheet assembly to provide a sound and smooth substrate surface.
   7. Place tapered thickness insulation to the required slope pattern in accordance with insulation manufacturer's instructions.

B. Mechanical Attachment: Mechanically attach insulation and cover board using fastener manufacturers' recommendations for the appropriate fastener and plate type, size and length. Reference FM approvals for fastening patterns to satisfy FM wind uplift requirements. As a minimum provide one fastener and plate per 2 square feet of insulation and cover board to be attached with: additional fasteners as required in the corner and perimeter regions of the roof.

C. Polyurethane Adhesive Attachment: Follow insulation, cover board and polyurethane adhesive manufacturers' recommendations for the appropriate adhesive application rate and application procedure. Under normal application rate, dispense the first bead 3 inches inside the outside edges of the insulation/ cover board to be attached, with sequential beads equidistant. Place the boards onto the roofing adhesive beads. Walk on the boards to spread the roofing adhesive for maximum contact. Periodically walk on the boards until firmly attached. Reference FM approvals for adhesive application patterns that satisfy FM wind uplift requirements. Typical application is a 3/4 inch bead of roofing adhesive at a rate of one lineal foot per square foot of insulation/cover board to be attached. Additional adhesive is required in the corner and perimeter regions of the roof. Secure insulation/cover board in accordance with approval requirements.

D. Foamable Adhesive Attachment: Follow insulation, cover board and foamable adhesive manufacturers' recommendations for the appropriate adhesive application rate and application procedure. Under normal application rate, dispense the first bead 3 inches inside the outside edges of the insulation/cover board to be attached, with sequential beads equidistant. Place the boards onto the roofing adhesive beads.

Walk on the boards to spread the roofing adhesive for maximum contact. Periodically walk on the boards until firmly attached. Reference FM approvals for adhesive application patterns that satisfy FM wind uplift requirements. Typical application is a 3/4 inch bead of roofing adhesive at a rate of one lineal foot per square foot of insulation/cover board to be attached. Additional adhesive is required in the corner and perimeter regions of the roof. Secure insulation/cover board in accordance with approval requirements.

3.6 PRIMER APPLICATION

A. General:

1. Mix and apply single and two-component primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane manufacturer.
2. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
3. Do not install primer on any substrate containing newly applied and/or active asphalt, coal-tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.

B. Mixing of KEMPERTEC® EP and KEMPERTEC® D Primers:

1. Premix primer Component A thoroughly with a spiral agitator.
2. Pour primer Component B into Component A and mix for approximately 2 minutes with a clean spiral agitator on low speed without creating any bubbles or streaks. Do not aerate.
3. Primer solution should be a uniform color, with no light or dark streaks present.
4. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.

C. Mixing of Quick-Curing KEMPERTEC® EP5 Primer: Also to be used when ambient temperature is 50 degrees F (10 degrees C) and below.

1. Premix primer Component A thoroughly with a spiral agitator.
2. Pour primer Component B into Component A and mix the components for approximately 2 minutes with a clean spiral agitator on low speed or stir stick without creating any bubbles or streaks. Do not aerate.
3. Primer solution should be a uniform color, with no light or dark streaks present.
4. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.

D. Mixing of KEMPERTEC® R Primer:

1. Premix primer Component A within clear pouch to obtain consistent appearance.
2. Remove separation cord. Knead primer Component B into Component A and mix the components for approximately 1 minute.
3. Primer solution should be a uniform color, with no light or dark streaks present.
4. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.

E. Application of Primer:

1. Apply primer with a roller or brush evenly onto the surface in a cross directional method, or utilizing the pour and spread method to fully cover the substrate.
2. Porous and higher moisture content concrete substrates may require an adjustment to the primer application rate or multiple coats to achieve proper pore saturation and sealing.
3. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved material.
4. For all EP/EP5 primer applications, apply kiln-dried sand into final coat of EP/EP5 primer while still wet at the rate of 50 lbs. per 100 square feet.
5. Curing time is approximately 12-16 hours for D and EP primers and approximately 3-4 hours for R and EP5 primers. KEMPEROL membrane may be applied when the primer is completely dry and without tack. Do not apply KEMPEROL membrane to tacky or wet primer Membrane must be applied to primer only when completely dry and without tack.
6. Exposure of the primer in excess of 8 days or premature exposure to moisture may require removal and application of new primer. Do not apply new primer over exposed primer older than 8 days, primer prematurely exposed to moisture, or primer used as temporary waterproofing, unless approved in writing by the Membrane Manufacturer.

3.7 MEMBRANE APPLICATION

A. General:

1. Apply the waterproofing membrane immediately following full curing of the primer in order to obtain the best bond between primer and membrane.
2. Mix and apply cold fluid-applied reinforced polyurethane waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
3. Primed substrate surface shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.
4. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before 48 hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
5. Closely follow Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.

B. Mixing of KEMPEROL® 2K-PUR Resin:

1. Mix resin Component A (cream formulation) with a spiral agitator until the liquid is a uniform cream color. If the ambient temperature is below 50 degrees F (10 degrees C), then a weather related additive should be combined and mixed into the Component A.
   a. Accelerator should be added to resin Component A when ambient temperature is 50 degrees F (10 degrees C) and below. Mix accelerator with the spiral agitator for 2 minutes or until both liquids are thoroughly blended.
2. Pour entire resin Component B into entire resin Component A and thoroughly mix components with a clean spiral agitator. Resin solution should be a uniform color, with no light or dark streaks present. Mix only full units, do not break down units.
3. Resin pot life is approximately 30 minutes.

C. Application of Resin/Fleece:

1. Apply mixed resin to the prepared surface at the manufacturer's recommended application rate. Resin should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 - 20 SF (1.4 - 1.9 m2).
2. Roll out dry polyester fleece onto the liquid resin mix, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. Fleece will begin to rapidly saturate with the liquid resin mix. Use a medium nap roller or brush to work the resin into the fleece, saturating from the bottom up, and eliminating air bubbles, wrinkles, etc. Appearance of the saturated fleece should be light opaque amber with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these faults before the resin cures.
3. Apply additional liquid resin mix on top of fleece at the manufacturer's recommended application rate to finish the saturation of the fleece. Roll this final coating into the fleece, which will result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated fleece, eliminating ponding or excessive build-up of the resin. The correct amount of resin will leave no whiteness in fleece and there will be a slightly fibrous surface texture. Final resin coating should be smooth and uniform.
4. Approximately 2/3 of the total resin should be applied to the substrate below the fleece reinforcement, and 1/3 of the total resin should be applied over the fleece reinforcement.
5. Prevent contact between mixed/unmixed resin and new/existing membrane. If any unmixed resin contacts membrane surface remove immediately and clean thoroughly with a cloth rag.
6. At all fleece seams, allow a 2 inches (5 cm) overlap for all side joints and a 4 inches (10 cm) overlap for all end joints.
7. At membrane tie-offs, clean in-place membrane with MEK (methyl ethyl ketone) solvent or acetone once resin has cured. Allow solvents to fully evaporate before application of new resin.

3.8 FLASHING APPLICATION

A. General:

1. Install flashing system in accordance with the requirements/recommendations of the Membrane manufacturer and as indicated on the manufacturer's standard drawings. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system.
2. Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.
3. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the Contractor's expense.

4. Provide a minimum vertical height of 8 inches for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. Do not flash over existing through-wall flashings, weep holes and overflow scuppers.
5. All flashings shall be terminated as required by the Membrane Manufacturer.
6. Apply alkalinity surface protection consisting of one application of EP primer and one application of approved broadcast mineral aggregate surfacing wherever stone, concrete, or masonry elements will be placed directly over the flashing

B. Metal Flashing - General:
1. Metal flashings shall be fabricated in accordance with the current recommendations of SMACNA and in accordance with the Manufacturer's standard drawings.
2. Metal flashing flanges to which membrane is to be bonded shall be a minimum of 4 inches in width, and secured to the substrate or wood nailers 6 inches on center staggered with fasteners appropriate to the substrate type. Flanges shall be provided with a roughened surface that has been cleaned of all oil and other residue.
3. Metal edges that will be overlaid with membrane shall be provided with a 1/4 inch minimum hemmed edge.
4. Apply primer, resin and fleece to metal flange, extending membrane to outside face of metal edging, and to vertical face of metal base/curb flashing.

C. Membrane Flashing - General:
1. Membrane flashings shall be fabricated with primer appropriate for the substrate surface, resin of the same base chemical type as the field membrane, and fleece of the same weight as the field membrane unless specified otherwise.
2. Primer, resin, and fleece mixing and application methods as specified for field membranes are also suitable for membrane flashing.
3. Fleece shall overlap 2 inches (5 cm) minimum for all joints. Fleece shall be cut neatly to fit all flashing conditions without a buildup of multiple fleece layers. Work wet membrane with a brush or roller to eliminate blisters, openings, or lifting at corners, junctions, and transitions.

D. Pipes, Conduits, and Unusually Shaped Penetrations:
1. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. Provide a minimum of a 2 inch (5 cm) overlap between vertical and horizontal flashing components.

E. Drains and Scuppers:
1. Acceptable drain and scupper materials are cast iron, cast aluminum, and copper.
2. Connect new drains and scuppers to existing storm sewer system.
3. Alternatively, replace all broken or damaged parts of existing drains and scuppers.
4. Flashing material shall extend 4 inches minimum onto drain or scupper flange and into drain/ scupper body.
5. Install clamping ring if provided as part of the drain or scupper design. Install a strainer basket to prevent debris from clogging the drainage line.

F. Hot Stacks:
1. Protect the membrane components from direct contact with steam or heat sources when the in-service temperature exceeds 170 degrees F. In all such cases flash to an intermediate "cool" sleeve.
2. Fabricate "cool" sleeve in the form of a flanged metal cone using galvanized metal, mechanically attached to the structure or wood nailers.
3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a 2 inch (5 cm) overlap between vertical and horizontal flashing components.

G. Flexible Penetrations:
1. Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in water cut-off mastic and secure to the structural substrate.
2. Acceptable gooseneck material is copper, of a sheet weight appropriate for the application.
3. Flashing is typically constructed as a two part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a 2 inch (5 cm) overlap between vertical and horizontal flashing components.

H. Walls, Curbs and Base Flashings:
1. Wall, curb and base flashings shall be installed to solid substrate surfaces only. Adhering to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding, and other similar materials is not acceptable.

2. Reinforce all transition locations and other potential wear areas with a 4 inch wide membrane strip evenly positioned over the transition prior to installing the exposed flashing layer.
3. Reinforce all inside and outside corners with a 4 inch diameter conical piece of membrane prior to installing the exposed flashing layer.
4. All pins, dowels and other fixation elements shall be flashed separately with a vertical flashing component prior to installing the exposed flashing layer.
5. Extend flashing a minimum of 4 inches onto the field substrate surface.

I. Drip Edges and Gravel Stops:
1. Metal drip edges and gravel stops shall be installed to solid substrate surfaces or wood nailers only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding or coping, and other similar materials is not acceptable.
2. Flash all drip edges and gravel stops by extending the field membrane all the way to the edge of the exposed face prior to installing the metal edging. Strip in the metal flange with a separate 8 inch wide strip of membrane adhered to both the securement flange and to the field membrane.
3. For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate membrane layer positioned behind the face area and extending a minimum of 4 inches past the securement flange onto the field substrate prior to installing the drip edge or gravel stop.

J. Field Fabricated Control or Expansion Joint Flashing:
1. Control or expansion joints in excess of 2 inches in width and all expansion joints subject to vehicular traffic require the use of a separate engineered joint system.
2. For non-vehicular expansion joints in excess of 2 inches apply a minimum 8 inch strip of KEMPEROL® membrane onto the primed field substrate on both sides of the joint. Lay expansion joint into the liquid membrane while wet. Following the initial embedment, cover the top fleece surface of the expansion joint material with a second 13 inch strip of KEMPEROL® membrane, overlapping the fleece portion of the expansion joint, the first layer of KEMPEROL® membrane and terminating on the field substrate.
3. For expansion joints that are less than 2 inches; Grind or otherwise bevel the inside edges of the joint opening to provide a smooth transition edge for the fleece.
4. Flashing typically consists of a fully saturated membrane bottom layer looped into the joint as a cradle, a compressible foam or rubber insert at 25 percent compression fitted into the joint, and a membrane top layer applied over the joint. Extend both fleece layers 4 inches minimum onto the field substrate on both sides of the joint.
5. Apply the field membrane tying in the joint area.

K. Electrical Conduit, Gas Lines and Lightning Protection
1. Supports for electrical conduit and gas lines greater than 1 inch in diameter require the use of a separate engineered support system.
2. Supports for electrical conduit and gas lines 1 inch or less in diameter, and bases for lightning protection rods and cable, can be adhered directly to the membrane surface with a single-component, polyurethane construction adhesive.

3.9 MEMBRANE PREPARATION FOR SURFACINGS AND COATINGS

A. Membrane must be clean and dry, and free of all contaminants that may interfere with the adhesion of the surfacing and coating to the membrane surface.

B. Membrane exposed less than 48 hours prior to application of surfacing and coating materials does not require special surface preparation. It is highly recommended that all surfacing and coating materials be applied to the membrane surface within 48 hours.

C. Membrane exposed longer than 48 hours will require sanding/scuffing of the surface to remove the hard gloss finish, followed by an MEK or acetone solvent wipe.

3.10 SURFACING AND FINISHES

A. Aggregate Finish Surfacing
1. Where specified, provide and install approved kiln-dried silica sand, or other approved mineral surfacing to achieve an aesthetic and/or non-skid surface.
2. Pre-mix single-component and two-component coatings prior to application to achieve an even consistency.
3. Broadcast specified and approved sand or aggregate in excess into a bonding coat application of Membrane Manufacturer's aggregate coating system applied over clean, cured membrane at the manufacturer's recommended application rate. Aggregate shall be applied to excess to obtain uniform

and full coverage.

4. Following minimum 24 hour cure time remove loose/un-embedded mineral aggregate by blowing with oil-free compressed air or with a vacuum. Re-broadcast clean mineral aggregate as required to provide full embedment and coverage of membrane.
5. Seal aggregate surface with a sealing coat application of Membrane Manufacturer's approved aggregate coating, applied at the manufacturer's recommended application rate. After completion of surfacing, avoid any traffic for a minimum of 3 days to allow for surfacing to cure.

B. Coating-Type Finish Surfacing
1. Where specified, provide and install Membrane Manufacturer's approved polyurethane-based or acrylic-based coating applied over clean, fully cured membrane at the manufacturer's recommended application rate.
2. Pre-mix single-component and two-component coatings prior to application to achieve an even consistency and color. Mix thoroughly for approximately 2 minutes with a clean spiral agitator without creating any bubbles or streaks. Do not aerate.
3. Apply coating at the manufacturer's recommended application rate. Two coating applications are recommended for best coverage and appearance. After completion of coating, avoid any traffic for a minimum of 2 days to allow for surfacing to cure.

C. Alkalinity Protection
1. Where placement of concrete, mortar or adhesive setting beds are required over sections of the waterproofing membrane or flashing, apply manufacturer's epoxy primer/coating at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet primer/coating.
2. Protection shall extend a minimum of 1 foot (0.3m) past the concrete form or setting bed on all sides.
3. Provide continuous cleaning with water and brush to eliminate settlement of concrete residues on in-place waterproofing membrane adjacent to area of concrete placement.

D. Adhesion Key:
1. Where placement of non-cementitious material such as asphalt pavement is required over sections of the waterproofing membrane or flashing, apply manufacturer's epoxy primer/coating at the manufacturer's recommended coverage rate, with broadcast to excess of kiln-dried silica sand into wet primer/coating.

3.11 TRAFFIC SURFACING

A. Horizontal Surfacing Profile Joint:
1. Before starting the installation of the profile joints ensure the cold liquid-applied waterproofing membrane system is fully cured and can be exposed to foot traffic.
2. Determine the locations for the horizontal surfacing profile joints and mark off with a line. Distance between joints should not exceed 20 linear feet.
3. Apply single component polyurethane construction adhesive to the membrane and set the perforated anchoring legs to ensure full coverage.
4. Once the joint is in place the application of the Traffic Surfacing system may start.

B. Mixing of KEMPERDUR® TC Traffic Coating
1. Pre-mix Component A (light brown formulation) with a KEMPEROL spiral agitator until the liquid is a uniform color and all solids that may have settled to the bottom of the can have been mixed.
2. Pour Component A into in to a separate clean mixing pail, add Component B (dark brown formulation) and mix with a spiral agitator for 1 minute, until the liquid is a uniform dark beige color without light or dark streaks. When working on a sloped area add KEMPERTEC® TX Thixotropic additive to Component A before adding Component B.
3. Gradually add Component C (white graded fillers) to the liquid while mixing continues for an additional 1 minute until a smooth, lump free mix is produced.
4. Mix only full units, pot life is approximately 10 minutes. Do not exceed mixing times.

C. Application of Surfacing and Aggregate
1. Empty mixing bucket of all KEMPERDUR® TC mix onto the prepared surface and spread with a 1/4 inch square notched metal trowel at the manufacturer's specified coverage rate.
2. Immediately de-aerate the coating in a cross direction with a porcupine (spiked) roller in order to release the air bubbles that may develop within the coating.
3. Allow the surfacing mix to self-level and reach an initial set for 10-20 minutes until material will retain a peak after being touched by a finger.
4. Broadcast aggregate to excess into surfacing until a uniform dry aggregate layer has been achieved. Aggregate will initially sink into surfacing, requiring the application of additional aggregate.
5. Allow the aggregate-filled surfacing to cure for approximately 4 hours, then remove excess aggregate

by brooming and vacuuming.

D. Sealing
   1. Apply sealer at the manufacturer's specified coverage rate to provide a sealed, maintainable surface finish.
   2. After completion of mineral aggregate surfacing, avoid any traffic for a minimum of 3 days.

3.12 TEMPORARY CLOSURES AND WATERSTOPS

A. Ensure that moisture does not damage any completed section of the new waterproofing system. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition. All temporary closures shall be made as recommended or required by the membrane manufacturer.

3.13 PROTECTION

A. Upon completion of waterproofing and flashings and associated work, institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. Protect all areas where membrane has been installed

3.14 FIELD QUALITY CONTROL

A. Electronic Field Vector Mapping (EFVM) test shall be completed prior to the installation of the overburden, but after the membrane receives a final inspection. Test shall be scheduled through the membrane manufacturer a minimum two weeks prior to the test and completed by an approved testing company. All located deficiencies shall be repaired and followed by a re-inspection by the membrane manufacturer.

B. Flood Test of the completed membrane and flashing system shall be conducted prior to the installation of any overburden/surfacing. Flood test shall be of a 24 hour minimum duration, and shall apply a 2 inch water head of over the entire application area. Any incidents of water entry shall be evaluated and all necessary repairs conducted, followed by an additional flood test.

C. Prepare a written report of results of successful and unsuccessful inspection testing and submit to Architect within 7 days following each test. Report shall include date of test, project name, list of products being applied and tested, name of applicator, name of Contractor, and conditions causing failure of roofing/waterproofing in event of an unsuccessful test.

D. Complete all post installation procedures in accordance with the manufacturer's guidelines for warranty issuance of the specified warrantee.

E. Notification of Completion: Notify the membrane manufacturer of job completion and schedule a final inspection date.

F. Final Inspection: At the completion of the Work meet with the membrane manufacturer's technical field representative to evaluate the completed installation of the field and flashing membrane. Complete all previously noted punch list items prior to the scheduled meeting.

G. Correction of Work: Work that does not conform to specified requirements including tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced.

3.15 DRAINAGE BOARDS AND PROTECTION MAT

A. Place the drainage mat fabric side up on top of the finished waterproofing membrane. Secure the drainage mat in place by placing temporary ballast on top of the drainage mat.

B. Connect adjacent panels at the longitudinal edge by pulling the filter fabric back to expose the flange. Butt one panel edge to the edge of the adjacent panel. Panel ends are to be butted in the same manner. Tape the fabric overlaps, and seal the butt joints with tape as well. Overlap fabric in the direction of water flow. Cover all terminal edges with the filter fabric flap by tucking the fabric behind the core.

C. Drainage mat should be channeled into an internal drain or perimeter drain system. Create openings in the drainage core to correspond with all discharge holes in the drain at the structural deck level. Fabric must be left intact at these holes to prevent intrusion of soil, grout, sand, or concrete into the drainage core.

D. At roof penetrations, cut the drainage core around the protrusion, cut an X in the fabric, and tape the

fabric around the protrusion to prevent intrusion of overburden materials into the core.

3.16 WATER RETENTION PROTECTION MAT

A. Place the drainage mat fabric side up on top of the finished waterproofing membrane. Secure the drainage mat in place by placing temporary ballast on top of the drainage mat. Dimple openings must be facing up.

B. Connect adjacent panels at the longitudinal edge by pulling the filter fabric back to expose the flange. Butt one panel edge to the edge of the adjacent panel. Panel ends are to be butted in the same manner. Tape the fabric overlaps, and seal the butt joints with tape as well. Overlap fabric in the direction of water flow. Cover all terminal edges with the filter fabric flap by tucking the fabric behind the core.

C. Water retention mat should be channeled into an internal drain or perimeter drain system. Create openings in the drainage core to correspond with all discharge holes in the drain at the structural deck level. Fabric must be left intact at these holes to prevent intrusion of soil, grout, sand, or concrete into the drainage core.

D. At roof penetrations, cut the drainage core around the protrusion, cut an X in the fabric, and tape the fabric around the protrusion to prevent intrusion of overburden materials into the core.

3.17 EXTRUDED POLYSTYRENE INSULATION

A. Insulation shall be installed in accordance with the insulation manufacturer's current published specifications and recommendations for use in an above-membrane application.

B. Install only as much insulation as can be covered with overburden or otherwise secured in place before the end of the day's work or before the onset of inclement weather.

C. Neatly fit insulation to all penetrations and projections. Insulation shall be loosely butted, with gaps not greater than 1/4 inch.

3.18 FILTER FABRIC

A. Roll out filter fabric over the extruded polystyrene insulation, avoiding wrinkles. Overlap all side and end laps by 12 inches.

B. Cut filter fabric neatly around all penetrations and projections.

3.19 SEPARATION MAT INSTALLATION

A. Install separation mat on top of the finished waterproofing membrane or extruded polystyrene insulation. Provide 4 inch overlaps.

B. Extend the separation mat vertically to just above the height of the growing medium.

C. Cut the water separation mat at perimeter and penetration locations so as to neatly fit the mat at all flashing locations.

3.20 WATER RETENTION/ PROTECTION MAT INSTALLATION

A. Place drainage mat fabric side up on top of finished waterproofing membrane. Secure drainage mat in place by placing temporary ballast on top of drainage mat. Dimple openings must be facing up.

B. Connect adjacent panels at the longitudinal edge by pulling filter fabric back to expose flange. Butt one panel edge to edge of adjacent panel. Panel ends are to be butted in the same manner. Tape fabric overlaps, and seal butt joints with tape as well. Overlap fabric in direction of water flow. Cover all terminal edges with filter fabric flap by tucking fabric behind the core.

C. Channel water retention mat into an internal drain or perimeter drain system. Create openings in drainage core to correspond with all discharge holes in the drain at the structural deck level. Fabric must be left intact at these holes to prevent intrusion of soil, grout, sand, or concrete into the drainage core.

D. At roof penetrations, cut drainage core around the protrusion, cut an X in the fabric, and tape fabric around the protrusion to prevent intrusion of overburden materials into the core.

3.21 SOLID OVERBURDEN

A. Pavers, tiles, stone ballast, or wood decking shall be installed in accordance with the overburden manufacturer's current published specifications and recommendations for use in an above-membrane plaza application.

B. Install overburden neatly, level and even. Cracked, broken or otherwise damaged overburden materials must be removed and discarded. Fit overburden neatly around all penetrations and projections, and at the perimeter. Ensure that overburden is properly supported to provide even weight distribution to underlying assembly.

3.22 SOLID ADHERED OVERBURDEN

A. Paving stones and tiles shall be installed in accordance with the overburden manufacturer's current published specifications and recommendations for use in an above-membrane plaza, terrace, fountain, or flooring application.

B. Membrane Preparation: Install adhered overburden to waterproofing membrane that has been provided with alkalinity/adhesion key surfacing. Utilize adhesives/mortars approved by the membrane manufacturer. Tile adhesive shall meet and exceed ANSI requirements for adhesion shear strength.

C. Install Overburden: Install overburden neatly, level and even. Cracked, broken or otherwise damaged overburden materials must be removed and discarded. Fit overburden neatly around all penetrations and projections, and at the perimeter. Ensure that overburden is properly supported to provide even weight distribution to underlying assembly.

3.23 VEGETATIVE OVERBURDEN

A. Irrigation systems, dirt or other growing media, and plantings shall be installed in accordance with the irrigation system manufacturer's current published specifications and recommendations for use in an above-membrane garden application.

B. Install Overburden: Install overburden neatly, level and even. Dead, broken or otherwise damaged overburden materials must be removed and discarded. Fit overburden neatly around all penetrations and projections, and at the perimeter. Protect plantings from damage and provide with sufficient water until entire installation is complete.

3.24 CLOSEOUT

A. Correction of Work: Work that does not conform to specified requirements including tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane Manufacturer's inspections shall be corrected and/or replaced.

3.25 PROTECTION

A. Protect building components with tarps or other suitable materials, from soil, stains, or spills at all hoisting points and areas of application.

B. Any such damage shall be repaired at Contractor's expense to Owner's satisfaction or be restored to original condition.

C. Provide barricades, retaining ropes, safety elements and any appropriate signage required.

D. Protect finished waterproofing membrane from damage by other trades by the use of a cushioning layer such as 1 inch thick expanded polystyrene insulation and an impact layer such as 1/2 inch thick exterior-grade plywood.

E. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, etc. or direct steam venting to come into direct contact with the membrane unless approved by manufacturer's chemical resistance chart.

F. Eliminate construction traffic on newly tested membrane systems. Do not store construction materials on unprotected membrane surfaces.

G. Membrane areas that are observed to be trafficked or used as a storage/working platform shall be retested and immediately repaired and covered with insulation and drainage composite.

3.26 CLEANING

A. Clean-Up: Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition.

B. Waterproofing materials, components and accessories shall be removed from Site and taken to a legal dumping area authorized to receive such materials.

C. Disposal of Primer and Resin: Cured resin may be disposed of in standard landfills. Uncured resin is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation

END OF SECTION

Index of Standard Details

Headquarters: **Kemper System America, Inc.** | 1200 North America Drive | West Seneca, NY 14224
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B-2B Two Ply Base Flashing w/Counterflashing
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B-4A Concrete / Masonry Wall Flashing Over Masonry Coping Stone
B-5 Two Ply Masonry Wall Flashing without Coping Cap
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M-15 Gutter Lining Detail
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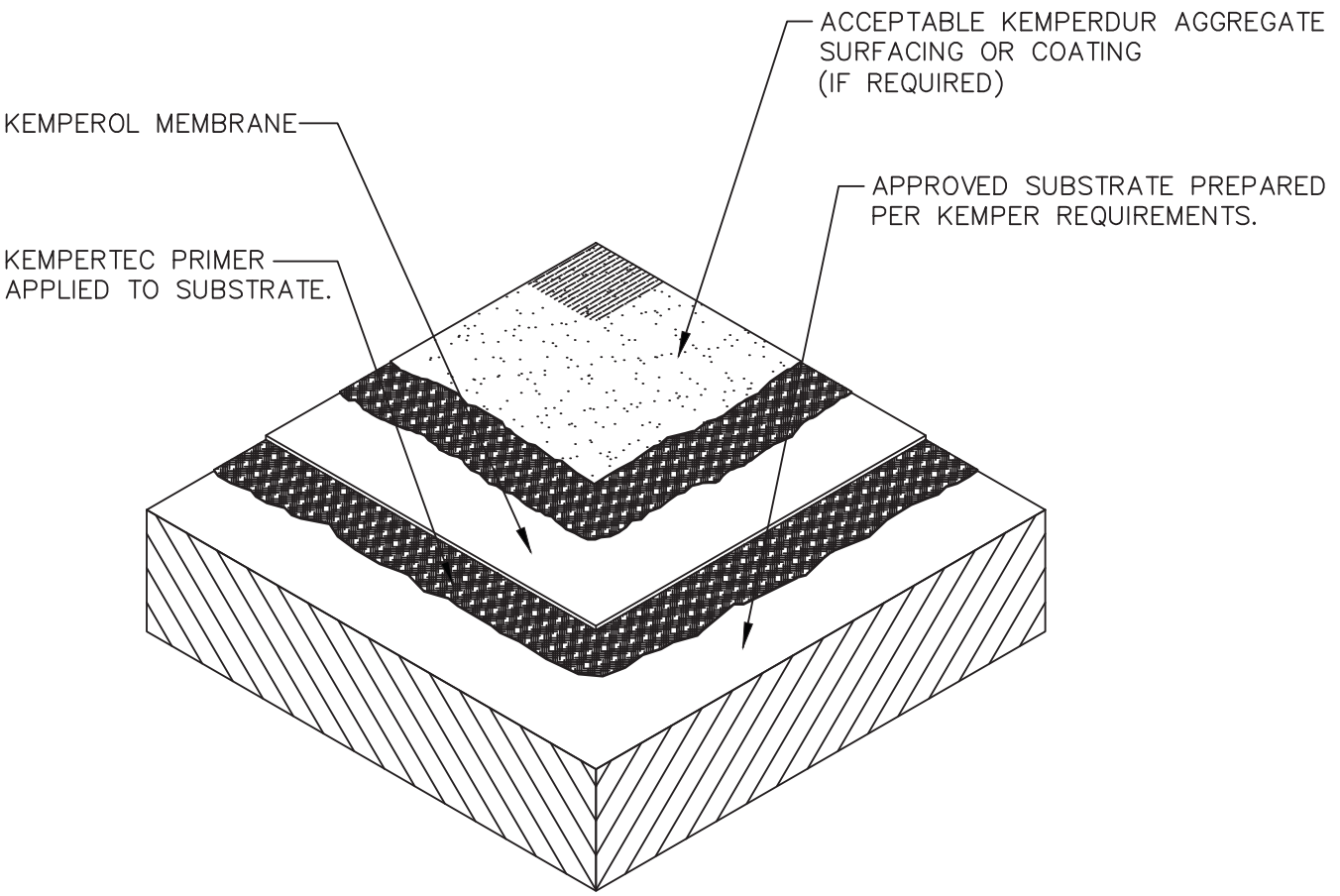
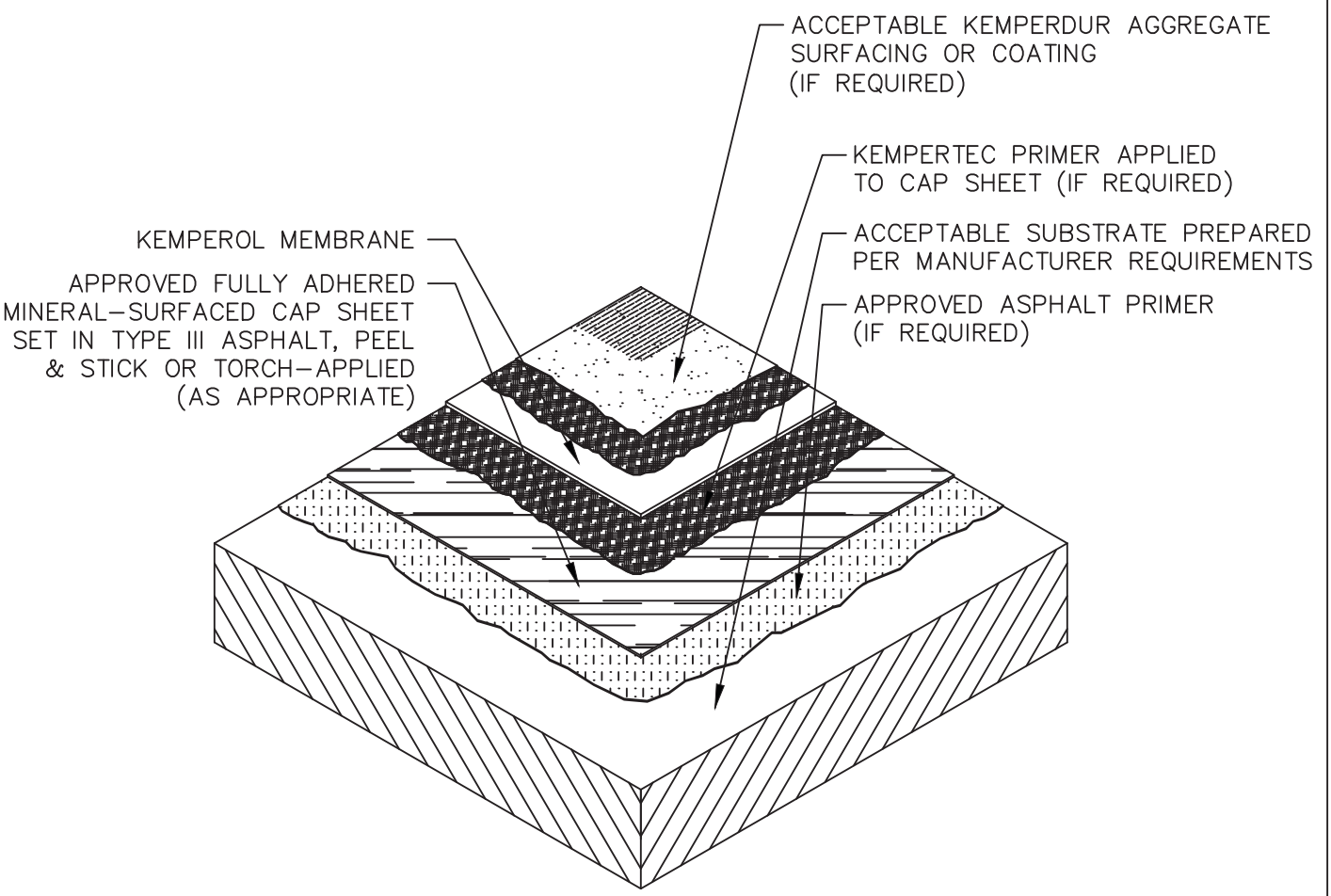


DRAWING NO.	NON-INSULATED WATERPROOFING ASSEMBLY			
A-1	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-1.DWG	10-06-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	NON-INSULATED WATERPROOFING ASSEMBLY W/FULLY ADHERED CAP SHEET			
A-3	REVISION	ISSUE DATE	SCALE	DRAWN BY
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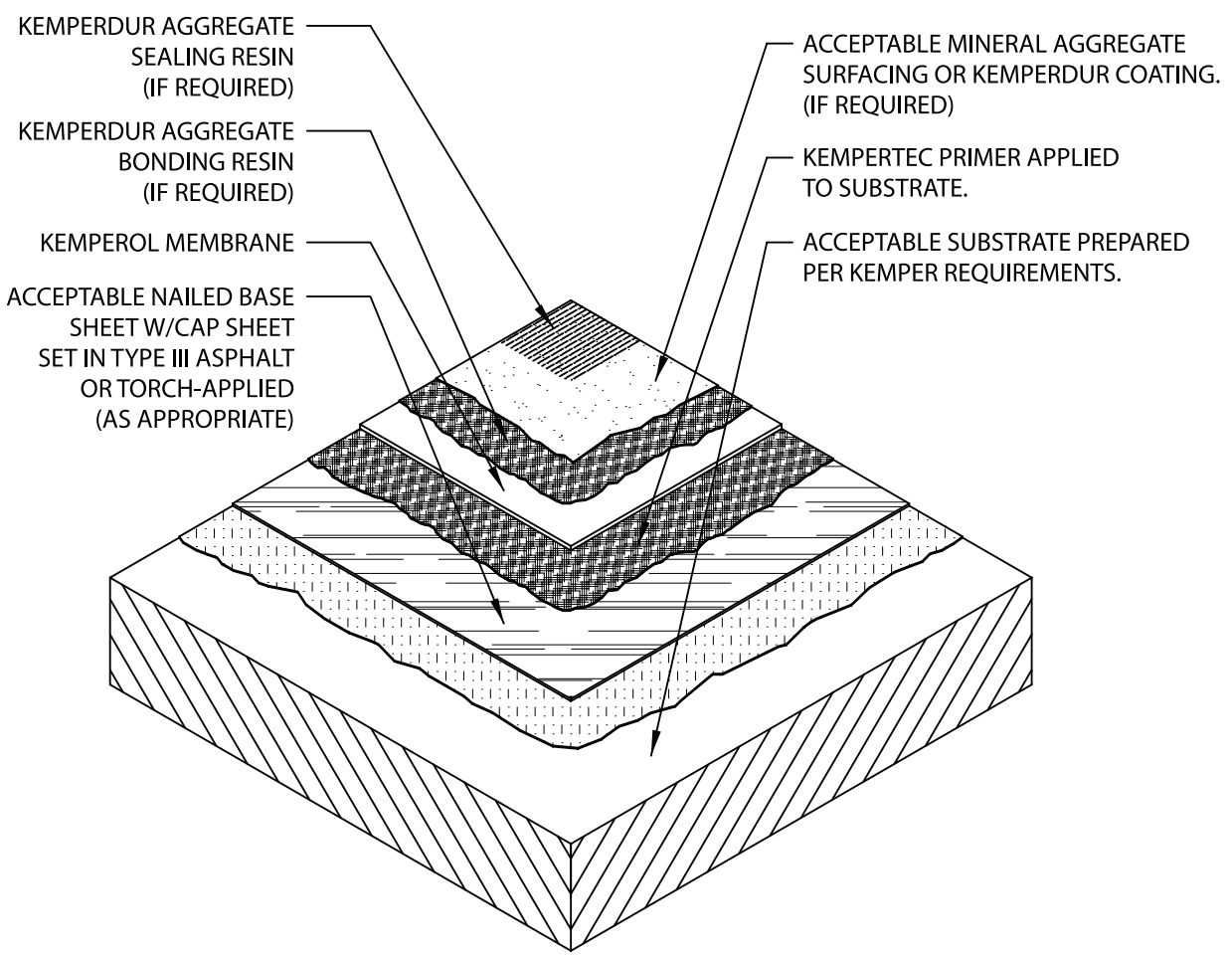
KEMPER SYSTEM



DRAWING NO.	NON-INSULATED WATERPROOFING ASSEMBLY W/NAILED CAP SHEET			
A-4	REVISION	ISSUE DATE	SCALE	DRAWN BY
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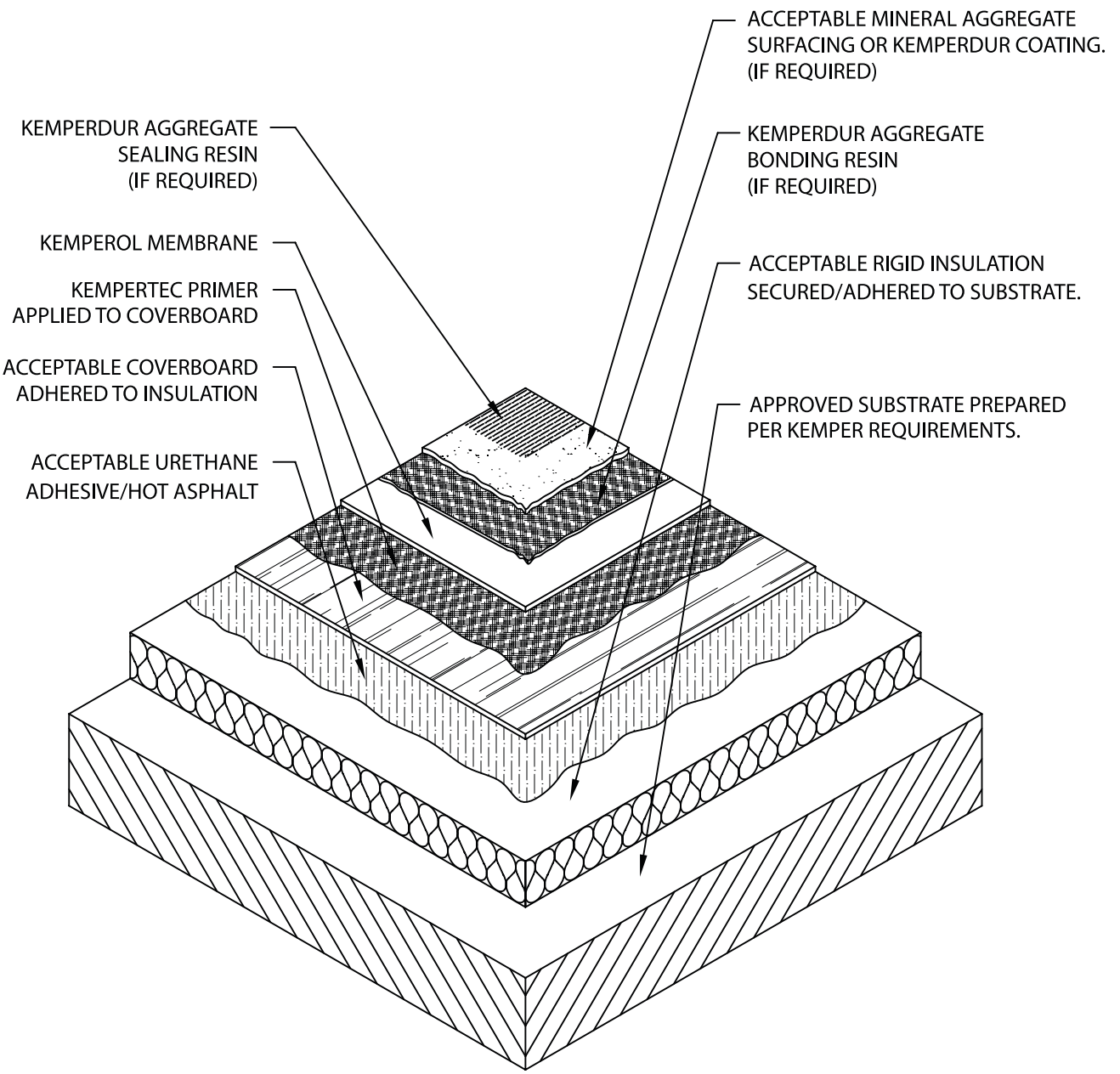
KEMPER SYSTEM



DRAWING NO.

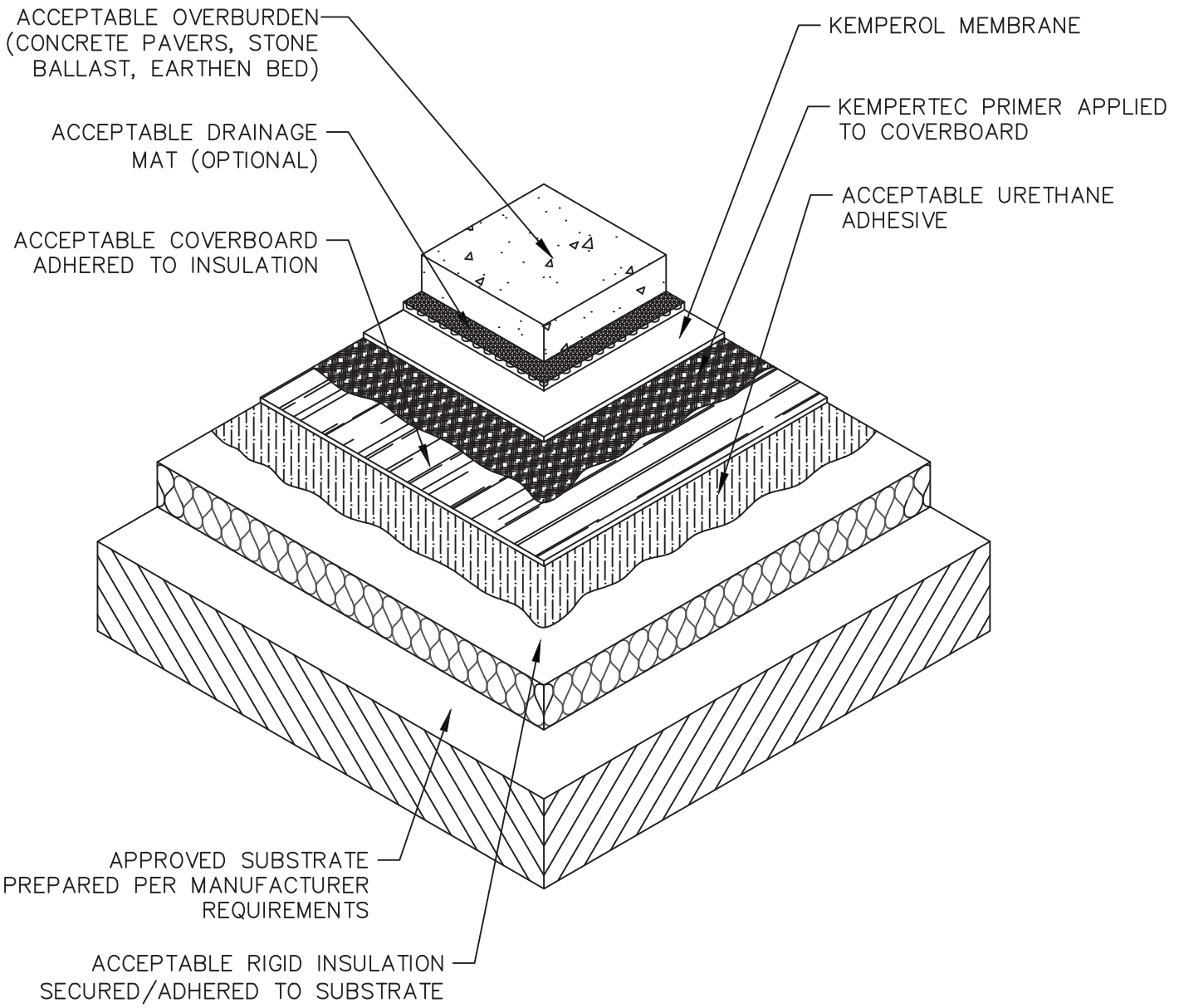
A-5

A-5.DWG

INSULATED WATERPROOFING ASSEMBLY W/FOAM INSULATION & COVERBOARD

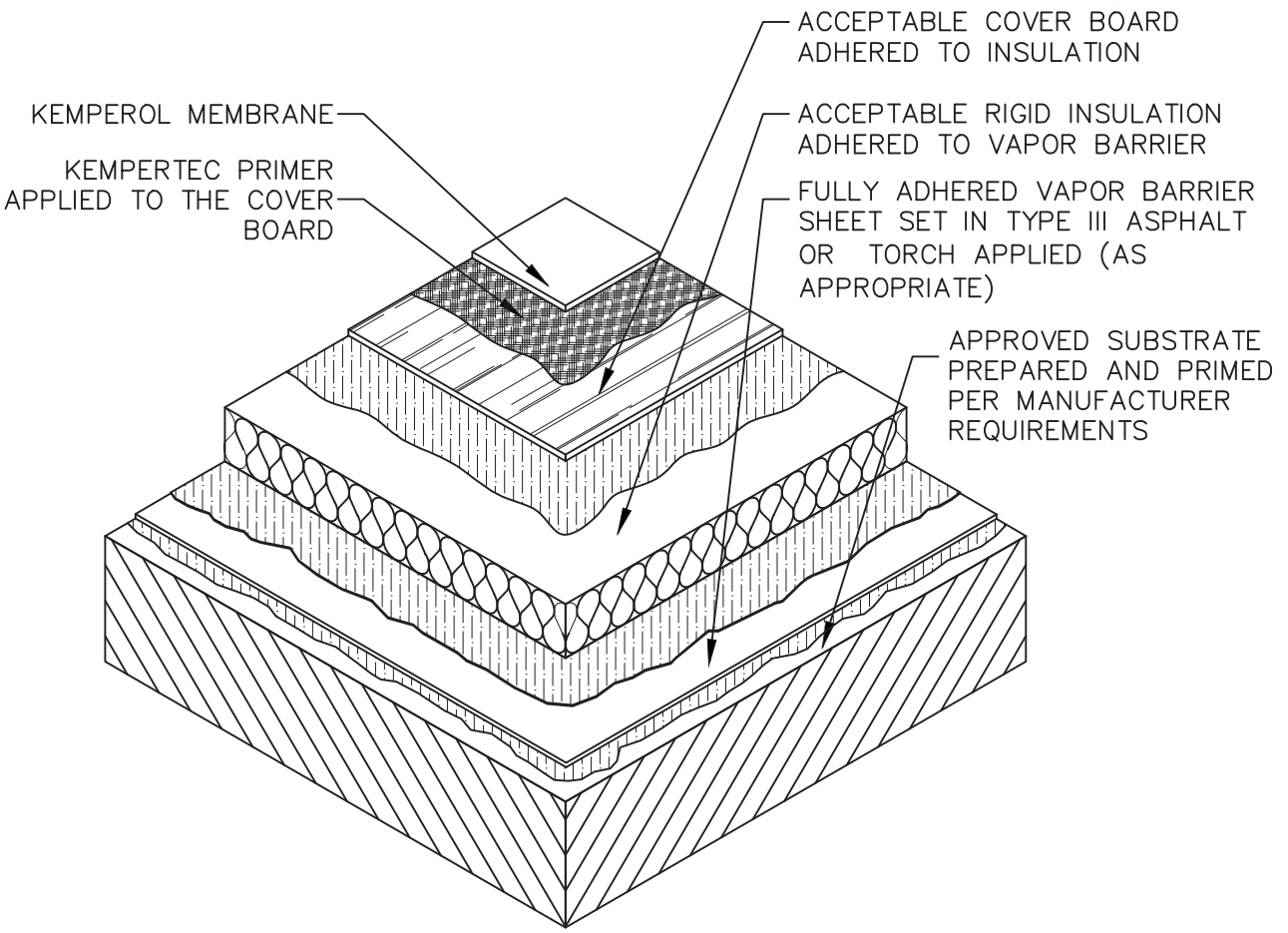
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



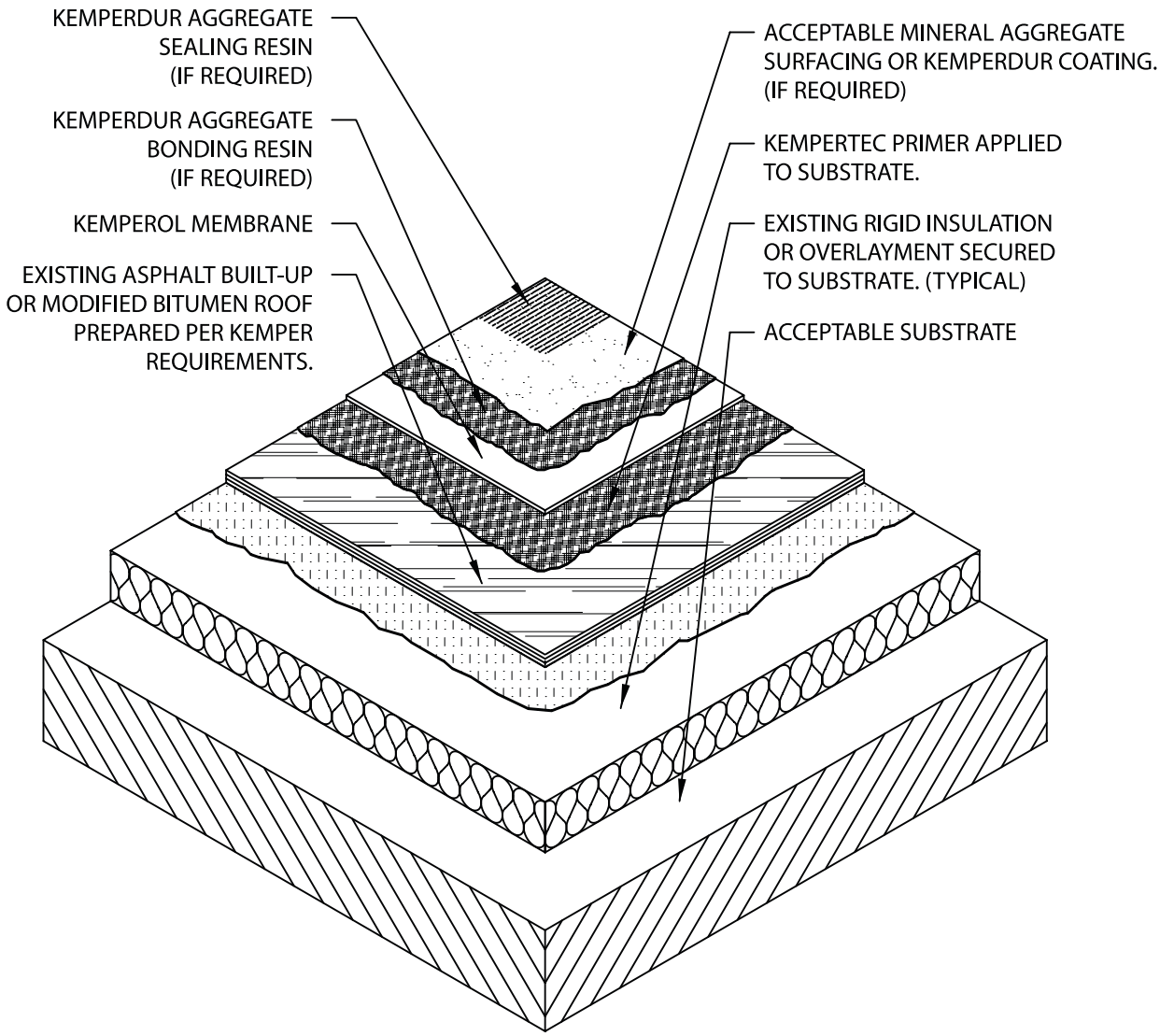
DRAWING NO.	PLAZA WATERPROOFING ASSEMBLY W/FOAM INSULATION & COVERBOARD			
A-5B	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-5B.DWG	10-08-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



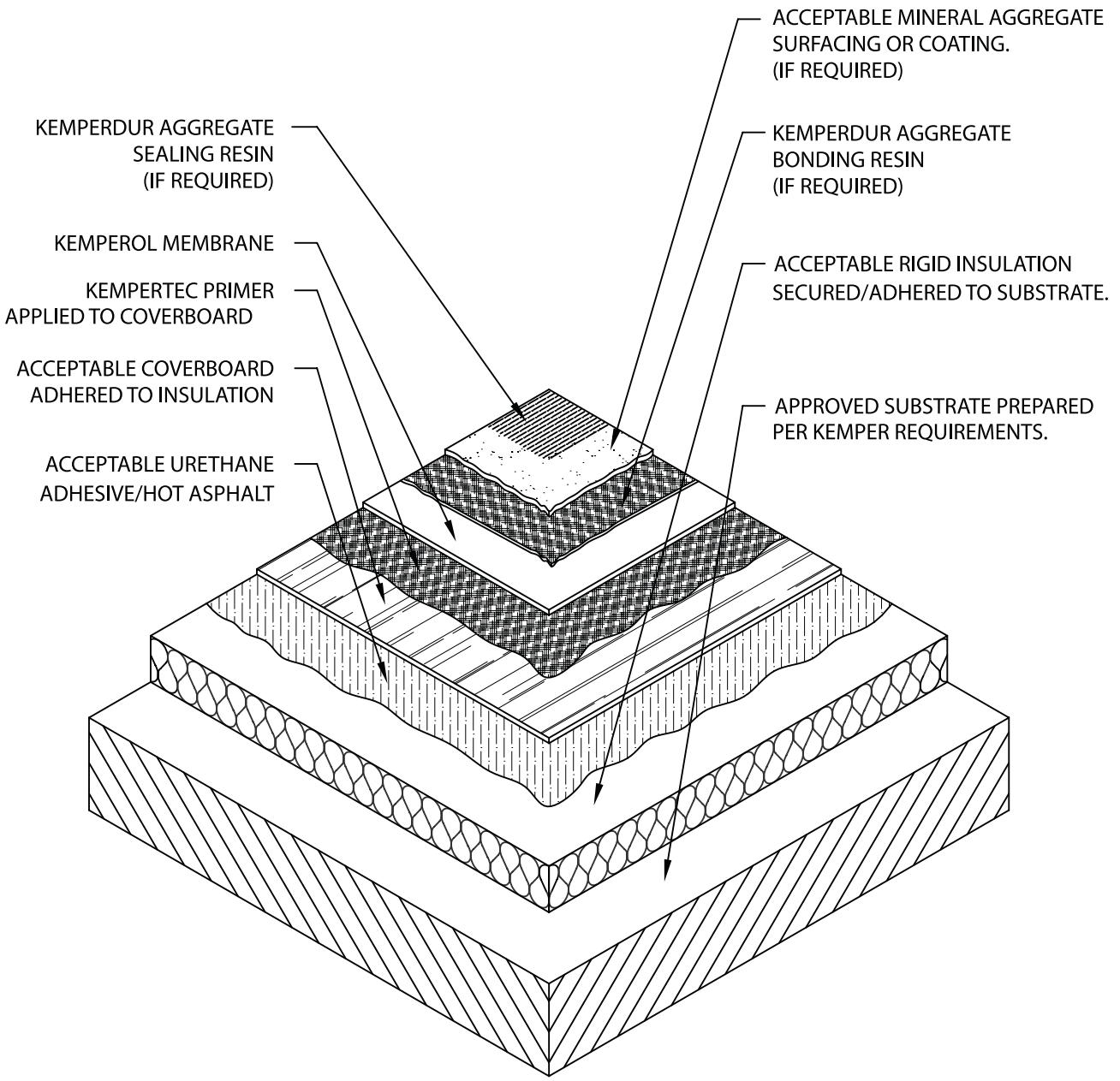
DRAWING NO.	INSULATED WATERPROOFING ASSEMBLY W/VAPOR BAR., INSULATION & COVERBOARD			
A-5C	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-5C.DWG		01-16-2017	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	NON-INSULATED ROOF RECOVERY WATERPROOFING ASSEMBLY			
A-8	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-8.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

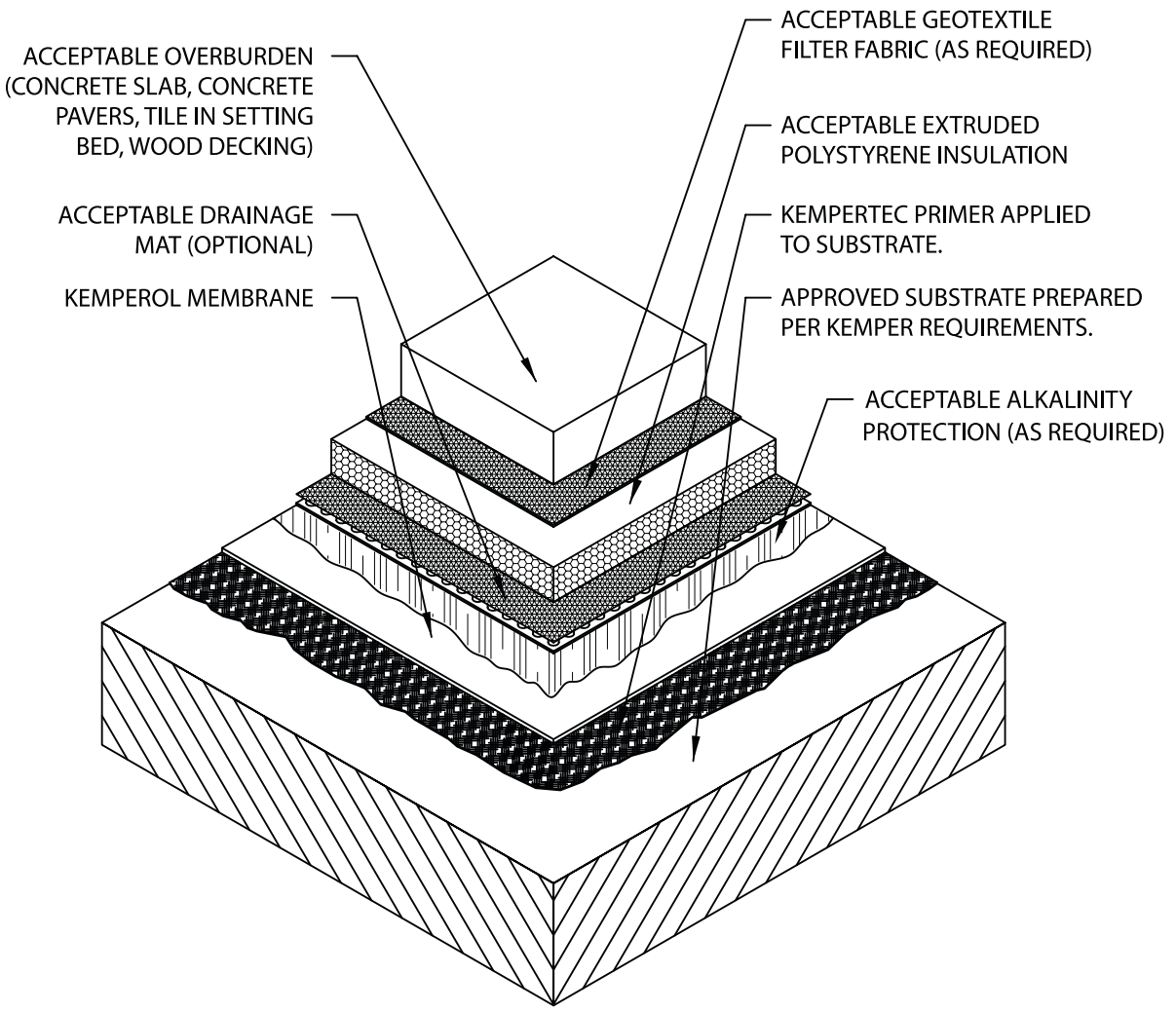
A-11

A-11.DWG

INSULATED ROOF RECOVERY WATERPROOFING ASSEMBLY W/FOAM INSULATION & COVERBOARD

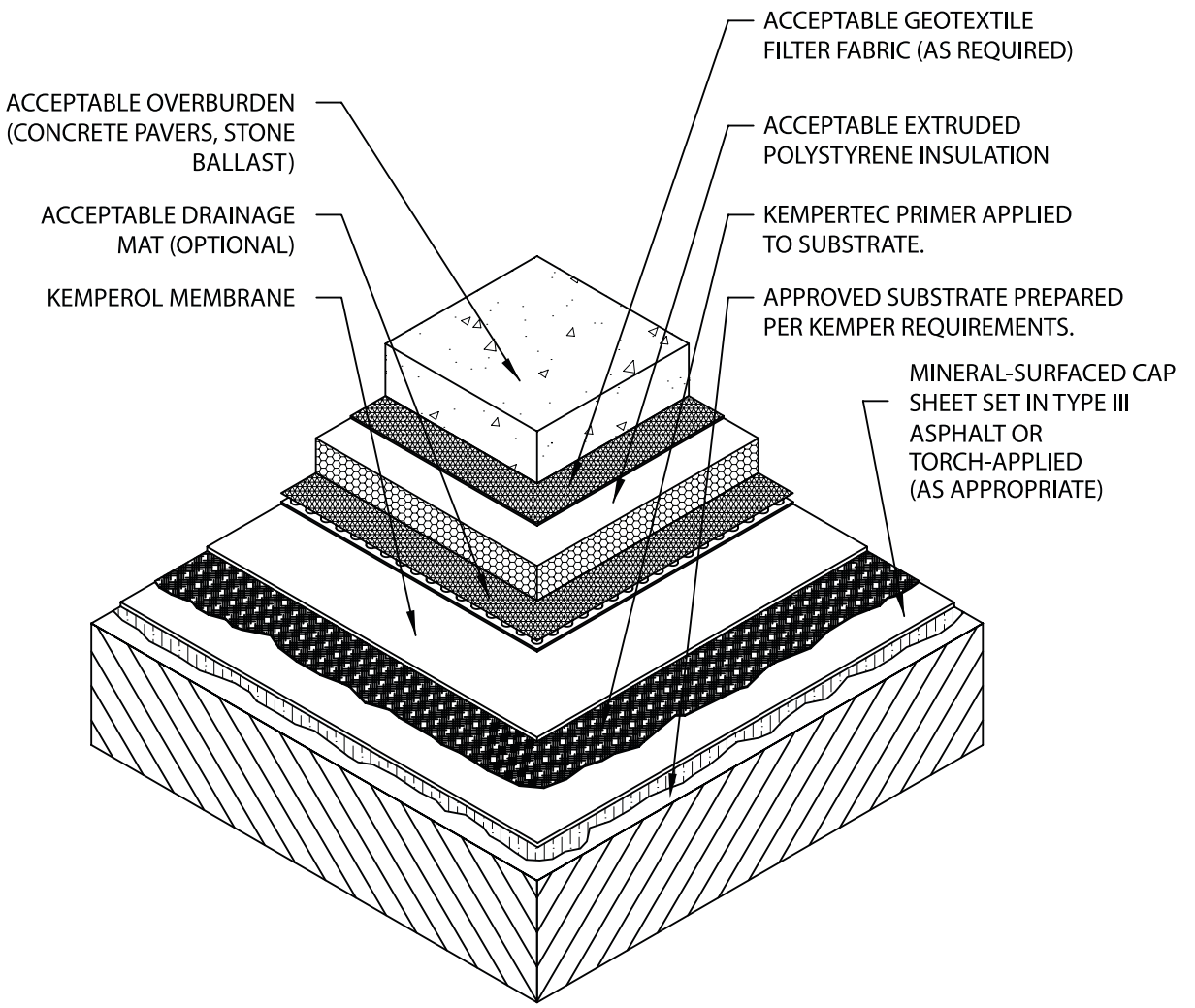
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



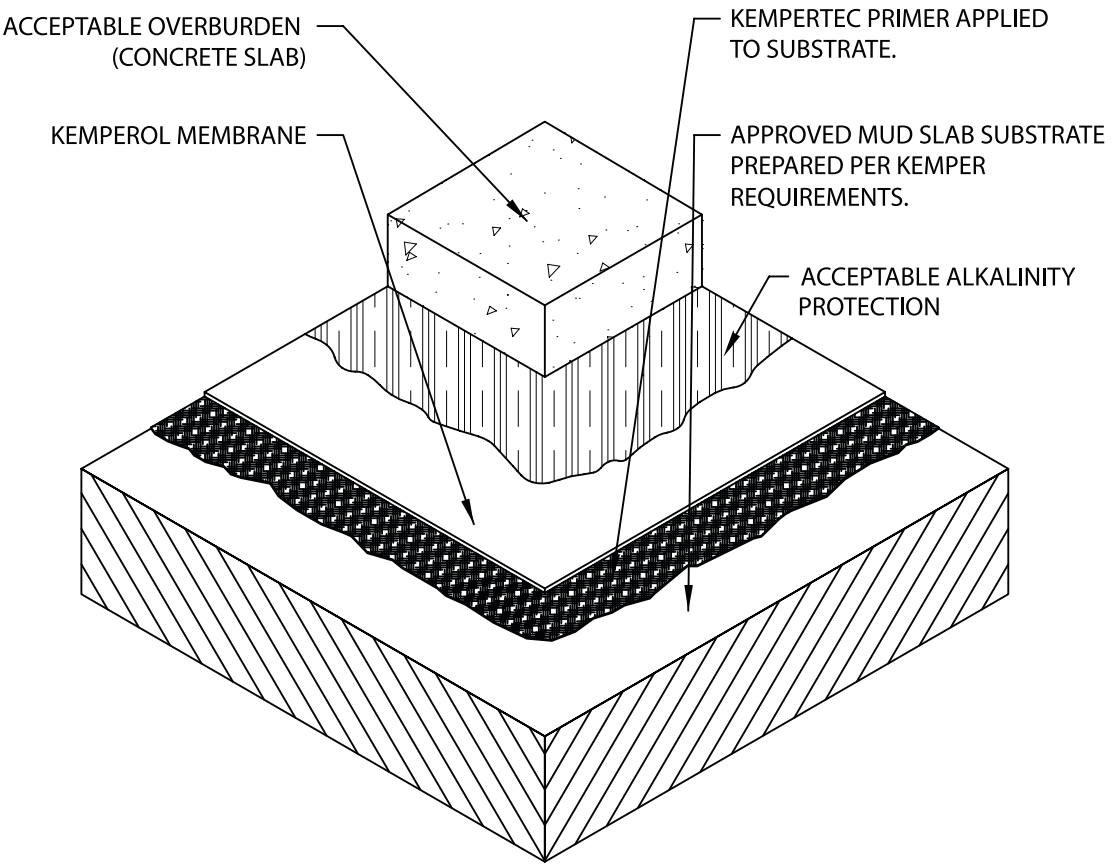
DRAWING NO.	PRMA WATERPROOFING ASSEMBLY W/OVERBURDEN			
A-13	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-13.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



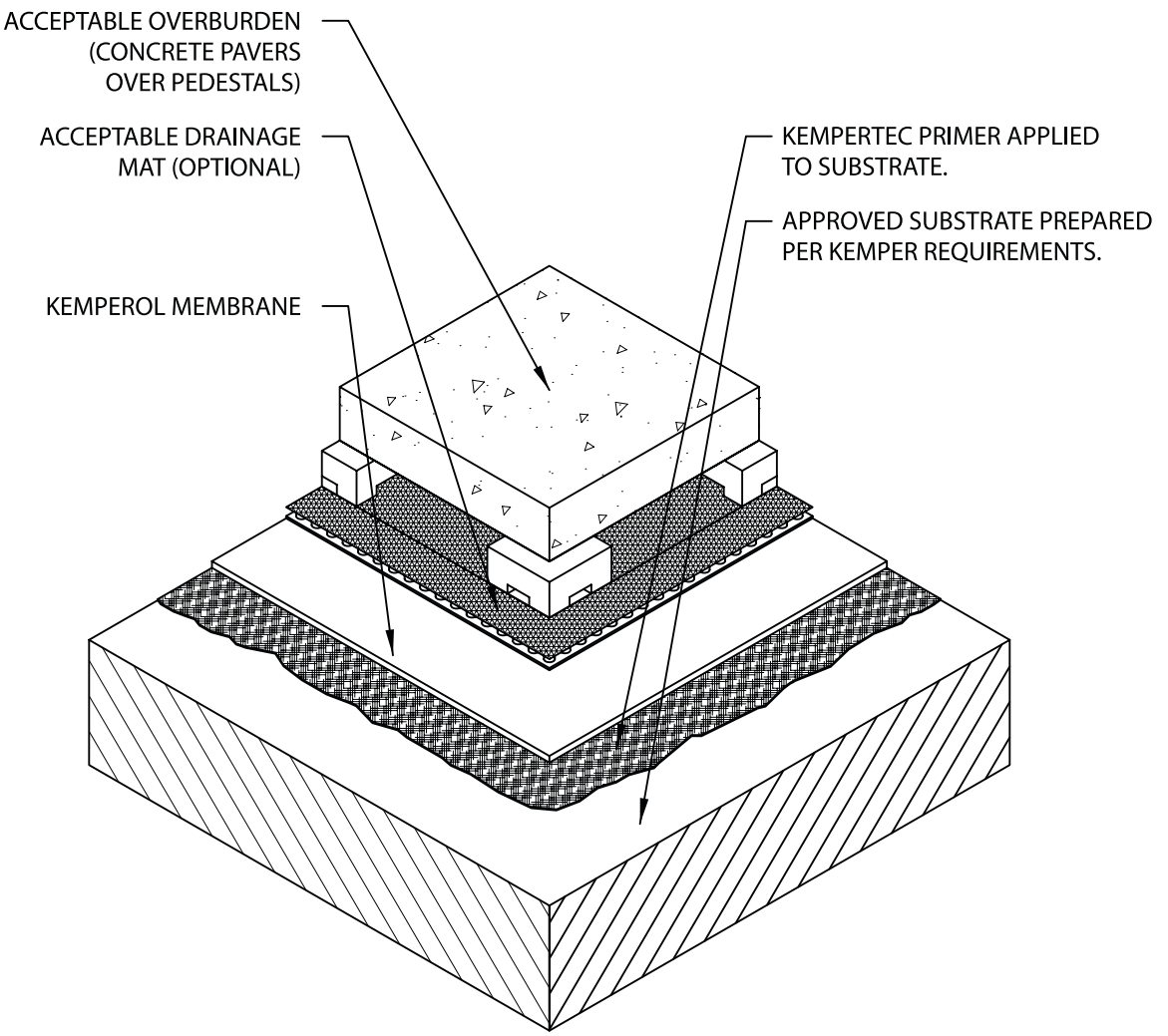
DRAWING NO.	PRMA WATERPROOFING ASSEMBLY W/FULLY ADHERED CAP SHEET			
A-15	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-15.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



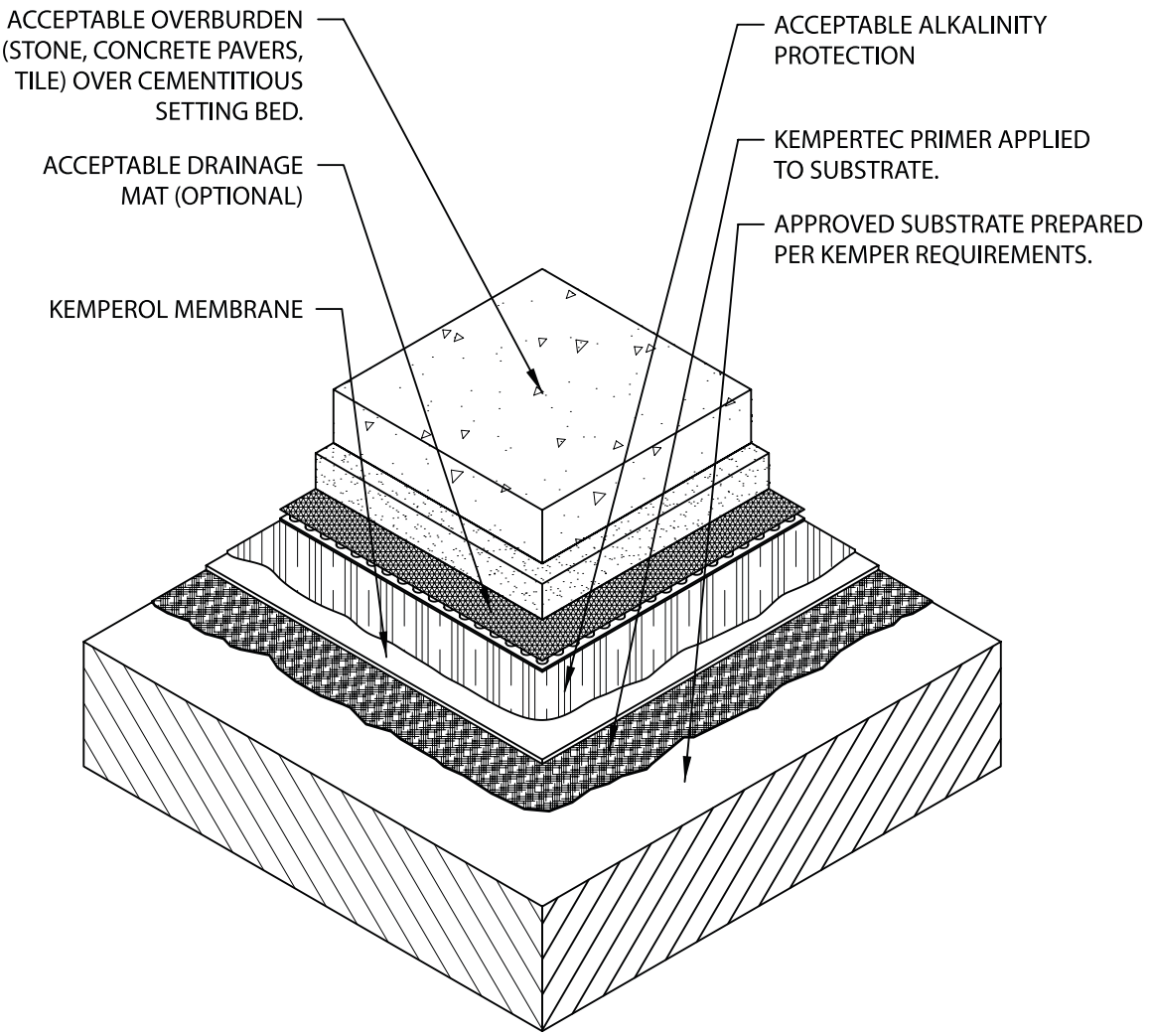
DRAWING NO.	WATERPROOFING ASSEMBLY W/OVERBURDEN			
A-16	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-16.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	PLAZA WATERPROOFING ASSEMBLY W/PEDESTAL-MOUNTED PAVER OVERBURDEN			
A-18	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-18.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

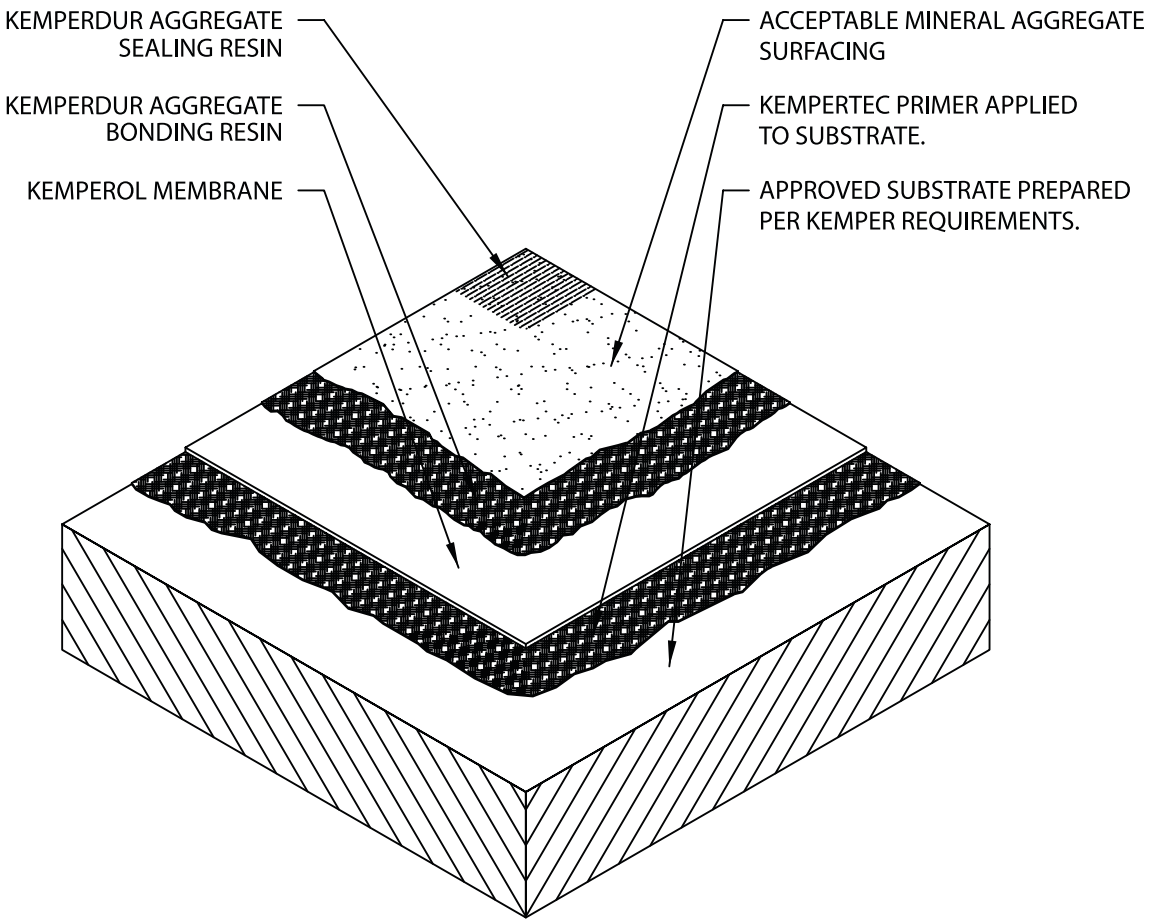
A-19

A-19.DWG

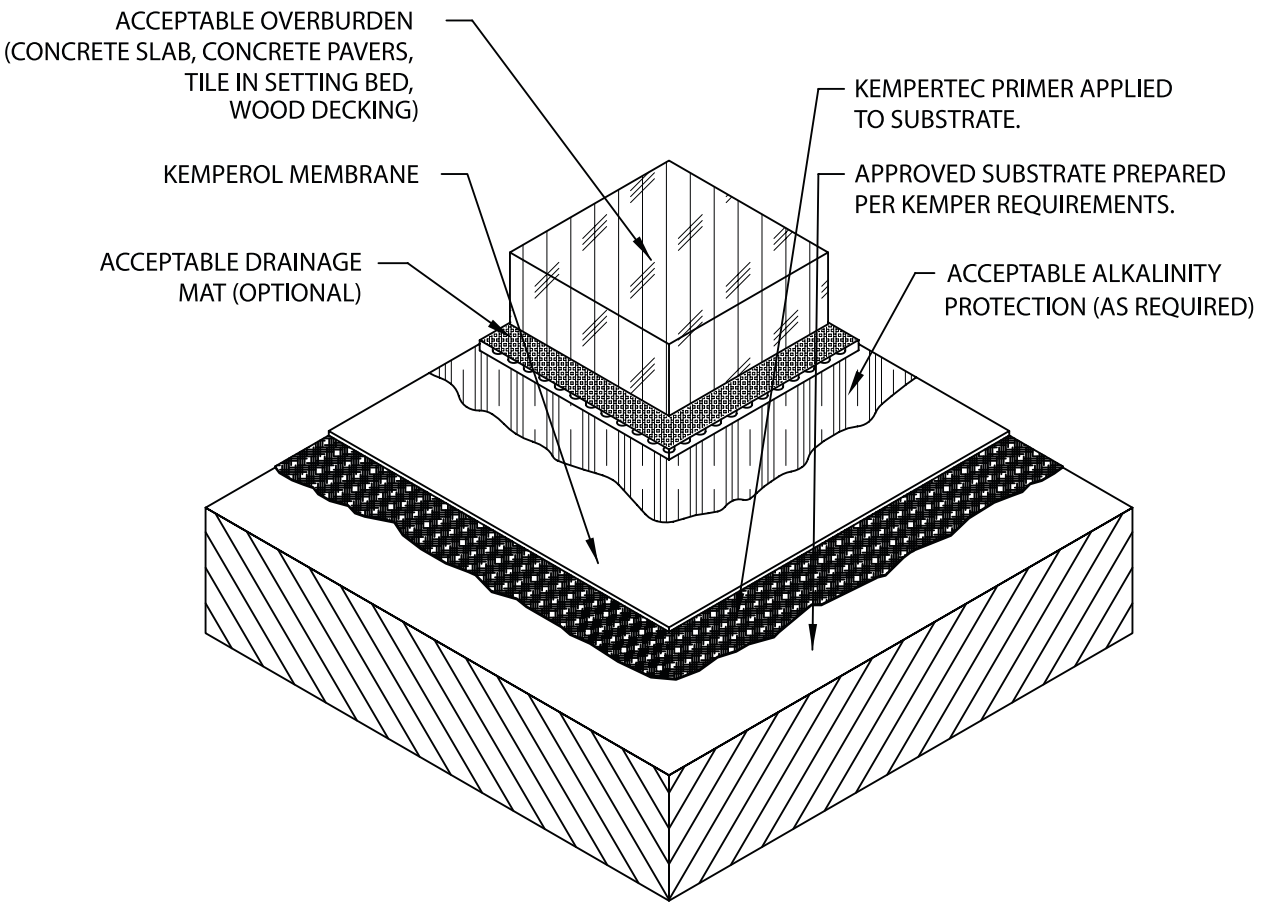
PLAZA WATERPROOFING ASSEMBLY W/SOLID OVERBURDEN

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	BALCONY WATERPROOFING W/SURFACING ASSEMBLY			KEMPER SYSTEM
A-21	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-21.DWG	-	03-01-2011	N.T.S.	K.S.A.



DRAWING NO.

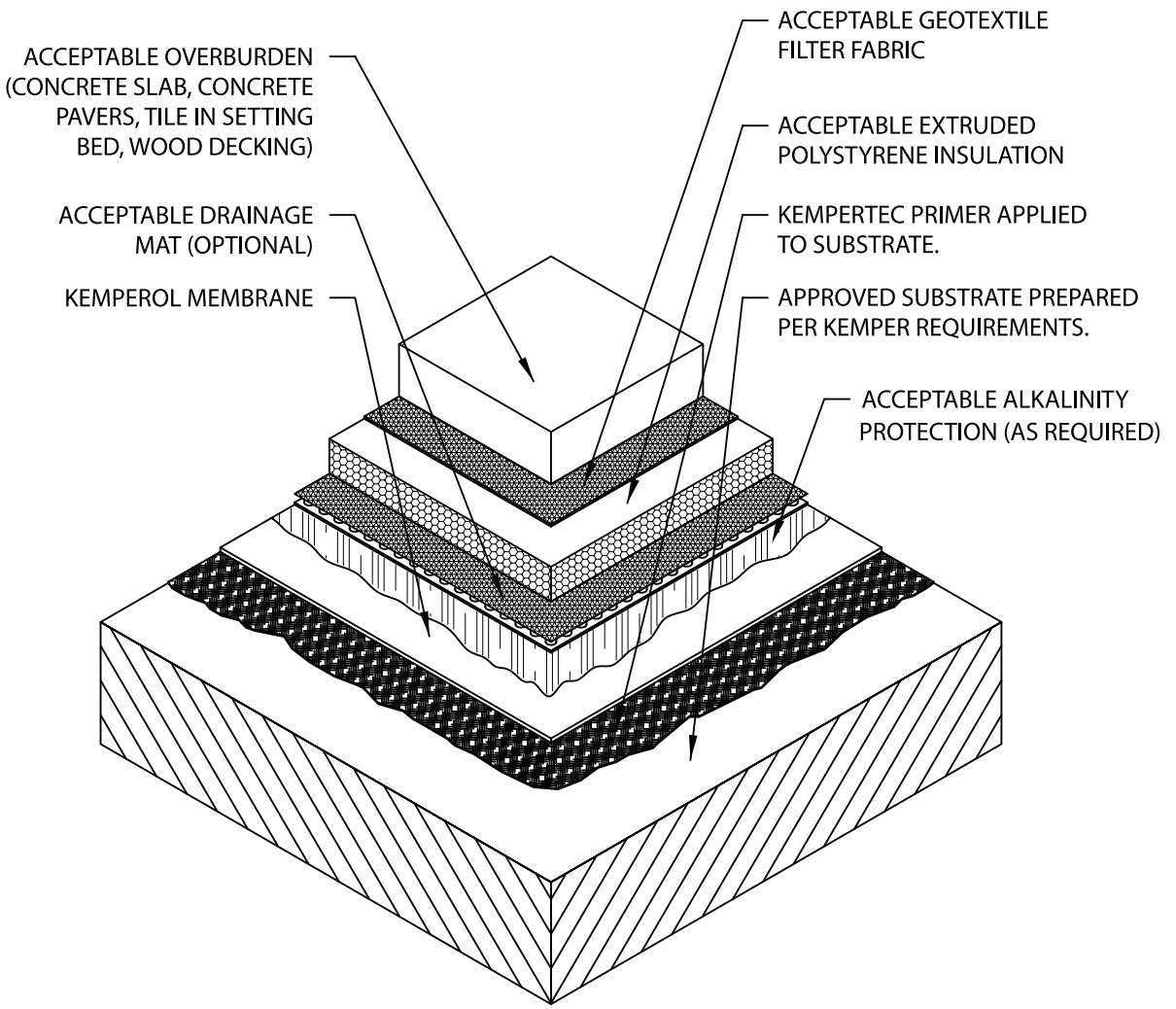
A-22

A-22.DWG

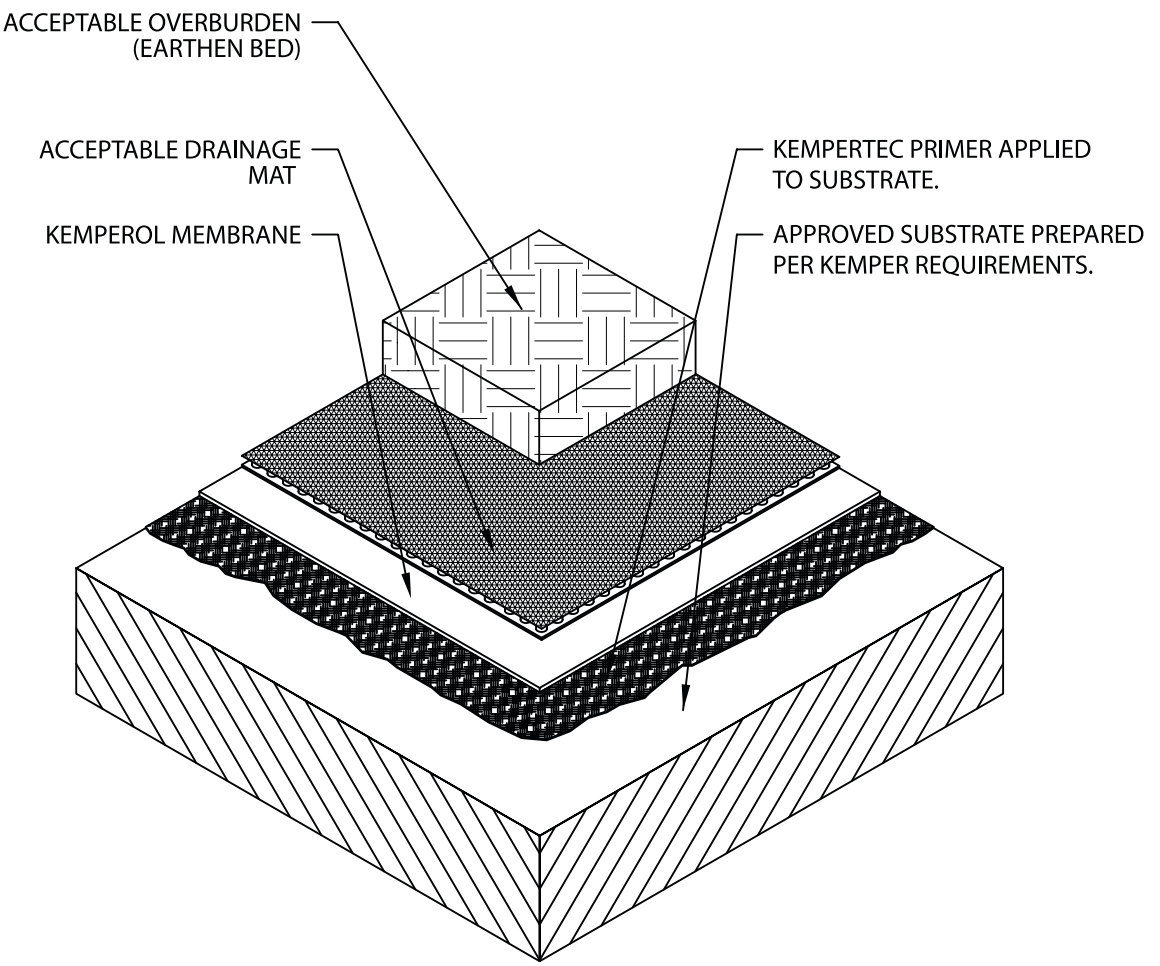
BALCONY WATERPROOFING ASSEMBLY W/OVERBURDEN

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	BALCONY WATERPROOFING ASSEMBLY W/INSULATION & OVERBURDEN			KEMPER SYSTEM
A-23	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-23.DWG	-	03-01-2011	N.T.S.	K.S.A.



DRAWING NO.

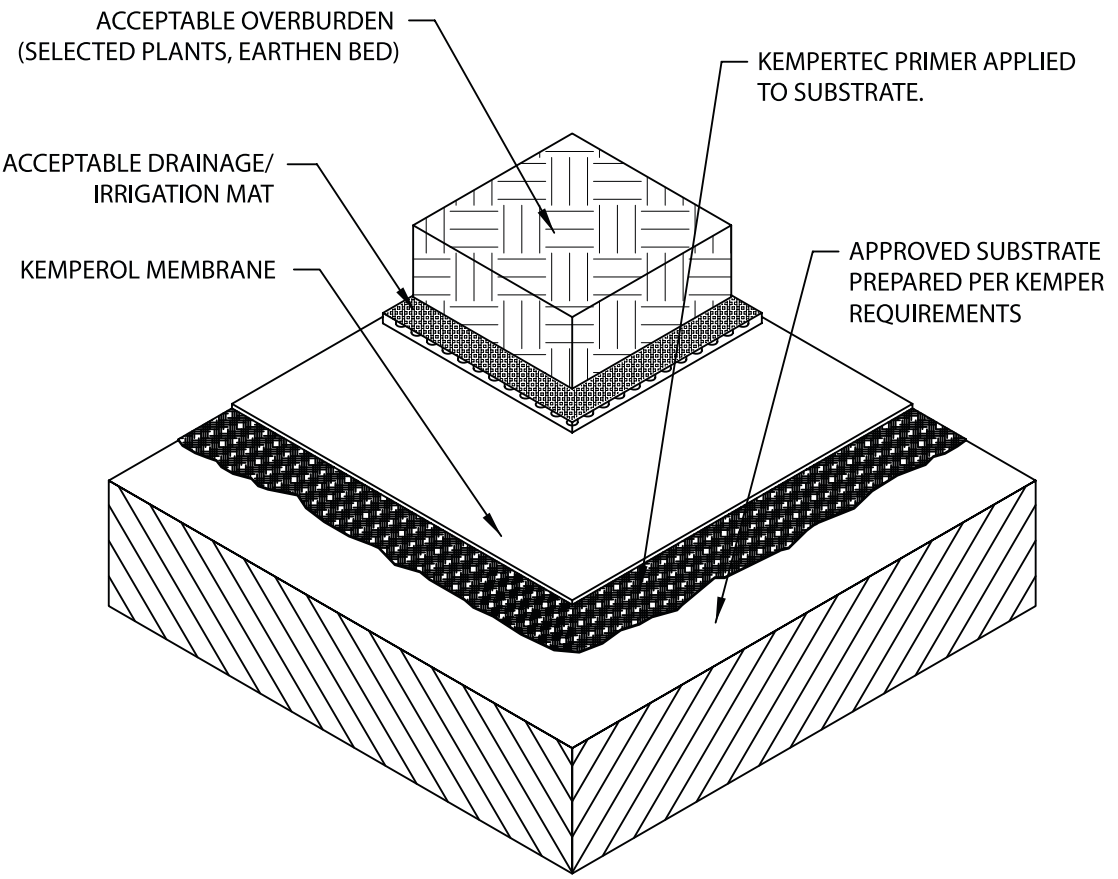
A-24

A-24.DWG

PLANTER BOX WATERPROOFING ASSEMBLY

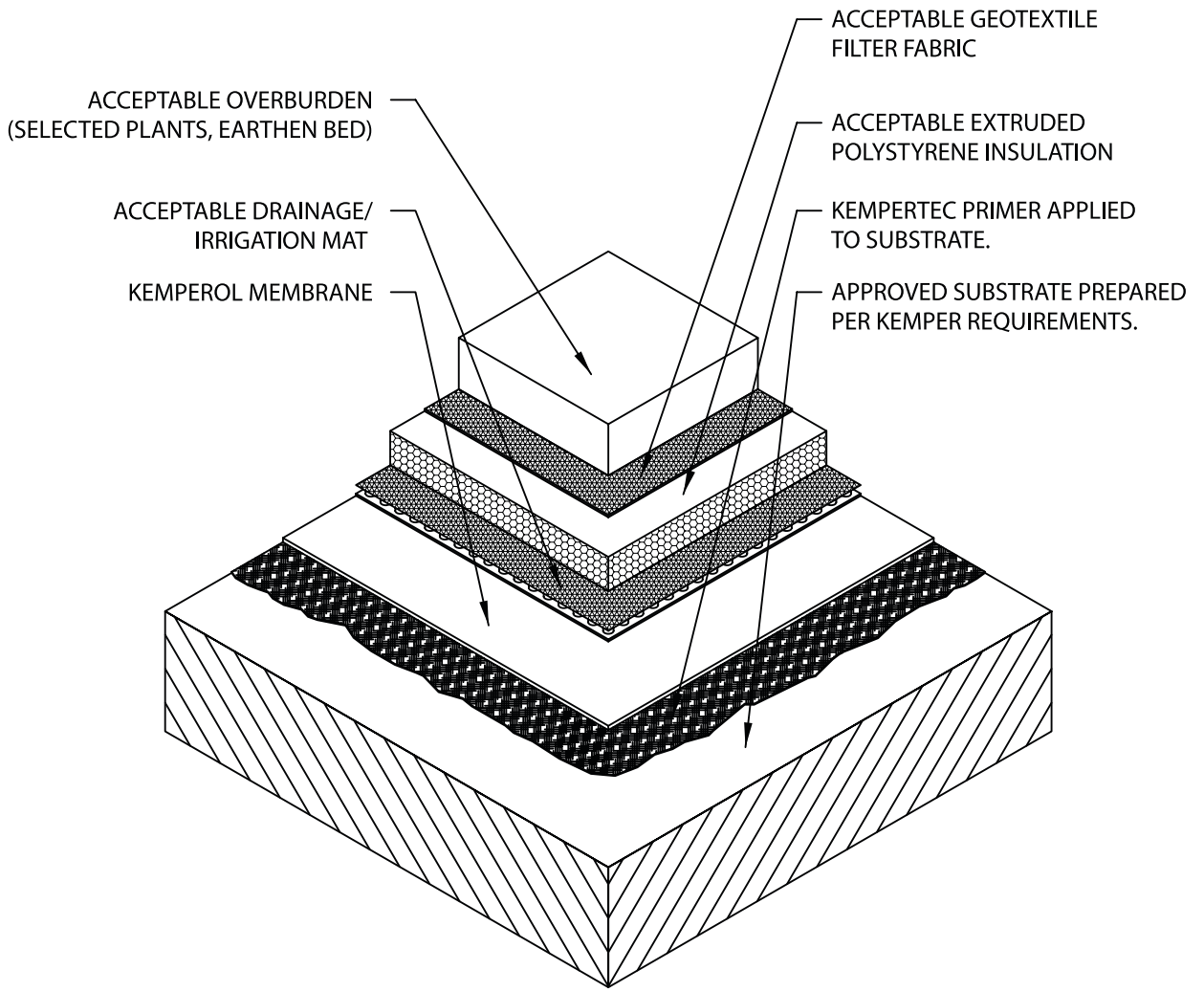
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	LANDSCAPE WATERPROOFING ASSEMBLY			
A-25	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-25.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

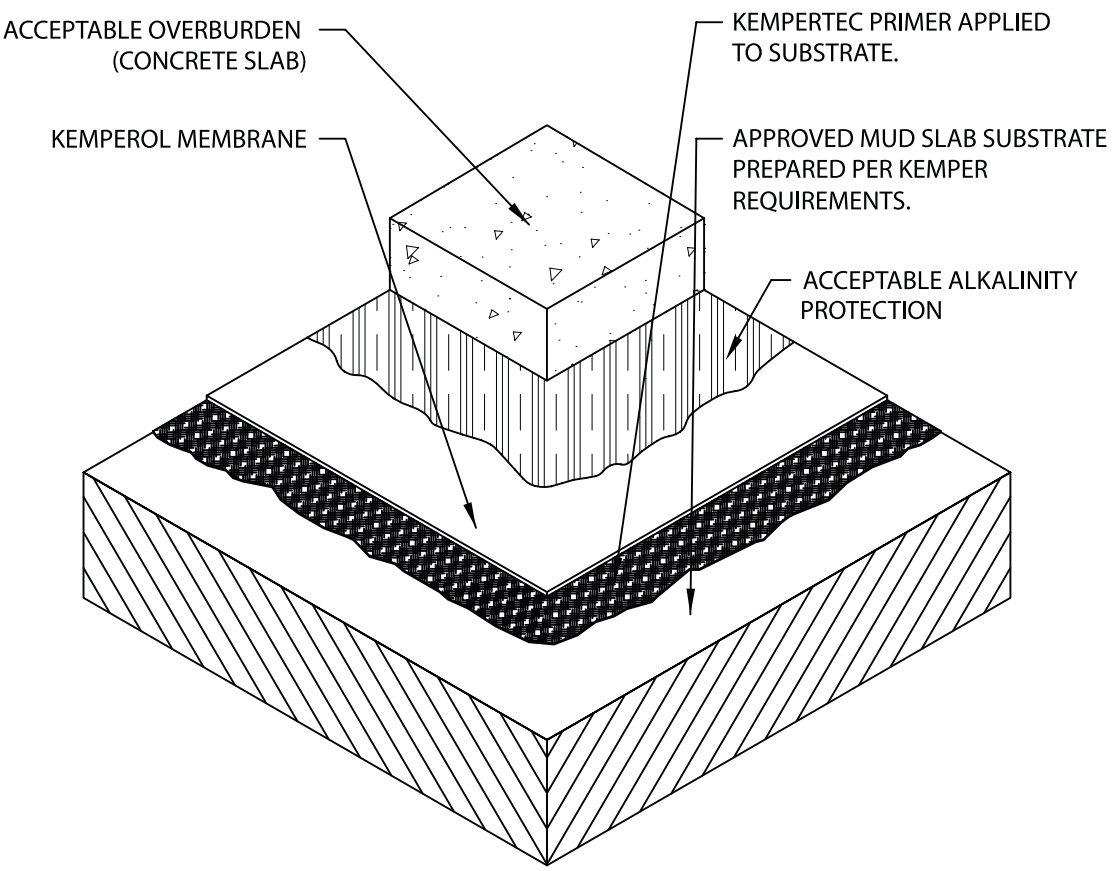
A-26

A-26.DWG

LANDSCAPE WATERPROOFING ASSEMBLY W/INSULATION

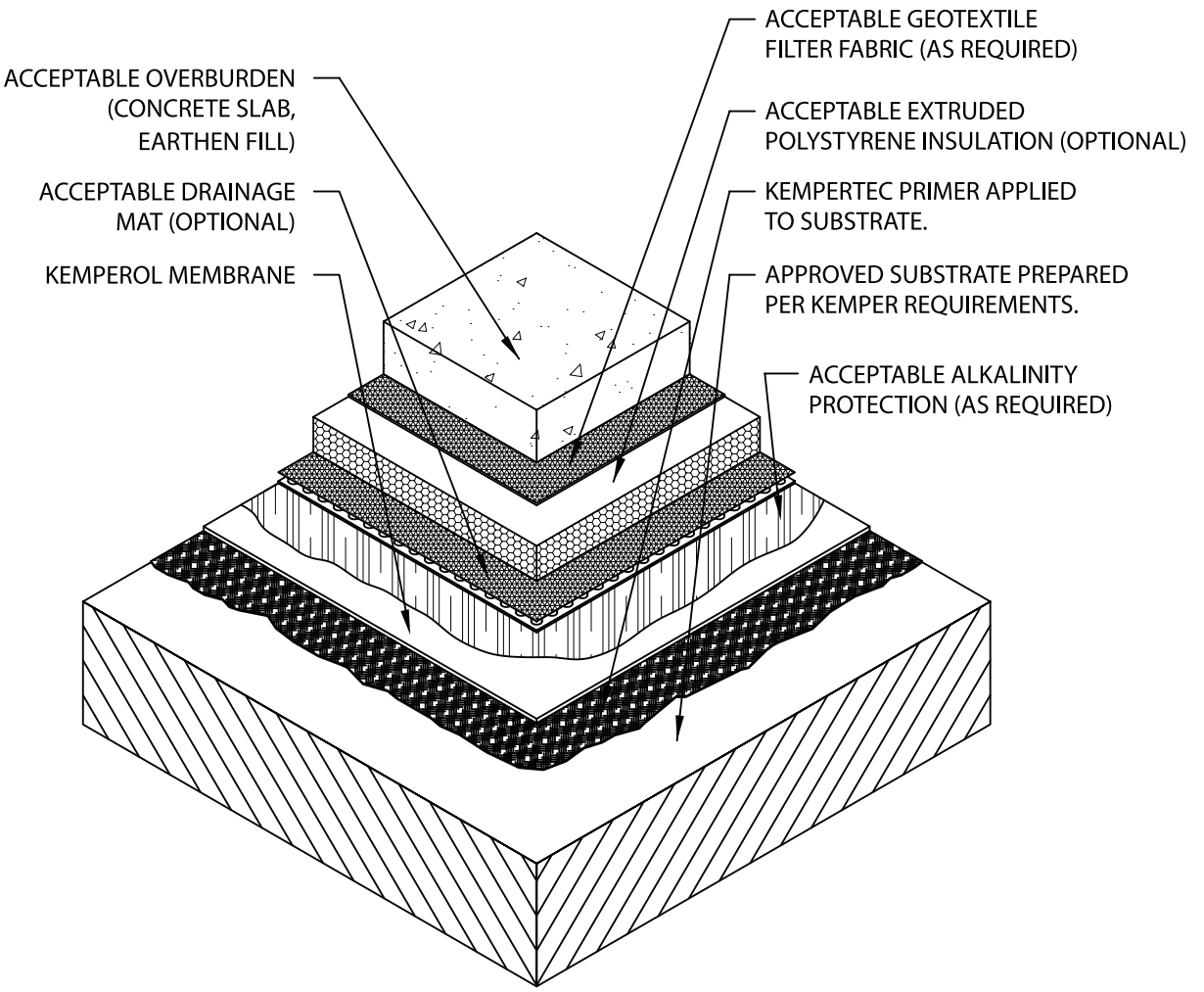
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	SPLIT-SLAB BELOW-GRADE WATERPROOFING ASSEMBLY			
A-27	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-27.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

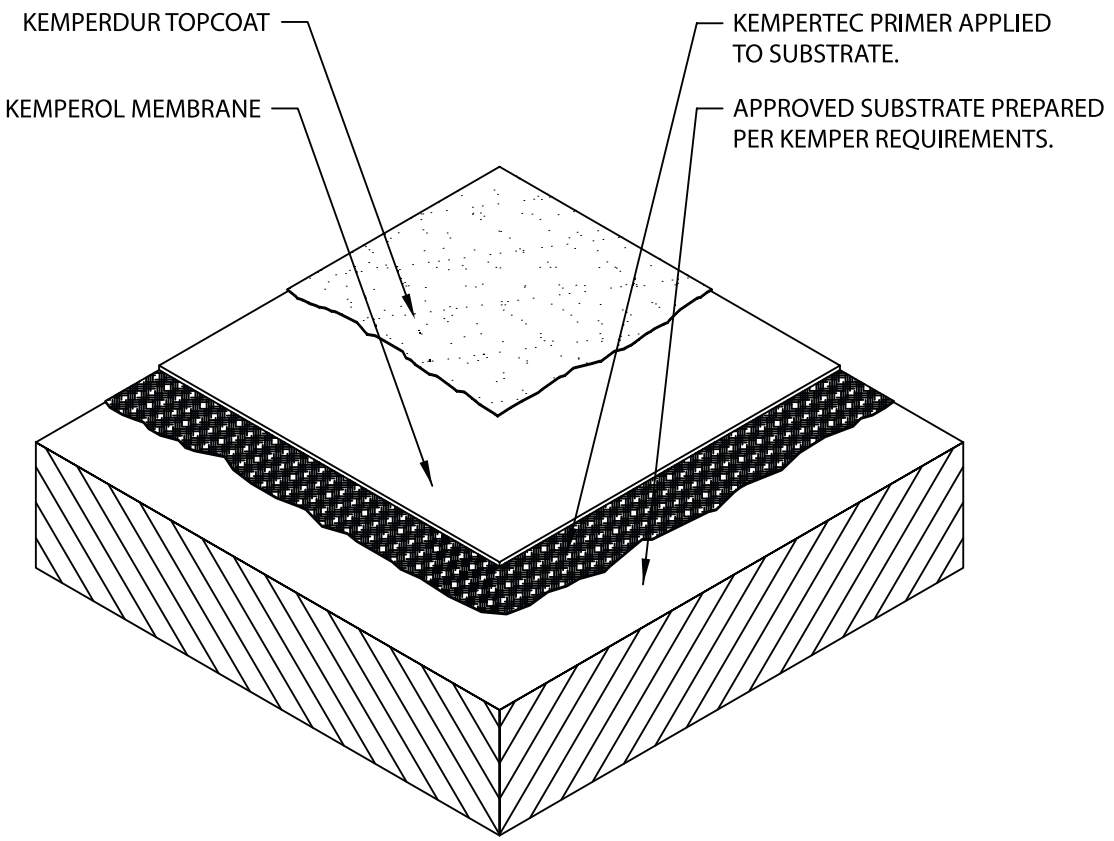
A-28

A-28.DWG

BELOW-GRADE WATERPROOFING ASSEMBLY W/OVERBURDEN

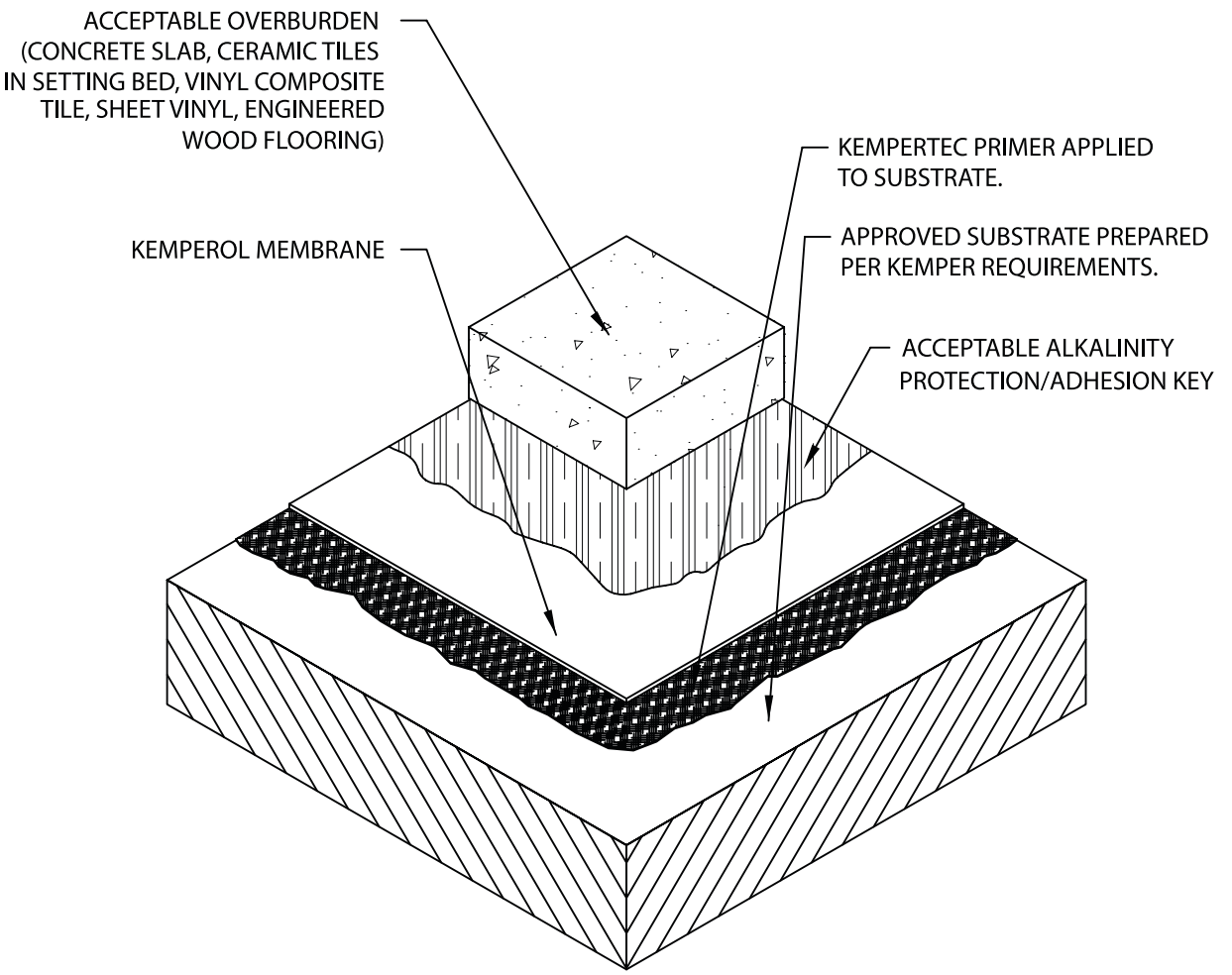
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



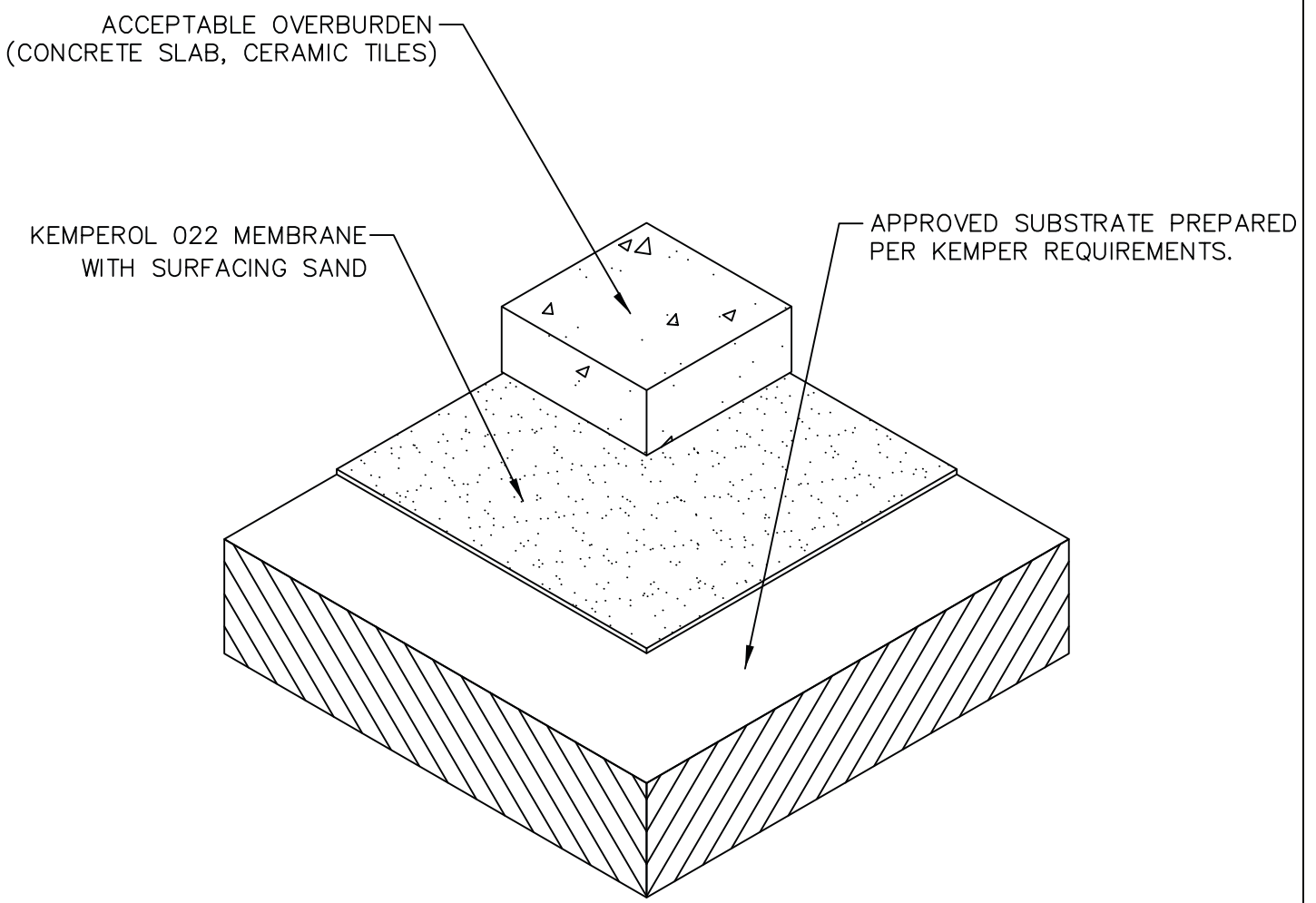
DRAWING NO.	INTERIOR FLOOR WATERPROOFING ASSEMBLY			
A-29	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-29.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



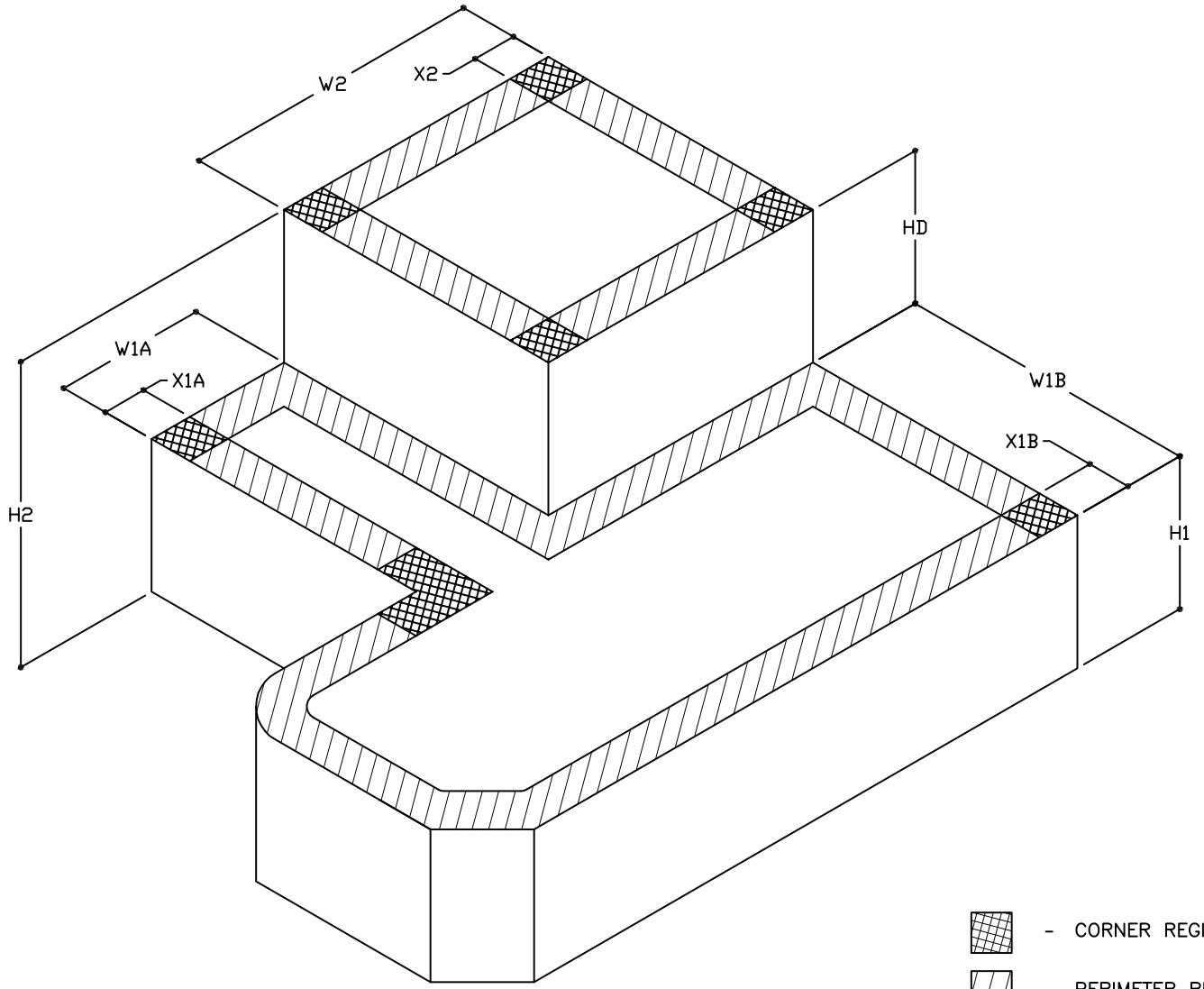
DRAWING NO.	INTERIOR FLOOR WATERPROOFING ASSEMBLY W/OVERBURDEN			
A-30	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-30.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	INTERIOR FLOOR WATERPROOFING ASSEMBLY W/OVERBURDEN			
A-31	REVISION	ISSUE DATE	SCALE	DRAWN BY
A-30.DWG	10-10-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



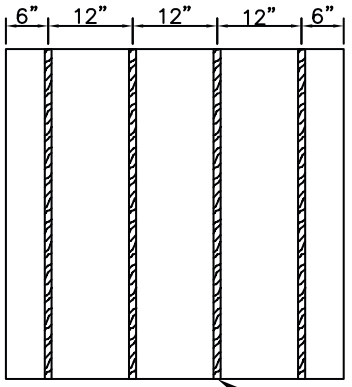
NOTES:

1. THE USE OF THIS ROOF ZONE LAYOUT IS MANDATORY FOR ALL APPLICATIONS FOR WHICH AN EXTENDED WIND SPEED WARRANTY IS REQUIRED.
2. ADDITIONAL SECUREMENT IS REQUIRED IN CORNER AND PERIMETER REGIONS, TYPICALLY PROVIDED BY AN INCREASED DENSITY OF URETHANE ADHESIVE RIBBONS (SEE DRAWING HW-2) OR MECHANICAL FASTENERS/PLATES (SEE DRAWING HW-3).
3. CORNER/PERIMETER REGIONS: DIMENSION X = (0.1)(W) OR (0.4)(H), WHICHEVER IS LESS, WITH A 4' MINIMUM.
4. HEIGHT DIFFERENCE BETWEEN ADJACENT ROOF LEVELS MUST EQUAL OR EXCEED 3' FOR THE HIGHER LEVEL TO BE CONSIDERED A SEPARATE LEVEL.
5. REFERENCE FACTORY MUTUAL DATA SHEET 1-28 AND CONTACT KEMPER SYSTEM, INC. TECHNICAL SERVICES DEPARTMENT FOR SUPPLEMENTAL REQUIREMENTS REGARDING OVERHANGS, CANOPIES, HANGER BUILDINGS, MULTI-BAY LOADING DOCKS, WAREHOUSES, INTERNALLY PRESSURIZED BUILDINGS, AND OTHER SIMILAR APPLICATION CONDITIONS WHERE AIR PRESSURE FORCES COULD ACT ON THE UNDERSIDE OF THE ROOF DECK.

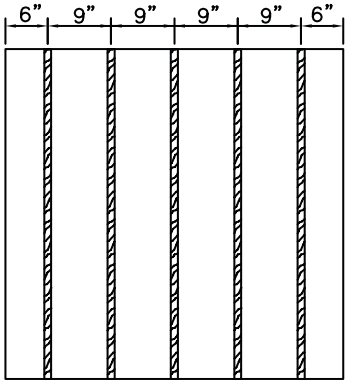
DRAWING NO.	ROOF ZONE LAYOUT			
HW-1	REVISION	ISSUE DATE	SCALE	DRAWN BY
HW-1.DWG	10-13-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM

FIELD REGION

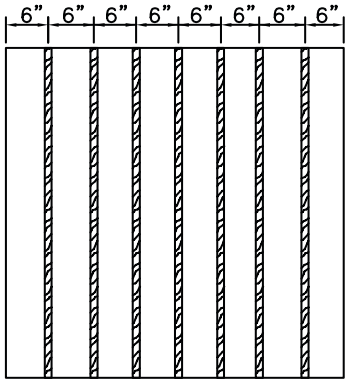


PERIMETER REGION



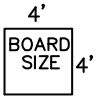
FM–APPROVED 3/4"– 1" WIDE
CONTINUOUS ADHESIVE BEAD
ADHESIVE APPROVED BY
KEMPER TECHNICAL SERVICES

CORNER REGION



NOTES:

1. THE USE OF THIS 3–ZONE URETHANE ADHESIVE INSULATION ATTACHMENT PATTERN IS MANDATORY FOR ALL APPLICATIONS FOR WHICH AN EXTENDED WIND SPEED WARRANTY IS REQUIRED.
2. ADDITIONAL SECUREMENT IS REQUIRED IN CORNER AND PERIMETER REGIONS, AS IDENTIFIED BY THE DRAWING HW–1, ROOF ZONE LAYOUT.
3. ADDITIONAL SECUREMENT IS PROVIDED BY THE USE OF AN INCREASED DENSITY OF URETHANE ADHESIVE RIBBONS.
4. MAXIMUM BOARD SIZE FOR ADHERED APPLICATIONS IS 4' X 4'.
5. THE USE OF INSULATION BOARDS AND COVER BOARDS APPROVED IN WRITING BY KEMPER SYSTEM, INC. TECHNICAL SERVICES DEPARTMENT IS REQUIRED.
6. SUBSTRATE TYPE MUST BE COMPATIBLE WITH URETHANE ADHESIVE AND APPROVED BY KEMPER SYSTEM, INC. TECHNICAL SERVICES DEPARTMENT
7. 100 FT. HEIGHT LIMITATION UNLESS APPROVED IN WRITING BY KEMPER SYSTEM, INC. TECHNICAL SERVICES DEPARTMENT.



DRAWING NO.

HW-2

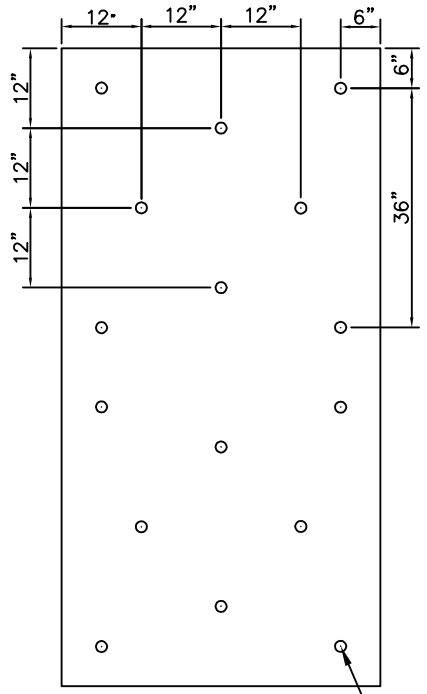
HW–2.DWG

URETHANE ADHESIVE RIBBON INSULATION ATTACHMENT PATTERN

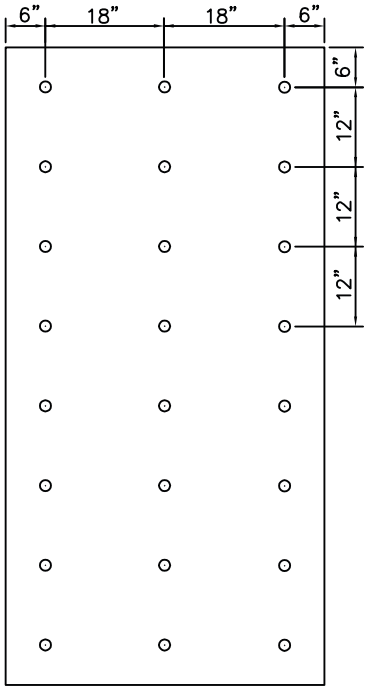
REVISION	ISSUE DATE	SCALE	DRAWN BY
10–13–2014	03–01–2011	N.T.S.	K.S.A.

KEMPER SYSTEM

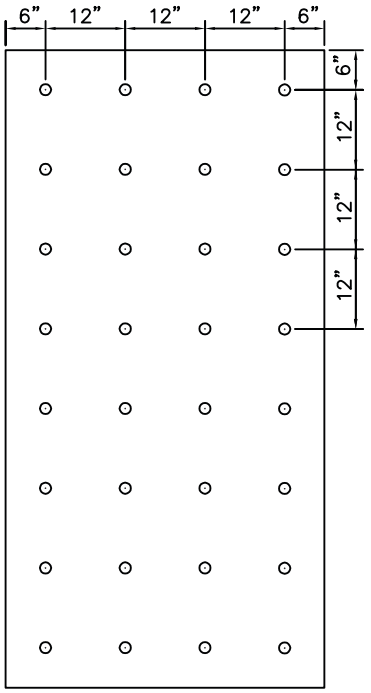
FIELD REGION



PERIMETER REGION



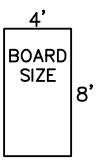
CORNER REGION



FM–APPROVED MECHANICAL FASTENERS AND PLATES – MUST BE APPROVED BY KEMPER TECHNICAL SERVICES

NOTES:

1. THE USE OF THIS 3–ZONE MECHANICAL FASTENER & PLATE ATTACHMENT PATTERN IS MANDATORY FOR ALL APPLICATIONS FOR WHICH AN EXTENDED WIND SPEED WARRANTY IS REQUIRED.
2. ADDITIONAL SECUREMENT IS REQUIRED IN CORNER AND PERIMETER REGIONS, AS IDENTIFIED BY THE DRAWING HW–1, ROOF ZONE LAYOUT.
3. ADDITIONAL SECUREMENT IS PROVIDED BY THE USE OF AN INCREASED DENSITY OF MECHANICAL FASTENERS AND PLATES.
4. MAXIMUM BOARD SIZE FOR MECHANICALLY ATTACHED APPLICATIONS IS 4' X 8'.
5. THE USE OF INSULATION BOARDS AND COVER BOARDS APPROVED IN WRITING BY KEMPER SYSTEM, INC. TECHNICAL SERVICES DEPARTMENT IS REQUIRED.
6. MECHANICAL FASTENER TYPE AND PENETRATION DEPTH INTO THE SUBSTRATE MUST MEET FACTORY MUTUAL REQUIREMENTS.
7. 100 FT. HEIGHT LIMITATION UNLESS APPROVED IN WRITING BY KEMPER SYSTEM, INC. TECHNICAL SERVICES DEPARTMENT.



DRAWING NO.

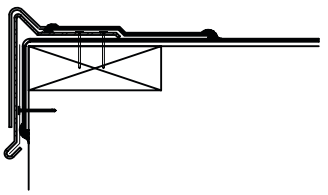
HW-3

HW–3.DWG

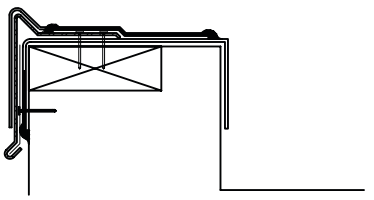
FASTENER & PLATE INSULATION ATTACHMENT PATTERN

REVISION	ISSUE DATE	SCALE	DRAWN BY
10–13–2014	03–01–2011	N.T.S.	K.S.A.

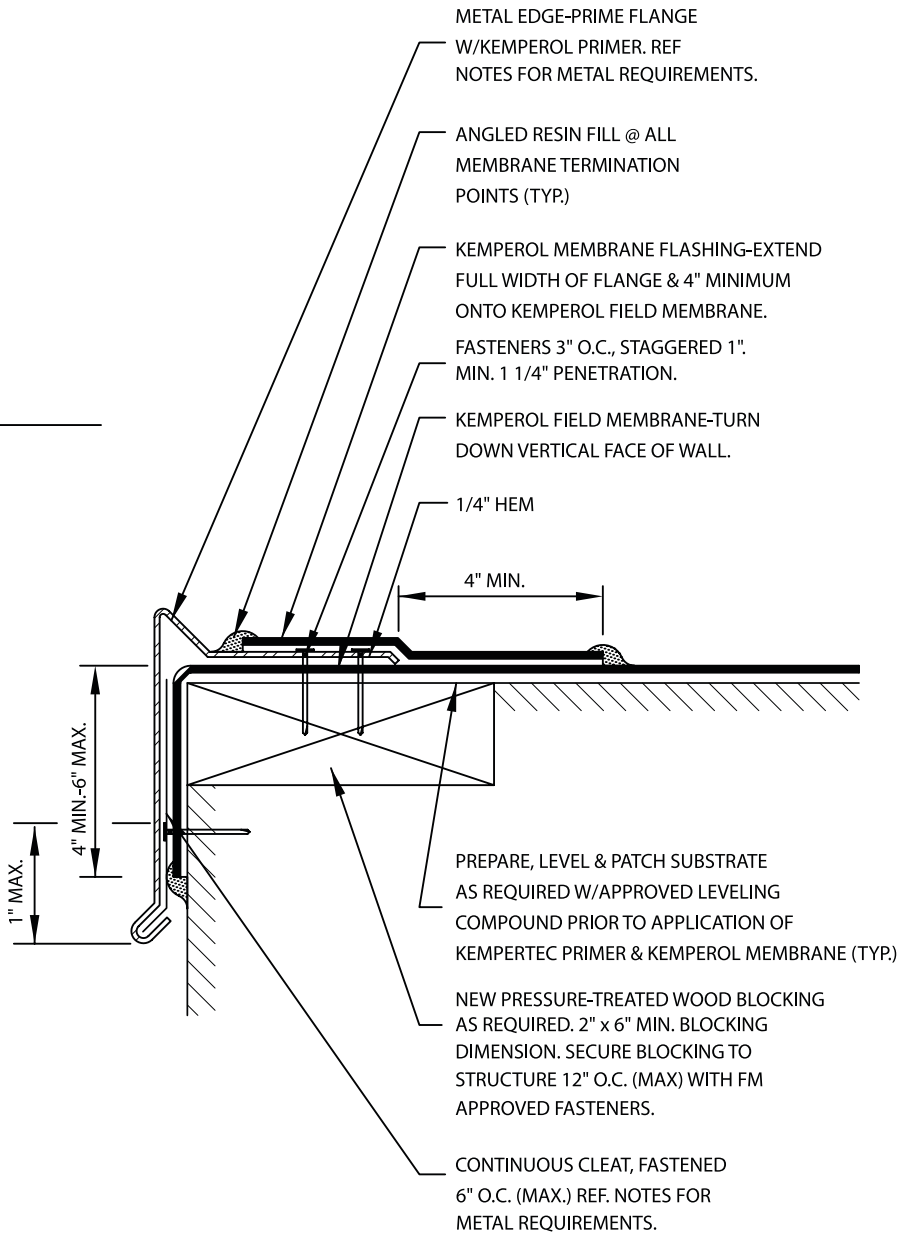
KEMPER SYSTEM



CONDITION #1: (TYPICAL)
METAL EDGE AT ROOF EDGE



CONDITION #2: (TYPICAL)
METAL EDGE AT PARAPET
WALL EDGE

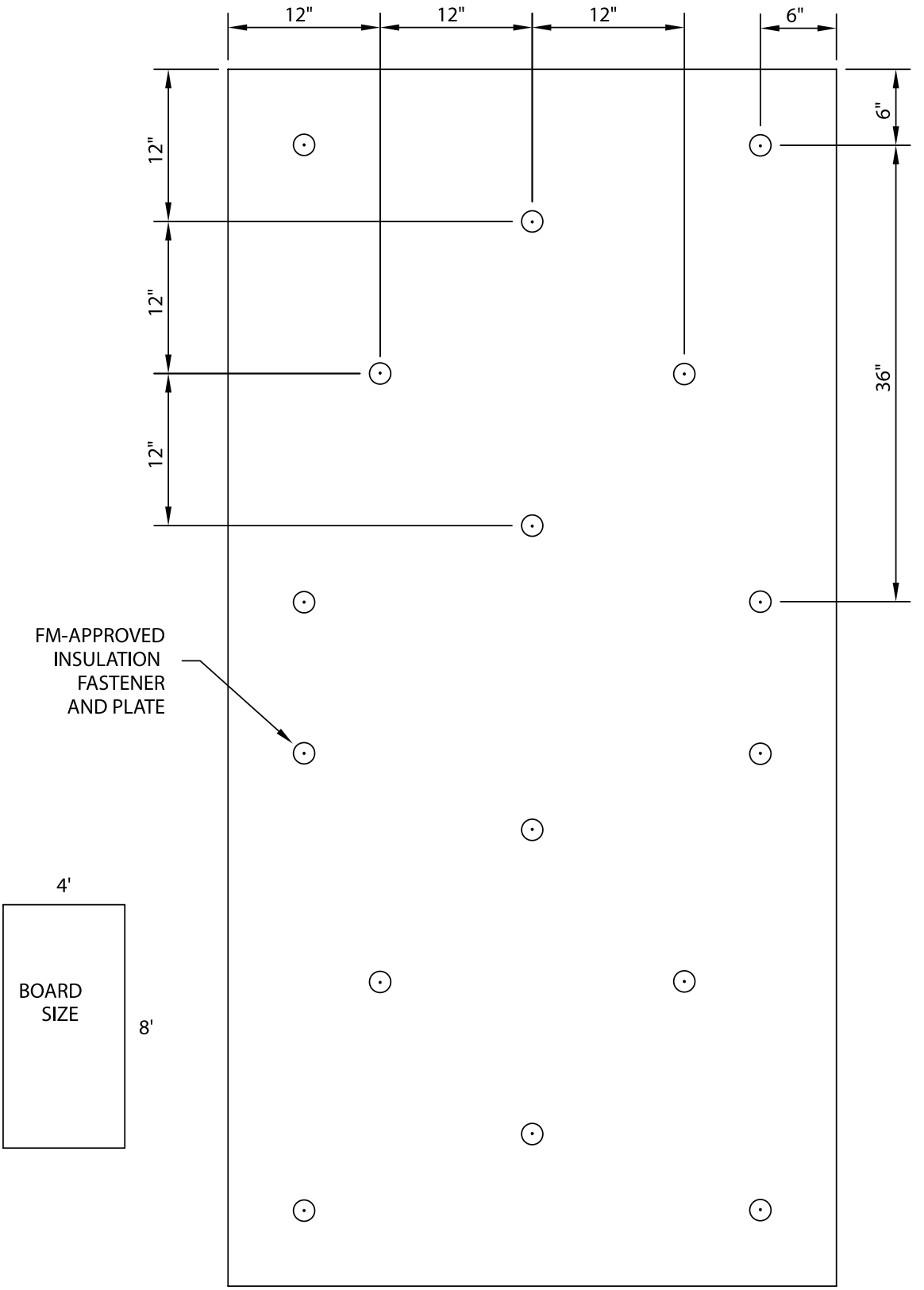


NOTES:

1. THE USE OF THIS METAL EDGE SECUREMENT IS MANDATORY FOR ALL APPLICATIONS FOR WHICH AN EXTENDED WIND SPEED WARRANY IS REQUIRED.
2. THE USE OF COMMERCIALLY AVAILABLE METAL EDGE SYSTEMS RATED FOR HIGH WIND APPLICATIONS MUST BE APPROVED IN WRITING BY KEMPER SYSTEM AMERICA, INC. TECHNICAL SERVICES DEPARTMENT.
3. MECHANICAL FASTENER TYPE AND PENETRATION DEPTH INTO THE SUBSTRATE MUST MEET FACTORY MUTUAL REQUIREMENTS.
4. MECHANICAL FASTENERS MUST BE SECURED INTO STRUCTURAL CONCRETE, SOLID MASONRY, OR PRESSURE-TREATED WOOD BLOCKING.
5. MINIMUM METAL GAUGES ARE: 20GA. STEEL, .060" ALUMINUM, AND 24 OZ COPPER.
6. 100 FT. HEIGHT LIMITATION UNLESS APPROVED IN WRITING BY KEMPER SYSTEM AMERICA, INC. TECHNICAL SERVICES DEPARTMENT.

DRAWING NO.	METAL EDGE SECUREMENT			
HW-4	REVISION DATE	ISSUE DATE	SCALE	DRAWN BY
HW-4.DWG		03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

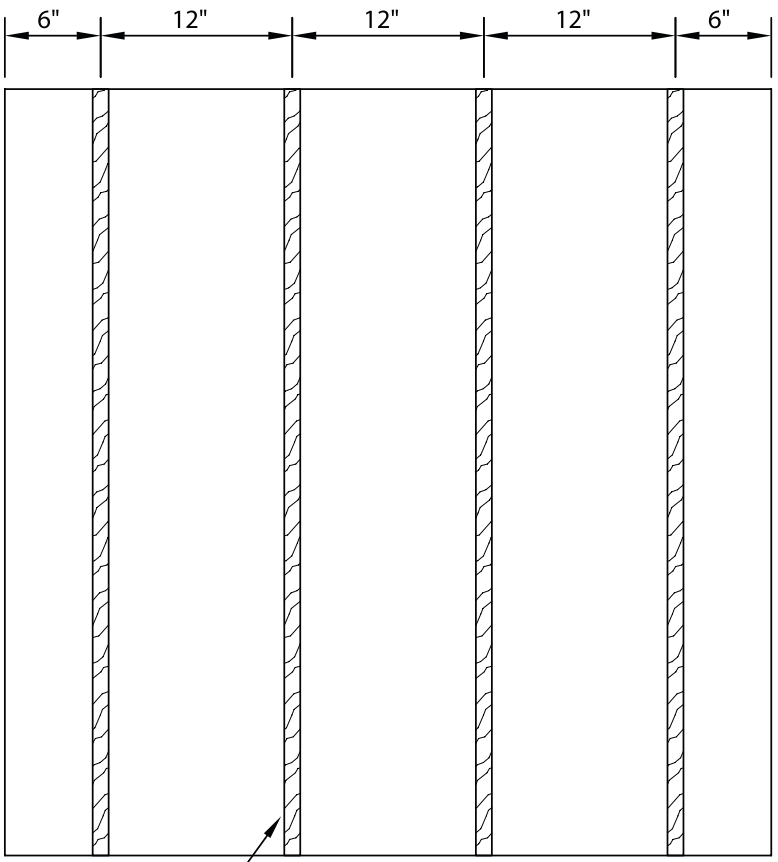
IA-1

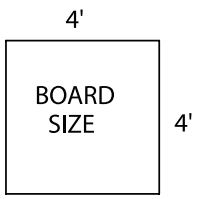
IA-1.DWG

DIAMOND - IN - SQUARE
INSULATION ATTACHMENT PATTERN

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	SHOWN	K.S.A.

KEMPER SYSTEM





DRAWING NO.

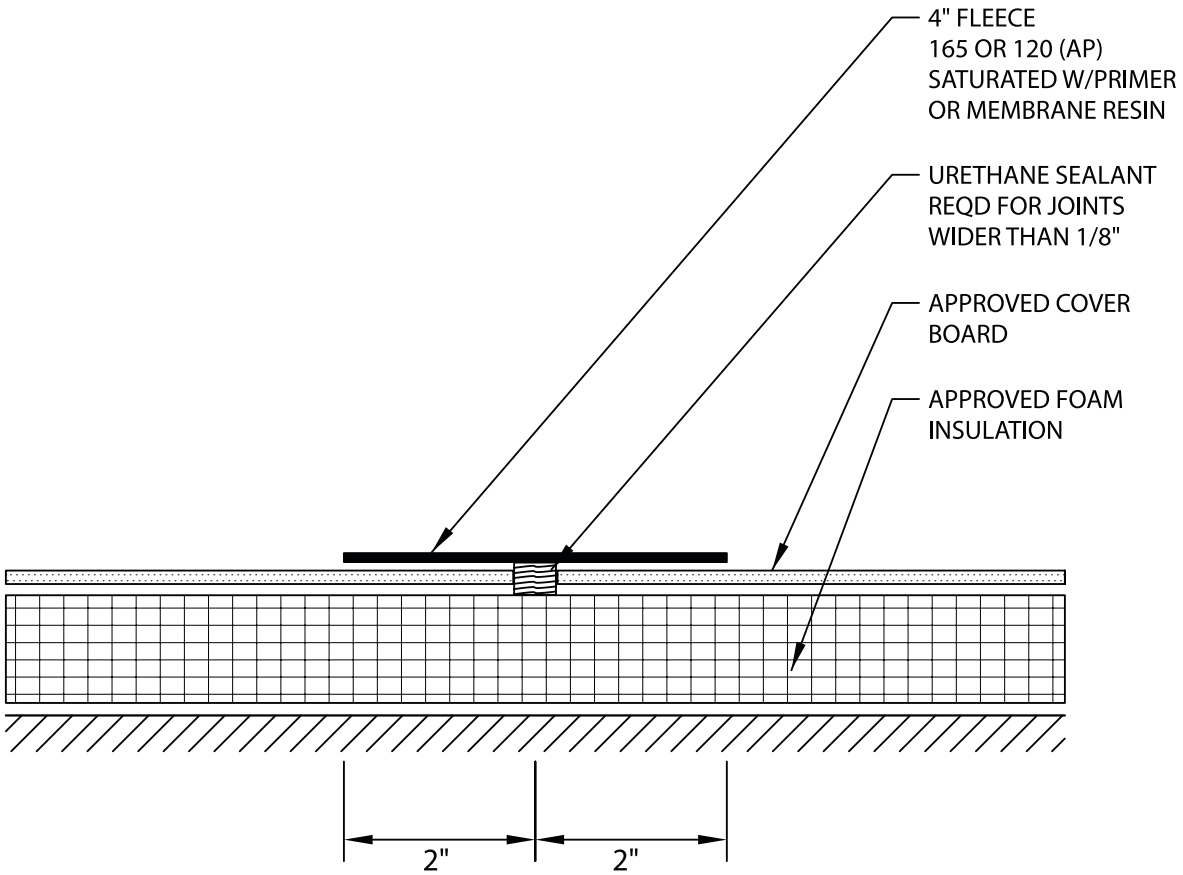
IA-2

IA-2.DWG

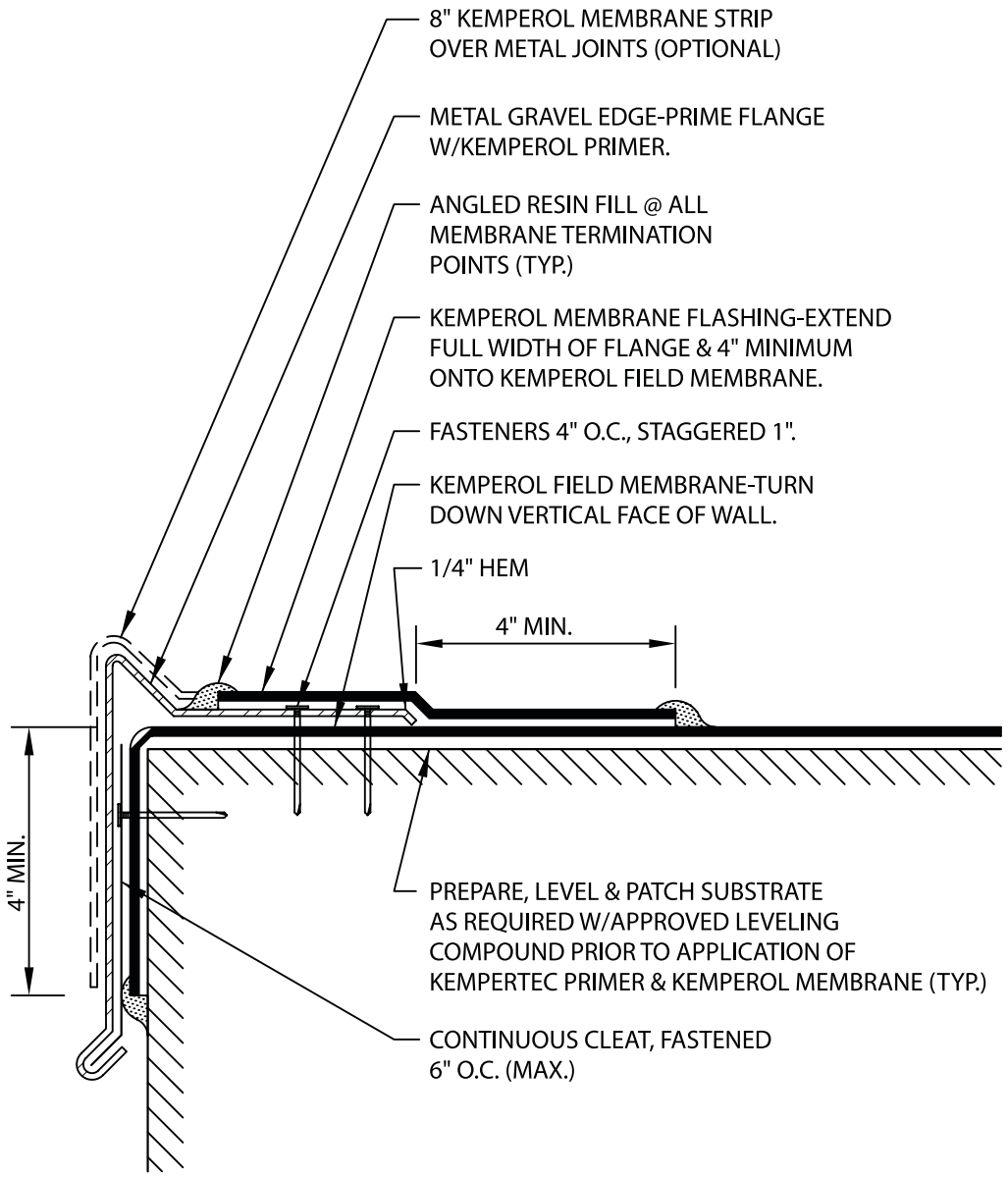
URETHANE ADHESIVE RIBBON INSULATION ATTACHMENT PATTERN

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	SHOWN	K.S.A.

KEMPER SYSTEM

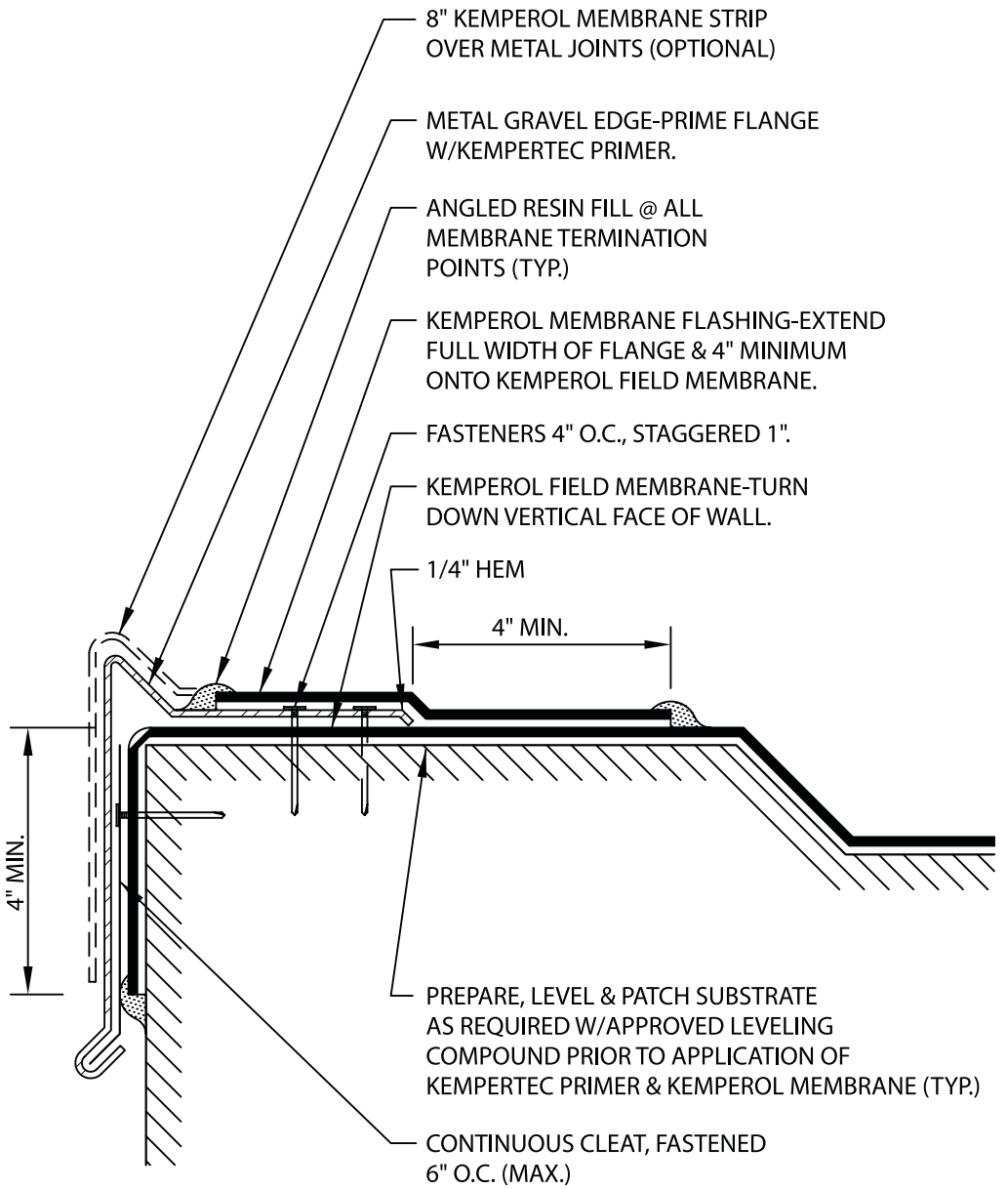


DRAWING NO.	COVER BOARD JOINT STRIPPING-IN DETAIL				KEMPER SYSTEM
IA-3	REVISION	ISSUE DATE	SCALE	DRAWN BY	
IA-3.DWG	-	03-01-2011	SHOWN	K.S.A.	



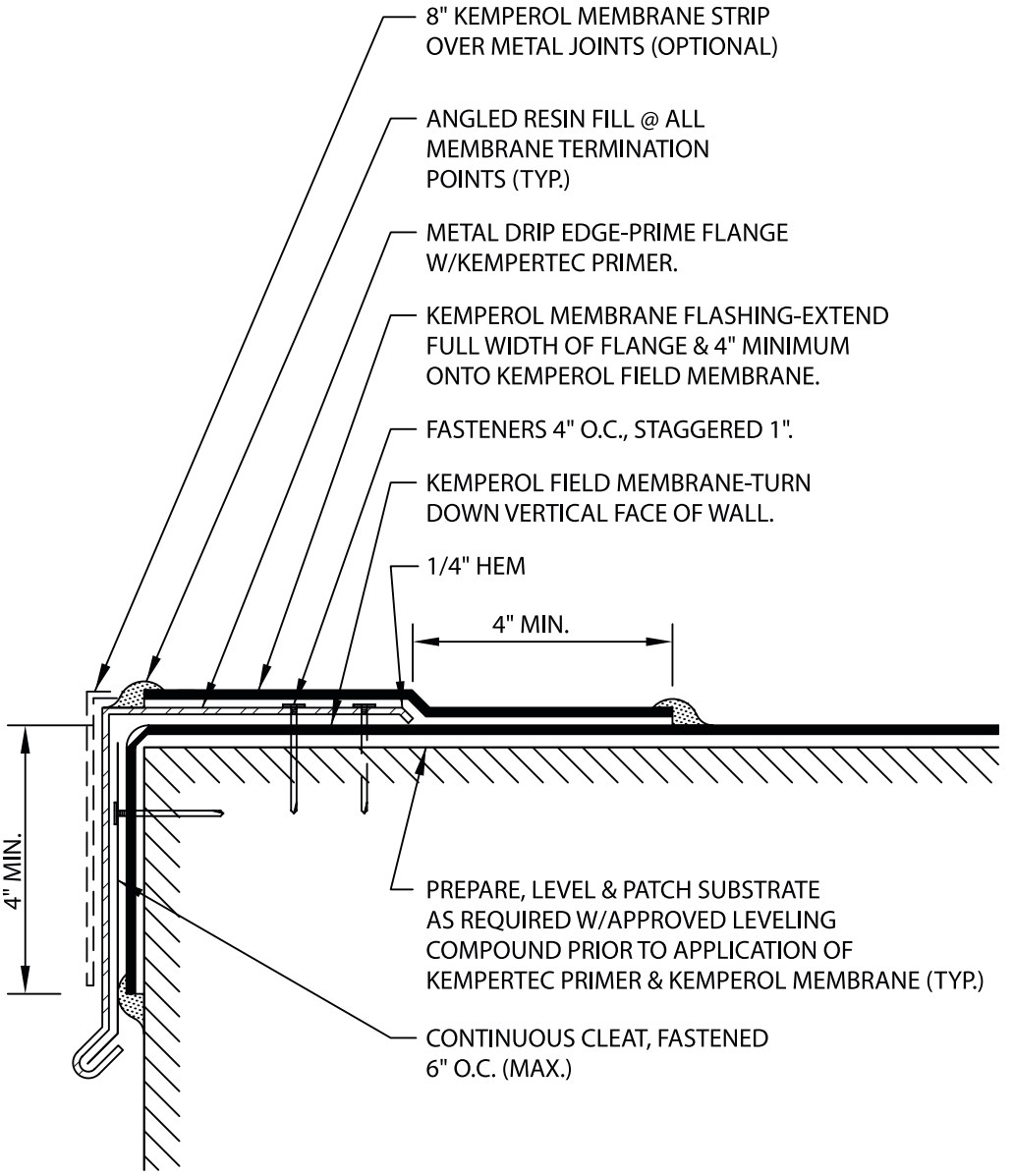
DRAWING NO.	GRAVEL STOP ROOF EDGE FLASHING			
E-1	REVISION	ISSUE DATE	SCALE	DRAWN BY
E-1.DWG	1	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



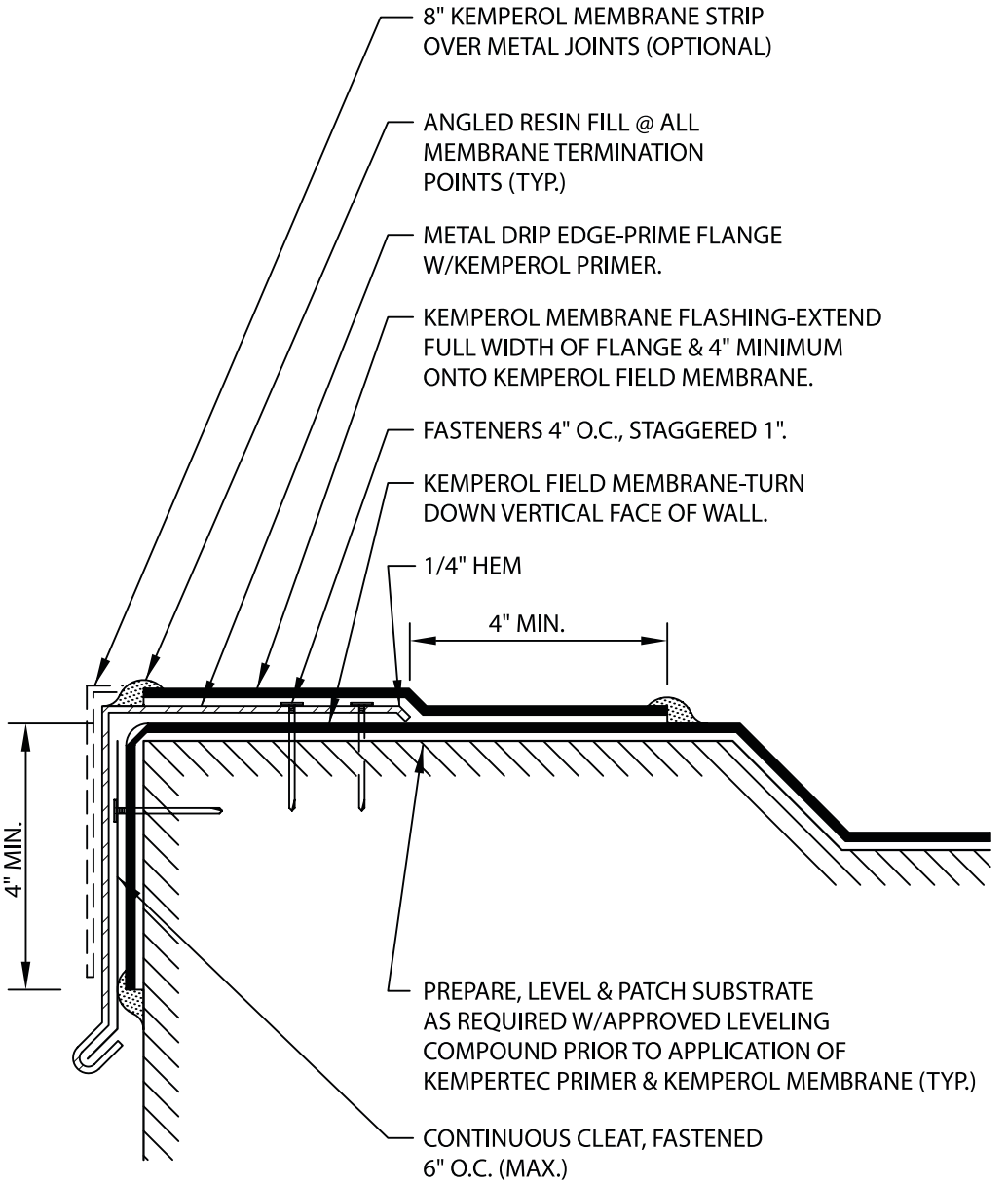
DRAWING NO.	RAISED GRAVEL STOP FLASHING			
E-1A	REVISION	ISSUE DATE	SCALE	DRAWN BY
E-1A.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	DRIP EDGE FLASHING			
E-2	REVISION	ISSUE DATE	SCALE	DRAWN BY
E-2.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

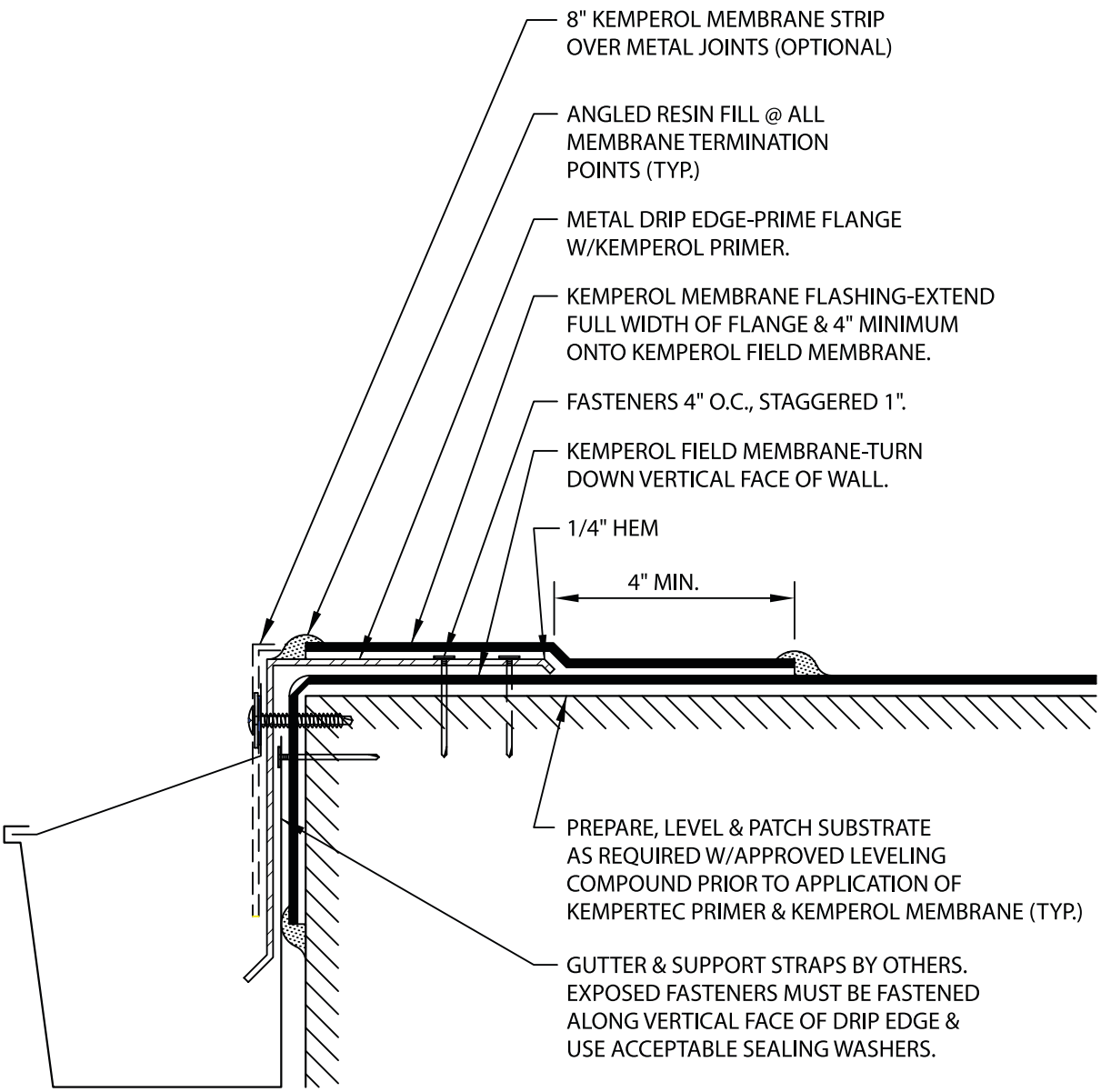
E-2A

E-2A.DWG

RAISED DRIP EDGE FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

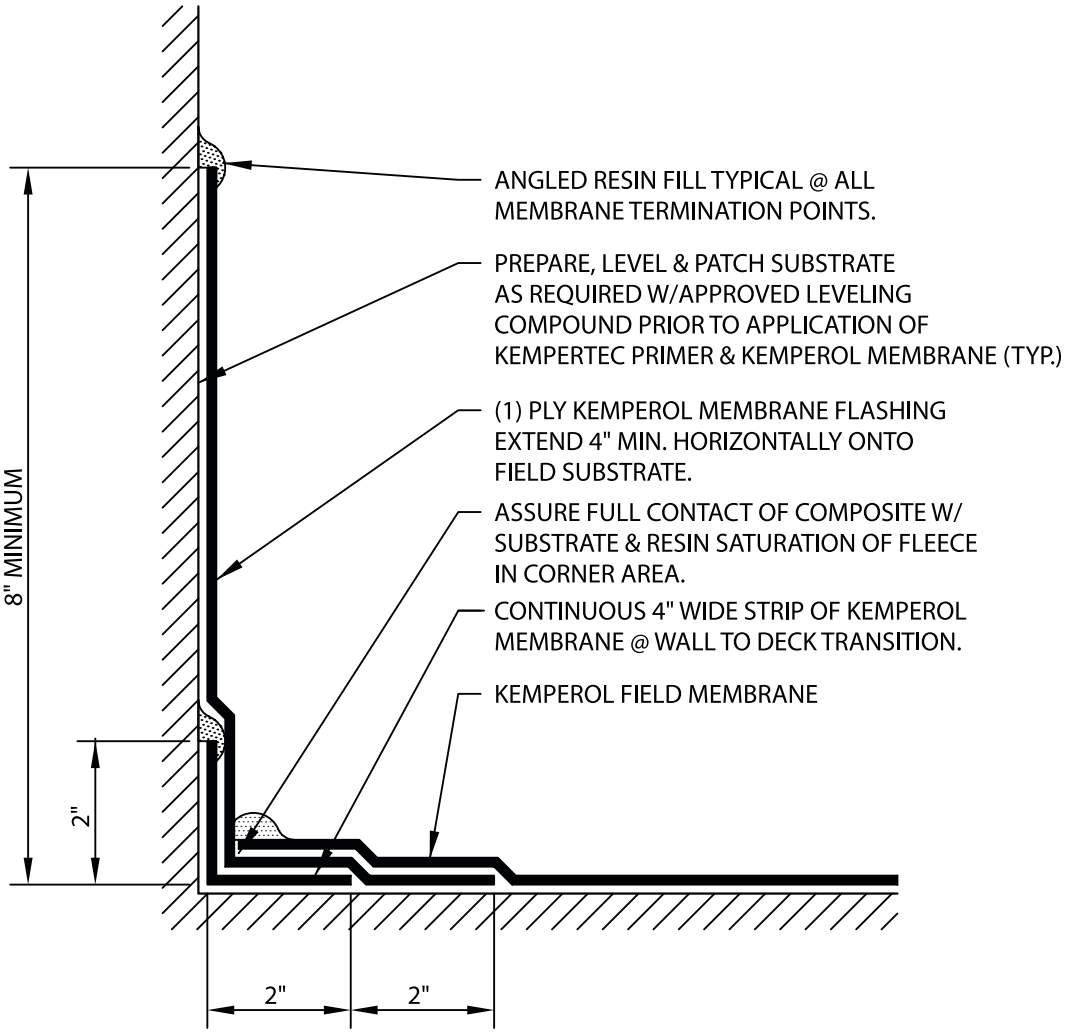
E-3

E-3.DWG

GUTTER EDGE FLASHING

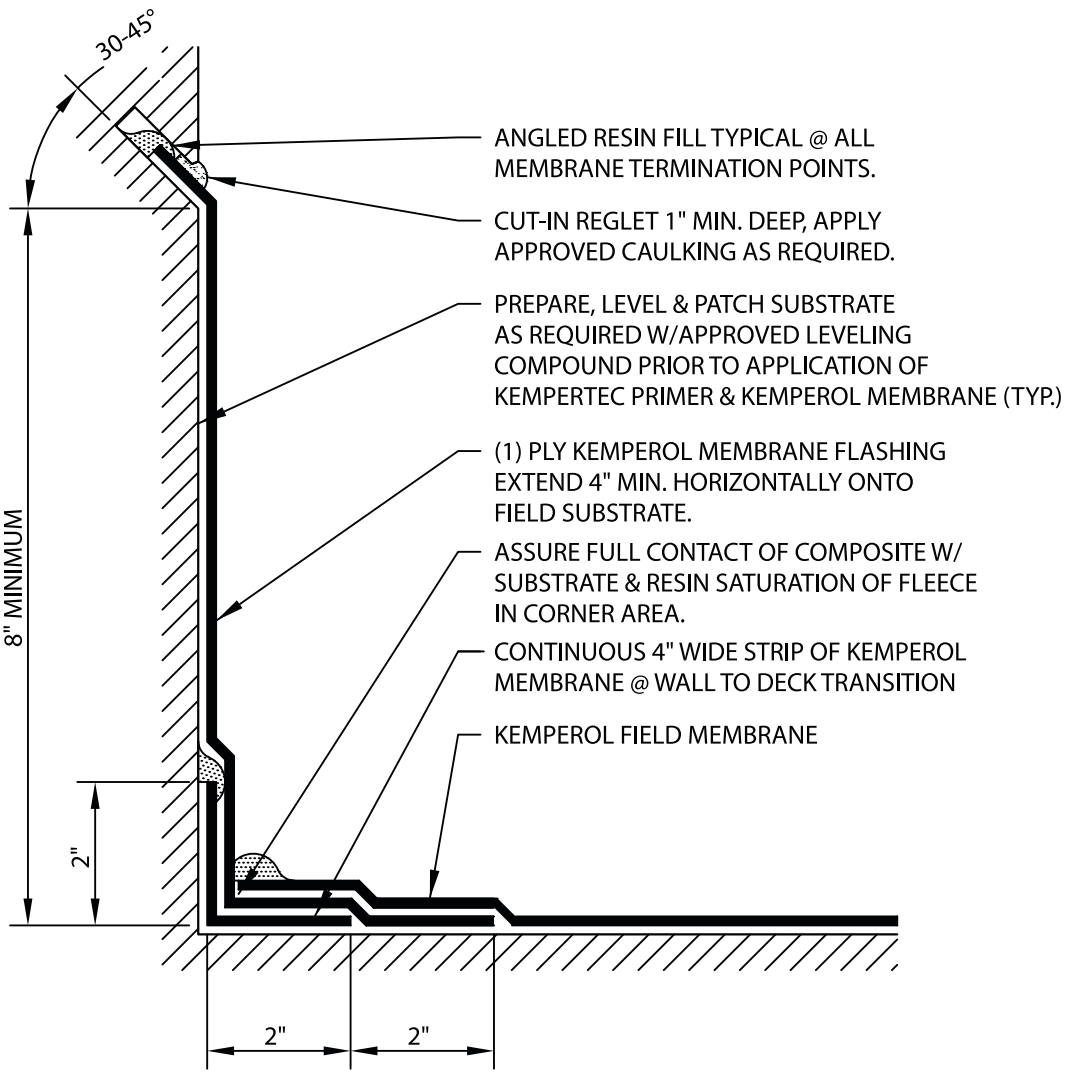
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



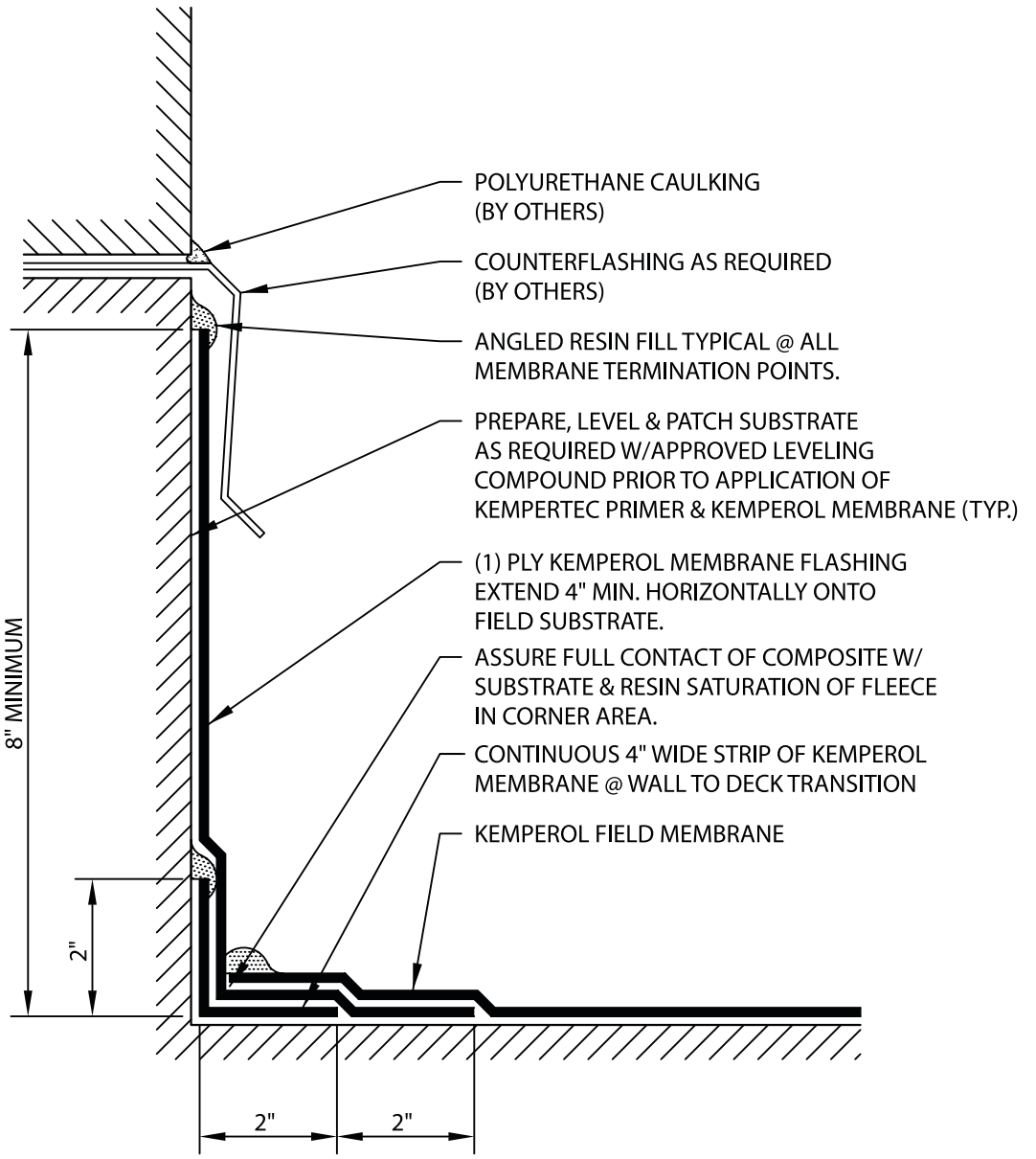
DRAWING NO.	ONE PLY BASE FLASHING			
B-1	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-1.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



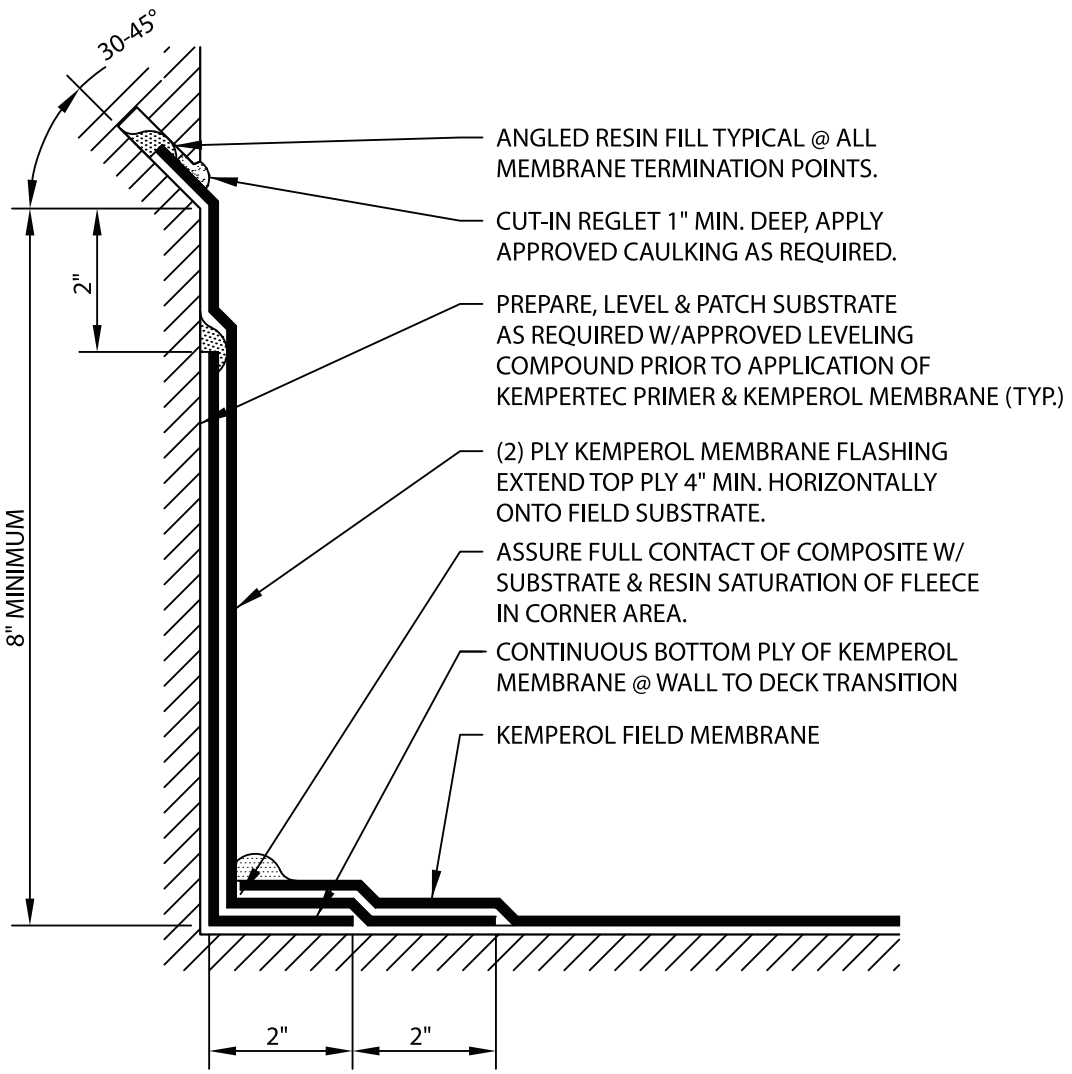
DRAWING NO.	ONE PLY BASE FLASHING W/CUT-IN REGLET			
B-1A	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-1A.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



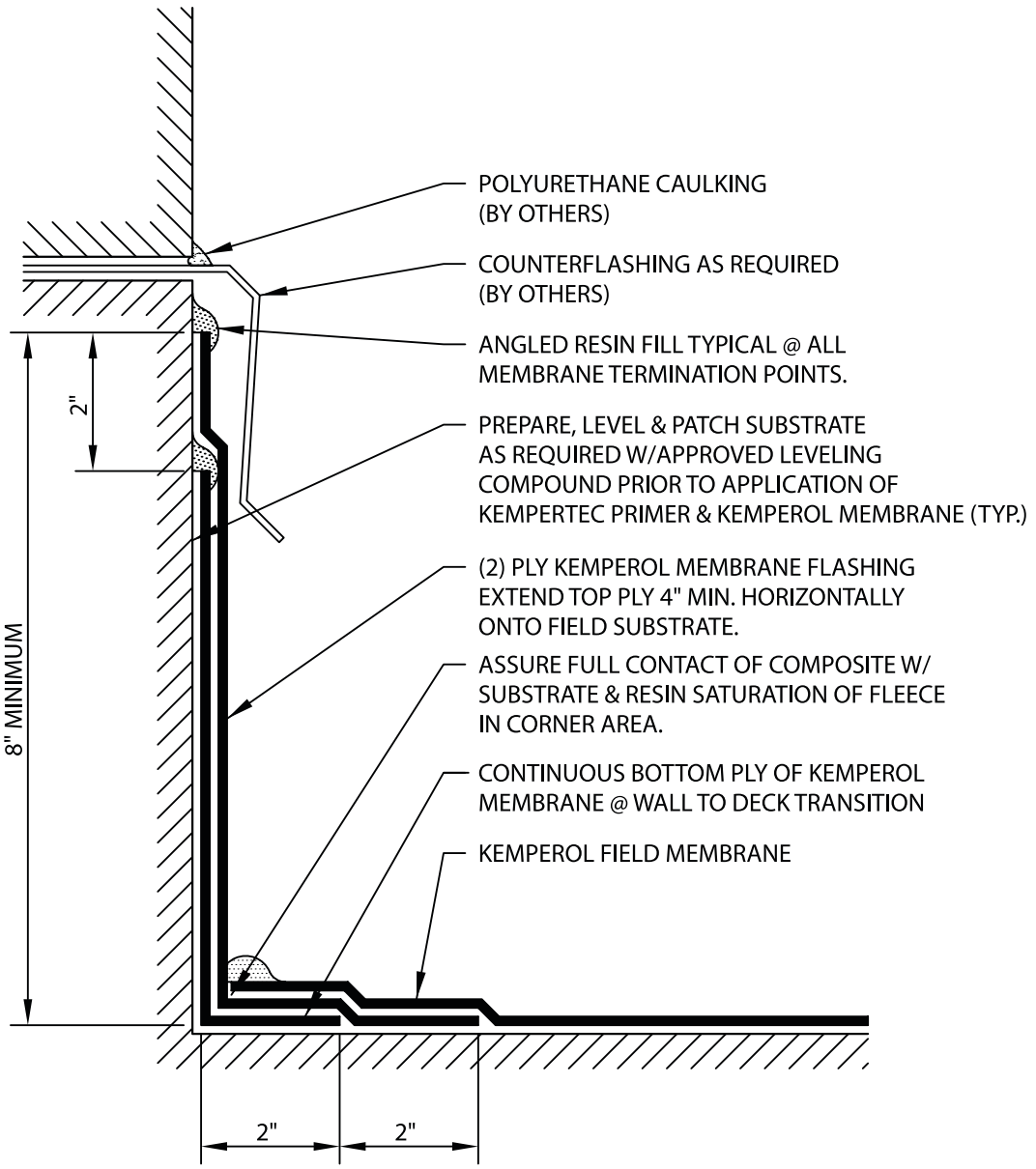
DRAWING NO.	ONE PLY BASE FLASHING W/COUNTERFLASHING			
B-1B	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-1B.DWG	-	03-01-2011	N.T.S.	K.S.A

KEMPER SYSTEM



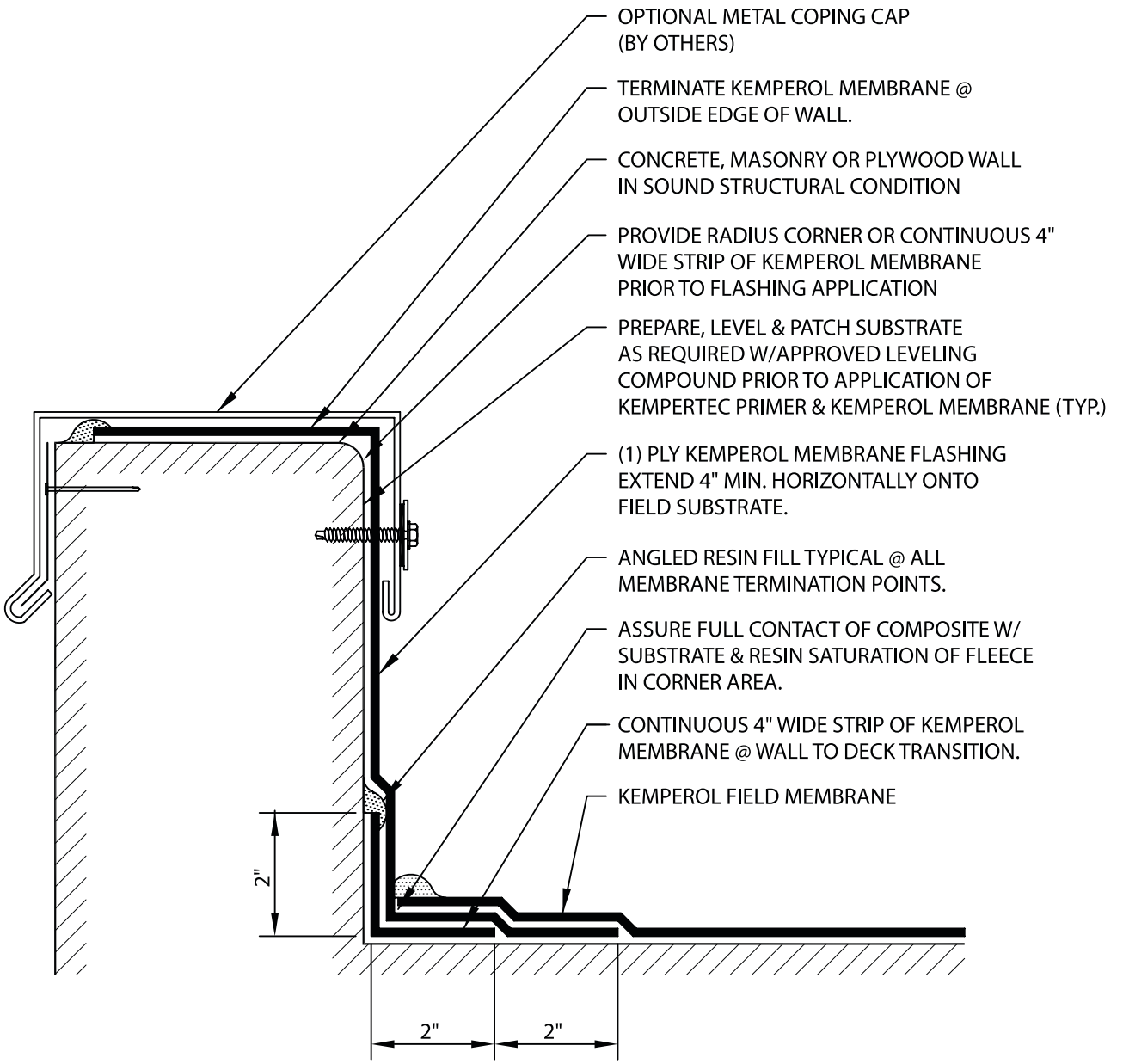
DRAWING NO.	TWO PLY BASE FLASHING W/CUT-IN REGLET			
B-2A	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-2A.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



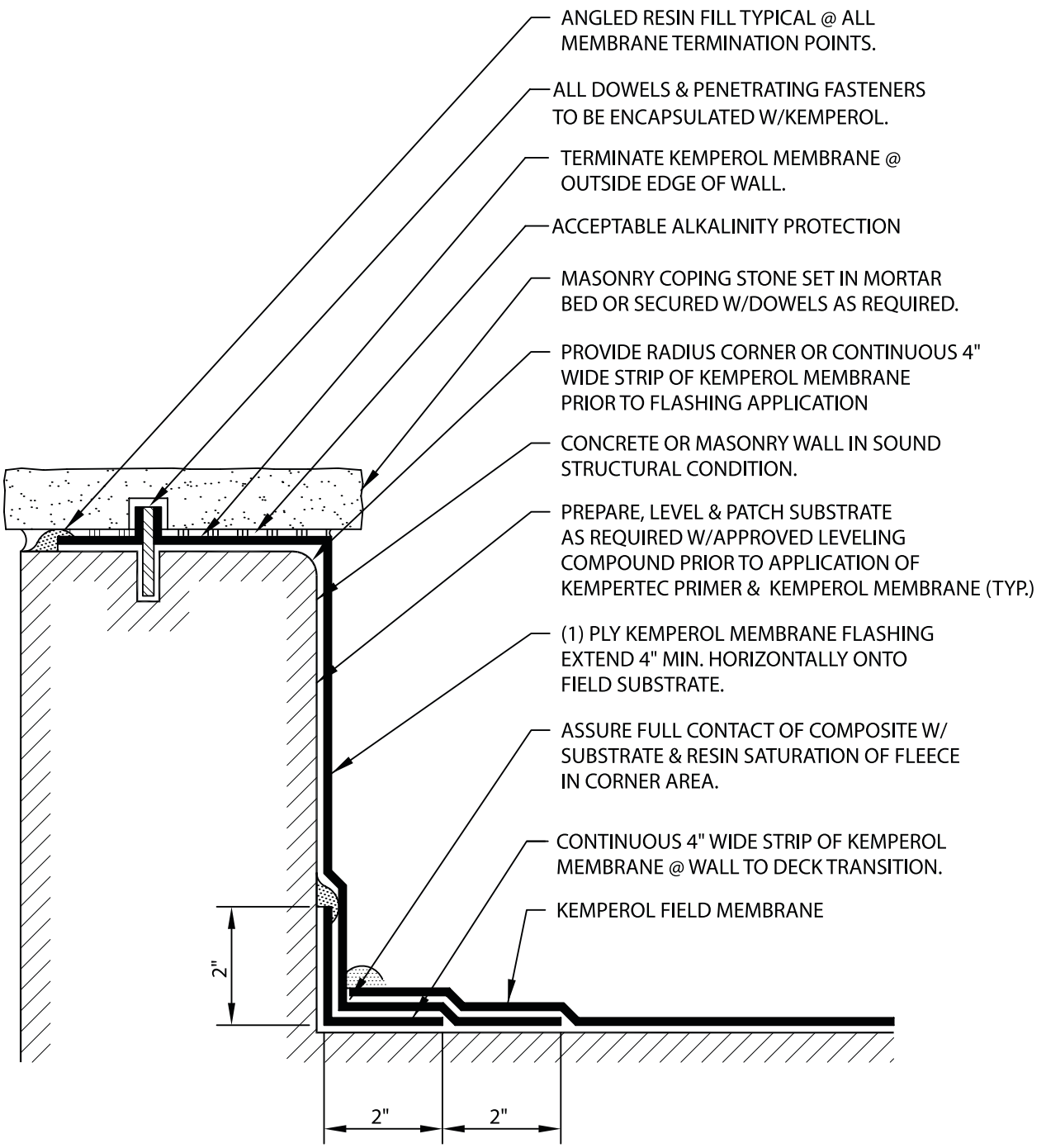
DRAWING NO.	TWO PLY BASE FLASHING W/COUNTERFLASHING			
B-2B	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-2B.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



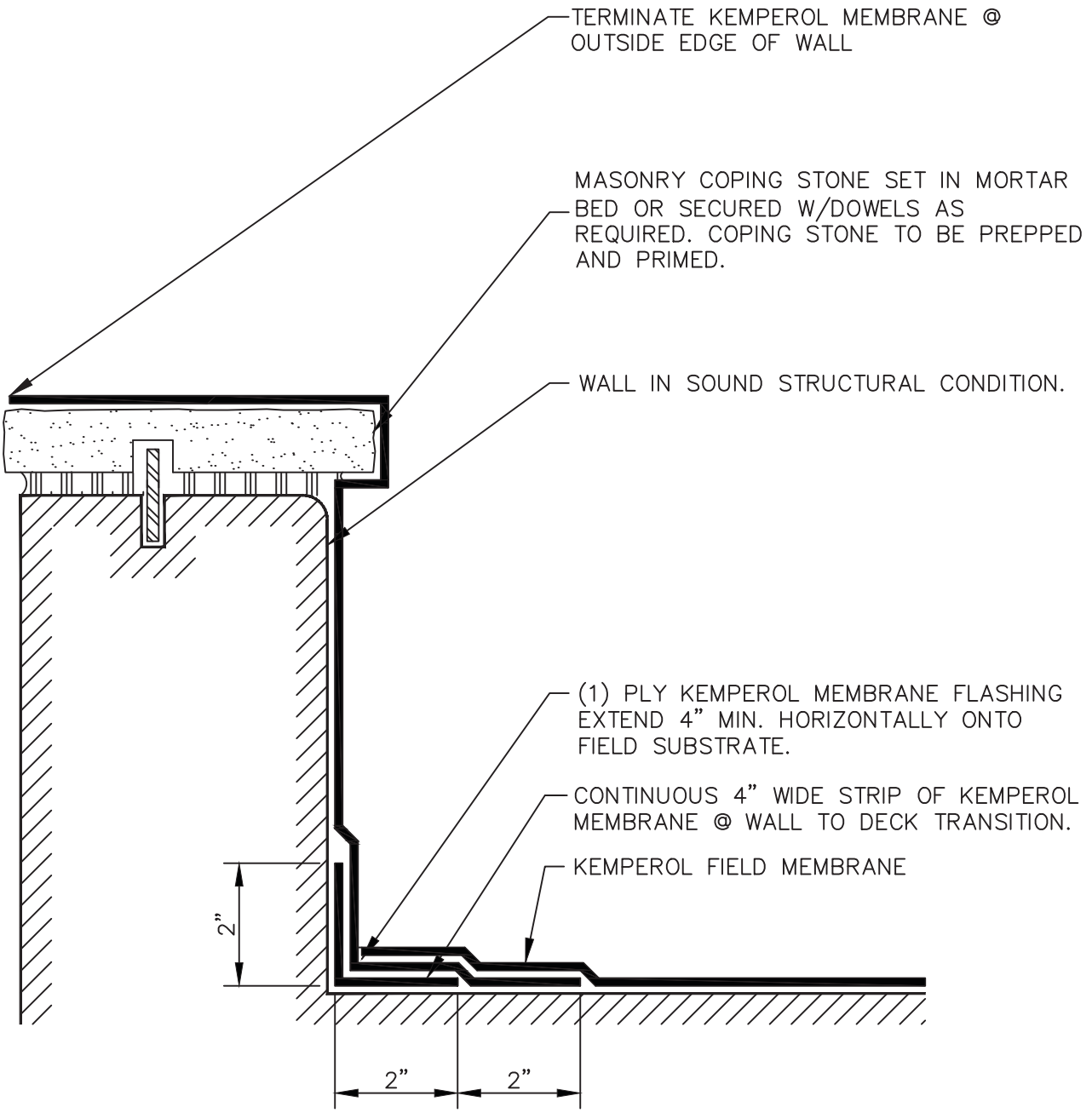
DRAWING NO.	WALL FLASHING W/COPING CAP			
B-3	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-3.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



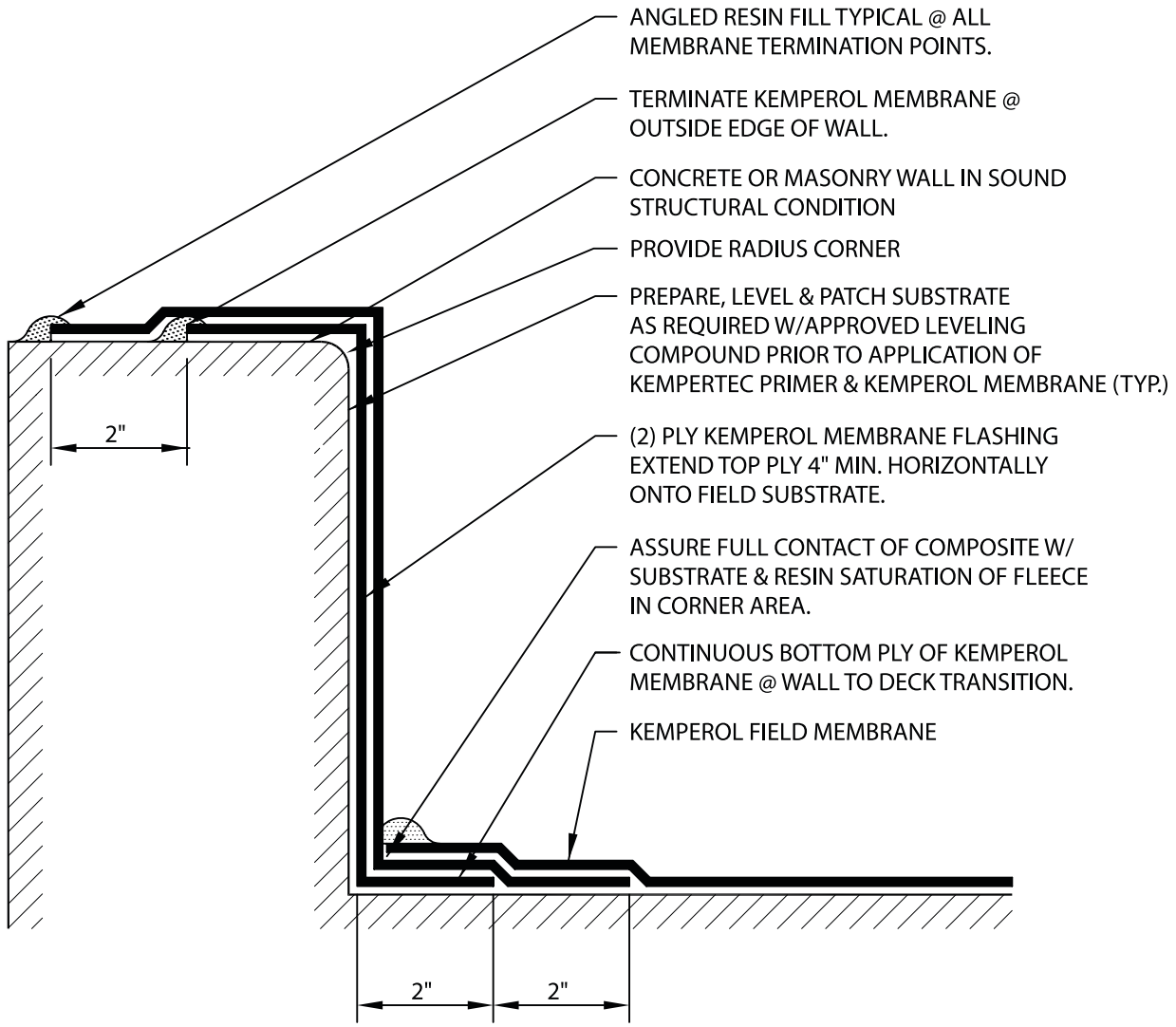
DRAWING NO.	CONCRETE/MASONRY WALL FLASHING W/MASONRY COPING STONE			
B-4	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-4.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	CONCRETE/MASONRY WALL FLASHING OVER MASONRY COPING STONE			
B-4A	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-4A.DWG	05-13-2019	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

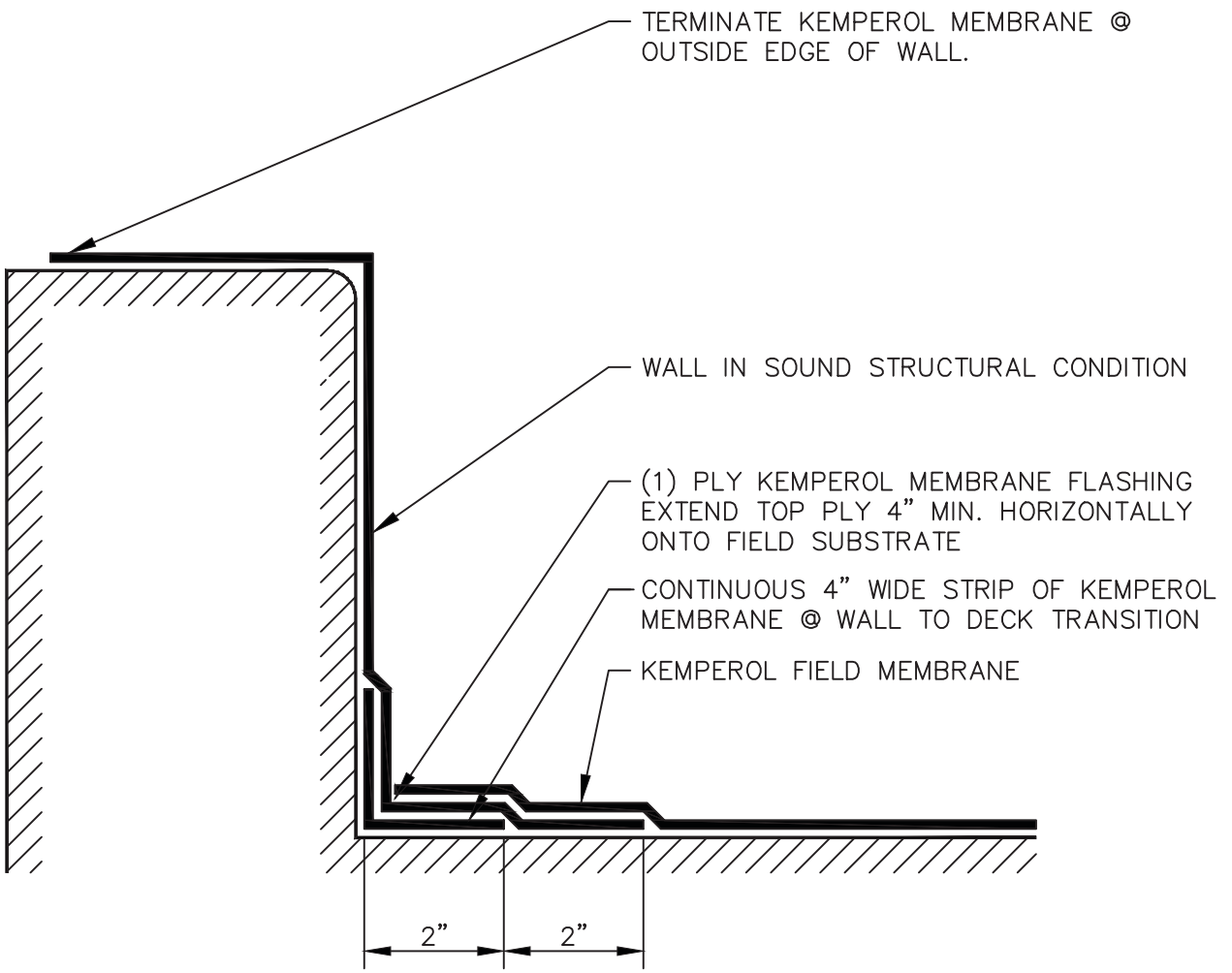
B-5

B-5.DWG

TWO PLY MASONRY WALL FLASHING WITHOUT COPING CAP

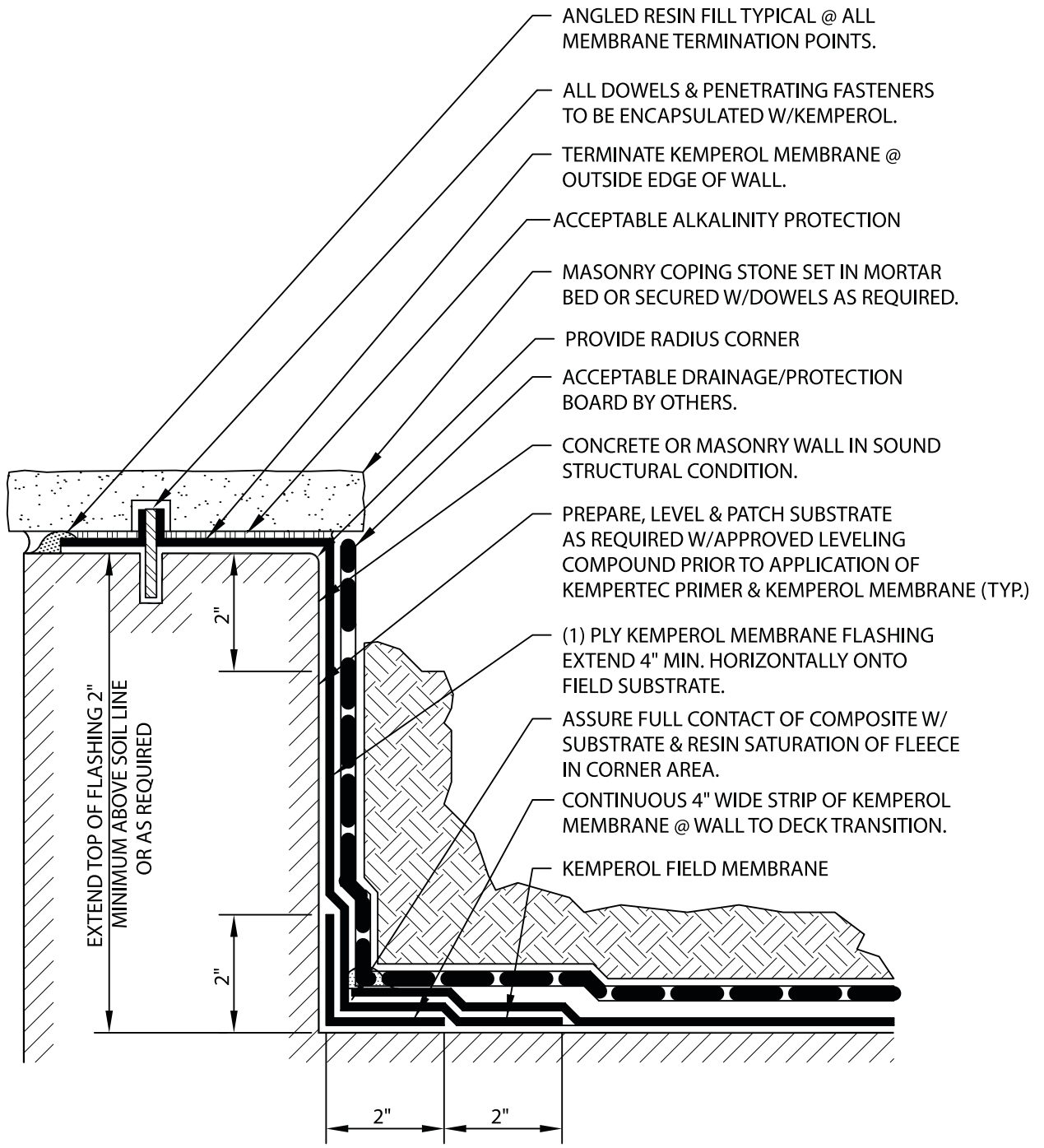
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	ONE PLY MASONRY WALL FLASHING WITHOUT COPING CAP			
B-5A	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-5A.DWG	10-14-2014	03-01-2011	N.T.S.	K.S.A.

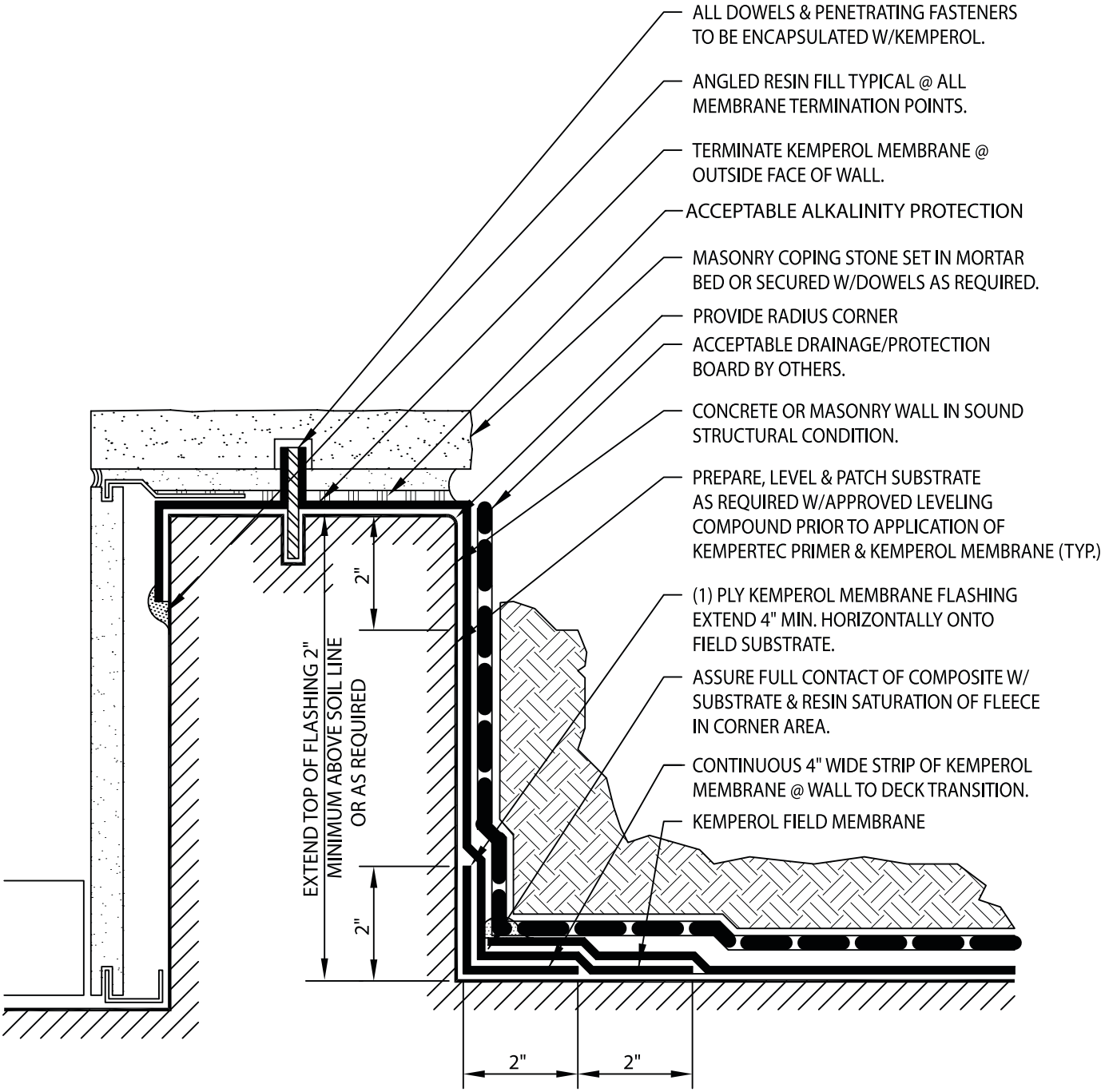
KEMPER SYSTEM



DRAWING NO.	PLANTER BOX WATERPROOFING CONCRETE/MASONRY KNEE WALL			
B-6	REVISION	ISSUE DATE	SCALE	DRAWN BY
	-	03-01-2011	N.T.S.	K.S.A.

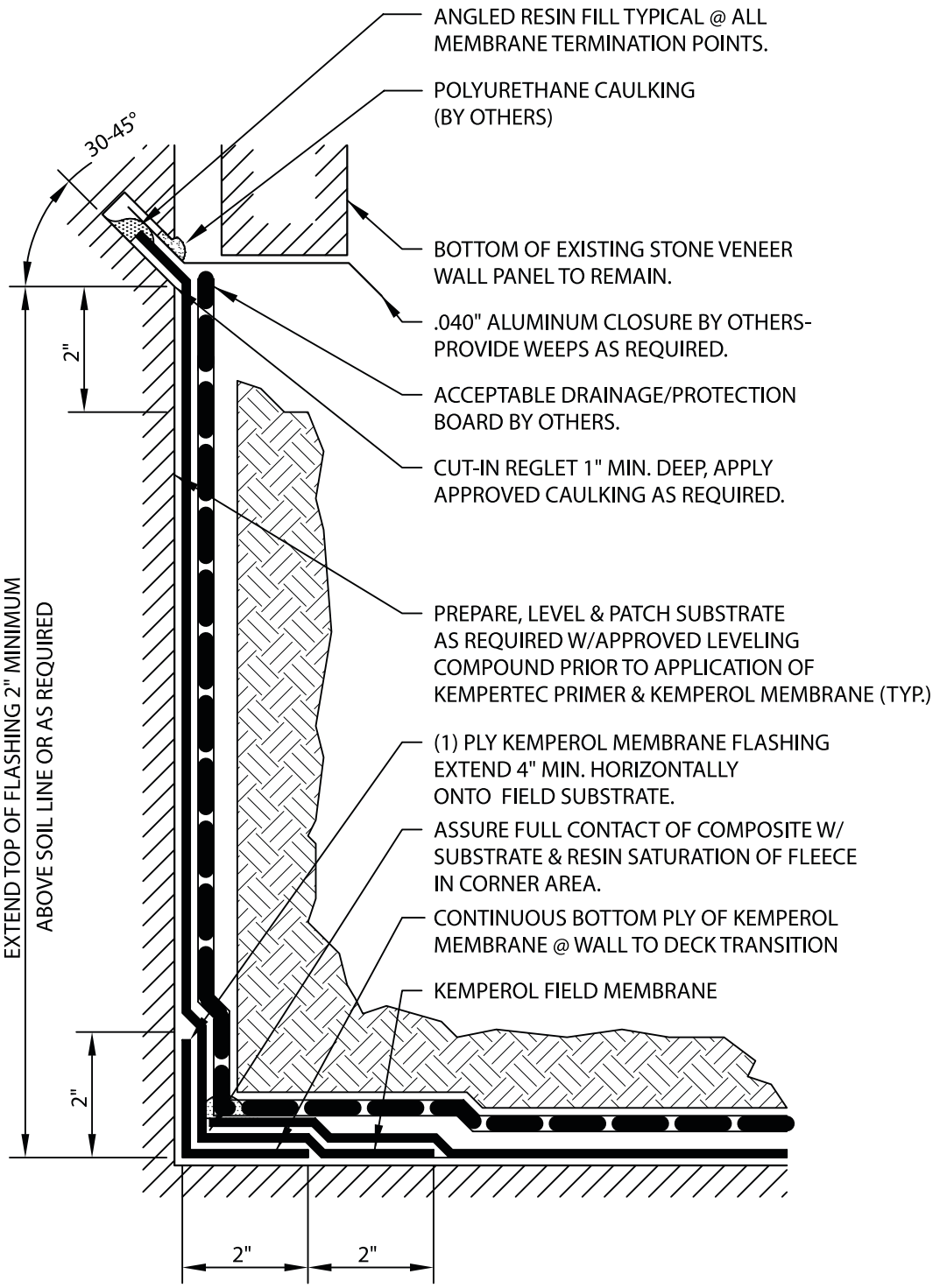
KEMPER SYSTEM

B-6.DWG



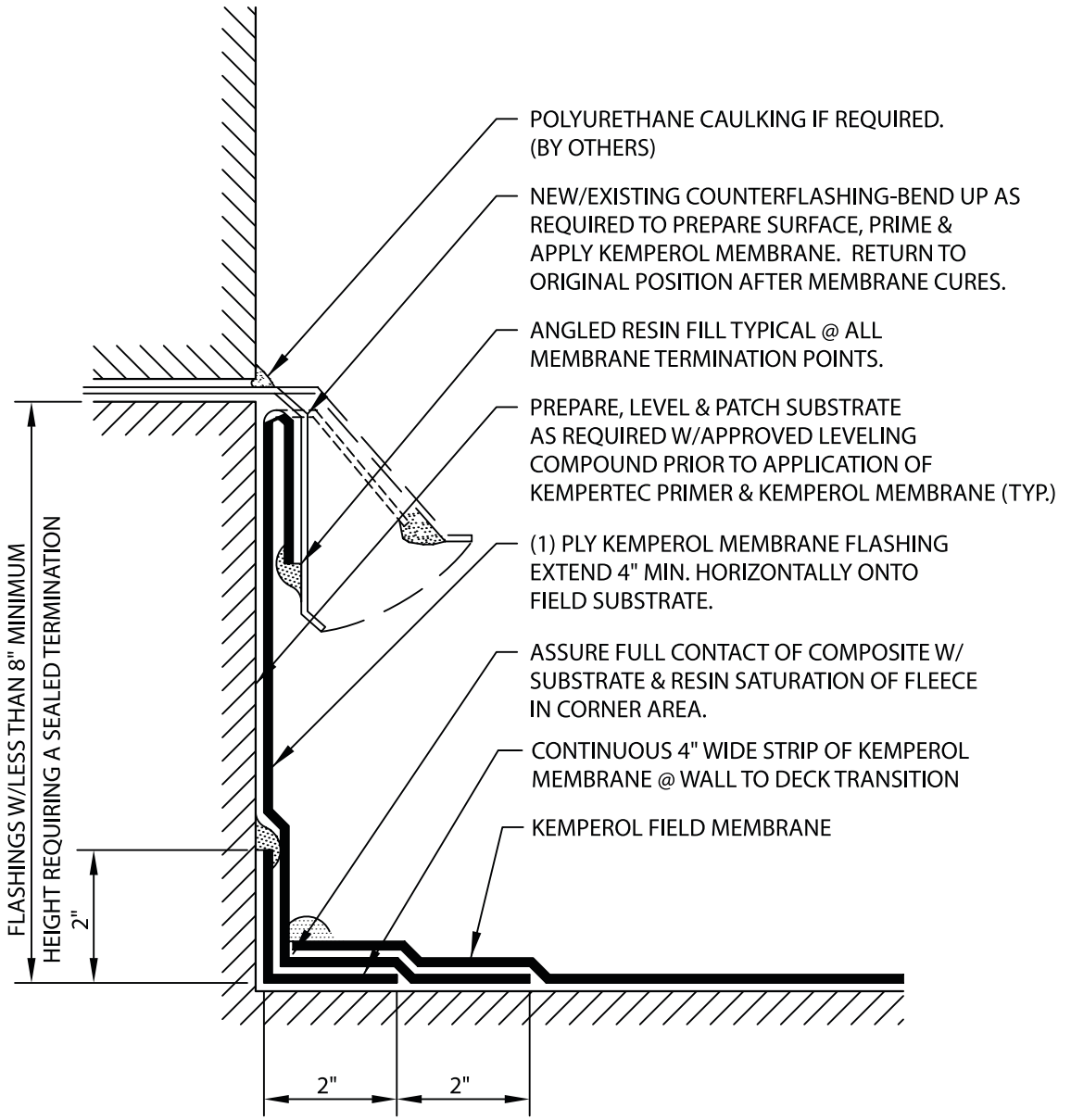
DRAWING NO.	PLANTER BOX (ENGAGED) WATERPROOFING FLASHING			
B-6A	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-6A.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



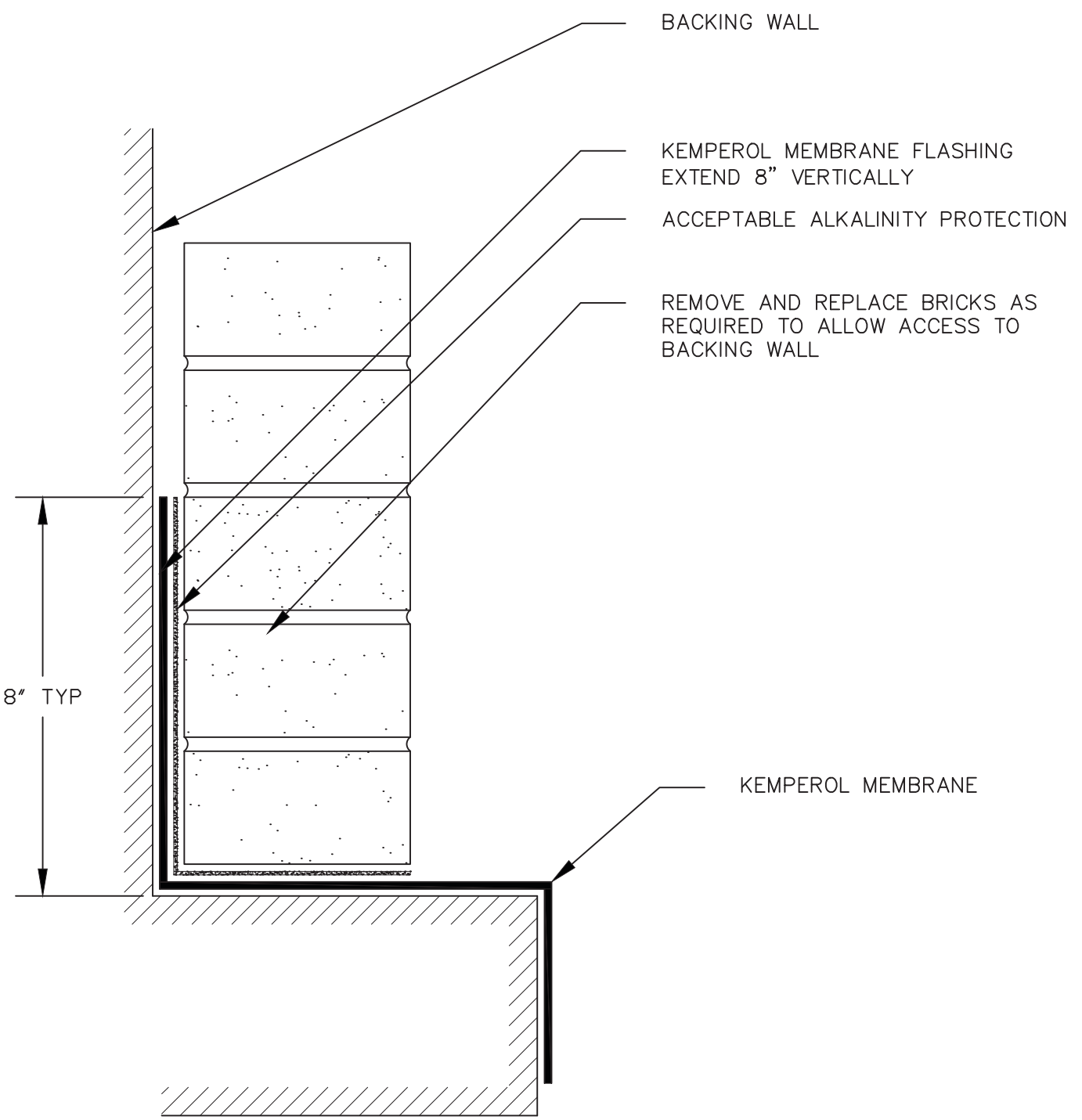
DRAWING NO.	PLANTER BOX WATERPROOFING CONCRETE/MASONRY BUILDING WALL			
B-6B	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-6B.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



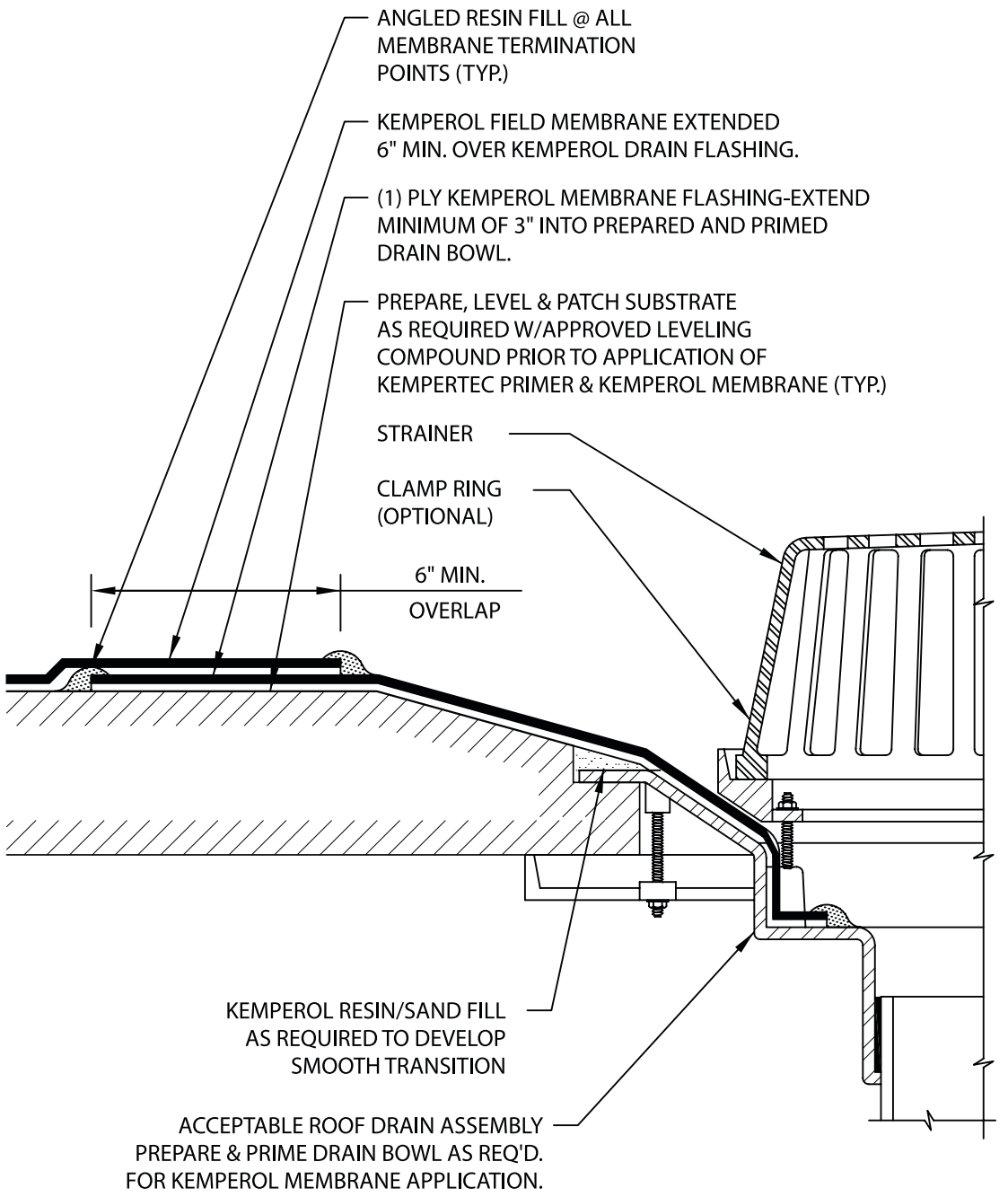
DRAWING NO.	ONE PLY BASE FLASHING W/COUNTER FLASHING (LOW FLASHINGS)			
B-7	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-7.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	THRU-WALL FLASHING DETAIL			
B-10	REVISION	ISSUE DATE	SCALE	DRAWN BY
B-10.DWG	10-14-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

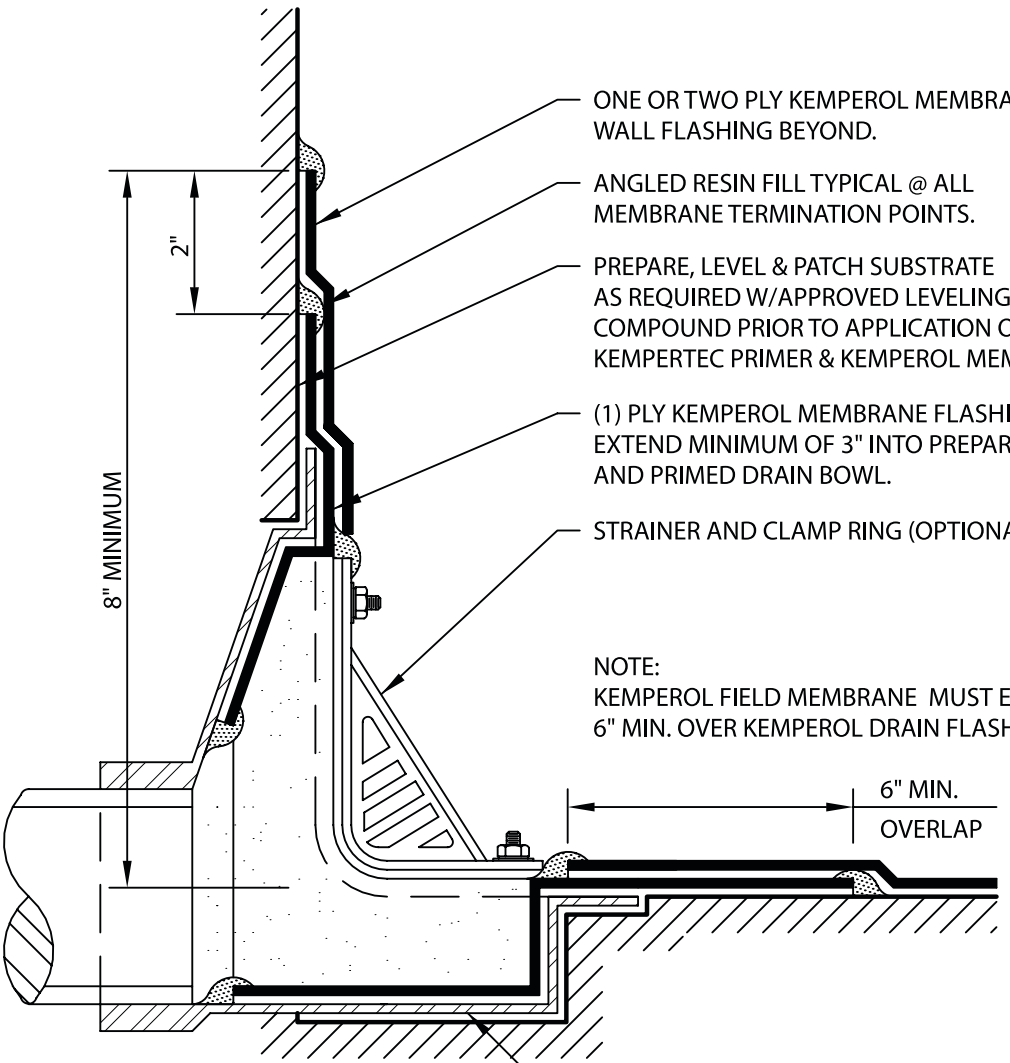
D-1

D-1.DWG

ROOF DRAIN FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

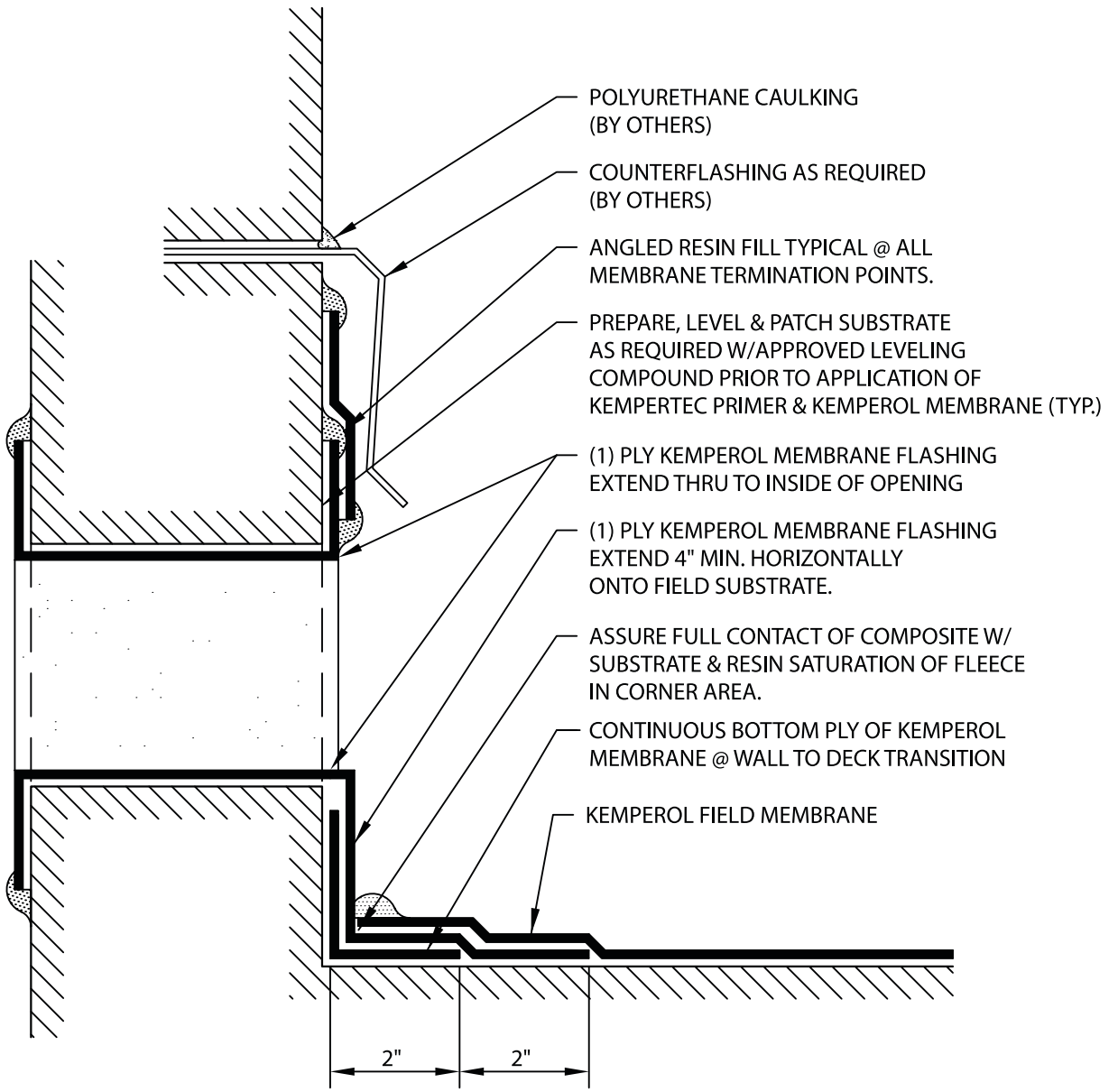
D-2

D-2.DWG

SCUPPER DRAIN FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

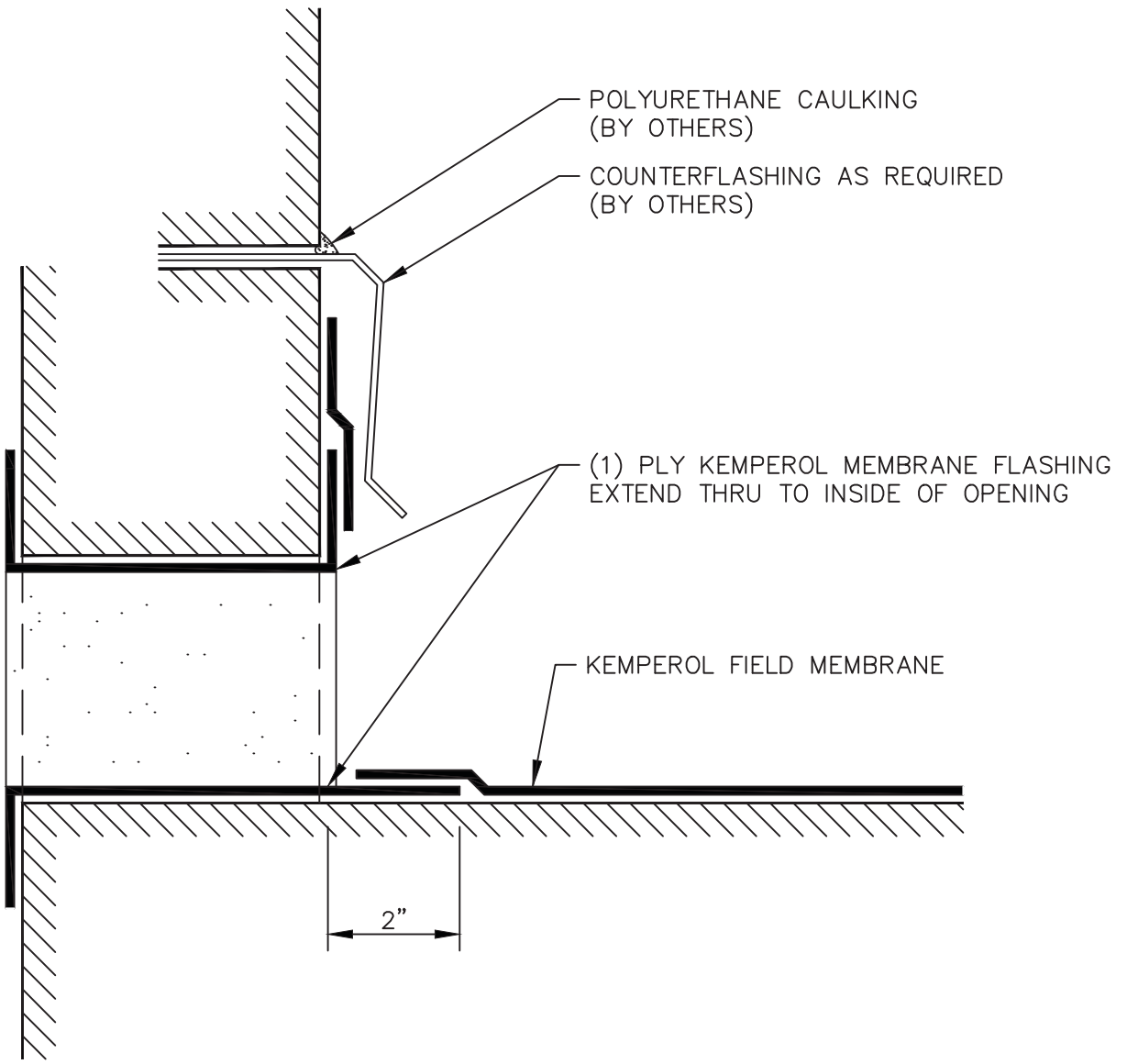
D-3

D-3.DWG

THRU-WALL SCUPPER FLASHING

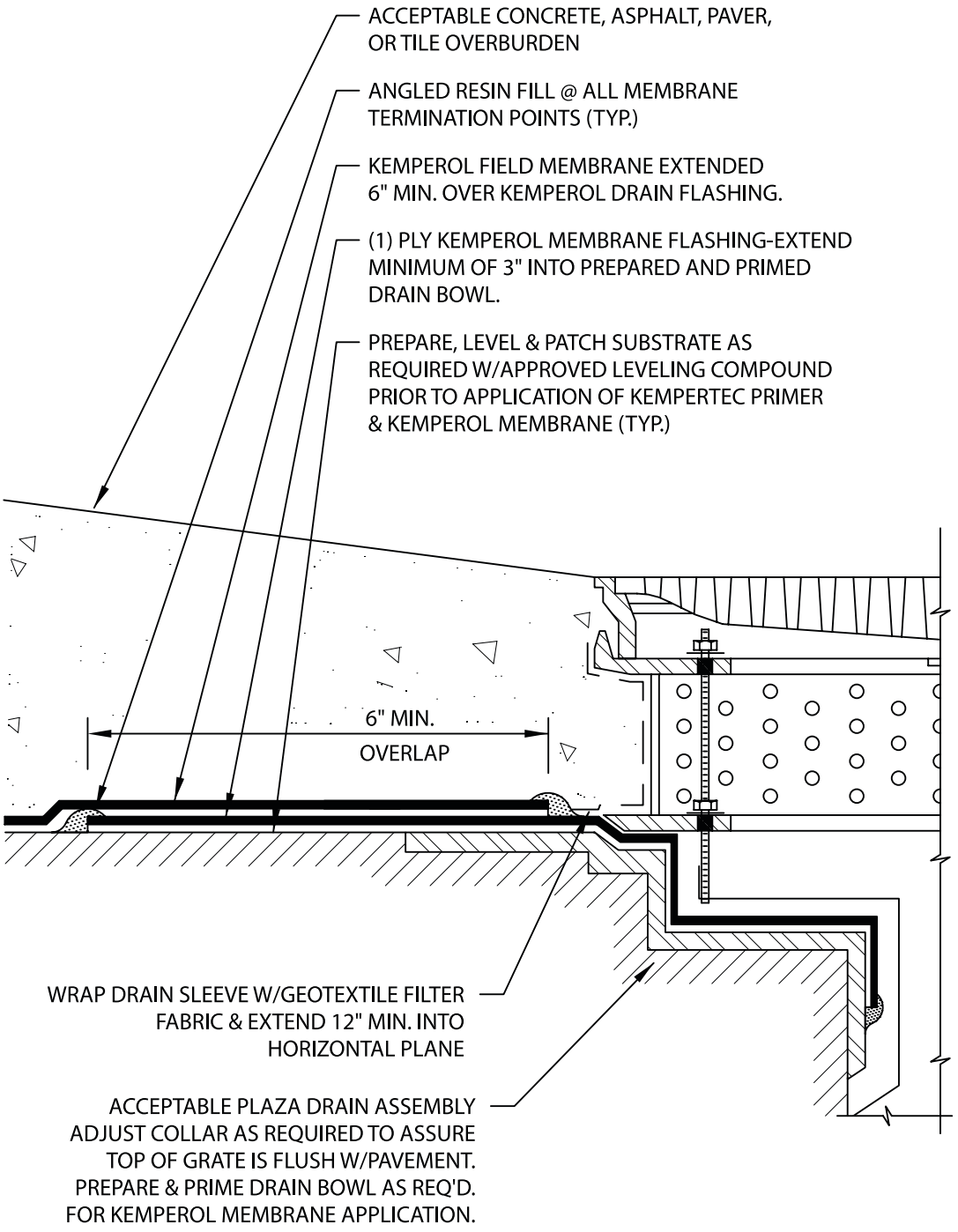
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	THRU-WALL FLUSH SCUPPER FLASHING			
D-3A	REVISION	ISSUE DATE	SCALE	DRAWN BY
D-3A.DWG	10-14-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

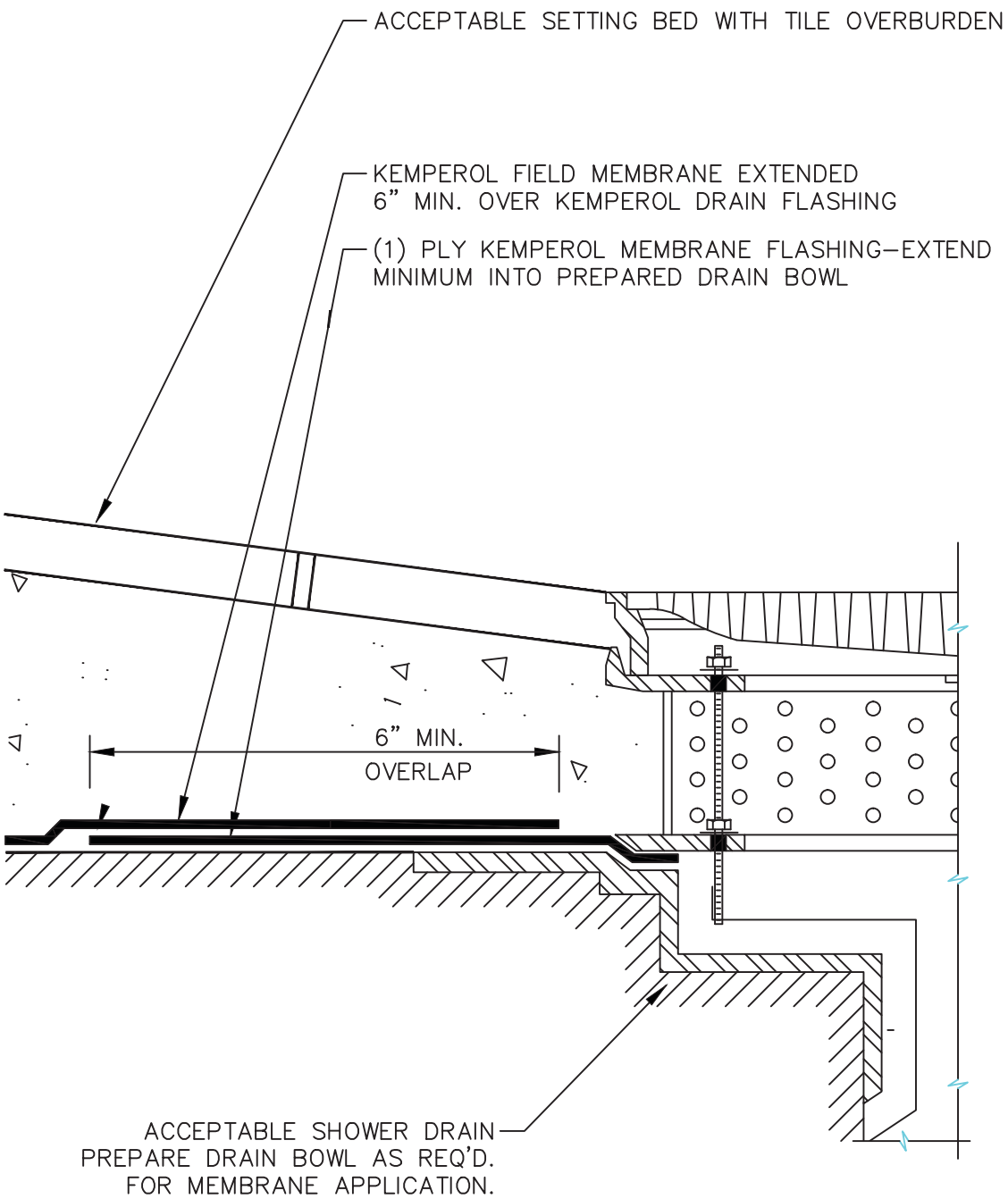
D-4

D-4.DWG

PLAZA DRAIN FLASHING

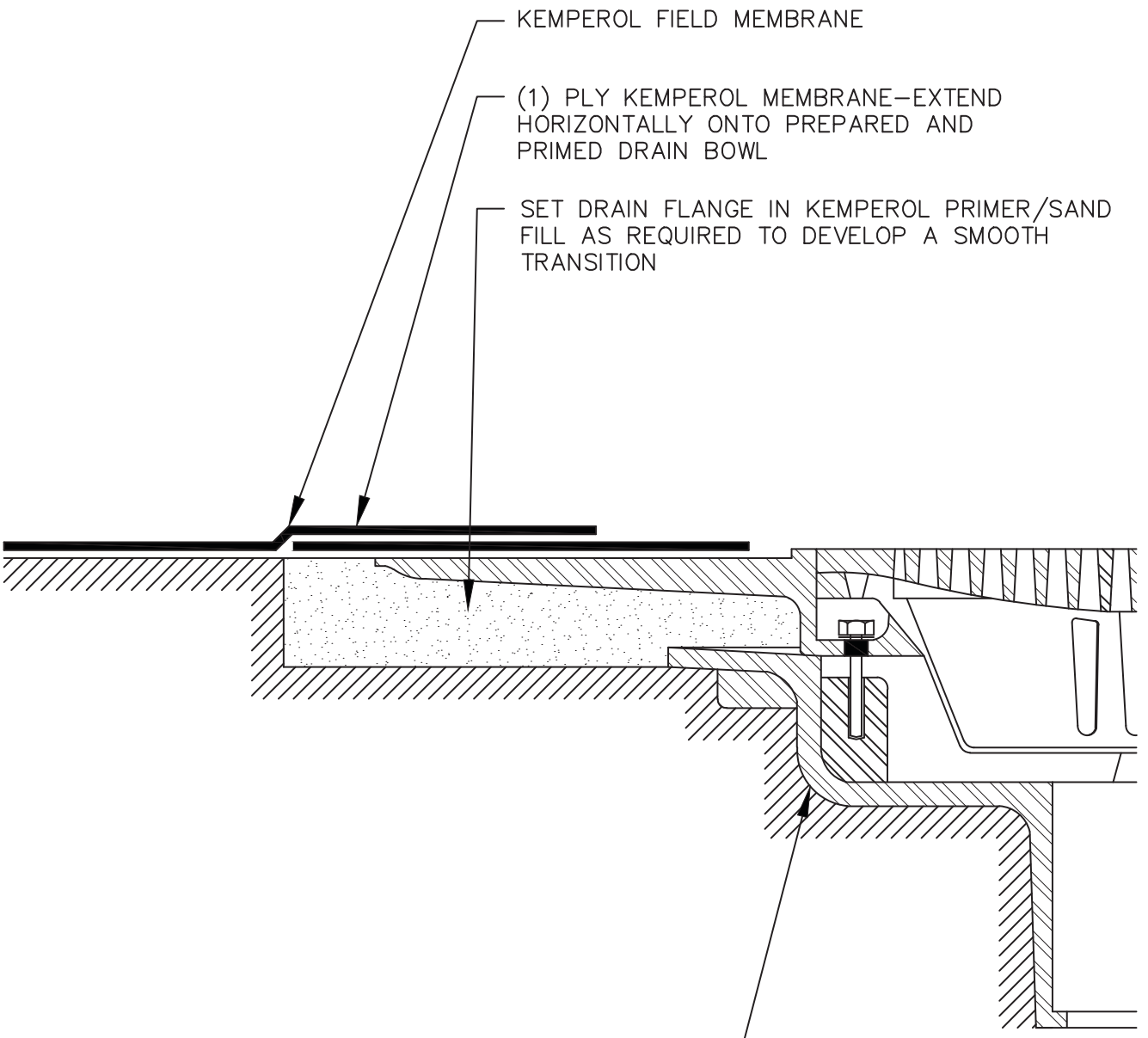
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	SHOWER DRAIN FLASHING			
D-4A	REVISION	ISSUE DATE	SCALE	DRAWN BY
D-4A.DWG	10-14-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



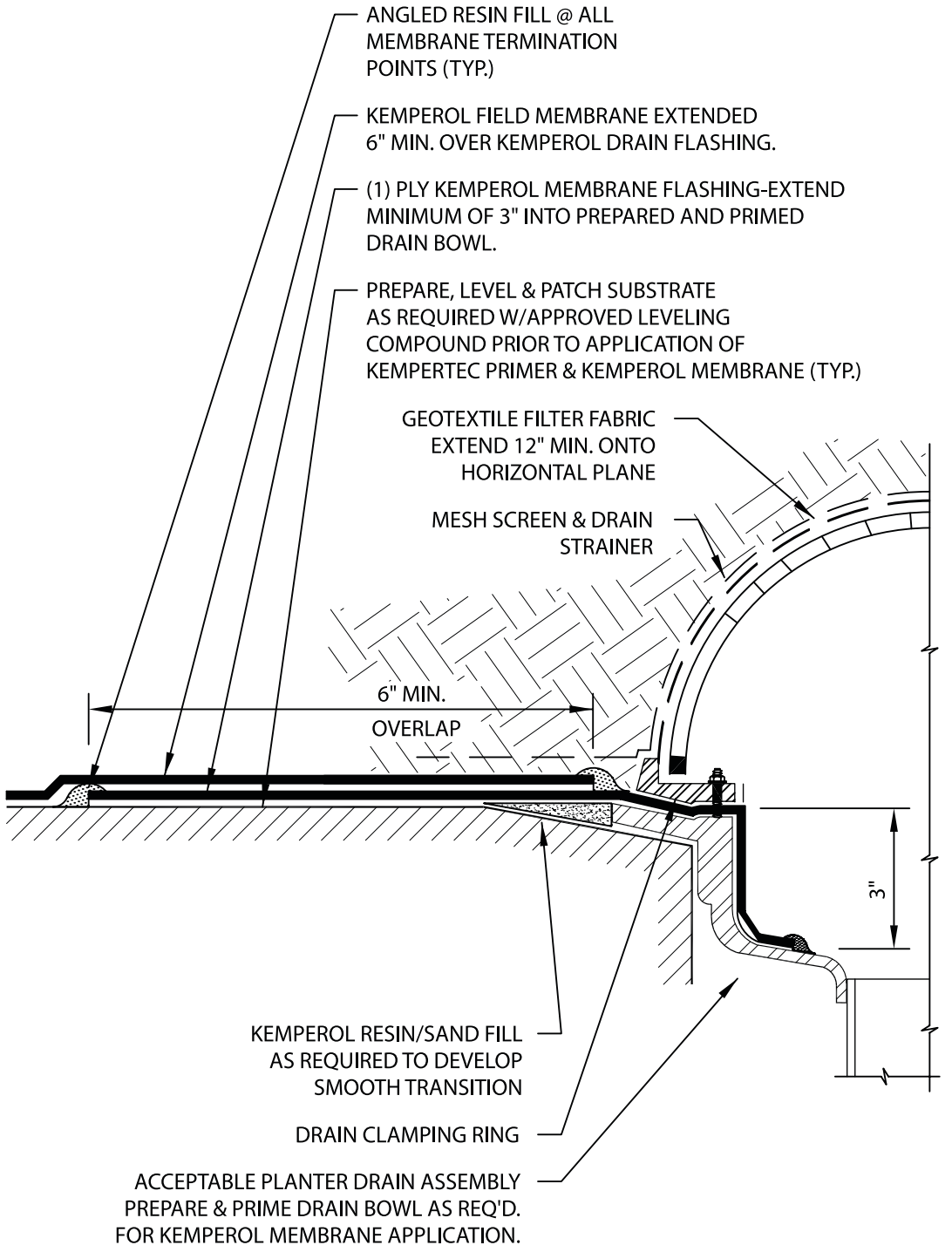
DRAWING NO.

D-5

FLAT GRATE DRAIN FLASHING

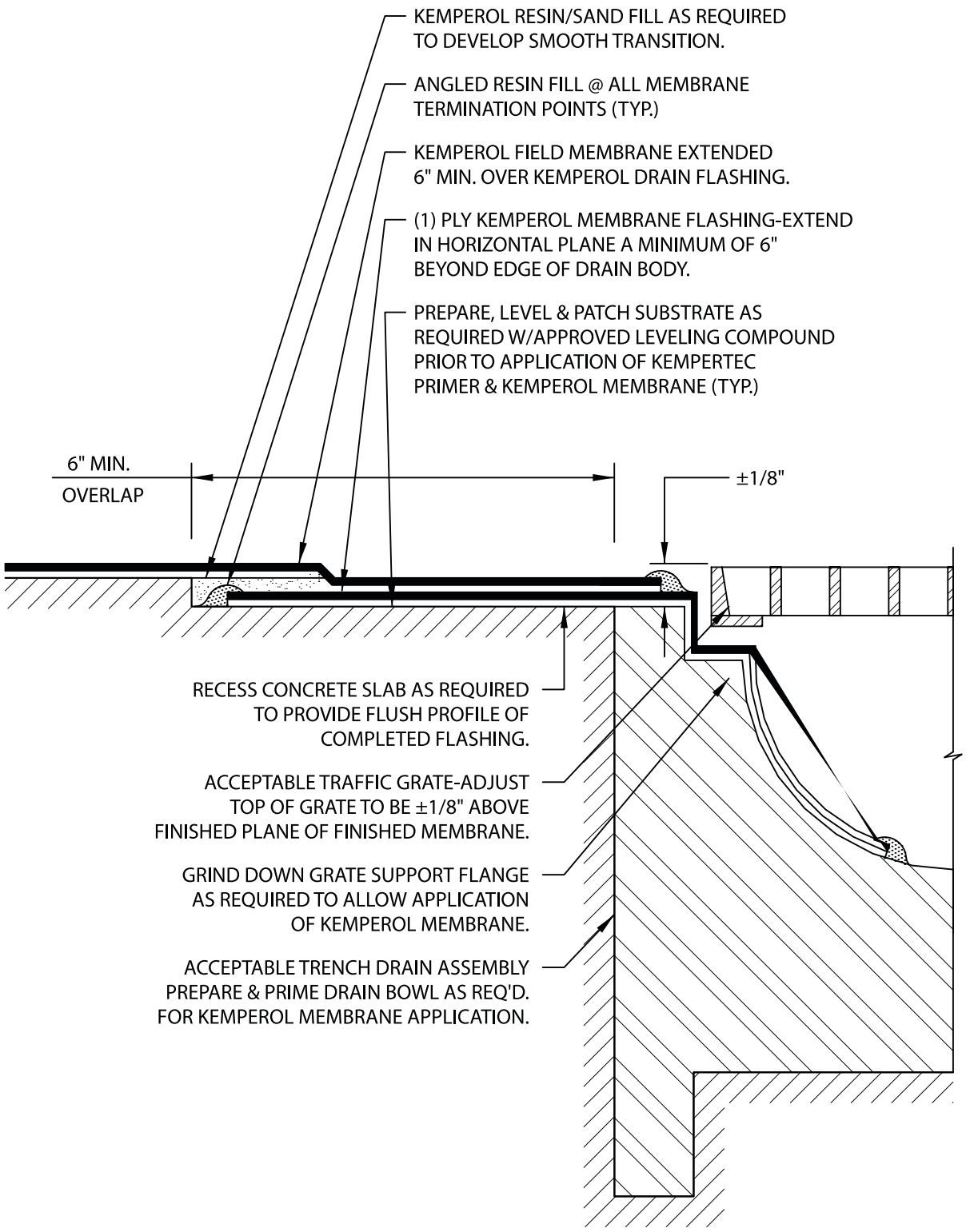
REVISION	ISSUE DATE	SCALE	DRAWN BY
10-14-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	PLANTER DRAIN FLASHING			
D-6	REVISION	ISSUE DATE	SCALE	DRAWN BY
D-6.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

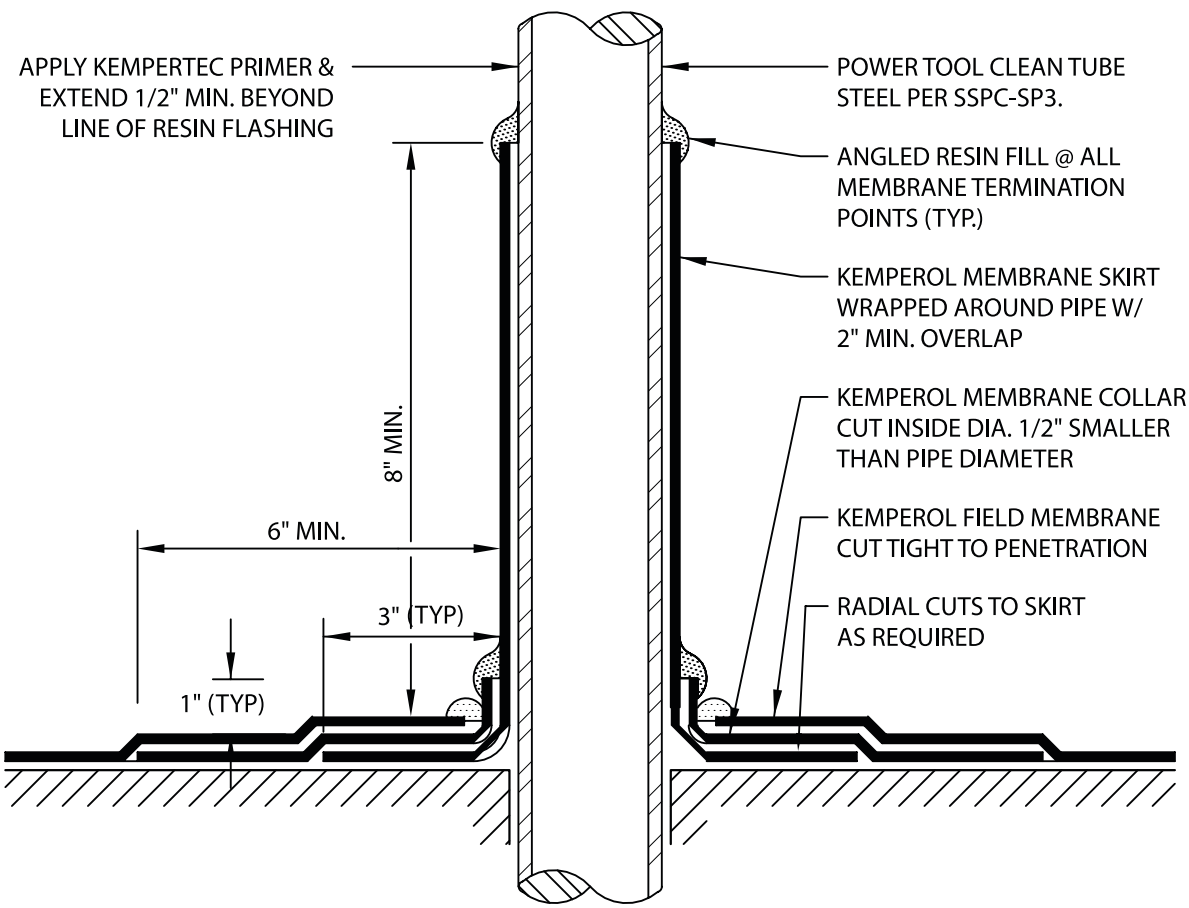
D-7

D-7.DWG

TRENCH DRAIN FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

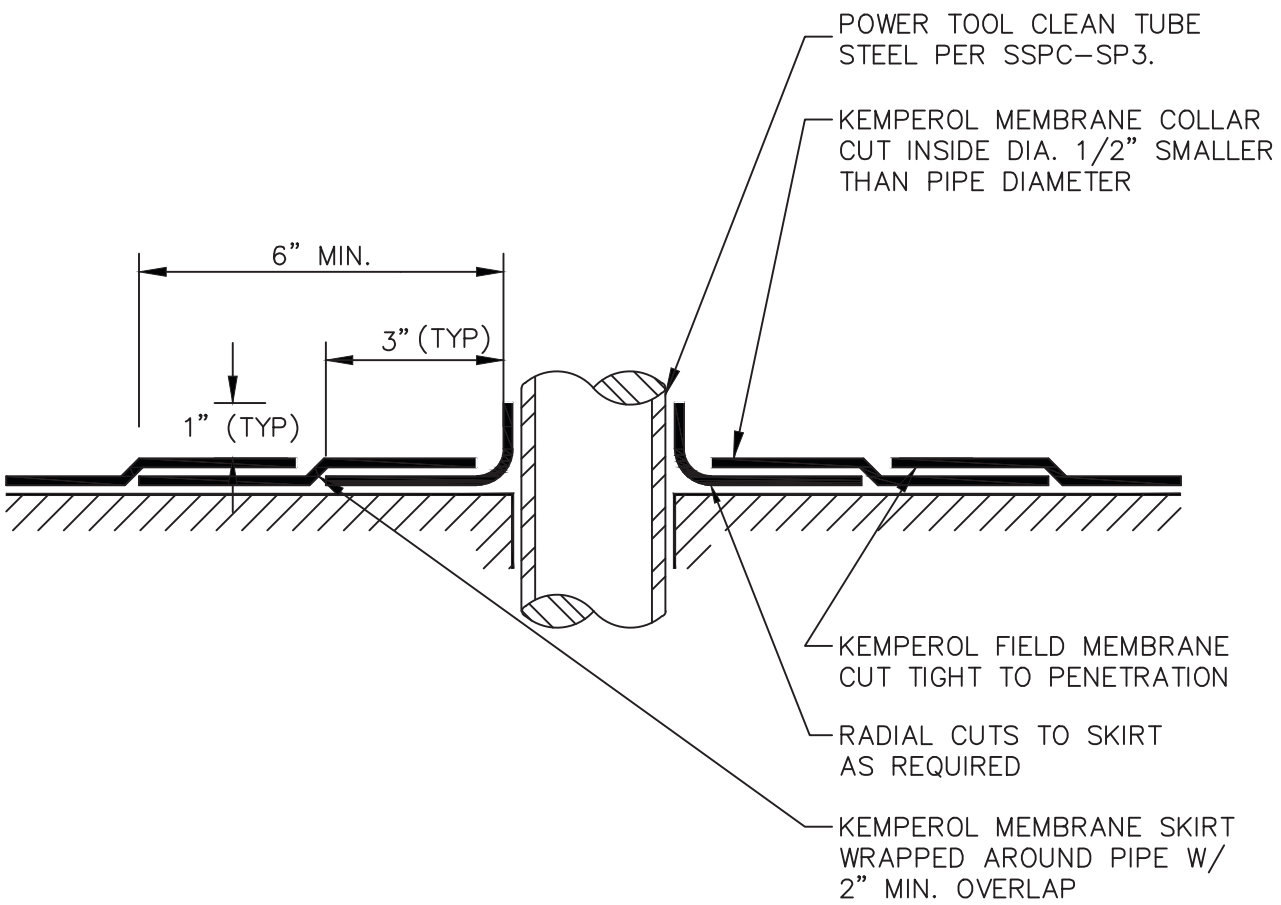
P-1

P-1.DWG

FIELD FABRICATED PIPE PENETRATION FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

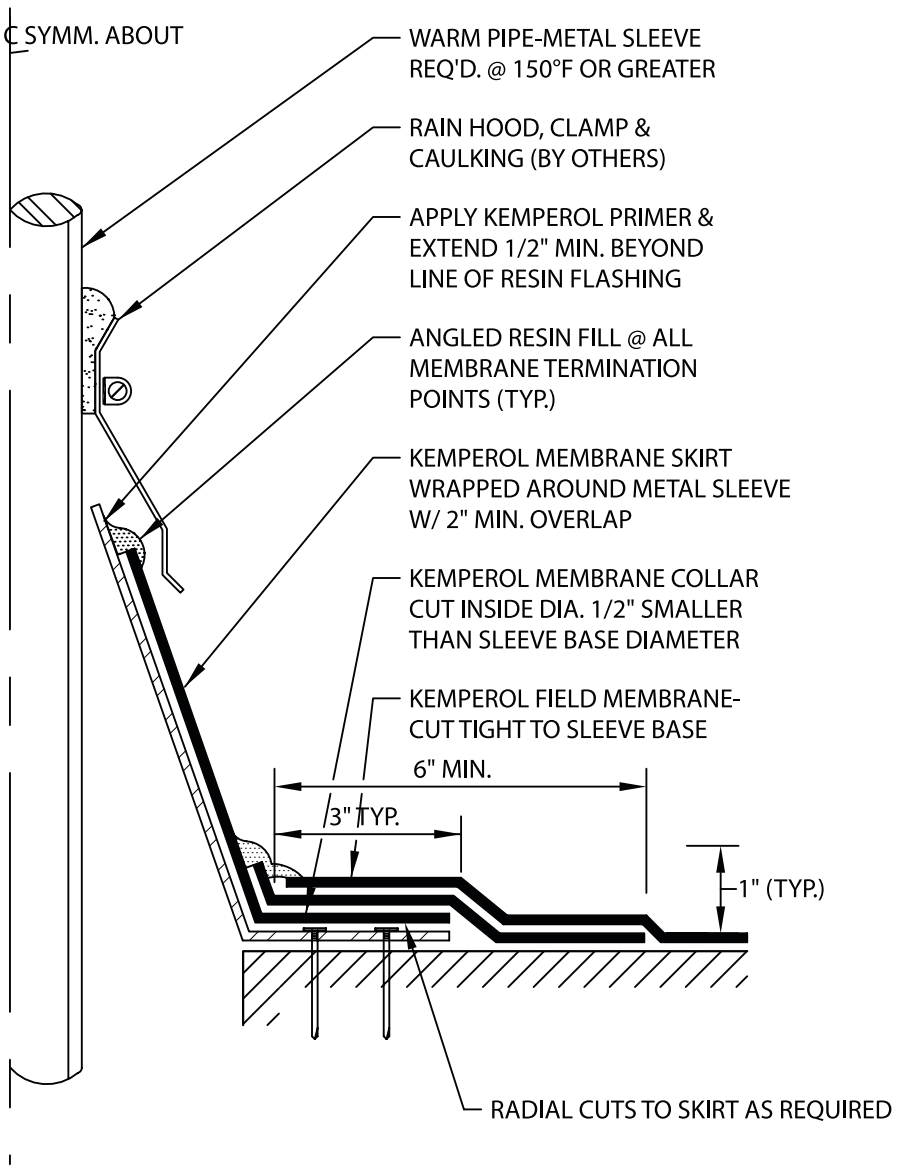
P-1A

P-1.DWG

FIELD FABRICATED PIPE PENETRATION FLASHING

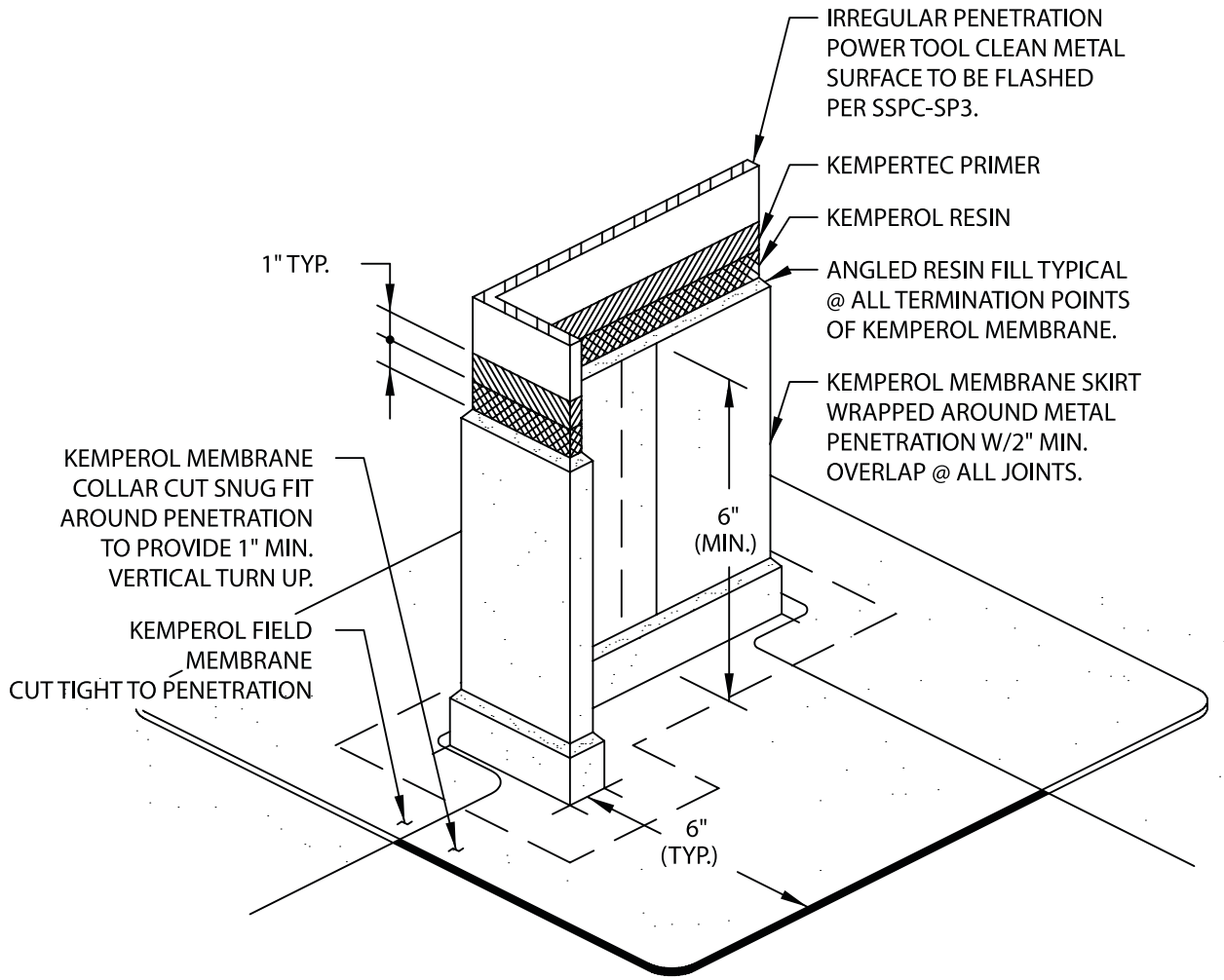
REVISION	ISSUE DATE	SCALE	DRAWN BY
10-15-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



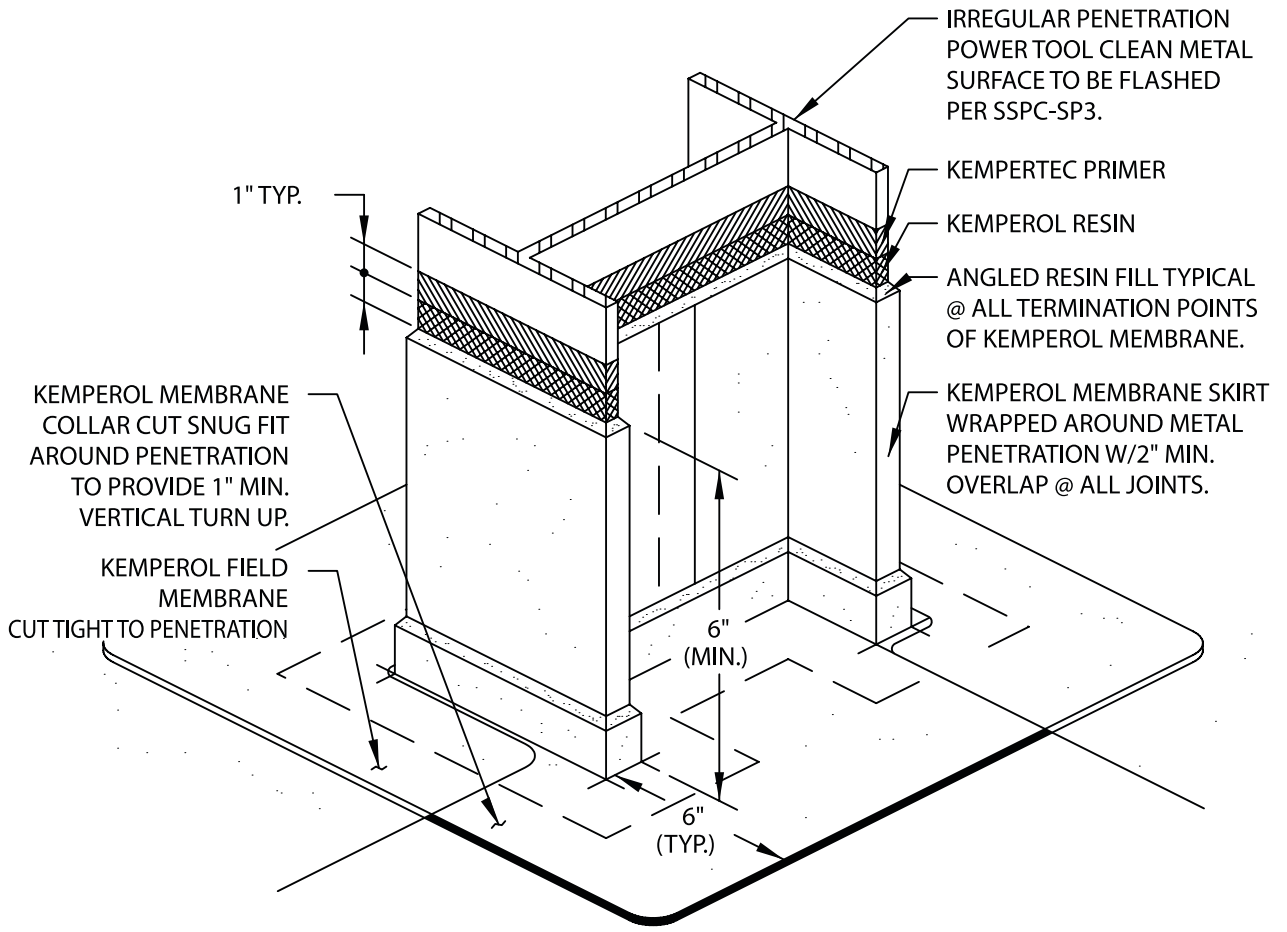
DRAWING NO.	FIELD FABRICATED WARM PIPE PENETRATION FLASHING			
P-2	REVISION	ISSUE DATE	SCALE	DRAWN BY
P-2.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



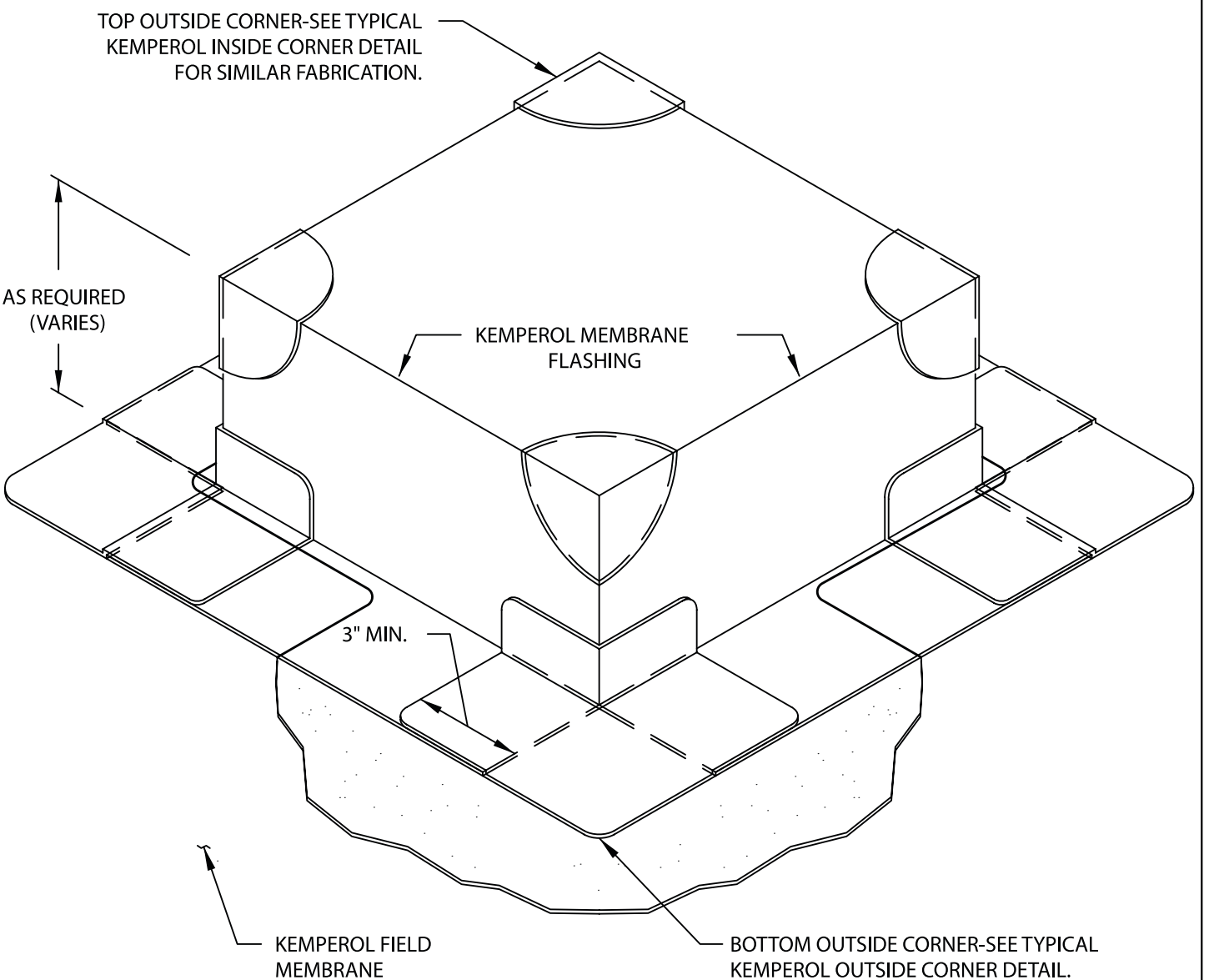
DRAWING NO.	IRREGULAR PENETRATION ANGLE FLASHING			
P-3	REVISION	ISSUE DATE	SCALE	DRAWN BY
P-3.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	IRREGULAR PENETRATION WIDE FLANGE FLASHING			
P-4	REVISION	ISSUE DATE	SCALE	DRAWN BY
P-4.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

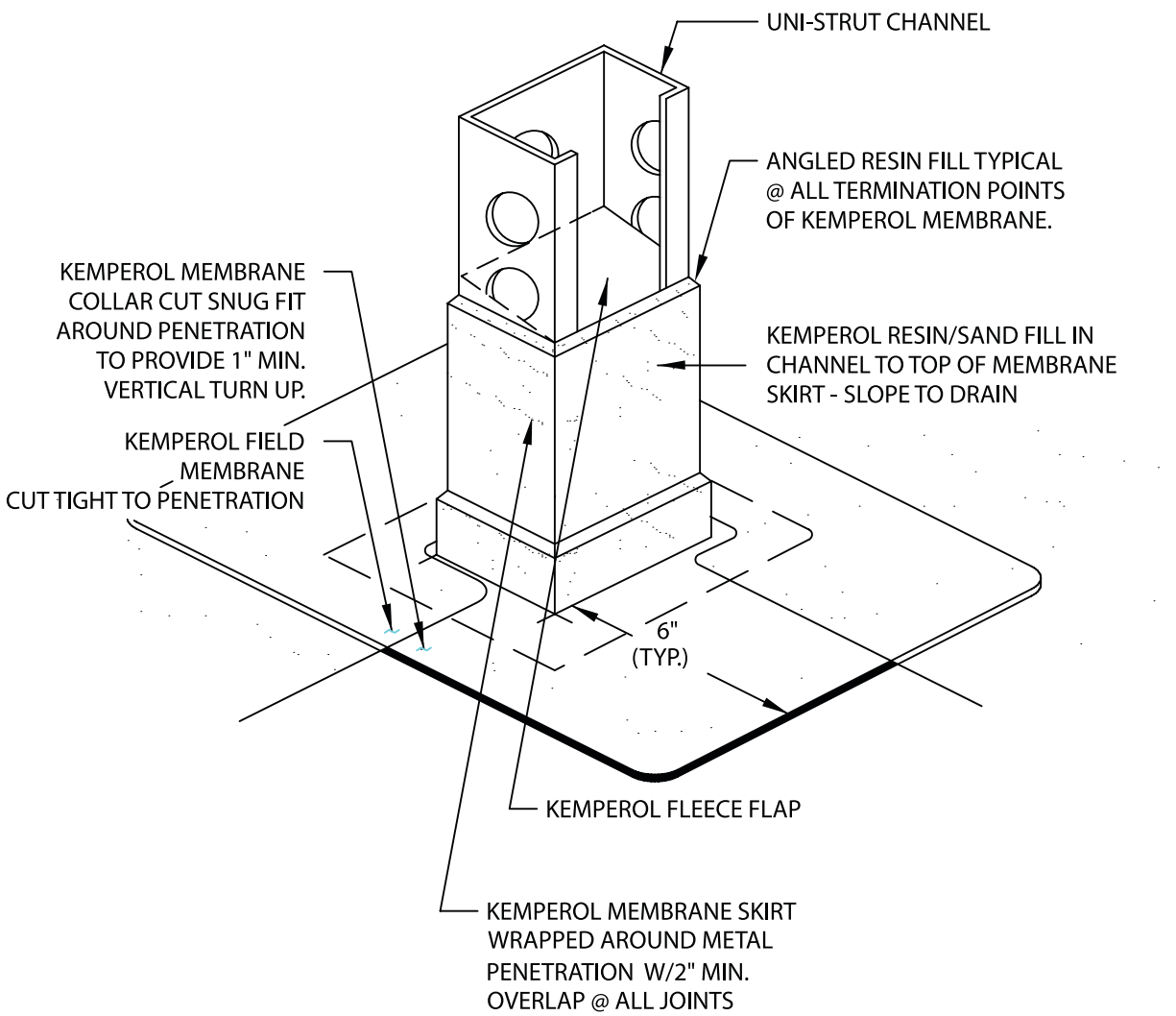
P-5

P-5.DWG

CURB\PAD ENCAPSULATION FLASHING

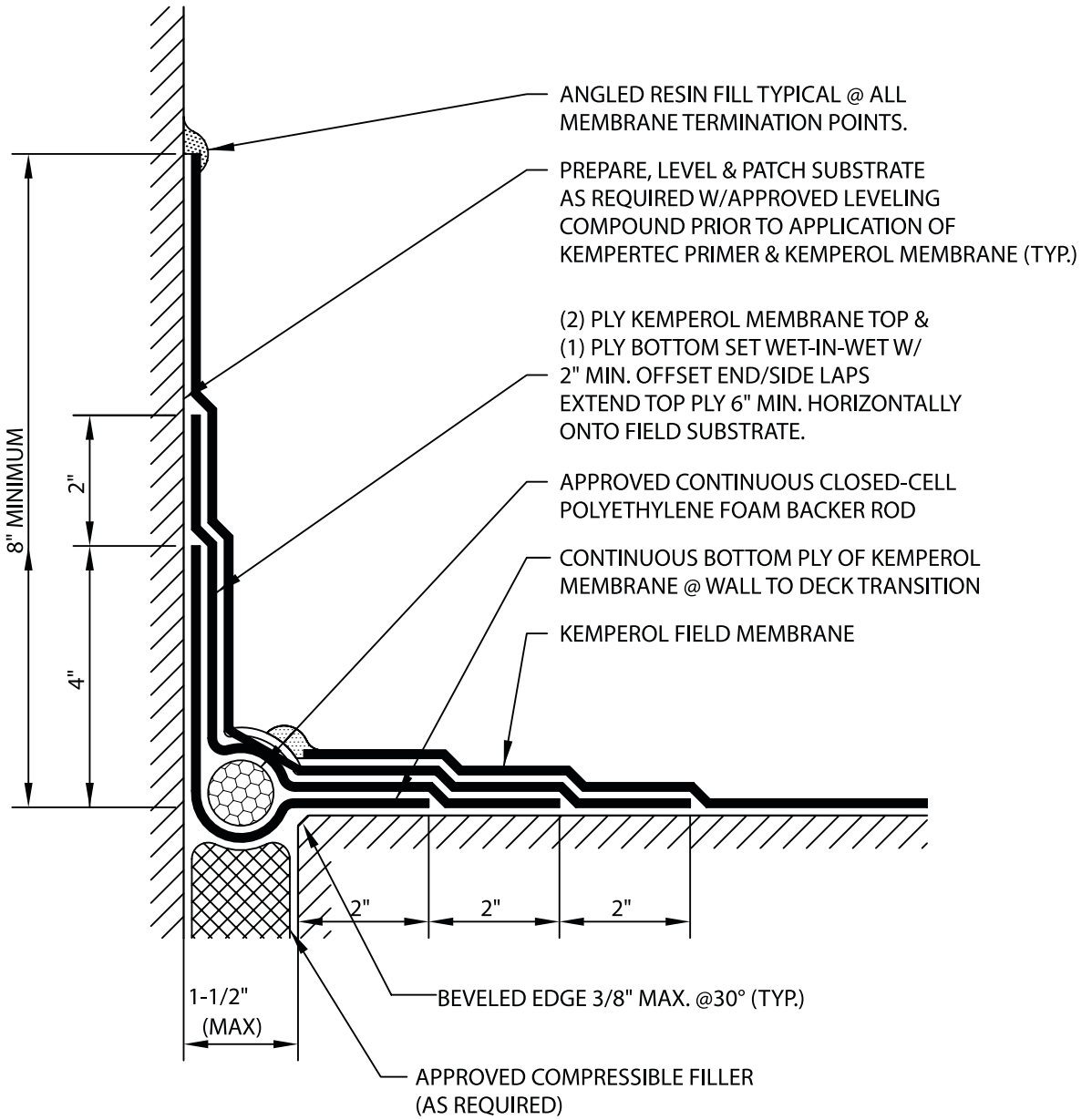
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	IRREGULAR PENETRATION UNI-STRUT CHANNEL FLASHING			
P-10	REVISION	ISSUE DATE	SCALE	DRAWN BY
P-10.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

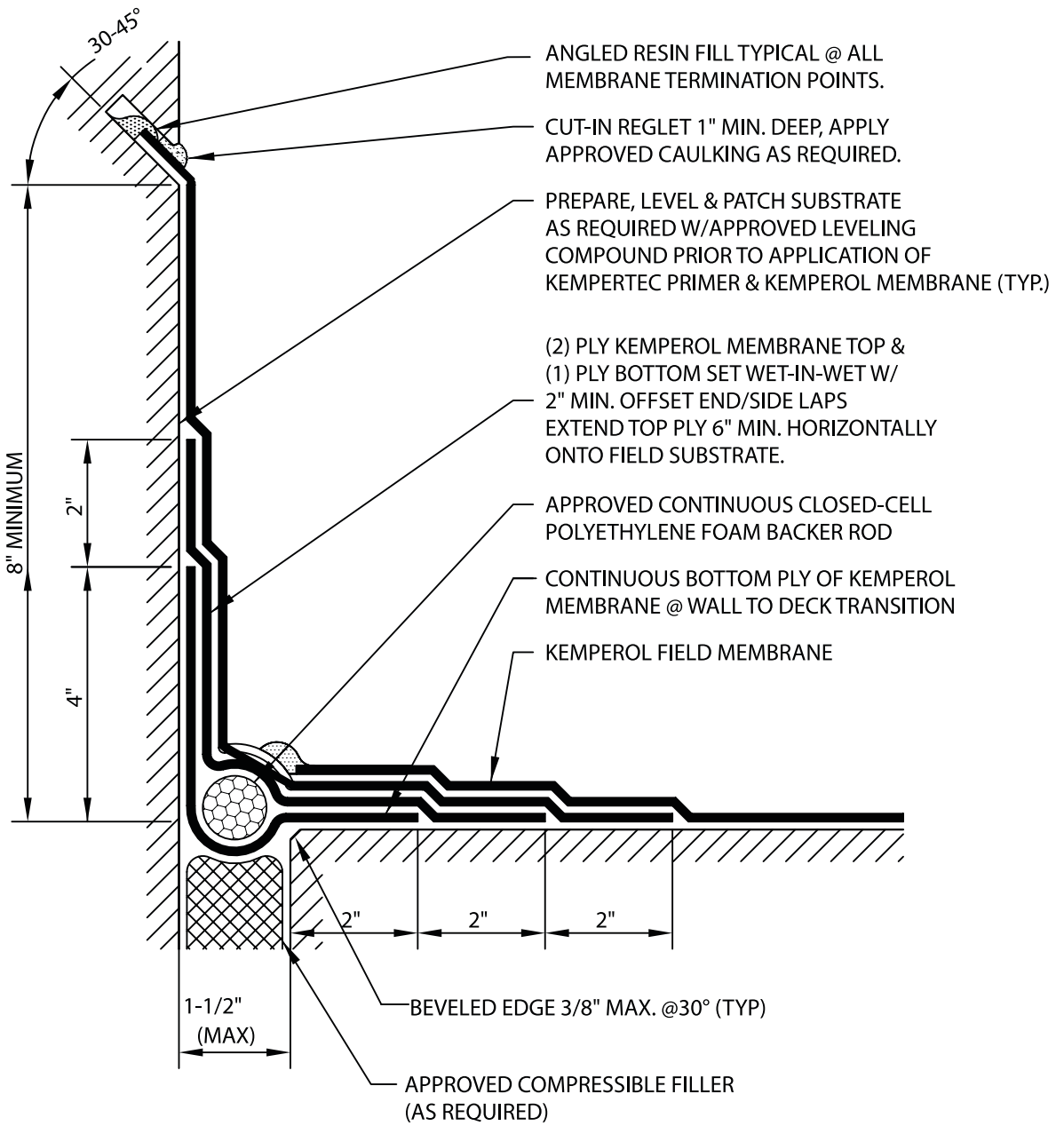
J-1

J-1.DWG

HORIZONTAL TO VERTICAL TRANSITION EXPANSION JOINT FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

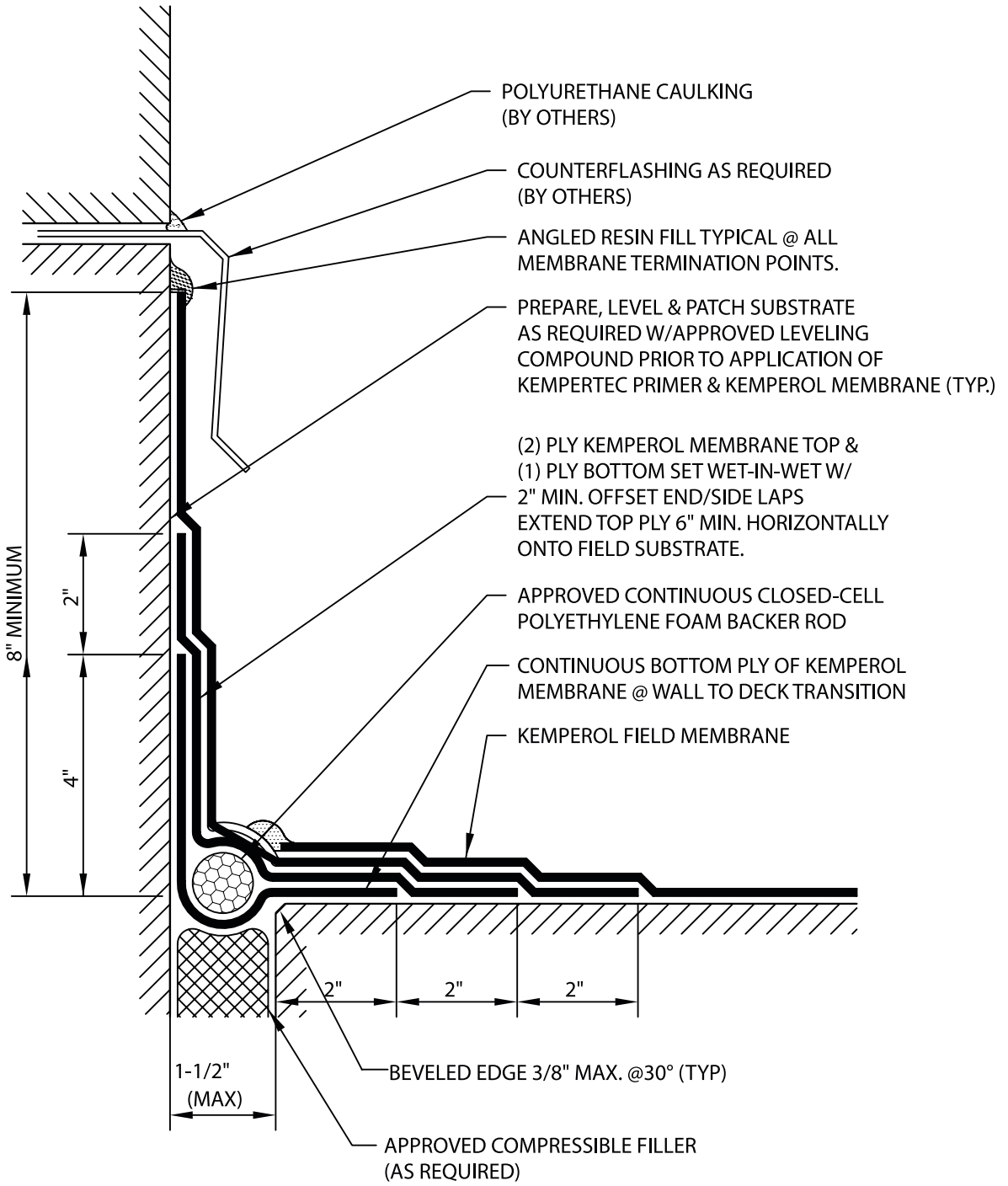
J-1A

J-1A..DWG

HORIZONTAL TO VERTICAL TRANSITION EXPANSION JOINT W/CUT-IN REGLET

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

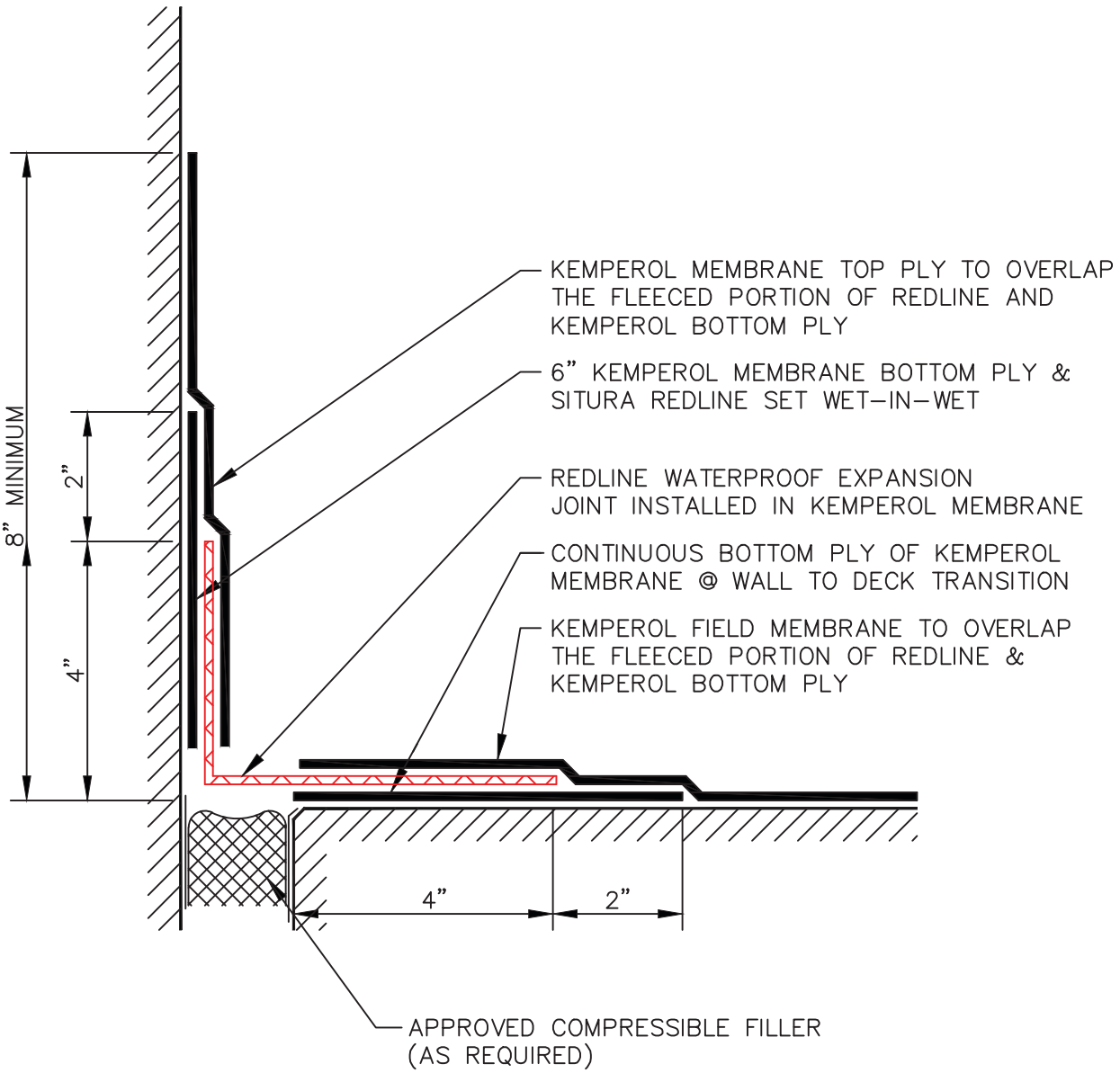
J-1B

J-1B.DWG

HORIZONTAL TO VERTICAL TRANSITION EXPANSION JOINT W/COUNTERFLASHING

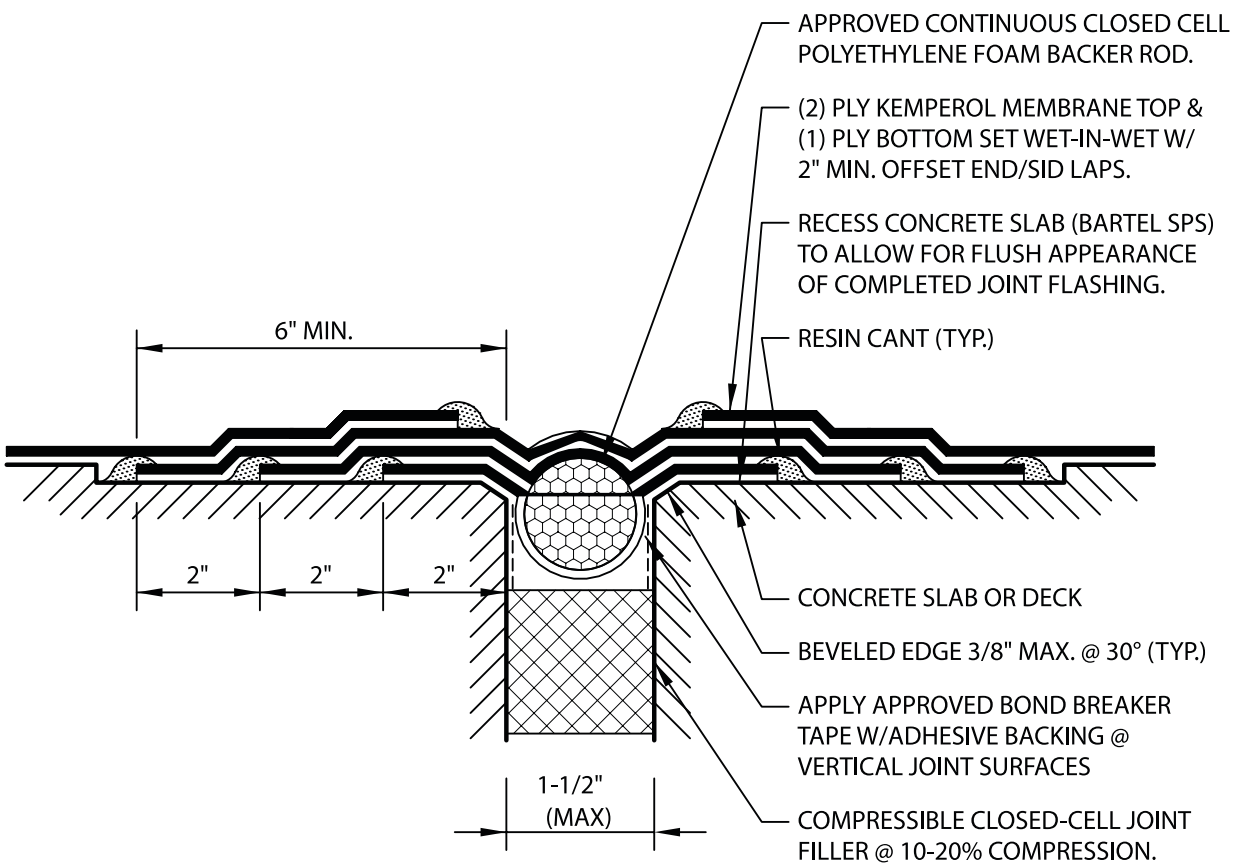
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	HORIZONTAL TO VERTICAL TRANSITION REDLINE EXPANSION JOINT FLASHING			
J-1R	REVISION	ISSUE DATE	SCALE	DRAWN BY
J-1R.DWG	2-26-16	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

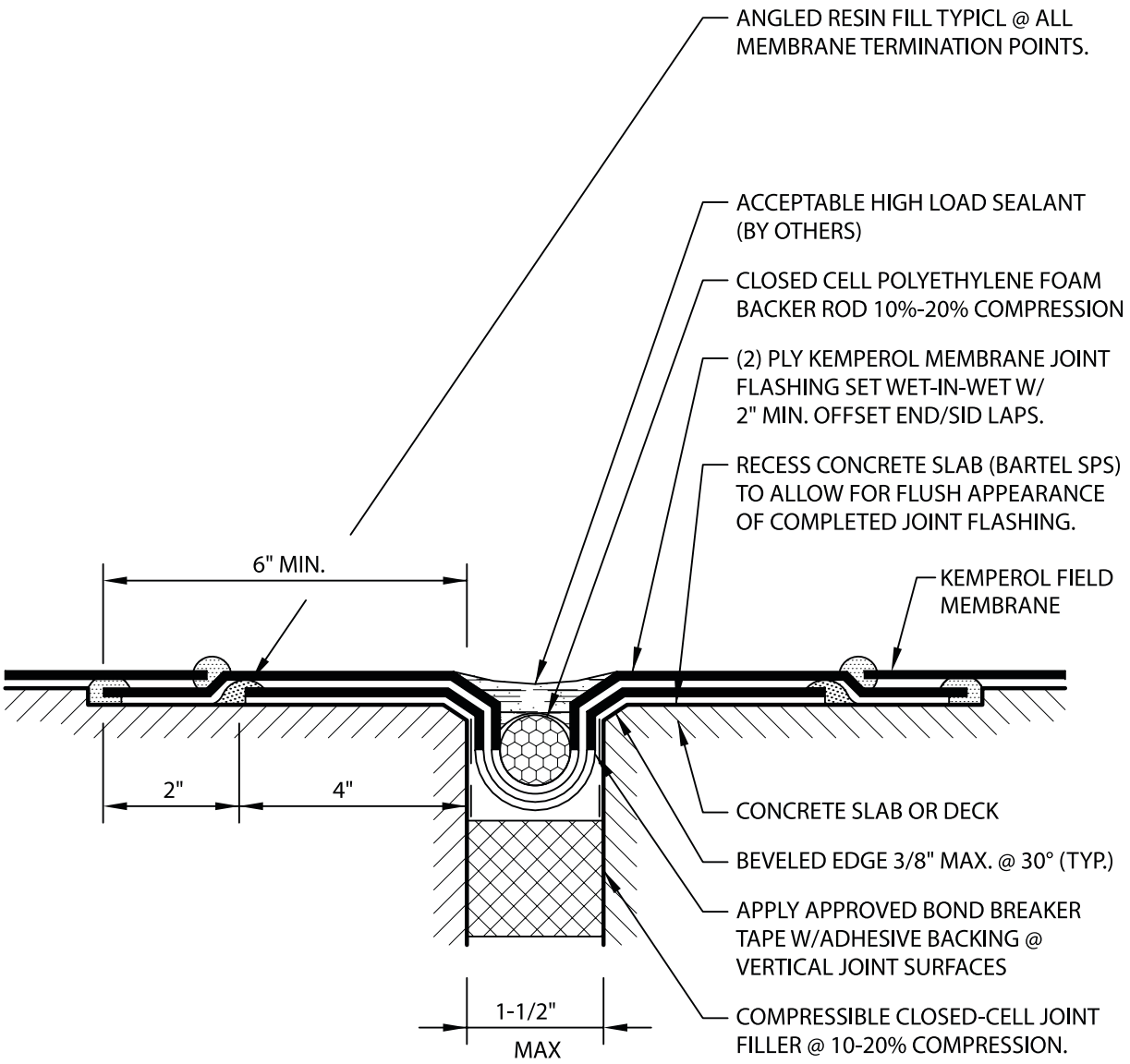
J-2

J-2.DWG

HORIZONTAL (IN-LINE) WATERPROOF EXPANSION JOINT

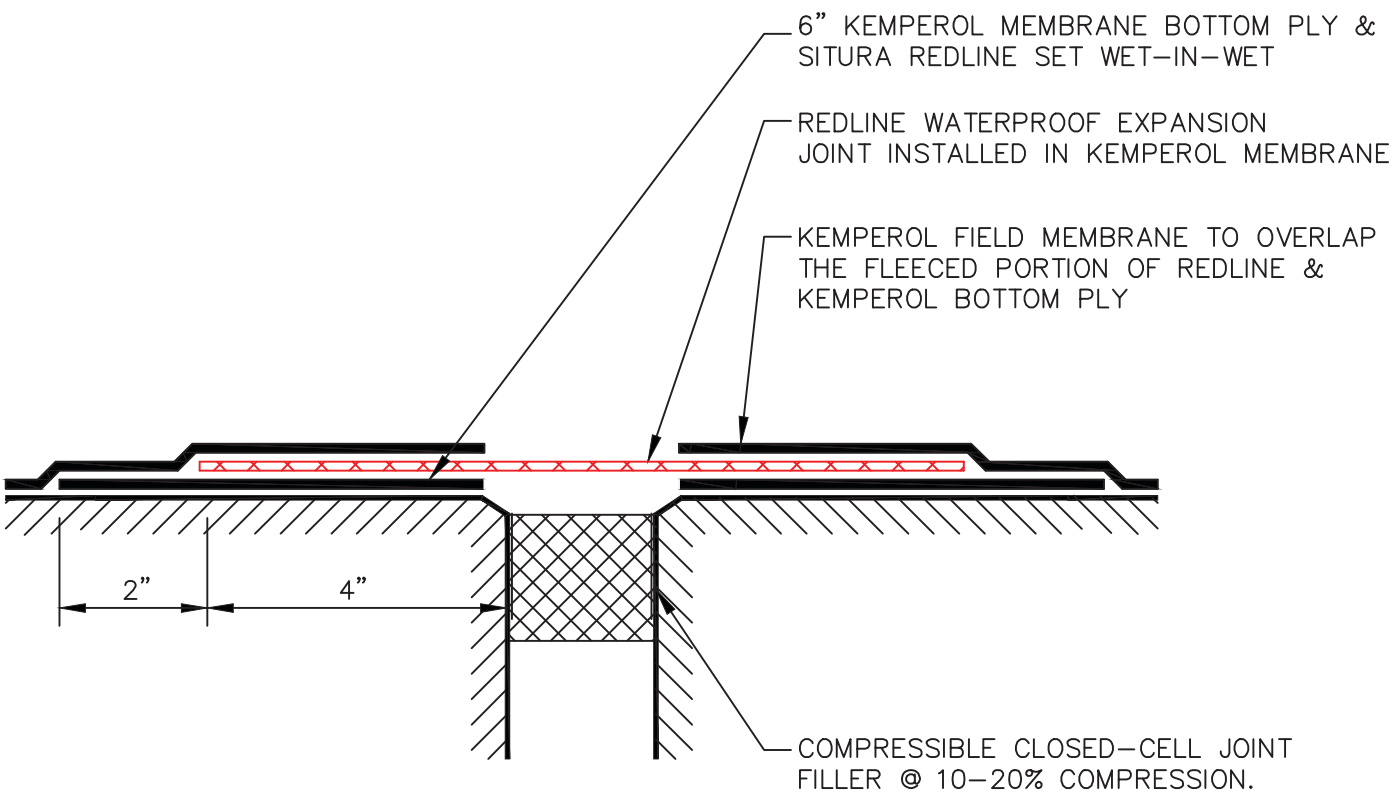
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



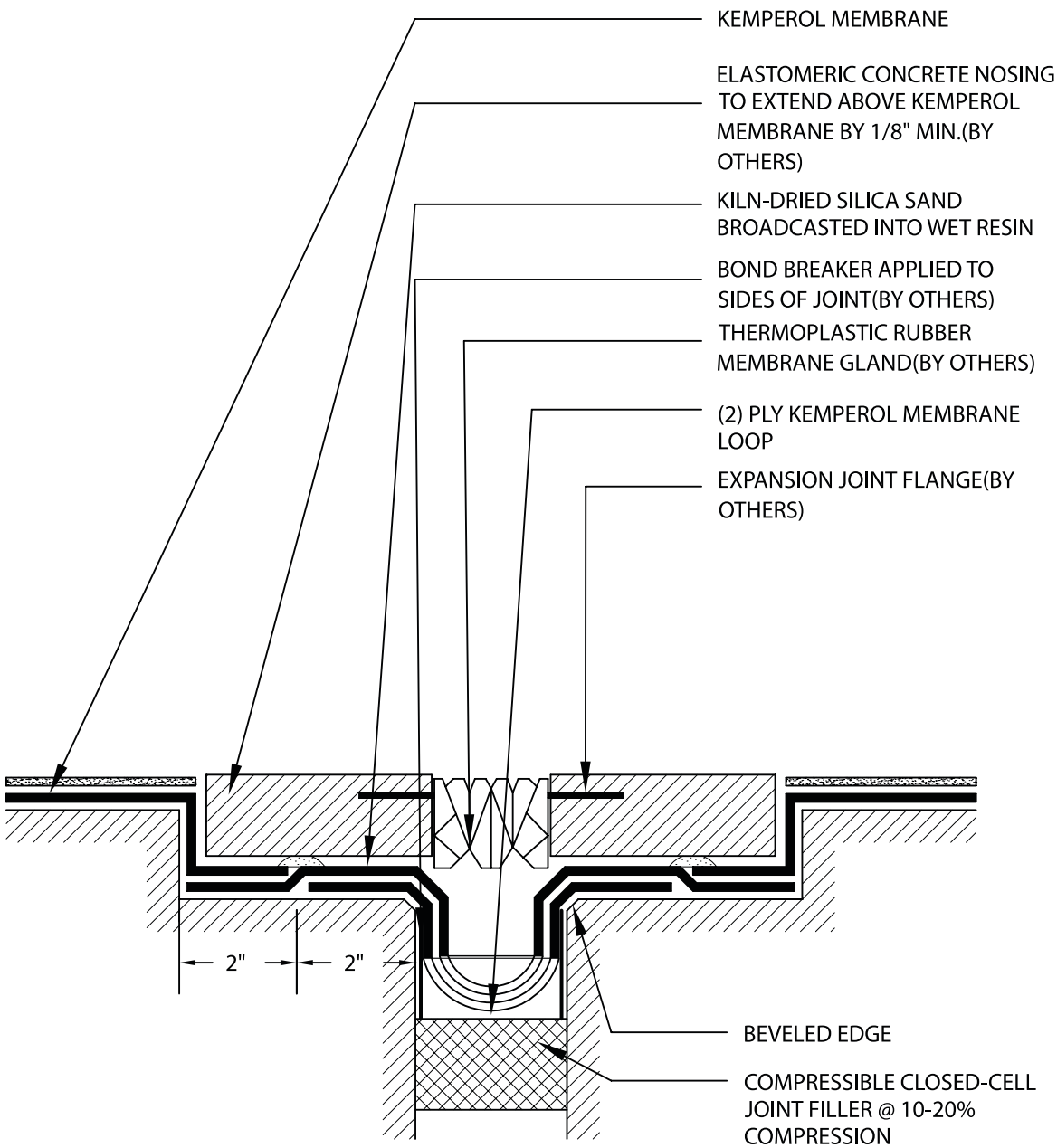
DRAWING NO.	HORIZONTAL (IN-LINE) WATERPROOF EXPANSION JOINT W/SEALANT			
J-3	REVISION	ISSUE DATE	SCALE	DRAWN BY
J-3.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	HORIZONTAL (IN-LINE) WATERPROOF EXPANSION JOINT W/SEALANT			
J-3R	REVISION	ISSUE DATE	SCALE	DRAWN BY
J-3R.DWG	10-15-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

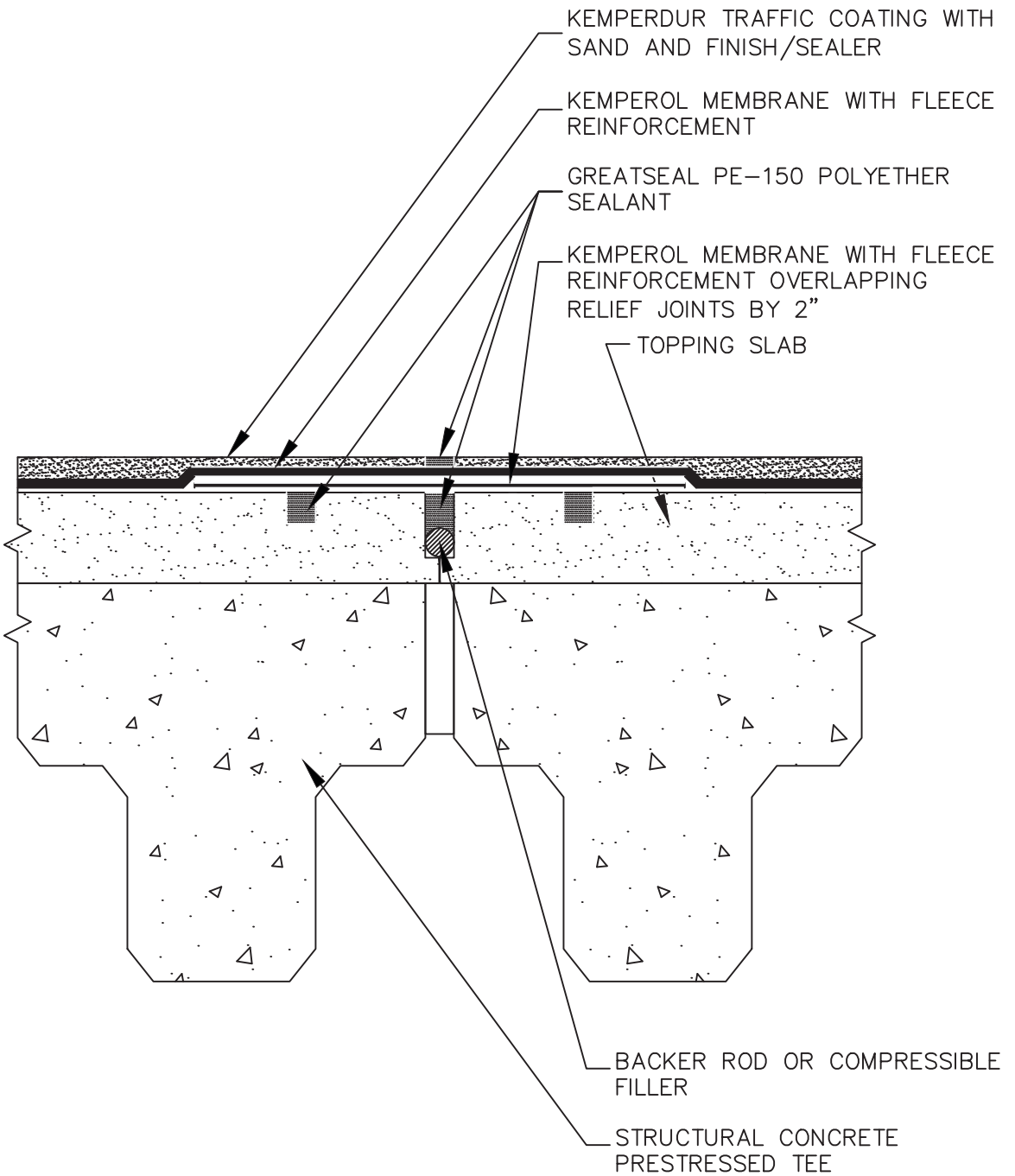
J-4

J-4.DWG

FLASHING AT VEHICULAR TRAFFIC JOINT

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM

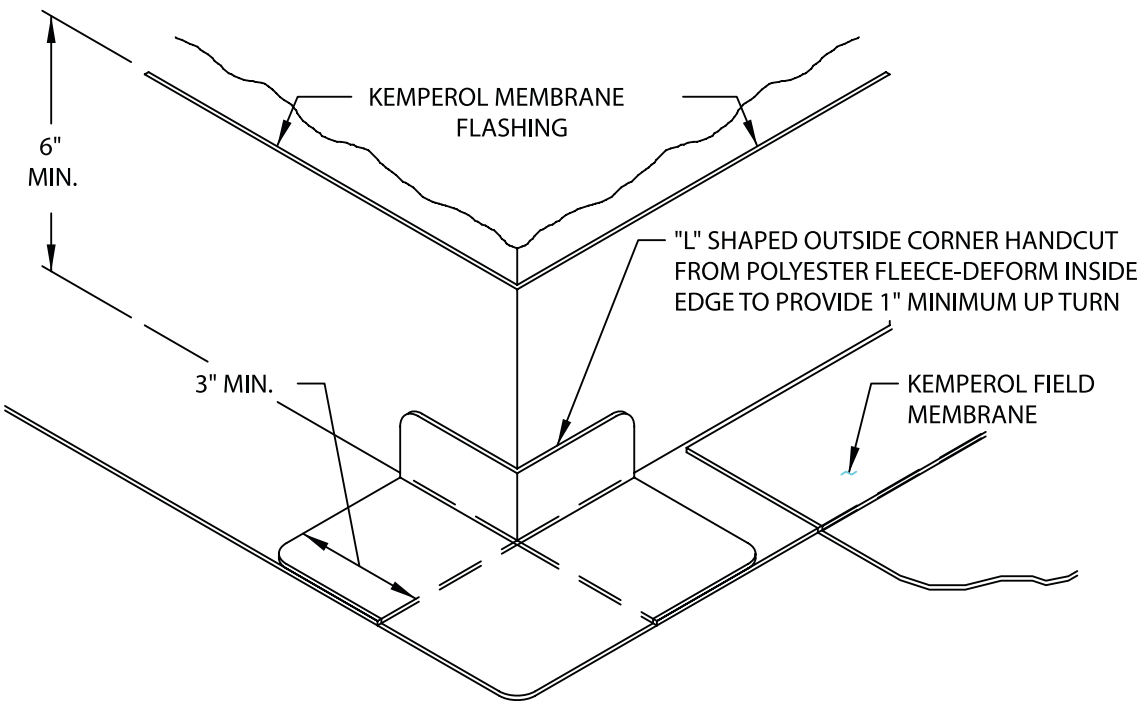


DOUBLE TEE JOINT

DRAWING NO.	REVISION	ISSUE DATE	SCALE	DRAWN BY
J-5	–	02-06-2019	N.T.S.	K.S.A.

J-5.DWG

KEMPER SYSTEM



DRAWING NO.

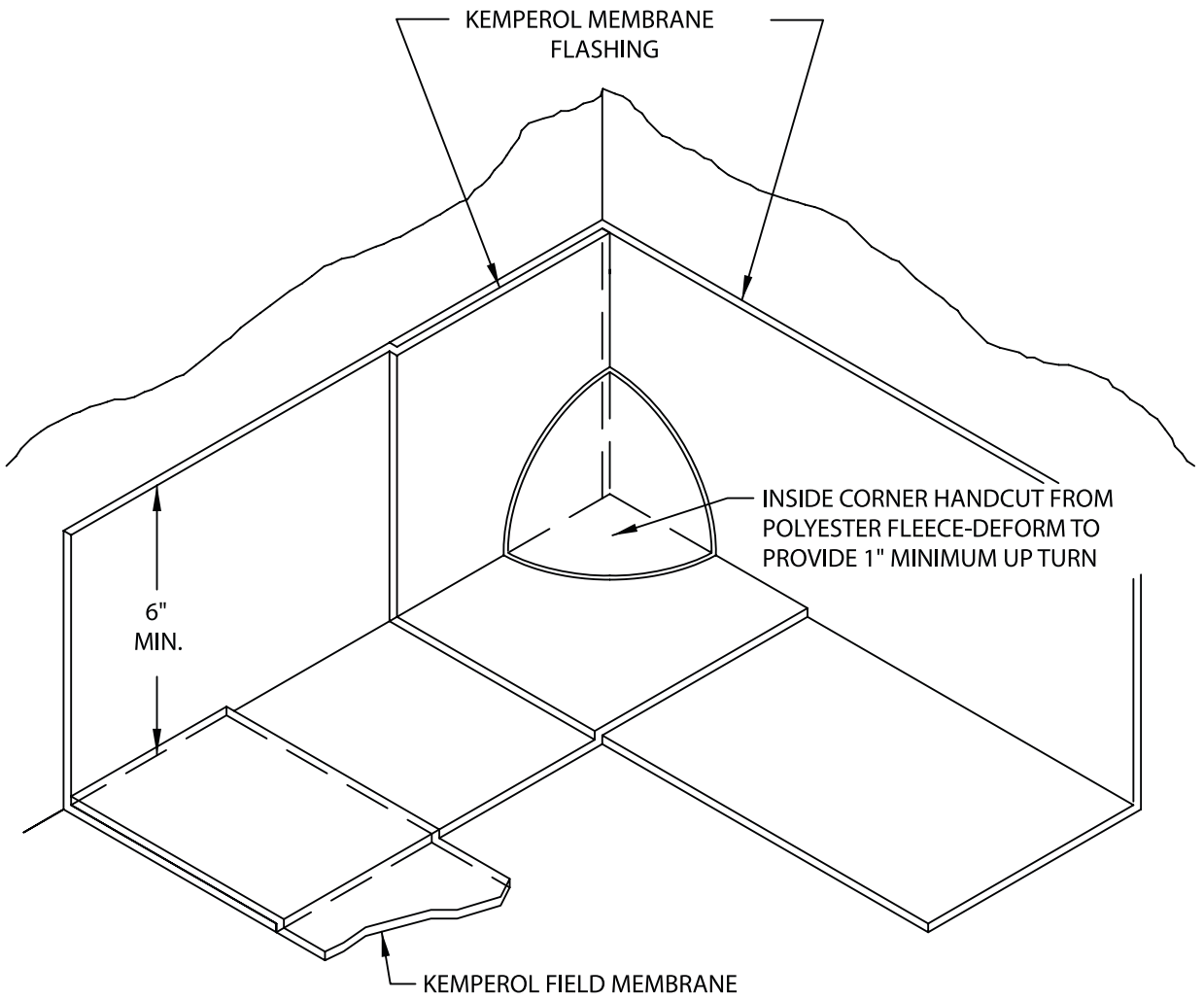
M-1

M-1.DWG

FIELD FABRICATED
OUTSIDE CORNER FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

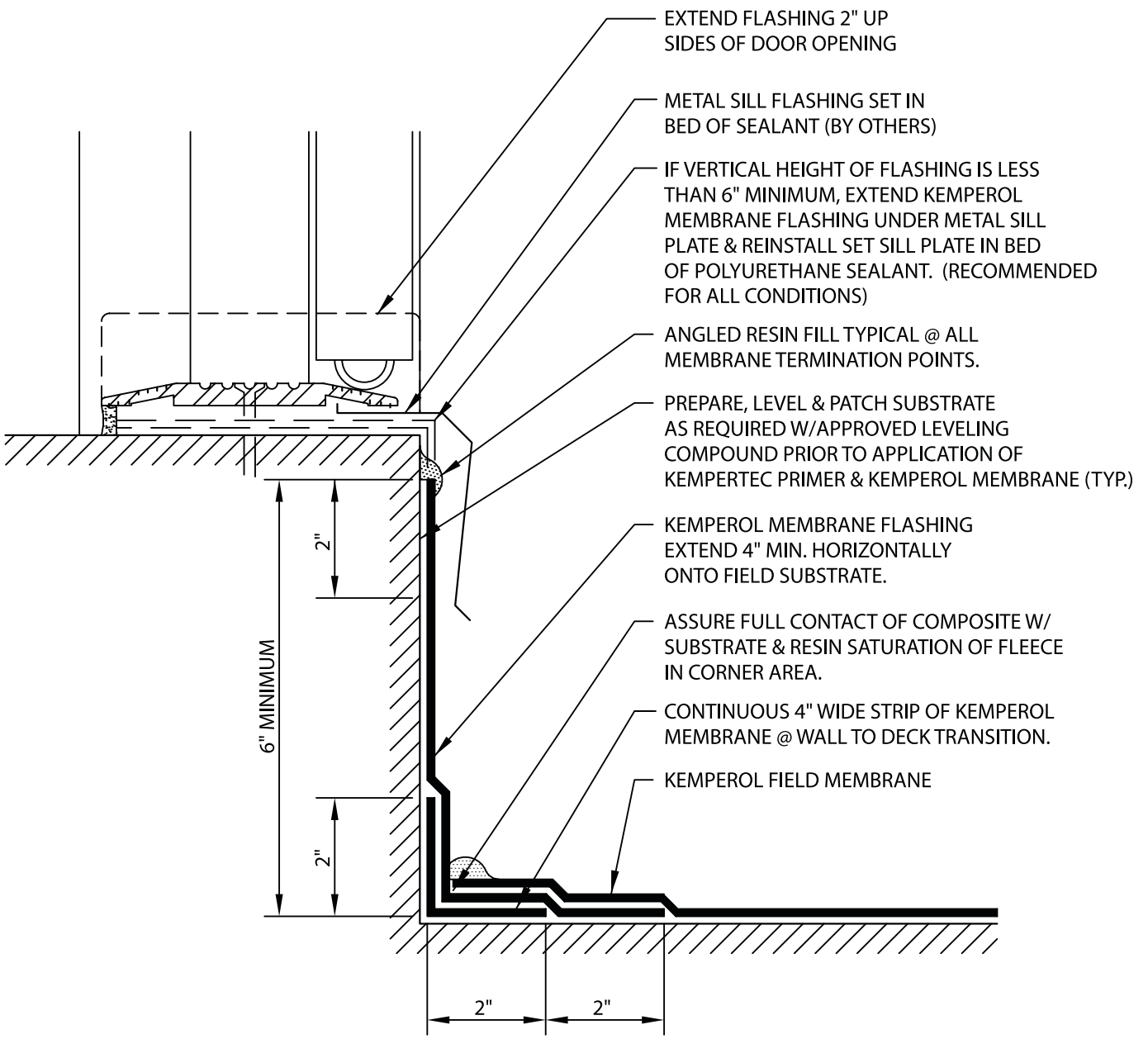
M-2

M-2.DWG

FIELD FABRICATED
INSIDE CORNER FLASHING

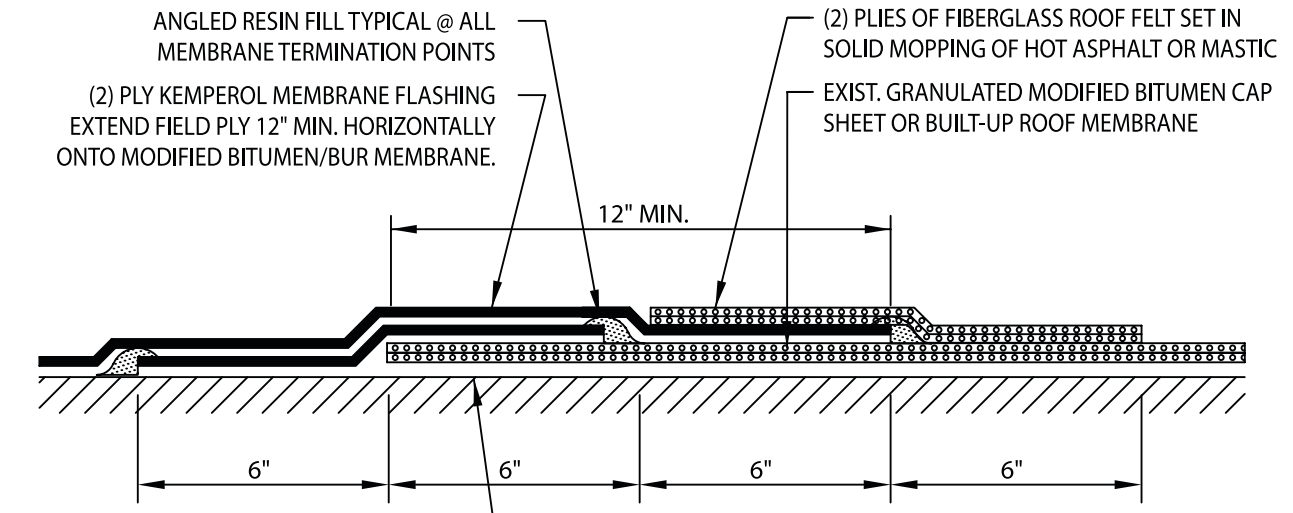
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



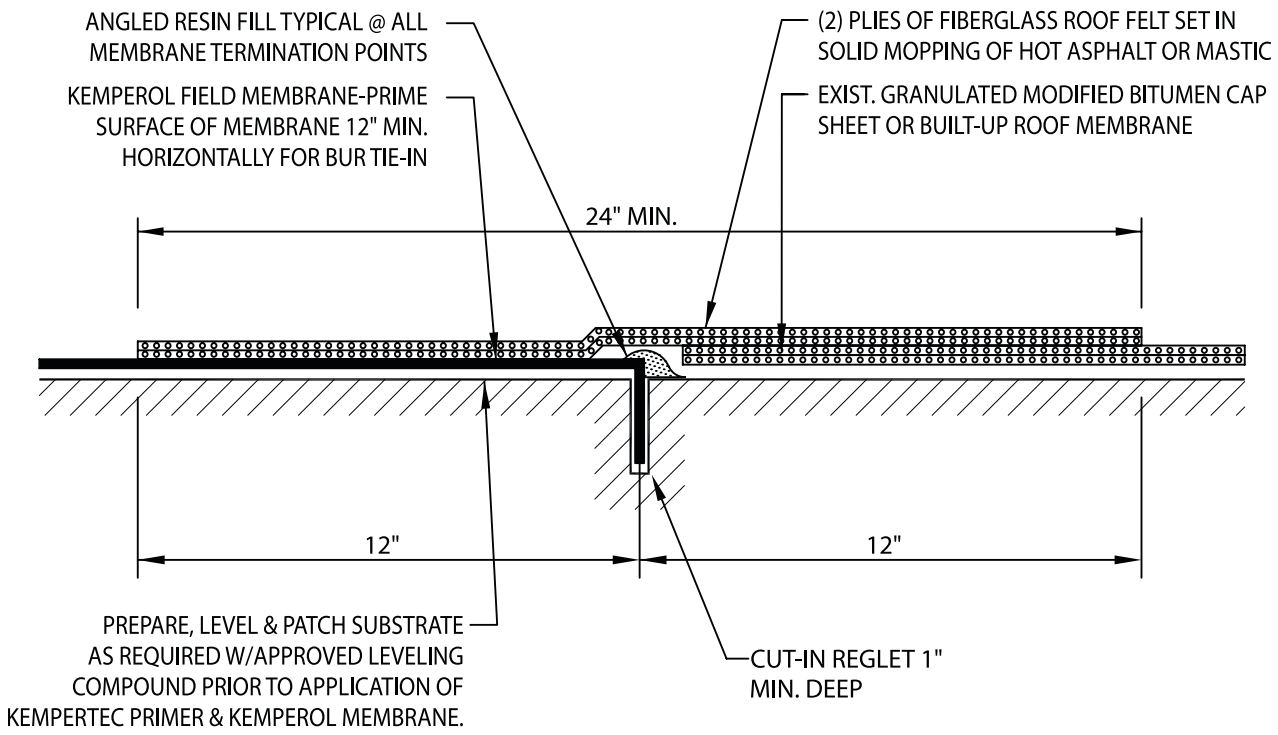
DRAWING NO.	DOOR SILL FLASHING			
M-3	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-3.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



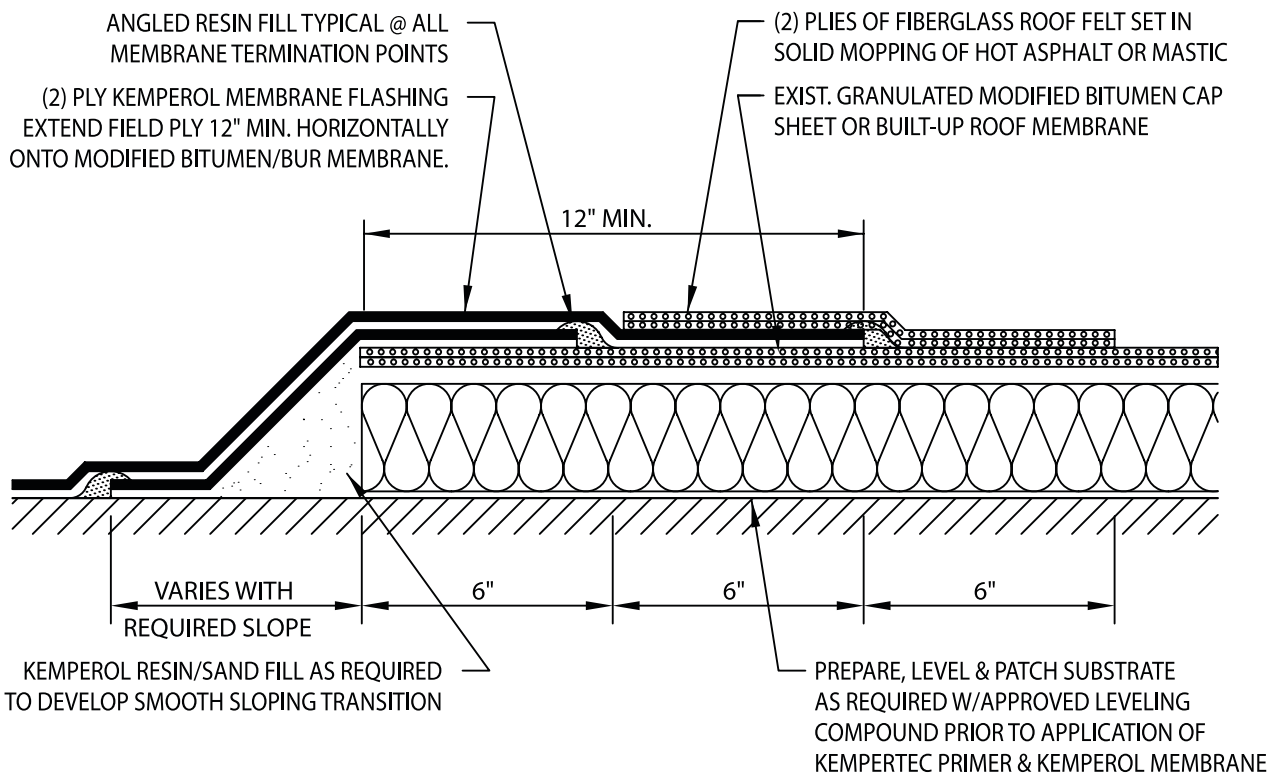
DRAWING NO.	TIE-IN TO MODIFIED BITUMEN/BUR MEMBRANE			
M-4	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-4R.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	TIE-IN TO MODIFIED BITUMEN/BUR MEMBRANE			
M-5	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-5.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

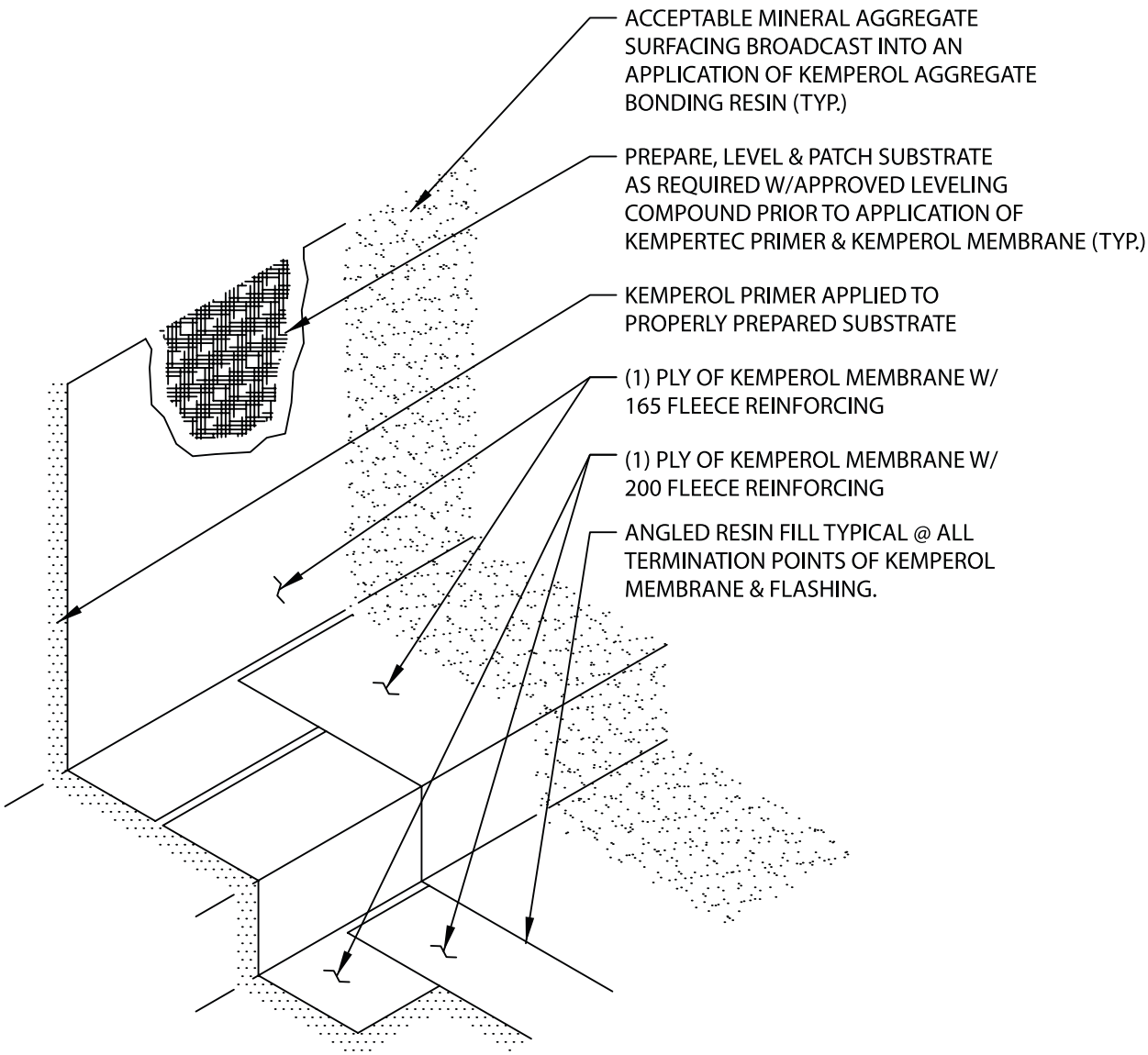
M-6

M-6.DWG

TIE-IN TO MODIFIED BITUMEN/BUR MEMBRANE

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

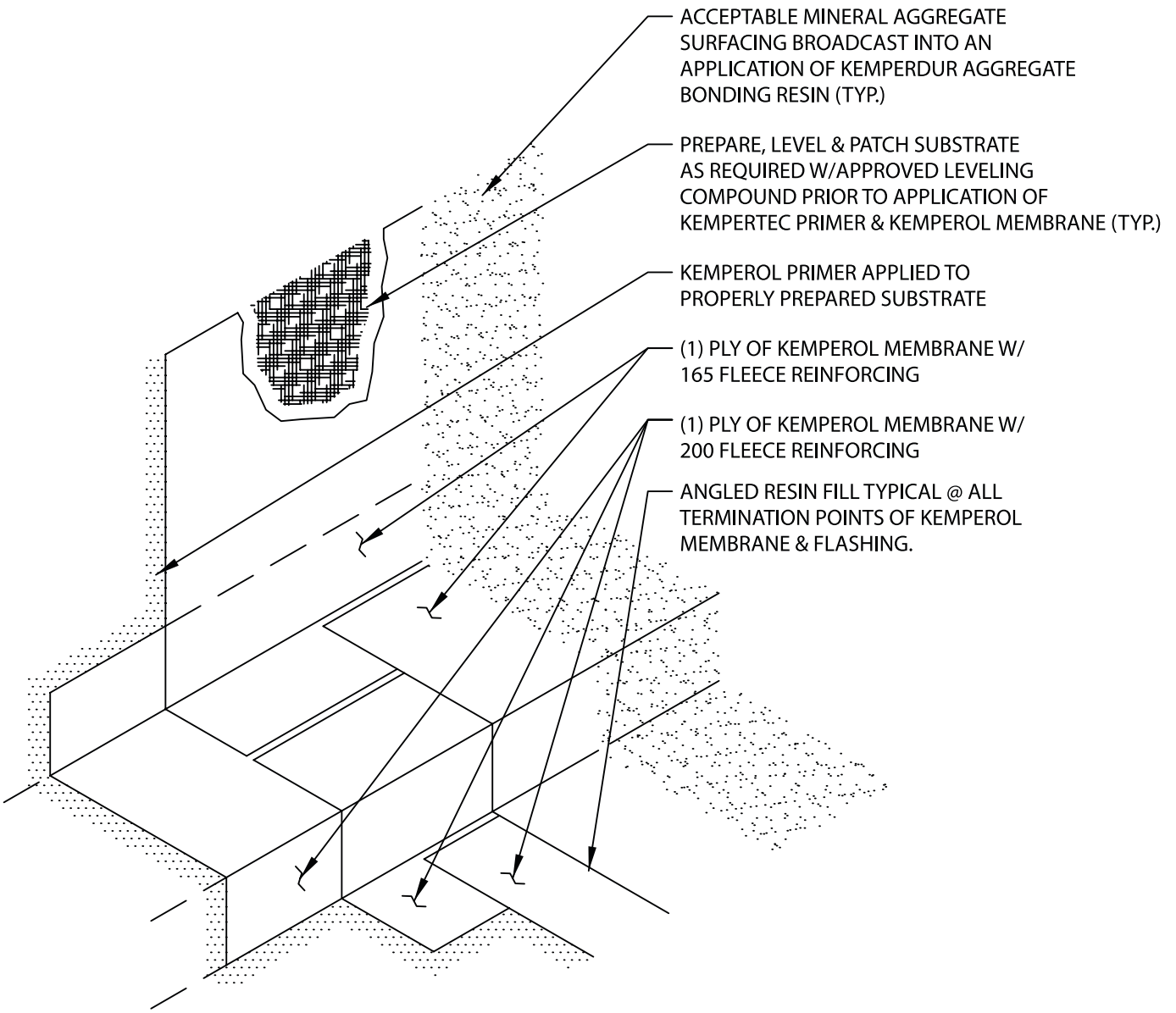
M-7

M-7.DWG

PEDESTRIAN CURB FLASHING (2-PLY)

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

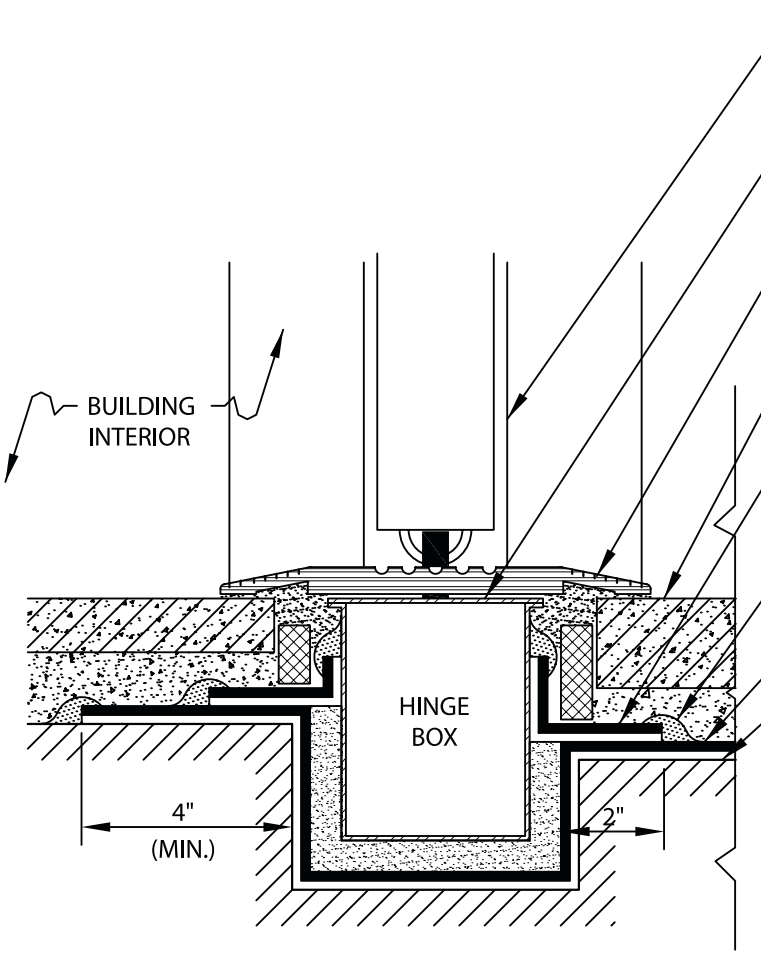
M-8

M-8.DWG

VEHICULAR CURB FLASHING (3-PLY)

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DOOR, FRAME, SADDLE & PIVOT HINGE BY OTHERS. COORDINATE INSTALLATION OF HINGE BOX W/WATERPROOFING APPLICATION.

PIVOT HINGE BOX SET IN 1/2" MIN. THICK BED OF KEMPEROL RESIN/SAND MORTAR. PRIME ALL CONTACT SURFACES W/KEMPERTEC PRIMER.

METAL DOOR SADDLE SET IN CONTINUOUS BED OF KEMPEROL RESIN/SAND FILL. PRIME ALL CONTACT SURFACES W/KEMPEROL PRIMER.

STONE OR CONCRETE PAVER SET IN ACCEPTABLE MORTAR SETTING BED.

(1) PLY KEMPEROL MEMBRANE FLASHING EXTEND 2" MIN. HORIZONTALLY ONTO KEMPEROL FIELD MEMBRANE.

ANGLED RESIN FILL TYPICAL @ ALL MEMBRANE TERMINATION POINTS.

KEMPEROL FIELD MEMBRANE

PREPARE, LEVEL & PATCH SUBSTRATE AS REQUIRED W/APPROVED LEVELING COMPOUND PRIOR TO APPLICATION OF KEMPERTEC PRIMER & KEMPEROL MEMBRANE (TYP.)

DRAWING NO.

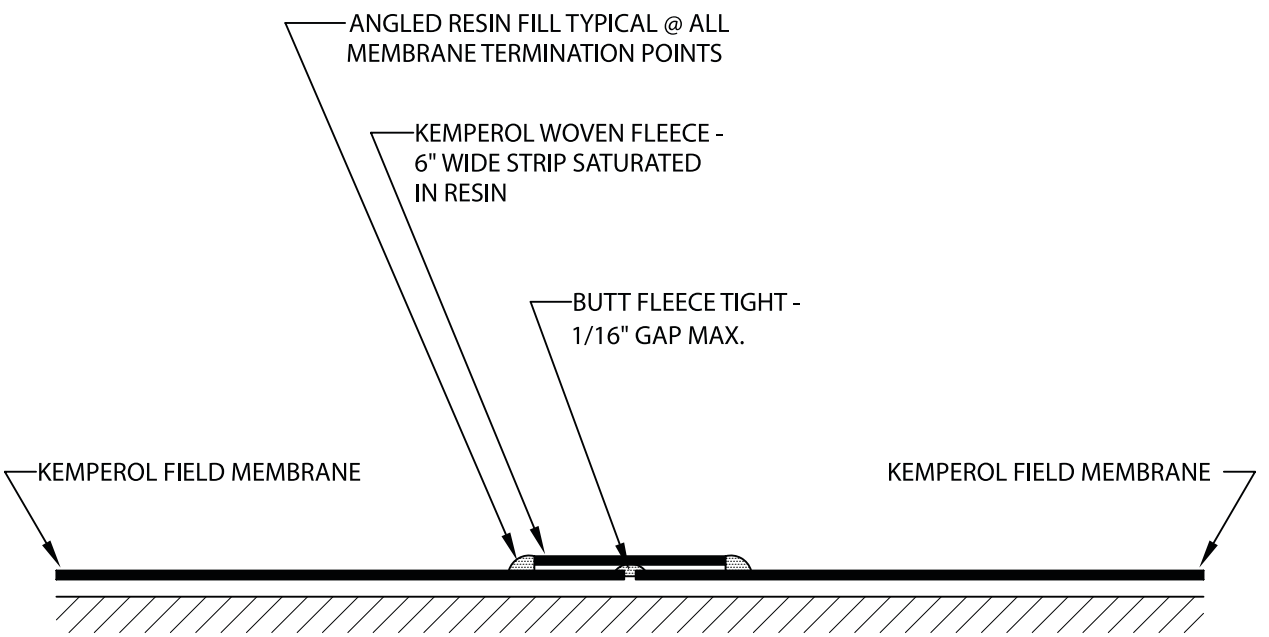
M-10

M-10.DWG

PIVOT HINGE BOX FLASHING

REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

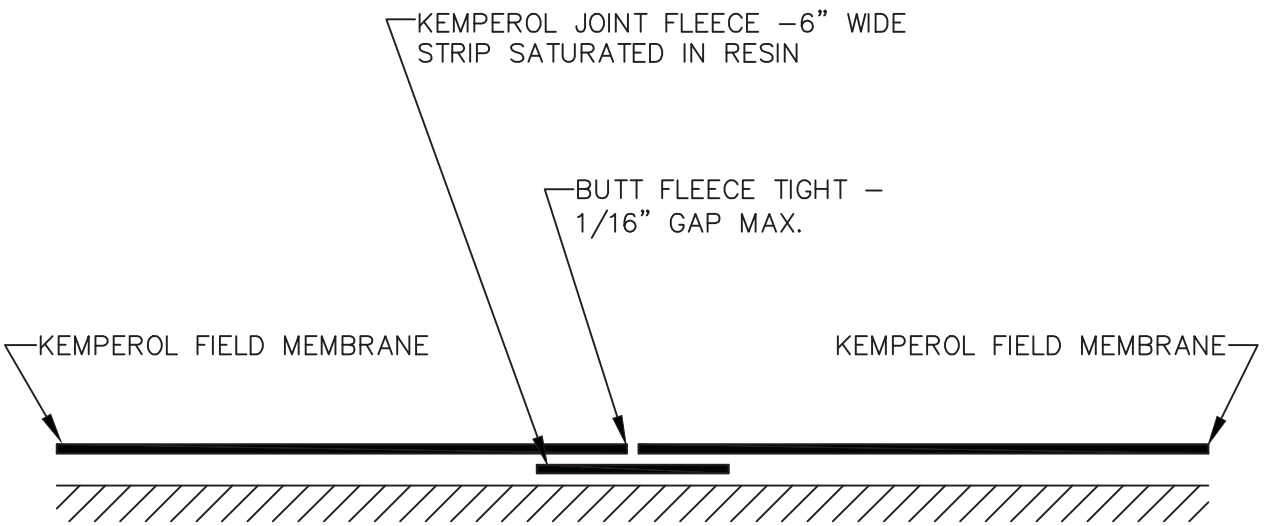
M-11

M-11.DWG

BUTT JOINT FLASHING - FIELD

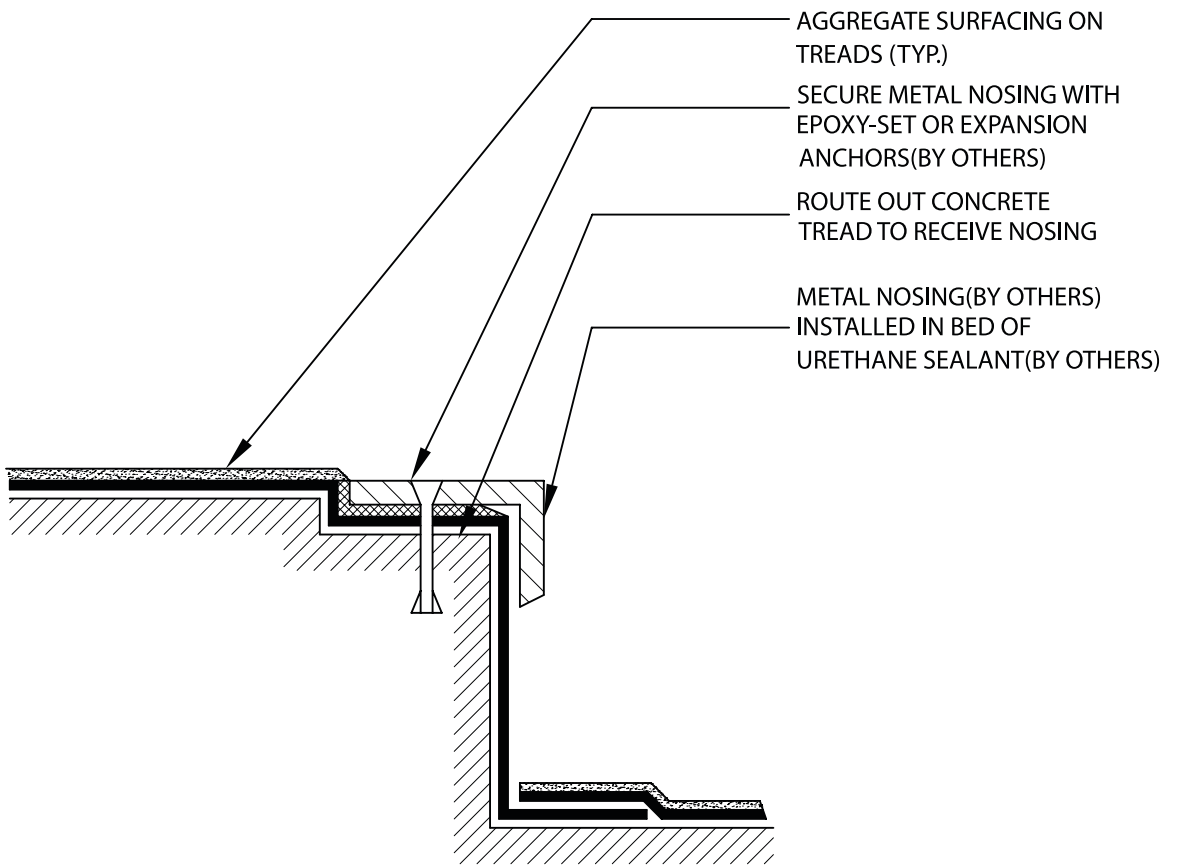
REVISION	ISSUE DATE	SCALE	DRAWN BY
-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



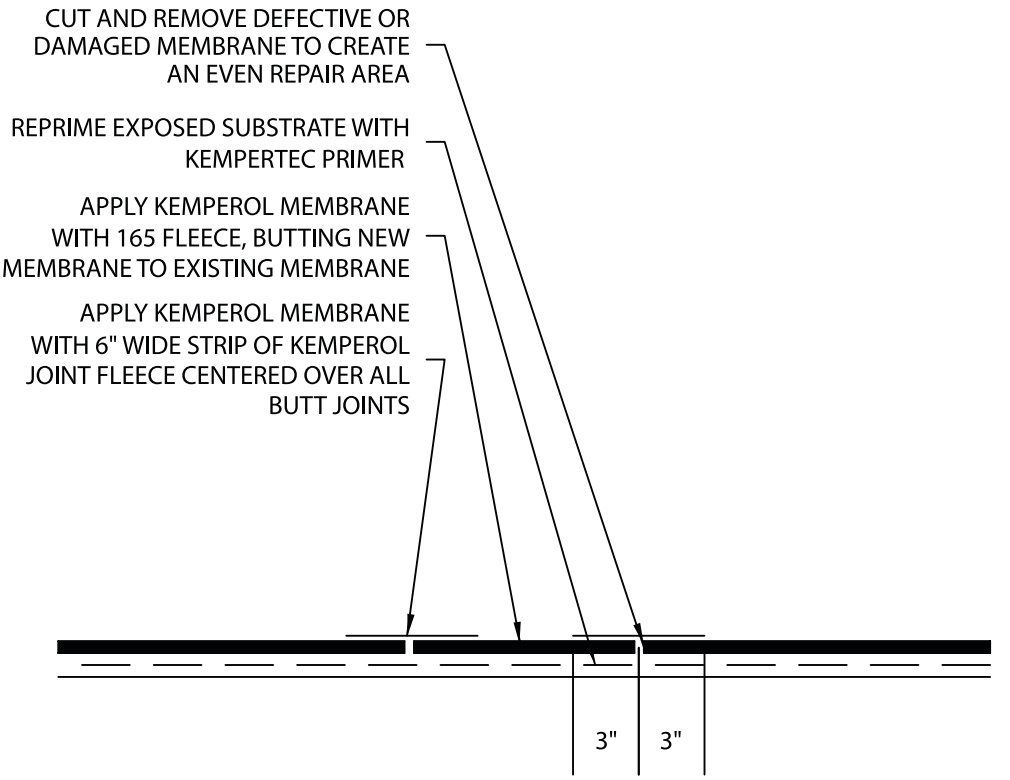
DRAWING NO.	BUTT JOINT FLASHING - FIELD			
M-11A	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-11A.DWG	10-1-2016	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	STAIR TREAD NOSING			
M-12	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-12.DWG	-	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

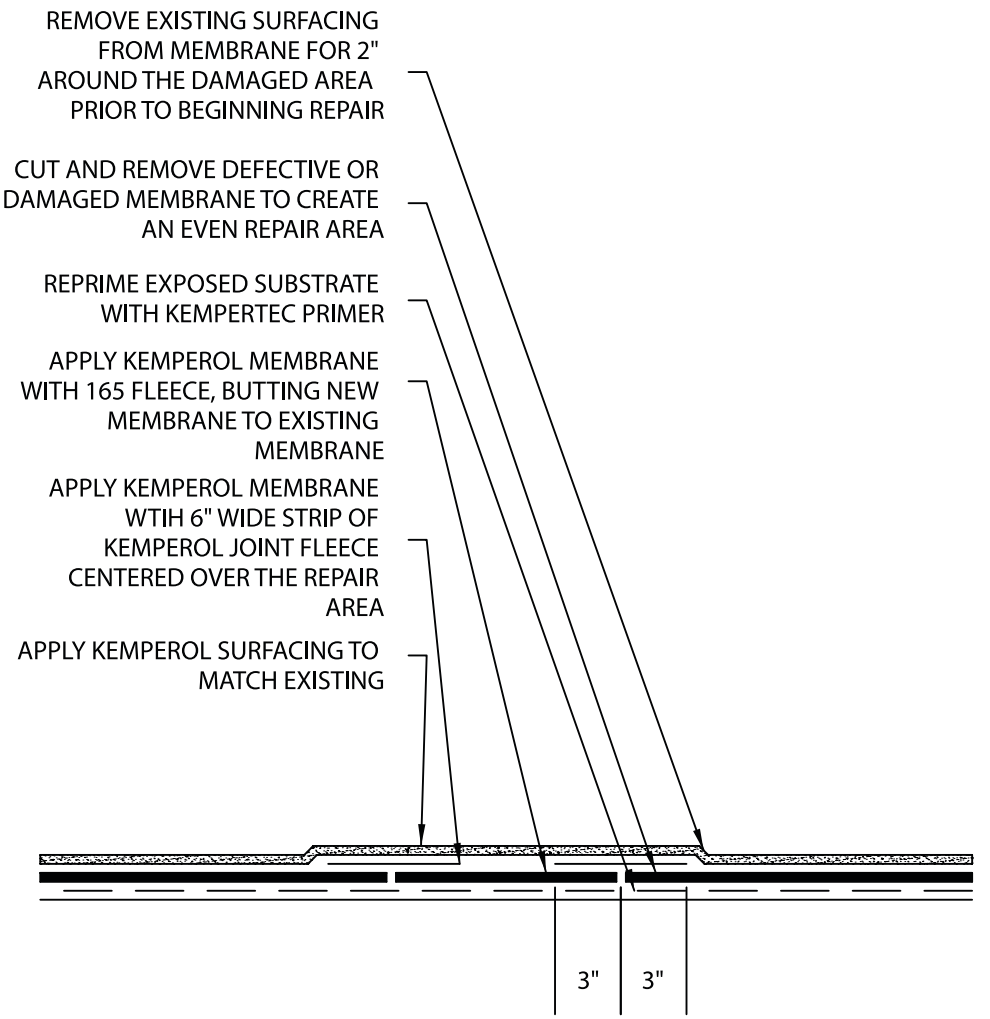
M-13

M-13.DWG

MEMBRANE REPAIR

REVISION	ISSUE DATE	SCALE	DRAWN BY
	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.

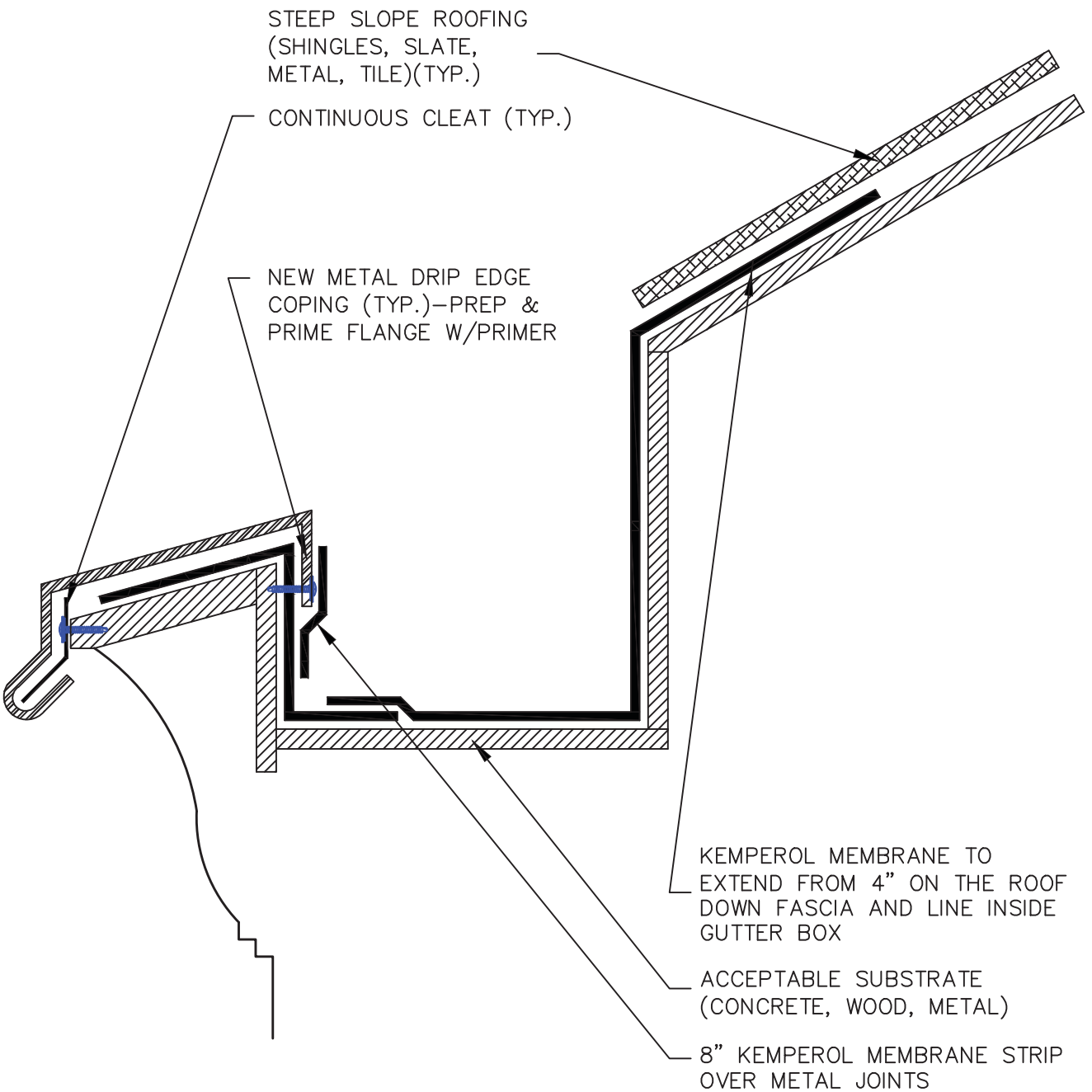
M-14

M-14.DWG

MEMBRANE REPAIR WITH SURFACING

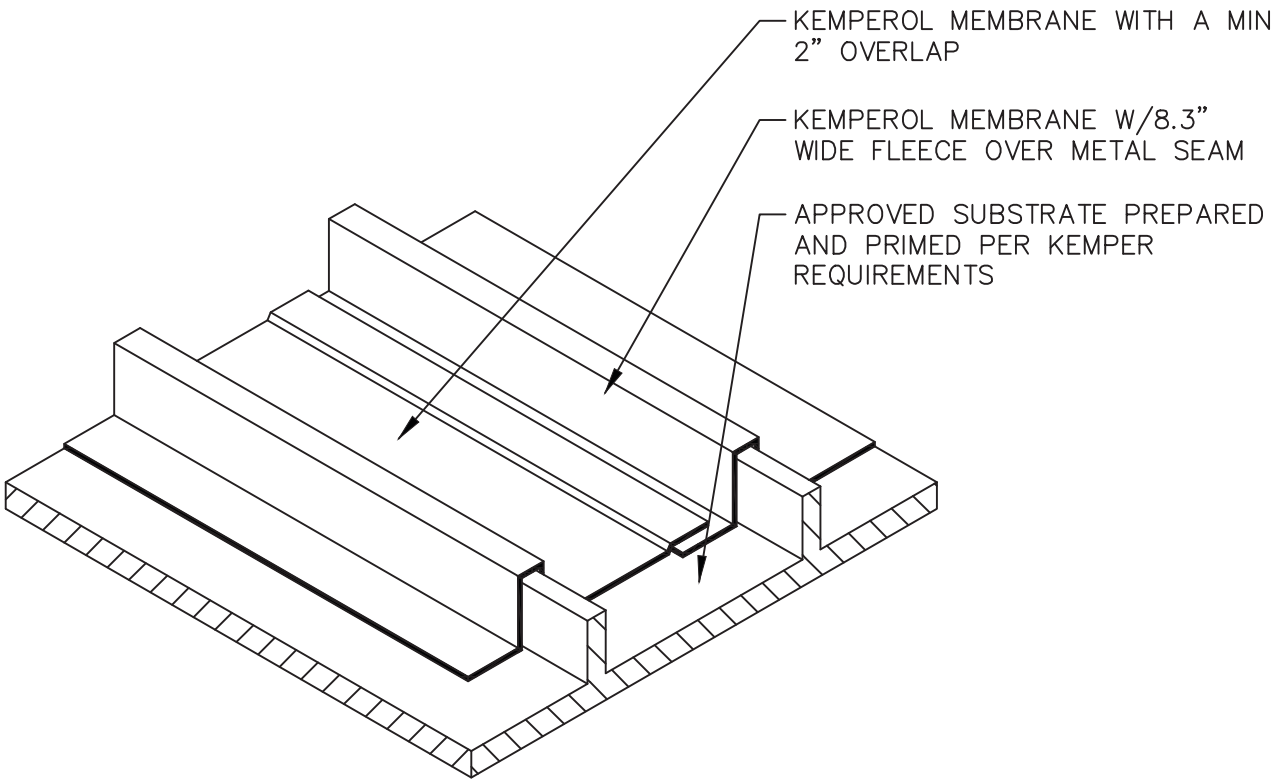
REVISION	ISSUE DATE	SCALE	DRAWN BY
	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	GUTTER LINING DETAIL			
M-15	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-15.DWG	10-15-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM



DRAWING NO.	STANDING SEAM METAL ROOF DETAIL			
M-16	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-16.DWG	10-15-2014	03-01-2011	N.T.S.	K.S.A.

KEMPER SYSTEM

KEMPERDUR FINISH/SEALER
(COLOR OR TRANSPARENT)

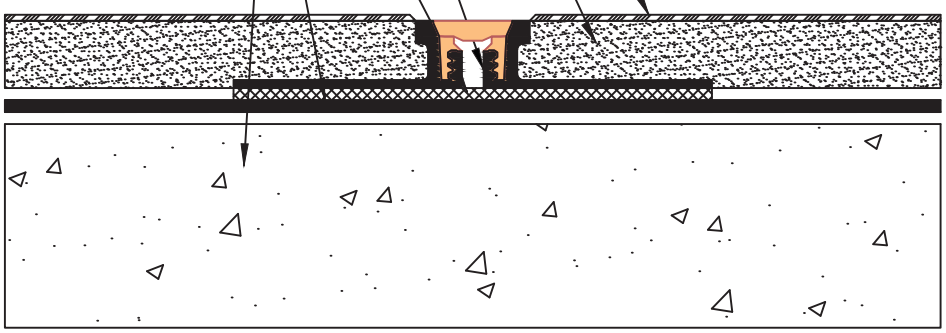
KEMPERDUR TRAFFIC SURFACING
WITH SAND BROADCAST

3/16"H X 11/16"W ALUMINUM
SURFACE JOINT PROFILE TO BE
INSTALLED OVER COLD JOINTS
AND/OR EVERY 20'

POLYURETHANE ADHESIVE

KEMPEROL COLD LIQUID–
APPLIED REINFORCED MEMBRANE
SYSTEM

APPROVED STRUCTURAL
CONCRETE SUBSTRATE



DRAWING NO.	HORIZONTAL SURFACING PROFILE JOINT			
M-17	REVISION	ISSUE DATE	SCALE	DRAWN BY
M-17.DWG		06-15-16	N.T.S.	KSA

KEMPER SYSTEM

Chemical Resistance for Kemper System Products

Survey table for chemical resistance of:

unsaturated polyesters (UP)
- KEMPEROL BRM/V210M Waterproofing

two-component polyurethanes (2K-PUR)
- KEMPEROL 2K-PUR Waterproofing
- KEMPEROL 2K FR

polymethyl methacrylates (PMMA)
- KEMPEROL AC Speed FR
- KEMPERDUR AC Finish

epoxy resins (EP)
- KEMPERTEC EP/EP5-Primer
- KEMPERDUR EP-FR Finish

Headquarters: **Kemper System America, Inc.** | 1200 North America Drive | West Seneca, NY 14224
Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

Chemical Resistance for Kemper System Products

Product	*solid*	*solution*	*liquid*	UP	2K-PUR	PMMA	EP
A Accumulator Acid		x		o	o	+	+
Acetic Acid < 10 %		x		o	o	+	+
Acetic Acid conc.			x	-	-	-	-
Acetone			x	-	-	-	-
Aluminumchloride Solution 30%		x		+	+	+	+
Ammonia		x		-	-	+	+
Ammonium Carbonate	x	x		+	+	+	+
Ammonium Chloride	x	x		+	+	+	+
Ammonium Perchlorate	x	x		o	o	+	+
Ammonium Phosphate	x	x		+	+	+	+
Ammonium Sulphate	x	x		+	+	+	+
Aqua Regia		x		-	-	-	-
B Barium Chloride	x	x		+	+	+	+
Barium Hydroxide	x			o	o	+	+
Barium Hydroxide Solution		x		-	-	+	+
Barium Nitrate	x	x		+	+	+	+
Beer			x	+	+	+	+
Bleach			x	-	-	-	o
Borax	x	x		+	+	+	+
Boric Acid		x		+	+	+	+
Butanal			x	-	-	-	-
Butanol			x	o	o	+	+
Butylacetate			x	-	-	-	+
Butyric Acid	x		x	-	-	+	o
C Calcium Chloride	x	x		+	+	+	+
Calcium Formiate	x	x		+	+	+	+
Calcium Hydroxide				+	+	+	+
Calcium Hydroxide moist		x		-	-	+	+
Calcium Hydroxide Solution		x		-	-	+	+
Calcium Nitrate	x	x		+	+	+	+
Carbon Tetra Chloride			x	-	-	-	-
Castor Oil			x	o	o	o	+
Caustic potash solution 10 % (lye)		x		-	-	+	+
Caustic potash solution 10-50 % (lye)		x		-	-	o	+

+ resistant - no affect to the Kemper System after 60 days exposure at 68°F (20°C) to the listed material

o resistant with restrictions - no affect to the Kemper System after 3 days exposure at 68°F (20°C) to the listed material (i.e. Waterproofing system is stable when only small amounts are present and are removed immediately)

- not resistant - severe affects to the Kemper System when exposed to the listed material

Note: Specific testing is required for unlisted chemicals, mixtures, concentrations and temperatures.

Headquarters: **Kemper System America, Inc.** | 1200 North America Drive | West Seneca, NY 14224
Customer/Technical Service: Phone (800) 541-5455 | Fax (716) 558-2967 | inquiry@kempersystem.net

Chemical Resistance for Kemperol® Products

Product	*solid*	*solution*	*liquid*	UP	2K-PUR	PMMA	EP
Caustic potash solution conc. (lye)		x		-	-	-	-
Caustic Soda 10 % (lye)		x		-	-	+	+
Caustic Soda 10-50 % (lye)		x		-	-	o	+
Caustic Soda conc. (lye)		x		-	-	-	+
Chloracetic Acid	x	x		-	-	-	-
Chlorinated Water		x		o	o	o	o
Chlorinated Water (Swimming pools)		x		+	+	+	+
Chloroform			x	-	-	-	+
Chromic Acid 10%		x		-	-	-	-
Citric Acid	x	x		o	o	+	+
Cobalt Chloride	x	x		+	+	+	+
Cobalt Nitrate	x	x		+	+	+	+
Copper Chloride	x	x		+	+	+	+
Copper Sulphate	x	x		+	+	+	+
Cyclohexanol			x	o	o	+	+
Cyclohexanon			x	o	o	-	o
D Dibutyl Phthalate	x			o	o	o	+
Dioctyl Phthalate	x			o	o	o	+
E Ethanol < 50 %			x	o	o	+	o
Ethanol conc.			x	-	-	+	o
Ether			x	o	-	-	-
Ethylacetate (Aceticacidethylester)			x	-	-	-	o
Ethylglycol Acetat			x	-	-	-	o
F Ferrum Chloride	x	x		+	+	+	+
Ferrum Chloride Solution 50%		x		+	+	+	+
Ferrum Sulphate		x		+	+	+	+
Ferrum Sulphate	x	x		+	+	+	+
Fertilizer	x	x		o	o	o	o
Formaldehyde 30-40% (Formalin)			x	o	o	-	+
Formic Acid < 30 %		x		o	o	o	o
Formic Acid 31-85 %		x		-	-	-	-
Fuel Oil EL			x	+	+	+	+
Fuel, Petrol			x	o	o	o	+
G Glucose	x	x		+	+	+	+
Glycerin			x	+	+	+	+
Glycol			x	o	o	+	o
H Hydrobromic Acid		x		o	o	+	o
Hydrochloric Acid 20 %		x		-	-	o	+
Hydrochloric Acid conc.		x		-	-	o	o
Hydrofluoric Acid			x	-	-	-	-
I Isopropyl Alcohol			x	o	o	+	o
L Lactic Acid 10%		x		+	+	+	+

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Chemical Resistance for Kemperol® Products

Product	*solid*	*solution*	*liquid*	UP	2K-PUR	PMMA	EP
Lactic Acid conc.		x		o	o	o	+
Lead Acetate	x	x		+	+	+	+
Lime Chloride	x			o	o	o	o
Lubricating Grease	x			+	+	+	+
Lubricating Oil			x	+	o	+	+
M Magnesium Chloride	x	x		+	+	+	+
Magnesium Nitrat	x	x		+	+	+	+
Magnesium Sulphate	x	x		+	+	+	+
Maleic Acid	x		x	+	+	+	+
Manganese Sulphate	x	x		+	+	+	+
Margarine	x		x	+	+	+	+
Mercury			x	+	+	+	+
Mercury Chloride	x	x		+	+	+	+
Methanol			x	-	-	+	-
Methyl Acetate			x	-	-	-	-
Methyl Chloride			x	-	-	-	-
Methylamine			x	-	-	-	-
Methylethylketone			x	-	-	-	-
Methylisobutylketone			x	-	-	-	-
Milk			x	+	+	+	+
Mineral Oil			x	+	+	+	+
Molasses (Beet)			x	+	+	+	+
N Nickel Chloride	x	x		+	+	+	+
Nickel Sulphate	x	x		+	+	+	+
Nitric Acid (Azotic Acid)		x		-	-	-	o
O Oil for cooking			x	+	+	+	+
Oil for Engines			x	+	+	+	+
Oil from Flax (Linen)			x	+	+	+	+
Oxalic Acid	x	x	x	o	o	o	+
Ozone				+	+	+	+
P Paraffin			x	+	+	+	+
Perchloric Acid < 10 %		x		o	o	+	o
Perchloric Acid 70 %		x		-	-	-	+
Petroleum			x	o	o	o	+
Phenol	x		x	-	-	-	-
Phosphoric Acid 10 %		x		o	o	+	+
Phosphoric Acid 50 %		x		-	-	o	o
Phosphoric Acid conc.		x		-	-	-	-
Phthalic Acid	x			+	+	+	+
Potassium Bromate	x	x		o	o	+	+
Potassium Carbonate	x	x		+	+	+	+
Potassium Chlorate	x	x		o	o	+	+

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Product	*solid*	*solution*	*liquid*	UP	2K-PUR	PMMA	EP
Potassium Chloride	x	x		+	+	+	+
Potassium Chromat	x	x		o	o	+	+
Potassium Cyanide	x	x		+	+	+	+
Potassium Dichromat	x	x		o	o	+	+
Potassium Fluoride	x	x		+	+	+	+
Potassium Iodid	x	x		+	+	+	+
Potassium Nitrat	x	x		+	+	+	+
Potassium Permangante	x	x		o	o	+	+
Potassium Phosphate	x	x		+	+	+	+
Potassium Sulphate	x	x		+	+	+	+
Propanol			x	o	o	+	o
Propionic Acid 10 %		x		o	o	+	o
Propionic Acid conc.		x		-	-	o	-
S Salicylic Acid	x	x		o	+	+	+
Salt	x	x		+	+	+	+
Salt moist		x		+	+	+	+
Silver Nitrate	x	x		+	+	+	+
Sodium Acetat	x	x		+	+	+	+
Sodium Bromat	x	x		o	o	o	o
Sodium Bromid	x	x		+	+	+	+
Sodium Carbonat	x	x		+	+	+	+
Sodium Chlorat	x	x		o	o	o	o
Sodium Chlorid	x	x		+	+	+	+
Sodium Cyanide	x	x		+	+	+	+
Sodium Fluoride	x	x		+	+	+	+
Sodium Hypochlorite	x	x		+	+	+	+
Sodium HypoChlorite Solution			x	o	o	o	o
Sodium Nitrate	x	x		+	+	+	+
Sodium Perborate	x	x		o	o	o	o
Sodium Perchlorat	x	x		o	o	o	o
Sodium Peroxide	x	x		-	-	-	-
Sodium Phosphate	x	x		+	+	+	+
Sodium Sulfite	x	x		+	+	+	+
Sodium Sulphate	x	x		+	+	+	+
Sodium-Potassium Silicate		x		o	o	o	+
Stearic Acid	x	x		+	+	+	+
Styrene			x	-	-	-	o
Succinic Acid	x	x		+	+	+	+
Sugar	x	x		+	+	+	+
Sugar moist		x		+	+	+	+
Sulfuric Acid 10 %		x		+	+	+	+
Sulfuric Acid 20 %		x		+	+	+	+

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Product	*solid*	*solution*	*liquid*	UP	2K-PUR	PMMA	EP
Sulfuric Acid 40 %		x		o	o	+	o
Sulfuric Acid 60 %		x		-	-	+	o
Sulfuric Acid conc.		x		-	-	-	-
Sulfuric Acid conc.		x		-	-	-	-
T Table Salt	x	x		+	+	+	+
Table Salt Solution		x		+	+	+	+
Tannic Acid			x	+	+	+	+
Tartaric Acid	x	x		+	+	+	+
Tetra Hydro Furane (THF)			x	-	-	-	-
Tin Chloride	x	x		+	+	+	+
Toluene			x	-	-	-	-
Tri Sodium Phosphate	x	x		o	o	o	o
Trichlorethan			x	-	-	-	-
Trichlorethylene			x	-	-	-	-
Triethanolamine			x	-	-	-	-
Triethylamine		x		-	-	-	-
Turpentine			x	o	o	o	o
U Urea	x	x		+	+	+	+
Urine			x	o	o	+	+
W Washing Powder 5%		x		+	+	+	+
Wasser (destillated)			x	+	+	+	+
Water (Sea-, Mineral-, Potable)			x	+	+	+	+
Wine		x		+	+	+	+
X Xylol			x	-	-	-	o
Z Zinc Chloride	x	x		+	+	+	+
Zinc Nitrate	x	x		+	+	+	+
Zinc Sulphate	x	x		+	+	+	+

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Warranty Availabilty Schedule

KEMPER SYSTEM AMERICA, INC.'s ("KSA") below warranties are only available for projects installed by KSA applicator firms and applicator personnel trained and approved in accordance with current "TRAINING AND APPROVAL PROCEDURES" and applied in accordance with current "POLICY AND PROCEDURES FOR APPLICATIONS," including currently published application and specification requirements, construction details, and technical bulletins. Please contact your local sales representative for other custom warranties.

WORKMANSHIP & MATERIALS WARRANTY and RIDERS

PREMIER NDL LIMITED WARRANTY (EDGE-TO-EDGE PROJECTS)

Eligibility: Available for select roofing and waterproofing projects that are full installations; Kemperol membrane must encapsulate the substrate completely edge to edge with no chance of moisture migration into the Kemperol system from other surfaces.

Eligibility Limitations: Not intended for applications on individual residences.

Intent of Coverage: This limited warranty provides repair/replacement materials and labor required to repair/replace the materials in the event defects in the Kemperol materials or related installation workmanship allow water to infiltrate through the systetm, as defined in the warranty.

Minimum Square Footage of KSA material: 1,000 square feet

Maximum $ liability of KSA for this warranty: No Dollar Limit (NDL)

The following warranty riders are available on a per-project basis. Contact KSA Technical Services for specific requirements. **Additional Coverage Option:** For certain surfacing and coating products applied directly to the Kemperol waterproofing membrane. Additional coverage provides labor and material for the surfacing/coating to be defect free and be free from separation from the membrane, as defined in the warranty.

Overburden Removal & Reinstallation Rider: (NOT applicable for permanent overburden such as concrete, tile in a setting bed, wood decking, green/decorative landscaping, etc.)

125 mph Wind Coverage Rider: (Specific substrate applications only. Special requirements apply.)

150 mph Wind Coverage Rider: (Direct-to-structural substrate application only. Special requirements apply.)

MATERIAL WARRANTY

SELECT WARRANTY (ROOFING, WATERPROOFING, AND FLASHING WARRANTY)

Eligibility: Available for select roofing, waterproofing, and flashing projects that are full or partial installations. **Specifically intended for installations on individual residences and balconies.**

Intent of Coverage: This limited warranty provides repair/replacement materials and labor required to repair/replace the materials in the event defects in the Kemperol materials cause loss of watertight integrity, as defined in the warranty.

Minimum Square Footage of KSA material: 500 square feet

Maximum $ liability of KSA for this warranty: Original Cost To Owner of KSA material and labor.

MATERIAL WARRANTY

MATERIALS PRODUCT WARRANTY

Eligibility: For all membrane and surfacing/coating products and for applications that do not qualify for Premier and Select Labor and Materials warranties.

Intent of Coverage: This limited warranty provides replacement materials in the event the Kemperol materials are defective in their composition, as defined in the warranty. Labor required to repair/replace the materials are not included.

Maximum $ liability of KSA for this warranty: Original Cost To Owner of KSA material.

Note: Refer to individual warranties for specific terms and conditions, coverage, exclusions, and the rights, responsibilities and obligations of both the Building Owner and KSA. NO OTHER WARRANTIES ARE MADE OR IMPLIED; ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

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