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5.01.1 General

A. This section will outline the key aspects of IKO's below-grade waterproofing products.

B. The use and installation information provided shall be considered in conjunction with the General Requirements in Part 2 of this manual. Suitability of product use and building envelope design is the responsibility of the architect, building designer, contractor and/or building owner.

5.02.1 IKO AquaBarrier FP — Product Description

A. IKO AquaBarrier FP is a self-adhering, cold-applied SBS modified composite sheet membrane designed to provide long-lasting and dependable primary waterproofing and below-grade foundation protection from the damaging effects of water, or to be used as an effective air and vapour barrier in a variety of above-grade applications.

B. IKO AquaBarrier FP is manufactured by integrally bonding SBS-modified asphalt to a high-density cross-laminated woven polyethylene film. A silicone-treated release liner protects the adhesive back surface prior to installation.

C. IKO AquaBarrier FP offers superior performance for below-grade and other critical areas where waterproofing is required. It also may be used in balconies, parking decks, tunnels and foundation walls. IKO AquaBarrier FP can be applied to all common building substrates, including concrete, gypsum, CMU and OSB. The membrane may also be used in conjunction with insulated concrete form (ICF) wall construction; however, since these forms typically incorporate expanded polystyrene insulation, water-based primers and adhesives must be used rather than solvent-based primers and adhesives.

D. IKO AquaBarrier FP is sold in rolls, sixty-six point seven feet (66.7') (20.3 m) long, thirty-six inches (36") (914 mm) wide.

E. The product has a nominal thickness of sixty (60) mils (1.5 mm).

F. Lines are imprinted on the upper surface at three inches (3") (75 mm) from each edge to aid in product overlapping and alignment during installation.

5.02.2 IKO AquaBarrier FP — Uses and Installation

A. Due to the modified bitumen coating on the backside of IKO AquaBarrier FP, it is readily compatible with, and may be applied to, common foundation substrates, such as poured concrete or concrete masonry units (block walls).

B. Substrates must be primed with either IKO S.A.M. or IKO S.A.M. LVC Adhesive prior to application of the IKO AquaBarrier FP membrane.

C. Orientation of the membrane (vertical or horizontal) may depend on ease of accessibility.

D. Install to the substrate in manageable lengths, approximately six and one-half feet (6 1/2') (2.5 m). Allow the precut sections of membrane time to lay flat and relax prior to installation.

E. Ambient temperatures during installation must be no colder than -10°C (14°F).

F. Install reinforcing gusset strips at all inside and outside corners, and at the junction of the foundation and the concrete footing. The reinforcing gusset strips shall be a minimum width of six inches (6") (150 mm) and installed centred over the transition so that the laps are equal on both adjacent sides.

G. Remove the release liner from half of the gusset strips and install onto the primed substrate. Press the membrane firmly to ensure adequate adhesion. Push the membrane into the inside corner before removing the balance of the release liner.

H. Install reinforcement strips of membrane onto the horizontal plane at the footing. Peel the release liner and extend the reinforcement strip such that a minimum of one inch (1") (25 mm) extends up the lower vertical face of the foundation wall.

I. Cut and position the field membrane on the vertical plane. The top edge should terminate at grade level, and the bottom edge should terminate at footing and foundation wall junction, overlapping the reinforcement strip.

J. Remove a portion of the release liner, approximately eight inches (8") (200 mm) from the back of the membrane prior to installation. Position membrane for installation beginning at the top of the foundation wall. Apply sufficient hand pressure or use a roller to ensure adhesion to the substrate.

K. Remove the release liner, pulling from behind and parallel to the membrane. Continue to apply sufficient pressure to ensure adequate adhesion to the substrate.

L. Install successive courses of membrane, ensuring that all end laps are a minimum of six inches (6") (150 mm), and all side laps are aligned at three inches (3") (75 mm).

M. Seal top edge and bottom edge of the field and reinforcement membranes to the substrate with modified bitumen mastic at the end of each workday.

N. Do not leave the membrane exposed to sunlight/UV for more than thirty (180) days.

O. Prior to installation of the drainage layer or membrane protection board, inspect the membrane for punctures or tears. Any areas of breached membrane integrity must be repaired. The repair patch must extend at least six inches (6") (150 mm) beyond the damaged area on all sides.

P. Install the protection board and/or drainage layer as per the construction documents.

5.03.1 IKO AquaBarrier TG — Product Description

A. IKO AquaBarrier TG is an SBS-modified sheet membrane designed to act as an air and vapour barrier in a variety of above-grade wall systems, and as a waterproofing membrane in below-grade installations.

B. IKO AquaBarrier TG is manufactured by integrally bonding SBS-modified asphalt to an inorganic reinforcing mat of high-strength nonwoven glass fibers. The product is surfaced with a microperforated film on both sides. The film on the back side of the membrane disappears during heat-welded installation.

C. IKO AquaBarrier TG is sold in rolls, thirty-two point eight feet (32.8') (10 m) long, in roll widths either nineteen point seven inches (19.7") (500 mm) or thirty-nine point four inches (39.4") (1000 mm).

D. The product has a nominal thickness of one hundred (100) mils (2.5 mm).

E. Lines are imprinted on the upper surface at three inches (3") (75 mm) to aid in product overlapping and alignment during installation.

5.03.2 IKO AquaBarrier TG — Uses and Installation

A. Due to the modified bitumen coating on the backside of IKO AquaBarrier TG, it is readily compatible with, and may be applied to, common foundation substrates, such as poured concrete or concrete masonry units (block walls).

B. Substrates must be primed with either IKO Mod-Bit Primer or IKO Spray Primer prior to application of the IKO AquaBarrier TG membrane.

C. Ambient temperatures during installation must be no colder than -10°C (14°F).

D. Orientation of the membrane (vertical or horizontal) may depend on ease of accessibility.

E. Install to the substrate in manageable lengths, approximately six and one-half feet (6 1/2') (2.5 m). Allow the precut sections of membrane time to lay flat and relax prior to installation.

F. Install reinforcing gusset strips at all inside and outside corners, and at the junction of the foundation and the concrete footing. The reinforcing gusset strips shall be a minimum width of six inches (6") (150 mm) and installed centred over the transition so that the laps are equal on both adjacent sides.

G. Using a propane torch, soften the underside of the membrane by burning off the backing film. To ensure adequate adhesion, the bitumen should be in a semi-molten state, and the membrane should be pressed into place immediately after torching.

H. Install reinforcement strips of membrane onto the horizontal plane at the footing. Install the reinforcement strip such that a minimum of one inch (1") (25 mm) extends up the lower vertical face of the foundation wall.

I. Cut and position the field membrane on the vertical plane. The top edge should terminate at grade level, and the bottom edge should terminate at footing and foundation wall junction, overlapping the reinforcement strip.

J. Position membrane for installation beginning at the top of the foundation wall. Apply roller to ensure adhesion to the substrate.

K. Install successive courses of membrane, ensuring that all end laps are a minimum of six inches (6") (150 mm), and all side laps are aligned at three inches (3") (75 mm).

L. Seal the top edge and bottom edge of the field and reinforcement membranes to the substrate with modified bitumen mastic at the end of each workday.

M. Do not leave the membrane exposed to sunlight/UV for more than thirty (30) days.

N. Prior to installation of the drainage layer or membrane protection board, inspect the membrane for punctures or tears. Any areas of breached membrane integrity must be repaired. The repair patch must extend at least six inches (6") (150 mm) beyond the damaged area on all sides.

O. Install the protection board and/or drainage layer as per the construction documents.

5.04.1 IKO ArmourBridge — Product Description

A. IKO ArmourBridge Bridge Deck and Waterproofing Membrane is made with a tough nonwoven reinforced polyester mat strengthened with select glass fiber strands. It is then coated with select SBS polymers and premium asphalt to a superior thickness of approximately one hundred seventy-seven (177) mils (4.5 mm).

B. IKO ArmourBridge 45 is a preformed SBS modified bitumen membrane with a ceramic-coated granule top surface to protect against abrasion and work traffic. Also used in parking garage surfaces, it's specially formulated to protect decking from the assault of melting snow laden with salt and de-icing solution.

C. IKO ArmourBridge 45 satisfies the requirements of ASTM D6153 standard specification for Materials for Bridge Deck Waterproofing Membrane Systems and ASTM D5849 standard test method for evaluating resistance of modified bituminous roofing membranes to cyclic fatigue, (joint displacement). It also conforms to the requirements of CGSB 37.56-M, Class G, Type 2, Grade 2, and ASTM D6164 Type I, Grade G.

D. IKO ArmourBridge is manufactured to a width of thirty-nine point six inches (39.6") (1005 mm) and a length of twenty-six point two feet (26.2') (8 m). It has a three and one-half inch (3 1/2") (90 mm) ungranulated selvage edge.

5.04.2 IKO ArmourBridge — Uses and Installation

A. Consult local building codes and/or department of transport regulations for requirements pertaining to bridge deck waterproofing. Use and application of this product must be in accordance with all local, provincial and national code requirements.

B. IKO ArmourBridge is specifically designed for paving overburden and offers excellent protection for concrete structures against waterborne chemical deterioration. Studies have shown that waterproofing and proper water management on the bridge deck extends the life of the bridge by minimizing associated water damage. It also reduces chemical deterioration through minute fissures and cracks from de-icing and salt chemicals during the winter months.

C. The substrate should be smooth and dry, and free from dirt, oil, grease or other contaminants. Large cracks or openings greater than one quarter inch (1/4") (6 mm) must be filled.

D. All side laps shall be a minimum of three and one-half inches (3 1/2") (90 mm).

E. All end laps shall be a minimum of six inches (6") (150 mm).

F. The side and end laps shall be staggered a minimum of twelve inches (12") (300 mm) and twenty-four inches (24") (610 mm), respectively, from each other.

G. All end laps shall have a forty-five (45°) degree section removed to form a positive water stop.

H. All metal and concrete surfaces that come into contact with the membrane must first be primed with an IKO Mod-Bit Primer or IKO Standard Asphalt Primer.

I. Remove all wrapping tape and labels before beginning installation. The sheets must be unrolled, allowed to relax and then rerolled prior to installation.

J. Begin installation at the low point of the deck. Unroll and align the sheet prior to attachment. Use chalk lines where necessary to ensure proper alignment. Ensure side laps are oriented so as not to block the flow of water to drains.

K. The cap sheet shall be terminated on the horizontal surface at the intersection of any vertical surfaces, or as otherwise specified in the construction drawings.

L. The membrane is installed via heat fusion from an open-flame torch. IKO requires that the torch operator be positioned in front of the roll and use a hook or cane-type tool to pull the roll towards the installer instead of walking on the freshly heated membrane.

M. Beginning at the rerolled portion of the cap sheet, apply the flame evenly across the back of the roll and along the exposed side lap of the previously installed sheet.

N. Apply enough flame to melt the film on the back of the sheet and the lap on the previously installed sheet. Installation is correct when a small bead of bitumen can be seen in front of the roll and at the side lap, producing a nominal quarter inch (1/4") (6 mm) bleed-out of bitumen.

O. Reroll the opposite half of the sheet and repeat the above method to complete installation of the full roll.

P. On end laps, the end lap granules shall be embedded with a torch and trowel prior to mating with the next sheet. Heat is applied to both the membrane and the trowel so as to embed the granules into the bitumen — they should not be scraped off the cap sheet.

Q. On sheet side laps, if the factory-provided three and one-half inch (3 1/2") (90 mm) side lap is not available, then the side lap granules shall be similarly embedded with a torch and trowel to create the required three and one-half inch (3 1/2") (90 mm) overlap.

R. Prior to completion of the bridge deck traffic surface, the IKO ArmourBridge shall be protected from damage, which is typically achieved by the installation of a loose-laid layer of IKO Protectoboard.

5.05.1 IKO Blindside Waterproofing Membrane Installation Guidelines

A. This guide describes the minimum application requirements for IKO Blindside Waterproofing installations. Refer also to all IKO Commercial technical documents, including Installation Manuals, Detail Drawings and Product Data Sheets, to ensure that the installed system complies with all IKO technical requirements.

B. IKO Commercial does not practice architecture or engineering. IKO provides the general information in this guide in good faith, as a courtesy only, and not as a substitute for consultation with a design professional to determine the applicability of IKO technical requirements for a specific project.

C. The building owner or project design professional is responsible for consulting with all local authorities having jurisdiction (AHJs), national and local building codes, and insurance requirements to determine project-specific requirements. These codes and requirements may supersede IKO technical requirements, where the codes and requirements are more restrictive.

D. Not all possible conditions are covered in this document. Whenever any project condition or specification requirement falls outside the guidance given herein, IKO Technical Services must be consulted.

5.05.2 Introduction

The foundation of a building is designed to give strength and stability. In architecture and engineering, they are designed to support and distribute the structural weight of a building, usually made of concrete with steel reinforcing bars but can also be made of wood, concrete blocks or stones.

The foundations are located in the ground and are subject to hydrostatic-pressure, water veins and groundwater, hence the importance of protecting them against these elements, otherwise, cracks in concrete may appear due to ground movements allowing water to infiltrate the building and promote the development of mould, concrete spalling and an increase in humidity, which may affect and make structural materials unstable.

Concrete being a porous material, can become saturated with water over time and lose some of its structural strength. A foundation whose concrete is saturated shows visual signs inside such as efflorescence. Due to the hydrostatic pressure exerted on the foundation from the outside to the inside, it is strongly recommended to waterproof from the outside (Positive Side Waterproofing). The topography of the land and the nature of the soil and groundwater, will dictate the choice of the type of material and waterproofing system that must be installed on the foundation.

5.05.3 Storage and handling of materials

All IKO products must be stored in a dry place protected from the weather and contaminants. When stored outside, they must be placed on a pallet at least 4 inches above the ground.

Do not install in rainy or snowy conditions.

Membrane storage: Membranes should remain upright on a pallet with the overlap seam positioned up. Self-adhesive membranes must be protected from direct sunlight at all times. If the work must be carried out during the winter period, the membranes can be stored outside, but must be placed in a shelter with a controlled environment at a temperature above 20 degrees Celsius (68 degrees Fahrenheit), 24 hours before their installation.

Storage of primers & mastics: Please refer to Product Data Sheets and iko.com/comm.

5.05.4 Application of primers

- The drying (curing) time of the different products listed below varies according to the porosity of the surface, the ambient temperature and humidity. Cure time is usually accelerated with higher temperatures and lower relative humidity.
- S.A.M. Adhesive & S.A.M. Adhesive LVC: IKO S.A.M. Adhesive is a quick-drying, solvent-based liquid surface primer for priming substrates over which self-adhering membranes are installed. Yellow in color, it requires a minimum 30 minutes flash off, and its coverage is approximately 3 to 6 m^2/L (122 to 244 ft^2/gal).
- IKO S.A.M. Adhesive LVC is green in color and formulated with a low volatile organic compound content, so it is used for projects requiring low VOC materials.

Note: Self-adhesive membranes must be installed within a maximum of four (4) hours after the application of the S.A.M. Adhesive.

Under certain job site conditions, the primer may be contaminated with dust; in this situation, the surface must be covered again with another coat of primer before proceeding with the installation of the membranes.

5.05.5 Tools

Typically, primers are installed with a long nap paint roller, sprayer or brush.

It is not allowed to dilute the primer to increase its coverage or to restore a primer whose solvents have evaporated in the container, this will have a negative impact and will affect the good adhesion of the self-adhesive and heat-welded membranes.

5.05.6 Safety

Never use the torch to make sure a primer is dry; please refer to the S.A.M. Adhesive SDS for full details.

Products used within an IKO BSW system:

- Membrane for vertical surface: AquaBarrier BSW-V
- S.A.M. Adhesive or S.A.M. Adhesive LVC for self-adhesive membranes
- Membrane for horizontal surface: AquaBarrier BSW-H
- MS Detail for penetrations
- Polyester reinforcement
- Termination bar for membrane
- Fasteners and plates
- Drainage Mat

5.05.7 Membranes for vertical blind side - self adhered

AquaBarrier BSW-V

Thickness	Dimensions	Reinforcement	Area	Application Temperature
3 mm	32.8 ft x 39.6 ft	Composite	108 ft²/ 97.3 ft² 10 m²/9.04 m²	-10° C to 50° C 14° F to 122° F

- Self-adhesive underside with release film/sanded top surface
- Selvage width: 4.0 inches
- Resistant to hydrostatic pressure
- Dual selvage configuration, 2" self-adhesive and last 2" heat sealable

5.05.8 Membranes for horizontal blind side - heat welded

AquaBarrier BSW-V

Thickness	Dimensions	Reinforcement	Area/Coverage	Application Temperature
3.5 mm	32.8 ft x 39.6 ft	Polyester	108 ft²/ 97.3 ft² 10 m²/9.04 m²	-10° C to 50° C 14° F to 122° F

- Sanded surface and micro perforated film underside
- Selvage width: 4.0 inches
- Resistant to hydrostatic pressure

5.05.9 Installation

Surface Preparation:
All work surfaces shall be clean and dry and free of dust, dirt, debris, oils and any other contaminants that may negatively affect membrane adhesion. Substrate irregularities which may hinder adhesion shall be corrected.

AquaBarrier BSW-V:
The AquaBarrier BSW-V membrane is usually installed directly over a drainage mat primed with S.A.M. adhesive (where required).

Installation of drainage mat:
Cellular drainage mats are used on the outer side of the foundation wall to eliminate the thrust of the hydrostatic pressure on the exterior side of the foundation and allows the flow of water to be directed towards the drainage tile.

Install the drainage mat according to the manufacturer's recommendations using the appropriate type and number of anchors as prescribed by the design professional. The filter mat must be facing outwards with the female dimpled surface facing inwards.

Application of the primer:

- IKO S.A.M. Adhesive can be applied with a brush, paint roller or mechanical sprayer.
- Available in 17 L (4.49 gal)
- Coverage: 122 to 244 square feet per gallon
- Flash Off Time: Minimum 30 minutes
- Install the membrane within 4 hours of application, after which time apply another coat of primer.
- Application temperature: -10 to 40 degrees Celsius
- All substrates must be clean, dry and free of dust, dirt, oil and other greasy substances.
- Apply in well-ventilated areas and keep away from open flames.

Note: IKO S.A.M. Adhesive is required for any installations below 10°C and may be needed based on other site specific conditions. Contact IKO Technical Services for more information.

Apply the S.A.M. adhesive directly to the drainage mat and ensure that the surface is completely covered with the primer. Allow to flash off for a minimum of 30 minutes.

Begin installing the AquaBarrier BSW-V membrane from the top down. Remove part of the release film and stick the upper part of the membrane while aligning it so that it is well positioned vertically.

Pull the release film aside at a 45-degree angle to remove it completely.

At each row of installed membranes, with the help of a roller, roll the entire surface of the membrane, applying good pressure.

On some projects, it may be necessary to extend the upper part of each row of membrane to be able to connect it to the membrane that will later be installed on the horizontal slab. To determine the length of the membrane required for the connection, you must know the thickness of the slab to allow a connection joint of a minimum of 6 inches.

End laps must be a minimum of 6" and must be heat welded with a torch or hot air welder. With the torch, it is wise to install a strip of temporary self-adhesive membrane 6 inches wide opposite and next to the end overlap joint, on the adjacent drainage mat to protect it from the flame. Once the joint is welded, remove the strip of temporary membrane that you can reuse in similar situations in the future.

To prevent the membranes from shifting or slipping, IKO BSW-V must be mechanically secured at the top termination with 2" round plates and appropriate fasteners every 13" o.c. The end lap must be a minimum of 6" to cover the screws and plates.

All penetrations must be reinforced with a piece of heat-welded membrane extending a minimum of 6" beyond affected surface.

To complete the waterproofing of penetrations, MS Detail liquid membrane and polyester reinforcement fabric must be used. Installation instructions can be found at www.iko.com/comm.

Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances, based on the geotechnical report, may require two plies of BSW-V membrane or other additional enhancements to be eligible for the IKO Limited Material Warranty. Please refer to the project design professional or your local IKO Representative.

AquaBarrier BSW-H:

It is common that horizontal waterproofing is also required; for this, AquaBarrier BSW-H is to be used, which is laid directly on the blinding slab or compacted soil and heat welded at all side and end laps. End laps must be staggered by a minimum of 12".

To ensure a perfect seal at the junction of the vertical and horizontal transition, the AquaBarrier BSW-H membrane must rise a minimum of 4 inches on the vertical part of the AquaBarrier BSW-V membrane and be heat-welded there. Make sure that the longitudinal seams of the two membranes are staggered a minimum of 18 inches.

At all angle changes, a 13" membrane flashing must be heat-welded to cover the seams of the two BSW membranes. The membrane flashing must extend a minimum of 6 inches on both the vertical and horizontal surfaces (see IKO Technical Detail Drawings for more information).

All penetrations must be reinforced with a piece of heat-welded membrane extending a minimum of 6" beyond affected surface.

To complete the waterproofing of penetrations, MS Detail liquid membrane and polyester reinforcement fabric must be used. Installation instructions can be found at www.iko.com/comm.

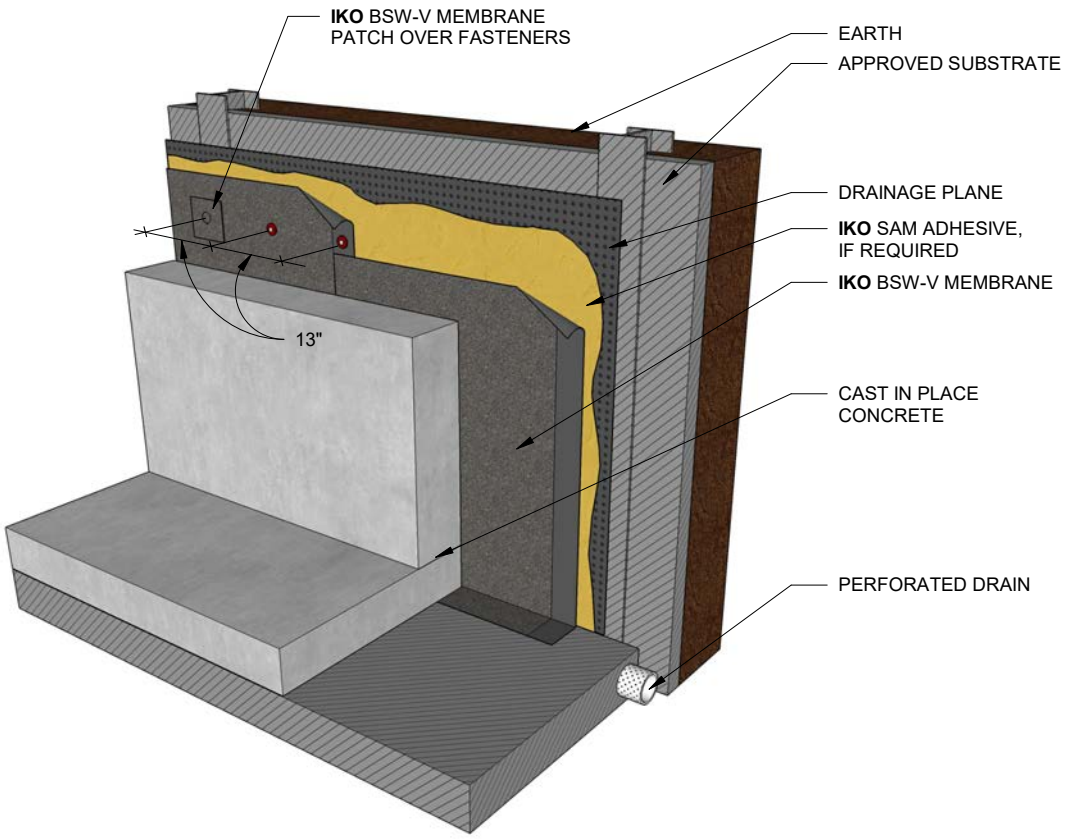
Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances, based on the geotechnical report, may require two plies of BSW membrane or other additional enhancements to be eligible for the IKO Limited Material Warranty. Please refer to the project design professional or your local IKO Representative.

For projects requiring two layers of Aquabarrier BSW-H, the top membrane layer should be heat welded to the bottom membrane layer to avoid membrane movement due to traffic.

Before leaving the site, complete a final inspection to ensure that all joints are welded and that the membrane is not damaged or punctured.

Make the corrections, if necessary, with welded membrane pieces and MS Detail as described above.

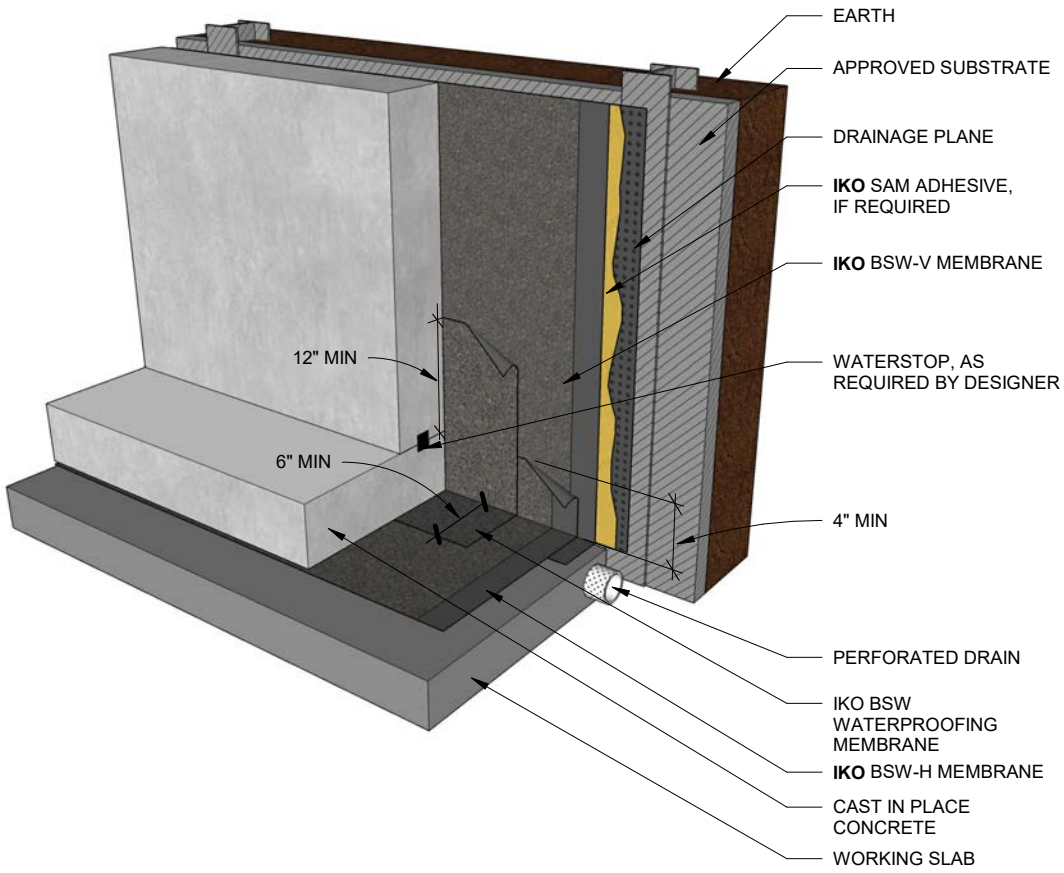
IKO Blindside Waterproofing Typical Wall Detail



Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. Pease refer to project design professional or your local IKO representative.

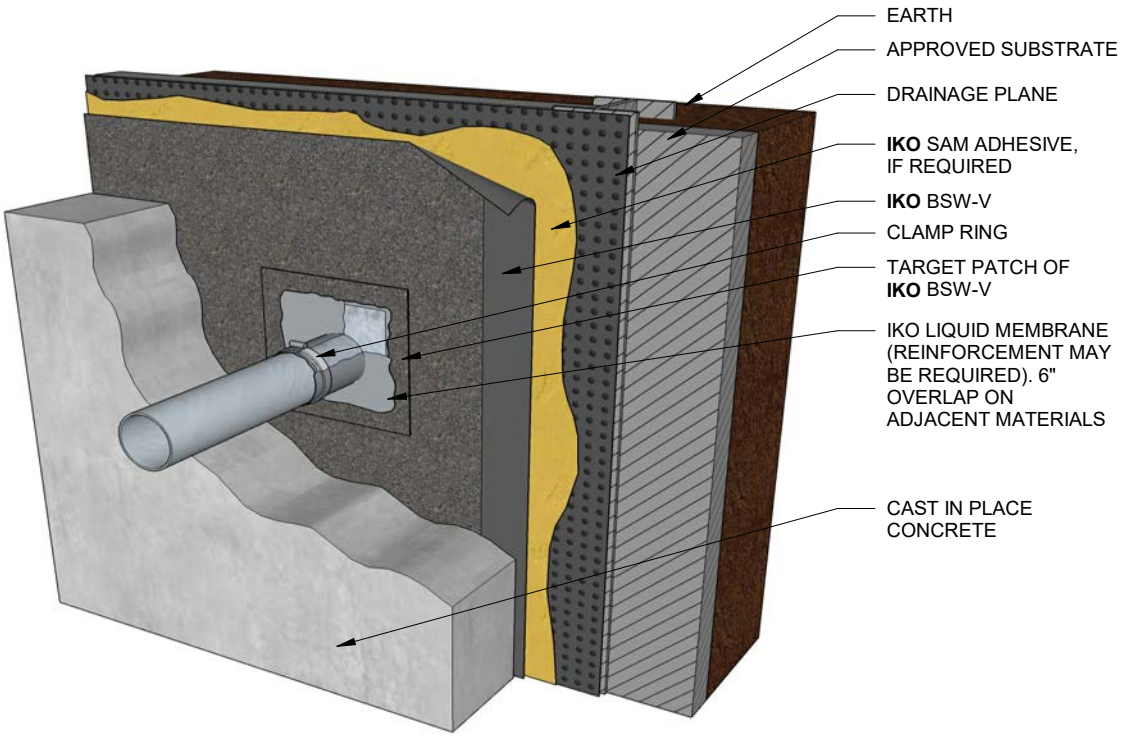
IKO Blindside Wall Base Detail



Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. Please refer to project design professional or your local IKO representative.

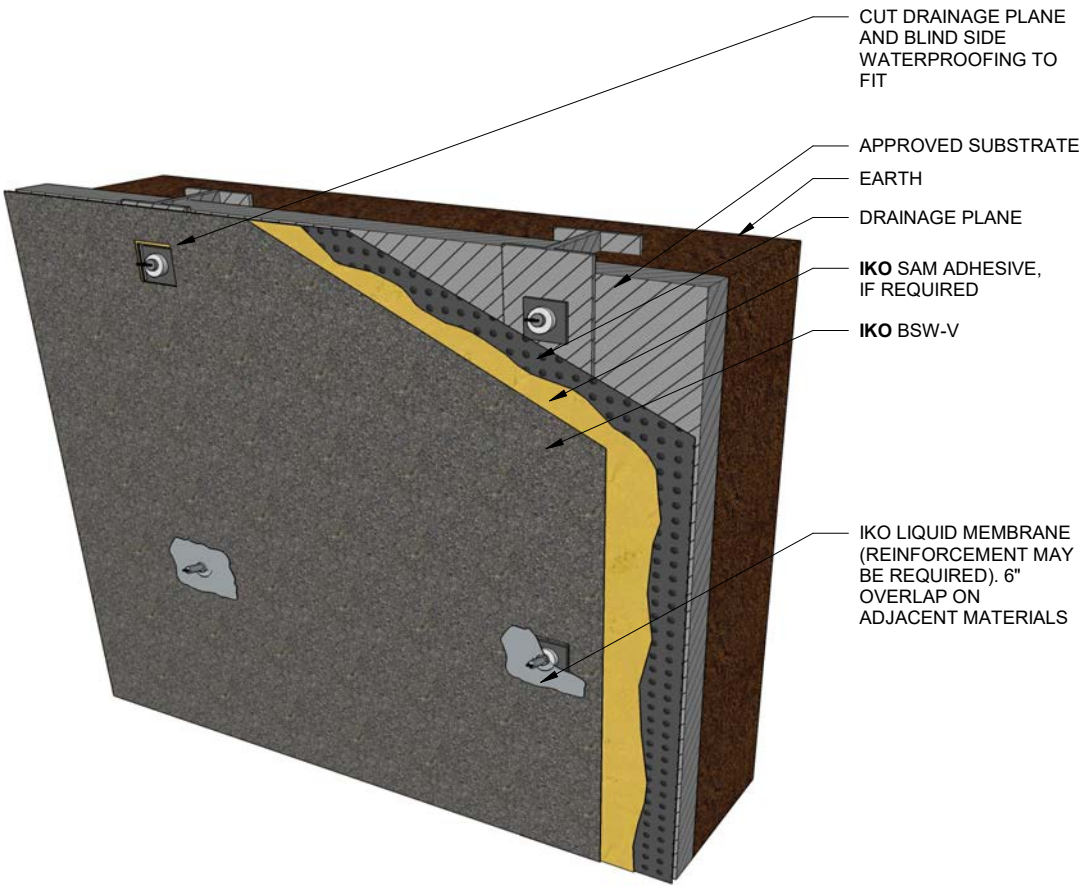
IKO Blindside Penetration Detail



Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. Please refer to project design professional or your local IKO representative.

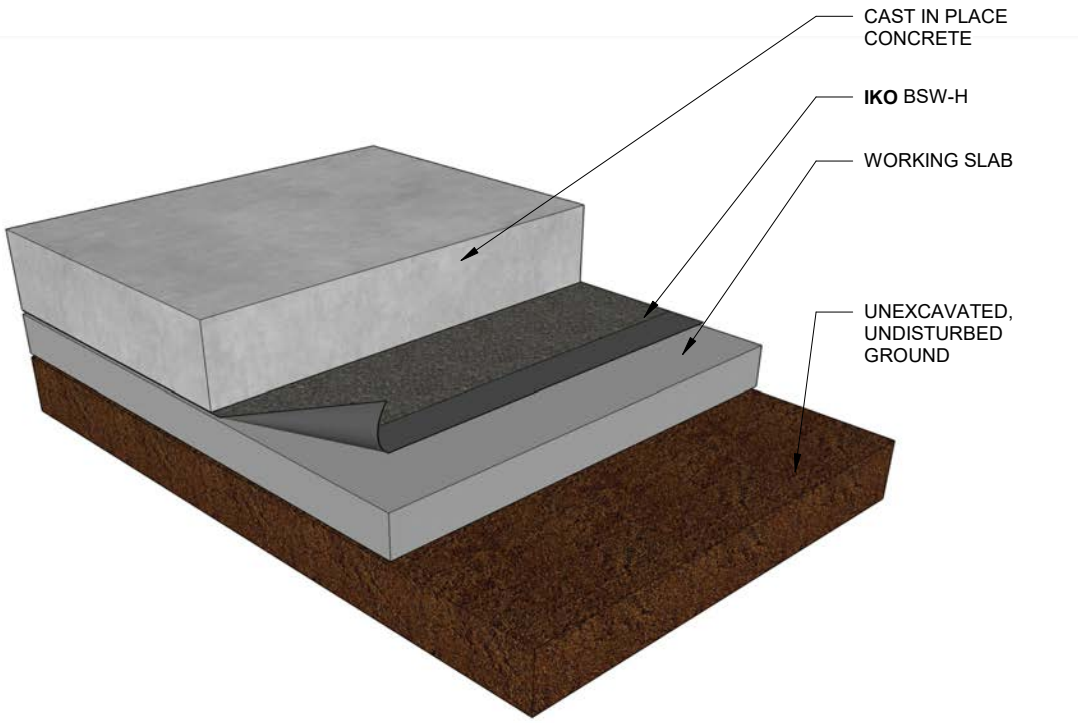
IKO Blindside Tie Back Detail



Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. Please refer to project design professional or your local IKO representative.

IKO Blindside Horizontal Typical Application

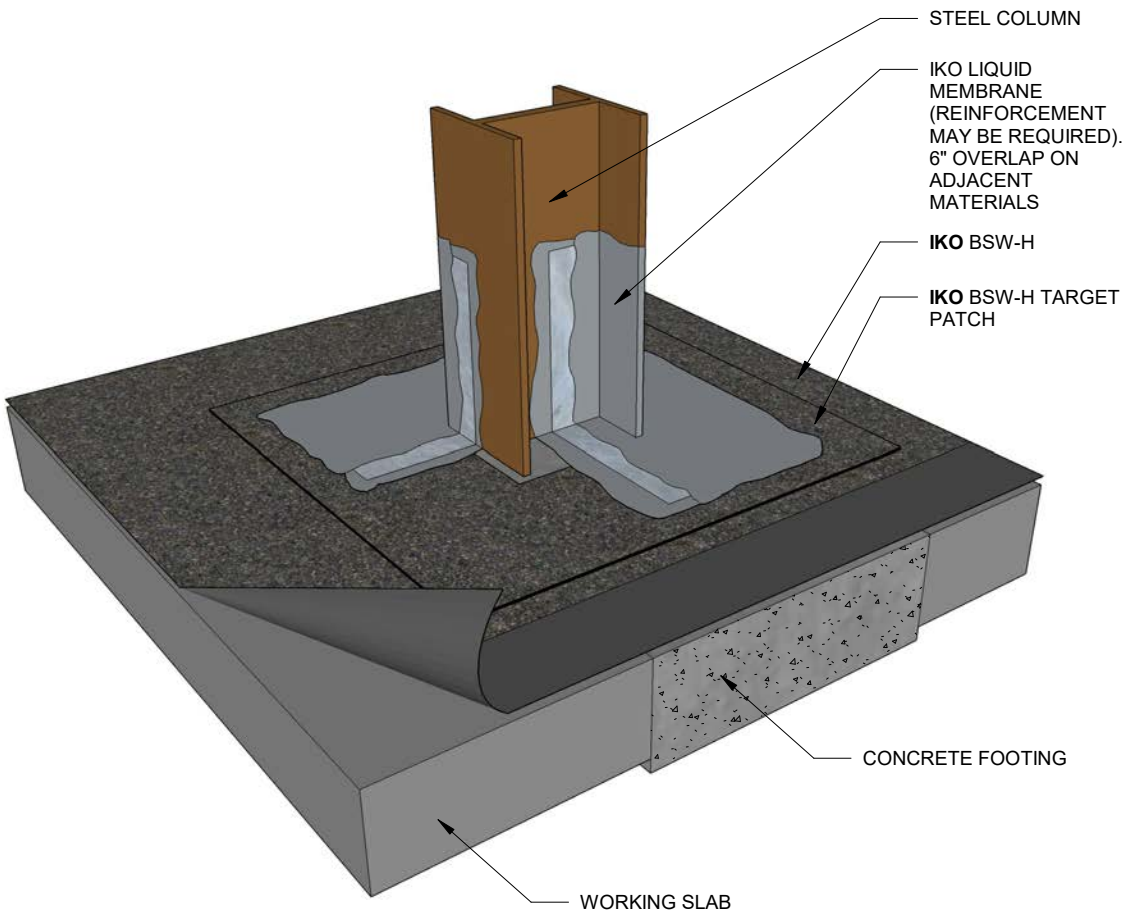


Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. Please refer to project design professional or your local IKO representative.

2) Minimum membrane lap distance of 12" from cold joint.

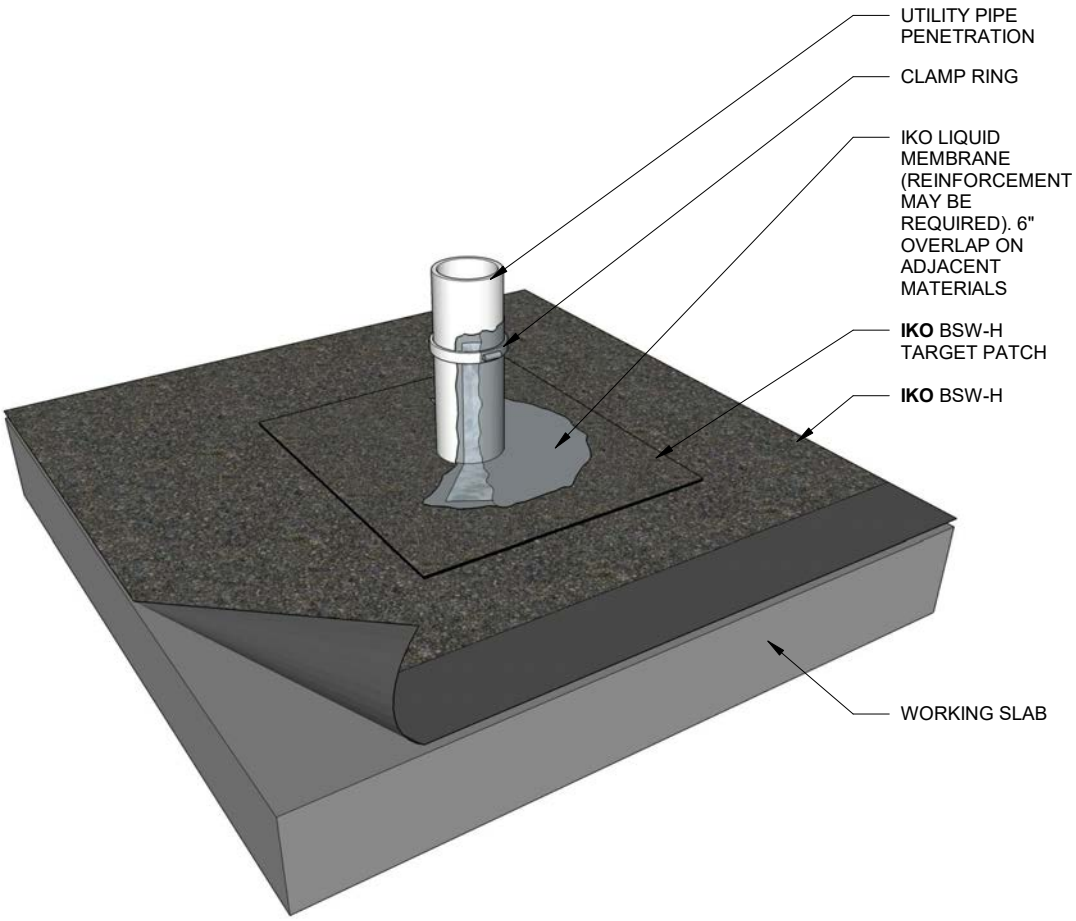
IKO Blindside Column Penetration



Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. please refer to project design professional or your local IKO representative.

IKO Blindside Service Pipe Penetration



Notes:

1) Projects that are subject to high water table, hydrostatic conditions and/or other extenuating circumstances may require two plies of BSW-V for the IKO limited material warranty. please refer to project design professional or your local IKO representative.

End of Section