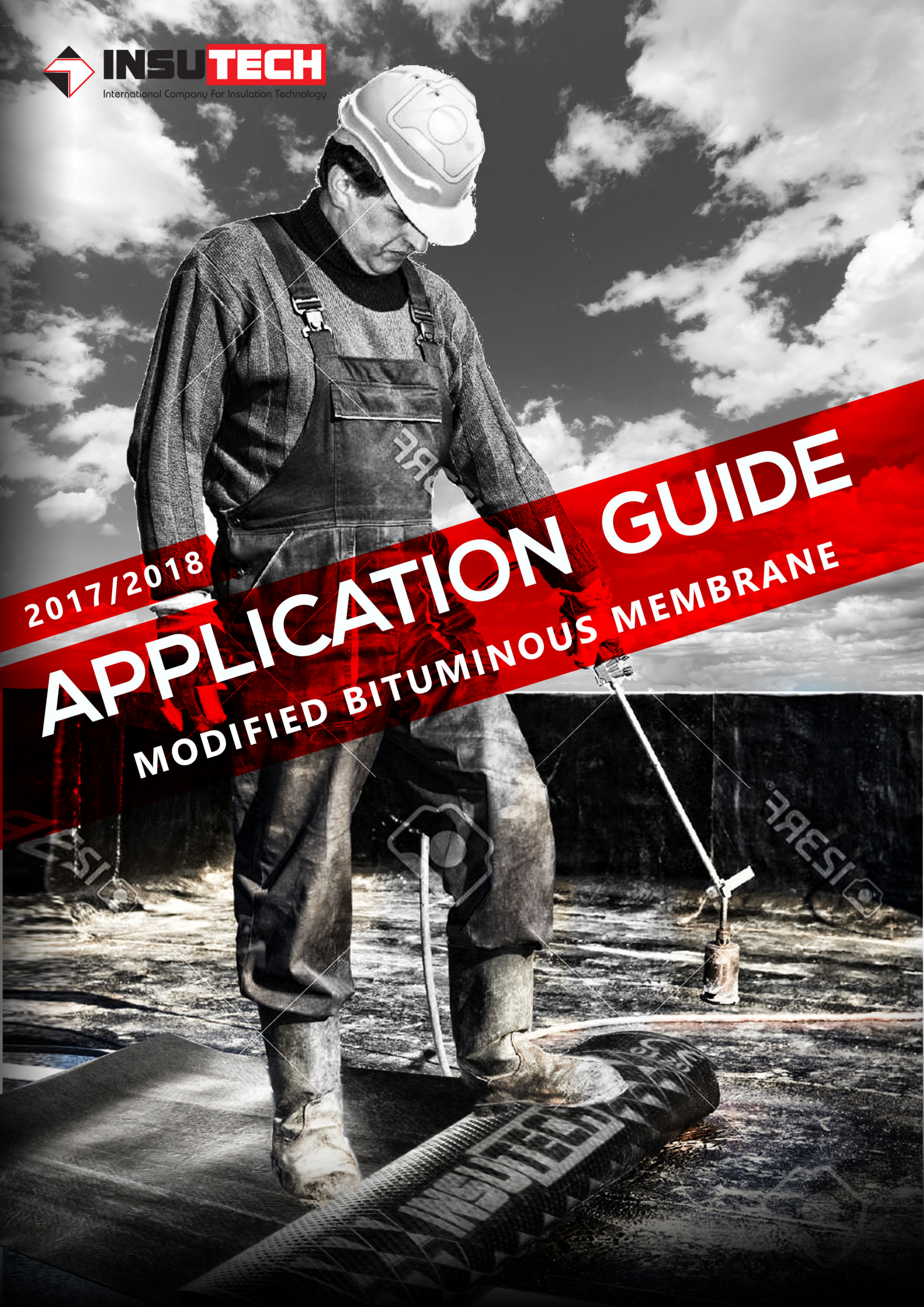
INSUTECH
International Company For Insulation Technology



2017/2018

# APPLICATION GUIDE

## MODIFIED BITUMINOUS MEMBRANE

# SUMMARY

# 01 INTRODUCTION

INSUTECH is a specialized waterproofing and thermal insulation solutions company that provides products to customers in more than 70 countries around the world.

We develop and manufacture high-quality solutions of Modified Bituminous Membranes, emulsions and polystyrene foam products for various building applications.

INSUTECH is a subsidiary of Contact Group, whose main activity is manufacturing complementary building materials, serving the building and construction industry in Egypt and global markets since 1987.

# 02 SCOPE

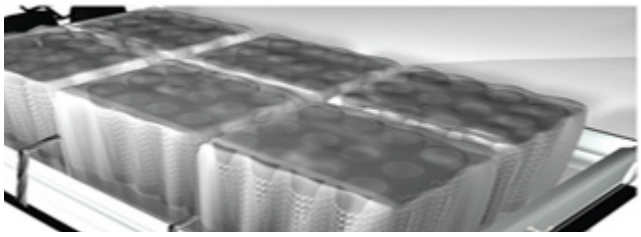
INSUTECH's modified waterproofing bituminous membrane (MBM) manual provides information on how to properly install the most common insulation systems:

Wet rooms waterproofing.
Subgrade application.
Bridge deck waterproofing.
Roofing system.

# 03 PRODUCT HANDLING

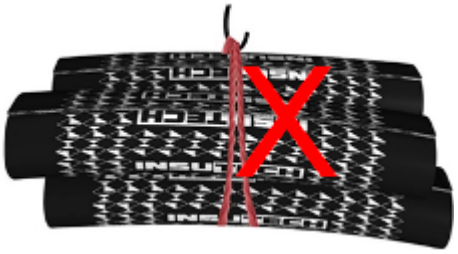
## 03.1 DELIVERY AND PROTECTION

The MBM rolls are bundled in an upright position. Ropes are then tied across the van and between the bundles to prevent them from falling. Over-tightening the ropes should be avoided to reduce imprints on the rolls. The rolls are then placed on wooden pallets and shrink wrapped with breathable type covers such as canvas tarpaulins to al- low vesting and protection from the weather and moisture, eliminating the possibility of the rolls sticking together. In addition, the rolls must not be exposed to moisture in any form before, during, or after delivery to site.



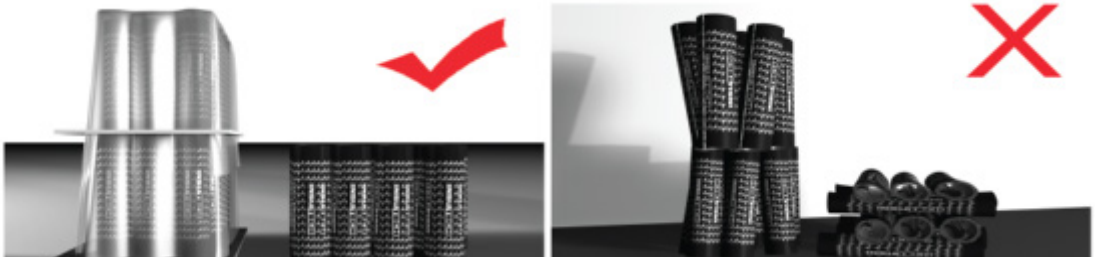
## 03.2 HANDLING

Place the rolls in an upright position on a flat, smooth surface. Use a crane to lift the rolls in an upright position onto the roof. Rolls should be lifted in the upright position even when they are few and shouldn 't be tied and lifted to the roof. Improper handling at any stage can alter the properties of the product. The MBM products are made to withstand the mechanical pressure they undergo during application. However, shipping operations should be carried out with care to prevent compression or contact with sharp or pointed surfaces. At low temperatures, sharp dropping should be avoided as it may cause the membrane to break and cause detachments of the insulating strips from the surface.



## 03.3 STORAGE

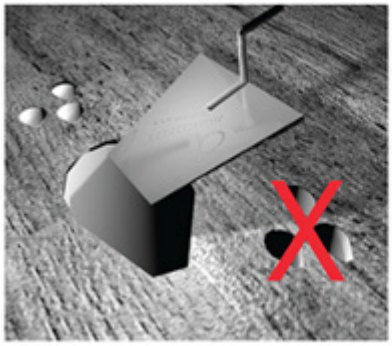
Pallets should be stored vertically on a clean, raised platform to keep the ends free from foreign matter. Rolls stored on their sides will flatten and stick together, making them very difficult to apply which may cause problems in insulating post application . The area the rolls are stored in should be dry, properly ventilated , and out of direct sunlight. During the summer, pallets with shrink-wrap covers left in the sun can quickly reach temperatures of 70 0C which causes progressive blackening of the talc or mineral slates on the MBM rolls until the membrane sticks to itself or become disfigured . Heat also causes bituminous membranes rolls to progressively lose their flexibility . If what occurs naturally during work happens while the material is still in rolls, cracking and difficulty in unrolling may occur when it comes to application . If it's necessary to store pallets in the sun, even for short periods, it's better to remove the covering completely or at least to make slits in the sides for ventilation and protect the top with wooden planks or laths. In winter, the rolls should be left in a temperature above +5C for 24 hours before laying but should not be left in the open air overnight. Only rolls are to be laid during the day's work should be taken to the site. When application of MBM occurs at low ambient temperature , care should be taken that the rolls are not thrown on the deck or storage area as sudden impact of the roll can cause it to crack. A good practice is to always take the oldest rolls from the store and not to leave any rolls stored for more than 12 months.

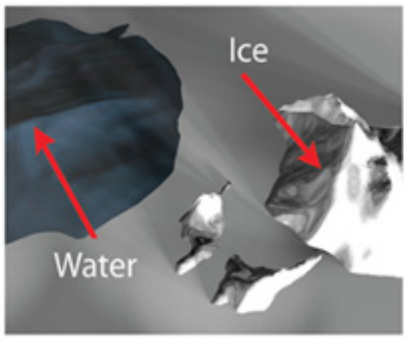


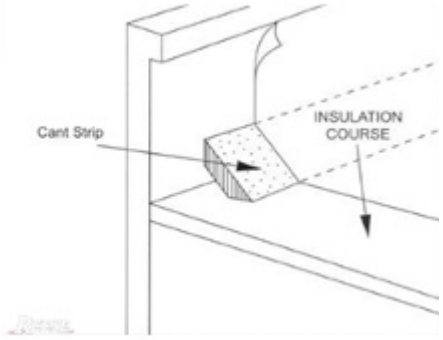
# 04 SUBSTRATE PENETRATION

## 04.1 SUBSTRATES OF WET ROOMS

The waterproofing system must be laid over a dry, smooth , and clean concrete floor with a positive slope to drains. A sand cement mortar cant strip must be present at walls and protrusions.






## 04.2 MASONRY SUBSTRATE FOR SUBGRADE APPLICATION

Irregular existing masonry surfaces that will be waterproofed with a membrane should be finished to a smooth steel trowel surface. Any holes, joints, and voids should be prepared flush with surface. Penetrations should be grouted tightly as an uneven and irregular surface is undesirable as the crests and troughs as they will lead to irregular pressure being exerted which may cause the rupture of the MBM.

## 04.3 CONCRETE SUBSTRATE FOR SUBGRADE APPLICATION

Horizontal concrete decks must cure a minimum 28 days specified by the material manufacturer to allow moisture to dissipate from the top surface prior to applying waterproofing materials. Any excavation must be kept free of water by provision of continuous dewatering till the adequate counter load of concrete has been successfully installed.

## 04.4 CONCRETE BRIDGE DECK SUBSTRATE

The deck surface finish is of extreme important as air pockets entrapped beneath the MBM may create MBM blistering and elastic mattress on which the asphalt -wearing course cannot be properly compacted . The surface finish must be smooth and free from any high spots and any depressions greater than 5mm. If necessary, leveling can be done by using a mechanical grinder (for spots) and/or epoxy mortar (for depressions) The deck surface must be dry; moisture entrapped beneath it may create MBM blistering. The concrete decks should also be cured and dried for the required time before the MBM installation.

## 04.5.3 ROOF DECK RECOMMENDATIONS

Must conform to the internationally recognized designs.
Must be designed to support live and dead loads.
Should be provisioned for expansion joints to accommodate the structural movements.
Such provisions are intended to protect the integrity of the structural system and the waterproofing MBM.
Positive slope to outlets must exist, as standing water isn't permitted.
A minimum slope of 1% is recommended.
If any area on the roof contains stagnant water for more than 24 hours after a water test or rain, the deck lacks sufficient drainage.
All openings in the roof deck must be completed prior to installing any roofing materials.
No protrusions are permitted between the substrate and the roofing MBM.
Surface must be dry, free from moisture, smooth, and free from loose debris,
Any irregularities must be rectified prior to application of MBM.
The placement of electrical conduits, bolts, piping or similar equipment on the surface of the roof deck is not permitted.

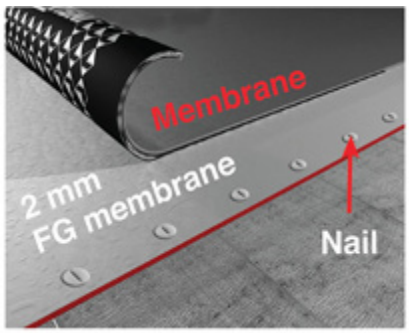
# 04.5.1 VARIOUS TYPES OF ROOF DECKS

## PRECAST CONCRETE DECK

Must be a totally cured and unbroken surface. In addition, it is preferred to be topped with cast in place concrete screed or lightweight insulating foam concrete deck.

## LIGHTWEIGHT FOAM CONCRETE SCREED (L.W.Fc)

It's composed of Portland cement and air entraining agent, which is why it should be allowed to sufficiently cure, 5 days are usually enough, depending on environmental conditions. The cured surface should be smooth to the touch, free of depressions and ridging. The finished surface should not be left exposed for a long time to prevent cracks from developing on the surface.




## WOOD PLANK AND STRUCTURAL WOOD PANE_ DECK and PLYWOOD SHEATING

Fiberglass base sheet must cover the entire roof deck to prevent seepage of roofing compounds through the deck. Due to bitumen adhesive not being used to adhere the MBM directly to the wooden deck, using mechanical fasteners is recommended.

## STRUCTURAL PERFORMED CEMENT FIBER DECK

Boards must be protected from moisture at all times and must be dense to securely hold approved fasteners. If the joints are not grouted or tongue and-groove design, the entire roof deck must be covered with glass fiber base sheet to prevent seepage of roofing compounds through the deck.

# 04.5.1 VARIOUS TYPES OF ROOF DECKS

## CAST-IN-PLACE-GYPSUM

Must be dry, smooth, free from deflections or ridges, and must be cured a minimum of 24 hours prior to installing any roofing materials. All high spots and depressions must be leveled to avoid entrapment of moisture under the roofing system. Below are recommendations that must be taken into consid- eration:
- Ventilation must be from beneath , the top, as well as perimeter . The penetrations shall not be restricted until gypsum is completely cured.
- Gypsum mustn't be used in buildings whereby occupancy creates a high relative humidity leading to provision of roof vents installed through the roof MBM so proper drying is strongly recommended.

## PRECAST GYPSUM PLANK

All joints must be flush, smooth, and all irregularities must be removed prior to installing any roofing material. The entire roof deck must be covered with glass fiber base sheet to prevent seepage of roofing compounds through the deck.

## LIGHTWEIGHT FOAM CONCRETE

Must be dried and fully cured prior to installing any roofing materials, 5 days of good curing time is recommended. All high spots and depressions must be leveled. Ventilation from beneath the deck shall not be restricted until the deck is fully cured. Lightweight insulating concrete must be ap- plied over a stable surface that permits curing from beneath.

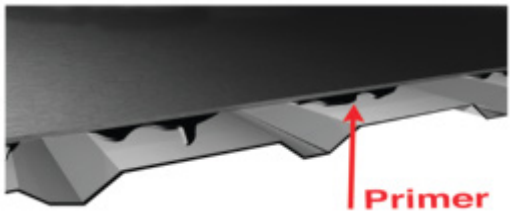
# 04.5.1 VARIOUS TYPES OF ROOF DECKS

## CAST-IN-PLACE CONCRETE

Shall be dry, smooth, free from deflections or ridges and shall be cured a minimum of 24 hr. prior to installing any roofing materials and all high spots shall be made level and all depressions also shall be made level and treat- ed wood nailers shall be installed at all edges, large protrusions, expansion joints, breaks in the deck, and areas where flashing are to be installed.

## PRESTRESSED CONCRETE

Shall be topped with cast-in-place concrete, lightweight insulating concrete or rigid board insulation and shall be dry and fully cured prior to installing any roofing materials so 5 days of good curing time is recommended and all high spots and all depressions shall be made level.




## METAL DECK

The metal deck must have be firm, capable of withstanding rooftop traffic and properly secured to the building structural support system, fluted met- al decks shall have flat flute surfaces, and metal decks shall be insulated if concrete is used, provisions shall be made for ventilation. In addition, the insulation may be installed to fluted metal decks with flat flute surfaces by primer adhesive only to the upper planes of flutes, due to possible wind uplift, that insulation be fastened with approved mechanical non-corrosive fasteners, when flutes are not flat. Wood nailers of equivalent thickness of the roof insulation must be provided at perimeters and projection openings to act as an insulation stop and to provide nail holding capability for the nailing flanges of metal flashing. The steel deck should preferably have ei- ther a shop coat of paint, be galvanized or similarly treated.

# 05 PRIMER INSTRUCTIONS

## 05.1 SURFACE PREPARATION

Preparation and cleaning of the area are done by removing loose and friable material, and protrusions by using a soft broomstick or the like and cleaning with water to remove fine dust from the surface.
Remove oil, grease and paints or other contaminates by using a rug cloth and paint scraper respectively.
Repair cracks with approved repairing material.

## 05.2 APPLICATION

Carry out the application of liquid applied bituminous waterproofing by approved by contractor or main contractor.
Apply the liquid applied bituminous waterproofing system on sound, smooth, dry, and clean concrete surface.
The substrate must be free from cracks. Repair any present cracks and any defects in the surface.
Earth pits and pipes must be completed prior to the application of bituminous waterproofing.
Lay out liquid applied bituminous waterproofing with roller. Take extra care while applying to avoid splashing and wastage.
Using Liquid applied bituminous waterproofing, completely cover all pits, porous, joints and intersection corners.
Number of coatings depends on degree of protection required and condition of surface.

# 06 INSTALLATION PROCEDURES

## 06.1 PREPARATIONS

### APPLY PRIMING COAT

Shake the container of INSUCOAT Primer well prior to opening and proceed with applying a full coat of primer on the substrate surface and on the cant strip and up stands. INSUCOAT can be applied with a brush or roll.
Allow the coating to dry. Once the primer is installed and cured; begin the installation of the MBM.

### PREPARE A SAND CEMENT CANT STRIP

A suitable size (5*5 cm) sand cement cant strip is made in all junctions between the horizontal and vertical areas. It is recommended to use 30 cm of a wide reinforcing strip along the cant strip, which provides strength to the vertical and the horizontal areas as they are subjected to maximum stresses, and applied prior to the application of first layer.

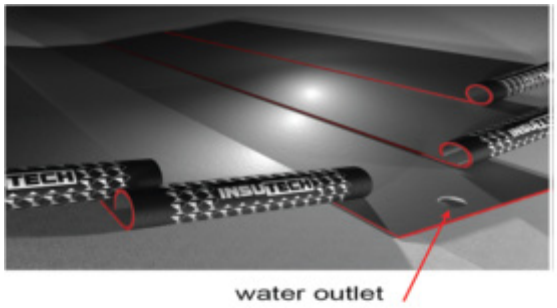
## 06.2 MBM INSTALLATION

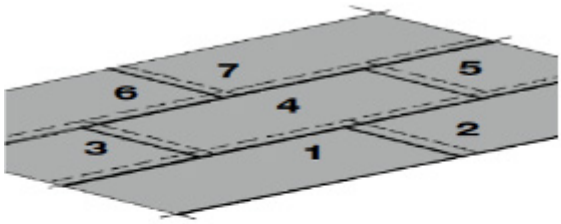
There are three types of installation of MBM:
Fully Bonded.
Loose Laid and Spot Bonded.

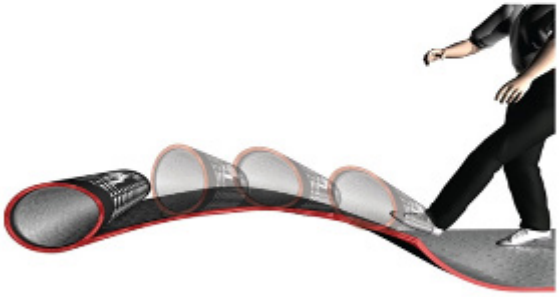
# 06 INSTALLATION PROCEDURES

## 06.2.1 FULLY BONDED

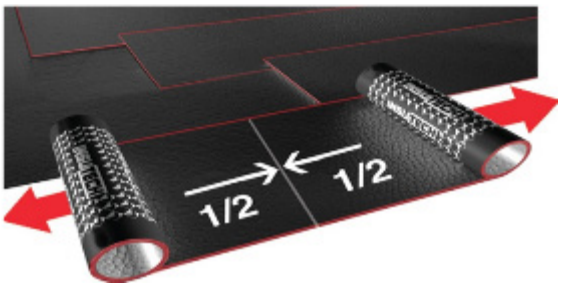
Starting in the one corner of the horizontal area, using the base edge of the cant strip as the starting installation and before laying, the rolls must be unrolled and aligned to lay out the overlaps between the sheets.
The sheets must then be rolled up again to proceed with the flame
welding. The end-to-end overlaps of the waterproof sheets must not be
arranged along a single line but must always alternate.
The sheets must be arranged with overlaps as in tiling a roof, i.e. always starting the overlaps at the drains or the downpipes.



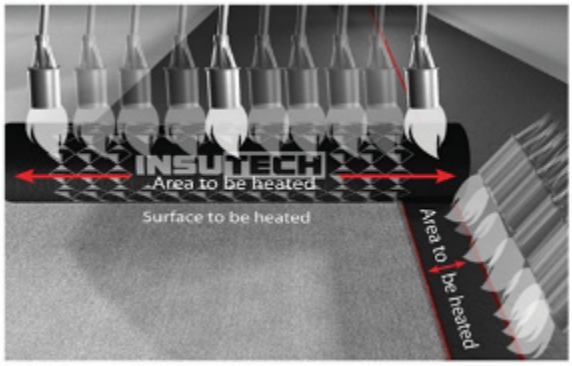
## 06.2.2 MBM ALIGNMENT




Unroll the MBM sheet and align it by over-lapping the edge on the nearest sheet, then partially roll it up again from both ends and start the flame bonding process.
At low temperatures, do not bang the rolls or unroll them in a way that may damage the membrane.
Unroll them with care and without kicking them.

## 06.2.1

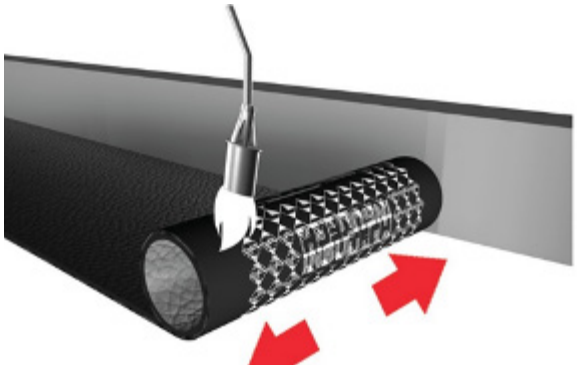
A) Apply the torch flame to the whole width of the roll in to burn off the PE foil and superficially melt the bitumen. A small wave of melted bitumen may appear at the base of the roll in contact with the deck lead to fully torched of MBM on the deck. The application process starts when butane torch is applied toward the exposed outer surface of the roll until the temperature of MBM surface teach to the proper application temperature (generally 200 0C) and there are indications for desirable welding temperature :




1- Slight sheen.

2– Observation of the film burn-off sheet melting.

3– Leaving a glassy surface of modified coating to be bended to the substrate.



NOTE that: if flow of modified bitumen coating is observed before contact with the substrate, this means that wielding temperature is too high. But if there's no flow, it indicates too little heat meaning that the wielding temperature is too low and adherence will be weak.

4– Flow from all seams should be between 3mm and 13mm.

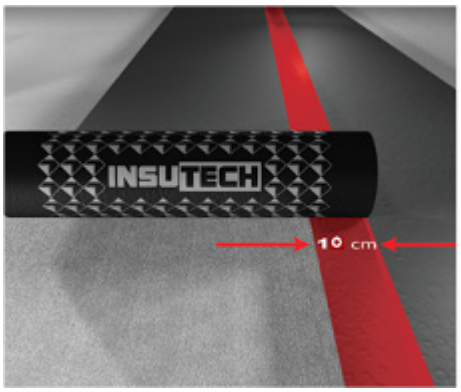
To avoid overheating, which may result in damage of the reinforcement, the flame should be moved in the shaped of an (L) applying about 75% of the flame to the roll and the remaining 25% to the substrate.

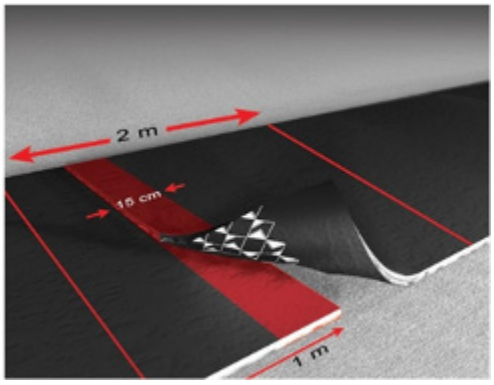
This heat distribution ensures proper and balanced torching, it should be done while gradually unrolling and pressing the MBM sheet towards the substrate to create a heat weld between the membrane and the perimeter of the substrate and the cant strip.

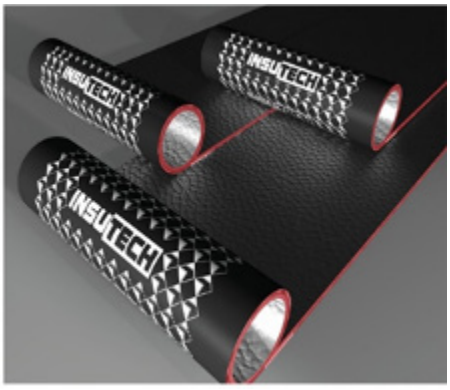
The flame should be moved from side to side and up the lab edge.

## 06.2.1

B) installing additional rolls in a shingle fashion as illustrated below:
In case of double layer when applying a second layer ensure that it's completely fame-bonded over the overlaps of the first layer with 10cm side laps and 15cm end laps should be continued.
If laying a second layer is specified , it must be laid so as to straddle the overlap of the previous layer and must be bonded in complete adhesion .
The burner flame must also heat the membrane already laid.

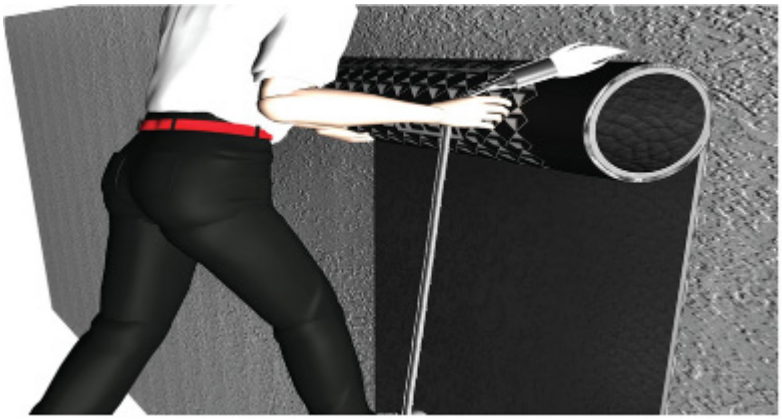


## 06.2.1

C) Seams at overlaps must be secured for proper welding by running a heat- ed trowel along the edge of the seam to reseal all possible voids in the laps. It's recommended to have about 10mm flow of bitumen at the seam areas. It can be rolled with hand roller, a trowel or walked in so all edges must be slightly melting the modified bitumen compound evenly creating a finally welded seam after covering the whole area. If there is unadhered seams, it must be lifted with a heated trowel and released by lightly torching the seam area then pressing or rolling the seam to achieve a minimum 10mm compound flow out of bitumen. Never attempt to repair laps by heating the top surface of the membrane.



D) For vertical application all INSUTECH membranes have excellent resistance to creep and do not slip even if bonded to a vertical surface. By flame heating both the membrane and the bonding surface, the MBM will hold tenaciously without need for mechanical support.
In summer, the membrane-bonding surface may be so hot that it is necessary to wait for a long time until cooling takes place and the material holds. If this happens the applicator is obliged to hold the material up with his hands until cooling occurs; if he doesn't the sheet will not stay attached and will fall.

## 06.2.1

Detached sheets should not be reheated immediately in another the surface; instead, the applicator should wait for them to cool. If not, the sheet will never cool and will therefore not succeed in sticking to the surface.
The roll is opened and aligned in such manner that the top of the roll has an overlap of about 15cm along the horizontal application, then the roll is re-rolled going up the surface so that proper torching can be done to ensure a good bond with the vertical wall.
Torching begins from the area along the cant strip and continues upward later the 15cm horizontal area is completed, ensuring that the amount of bitumen flow out of the sides. No air bubbles should be allowed along the vertical with maintaining 10cm side lap and 15cm end laps.

## 06.2 LOOSE LAID INSTALLATIONS

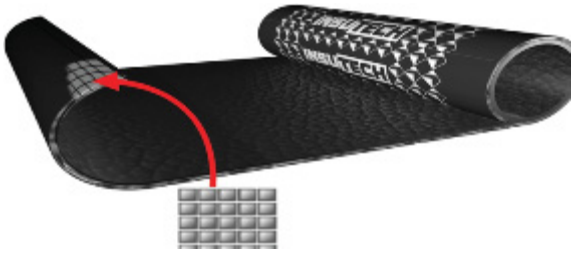
Loose laid system do not require any priming material on the horizontal area. Follow all instruction of fully bonded with all notifications for seams at overlaps for MBM except that torching is applied only at the overlaps to weld the two layers together to ensure that the overlap size is as per the stated dimensions. The applicator should make use of a chalk line or any other tools to ensure that the overlaps are straight. All end laps must be staggered so that no adjacent end laps coincide. If for any reason the adjacent end laps coincides, a full width of MBM must be installed over the end laps.

## 06.3 SPOT BONDED INSTALLATIONS

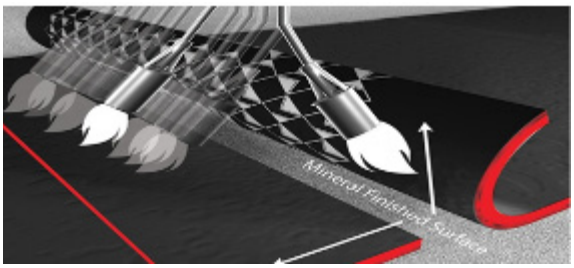
Proceed in loose laid installation while placing each roll. Heat the part of the MBM which is in contact with the concrete deck to create a spot of bonding between the concrete and the MBM. Repeat the spot bonding to ensure that spots are at 50cm centers and around 20cm wide.

## 06.4 MEMBRANE SURFACES

The lower surface of the MBM rolls is the surface which to be torched. It is embossed with shaped embossing and laminated with PE film. When heated the PE film melts to indicate when material is ready for bonding.
The upper surface is covered with either PE film, mineral slates, Aluminum foil, or sand.



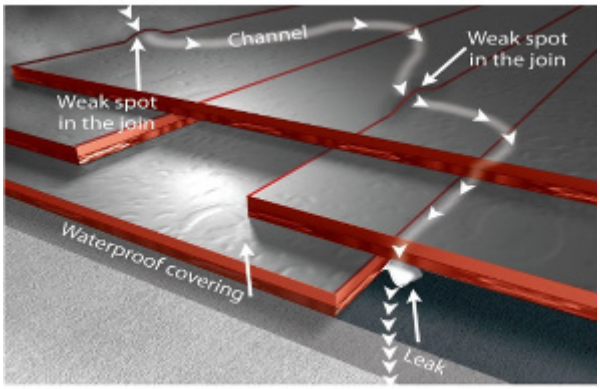
## 06.5 HEAD-TO-TAIL OVERLAPS OF MINERAL FINISHED MEMBRANES




The bonding areas on side to-side overlaps are free from Mineral but for head-to-tail mineral finish overlaps, the underlying membrane needs to be heated to draw the compound to the surface. This is done by persistent heating and will give perfect bonding and Light torching and scrapping the mineral with spatula.

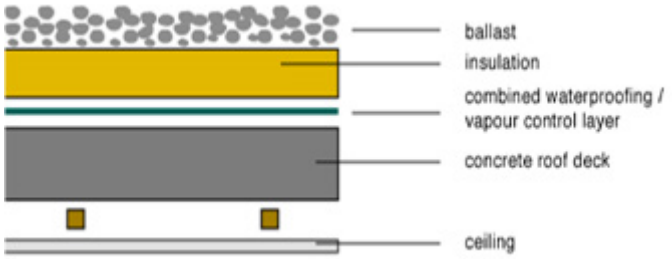
## 06.6 TWO OR MORE LAYER COVERING

When the waterproof covering consists of two or more layers, it is essential that they adhere well to each other. There is no justification for less careful application because the covering has more layers. If the layers are not bonded well to each other, water will find its way from the external layer through the innumerable channels created between the layers until it finds a weak spot in the layers below and leak. Effectiveness of multilayer roofing is guaranteed only by complete adhesion between all layers.




## 06.7 DIFFERENCE BETWEEN CONVENTIONAL AND INVERTED ROOF SYSTEMS

The difference between both systems is the position of rigid board for thermal insulation of (EPS or XPS) whether before or after the MBM. The more favorable one is the inverted roof system where the MBM is on the roof deck then rigid board insulation is on the MBM. Its advantages are better than the conventional position due to the following:



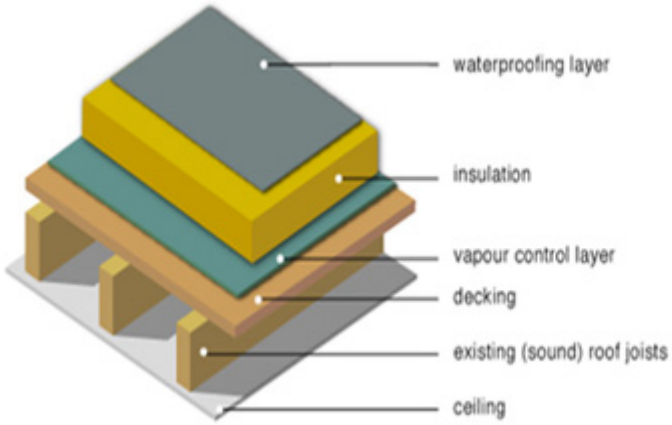

1– Act as protection layer for MBM.

2- Act as thermal insulation, which is its main purpose.

3– If any leakage occurs, then there's another line of defense for the building along with the MBM. The thermal insulation is comprised of rigid boards and the MBM supports for building thanks to its reinforcement which gives strength and elongation during movement of building.

4– Ease of application for MBM with granules, sand, and aluminum finish for non-accessible roofs.

In the case of conventional roofing system, the position of the rigid board is under the MBM. This is not favored. If any leakage occurs in the MBM, the rigid board will not act as a secondary line of defense for the building. However it creates high thermal conductivity and thermal resistance. So, in this system, each layer performs its main job only; water insulation for MBM and thermal insulation for rigid board.



# 07 PROTECTION BOARD APPLICATION

## INSUBOARD

INSUBOARD is a tough, high quality, semi flexible modified bituminous board used as a protection layer for various waterproofing systems. INSUBOARD consists of a modified bitumen compound, embedded between two layers of saturated reinforcements such as fiberglass or composite mat, providing a robust protection board with superior resistance to damage and deviation.

## KEY FEATURES

Semi flexible yet robust.
High tolerance to normal soil and structural movements.
Resistant to penetration of backfilling materials and accidental damages from site operations.
Water resistant towards wet soil conditions.
Cost saving as it eliminates the need for screed and masonry protection.
Compatible with most waterproofing systems, especially bituminous systems.
Time saving and easy to install.
Resistant to chemicals and salts found in soil.

## APPLICATION

INSUBOARD is used to protect old and new waterproofing systems from damage caused during construction and backfilling work.
INSUBOARD's strong properties of high resistance towards puncture and impact creates an ideal protection of the membrane against sharp aggregate fill materials and other conflicting matters that can follow with a backfill. It can also be used as a protection panel, as a walk pad over exposed roofs as well as around mechanical equipment installed on roofs.
The advantage of using INSUBOARD is that in addition to providing protec tion to the waterproofing system, it also serves a second waterproofing layer improving the overall efficiency of the system.

## INSTALLATION

INSUBOARD can be loose-laid directly on the waterproofing material or spot bond by using an adhesive compound or by using double sided adhesive tape or by torch welding or by using hot bitumen once the protection board is fixed in place, for vertical installation supports/props have to be used
to keep the boards in place till the adhesive is strong enough to hold the board.

# 08 HYDROSTATIC PRESSURE RELIEF SYSTEM

It's recommended for any subgrade application as it's a very effective way of minimizing the possibility of leak.
It is a system of perimeter and/or under-slab drains used to regulate the hydrostatic pressure in the earth surrounding a below- grade structure. The most effective way to waterproof walls and floors placed against earth is to remove the water from the earth prior to it reaching the wall or floor. The determination of whether a hydrostatic pressure relief system can be used or not depends on the following:
1– The quantity of water that must be handled and how to be handled or resisted.
2- Analysis of soil investigation and borings.
3- Water table level readings.
The benefits of this system are; by using it the slab on grade can be designed with only surface load considerations leading to the reduction of construction costs.
When gravity can be used to direct water from around the building's foundation into a storm sewer, greater amounts of water can be handled than when pumping must be used to lower the water table as operating pumps can be costly. If there is a great amount of water to handle, the floor slab must be designed with sufficient concrete mass and reinforcement to resist the uplift pressures of the anticipated water table, the construction has to be carefully waterproofed leading to expensive construction process. By using it, waterproofing of the floor slab may not be necessary.

# 08 HYDROSTATIC PRESSURE RELIEF SYSTEM

It can be applied at site with dense clay soil resistance to water percolation even if water table level is higher than foundation floor slab.

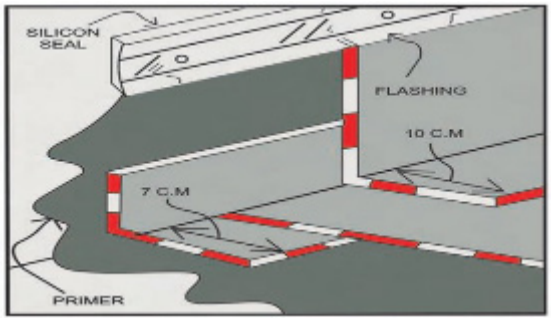
it is not applicable at site with coarse permeable soil that freely permits water percolation combined with a water table level that is above the top of the foundation floor slab as using pumping to decrease water table level.

Hydrostatic pressure can be relieved from perimeter walls below grade by using a coarse aggregate backfill or prefabricated drainage product. These systems channel ground water traveling toward the building down to a perimeter drainage system located below the bottom of the foundation floor slab and so it must be a separate protection course placed against the MBM to protect MBM from damage during aggregate replacement.

# 09 DETAILS FOR SYSTEMS

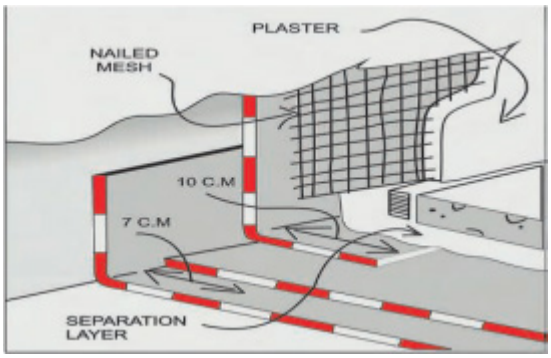
## 09.1 PROJECTIONS WITH METAL RUNNERS

If no seating has been created for the covering on a vertical wall, a runner will have to be nailed and sealed above the edge of the sheeting.
The membrane must be completely bonded to the laying surface along the edge of roofs and on the flat.



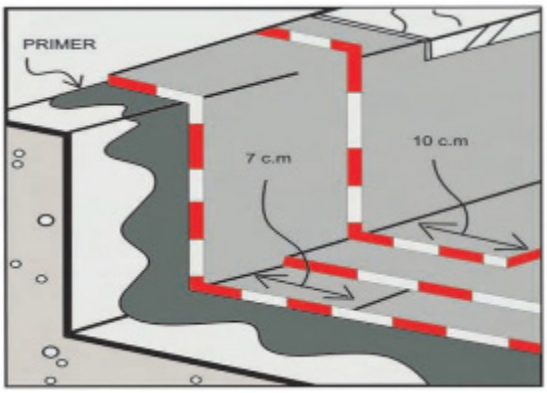

## 09.2 PROTECTED PROJECTIONS

If a seating has been created for the covering, the material is bonded there and then covered with a metal mesh to which the mortar anchors itself.




## 09.3 PROJECTIONS WITH FLASHING

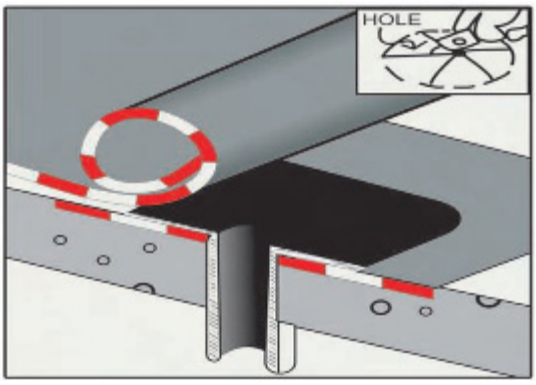
If the waterproofing covering is bonded to the perimeter walls, these will then be covered with nailed flashing.



# 09 DETAILS FOR SYSTEMS

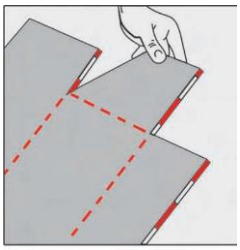
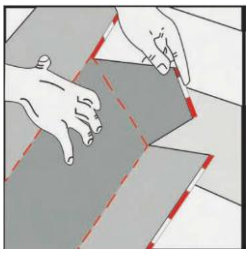
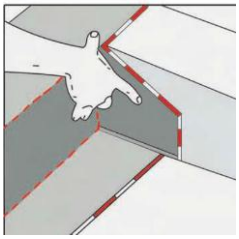
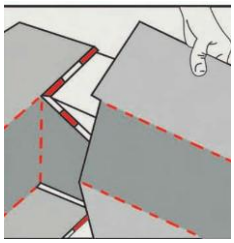
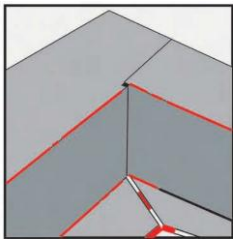
## 09.4 DRAINAGE OUTLETS

Paint the seating in the support with primer, then bond a piece of membrane in the seating followed with bonding the flat of the drainage outlets onto the flame-drawn membrane and bonding the finishing layer to both the membrane & the flat of the drain.




## 09.5 INTERNAL ANGLE

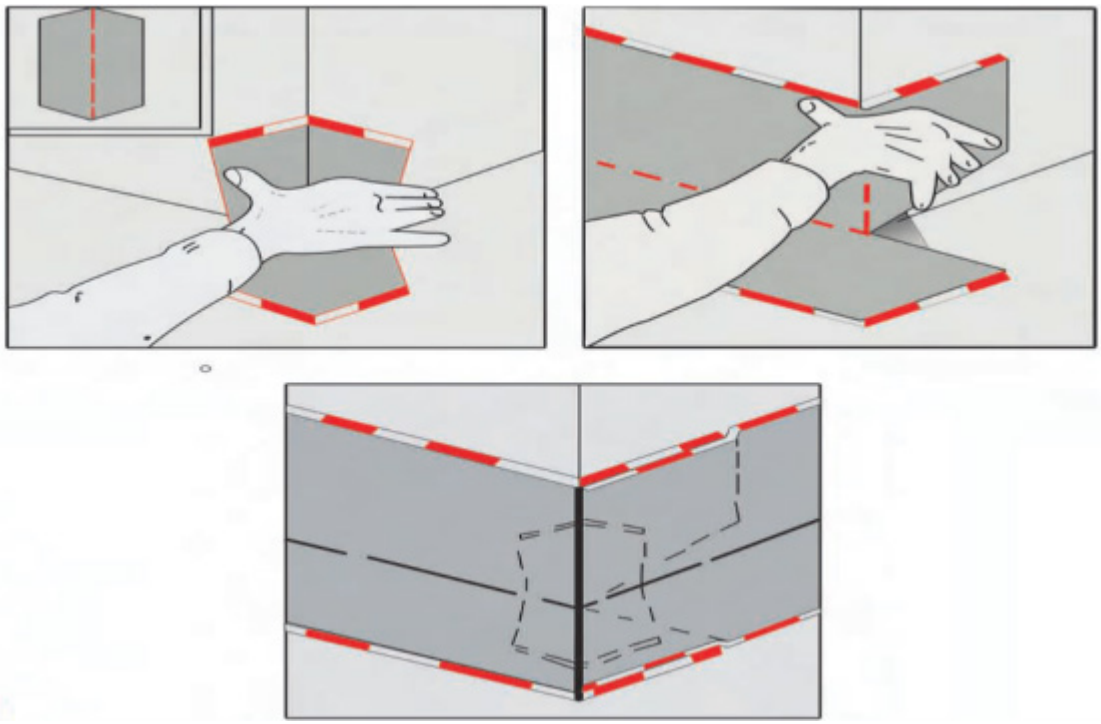
Similar to the cut in the membrane made for correct head-to-tail overlaps.

# 09 DETAILS FOR SYSTEMS

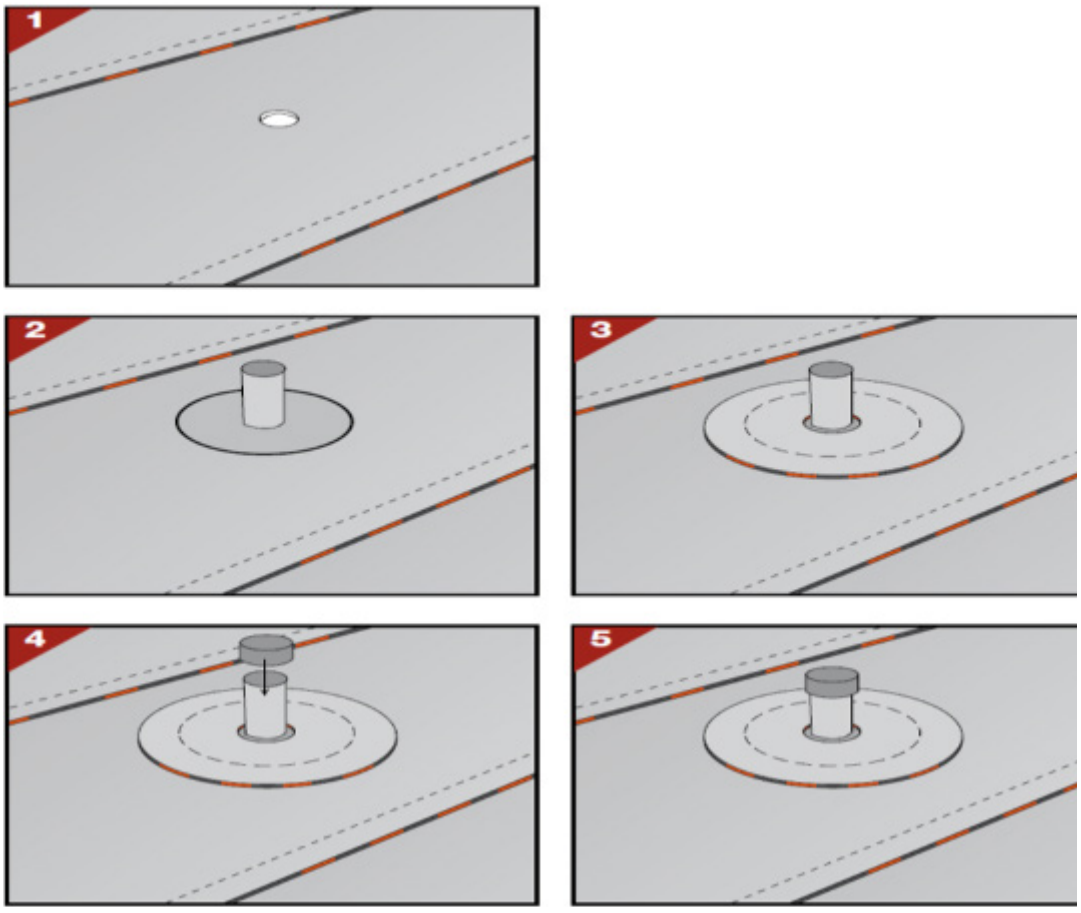
## 09.6

EXTERNAL ANGLE: Particular care must be taken to ensure that the over- laps do not leave holes or cuts exposed.



# 09 DETAILS FOR SYSTEMS

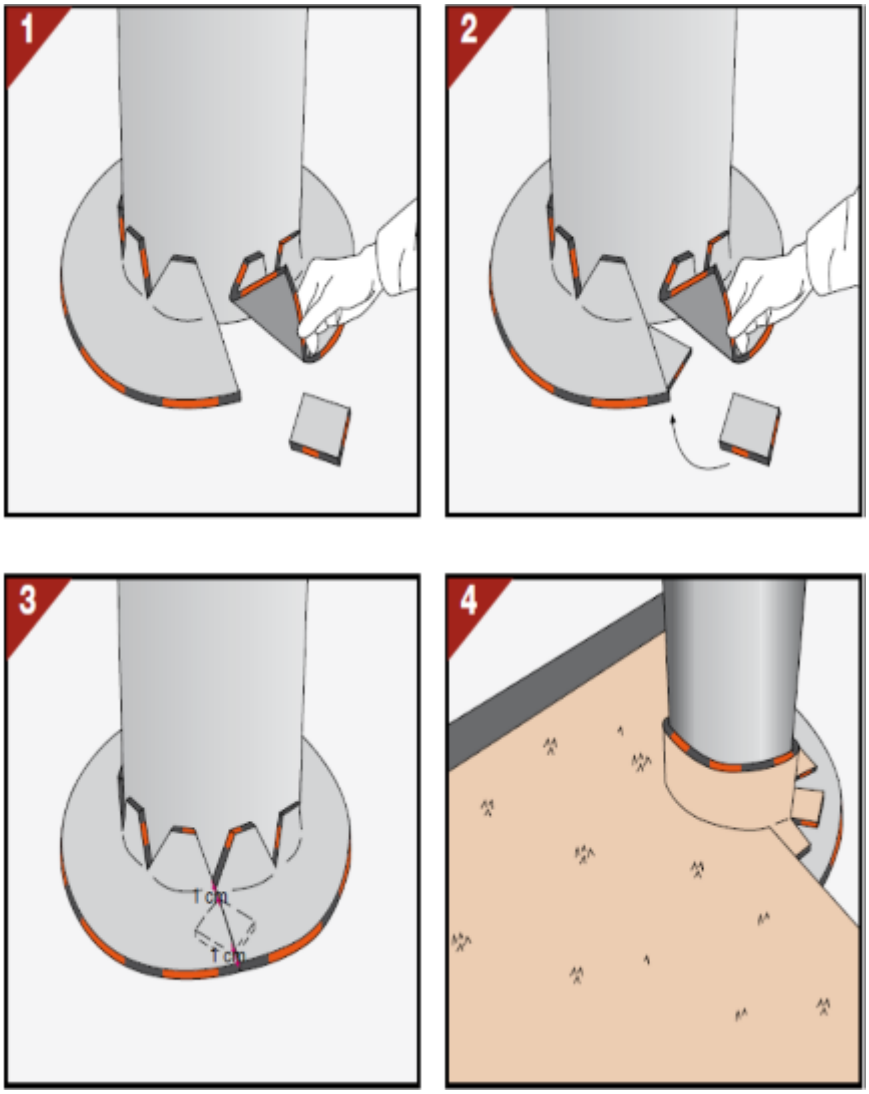
## 09.7 ROOF VENT



# 09 DETAILS FOR SYSTEMS

## 09.8

### Protruding Round Element:



# 10 PRECAUTIONS

## For Cold Weather Application:

In very cold weather conditions membrane application must be stopped, as it cannot be applied unless asphalt application temperature is correct . 10.1- Remove any moisture before application as it causes poor adhesion and blistering of the membrane.

9.2- To ease the application of MBM and coatings, they must be stored in heated area at minimum 15 °C. Begin the install process right after removing it from the store.

9.3– Do not start the installation process of the MBM in the following conditions:

1– First thing in the morning.

2– Temperatures at night are at or below 10 °C, as the membrane must be installed on a surface that's been allowed to warm to temperatures above 15 °C

9.4– When the ambient temperature is above 15 °C, remove from the protected storage area only the roll that will be installed the same day. These rolls must be unrolled, with the backside up and allowed to relax and be warm, then re-rolled to apply. But if ambient temperature is less than 15 °C, then remove only those rolls that can be applied immediately.

9.5– Never throw rolls of membrane on the deck or storage area.

# 11 WARNINGS

11.1- Never start work if the deck is not valid.
11.2- For wet rooms application, ensure that there is positive slope on the deck with no possibility of water ponding.
11.3- Never start work if the deck is not fully dried and never use wet or damaged. Material.
11.4- Avoid exposing materials to moisture in any case before, during or after transmission to the site.
11.5- Avoid storing materials at temperatures below 15 0C.
11.6- Always store finished products on end in a clean, dry and ventilated area.
11.7- Avoid any over or under torching for the roll.
11.8- Wet rooms application starting the installation of MBM at the low point of drains, so that the flow of water is over or parallel to the layers but never against the laps.
11.9- At two layer system laps must be staggered and never coinciding. 11.
10- To ensure the success of waterproofing, the flashing must be properly designed and installed.
11.11- Ensure proper protection of the MBM by using INSUBOARD.

# 12 SAFETY

12.1– As with any construction process, safety is key element. Therefore, INSUTECH recommends that all applicators' safety standards and good waterproofing practices be followed. Fire ignition prevention is the applicators responsibility.
12.2- Torching devices should not be left neglected and should not be allowed to get in touch with flammable materials. Torch flames should be kept moving and properly observed all the time. Keeping the torch flame directed towards one area for any period may cause ignition with surface or other flammable materials.
12.3– No contact with molten asphalt and torch flame as it cause burns. In case of contact with molten bitumen, apply ice or any other applicable cold liquid that is compatible with the skin and call for medical care immediately.
12.4- Do not torch anything that cannot be seen. Do not torch near gas lines, electrical wires or flammable vents. Follow the torch manufacturer's safety precautions prior to using the torching tools. All fittings for applica- tion tools must be thoroughly checked prior to starting the application process.
12.5- Do not use cigarette lighter to test leaks of torch but by using soap solution for gas leaks before lighting.
12.6- Do not use trowels or other tools as a torch support.
12.7– After completion of installation application staff must remain on site at least one hour to inspect for any possible flames, smoke. Also check prior to starting the application process. Propane torches should only be used in properly ventilated areas.
12.8- Do not use old shoes.
12.9- Always wear proper clothing. Wearing full sleeves overalls only.
11.10- Always keep a Pail of cold water handy in case of burns.
11.12- Conduct a safety drill on a frequent basis
WORK SAFETLY BY WORKING SMART. WHEN IN KDOUBT...DONOT USE
PREVENTION IS BETTER THAN CURE. NEVER LEAVE A TORCH UNAT- TENDED