
Wet Rooms Waterproofing

Design and Installation Manual





Wet Rooms Waterproofing



BATHROOM



KITCHEN



TECHNICAL ROOMS



LAUNDRY

Rooms exposed to permanent humidity or water

GENERAL

- * BITUMAT Wet rooms waterproofing system is designed for use as waterproofing system to for concrete floors of rooms exposed to permanent humidity or water, such as bathrooms, kitchens, laundries, technical rooms.
- * The base of the system consists of BITUMAT POLYFLAME, a single layer APP modified bitumen membrane reinforced with a 200gm nonwoven polyester.
- * BITUMAT Polyflame is always protected by an adequate separation layer and mortar screed.
- * Proper installation of any waterproofing system requires professional supervision and properly trained manpower. Insist on a professional roofing contractor.

This manual is designed to assist and inform the designer professional, contractor or owner of BITUMAT's recommendation on Modified Bitumen Wet Rooms Waterproofing system and application methods, proven over time to provide superior performance. This manual contains the BITUMAT Wet Rooms Waterproofing and application specifications. These specifications are based on the best available knowledge & technology.

1.2 International Compliance & Codes of Practice

All BITUMAT waterproofing material / systems comply with the applicable requirements of the following associations or standards.

Membrane Design:

BITUMAT Polyflame modified bitumen membrane comply with the requirement of the following standards: ASTM-D-6222 Type II.

UEATC (European Association for Technical Agreements)
Ref.: Special Directives for the assessment of APP modified bitumen membranes.

CGSB (Canadian General Standards Board)
Ref.: Standard 37/GP-56 M, Modified bitumen prefabricated and reinforced membrane for roofing.

Our manual has been inspired from the following Codes of Practices:

- France : DTU 43.1 - Roofing works
- DTU 20.12 - Design of Concrete Structure to receive roofing
- DTU 26.2 - Tolerance in screeding works
- U.K.: CP 144 - Part 3 Roofing works
- Germany: DIN 18338 - Roofing works

U.S.A.: NRCA Roofing Manual
Part 1 - Low slope roofing
Part 3 - Construction details

2. SCOPE

Scope of this manual is waterproofing membrane application for Wet Rooms. Only material applicable to these systems shall be used.



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5. DELIVERY, HANDLING AND STORAGE

All BITUMAT products are designed for application under specific conditions. Improper handling at any stage can alter the properties of the product.

All BITUMAT membranes and other products are transported on wooden pallets, shrink wrapped for best protection. Unload and handle all waterproofing materials with care. Examine all materials as they are received. All Bitumat products display legible labels identifying the material.

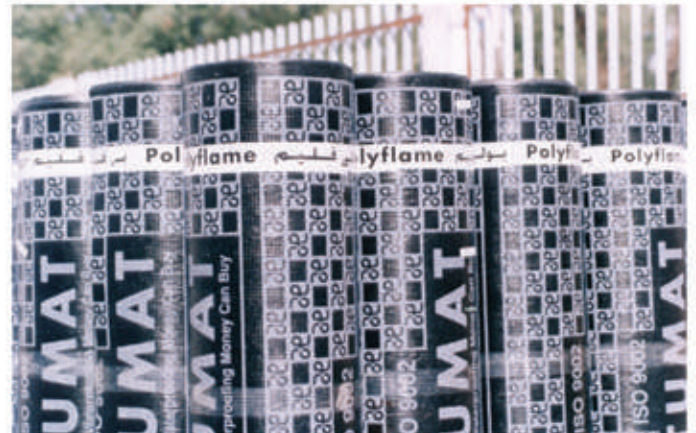
Look for any damaged or defective material and notify the carrier and manufacturer. Do not expose material to moisture in any form before, during or after delivery to site. Usage of wet or damaged material can contribute to failure of the waterproofing system.

Always store roll goods on end on a clean, raised platform to keep the ends of the rolls free from foreign matter. Rolls stored on their sides will flatten and stick together, making them very difficult to apply and then may cause problems later. Take care to prevent damage to roll ends or ridges. Do not double stack modified bitumen products. Store all waterproofing materials in a dry shaded and properly ventilated area.

Keep the temperature above 5°C (41°F) for 24 hours prior to application. Modified bitumen membranes are considerably easy to in-stall when maintained at temperatures above 11°C (51.8° F).

When application of membrane occurs at low ambient temperatures, care should be taken that the rolls are not thrown on the deck or storage area. Sudden impact of the roll can cause cracking of the rolls.

It is suggested to use "breathable type covers such as canvas tarpaulins to allow venting and protection from the weather and moisture. Thus the possibility of rolls sticking is eliminated.



3. LIMITATIONS

BITUMAT as a manufacturer is not involved in the design or construction of buildings or structures. BITUMAT will under no circumstances accept responsibility for the performance of its products when damage to its products results from such things as improper bridge design, construction faults, or defects in workmanship.

The various systems and their uses shown within this manual are designed for a specific purpose; therefore, one system is not necessarily better than the other, and each should be utilized in its respective application according to each project's design requirements.

The design responsibility remains with the architect, engineer or owner, and construction details illustrated and described herein are furnished solely for guidance purposes. These guidelines should not be construed as being all-inclusive.

Some construction details may require special treatment to secure water tightness. Therefore, it is recommended that these details are brought to the attention of the manufacturer prior to design. BITUMAT suggests that designers and architects refer to the BITUMAT Technical Department prior and during the design of any waterproofing system.

4. PHYSICAL PROPERTIES

The typical properties of Bitumat products as stated in the Product data sheets are typical median values and are within normal tolerance limits as stated in the UEAtc and other relevant standards, and may vary under normal manufacturing procedures as such and subject to change without notice.



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6. GUARANTEES

BITUMAT Co. Ltd Guarantees on BITUMAT material are available only when the BITUMAT membranes are installed in accordance with the installation guidelines set forth in this manual, and by a BITUMAT approved contractor who owns a written approval from BITUMAT Co. Ltd to install the BITUMAT material.

7. MAINTENANCE

Since BITUMAT has no control over a building's contents, type, quantity, positioning or protection, BITUMAT shall not be responsible for any consequential damages in case of bridge deck failure. BITUMAT strongly recommends annual inspection and preventive maintenance to prolong the life of the system.

8. THE APPLICATOR

BITUMAT recommends prequalification of the applicator. A professional contractor must have the following:



- A permanent place of business.
- Official registration documents.
- Knowledge of bridge deck systems.
- Good track record of application.
- Affiliated with a major waterproofing products manufacturer.

Since good workmanship is essential, qualified supervision of the application should be exercised. The applicator has the sole responsibility for the quality of the application of the bridge deck system.

9. PRE-INSTALLATION MEETING

A meeting between all parties concerned should be organized on site prior to installing any waterproofing materials, to approve the readiness of the bridge deck surfaces and details of the design. BITUMAT strongly recommends that the above procedure must be followed to avoid misinterpretation and to ensure proper installation of the system. Agreement shall be reached on all points





10.00 MATERIALS

10.01. POLYFLAME is a waterproofing membrane made of APP modified bitumen with a 200gm/m² non woven polyester reinforcement, black finish with a very thin torch off polyethylene foil permanently fixed on both sides.

Nominal Thickness 4mm
Nominal roll size 1x10 m

Nominal Thickness 4mm
Packing 1x10 m nominal roll size, with a selvedge for overlap welding.



10.02. Concrete Primer

BITUMAT Concrete Primer is a solvent based, fast drying, cold applied bituminous primer designed to penetrate concrete surfaces and provide a bondable surface.

Packing: 200 Litres / drum

10.03. Other Materials:

10.03.1. Separation Layers:

Polyethylene foils : 150 microns thick minimum may be clear or coloured.

Polyester felts : Nonwoven polyester mat, 120-140gm /m² Polypropylene felt are also acceptable.

10.03.2. Top Covering :

Concrete Screed : Minimum 4cm thick reinforced.

10.03.3. Expansion Joint

covering shall be custom designed to face the specific stresses expected, and be compatible with Bitumat APP modified bitumen membranes.



SPECIFICATION 1312

(WET ROOMS WATERPROOFING SYSTEM)

Substrate:

The waterproofing system shall be installed over a dry, smooth and clean concrete floor having a positive slope to drains. A sand cement mortar cant strip shall be provided at walls and protrusions.

Materials:

The waterproofing material shall be:

BITUMAT Polyflame, APP modified bitumen membrane reinforced with 200gm/m² polyester mat, 4mm nominal thickness, black finish, conforming to UEAtc and CGSB Standards.

BITUMAT Concrete Primer, conforming to ASTM D41.

Separation layers:

- 150 microns polyethylene sheet
- 120-140 gm/m² polyester felt
- Acoustic screen: (as specified)
- Protection: 4cm mortar screed

Installation:

- Apply a full coat of primer on the floor, the cant and the upstands.
- Apply Bitumat Polyflame 4 fully bonded by torch onto the primed concrete, with 10cm side laps and 15cm staggered end laps fully torched and seamed.
- At all walls and protrusions, BITUMAT Polyflame shall be extended fully bonded onto the cant and 5cm above cant.

Flashing:

- The Bitumat Polyflame flashing membrane shall be installed in 1m wide strips, fully torch welded 10cm onto horizontal membrane, on the cant and on the vertical wall.
- The flashing membrane shall extend onto the wall at least 8-10cm higher than the finished floor level (top of tiles).

Top Covering:

- Install the acoustic screen (as specified)
- Install the separation layer
- The mortar protection screed shall be laid, and sectioned every 4m in both directions.
- The vertical flashing membrane shall be mechanically protected.

All membrane laying and etailing shall be in accordance with BITUMAT Wet Rooms Waterproofing System "Design and Installation Manual".

SAFETY PRECAUTIONS

(WET ROOMS WATERPROOFING SYSTEM)

Work Safely by Working Smart! When in Doubt...Do not use! Prevention is better than cure! NEVER LEAVE A TORCH UNATTENDED!

As with any construction process, safety is key element. Therefore, BITUMAT recommends that all applicable safety standards and good waterproofing practices be followed. Fire ignition prevention is the applicator's responsibility.

Contact with molten asphalt and torch flame may 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.

Torching devices should not be left unattended and should not be allowed to get in touch with flammable materials. Torch flames should be kept moving and properly monitored all the time. Keeping the torch flame directed towards one area for any period of time may result in ignition with surface or other flammable material.

Don't torch anything that cannot be seen. Don't 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 application tools must be thoroughly checked prior to starting the application process.

Propane torch should not be used except in properly ventilated areas. Application staff must remain on site at least one hour after completion of installation to inspect for any possible flames, smoke, or smolders of any combustible material.

- Do not use trowel or other tools as a torch stand.
- Do not use cigarette lighter or matches for test for leaks.
- Do not keep the fire extinguisher next to LP tank.
- Do not use hoses which are old and worn out.
- Always check the equipments for safety before starting work.
- Always wear the proper dress, wearing full sleeves overalls only.
- Always use soap solution to check for gas leaks before lighting.
- Always keep a bucket of cold water handy in case of burns.
- Conduct a safety drill on a frequent basis.

- There should be a trained first aide provider on site who is familiar with the first aid procedures.
- If working with scaffolding, ensure the sturdiness and proper placement
- Ensure safety of the side rails on the roof.
- Always be alert to the site surroundings.

* Special Consideration

* Cold Weather Application

Waterproofing materials cannot be applied unless correct asphalt application temperatures can be maintained. Membrane application shall not be continued during very cold weather conditions.

A.) When water in any form is present on the deck, application procedures must be suspended until the deck has dried. Any moisture present at the time the waterproofing is applied may result in poor adhesion and blistering of the membrane.

B.) Store membrane rolls and coatings in an area heated at a minimum temperature of 55°F (12.6°C) when the ambient temperature and wind chill factor is below 45°F (7.1°C). This will help in the ease of application, and reduce the potential of membrane coating cracking during their handling and application.

C.) Install membrane rolls immediately after removal from storage to avoid membrane cooling to below 45°F (7.1°C).

D.) During installation, if surface cracking appears in the membrane, discontinue installation immediately and contact Bitumat technical Dept.

E.) If temperatures at night are at or below 45°F (7.1°C), never start applying first thing in the morning. The surface over which the membrane is to be installed must be allowed to warm to a temperature above 55°F (12.6°C).

F.) On those days when ambient temperature is greater than 55°F (12.6°C), remove from the protected storage area only those roll that will be installed the same day. These rolls must be unrolled, with the back side up and allowed to relax and warm. Then re-roll to apply. If the outside temperature is less than 55°F (12.6°C), then remove only those rolls that can be applied immediately.

SAFETY PRECAUTIONS

(WET ROOMS WATERPROOFING SYSTEM)

G.) Do not apply waterproofing materials when the ambient temperature and wind chill factor is below 45°F (7.1°C) unless the following recommendations for application during cold weather are followed:

- Waterproofing installation at temperatures below 45°F (7.1°C) require special precautions to insure satisfactory performance of the finished roof. Remove all traces of moisture from the deck before waterproofing.

- Do not overheat APP membranes to compensate for cold temperatures.

-When torching, unroll the membrane slowly to ensure proper flow of the coating.

- Never throw rolls of membrane on the deck or storage surface. Sudden impact of the roll can possibly cause cracking of the coating.

Trouble Shooting

- Never start work if the deck is not satisfactory
- Ensure that there is positive slope on the deck, with no possibility of water ponding.
- Never start work if the deck is not fully dried.
- Never use material which is wet or damaged.
- Avoid exposing materials to moisture in any form before, during or after delivery to the site.
- Always store goods on end in a clean, dry and ventilated area.
- Avoid storing materials at temperatures below 55 deg F (12.6 deg C).
- Do not begin work when inclement weather is forecast to occur prior to the anticipated time of completion of the work item.
- Do not install materials during inclement weather, except for temporary work necessary to protect installation.
- Do not apply the membrane if the ambient temperature is below 45 deg F (7.1 deg C).
- During cold weather never throw rolls of membrane on the deck or storage area.
- Always insist on a pre application conference with all the concerned parties.
- Always "relax" the membrane prior to torching.
- Special care to be exercised when torching, avoiding both under and over torching.
- Always start installation of membranes at the low point or drains, so that the flow of water is over or parallel to the plies BUT NEVER AGAINST THE LAPS.

- Ensure staggering of laps when doing a two layer system, laps never coinciding.
- Appropriate precautions to be taken when torching on site.
- Ensure proper seam integrity by rolling over the laps.
- Flashing is the most common of waterproofing failure, ensure that the flashing is properly designed and installed.
- Never install base flashing on fresh plaster. It will lead to wrinkling and buckling.
- Maintain the right amount of overlaps and the length of the flashing should not be unmanageable.
- Ensure proper protection of the membrane
- Cover immediately to avoid any damage.
- Insist on proper safety programme on the site.





Construction Details

1. TYPICAL SECTION
2. TYPICAL BATHROOM STAND
3. TYPICAL TECHNICAL ROOM UPSTAND
4. MEMBRANE TERMINATION AT DOORS
5. PIPE / DUCT PENETRATION
6. PIPE PENETRATION
7. TRESHOLD
8. DRAIN

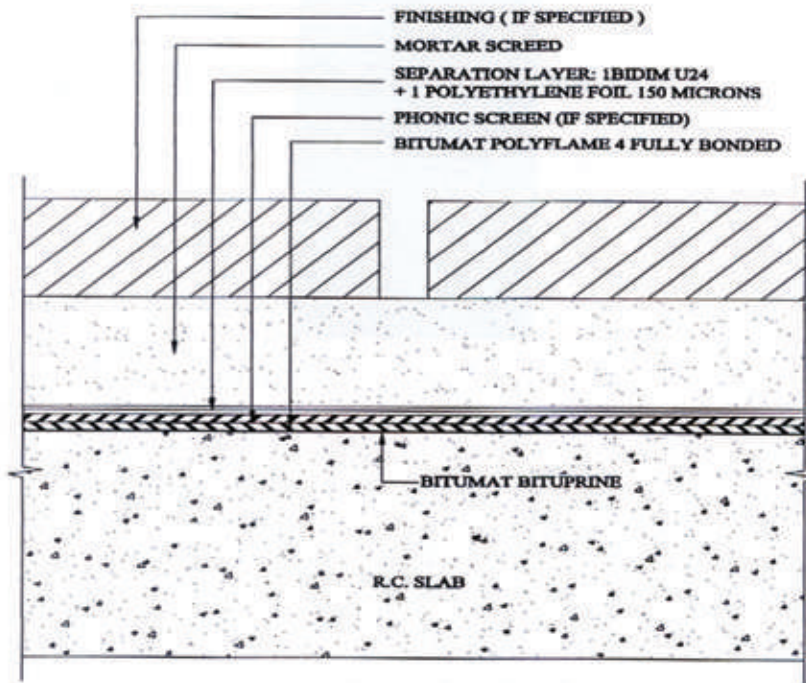


**TECHNICAL
DRAWINGS**

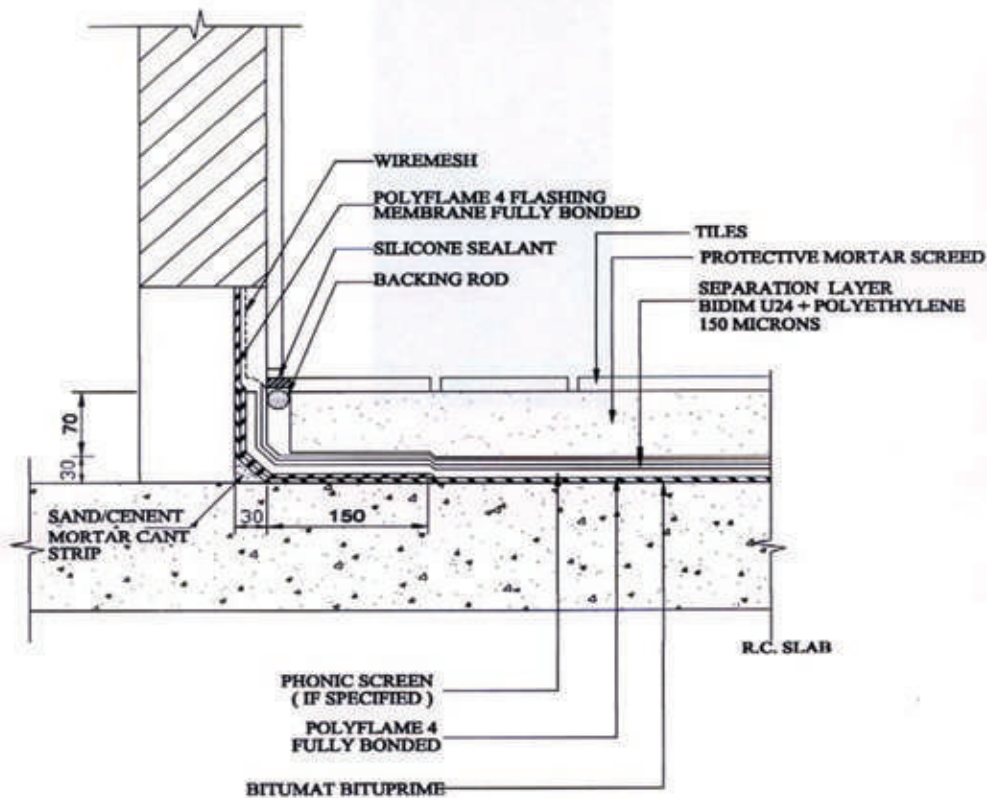




WET ROOMS WATERPROOFING SYSTEM



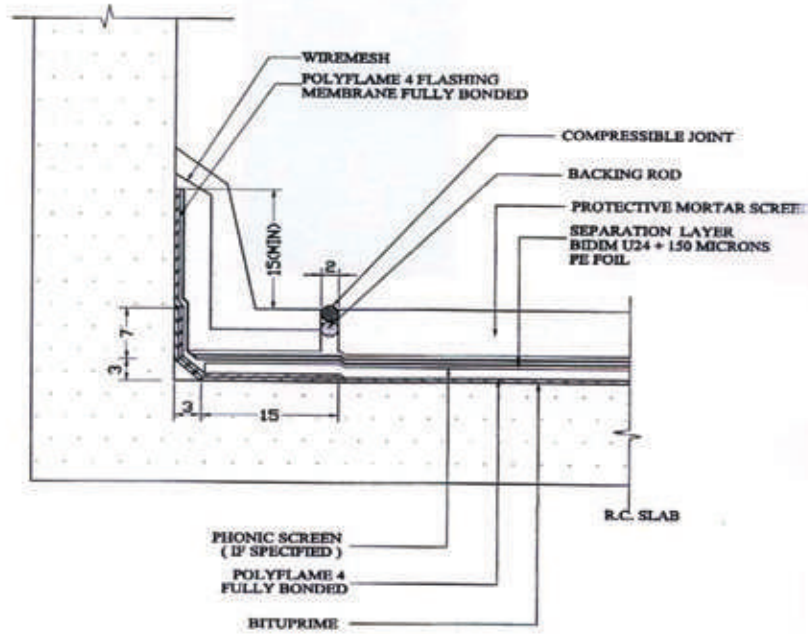
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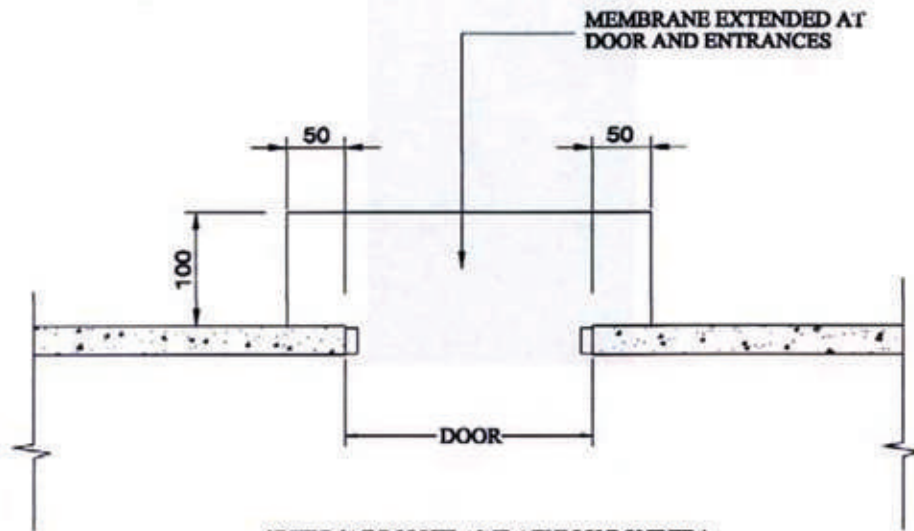
TYPICAL BATHROOM UPSTAND



WET ROOMS WATERPROOFING SYSTEM



TYPICAL TECHNICAL ROOM UPSTAND



(BITUMAT POLYFLAME 4 FULLY BONDED)

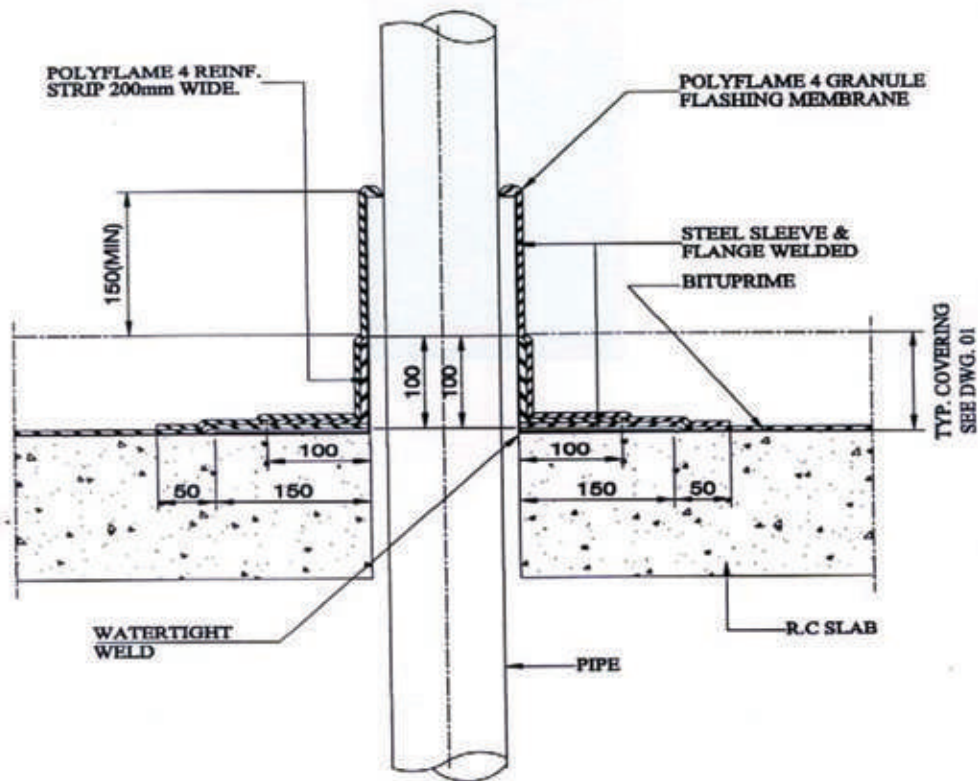
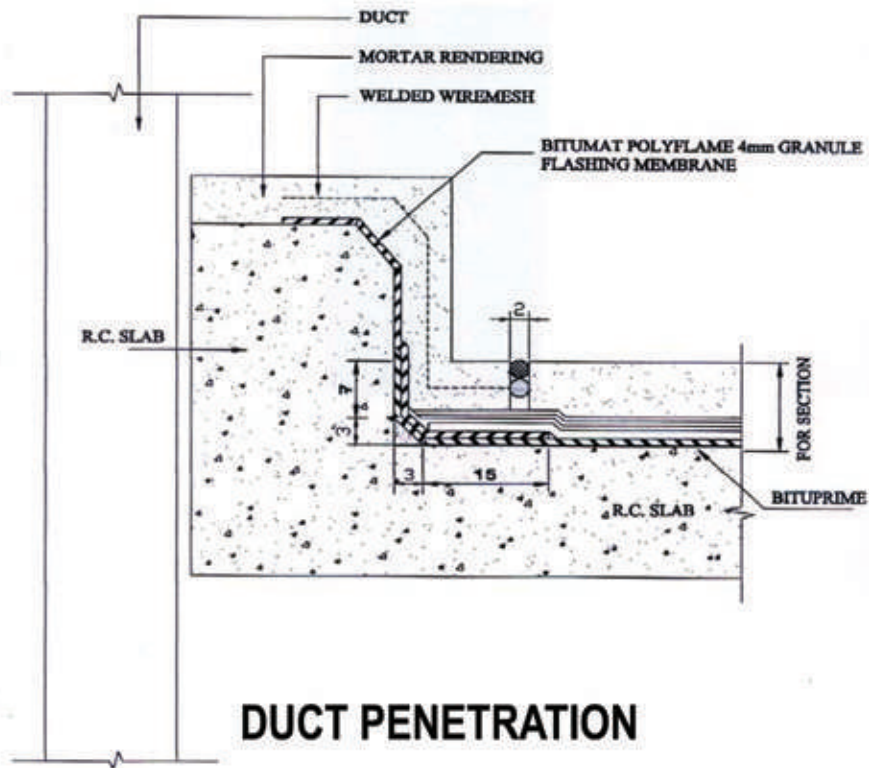
WET ROOM

TOP VIEW

MEMBRANE TERMINATION AT DOOR

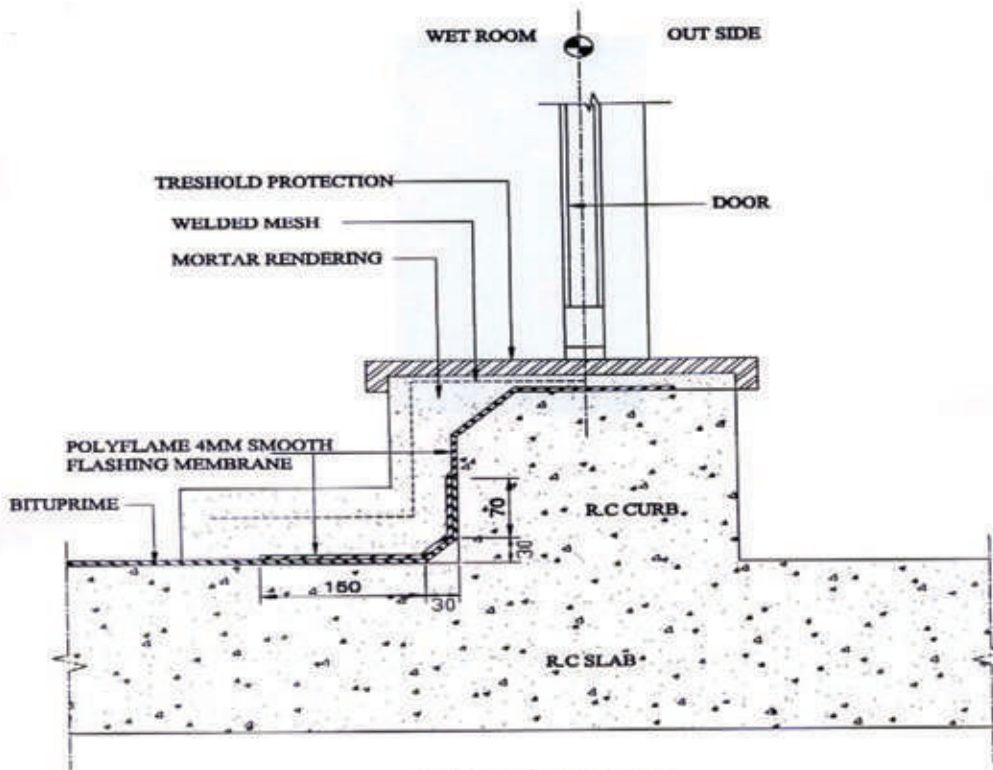


WET ROOMS WATERPROOFING SYSTEM

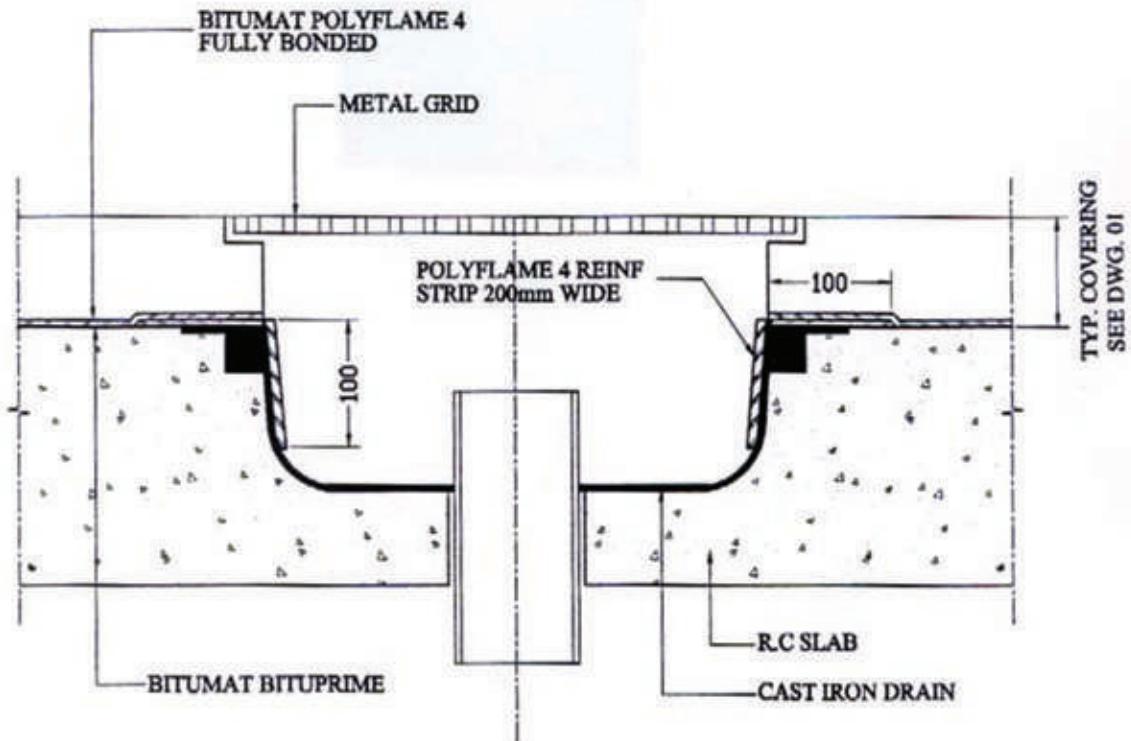




WET ROOMS WATERPROOFING SYSTEM



THRESHOLD



DRAIN