Jaisons Construction Solutions

WATERPROOFING SPECIFICATIONS & METHODOLOGY HAND BOOK

BY JAYANT DEOGAONKAR

constructions.jaisonsgroup.com

ABOUT US

CONSTRUCTIVE THINKING.
AND THE WILL TO LEAD
IS WHAT DEFINES WHO WE ARE.

Jaisons is a reputed brand providing products and solutions for the construction industry. Jaisons has been providing solutions for the construction sector since the last 30 years. The quality and performance guarantee of our products is a result of our state of art manufacturing facility well equipped with quality control systems. Jaisons Construction Solutions is focused on providing innovative products and services for the construction industry.

Established in the year 1989 and headquartered in Pune, Jaisons is a team of highly qualified technocrats led by Mr Jayant Deogaonkar, a renowned expert in construction and waterproofing technology.

We offer solutions for a wide range of construction problems and for various application areas such as paving, waterproofing, tile & stone installation, green building, building repair, swimming pool solutions etc. Our research & development team is constantly working on introducing more innovative solutions for problems faced by the construction industry.

Our production facility is located at Pirangut, a fast growing industrial town near Pune, which houses many multinational companies. Our products & solutions are tested and certified at premiere technical institutes of the country before use by various clients across different industry segments.

FROM THE AUTHOR'S DESK

This manual on waterproofing solutions is the result of over three decades of work done by Jaisons Constructions Solutions in the waterproofing technology. This book is a one-stop-resource compilation for any kind of waterproofing challenge that one would encounter in any construction project.

At Jaisons, we've been at the forefront of providing cutting-edge waterproofing solutions to the construction industry. Our solutions represent years and years of experience, innovation and expertise in this field. All the products mentioned in this manual are exclusively manufactured at our state-of-the-art manufacturing facility in Pirangut,Pune and they are in strict adherence to the highest quality standards. I would like to emphasize that it is not just about the product, but taking care of the entire system around waterproofing solutions. It is my endeavour to provide a step-by-step methodology for each and every construction area where waterproofing is required. The result will be there to be seen once this is followed.

It is essential that specifications and sequence of treatment are strictly adhered to for successful waterproofing treatment. Any negligence on methodology i.e. starting from surface preparation till the final protection system can result in defective work and it is very difficult to carry out repairs especially at inaccessible or hidden areas under treatment.

Like they say, prevention is better than cure. And the same holds true for waterproofing as well. In many cases, cure may not be possible at all if the right practices are not followed. At Jaisons, we bring to you proven systems to successfully treat each and every area for waterproofing.

We hope this manual helps you in successful implementation of your waterproofing needs.

Jayant Deogaonkar
Chairman, Jaisons Group

PROLOGUE

A methodology handbook on waterproofing techniques is indeed the need of the hour for todays construction industry and I am happy that Jaisons Construction Solutions has endeavoured to do this exercise.

Over the past 3 decades I have seen durability of concrete structures being severely impacted due to ingress of water. Any structure, if not waterproofed properly, sets in a vicious circle which is very difficult to come out of. Ingress of water causes corrosion of reinforcement. This corrosion leads to expansion of volume of reinforcement which in turn induces pressure on concrete, resulting in additional cracks in concrete. Additional cracks mean more ingress of water, and this vicious circle continues.

The need of the hour is to understand what we need to do to effectively and optimally stop the ingress of water at source. The obvious answer is of course to ensure waterproofing is done properly. This is easier said than done and as far as waterproofing is concerned the devil is in the detail. Waterproofing process needs to be clearly identified and each area needs to be treated with meticulous attention to detail and proper procedure and systems. This handbook is an excellent effort to provide a detailed step by step approach towards waterproofing. I hope this handbook helps every architect, consultant and engineer to understand waterproofing methodology and effectively assist in delivery of a waterproof structure.

For the past so many years, focus has been solely on strength of a structure. Equal attention needs to be given to the durability and lifespan serviceability of a structure. This handbook on waterproofing methodology will surely help in achieving this.

Umesh Joshi
Partner,
JW Consultants LLP

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1 OVERALL DESIGN PHILOSOPHY

It should be very clearly understood that 'Waterproofing' is not a work of magic, but a system that provides resistance or defense against the ingress of water into the core of concrete structure. Higher and stronger defense or resistance against the water ingress will result in stopping the water from percolating into the body of structure and **this effect is called Waterproofing.**

While designing a suitable treatment of waterproofing, it is essential to know and understand the Location, Strata, Type of building (Industrial / Residential), Type of structure (i.e. PT or conventional), Grade of concrete, Expansion Joint provisions, Seismic Joints provision, and many more aspects of the said construction which cannot be listed here, but would need a special attention. Once the parameters mentioned above are known from the drawings and related data, it becomes mandatory to visit the project site, and then formulate the correct specification in the **light of design philosophy, product and system selection, accessibility to application in view of safety norms.** It requires quite a bit of thinking while formulating the specifications and methodology. Correct selection of products, specifications and methodology is of utmost importance, and, at the same time, **the application expertise is the only key to success.**

The specifications and waterproofing system design guidelines for different application areas are discussed in the following sections of this chapter:

1 BASEMENT :

To create resistance against water percolation / penetration, we require :

a. A strong – cohesive – impervious concrete shell, which is structurally designed to take uplift water pressure and other design parameters of loading etc.

b. During the construction of a water-tight shell (say basement), the construction procedures, however modern they might be, will definitely have weaker areas like -

   i. Construction joints

   ii. Honey combed pockets

   iii. Vertical and horizontal junctions

   These areas also require a special attention to achieve a waterproofing effect.

c. While counter balancing the uplift pressure, the structural designer faces the challenges for RAFT THICKNESS. Especially in case of deeper basement (-1, -2, -3 levels), the Raft thickness becomes uneconomical to counterbalance the uplift pressure and thus providing anchors or compensatory over burden on raft becomes mandatory.

d. Many times, after the excavation to desired depth, the strata met with may be total hard rock or may be partially weathered rock or hard murum etc. The excavation, under these circumstances, may be more than required in some area or may be just as desired or may be slightly less than the desired depth. In such cases, though the requirement of bottom levelling is by M-25 or M-30 grade concrete many Contractors might prefer to plum-concrete or even trap-metal or hard murum filling. This is hazardous to structural stability since water establishes access underneath the raft and helps uplift.

e. In many cases, you may not get the desired strata as per soil investigation report. If you meet with- say hard murum, you need to take help of the structural designer, and modify the design in view of the strata met with.

In view of the points explained above, waterproofing of an Underground structure or Basement becomes very critical and needs a special attention.

2 PODIUM :

This is a very crucial area in towering buildings and is the heart of the building. It is most vital selling point for a builder / constructor. It houses Driveways, Garden areas, Swimming Pools, Water-bodies and fountains and also sports grounds on the top. And, there is essentially a Huge car Parking Area below the Podium. Moreover, there are level-charges, stepping platforms, Amphitheatre and hence lot of Light weight filling. All above being split up structures, spread over the podium area, the skill lies in selecting a correct products treatment and specifications which will behave as per the behavior of the Podium structure and will synchronize with possible movements of the podium base, by imparting desired flexibility / Resilience.

3 EXPANSION JOINTS :

a. The Expansion joints location on the podium area need to be inspected and we have to be very sure that no structure is planned on the Expansion Joint. It should be ensured that the treatment provided is easily accessible, to rectify damages which occurs for reasons beyond our control. Many times, this particular aspect is forgotten and Expansion joints though treated with good material show distress and become main cause of leakages.

b. The Expansion joint treatment is provided on a thoroughly prepared original concrete slab. Due to development works, the finished level near Expansion Joint is well above the slab. In such cases, we have to build up the Expansion Joint to the desired level, with a specific system build up, so that the desired design requirements are not altered and the joints are also protected.

4 TOILETS :

Nowadays, the Toilets are treated with a system of Coatings; membranes and Brick Bat Coba (if sunken) or screeds. The system works well for toilets slabs but invariably shows leakages in the adjacent rooms at lower level. This happens due to lateral flow of water from toilets to living room through the tile underlays (Toilet tiles underlay and Room tiles underlay) connected at threshold and peripheral locations resulting leakages in the Living Room below.

Therefore, when we talk philosophy of Waterproofing in Toilets, we must pay attention to: -

a. Stopper, below threshold and peripheral junctions.
b. Pipe sealing – (from inside and outside) or nhani trap or drainage channel.
c. Water-proofing of wall area behind shower portion.

5 TERRACES :

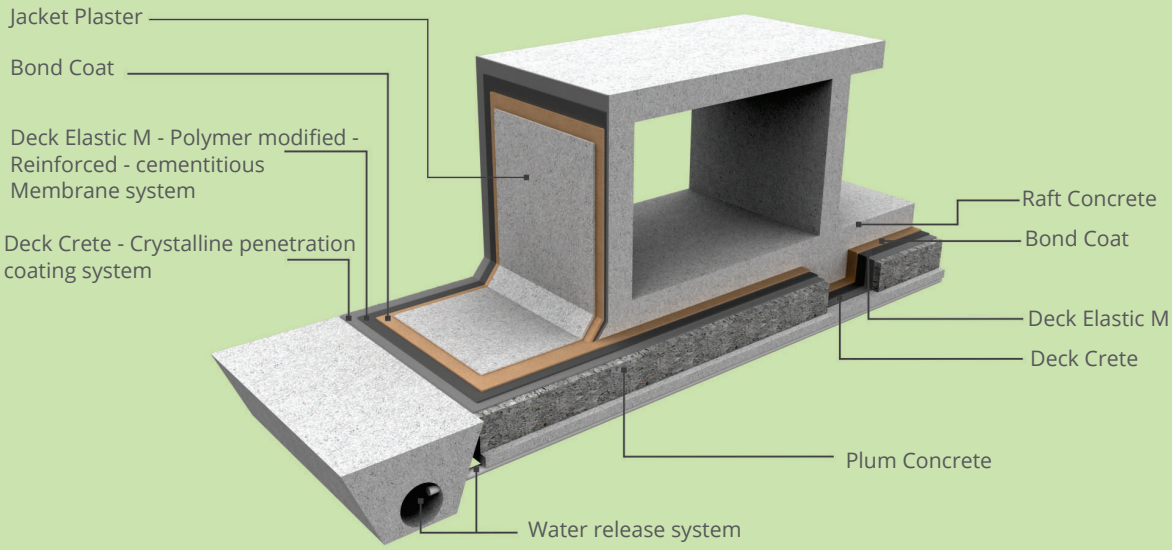
In Terraces, before deciding the treatment of Waterproofing, we should understand the probable installations on terraces. For example :-

a. Provision of Gandola Track or Spider Anchors required (especially in High Rise Tower) and their foundation details / anchoring arrangements.
b. Plumbing line from Over Head Water Tank - many times laid / fixed on parapet with Nails anchors or screws.
c. Installations of HVAC Machines, cable trays, etc. may or may not need foundations, but necessarily need anchorage to base slab.
d. Drain water outlets, under such circumstances, may be required more than designed and hence to be thought over, before finalizing waterproofing grids, ridges, slopes etc. So, on terraces, the systems of Waterproofing should be considered and checked in view of above points.

2 PROTECTION TO FOUNDATION

All foundation structures need to be protected against ingress of water or dampness into the core of concrete. This can be done by simply coating the concrete surface by Hydrophobic, penetrant sealer coating. The process is a crystalline penetration of reactive chemicals into the capillaries of concrete containing soluble lime and crystallization takes place converting soluble lime into insoluble crystals thus blocking the capillaries. In addition, the coating creates a cementitious integral surface over the concrete and thus protects the concrete for life time. This coating becomes an integral part of concrete.

Fig. 1 Basement - external side water proofing treatment with water release system



The product recommended for this protection (of foundation concrete) is a **single component or two component cementitious polymer modified coating system**.

Necessarily system comprises of :

- Cement
- Fine quartz sand
- Proprietary chemicals
- Liquid polymer component (Acrylic)

1 PRODUCT RECOMMENDED :

Deck Crete - single component polymer modified penetrant sealer

Dosages	: 2 to 2.5 kg per sq.m
Form	: powder
Colour	: white / grey
Methodology	: as per manufacturer's instructions

2 DESCRIPTION OF ITEMS :

Providing and applying a crystalline penetrant sealer coating polymer modified single component **DECK CRETE** in two coats as per the following methodology.

2.1. Clean, wire brush, grind and wash (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminants.

2.2. Prewet the concrete surface so as to make it damp or moist.

2.3. Mix **DECK CRETE (POWDER)** and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.

2.4. Apply 1st coat of **DECK CRETE** slurry by brushing it uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.

2.5. Apply 2nd coat of **DECK CRETE** slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.

2.6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.

3 GENERAL NOTE FOR BASEMENT RETAINING WALL

A . GENERAL GUIDELINES

Whenever there is a requirement of Basement Waterproofing, it is very essential to take cognizance of the following parameters as regards to its location, surrounding geography, soil investigation reports, structural design parameters and adjoining existing structures.

1. Whether the location of the basement is:
   a. On hill top / on a table land
   b. In the middle of the slopping ground / down the hill
   c. In the valley of two adjacent hillocks
   d. On a plane ground, in view of the general topography of the area.

2. Depth of Basement with respect to general ground level i.e. -
   a. Single lower level – say 3.5m below ground level
   b. Two levels below ground level – Say 7.00m below ground level
   c. Three levels below ground level – Say 11.5m below ground level And likewise.

3. Study of the water table during rainy season i.e. H.F.L etc.

4. The type and crowding / congestion of the buildings in the vicinity of proposed basement.

5. Location of River, Nallah or water reservoirs in the nearest vicinity.

6. Soil investigation reports.

Generally basements construction on Hill Top may not require any exhaustive waterproofing treatment; since water currents will easily get released to lower grounds. However, specific treatment to construction joint, horizontal and vertical concrete junction, honeycombed areas and jacket plastering to exposed RCC will be necessary. This is required in view of back filling and water ingress in rainy season. Similarly, on the sloping grounds, water will definitely find its way to lower grounds and treatments same as explained for hill tops would be necessary.

However, basements situated in a valley portion of the topography, as well as, deeper basements on fairly levelled ground, will require an exhaustive and well-designed treatment along with an effective water release system .

B. WATERPROOFING ASPECT

The waterproofing treatment needs to be provided on the external surfaces of Retaining Wall. In case of deep basement where depth of excavation exceeds 2.5 to 3.00 mt and that too in a rocky strata, it is difficult to provide working clearance beyond the external face of R.C.C. proposed retaining wall . Under such circumstances after the desired excavation, the vertical faces of the rock cut side are generally done with plain M-20/M 25 grade concrete cast against the rock cut side. Now the waterproofing treatment can be done to this concrete surface and the treated surface used as permanent formwork on outer side & then the RCC retaining wall is cast. If the excavation provides sufficient clearance for work space, then the waterproofing treatment can be easily done directly on the external side of RCC Retaining wall after casting. The material of waterproofing should have property of ground chemical resistance, flexible/elastomeric, high mechanical strength, puncture resistance & adequate abrasion resistance.

4 BASEMENT WATERPROOFING SYSTEM

THE BASEMENT WATERPROOFING SYSTEM IS TO BE CHOSEN DEPENDING UPON :

1. Site conditions & strata underneath.
2. Accessibility and working space
3. Water logging in particular area / Dewatering facilities
4. Uplift consideration
5. Provision of Expansion Joints / Seismic consideration in design.

RECOMMENDED SYSTEMS:

The substructures being underground, the crystalline penetration continues to seal and reseal capillary pores and becomes an integral and rigid part of concrete; whilst, an Elastomeric membrane will provide a crack free flexible barrier over the already sealed concrete.

4.1. BOX TYPE SYSTEM

4.2. PENETRANT SEALER COATING + CEMENTITIOUS ELASTOMERIC MEMBRANE

SPECIFIC REQUIREMENTS FOR TREATMENT :

The surface on which the waterproofing treatment is to be carried out below footing raft slab should be -

i. A structurally sound concrete surface (M 20 grade Min.)

ii. Should be thoroughly cleaned up and should be free from all loose scaling mortars or concrete scales, nails, binding wire protrusions, timber pieces, oils, grease or any other foreign materials.

iii. In the event of uplift consideration, suitable pressure release piping grid should be provided.

OPTION I

4.1 BOX – TYPE TREATMENT TO BASEMENT FROM EXTERNAL SIDE :

A. MATERIAL SELECTION :

1. ROUGH SHAHBAD (BLUE STONE) - MACHINE CUT – 25 MM (Av.) THICKNESS – SIZE 2′ X 2′ OR 2′ X 1 1/2 ‘. It should be equal to 1.5′ and not 1′ and 0.5″)
2. RIVER SAND – CLEANED & WASHED – WELL GRADED
3. CEMENT – OPC – 43 Grade
4. 10 MM – BELOW – WASHED CUBICAL AGGREGATES
5. ADMIXTURES DOSAGES

1. DICHTAMENT DM	200 ml / bag of cement	Integral waterproofing plasticizer
2. DECK FLEX	500 ml / bag of cement	Liquid polymer component for enhanced bonding and high flexural strength.
3. DECK SCA	200 gms / bag of cement	Shrinkage compensating (non – shrink) admixture
4 P.P.FIBER	19 mm long @ 125 gms per bag of cement	

B. PRE-REQUIREMENTS :

1. The excavation should be complete in the area to be treated.

2. P.C.C. (preferably M- 20) should be completed and cured.

3. The brick work (14" wide) to retain the soil should be completed and cured for 5 to 7 days. This brick work will be used as a part of the system where extra working space is not available.

C. FLOOR TREATMENT :

This treatment is done on the floor after PCC (M-20) before the casting of RCC RAFT.

1. Clean, wire brush & wash the area thoroughly.

2. Provide and lay underlay mortar bed in CM 1:4 admixed with Dichtament DM (an integral waterproofing plasticizer) @ 200 ml per bag of cement of av. 25 to 30 mm thickness.

3. Provide and lay rough shahabad ladi of size 2' x 1 ½' (Machine cut blue stone) of thickness 25 mm avg. with 25 mm to 35 mm joint laid in staggered fashion on the green underlay.

4. Grout the joints between rough shahabad with thick cement slurry (cement – sand 1:1) admixed with a non – shrink admixture DECK SCA @ 0.4% of cement weight i.e. 200 gms per bag of cement. Allow the grout to set for a day.

5. Provide and lay an overlay mortar of av. 20 to 25 mm thickness in C.M 1:4 admixed with DICHTAMENT DM @ 200 ml per bag of cement and Deckflex @ 500 ml per bag of cement and provide a smooth IPS finish or as directed.

D. WALL TREATMENT :

This treatment is done on RCC retaining walls after retaining walls are cast. (i.e. on RCC concrete surface)

1. Clean, wire brush and wash the area thoroughly.

2. Provide and fix rough shahbad 2' x 1 ½' -25 mm thick. (machine cut blue stone) on the RCC wall, using cement paste tabs of approx.2" dia @ 4 to 5 places, keeping ½" clearance from wall

   (for grouting) with 20 to 25 mm vertical joints, fixed in staggered manner.

3. Next day, grout the ½" gap between RCC wall and rough shahabad with a thick cement slurry admixed with a non shrink waterproof admixture DECK SCA @ 200 gm per bag of cement. Allow the grout set for a day. Lay and fix only ONE LAYER A DAY.

4. Continue the cladding up to 4 layers to 6 layers.

5. Provide and apply 20 mm thick plaster jacket (over the ladi) in CM 1:4 admixed with DICHTAMENT DM @ 200 ml per bag and P.P.Fiber @ 125 gram (1 packet) per bag and finish the surface as IP smooth.

6. Continue the process till you are 400 mm above the proposed ground level or hard deck. Junctions between vertical and horizontal surfaces, should be provided with 8" coving (watta) or concrete plug.

OPTION II

4.2 PENETRANT SEALER COATING + ELASTOMERIC REINFORCED MEMBRANE SYSTEM :

A. PRE-TREATMENT WORKS:

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment.
2. The RCC surfaces of walls should be thoroughly cleaned, by wire brushing, grinding & washing. It should be ensured that all loose slurries, timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease or any other foreign materials.
3. The materials used for the treatment should have ground chemical resistance, flexible & elastic with high mechanical strength puncture resistance, abrasion resistance & should have **good adhesion to concrete.**

B. DECK CRETE COATING SYSTEM :

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats as per the following methodology :-

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix **DECK CRETE (POWDER)** and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of **DECK CRETE** slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

C. DECK ELASTIC M MEMBRANE SYSTEM :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

- PART A – POWDER
- PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B while continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of **DECK ELASTIC M.**
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this **coat** to dry. (This is a self curing system. No water curing required)
3. Apply **2nd coat** ; fix **DECK NET** & trowel with immediate **3rd coat** so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours.

   (3 days)

   IMP : All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

D. PROTECTION JACKET ON VERTICAL WALLS (ON THE TREATMENT) :

Providing & applying a 15mm thick polymer modified waterproof plaster jacket walls in CM 1:4 admixed with :-

a. Dichtament DM internal water proof plasticizer @ 200 ml/per bag of cement

b. Deck flex (Liquid polymer component) @ 500 ml/per bag of cement.

c. P.P. fibre @ 125 gms per bag of cement and finishing the surface smooth as IPS.

d. Cure the area for 7 days by wet hessain cloth/curing compound

E. PROTECTION SCREED (ON THE TREATMENT) :

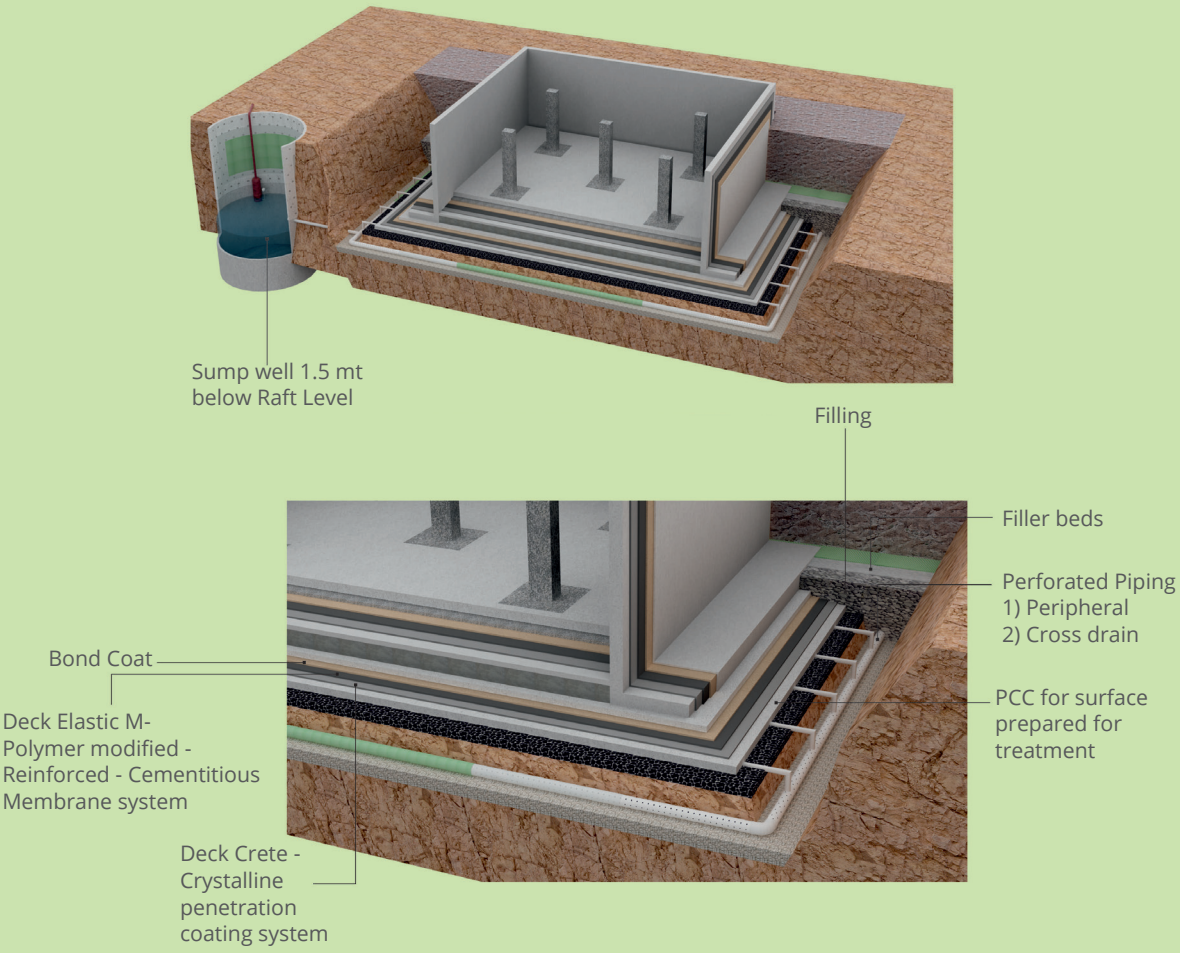
Providing and laying a PROTECTION SCREED of 30 to 40 mm thickness in M 20 grade concrete (using 10 mm below aggregates) and admixed with PP fibers at 0.9 Kg per M^3 of concrete and floated for better compaction using power floaters including curing for 7 days.Correct application of waterproofing system is possible only if,

a. There is a clear access to concrete surface, while working. The first step to be done on the entire exposed surface of concrete and the basic item before application is '**preparing the surface for treatment'**.

b. In deeper basements, where there is a continuous water percolation/ penetration from sides is seen, it is not possible to do effective dewatering and hence access to carry out the treatment is not available.

c. For an effective waterproofing treatment, effective dewatering while application is compulsory. This is possible if you resort to Water Release System.

Fig. 2 Basement waterproofing system with water release system at lowest level - leading to sump housed with pump (suitable capacity) with auto switch controlled



WATER RELEASE SYSTEM:

THEY SAY – "WHEN YOU CANNOT ARREST WATER, RELEASE IT OR DIVERT IT"

This is a simple technique of collecting ground water and percolation water at lowest level (through perforated pipes network) and taking it to a large sump which is located 2m deeper than the bottom of the Raft. This sump is housed with a submersible pump of adequate capacity and works on auto-level-control switch.

Water Release System is a network of perforated pipes-forming a close loop, under the raft, with 6" to 8" dia perforated pipes along the periphery of basement beyond the retaining wall (below raft level) and with 4" dia perforated cross-drainage pipes below the raft and connected to peripheral loop. This perforated pipe loop is further taken to 2M dia RCC sump. The bottom of sump is almost 2.00 meter below the bottom of Raft.

i. All perforated pipes are wrapped with 200 gsm non-woven – polyester fleece (Geo Textile) and further protected by Nylon mesh netting, to avoid any mud or fine particles entering and clogging the piping loop.

ii. All pipes in the loop are further covered with a good and GRADED FILTER MEDIA to avoid possible blockages. Graded Filter media consists of broken trap metal" (40mm to 60mm) – Coarse aggregate (20mm to 25 mm) and shingles 8mm to 10 mm in layer of 6" to 8" thickness.

Naturally, when the water level rises, water enters the pipe-line and is speedily taken to sump. When the water in the sump rises to the designated level, the submersible pump, is automatically switched on and water is thrown out to nearest storm-water line on ground level. The cycle continues keeping the bottom raft or PCC-top free of water for application of waterproofing system. The Water Release System allows you to do a quality job of specified waterproofing system due to clear accessibility to surface even for preparatory works.

5 WATERPROOFING TREATMENT TO LIFT PITS

Providing & applying a DECK CRETE + DECK ELASTIC M membrane type waterproofing system to Lift Pit, RCC Wall & RAFT from positive side.

5.1 PRE-TREATMENT:

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment
2. The RCC surfaces of walls should be thoroughly cleaned by wire brushing, grinding & washing. It should be ensured that all loose slurries, timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease or any other foreign materials.
3. The materials used for the treatment should have ground chemical resistance. It should be flexible and elastic with high mechanical strength, puncture resistance, abrasion resistance while ensuring good adhesion to concrete.

5.2 INJECTION GROUTING :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below.

   i. Remove loose and spalling concrete.

   ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

   iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

   iv. Inject cement slurry admixed with non-shrink admixtures Einpresshilfe EH at 200 gms per bag of cement, using hand or foot pump at 10 psi.

   v. Remove / cut the protruding socket tubes flush with the surface.

5.3 PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats as per the following methodology

a. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other Foreign contaminant.

b. Prewet the concrete surface so as to make it damp or moist.

c. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.

d. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface.

   Allow the coating to dry for 4 to 6 hrs.

e. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.

f. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.

g. Now the concrete surface is ready to receive the subsequent activities.

5.4 DECK ELASTIC M – MEMBRANE (over Deck Crete above) :

Providing and applying an Elastomeric Polymer modified cementatious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is a two component system

- PART A – POWDER
- PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B while continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed. Continue mixing for 2-5 minutes till you get a easily trowelable homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of DECK ELASTIC M.
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this coat to dry. (This is a self curing system. No water curing required)
3. Apply 2nd coat ; fix DECK NET & trowel with immediate 3rd coat so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

   IMP: All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

5.5 PROTECTION SCREED :

Protection screed (on horizontal surface) - Providing and laying a PROTECTION SCREED of 30 mm thickness in M 20 grade concrete (using 10 mm below aggregates) and admixed with poly propylene fibers at 0.9 Kg per M^3 of concrete and floated for better compaction using power floaters including curing for 7 days.

5.6 PROTECTION JACKET ON VERTICAL WALLS :

Providing & applying a polymer modified waterproof plaster jacket walls in CM 1:4 admixed with -

a. Dichtament DM internal water proof plasticizer @ 200 ml/per bag of cement

b. Deck flex (Liquid polymer component) @ 500 ml/per bag of cement.

c. P.P. fibre @ 125 gms per bag of cement and finishing the surface smooth as IPS. Cure the area for 7 days by wet hessian cloth/curing compound

6 TOILET FLOOR/WET AREAS & SIDE WALLS

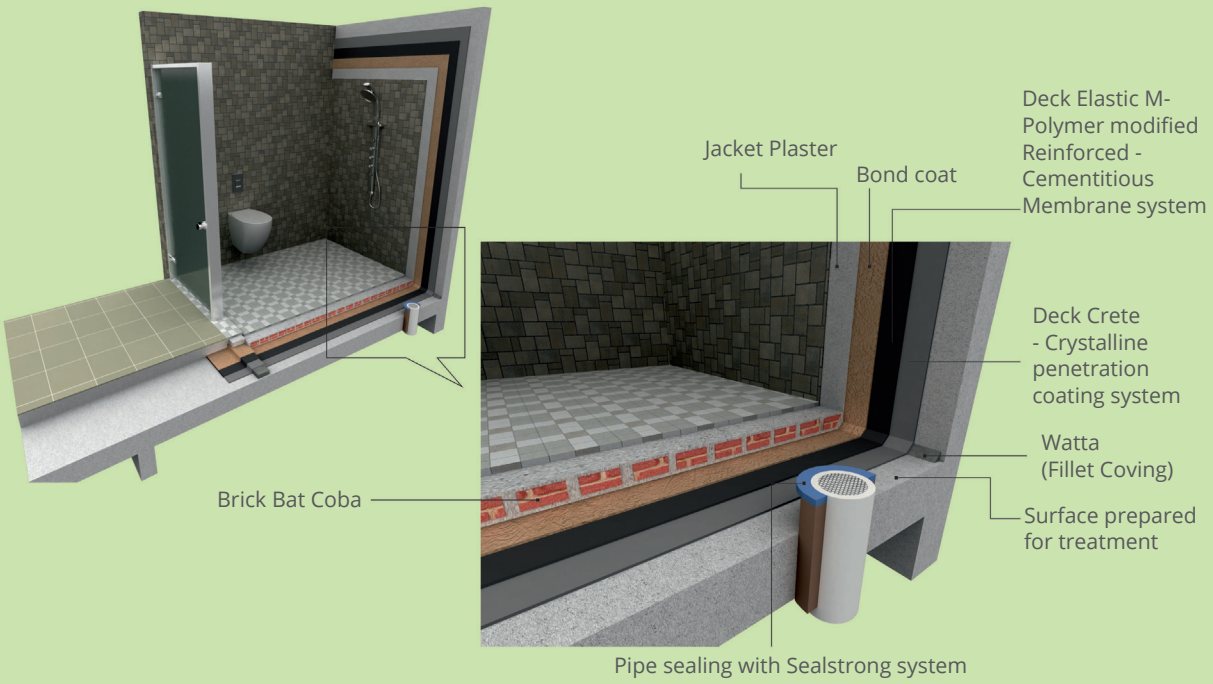
ASSESSMENT / RECOMMENDATIONS OF TOILET AREAS BEFORE WATERPROOFING :

1. The slab surface shall be cleaned thoroughly and any mortar droppings, debris etc. be mechanically abraded with carborundum stone wire brush and washed with plenty of water. The surface shall be free from dust dirt and foreign materials before starting the treatment.

2. Before starting the grouting process , a 100 mm depth water ponding for 10 days shall be carried out after plugging the nahani trap hole to identify loose pockets which have potential for leakage and create water ingress in the floor slab.

3. All construction joint, honey combed concrete leakage / damp areas in the slab shall be treated with pressure grouting using cement slurry mixed with DECK SCA or approved equivalent grout admixtures at the rate of 0.2 kg per bag of cement at construction joints vertical surfaces columns and wherever leakages are expected during cleaning / water ponding of the surface. The junction of vertical and horizontal surface shall have the CANTS at 45° using DECKFLEX modified mortar CM 1:3 as detailed in drawing.

Fig. 3 Waterproofing Of Toilets



WATERPROOFING TREATMENT :

A. PRE-TREATMENT WORKS :

Check the toilet floor slab for

6.1 Cracks in concrete 6.2 Cold construction joints 6.3 Honeycombed pockets.

By ponding water (100 mm depth) on Toilet floor slab

CRACKS IN CONCRETE SLAB & CONSTRUCTION / COLD JOINTS :

The cracks should be treated by adopting to the following methodology-

A. Clean, grind and thoroughly wash the area around and along the length of crack thoroughly.

B. Cut and open a dove – tail or U -shaped groove along the length of crack to get a 10 mm x 15 mm section of groove. Clean the groove by air under pressure or by blower and then wash thoroughly and allow to dry off.

C. Now the fill the groove with a non shrink cementitious polymer modified filler grout **'DECK GROUT '** and flush the top in level with adjecent slab surface. Cure the system for 3 days.

D. Cover the filled up crack with a 300 mm BAND (of any of the following) keeping 150 mm band width on either side of the repaired crack – section.

I. **BAND OF DECK PU 1K** (Single component polyurethane membrane sandwiched with 120 gsm non woven needle punch polyester fabric.)

II. **BAND OF DECK POLYUREA FFP (Liquid applied hybrid polyurea membrane sandwiched with non woven needle punch polyester fabric)** All the 300 mm band with systems are self curing membrane.

B. PENETRANT SEALER COATING – DECK CRETE :

A. **Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats on floor & upto height of 600 mm above on walls as per the following methodology. :**

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other Foreign contaminant.

2. Prewet the concrete surface so as to make it damp or moist.

3. Mix **DECK CRETE (POWDER)** and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.

4. Apply 1st coat of **DECK CRETE** slurries by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.

5. Apply 2nd coat of **DECK CRETE** slurries at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.

6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.

7. Now the concrete surface is ready to receive the subsequent activities.

C. DECK ELASTIC M – MEMBRANE (over Deck Crete above) :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECKELASTIC M is two component system

- PART A – POWDER
- PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of DECK ELASTIC M.
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this coat to dry.
   (This is a self curing system. No water curing required)
3. Apply 2nd coat ; fix DECK NET & trowel with immediate 3rd coat so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours.

   (3 days)

   IMP : All overlaps to have 100 mm min overlapping width / length and staggered. **No water curing - since the system is self curing**

D. PROTECTION JACKET ON VERTICAL WALLS (ON THE TREATMENT) :

Providing & applying a 15mm thick polymer modified waterproof plaster jacket walls 400 mm

above FFL in CM 1:4 admixed with -

a. Dichtament DM internal water proof plasticizer @ 200 ml/per bag of cement

b. Deck flex (Liquid polymer component) @ 500 ml/per bag of cement.

c. P.P. fibre @ 125 gms per bag of cement and finishing the surface smooth as IPS. Cure the area for 7 days by wet hessian cloth/curing compound

E. PROTECTION SCREED (ON HORIZONTAL SURFACE) :

Providing and laying a PROTECTION SCREED of 30 to 40 mm thickness in M 20 grade concrete (using 10 mm below aggregates) and admixed with poly propylene fibers at 0.9 Kg per M^3 of concrete and floated for better compaction using power floaters including curing for 7 days.

F. SUNK FILLING :

Providing & filling in sunks with Brick Bat Coba using full or half well kilned bricks in CM 1:4 admixed with Dichtament DM @ 200ml/bag of cement.(integral high performance plasticizer) laid with break/ staggered joints with controlled joint width (15 to 20mm) and finishing to surface smooth sd IPS or as directed.

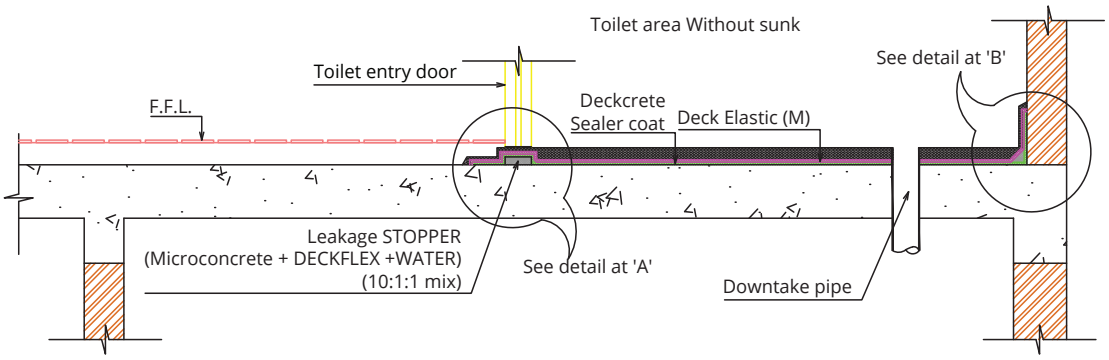
G. LIGHT WEIGHT FILLING :

Providing and filling in sunks with compact Light Weight concrete consisting of specially designed mix of EPS + Cement, Sand and binders ie DECK LITE

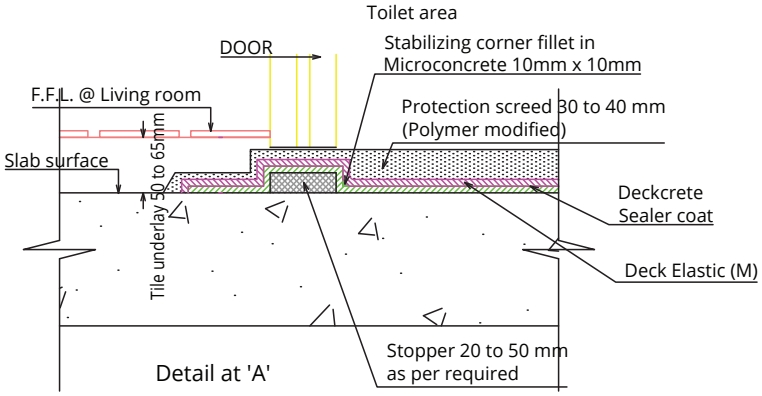
Deck Lite is a special purpose product based on polymer modified cementitious dry mix and EPS granules

DECK LITE DRY MIX	PART A	30KG
DECK LITE EPS	PART B	1 KG
WATER (just sufficient for a workable mix)	PART C	4.5 LTR + / - 10%

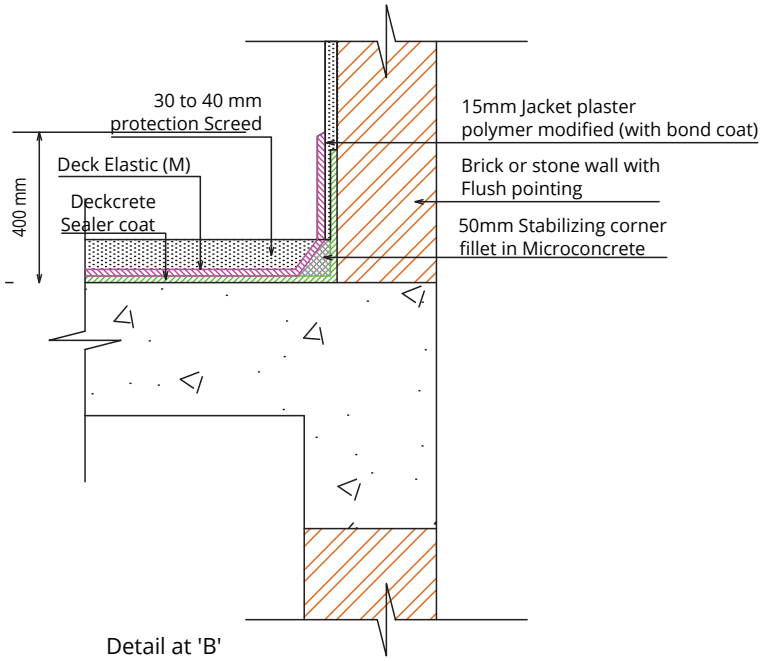
Fig. 4 WATERPROOFING TREATMENT TO TOILETS



WATERPROOFING TREATMENT TO TOILETS



Detail at 'A'



Detail at 'B'

7 WATERPROOFING TO PODIUM SLAB / PLANTERS ETC

7.1. AREA I (HARD DECKS & DRIVE WAYS)

A. PRE-TREATMENT :

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment
2. The RCC surfaces of walls, should be thoroughly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease, or any other foreign materials.
3. The materials used for the treatment should have ground chemical resistance. It should be flexible and elastic with high mechanical strength, puncture resistance, abrasion resistance while ensuring good adhesion to concrete.

B. PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats as per the following methodology :-

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix **DECK CRETE (POWDER)** and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of **DECK CRETE** slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of **DECK CRETE** slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

C. FLEXIBLE MEMBRANE SYSTEM OF DECK PROOF over Deck Crete :

Providing and applying an acrylic HIGH BUILD flexible (liquid applied) membrane system of DECK PROOF sandwiching 100 gsm nonwoven polyester fleece as per manufacturer's instructions in the following sequence.

1. Clean the area thoroughly. Dampen the surface by brushing water.
2. Apply primer DECK PROOF PRIMER (Deck Proof : Water = 1:2) in one coat.
3. Apply first coat of DECK PROOF (Deck Proof : Water = 1kg : 300 grams) uniformly and allow to dry.
4. Apply 2nd Coat of DECK PROOF (same proportion) - when wet fix 100 gsm non-woven polyester fleece & immediately apply 3rd coat (wet on wet) to saturate the reinforcing fleece thoroughly. Allow it to dry.
5. Apply the final coat (same proportion) and allow it to dry.

D. DECK ELASTIC M – MEMBRANE (over Deck Proof above) :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECKELASTIC M is two component system

- PART A – POWDER
- PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry.

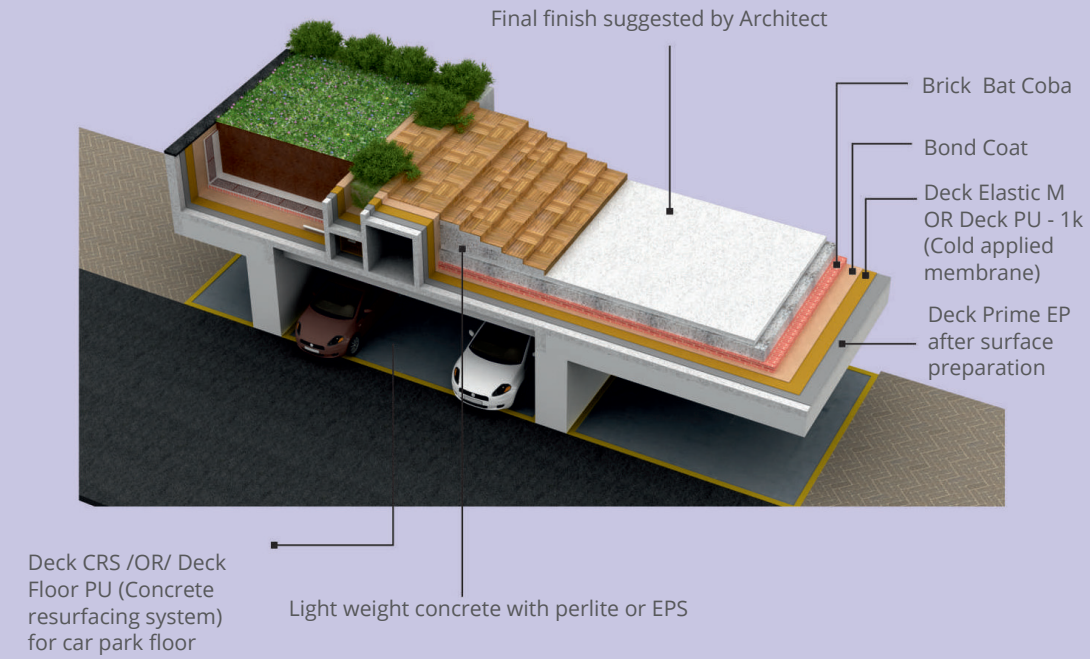
II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of **DECK ELASTIC M.**
2. Apply well mixed slurry on to a well prepared surface either by brush or Trowell and allow this coat to dry.
   (This is a self curing system. No water curing required)
3. Apply **2nd coat** ; fix **DECK NET** & Trowell with immediate **3rd coat** so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

   IMP : All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

Fig. 5 Waterproofing Treatment to Podium and Planter



E. PROTECTION SCREED :

Protection screed (on horizontal surface) - Providing and laying a PROTECTION SCREED of 30 mm thickness in M 20 grade concrete (using 10 mm below aggregates) and admixed with poly propylene fibers at 0.9 Kg per M^3 of concrete and floated for better compaction using power floaters including curing for 7 days.

F. PROTECTION JACKET ON VERTICAL WALLS :

Providing & applying a Polymodified waterproof plaster jacket walls in c.m, 1:4 admixed with -

a. Dichtament DM internal water proof plasticizer @ 200 ml/per bag of cement

b. Deck flex (Liquidf polymer component) @ 500 ml/per bag of cement.

c. P.P. fibre @ 125 gms per bag of cement and finishing the surface smooth as IPS.

Cure the area for 7 days by wet hessien cloth/curing compound

7.2. AREA II (GARDEN AREA) :

A. PRE-TREATMENT:

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment

2. The RCC surfaces of walls, should be thorouhly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease, or any other foreign materials.

3. The materials used for the treatment should have ground chemical resistance, flexible & elastic with high mechanical strength puncture resistance, abrasion resistance & should have good adhesion to concrete.

B. DECK PU 1K :

DECK PU1K (a single component polyurethane) reinforced membrane system on floor and 400 mm up on the wall

Methodology

Providing and applying a coating system of DECK PU1K on the entire surface of the podium excluding the band width at joints as per the following methodology :

- Apply DECK PRIME EP to the entire area and vertical wall up to required level – sprinkle silica sand (mesh 16/32) over the coat of DECK PRIME EP.
- Apply first coat of DECK PU1K on the surface with the help of nylon roller / brush.
- Apply 2/3rd of DECK PU1K of the second coat on the surface with the help of nylon roller / brush. Then roll out the 120 gsm polyester fleece. Remove all wrinkles and then saturate completely with remaining 1/3rd of DECK PU1K mixture as per manufacturer specification.
- Apply final coat of DECK PU1K on the surface with the help of nylon roller / brush.
- Allow the system to cure (air cure for 5 days)
- Apply DECK PRIME EP on the cured DECK PU1K membrane and sprinkle silica sand (mesh 12/16) over the wet coat DECK PRIME EP and allow it to cure for 24 hours.

C. PROTECTION SCREED :

Protection screed (on horizontal surface) - Providing and laying a PROTECTION SCREED of 30 mm thickness in M 20 grade concrete (using 10 mm below aggregates) and admixed with poly propylene fibers at 0.9 Kg per M^3 of concrete and floated for better compaction using power floaters including curing for 7 days.

D. PROTECTION JACKET ON VERTICAL WALLS :

Providing & applying a polymer modified waterproof plaster jacket walls in c.m, 1:4 admixed with -

a. Dichtament DM internal water proof plasticizer @ 200 ml/per bag of cement

b. Deck flex (Liquid polymer component) @ 500 ml/per bag of cement.

c. P.P. fibre @ 125 gms per bag of cement and finishing the surface smooth as IPS.

d. Cure the area for 7 days by wet hessian cloth/curing compound. Slopes are essential for draining of rain water. This can be achieved by providing :-

E. BRICK BAT COBA :

Providing and laying Brick Bat Coba in cement mortar 1:4 admixed with Dichtament DM at 200 ml per bag of cement & P.P. Fiber @ 125 grams per bag of cement laid in proper slope with 15 to 20 mm wide staggered brick joints using well kilned bricks & finishing the surface as IPS smooth with false chequered pattern (300mm x 300 mm) or as directed. Methodology :-

1. Ensure that the surface clean and surface is prewet.

2. Provide and lay an underlay mortar 25 mm thick in C.M 1:4 admixed with Dichtament DM @ 200 ml per bag of cement.

3. Start fixing full or half bricks (well kilned and soaked in water) with 15 to 20 mm staggered / break joints in curved pattern, laid with desired slope and line towards the drain outlet. Ensure bricks are firmly fixed in the green or wet mortar underlay with at least 8 to 10 mm penetration in mortar underlay.

4. Allow the brick bat coba undergo curing by water spray and set properly.

5. a. Now, provide and lay the top overlay screed (1:2:2) or Mortar (1:4) 25 mm / 30 mm thick, ensuring that the brick bat joints get properly filled up. Level the overlay mortar / screed, checking for slope without undulations towards the drain point.

   b. Create a Watta or Coving 300 mm on parapet wall and integral with horizontal coba, laid along with coba using quarter brick size bats uniformly.

   c. Finish the surface of overlay including Watta, to a smooth finish and mark 300 x 300 mm false chequered pattern by pressing (4 mm thick) line dori impression on the green finished top surface of coba

6. Cure the entire coba surface by ponding water for 15 days.

F. LIGHT WEIGHT CONCRETE :

Providing and laying EPS light weight concrete DECK LITE as per the following methodology :
Deck Lite is a special purpose product based on polymer modified cementitious dry mix and EPS granules

DECK LITE DRY MIX	PART A	30KG
DECK LITE EPS	PART B	1 KG
WATER (just sufficient for a workable mix)	PART C	4.5 LTR + / - 10%

Mix the materials in the above proportion in a concrete mixter & lay as a light weight screed from 40 mm to 200 mm thickness as per the slope requirement. The lightweight screed or concrete should be tamped or compacted well using wooden floats only. The top surface should be IPS like smooth which can be achieved by using dry mix as a dryshake hardner.

8 WATERPROOFING TREATMENT TO TERRACES

8.1. FOR TERRACE GARDEN

A. PRE-TREATMENT :

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment

2. The RCC surfaces of walls, should be thoroughly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease or any other foreign materials.

PRE-TREATMENT WORKS :

Check the toilet floor slab for cracks in concrete cold construction joints honey combed pockets.

B. INJECTION GROUTING :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below.

i. Remove loose and spalling concrete.

ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

iv. Inject cement slurry admixed with non-shrink admixtures Einpresshilfe EH at 200 gms per bag of cement.

v. Remove/ cut the protruding socket tubes flush with the surface

C. CRACKS IN CONCRETE SLAB & CONSTRUCTION / COLD JOINTS:

The cracks should be treated by adopting to the following methodology -

A. Clean, grind and thoroughly wash the area around and along the length of crack.

B. Cut and open a dove – tail or U -shaped groove along the length of crack to get a 10 mm x 15 mm section groove. Clean the groove by air under pressure or by blower and then wash thoroughly and allow to dry off.

C. Now the fill the groove with a non shrink cementitious polymer modified filler grout 'DECK GROUT ' and flush the top in level with adjecent slab surface. Cure the system for 3 days.

D. Cover the filled up crack with a 300 mm BAND (of any of the following) Keeping 150 mm band width on either side of the repaired crack – section.

I. **BAND OF DECK PU 1K** (Single component polyurethane membrane sandwiched with 120 gsm non woven needle punch polyester fabric.)

II. **BAND OF DECK POLYUREA FFP (Liquid applied hybrid polyurea membrane sandwiched with non woven needle punch polyester fabric)** All the 300 mm band with systems are self curing membrane.

D. DECK PU 1K :

DECK PU1K (a single component polyurethane) reinforced membrane system on floor and 400 mm up on the wall

Methodology

Providing and applying a coating system of DECK PU1K on the entire surface of the podium excluding the band width at joints as per the following methodology :

- Apply DECK PRIME EP to the entire area and vertical wall up to required level – sprinkle silica sand (mesh 16/32) over the coat of DECK PRIME EP.

- Apply first coat of DECK PU1K on the surface with the help of nylon roller / brush.
- Apply 2/3rd of DECK PU1K of the second coat on the surface with the help of nylon roller / brush. Then roll out the 120 gsm polyester fleece. Remove all wrinkles and then saturate completely with remaining 1/3rd of DECK PU1K mixture as per manufacturer specification.
- Apply final coat of DECK PU1K on the surface with the help of nylon roller / brush.
- Allow the system to cure (air cure for 5 days)
- Apply DECK PRIME EP on the cured DECK PU1K membrane and sprinkle silica sand (mesh 12/16) over the wet coat DECK PRIME EP and allow it to cure for 24 hours.

E. BOND COAT :

Providing and spraying high strength polymer modified CRS mortar admixed with Deck Flex as per manufacturer's instructions on the cured DECK PU1K system as an additional key and grip for subsequent plaster jacket.

F. BRICKBAT COBA :

1. Ensure that the surface clean and surface is prewet.
2. Provide and lay an underlay mortar 25 mm thick in C.M 1:4 admixed with Dichtament DM @ 200 ml per bag of cement.
3. Start fixing full or half bricks (well kilned and soaked in water) with 15 to 20 mm staggered / break joints in curved pattern, laid with desired slope and line towards the drain outlet. Ensure bricks are firmly fixed in the green or wet mortar underlay with at least 8 to 10 mm penetration in mortar underlay.
4. Allow the brick bat coba undergo curing by water spray and get set properly.
5. a) Now, provide and lay the top overlay screed (1:2:2) or Mortar (1:4) 25 mm / 30 mm thick, ensuring that the brick bat joints get properly filled up. Level the overlay mortar / screed, checking for slope without undulations towards the drain point.

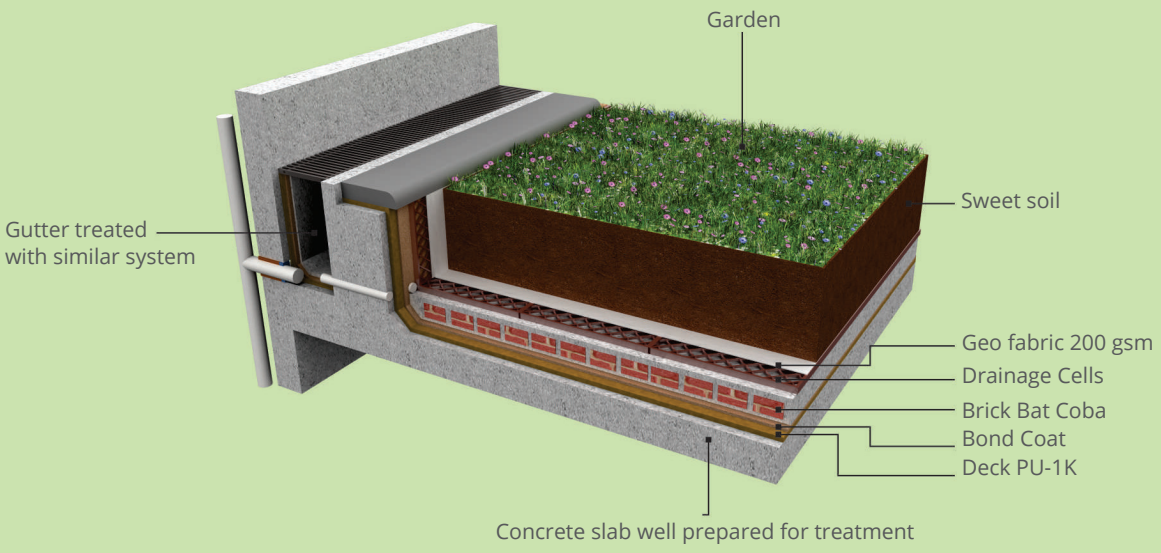
   b) Creat a Watta or Coving 300 mm on parapet wall and integral with horizontal coba, laid along with coba using quarter brick size bats uniformly.

   c) Finish the surface of overlay including Watta, to a smooth finish and mark 300 x 300 mm false chequered pattern by marking by pressing (4 mm thick) line dori impression on the green finished top surface of coba.
6. Cure the entire coba surface by ponding water for 15 days.

G. DRAINAGE CELLS & GEO-FABRIC :

Providing and laying drainage cells and geo-fabric of approved thickness and make over the brick bat coba to allow for drainage of water from the planter / garden.

Fig. 6 Specific Garden Terrace Treatment



8.2 FOR ROOF WITH SOLAR REFLECTIVE MEMBRANE

A. PRE-TREATMENT :

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment

2. The RCC surfaces of walls, should be thorouhly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease or any other foreign materials.

B. INJECTION GROUTING :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below.

I. Remove loose and spalling concrete.

ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

Iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

iv. Inject cement slurry admixed with non-shrink admixtures DECK SCA at 200 gms per bag of cement.

v. Remove/ cut the protruding socket tubes flush with the surface.

C. CRACKS IN CONCRETE SLAB & CONSTRUCTION / COLD JOINTS:

The cracks should be treated by adopting to the following methodology-

A. Clean, grind and thoroughly wash the area around and along the length of crack thoroughly.

B. Cut and open a dove – tail or U -shaped groove along the length of crack to get a 10 mm x 15 mm section groove. Clean the groove by air under pressure or by blower and then wash thoroughly and allow to dry of.

C. Now the fill the groove with a non shrink cementatious polymer modified filler grout 'DECK GROUT ' and flush the top in level with adjecent slab surface. Cure the system for 3 days.

D. Cover the filled up crack with a 300 mm BAND (of any of the following) Keeping 150 mm band width on either side of the repaired crack – section.

I. **BAND OF DECK PU 1K** (Single component polyurethane membrane sandwiched with 120 gsm non woven needle punch polyester fabric.)

II. **BAND OF DECK POLYUREA FFP (Liquid applied hybrid polyurea membrane sandwiched with non woven needle punch polyester fabric)** All the 300 mm band with systems are self curing membrane.

D. PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats as per the following methodology

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitance, slurry, oil and other foreign contaminants.

2. Pre wet the concrete surface so as to make it damp or moist.

3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brush-able consistency slurry.

4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.

5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.

6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.

7. Now the concrete surface is ready to receive the subsequent activities.

E. DECK ELASTIC M MEMBRANE SYSTEM :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

- PART A – POWDER
- PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B while continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of **DECK ELASTIC M.**
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this **coat** to dry. (This is a self curing system. No water curing required)
3. Apply **2nd coat** ; fix **DECK NET** & trowel with immediate **3rd coat** so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours.

   (3 days)

   IMP : All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

F. LIGHT WEIGHT SCREED :

Providing and laying EPS light weight concrete screed of DECK LITE as per the following methodology:-

Deck Lite is a special purpose product based on polymer modified cementecious dry mix and EPS granules

DECK LITE DRY MIX	PART A	30KG
DECK LITE EPS	PART B	1 KG
WATER (just sufficient for a workable mix)	PART C	4.5 LTR + / - 10%

Mix the materials in the above proportion in a concrete mixter & lay as a light weight screed from 40 mm to 200 mm thickness as per the slope requirement. The lightweight screed or concrete should be tamped or compacted well using wooden floats only. The top surface should be IPS like smooth which can be achieved by using dry mix as a dryshake hardner.

G. FLEXIBLE, HEAT-REFLECTIVE COATING :

Providing and applying an acrylic HIGH BUILD flexible (liquid applied) membrane system of DECK PROOF sandwiching 100 gsm nonwoven polyester fleece as per manufacturer's instructions in the following sequence.

Clean the area thoroughly. Dampen the surface by brushing water.

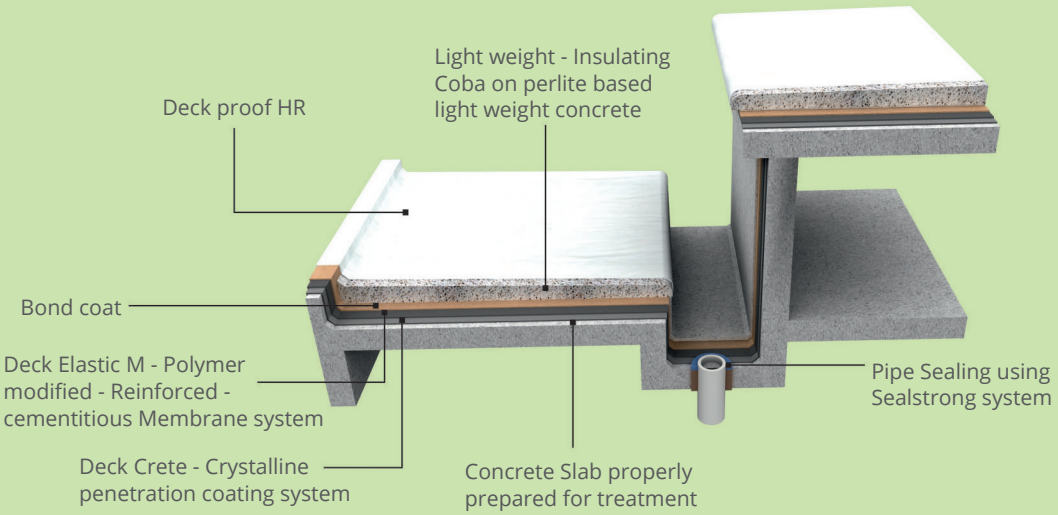
Apply primer of DECK PROOF (Deck Proof : Water = 1:2) uniformly and allow it to dry.

Apply first coat of DECK PROOF (Deck Proof : Water = 1kg : 300 grams) uniformly and allow to dry.

Apply 2nd Coat of DECK PROOF (same proportion) - when wet fix 100 gsm non-woven polyester fleece & immediately apply 3rd coat (wet in wet) to saturate the reinforcing fleece thoroughly. Allow it to dry.

Apply final coat of heat reflective coating.

Fig. 7 Waterproofing of Terrace - with Insulating coba and HR coating system



9 WATERPROOFING TREATMENT TO SWIMMING POOLS AT GROUND LEVEL

9.1 SURFACE PREPARATION :

Cleaning, wire brushing, abrasive grinding (wherever required) and washing the area to expose the original slab surface, including removing timber, nails or protruding binding wires etc. complete.

9.2 INJECTION GROUTING WITH NON-SHRINK GROUT :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below :-

I. Remove loose and spalling concrete.

ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

Iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

iv. Inject cement slurry admixed with non-shrink admixtures Einpresshilfe EH at 200 gms per bag of cement.

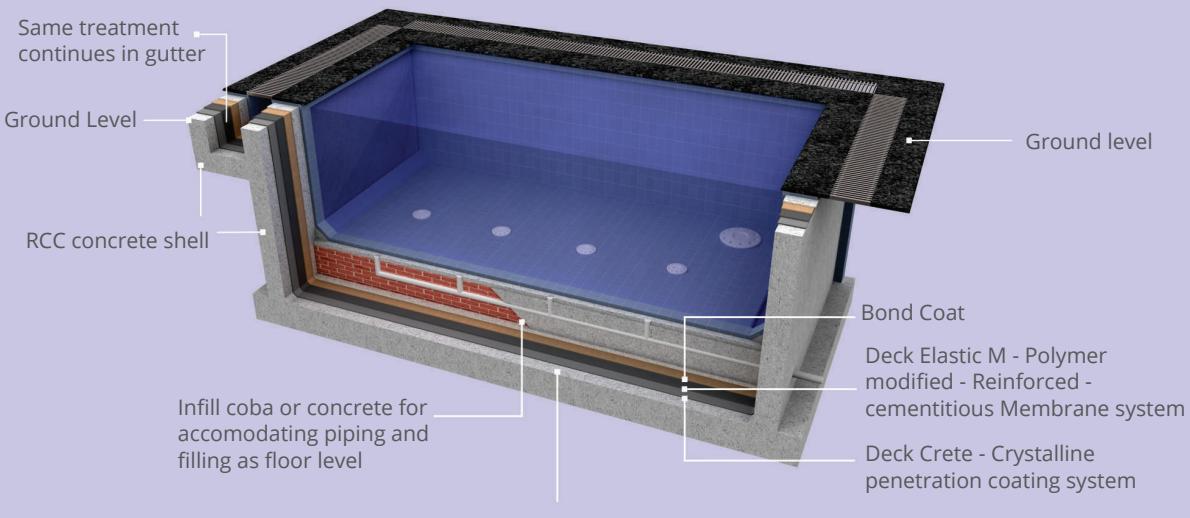
v. Remove/ cut the protruding socket tubes flush with the surface.

9.3 SEALING OF PIPES AND JUNCTIONS :

1. The pipe to be sealed for water tightness should be in place properly levelled and supported in the core so that it does not move or get distrubed during the process of sealing.

2. Ensure that there is a gap of 10 mm ± 2 mm between the core and the outer surface of pipe.

Fig. 8 Typical Ground Level Swimming Pool - Waterproofing Treatment



3. Provide a temporary bottom plug of POP or any other plugging material at the soffit of concrete slab.
4. Now, prepare a flowable and pourable Microconcrete by mixing MICROCONCRETE + DECK FLEX @

   (5% of Microconcrete + powder) + Water (15% of Microconcrete powder)
5. Pour the mixed microconcrete into the gap between the pipe and core cut upto a height 15 mm below the slab surface. Allow the filled up microconcrete to harden and gain strength for 2-3 days.
6. Now the 15 mm recessess, should be packed and filled with Pu Sealent, Epoxy Putty (steel putty) or DECK PLUG. Allow the sealent set and gain strength for 2 days.
7. Now, Finally seal the area with 6" to 8" band of DECK POLYUREA FFP flexible membrane, overlapping slab surface and pipe, (3" to 4" on either side) as per manufacturer's instructions.

9.4 PENETRANT SEALER COATING – DECK CRETE

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats as per the following methodology :

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other Foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

9.5 DECK ELASTIC M – MEMBRANE (over Deck Crete above)

Providing and applying an Elastomeric Polymer modified cementatious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing F.G. net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

PART A – POWDER

PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of **DECK ELASTIC M.**
2. Apply well mixed slurry on to a well prepared surface either by brush or Trowel and allow this **coat** to dry. (This is a self curing system. No water curing required)
3. Apply **2nd coat** ; fix **DECK NET** & Trowel with immediate **3rd coat** so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

   IMP: All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

9.6 BOND COAT :

Providing and spraying high strength polymer modified CRS mortar admixed with Deck Flex as per manufacture's instructions on to the cured DECK ELASTIC M system as an additional key and grip for subsequent plaster jacket

9.7 150 mm B.B. COBA TO FLOOR :

Providing and laying B.B. Coba of Av. 150 mm thickness using well kilned full or half bricks in C.M 1:4 admixed with Dichtament DM @ 200 ml per bag and finishing the surface as directed. This is required to conceal the piping work.

9.8 50 to 80 MM SCREED TO FLOOR :

Providing and laying 50-80 mm thick polymer modified screed concrete 1:2:2 on floor admixed with,

I. Deck flex @ 0.5 kg per bag of cement.

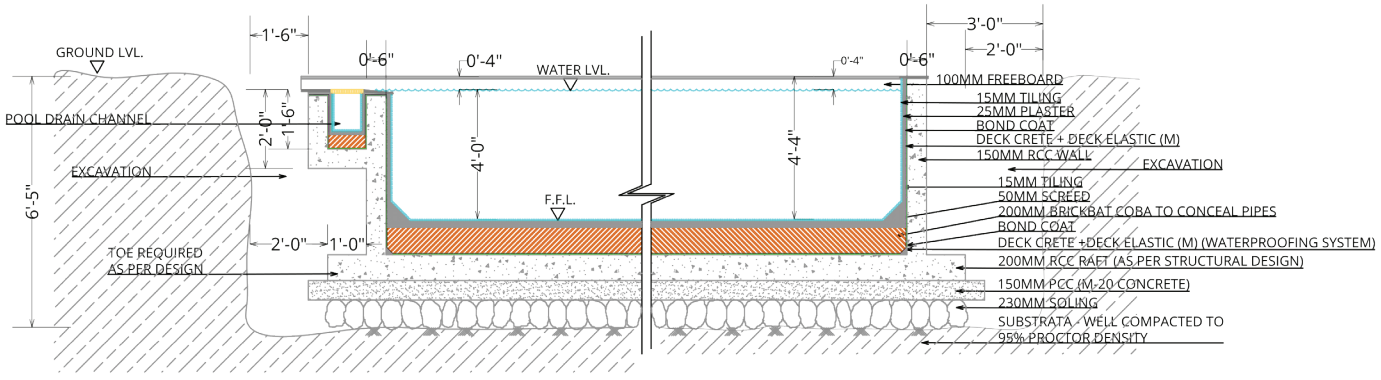
ii. P.P.Fiber @ 1 packet or 125 grams per bag of cement.

iii. Dichtament DM @ 200 ml per bag of cement including finishing the surface as IPS smooth.

9.9 25 MM JACKET PLASTER :

Providing and applying a 25 mm thick waterproof jacket plaster on wall in CM 1 : 4 admixed with, Dichtament DM @ 200 ml per bag of cement. P.P. Fiber at 1 packet (of 125 gms) per bag of cement. Deck Flex @ 0.75 kg per bag of cement.

Fig. 10 GROUND LEVEL SWIMMING POOL DETAILS



10 WATER PROOFING TREATMENT TO SWIMMING POOL, WATERBODIES, PLANTERS AT TERRACE/INTERMEDIATE LEVEL/PODIUM

10.1 SURFACE PREPARATION :

Cleaning, wire brushing, abrasive grinding (wherever required) and washing the area to expose the original slab surface, including removing timber, nails or protruding binding wires etc. complete.

10.2 INJECTION GROUTING :

a. Inspect the RCC shell thoroughly.

b. Honey combed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below.

   I. Remove loose and spalling concrete.

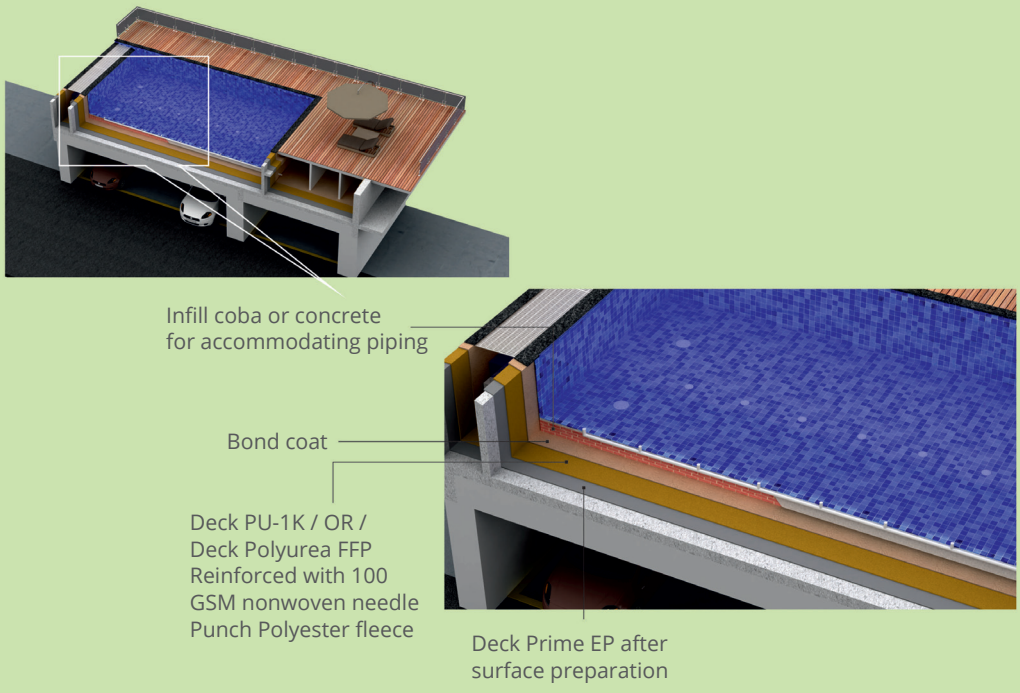
   ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

   Iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

   iv. Inject cement slurry admixed with non-shrink admixtures DECK SCA at 200 gms per bag of cement.

   v. Remove/ cut the protruding socket tubes flush with the surface.

Fig. 9 Waterproofing Treatment to Swimming Pool @ Podium Level



10.3 DECK PU 1K :

DECK PU1K (a single component polyurethane) reinforced membrane system on floor and 400 mm up on the wall

Methodology

Providing and applying a coating system of DECK PU1K on the entire surface of the podium excluding the band width at joints as per the following methodology :

- Apply DECK PRIME EP to the entire area and vertical wall up to required level – sprinkle silica sand (mesh 16/32) over the coat of DECK PRIME EP.
- Apply first coat of DECK PU1K on the surface with the help of nylon roller / brush.
- Apply 2/3rd of DECK PU1K of the second coat on the surface with the help of nylon roller / brush. Then roll out the 120 gsm polyester fleece. Remove all wrinkles and then saturate completely with remaining 1/3rd of DECK PU1K mixture as per manufacturer specification.
- Apply final coat of DECK PU1K on the surface with the help of nylon roller / brush.
- Allow the system to cure (air cure for 5 days)
- Apply DECK PRIME EP on the cured DECK PU1K membrane and sprinkle silica sand (mesh 12/16) over the wet coat DECK PRIME EP and allow it to cure for 24 hours.

10.4 BOND COAT :

Providing and spraying high strength polymer modified CRS mortar admixed with Deck Flex as per manufacture's instructions on to the cured DECK PU1K system as an additional key and grip for subsequent plaster jacket.

10.5 JACKET PLASTER :

Providing a waterproof plaster jacket of 25 mm thick. Fiber reinforced polymer modified CM 1:4 using following admixture. (For walls)

- Dichtament DM @ 200 ml. / bag of cement
- Deckflex @ 1Kg / bag of cement
- P.P. Fiber @ 1 pkt. (125 gm.) / bag of cement

10.6 BOTTOM FILLING COBA FOR CONSEALING PIPE LINES :

Providing B.B. Coba of 150 mm thick on floor to accommodate drain, floor inlet & related piping. Admixture for coba - Dichtament DM @ 200 ml / bag of cement.

10.7 FLOOR SCREED :

Providing 40 mm protection screed of 1:2:2 on floor admixed with

- Dichtament DM @ 200 ml. / bag of cement
- Deckflex @ 1Kg / bag of cement
- P.P. Fiber @ 1 pkt. (125 gm.) / bag of cement

10.8 SEALING OF PIPES & CONDUITS PASSING THROUGH RCC SHELL BY DECK POLYUREA FFP SYSTEM.

1. The pipe to be sealed for water tightness should be properly levelled and supported in the core so that it does not move or get distrubed during the process of sealing.

2. Ensure that there is a gap of 10 mm ± 2 mm between the core and the outer surface of pipe.

3. Provide a temporary bottom plug of POP or any other plugging material at the soffit of concrete slab.

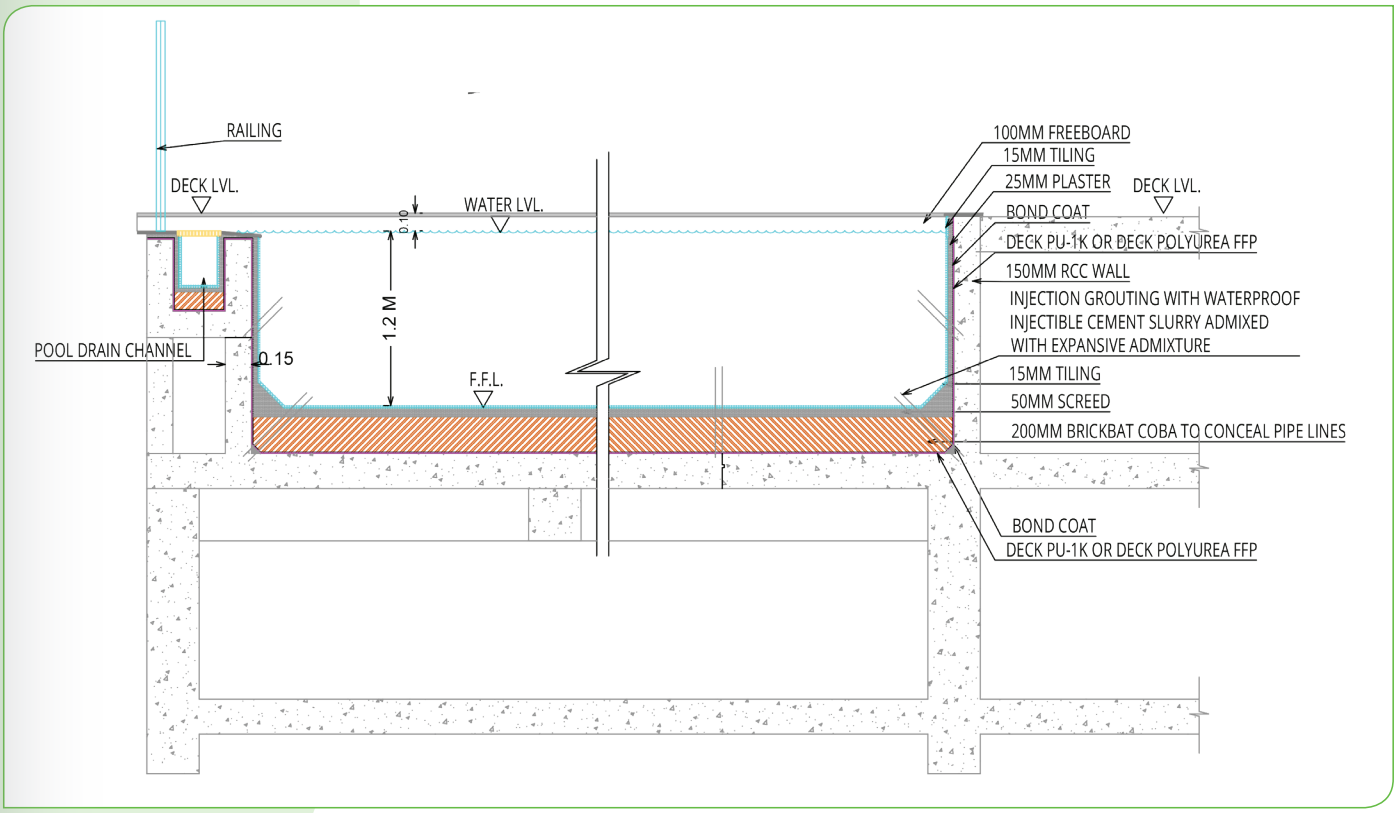
4. Now, prepare a flowable and pourable Microconcrete by mixing MICROCONCRETE + DECK FLEX @ (5% of Microconcrete) + Water (15% of Microconcrete powder)

5. Pour the mixed microconcrete into the gap between the pipe and core cut upto a height 15 mm below the slab surface. Allow the filled up microconcrete to harden and gain strength for 2-3 days.

6. Now the 15 mm recessess should be packed and filled with PU Sealent, Epoxy Putty (steel putty) or DECK PLUG. Allow the sealent set and gain strength for 2 days.

7. Lastly, seal the area with 8" to 10" band of DECK POLYUREA FFP flexible membrane, overlapping slab surface and pipe, (4" to 5" on either side) as per manufacturer's instructions.

Fig. 10 TERRACE / PODIUM LEVEL SWIMMING POOL DETAILS



11 WATERPROOFING TO CHAJJA, CANOPY, OPEN TERRACES & GUTTERS.

11.1 CHAJJA :

A. PRE-TREATMENT WORK :

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment

2. The concrete surfaces should be thoroughly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries, timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease, or any other foreign materials.

B. PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component **DECK CRETE** in two coats as per the following methodology :

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix **DECK CRETE (POWDER)** and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of **DECK CRETE** slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of **DECK CRETE** slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

C. FLEXIBLE MEMBRANE SYSTEM OF DECK PROOF (OVER DECK CRETE) :

Providing and applying an acrylic HIGH BUILD flexible (liquid applied) membrane system of **DECK PROOF** sandwiching 100 gsm nonwoven polyester fleece as per manufacturer's instructions in the following sequence.

1. Clean the area thoroughly. Dampen the surface by brushing water.
2. Apply primer DECK PROOF primer (Deck Proof : Water = 1:2) in one coat.
3. Apply first coat of DECK PROOF (Deck Proof : Water = 1kg : 300 grams) uniformly and allow to dry.
4. Apply 2nd Coat of DECK PROOF (same proportion) - when wet fix 100 gsm non-woven polyester fleece & immediately apply 3rd coat (wet in wet) to saturate the reinforcing fleece thoroughly. Allow it to dry.
5. Apply final coat (same proportion) allow it to dry.

11.2 CANOPY AND OPEN TERRACES :

A. PRE-TREATMENT WORK

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment

2. The concrete surfaces should be thoroughly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries, timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease or any other foreign materials.

B. INJECTION GROUTING :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below.

I. Remove loose and spalling concrete.

ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

Iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

iv. Inject cement slurry admixed with non-shrink admixtures DECK SCA at 200 gms per bag of cement.

v. Remove/ cut the protruding socket tubes flush with the surface.

C. SLAB & CONSTRUCTION / COLD JOINTS :

The cracks should be treated by adopting to the following methodology :

A. Clean, grind and thoroughly wash the area around and along the length of crack thoroughly.

B. Cut and open a dove – tail or U -shaped groove along the length of crack to get a 10 mm x 15 mm section groove. Clean the groove by air under pressure or by blower and then wash thoroughly and allow to dry of.

C. Now the fill the groove with a non shrink cementitious polymer modified filler grout **'DECK GROUT '** and flush the top in level with adjecent slab surface. Cure the system for 3 days.

D. Cover the filled up crack with a 300 mm BAND (of any of the following) Keeping 150 mm band width on either side of the repaired crack – section.

I. BAND OF DECK PU 1K (Single component polyurethane membrane sandwiched with 120 gsm non woven needle punch polyester fabric.)

II. BAND OF DECK POLYUREA FFP (Liquid applied hybrid polyurea membrane sandwiched with non woven needle punch polyester fabric) All the 300 mm band with systems are self curing membrane.

All the 300 mm band with systems are self curing membrane.

D. PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating polymer modified single component of DECK CRETE in two coats as per the following methodology.

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other Foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.

5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

E. ELASTOMERIC / FLEXIBLE MEMBRANE DECK ELASTIC M (over Deck Crete above) :

Providing and applying an Elastomeric Polymer modified cementatious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

PART A – POWDER

PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowelable homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of **DECK ELASTIC M**.
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this **coat** to dry. (This is a self curing system. No water curing required)
3. Apply **2nd coat** ; fix **DECK NET** and trowel with immediate **3rd coat** so as to sandwich the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

IMP : All overlaps to have 100 mm min overlapping width / length and staggered. No water curing - since the system is self curing.

F. 50 to 80 MM SCREED :

Providing and laying 50-80 mm thick polymer modified screed concrete 1:2:2 on floor admixed with,

I. Deck flex @ 0.5 kg per bag of cement.

ii. P.P.Fiber @ 1 packet or 125 grams per bag of cement.

Iii. Dichtament DM @ 200 ml per bag of cement including finishing the surface as IPS smooth.

G. BRICK BAT COBA :

Providing and laying Brick Bat Coba in cement mortar 1:4 or admixted with Dichtament DM at 200 ml per bag of cement & P.P. Fiber @ 125 grams per bag of cement laid in proper slope with 15 to 20 mm wide staggered brick joints using well kilned bricks & finishing the surface as IPS smooth with false chequered pattern (300mm x 300 mm) or as directed.

11.3 GUTTERS :

A. PRE-TREATMENT WORK :

1. All construction joints, wall and floor junctions, honey combed pockets should be grouted with waterproof cementitious slurry grout by using slurry grout pumps and areas be repaired with polymer modified repair mortars before starting the main waterproofing treatment
2. The concrete surfaces should be thorouhly cleaned, by wire brushing; grinding & washing. It should be ensured that all loose slurries, timber, nail or protruding wire embedments are removed properly. The surface for treatment should be free from oil, grease, or any other foreign materials.

B. INJECTION GROUTING :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, vertical horizontal junctions, construction and cold joints need to be grouted as below.

I. Remove loose and spalling concrete.

ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

Iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

iv. Inject cement slurry admixed with non-shrink admixtures DECK SCA at 200 gms per bag of cement.

v. Remove/ cut the protruding socket tubes flush with the surface.

C. CRACKS IN CONCRETE SLAB & CONSTRUCTION / COLD JOINTS :

The cracks should be treated by adopting to the following methodology :-

A. Clean, grind and thoroughly wash the area around and along the length of crack thoroughly.

B. Cut and open a dove – tail or U-shaped groove along the length of crack to get a 10 mm x 15 mm section groove. Clean the groove by air under pressure or by blower and then wash thoroughly and allow to dry of.

C. Now the fill the groove with a non shrink cementatious polymer modified filler grout 'DECK GROUT ' and flush the top in level with adjecent slab surface. Cure the system for 3 days.

D. Cover the filled up crack with a 300 mm BAND (of any of the following) Keeping 150 mm band width

I. **BAND OF DECK PU 1K** (Single component polyurethane membrane sandwiched with 120 gsm non woven needle punch polyester fabric.)

II. **BAND OF DECK POLYUREA FFP (Liquid applied hybrid polyurea membrane sandwiched with non woven needle punch polyester fabric)** All the 300 mm band with systems are self curing membrane.

D PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating of polymer modified, single component DECK CRETE in two coats as per the following methodology :-

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

E. ELASTOMERIC / FLEXIBLE MEMBRANE DECK ELASTIC M (over Deck Crete above) :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

PART A – POWDER

PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowelable homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of DECK ELASTIC M.
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this coat to dry. (This is a self curing system. No water curing required)
3. Apply 2nd coat ; fix DECK NET and trowel with immediate 3rd coat so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours.

   (3 days) **IMP :** All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

F. BOND COAT :

Providing and spraying high strength polymer modified CRS mortar admixed with Deck Flex as per manufacturer's instructions on the cured DECK ELASTIC M system as an additional key and grip for subsequent plaster jacket

G. PLASTER JACKET ON (WALLS & GUTTERS) :

Providing & applying a Polymodified waterproof plaster jacket walls in CM 1:4 admixed with -

a. Dichtament DM internal water proof plasticizer @ 200 ml/per bag of cement

b. Deck flex (Liquid polymer component) @ 500 ml/per bag of cement.

c. P.P. fibre @ 125 gms per bag of cement and finishing the surface smooth as IPS.

Cure the area for 7 days by wet hessian cloth/curing compound

H. BRICK BAT COBA ON FLOOR – LAID TO SLOPE TOWARDS DRAIN :

Providing and laying Brick Bat Coba in cement mortar 1:4 or admixed with Dichtament DM at 200 ml per bag of cement & P.P. Fiber @ 125 grams per bag of cement laid in proper slope with 15 to 20 mm wide staggered brick joints using well-kilned bricks & finishing the surface as IPS smooth with false chequered pattern (300mm x 300 mm) or as directed.

12 SEALING OF PIPES PASSING THROUGH THE CORE OF CONCRETE

Methodology :

1. The pipe to be sealed for water tightness should be in place properly levelled and supported in the core so that it does not move or get distrubed during the process of sealing.
2. Ensure that there is a gap of 10 mm ± 2 mm between the core and the outer surface of pipe.
3. Provide a temporary bottom plug of POP or any other plugging material at the soffit of concrete slab.
4. Now, prepare a flowable and pourable Microconcrete by mixing MICROCONCRETE + DECK FLEX @ (5% of Microconcrete + powder) + Water (15% of Microconcrete poweder)
5. Pour the mixed microconcrete into the gap between the pipe and core cut upto a height 15 mm below the slab surface. Allow the filled up microconcrete to harden and gain strength for 2-3 days.
6. Now the 15 mm recessess, should be packed and filled with Pu Sealent, Epoxy Putty (steel putty) or DECK PLUG. Allow the sealent set and gain strength for 2 days.
7. Now, Finally seal the area with 6" to 8" band of DECK POLYUREA FFP flexible membrane, overlapping slab surface and pipe, (3" to 4" on either side) as per manufacturer's instructions.

Fig. 11 Pipe Sealing In Toilets

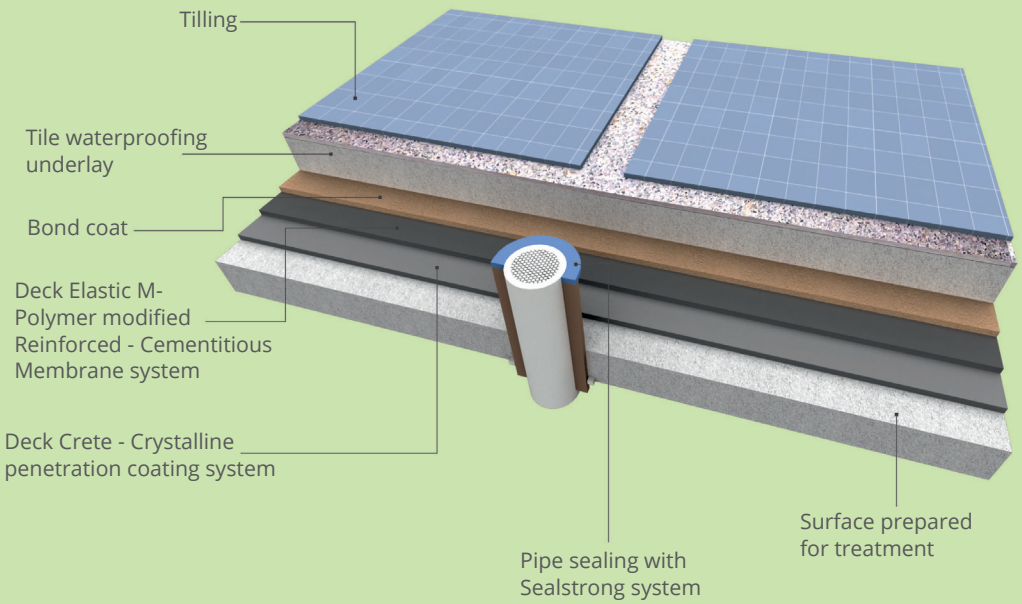
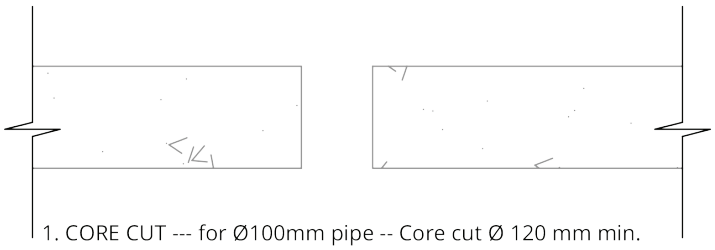


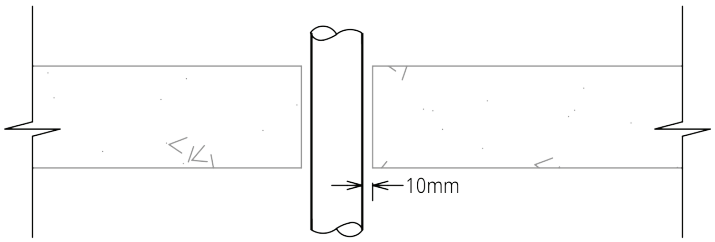
Fig. 12 PIPE SEALING

Fig. 12A



1. CORE CUT --- for Ø100mm pipe -- Core cut Ø 120 mm min.

Fig. 12B



2. PIPE IN PLACE : Check pipe in place, line & level with minimum 10 mm gap all around

Fig. 12C

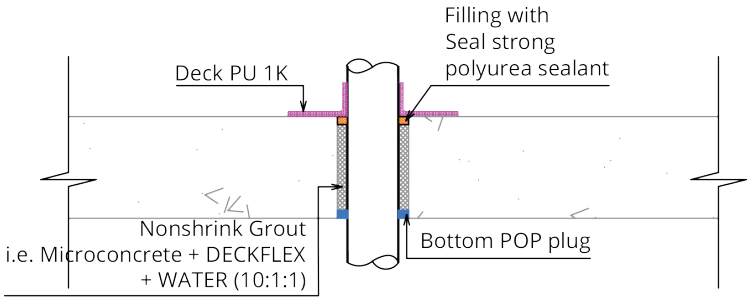


Fig. 12D

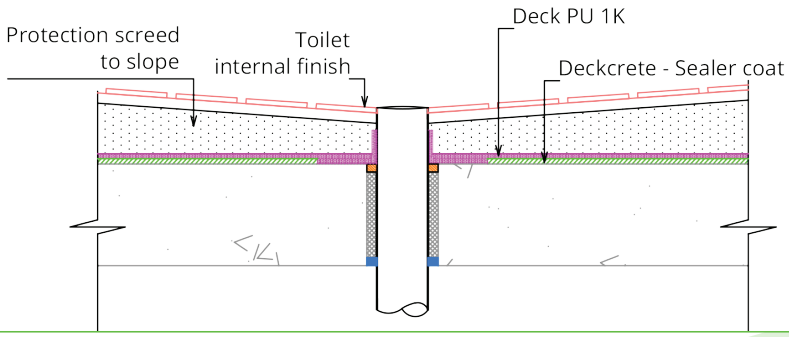


Fig. 13 DRAIN OUTLET DETAILS AT TERRACE LEVEL

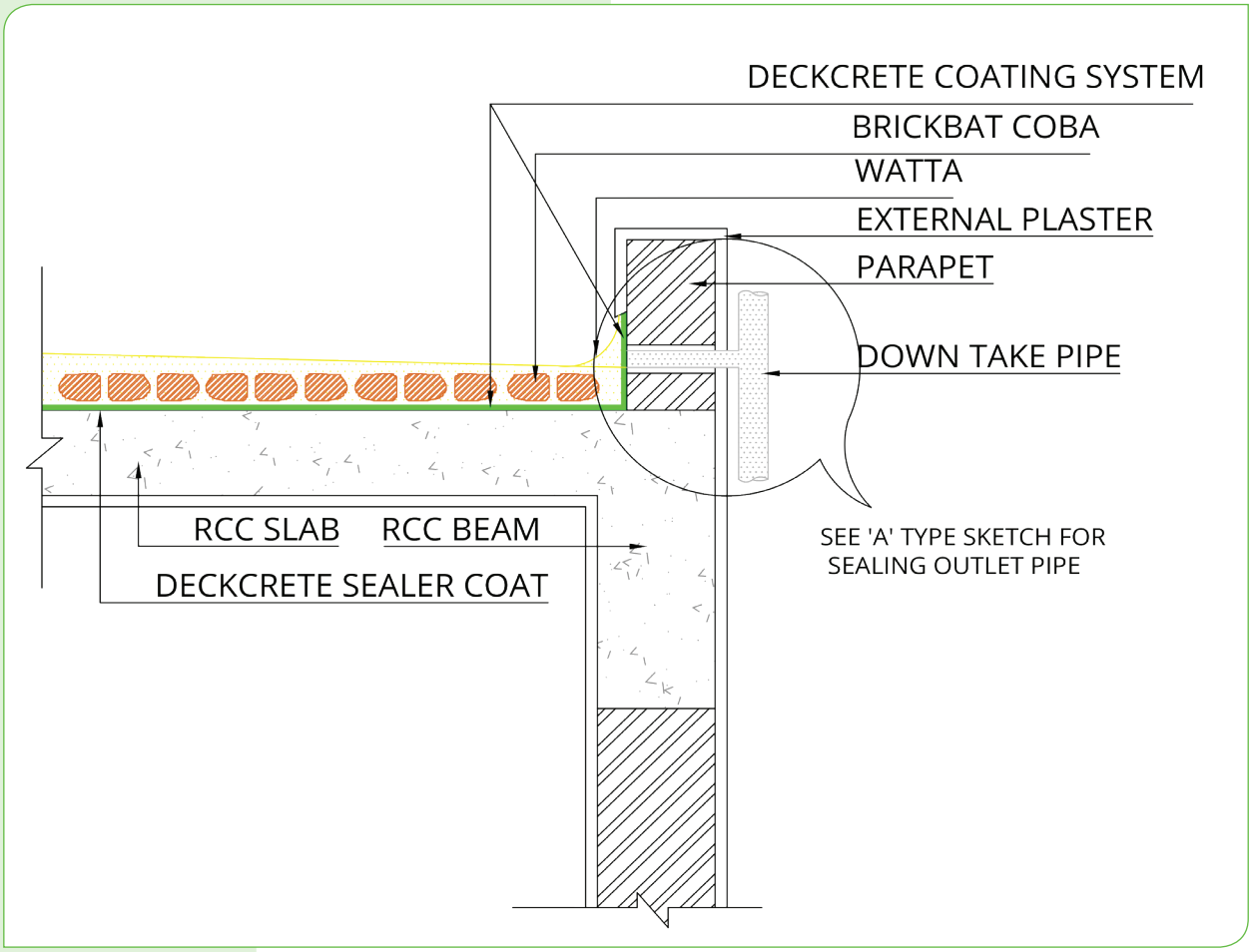


Fig. 14 DRAIN OUTLET DETAILS THROUGH PARAPET UPSTAND

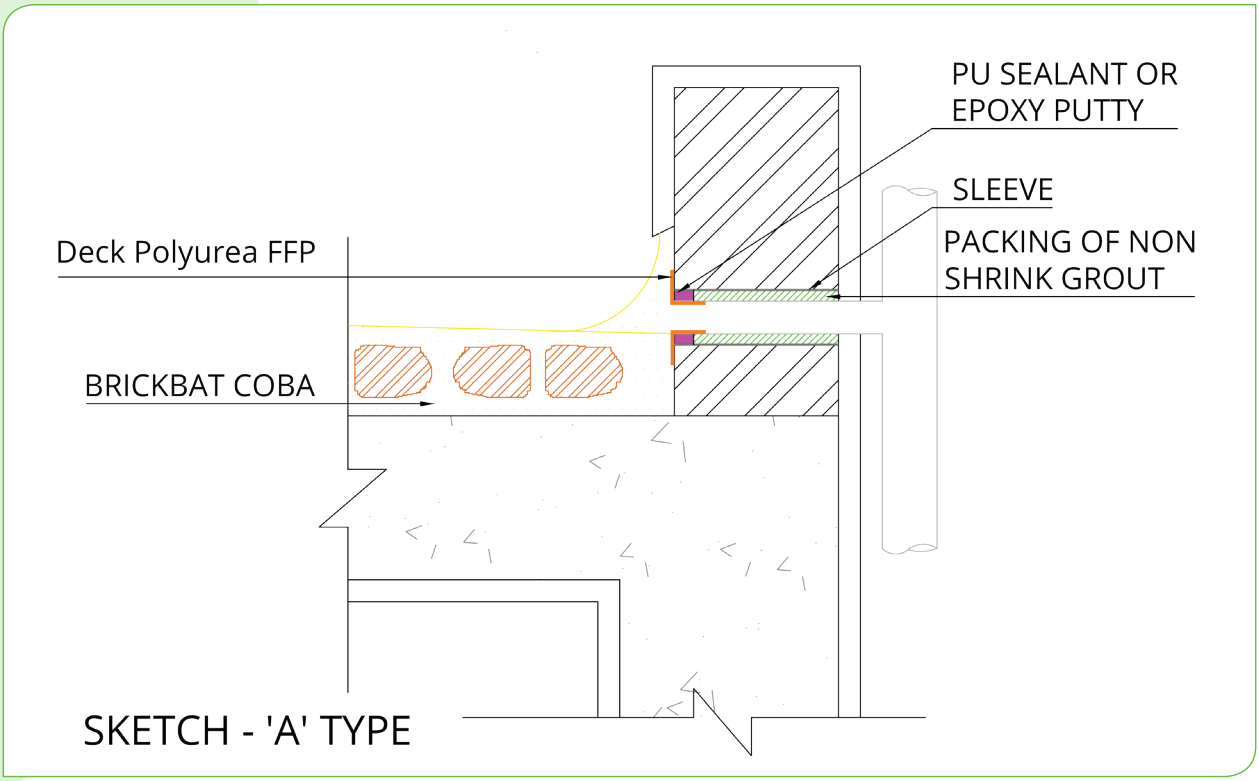
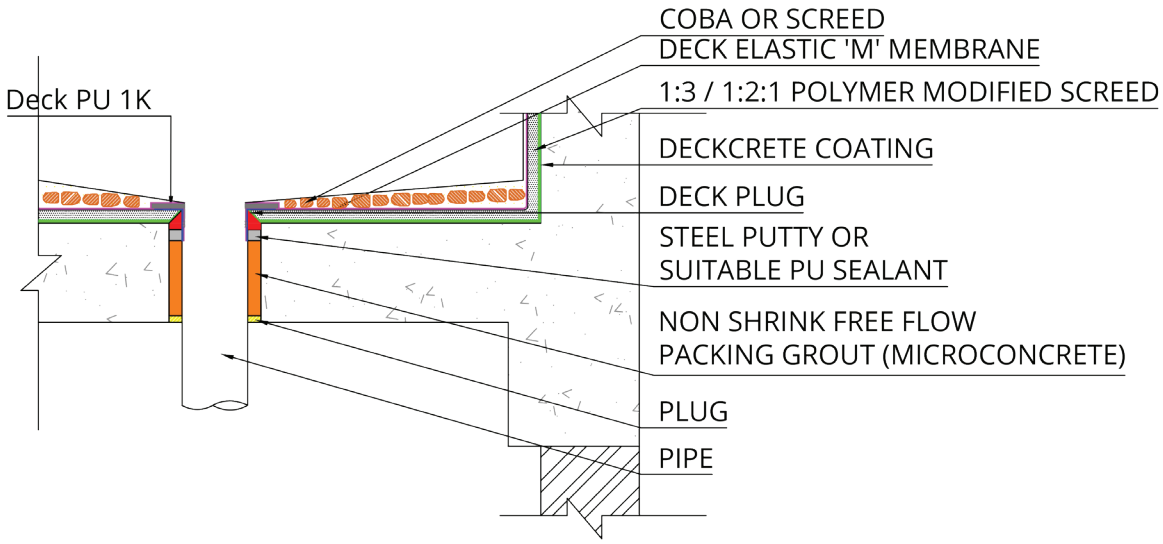


Fig. 15 DRAIN OUTLET DETAILS THROUGH THE ROOF SLAB



13 WATERPROOFING TREATMENT TO EXPANSION JOINT (VERTICAL/HORIZONTAL)

It is necessary to carry out the EXPANSION OR SEISMIC JOINT TREATMENT in view of the technical Requirements of specific joints and also the architectural aesthetics when the joint is carried-up or built up to match with the final floor / wall finishing provided.

The Sequence of operations to carry out the treatment should strictly be as below :

The treatment goes on to the STRUCTURALLY SOUND SUBSTRATE i.e. concrete slab – columns – beams and not on the made up or repaired surfaces.

The substrate is thoroughly prepared for treatment by using :

a. Grinders

b. Floor Grinding Machines

c. Vacuum cleaning – cum- washing machines, in order to make it absolutely clean surface for effective bonding.

In view of the technical / structural requirement of the joint we select the materials and formulate the system of joint treatment. A special attention is given to :

- Required flexibility
- Tensile strength
- Tear Resistance
- Bond – strength and bonding area required.

Since it's a Membrane – Built-up expansion joint treatment, its essential to decide the thickness built-up of membrane itself. It should provide desired expansive capacity (flexibility) and adequate Tear Resistance with excellent bonding on the sides of expansion joints. For effective bonding, it is the bonding area provisions which will stand for duty under distress and misuse during the its life.

In view of above, it is recommended to use high performance materials as detailed below :

1. (Reinforced) DECK POLYUREA-FFP- a highly flexible, high bond strength, high tear resistance membrane system.
2. DECK PRIME EP – a high performance, epoxy bonding system for priming the surface.
3. And, depending upon the requirement for Tensile strength, we recommend, the reinforcement in the membrane i.e.

   a. Non-woven needle punch- Polyester reinforcement – 120 gsm; 150 gsm; 200 gsm.

      OR

   b. Non-woven / multidirectional / carbon -fiber-mat reinforcement for very high tensile strength requirement.

These are thoroughly saturant reinforcing media for high built up layers of flexible Polyurea membrane systems.

4. Filler Boards and Bond Breaker Rods(to bridge the gap of expansion joint, the core of the treatment)

   - Essential that the expansion joint filler boards are Resilient and deliver 95% of compression recovery after deflection.
   - Weather Resistant
   - Closed cell composition
   - Chemically Resistant

Fig. 16 Expansion joint treatment at Terrace Level

Products Used
1. Deck Prime EP
2. Deck Polyurea FFP
3. High density closed cell foam as a breaker rod

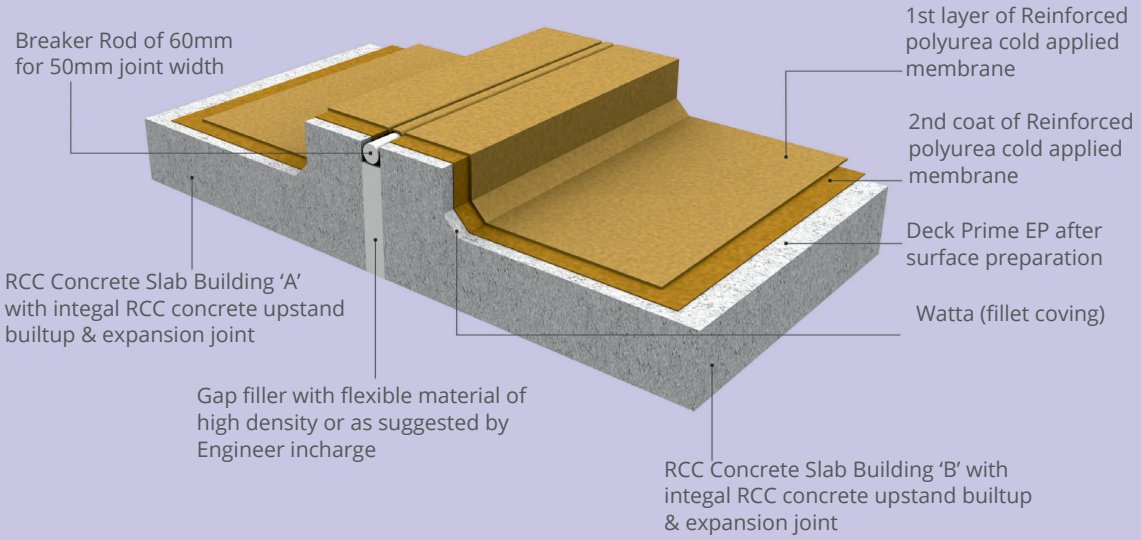


Fig. 17 Expansion joint treatment at Terrace Level with protection

Products Used
1. Deck Prime EP
2. Deck Polyurea FFP
3. High density closed cell foam as a breaker rod

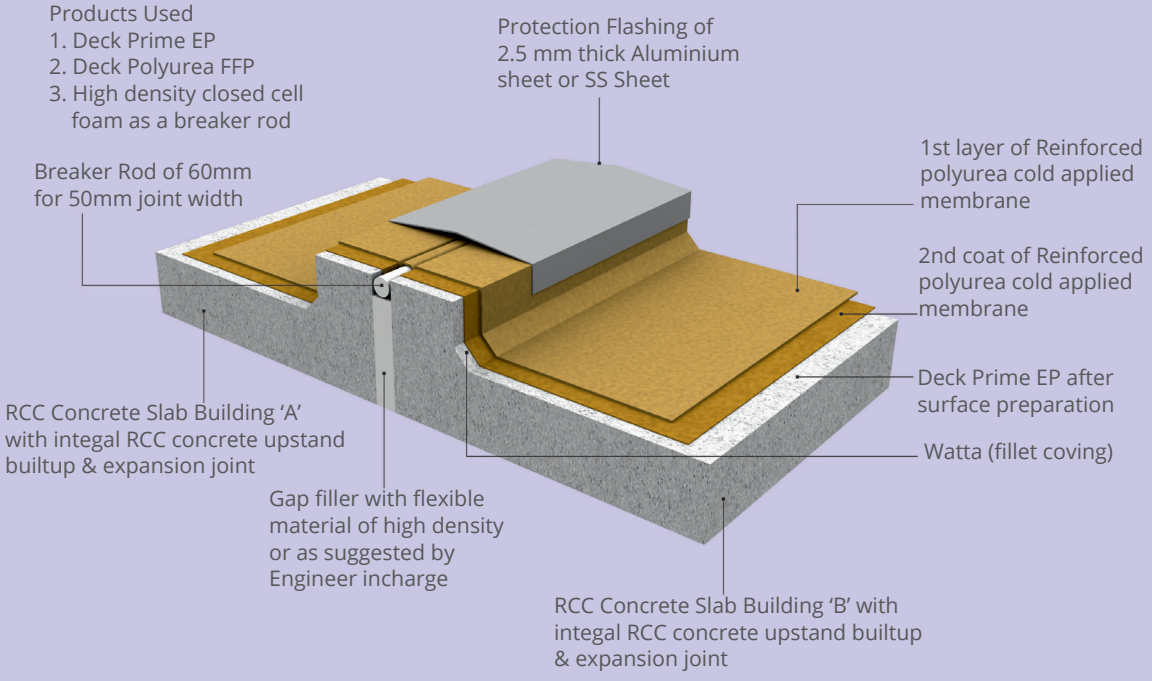


Fig. 18 EXPANSION JOINT ON VERTICAL WALL

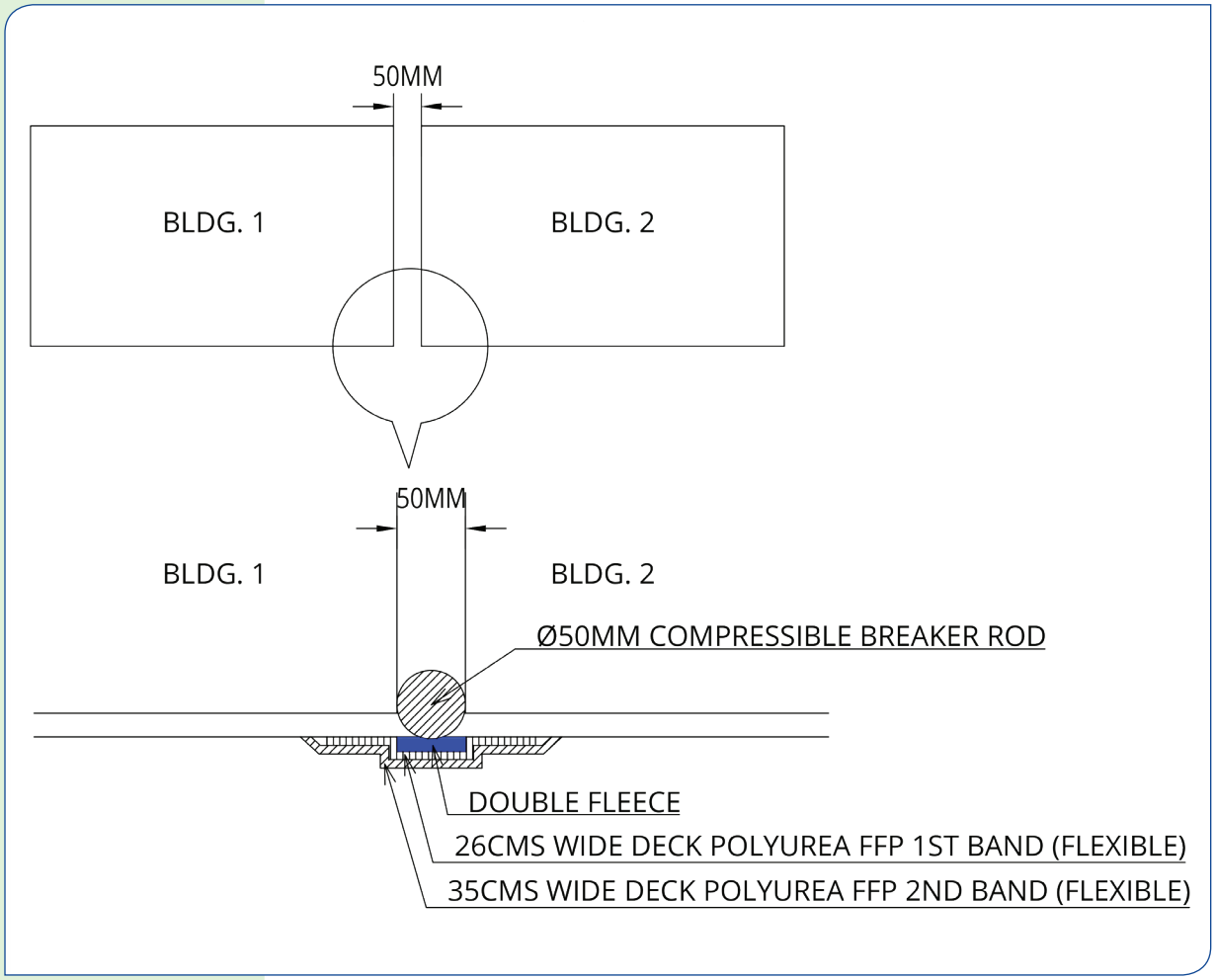


Fig. 19 EXPANSION JOINT AT PODIUM LEVEL

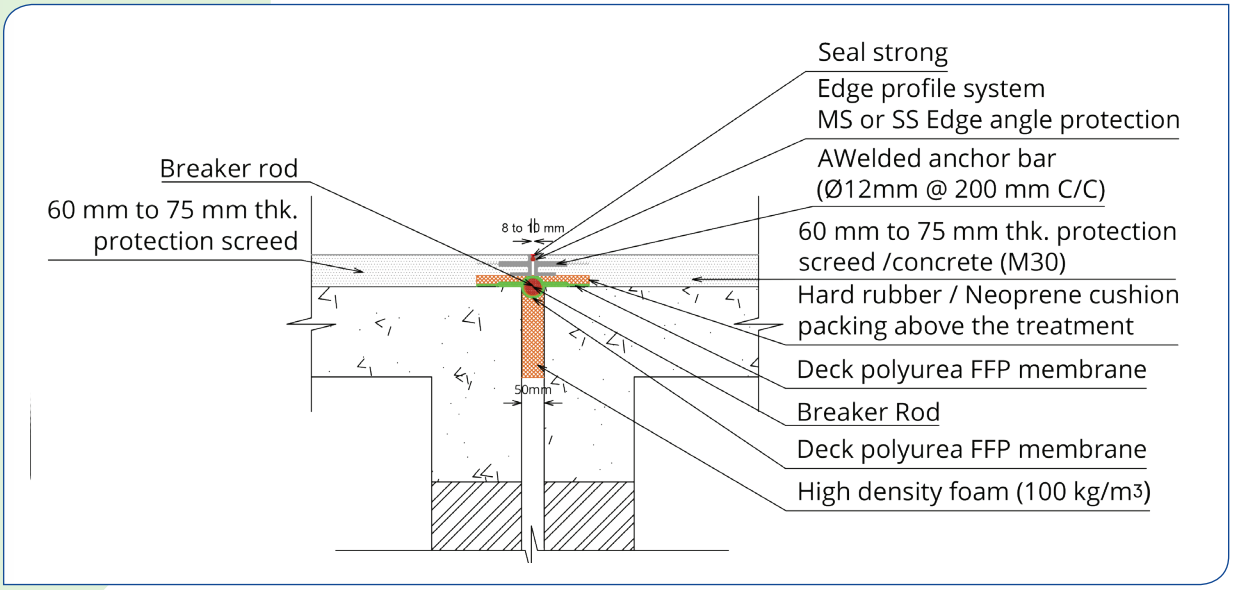
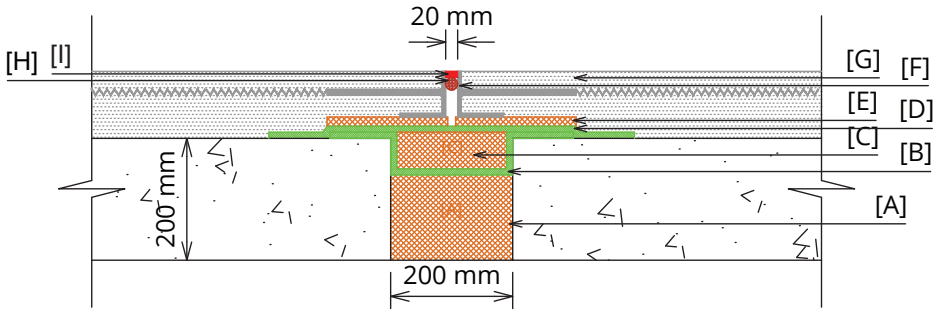


Fig. 20 SEISMIC JOINT / EXPANSION JOINT



Seismic joint

[A] Closed cell high density compressible foam sheet

[B] 1st layer of Deck polyurea FFP

i) Deck prime EP with sprinkled fine quartz sand

ii) Deck polyurea FFP 1st coat.

iii) Deck polyurea FFP sandwiched with 150 / 175 GSM fleece.

[C] High density compressible foam sheet

[D] 2nd layer of Deck polyurea FFP

i) Deck prime EP with sprinkled fine quartz sand

ii) Deck polyurea FFP 1st coat.

iii) Deck polyurea FFP sandwiched with 150 / 175 GSM fleece.

[E] Hard rubber / Neoprene cushion packing above the treatment

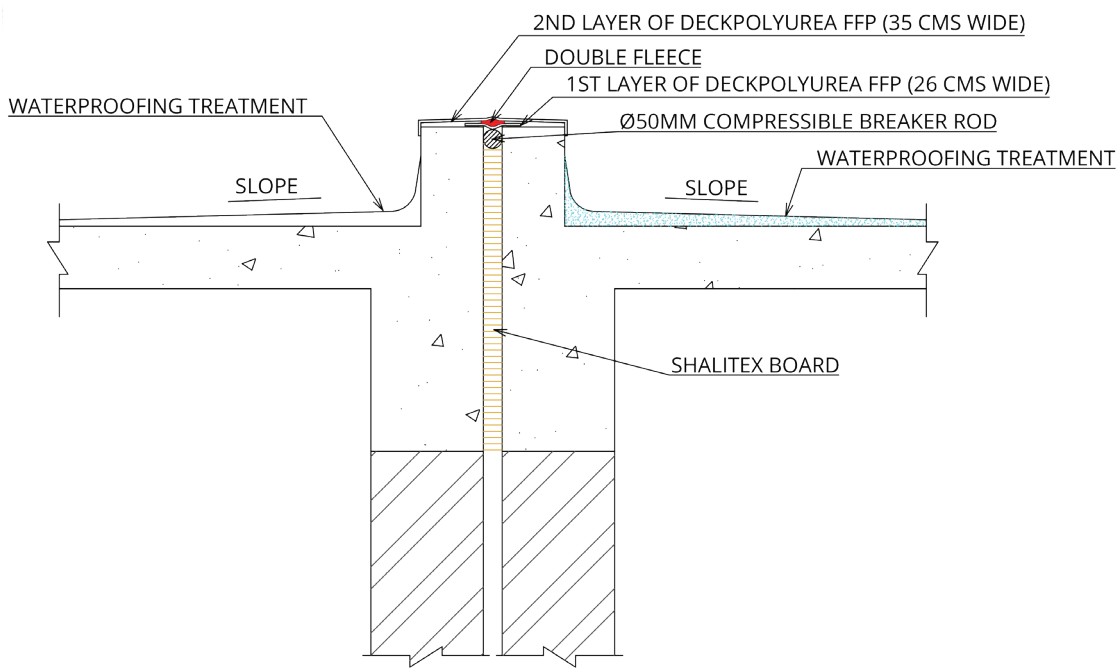
[F] Edge profile system MS or S.S. Edge angle protection, welded with anchor Ø12mm @ 200 mm C/C (further tied to concrete screed reinforcement

[G] 75 mm thk. 1:2:1 screed (M30)

[H] Breakar rod

[I] 20mm X 10mm / 30mm x 15mm Sealstrong

Fig. 23 EXPANSION JOINT AT TERRACE LEVEL



Methodology :

The vertical as well as the horizontal expansion joints will be sealed using double fleece system of DECK POLYUREA FFP.

a. Applying DECK PRIME EP @ 250 gm/ sqm on properly prepared surfaces adjoining the joint.

b. Applying across the joint bottom layer DECK FLEECE 120 (26.5 cm wide for joint width up to 50 mm & 35 cm for joint width upto 100 mm) soaked in DECK POLYUREA FFP Mix prepared as per manufacturer's instruction.

c. Placing of Polypropylene backer rod (density 100 Kg/ cu.m.) of suitable size over the bottom layer in the joint location.

d. Applying across the joint top layer DECK FLEECE 120 (35 cm wide for joint width up to 50 mm and 52.5 cm for joint width up to 100 mm) soaked in DECK POLYUREA FFP Mix prepared as per manufacturer's instructions.

e. Applying top coat of DECK PRIME EP @ 200 gm/sqm on the top in case any alkaline treatments i.e. Cement concrete / plaster / earth fill etc is to be provided on the POLYUREA sealing.

The Built-up of Expansion Joint to the finished surface :

This is also a very critical activity and involves structural elements to build up the depth, from structural slab level to finished (Tiled / Marble / Paving) level. Especially on podiums, this becomes vitally important procedure and will always need Structural and Architectural approval. Tailor-made solutions for such BUILT UP -OVER TREATED EXPANSION JOINT – KEEPING THE TECHNICAL REQUIREMENT UNALTERED are essential.

14 WATERPROOFING TREATMENT TO OVERHEAD WATER TANK (ON INTERNAL SURFACES)

14.1 SURFACE PREPARATION :

Providing, cleaning, wirebrushing, abrasive grinding (wherever required) and washing the area to expose the original slab surface, including removing timber, nails or protruding binding wires etc. completely.

14.2 INJECTION GROUTING :

a. Inspect RCC shell thoroughly.

b. Honeycombed pockets, vertical horizontal junctions, construction and cold joints need to be grouted as below.

i. Remove loose and spalling concrete.

ii. Make pocket 4" dia or 6" for injection sockets exposing the nearest reinforcement bar.

iii. Allow the sockets to firmly fix and gain rigidity for a day or two.

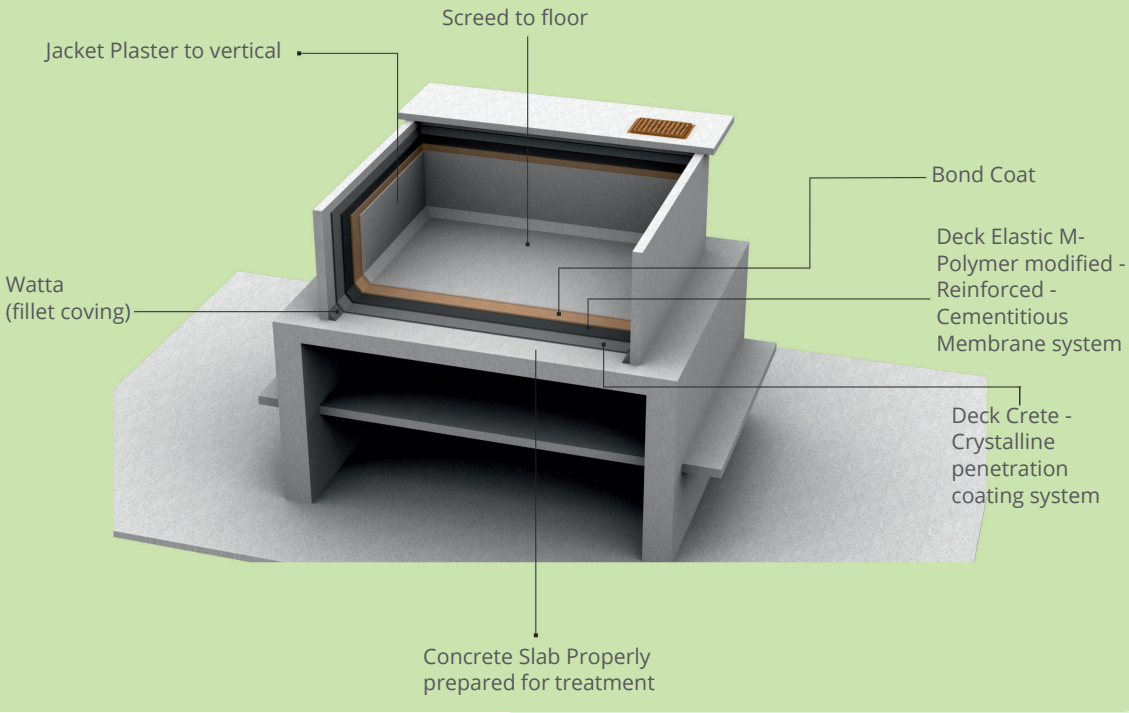
iv. Inject cement slurry admixed with non-shrink admixture Einpresshilfe EH at 200 gms per bag of cement.

v. Remove / cut the protruding socket tubes flush with the surface.

14.3 TREATMENT TO CONSTRUCTION JOINTS :

a. Providing and treating the construction joints after injection grouting as above (14.2) with a 300 mm BAND DECK PU 1K OR DECK POLYUREA FFP (150 mm on either side of joint) all along the joint as per manufacturer's instructions including providing a top key coat of Deck Prime EP & Quartz sand OR

Fig. 21 Waterproofing Treatment to over head water tank



b. Providing an Expanded Lath sandwiched treatment of high strength ready to use polymer modified fine mortars in a band width of 300 mm (150 mm on either side of joint) all along the joint as per following methodology.

1. Clean the surface over the joint.
2. Apply 6 mm thick polymer modifed fine mortar in a band of 400 mm (200 mm on either side of joint) and cure it for a day.
3. Fix 300 mm wide Expanded Metal lath by screws (¾" deep)
4. Apply a second coat of 6 mm thick polymer modified fine mortar covering and sandwiching expament.

14.4 PENETRANT SEALER COATING :

Providing and applying a crystalline pentrant – polymer modified hydraulically setting slurry coating on floor vertically on wall. The coating to be applied by brush in two coats as per manufacturer's instructions.

Product : DECK CRETE

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

14.5 ELASTOMERIC / FLEXIBLE MEMBRANE DECK ELASTIC M :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

PART A – POWDER

PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of DECK ELASTIC M.
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this coat to dry. (This is a self curing system. No water curing required)
3. Apply 2nd coat ; fix DECK NET & trowel with immediate 3rd coat so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

IMP : All overlaps to have 100 mm min overlapping width / length and staggered.

No water curing - since the system is self curing

14.6 BOND COAT :

Providing and spraying high strength polymer modified CRS mortar admixed with Deck Flex as per manufacturer's instructions on the cured DECK ELASTIC M system as an additional key and grip for subsequent plaster jacket

14.7 WATERPROOF JACKET (ON WALLS) :

Providing and applying a 25 mm thick waterproof jacket plaster on walls in CM 1:4 admixed with, Dichtament DM @ 200 ml per bag of cement.

P.P. Fiber @ 1 packet (of 125 gms) per bag of cement.

Deck Flex at 1kg per bag of cement.

14.8 WATERPROOF SCREED ON FLOOR :

Providing and laying 80 mm thick polymer modifed screed concrete 1:2:2 on floor admixed with,

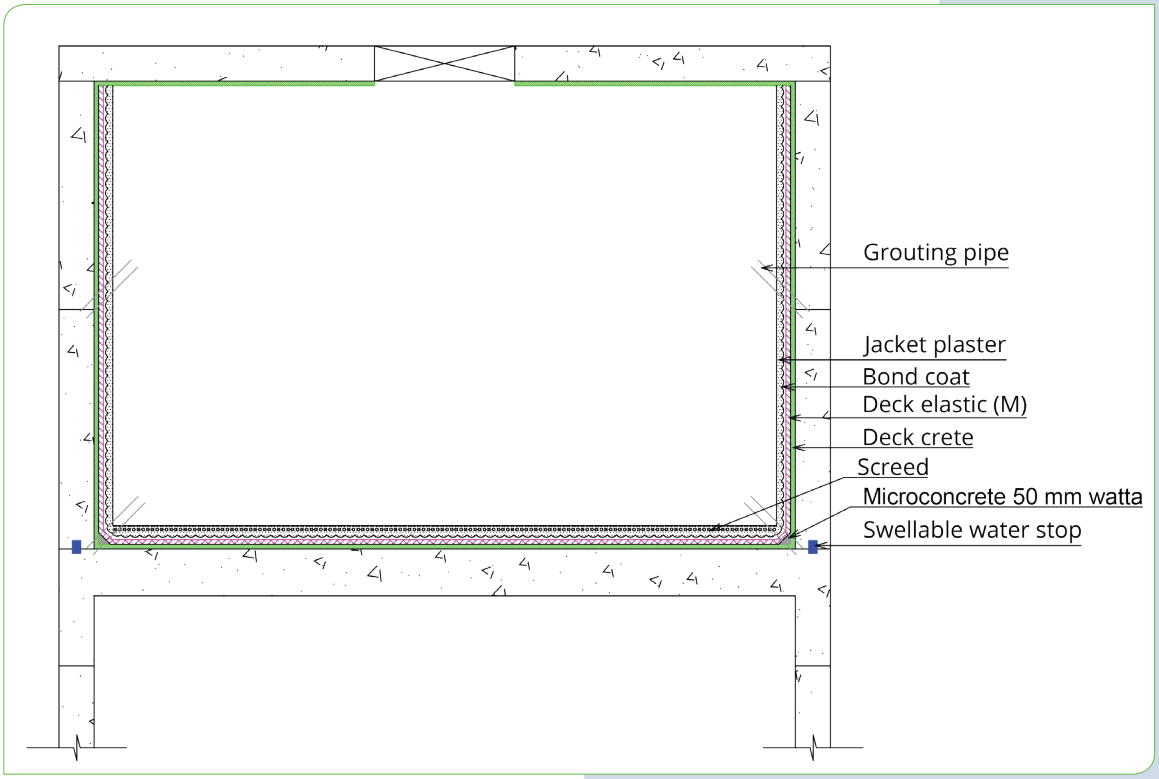
i. Deck Flex @ 1kg per bag of cement.

ii. P.P. Fiber @ 1 packet or 125 grams per bag of cement.

Iii. Dichtament DM @ 200 ml per bag of cement including finishing the surface as IPS smooth.

14.9 CURE THE AREA BY FILLING WATER IN THE RCC TANK

Fig. 22 OVERHEAD WATER TANK



15 WATERPROOFING TREATMENT TO UNDER GROUND WATER TANK

15.1 EXTERNAL TREATMENT – ON BASE :

The surface on which the waterproofing treatment is to be carried out below footing Raft slab should be -

i. A structurally sound concrete surface (M 20 grade Min.)

ii. Should be thoroughly cleaned up and should be free from all loose scaling mortars or concrete scales, nails, binding wire protrusions, timber pieces oils, grease or any other foreign materials.

iii. In the event of up lift consideration, suitable pressure release piping grid, should be provided for post injection grouting with cement slurry under 1 to 1.5 kg per Sq.CM pressure grouting system.

PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating polymer modified single component of DECK CRETE in two coats as per the following methodology :

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other Foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5 .Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.Tie the raft reinforcement.

Sprinkle / Broadcast DECK CRETE powder uniformly through the reinforcement on to coated floor surface @ 1.5 kg per Sq.m

15.2 EXTERNAL TREATMENT – ON RETAINING WALL :

Construction joint treatment at wall and floor junction and at intermediate construction joints :

1. Clean the joint thoroughly.
2. During concrete casting of next lift, provide a Sealing Layer of polymer modified Microconcrete, 6mm thick slurry. Allow the joint to cure before further treatment
3. Grouting and Pluging of voids by Deck Plug
4. Providing Deck Elastic M – 300 mm to 400 mm band on to the construction joint reinforced with Deck Net.
5. Providing bond coat of Deck CRS bonding coat for external plaster.

15.3 TREATMENT AFTER CASTING OF RCC WALL :

OPTION 1

A. SURFACE PREPARATION :

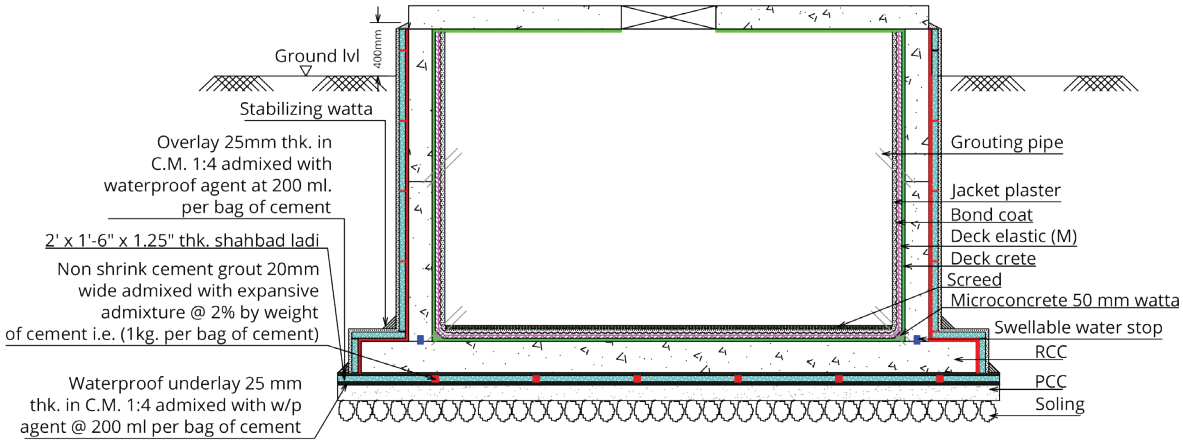
Providing, cleaning, wirebrushing, abrasive grinding (wherever required) and washing the area to expose the original slab surface, including removing timber, nails or protruding binding wires etc. completely.

B. PENETRANT SEALER COATING – DECK CRETE :

Providing and applying a crystalline penetrant sealer coating polymer modified single component of DECK CRETE in two coats as per the following methodology :-

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other foreign contaminant.
2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. Apply 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of DECK CRETE slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

Fig. 23 UNDER GROUND WATER TANK



C. ELASTOMERIC / FLEXIBLE MEMBRANE DECK ELASTIC M :

Providing and applying an Elastomeric Polymer modified cementitious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing fibre glass net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M **is two component system**

PART A – POWDER

PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.
Continue mixing for 2-5 minutes till you get a easily trowel - able homogeneous slurry.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of **DECK ELASTIC M**.

2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this coat to dry. This is a self curing system. No water curing required.

3. Apply **2nd coat** ; fix **DECK NET** & trowel with immediate **3rd coat** so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

IMP : All overlaps to have 100 mm min overlapping width / length and staggered.
No water curing - since the system is self curing.

OPTION II

BOX - TYPE TREATMENT

Provide a BOX TYPE treatment using machine cut 2' x 1½' Blue stone rough shahbad in C.M 1:4 admixed with Dichtament DM @ 200 ml per bag as per approved methodology of BOX TYPE TREATMENT (before raft reinforcement)

A. PRE-REQUIREMENTS :

1. The excavation should be complete in the area to be treated.
2. P.C.C. (preferably M- 20) should be completed and cured.
3. The brick work (14" wide) to retain the soil should be completed and cured for 5 to 7 days. This brickwork will be used as a part of the system where extra working space is not available.

B. FLOOR TREATMENT :

This treatment is done on the floor after PCC (M-20) before the casting of RCC RAFT.

1. Clean, wire brush & wash the area thoroughly.
2. Provide and lay underlay mortar bed in C.M 1:4 admixed with Dichtament DM (an integral. waterproofing plasticizer) @ 200 ml per bag of cement of av. 25 to 30 mm thickness.
3. Provide and lay rough shahabad ladi of size 2' x 1 ½' (Machine cut blue stone) of thickness 25 mm avg. with 25 mm to 35 mm joint laid in staggered fashion on the green underlay.
4. Grout the joints between rough shahabad with thick cement slurry (cement – sand 1:1) admixed with a non – shrink admixture DECK SCA @ 0.4% of cement weight i.e. 200 gms per bag of cement. Allow the grout get set for a day.
5. Provide and lay an overlay mortar of av. 20 to 25 mm thickness in CM 1:4 admixed with DECK SCA @ 200 ml per bag of cement and Deck Flex @ 500 ml per bag of cement and provide a smooth IPS finish or as directed.

C. WALL TREATMENT :

This treatment is done on RCC retaining walls after retaining walls are cast. (i.e. on RCC concrete surface)

1. Clean, wire brush and wash the area thoroughly.
2. Provide and fix rough shahbad 2' x 1 ½' -25 mm thick. (machine cut blue stone) on the RCC wall, using cement paste tabs of approx.2" dia @ 4 to 5 places, keeping ½ clearance from wall (for grouting) with 20 to 25 mm vertical joints, fixed in staggered manner.
3. Next day, grout the ½" gap between RCC wall and rough shahabad with a thick cement slurry admixed with a non shrink waterproof admixture DECK SCA @ 200 ml per bag of cement. Allow the grout set for a day. Lay and fix only **ONE LAYER A DAY.**
4. Continue the cladding up to 4 layers to 6 layers.
5. Provide and apply 20 mm thick plaster jacket (over the ladi) in CM 1:4 admixed with DICHTAMENT DM @ 200 ml per bag and P.P.Fiber @ 125 gram (1 packet) per bag and finish the surface as IP smooth.
6. Continue the process till you are 400 mm above the proposed ground level or hard deck. Junctions between vertical and horizontal surfaces, should be provided with 8" coving (watta) OR concrete plug.

16 WATERPROOFING TREATMENT TO UNDERGROUND WATER TANK - INTERNAL SIDE

16.1 SURFACE PREPARATION :

Cleaning, wire brushing, abrasive grinding (wherever required) and washing the area to expose the original slab surface, including removing timber, nails or protruding binding wires etc. completely.

16.2 INJECTION GROUTING WITH NONSHRINK GROUT :

a. Inspect the RCC shell thoroughly.

b. Honeycombed pockets, Vertical horizontal junctions, construction and cold joints need to be grouted as below.

I. Remove loose and spalling concrete.

ii. Make pocket 4" or 6" dia for injection sockets exposing the nearest reinforcement bar.

Iii. Provide release points with intermediate segments. Allow the sockets to firmly fix and gain rigidity for a day or two.

iv. Inject cement slurry admixed with non-shrink admixtures DECK SCA at 200 gms per bag of cement.

v. Remove/ cut the protruding socket tubes flush with the surface.

16.3 TREATMENT TO CONSTRUCTION JOINTS :

a. Providing and treating the construction joints after injection grouting as above (16.2) with a 300 mm BAND OF DECK PU 1K / DECK POLYUREA FFP (150 mm on either side of joint) all along the joint as per manufacturer's instructions including providing a top key coat of DECK PRIME EP & Quartz sand.

OR

b. Providing an Expanded Lath sandwiched treatment of high strength ready to use polymer modified fine mortars in a band width of 300 mm (150 mm on either side of joint) all along the joint as per following methodology.

1. Clean the surface over the joint.
2. Apply 6 mm thick polymer modifed fine mortar in a band of 400 mm (200 mm on either side of joint) and cure it for a day.
3. Fix 300 mm wide Expanded Metal lath by screws (¾" deep)
4. Apply a second coat of 6 mm thick polymer modified fine mortar covering and sandwiching expament.

16.4 PENETRANT SEALER COATING :

Providing and applying a crystalline penetrant – polymer modified hydraulically setting slurry coating on floor vertically on wall. The coating to be applied by brush in two coats as per manufacturer's instructions.

1. Clean, wire brush, wash & grind (wherever required) the concrete surface so as to obtain total dust free, virgin concrete surface free from all laitence, slurries, oils and other Foreign contaminant.

2. Prewet the concrete surface so as to make it damp or moist.
3. Mix DECK CRETE (POWDER) and clean potable water 2 : 1 (powder : water) to obtain a thick brushable consistency slurry.
4. 1st coat of DECK CRETE slurry by brush uniformly on to a prepared clean concrete surface. Allow the coating to dry for 4 to 6 hrs.
5. Apply 2nd coat of **DECK CRETE** slurry at right angles to 1st (dried) coat. Allow the coating to dry for 4 to 6 hours.
6. Cure the system for 3 days by sprinkling water or by wet hessain cloth or by ponding.
7. Now the concrete surface is ready to receive the subsequent activities.

16.5 ELASTOMERIC / FLEXIBLE MEMBRANE DECK ELASTIC M :

Providing and applying an Elastomeric Polymer modified cementatious membrane system of DECK ELASTIC M sandwiched with DECK NET as a reinforcing F.G. net (5 mm x 5 mm) OR Equivalent as per manufacturer's instructions and methodology in following sequence to ensure a high build thickness of 2 mm.

I. MIXING OF PRODUCT :

DECK ELASTIC M is two component system

PART A – POWDER

PART B – LIQUID POLYMER COMPONENT

Take part B (Liquid Component) in a bucket and slowly add Part A (powder) to Part B and continuously mixing with a helical electrical drill assisted mixer (at 500 rpm) slow speed.

Continue mixing for 10 minutes till you get a homogeneous slurry easily trowelable.

II. APPLICATIONS :

1. Prewet the surface and ensure it is damp before application of DECK ELASTIC M.
2. Apply well mixed slurry on to a well prepared surface either by brush or trowel and allow this coat to dry. (This is a self curing system. No water curing required)
3. Apply 2nd coat ; fix DECK NET & trowel with immediate 3rd coat so as to sandwiched the reinforcement. Allow the system to dry.
4. Apply final coat to ensure high build thickness of 2mm and allow the system to dry for 72 hours. (3 days)

   IMP : All overlaps to have 100 mm min overlapping width / length and staggered.

   No water curing - since the system is self curing

16.6 BOND COAT :

Providing and spraying high strength polymer modified CRS mortar admixed with Deck Flex as per manufacturer's instructions on the cured DECK ELASTIC M system as an additional key and grip for subsequent plaster jacket.

16.7 WATERPROOF JACKET (ON WALLS) :

Providing and applying a 25 mm thick waterproof jacket plaster on walls in CM 1:4 admixed with,

Dichtament DM @ 200 ml per bag of cement.

P.P. Fiber @ 1 packet (of 125 gms) per bag of cement.

Deck Flex at 1kg per bag of cement.

16.8 WATERPROOF SCREED ON FLOOR :

Providing and laying 50-80 mm thick polymer modifed screed concrete 1:2:2 on floor admixed with,

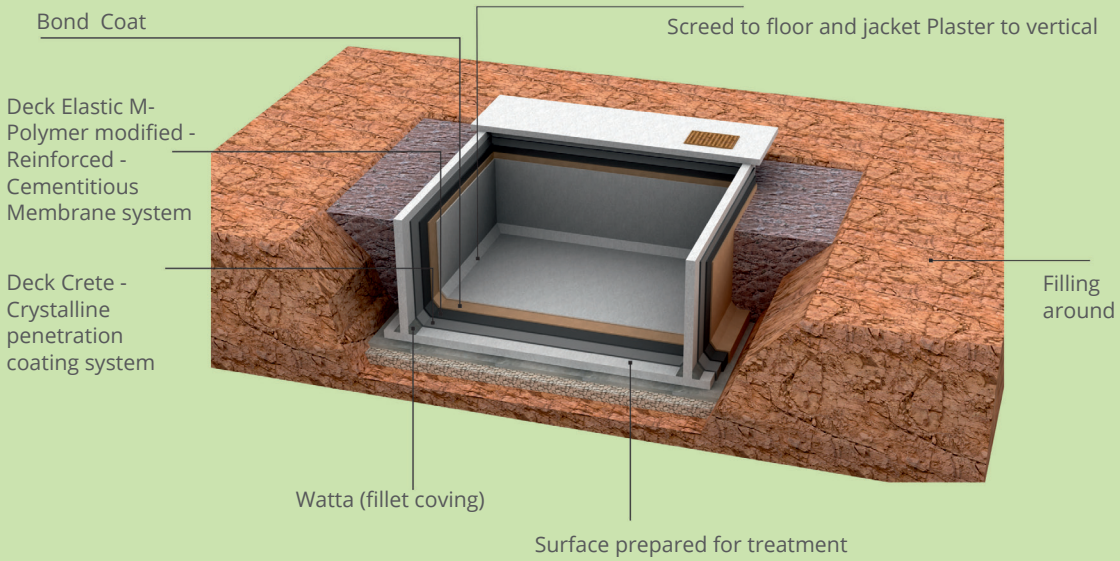
i. Deckflex @ 1kg per bag of cement.

ii. P.P. Fiber @ 1 packet or 125 grams per bag of cement.

Iii. Dichtament DM @ 200 ml per bag of cement including finishing the surface as IPS smooth.

16.9 CURE THE AREA BY FILLING WATER IN THE RCC TANK

Fig. 24 Waterproofing Treatment To Underground Water Tank



NOTES :

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