PRESENTATION ON WATERPROOFING

WATER PROOFING SYSTEM SOLUTIONS

Presented by -
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BTECH
CIDC CERTIFIED
14+ YEARS EXPERIENCE

SESSION AGENDA

1. MY EXPERIENCE IN WATERPROOFING
2. MY EXPERIENCE WITH DIFFERENT COMPANIES
3. WHY WATER PROOFING IS IMPORTANT ?
4. EXECUTION OF DIFFERENT WATERPROOFING SOLUTIONS
5. NON AVAILABILITY OF WP ITEMS
6. QUESTION & QUERIES

EXPERIENCE

I have been working in the waterproofing field for 14 years, during which I have gained deep knowledge of different sites and the materials and techniques required for effective waterproofing. My extensive experience has equipped me with a strong understanding of project requirements, site conditions, and the best solutions to prevent water damage.

I started my career with one company and over the years have expanded my expertise. Currently, I work with well-known government and private clients, providing waterproofing services as a consultant, applicator, and designer. This experience has allowed me to handle diverse projects and deliver tailored waterproofing solutions.

I have also achieved a unique CIDC certificate in the waterproofing field, which further validates my expertise and commitment to quality in this industry.

This constant endeavour from our side has today given us innumerable satisfied consumers.

SOME OF DEPARTMENTS AND COMPANIES I WORK WITH

MECON
मेकॉन
ISO 9001 Company

बी एण्ड आर
B AND R
BRIDGE AND ROOF CO. (INDIA) LTD.
(A Government of India Enterprise)

MILITARY ENGINEER SERVICES
MINISTRY OF DEFENCE

ncrtc

एन बी सी सी
N B C C

and many more….

IS STRUCTURAL WATERPROOFING IMPORTANT ?

WHY WATERPROOFING?

Water Seepage on account of cracks formed on concrete due to temperature variation

Water ingress due to Construction defects for example: Cracks in Critical Joint (expansion & contraction joints)

Moisture & Dampness percolates into the walls through capillary action which compromises with Integrity and Life of Structure

To prevent this water ingress and extend Life of the Substrate waterproofing is necessary

WATER INGRESS

CORE CUTTING

EXPANSION JOINT LEAK

TILE JOINTS/BATHROOM

TYPES OF WATERPROOFING IN MARKET IN 2026

- **Cementitious Waterproofing**
  This is one the simplest systems and is widely used in bathrooms. The process involves mixing of polymer with cement applying multiple coats.

- **Polyurethane (PU) Waterproofing**
  A High Elastic and seamless waterproofing system used for terraces, balconies and podium slabs. This can be applied both with brush or roller in some cases airless gun too.

- **POLYUREA Waterproofing**
  A High Elastic and high tensile waterproofing system used for terraces, podium slabs & retaining walls. This can be applied both with Graco Mixture Machine or roller. Never get confused between PU and POLYUREA. These both are different items.

- **APP/SBS Modified Membrane Waterproofing**
  These are torch applied membranes laid over primed surfaces, commanly used for roofs, retaining walls, podium and wet area.

- **Crystalline Waterproofing**
  This is a modern system yet best where crystalline chemicals penetrate the concrete pores and form insoluble, blocking water pathways permanently. Normally used in raft slab, retaining walls or STP's.

- **HDPE/PVC Membranes Waterproofing**
  This type of waterproofing is widely used today in rafts. As it has Zero chances of water penetration.

TYPES OF WATERPROOFING SOLUTIONS

There are two ways how waterproofing can be done:

Pre-formed Membranes – Classic & Traditional

Also known as sheet-applied, these membranes can be torch-applied or are self-adhesive. Preformed membranes are composed of multiple thin layers of waterproofed materials which are bonded together to form pre-formed waterproofing membrane.

Liquid Applied Membranes – Expert Solutions

Liquid applied membranes can be applied with a brush, roller, or spray, and they can cover every part of a surface. They are easy to install, provide full coverage, and are versatile.

TYPES OF PREFORMED MEMBRANES

ATACTIC POLYPROPYLENE (APP)
2mm / 3mm / 4mm
GF / PY / MT

Plastic Modified Asphalt / Bitumen

STYRENE-BUTADINE STYRENE (SBS)
3.5mm / 2mm

Synthetic Rubber Modified Asphalt

ETHYLENE PROPYLENE DIENE MONOMER (EPDM)
1.2mm / 1.5mm
Membrane / Pond Liner

HIGH DENSITY POLY ETHELENE (HDPE)
1.2mm / 1.5mm
HDPE 40 / HDPE 80 / Heat Weld

Pre-Applied

POLYWINYL CHLORIDE (PVC)
1.5mm / 2mm

THERMOPLASTIC POLYOLEFIN (TPO)
1.2mm / 1.5mm
Single Ply / Single Size Fleece

TYPES OF LIQUID APPLIED MEMBRANES

ACRYLIC COATINGS

Acrylic Based Coating

ACRYLIC POLYMER MODIFIED CEMENTITIOUS COATINGS

Acrylic Polymer mixed with Cement

POLYURETHANE DISPERSION (PUD) COATINGS

Acrylic Based mixed with PU for better tensile

BITUMIN BASED COATINGS

Tarcoal based coating used in tanks

POLYURETHANE (PU) COATINGS

Pure PU single component used for high tensile areas

HYBRID POLYUREA COATINGS

100% POLYUREA for no compromise leakage

PVC WATER STOP VS SWELLABLE WATER BAR

.

Parameter	PVC Water Stop	Swellable Water Bar (Hydrophilic)
Material	Polyvinyl Chloride (PVC)	Hydrophilic rubber / Bentonite-based compound
Working Principle	Acts as a physical barrier	Swells on contact with water to seal gaps
Joint Type	Expansion + Construction joints	Construction joints only
Water Pressure Capacity	✓ High (suitable for hydrostatic pressure)	⚠ Medium (limited swelling pressure)
Installation Method	Embedded centrally inside concrete joint	Fixed on surface before next concrete pour
Installation Skill	Requires skilled labor (alignment + heat welding)	Easy to install, no welding required
Joint Continuity	Requires proper heat welding at joints	Simple overlap or adhesive fixing
Typical Locations	Raft slabs, basements, tanks, dams	Kicker joints, pipe penetrations, lift pits
Cost	Higher (material + skilled labor)	Lower (material + installation)

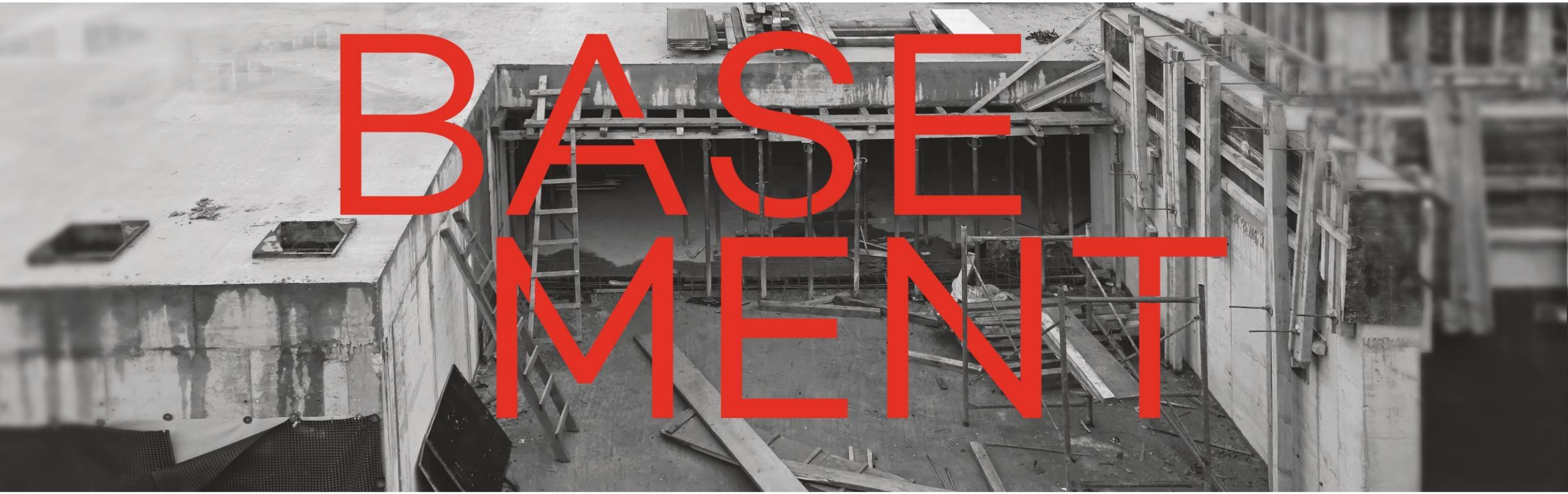
APPLICATION PROCESS OF WP ITEMS

1. BASEMENT
2. RETAINING WALL
3. TERRACE
4. WET AREAS
5.
6. NOT AVAILABLE ITEMS

OLD SCHOOL WATERPROOFING TECHNIQUES

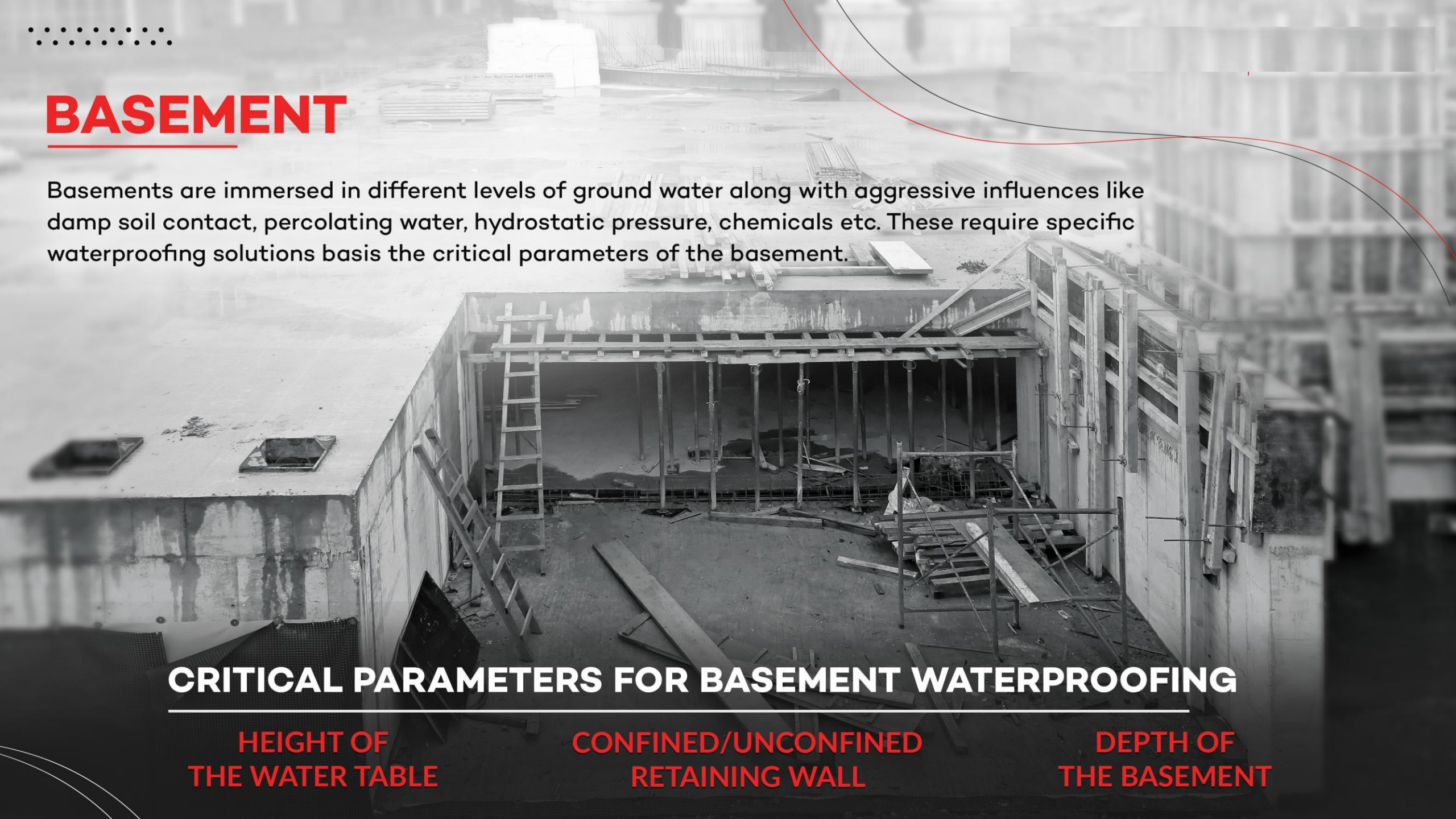
WATER TANKS


EXECUTION


BASE
MENT

BASEMENT

Basements are immersed in different levels of ground water along with aggressive influences like damp soil contact, percolating water, hydrostatic pressure, chemicals etc. These require specific waterproofing solutions basis the critical parameters of the basement.



CRITICAL PARAMETERS FOR BASEMENT WATERPROOFING

- HEIGHT OF THE WATER TABLE
- CONFINED/UNCONFINED RETAINING WALL
- DEPTH OF THE BASEMENT

HSR CHAPTER 28 – WATERPROOFING AND HEAT INSULATION

HERE FOR EASE, WE HAVE DIVIDED ALL ITEMS INTO THE PROPOSED AREAS TO BE USED

BASEMEMENT – RAFT/JOINTS

28.8 – HDPE MEMBRANE 1.2 MM - Laid after PCC before RAFT. Excellent Water Resistant. (White in Color)

28.18 – CRYSTALLINE ADMIXTURE – Excellent water reduction permiability. Mixed in RMC Plant.

28.19 - CRYSTALLINE DRY SHAKE – Sprinkled on top the raft for better Water resistant.

28.20 – CRYSTALLINE SLURRY COAT – Mainly used on Bridges, Tunnels, STP's, ETP's and WTP's, where chances of Water Ingress is very high.

28.29 – CRYSTALLINE MORTAR - Used for Repair of RAFT Joints.

NS - WELDABLE HDPE 1.5 MM - Laid after PCC before RAFT. Used where Water table is high or having more than 2 basements.

HSR 28.8 Pre-Apply HDPE Membrane

THE WIDEST RANGE OF HIGH PERFORMANCE HDPE MEMBRANES MADE IN INDIA

Pre-Apply HDPE Membrane

THE WIDEST RANGE OF HIGH PERFORMANCE HDPE MEMBRANES MADE IN INDIA

WIDEST PRODUCT RANGE

COMPOSITE THICKNESS VARIANTS IN 1.2MM, 1.5MM AND 1.8MM

Multiple Width Options of 1.2m, 2m and 2.4m

MULTIPLE TYPES OF OVERLAP

SINGLE SIDE SELVEDGE, DUAL SIDE SELVEDGE & HEAT WELDED

Critical to avoid leakages as per project specification

FACILITATES

PROTECTION AGAINST LATERAL WATER MIGRATION

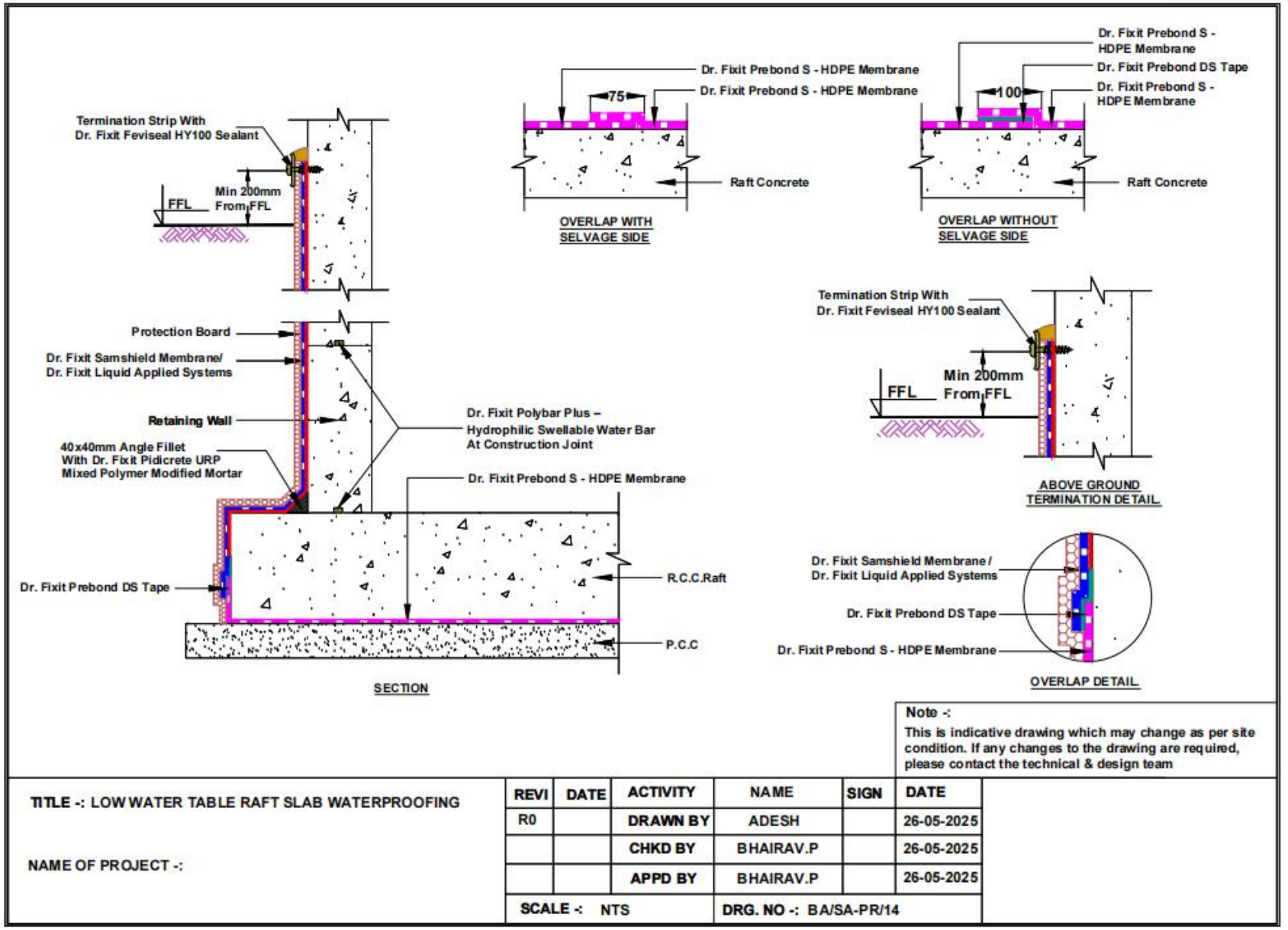
Prevents passage of water between membrane & concrete

SITE IMAGES OF HDPE MEMBRANE (HSR 28.8)

EXECUTION POINTS TO BE NOTED FOR HDPE MEMBRANE

1. PCC Surface should be cleaned.
2. No cracks and uneven surface should be there on PCC.
3. Overlapping 75 mm and 100 mm in end.
4. HDPE should be layed extra at the end as per RAFT thickness which will be incorporated with Concrete while pouring.

DETAILED SECTION FOR HDPE MEMBRANE



Note -:
This is indicative drawing which may change as per site condition. If any changes to the drawing are required, please contact the technical & design team

TITLE -: LOW WATER TABLE RAFT SLAB WATERPROOFING

NAME OF PROJECT -:

REVI	DATE	ACTIVITY	NAME	SIGN	DATE
R0		DRAWN BY	ADESH		26-05-2025
		CHKD BY	BHAIRAV.P		26-05-2025
		APPD BY	BHAIRAV.P		26-05-2025
SCALE -: NTS			DRG. NO -: BA/SA-PR/14		

HSR CHAPTER 28 – WATERPROOFING AND HEAT INSULATION

HERE FOR EASE, WE HAVE DIVIDED ALL ITEMS INTO THE PROPOSED AREAS TO BE USED

BASEMEMENT – RETAINING WALL/JOINTS 1

28.11 - SBS MEMBRANE 1.5 MM - To be applied on retaining walls, and protected with dimple board. (ask company if area is confined or un-confined).

28.18 – CRYSTALLINE ADMIXTURE – To be mixed in Concrete Good for Crack Bridging Properties and lifetime waterproofing properties.

28.20 – CRYSTALLINE SLURRY COAT – Mainly used on Load bearing Terrace. Bridges, Tunnels, STP's, ETP's and WTP's, where chances of Water Ingress is very high.

28.28 - PVC WATER STOP, Mainly used in construction joints with water table is high.(MUST)

28.29 – CRYSTALLINE MORTAR - Used for repair of Retaining wall construction faulty joints.

28.30 - SWELLABLE WATER BAR - Used in construction joints, pipe sealing, kicker joints. (MUST)

HSR CHAPTER 28 – WATERPROOFING AND HEAT INSULATION

HERE FOR EASE, WE HAVE DIVIDED ALL ITEMS INTO THE PROPOSED AREAS TO BE USED

BASEMEMENT – RETAINING WALL/JOINTS 2

28.6 – PU (polyurethane) coating. For Good Waterproofing., and protected with dimple board. (ask company if area is confined or un-confined).

28.7 - HYBRID POLYUREA - High tensile waterproofing coat with minimum 1.5 kg consumption and protected with dimple board. (ask company if area is confined or un-confined).

28.20 – CRYSTALLINE SLURRY COAT – Mainly used on Load bearing Terrace. Bridges, Tunnels, STP's, ETP's and WTP's, where chances of Water Ingress is very high.

NS ITEM- FOR WET CONCRETE(UNCONFINED, where there is space to work) - Dr. Fixit Flexi PU 500 GC, can be done on wet concrete. Having moisture content upto 15%.

SBS MEMBRANE (HSR 28.11)

STYRENE BUTADENE STYRNE (SBS) 1.5 MM – RETAINING WALL

EXECUTION POINTS TO BE NOTED FOR SBS MEMBRANE

1. Retaining Walls should be dry with max. 5% moisture.
2. Repair construction joints, honeycomb with polymer modified repair mortar.
3. Create vatta/gola of 75x75 mm at the joint.
4. Bitumen Primer at 500-600 sqft per 20kg drum.
5. SBS membrane should be more than 6 months old, which may lead to low adhesion.
6. Overlapping 75mm on side and 100 mm on end joints.
7. Protection board/dimple board is very necessary before back filling.

CRYSTALLINE WATERPROOFING IN HSR 2023

1. **HSR 28.18**

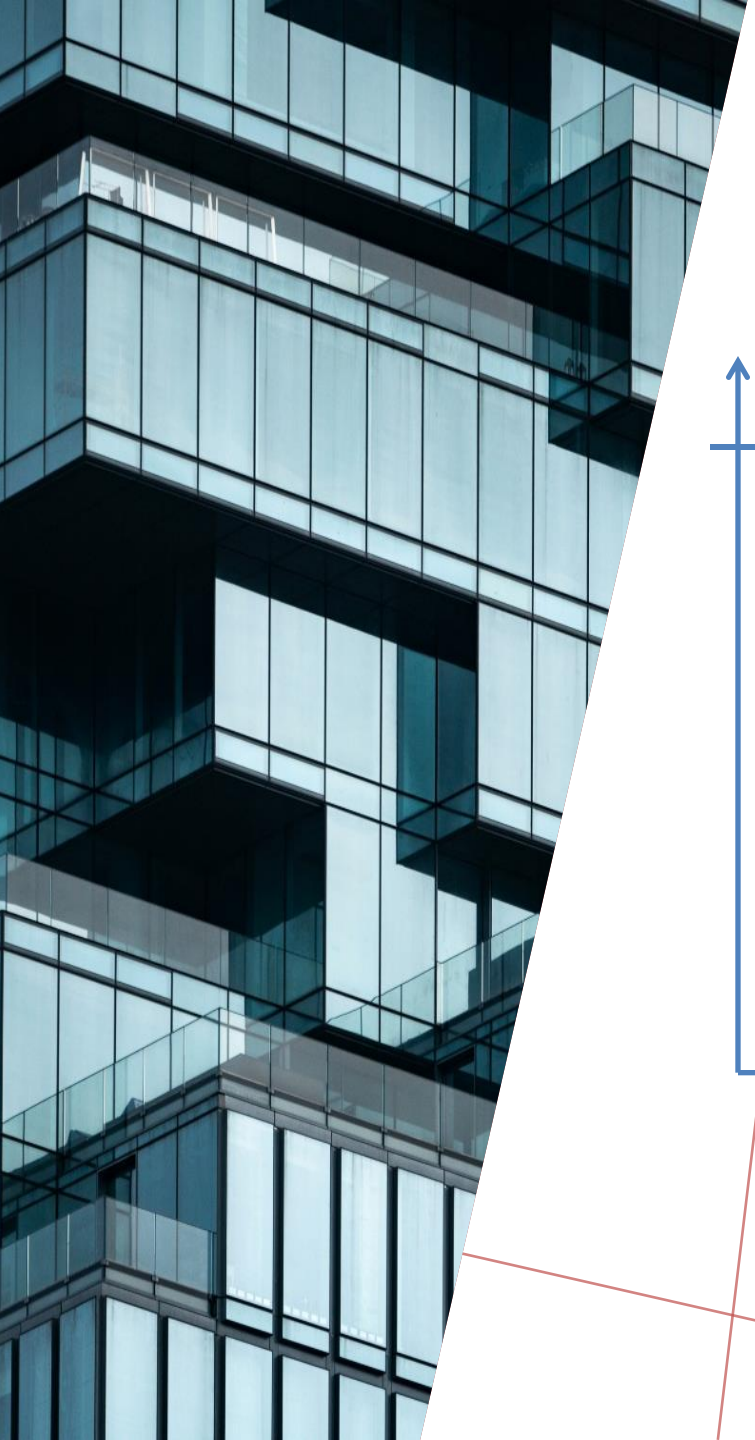
Providing and mixing integral crystalline admixture for **basement raft, retaining walls**, reservoirs, STP, ETP AND WTP, tunnels, subways and bridge decks.

2. **HSR 28.19**

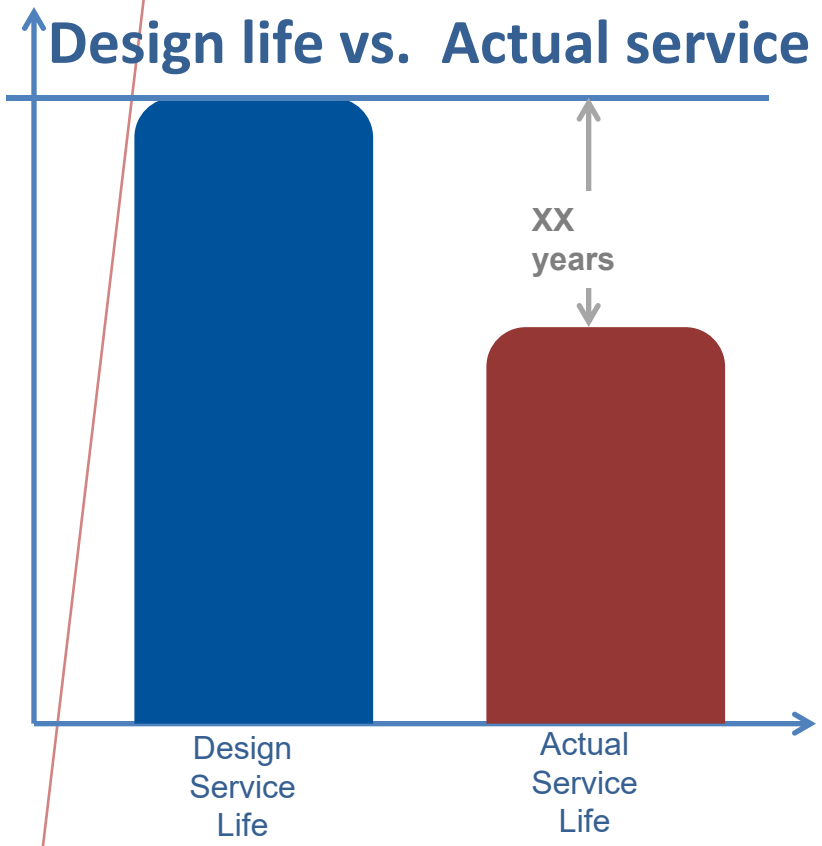
Providing and applying integral crystalline (dry shake) of hydrophilic in nature for waterproofing treatment to the RCC structures like basement raft, **foundation slab**, sewage and water treatment plant slab, **warehouses floor**, **parking structures** and water tank base slab etc.

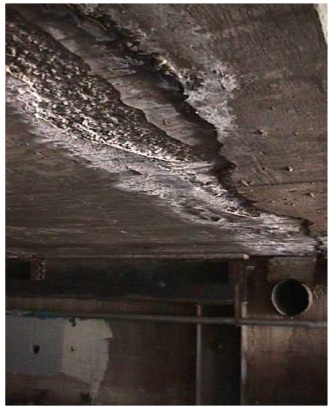
3. **HSR 28.20**

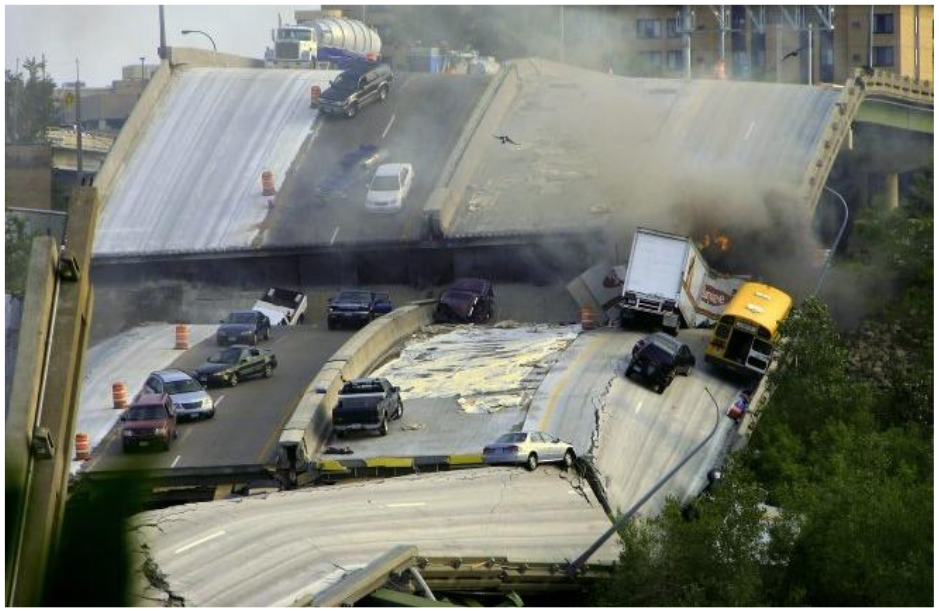
Providing and applying integral crystalline slurry of hydrophilic in nature for waterproofing treatment to the RCC structures like **retaining walls of the basement**, **water tanks**, roof slabs, podiums, reservoir, sewage and water treatment plant, tunnels / subway and bridge deck.



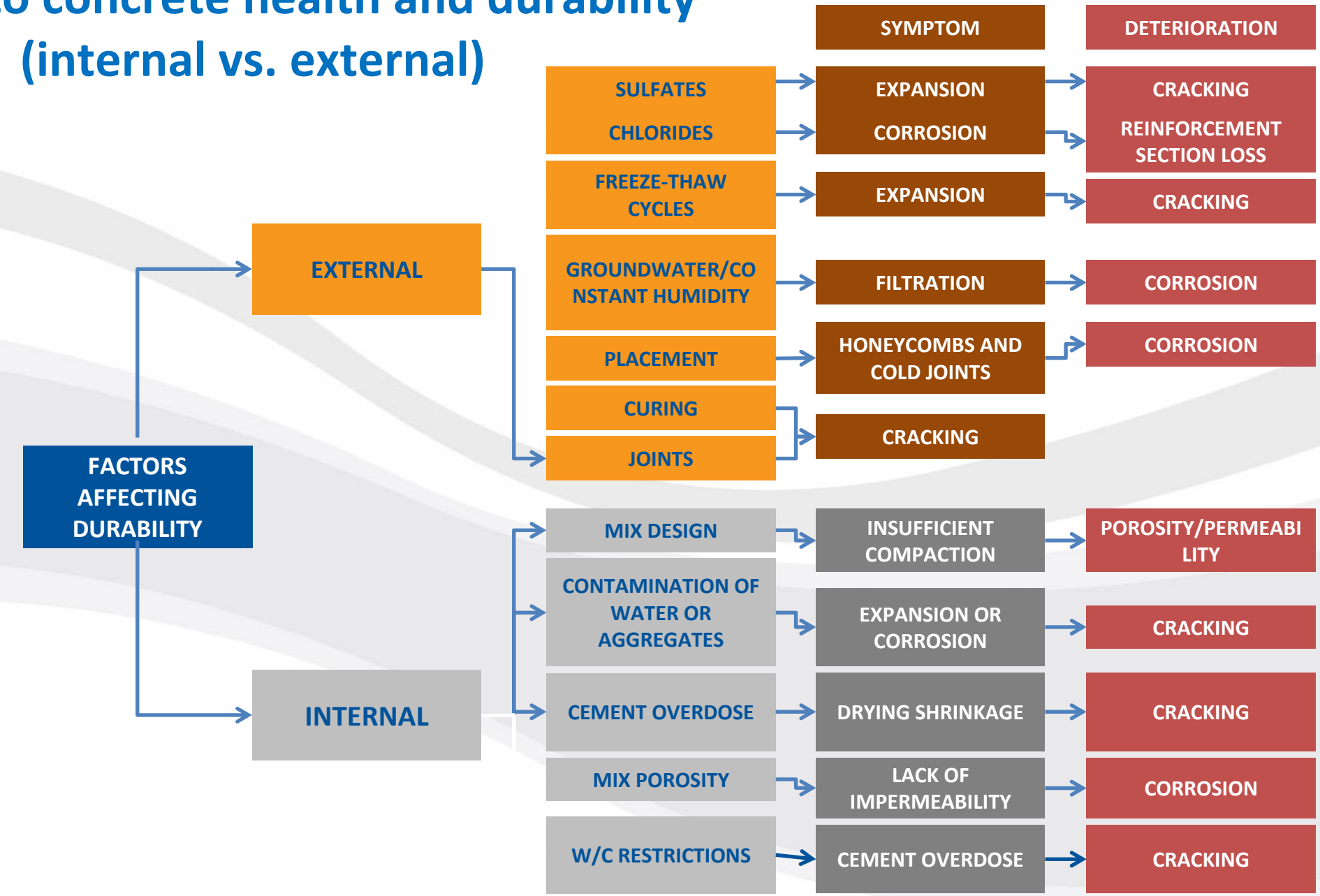
Design life vs. Actual service life







Threats to concrete health and durability (internal vs. external)



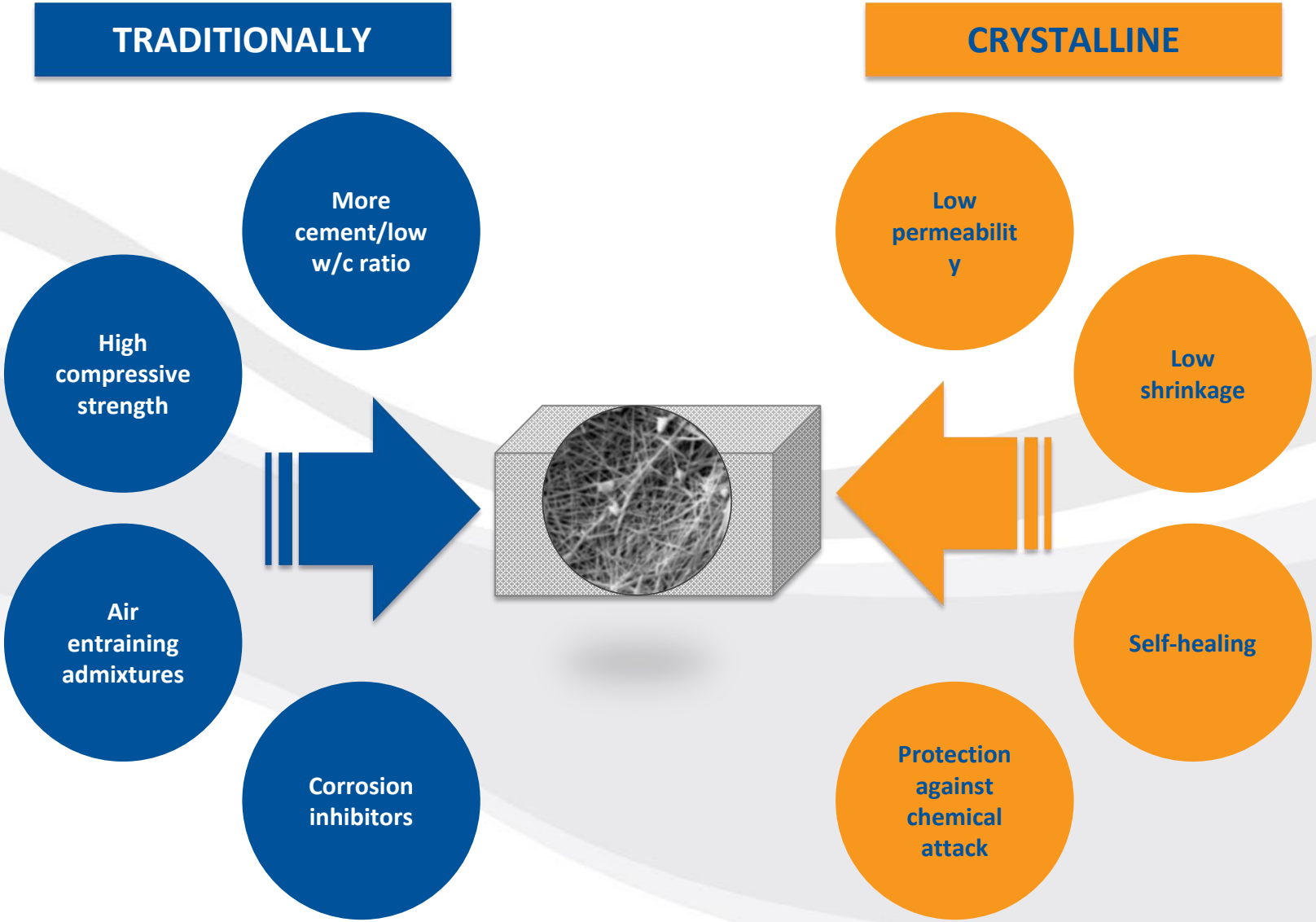
Elimination of water in concrete matrix is done by reducing permeability

Reduction in permeability

=

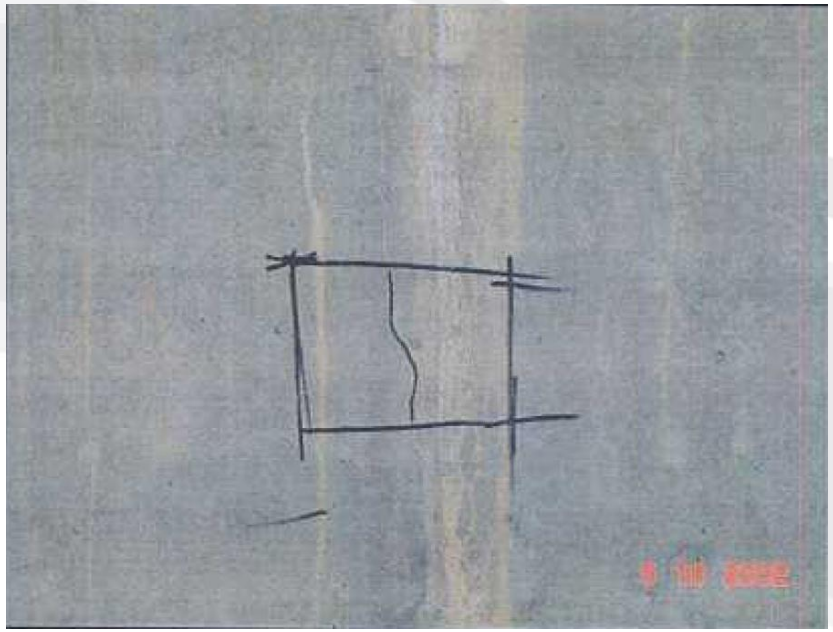
increase in durability

ACHIEVING CONCRETE DURABILITY



Crystal Growth

Microscopic analysis on the concrete cores from retaining walls at IGI Terminal 3, Delhi



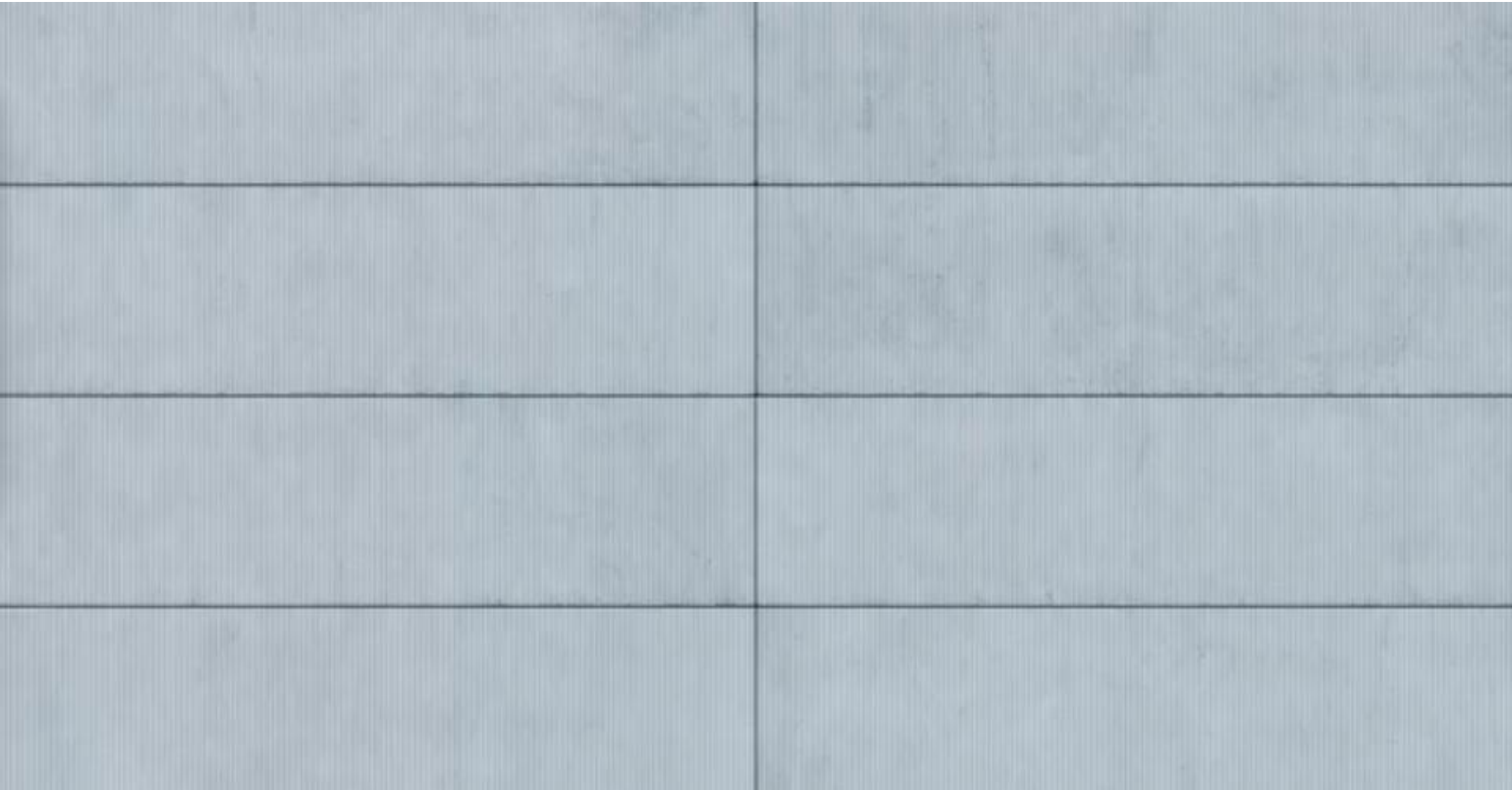
Crystal Growth

Microscopic analysis on the concrete cores from retaining walls at IGI Terminal 3, Delhi

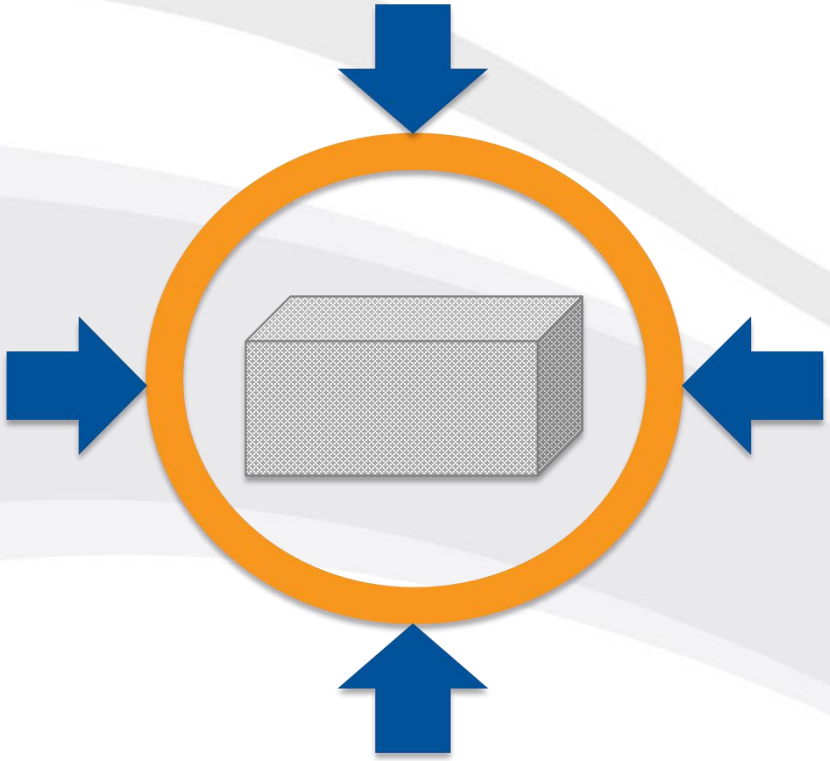
Crystals have formed in the crack

Needle-like, elongated crystals

KEY BENEFITS OF THE CRYSTALLINE SYSTEM



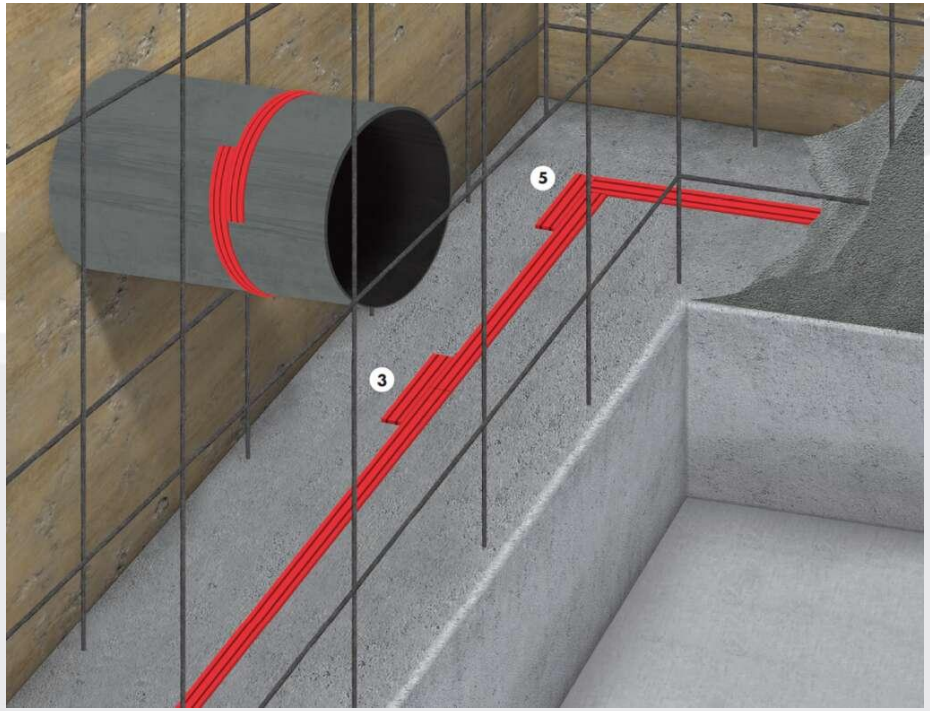
KEY FEATURES OF CRYSTALLINE IN ANY GOVERNMENT PROJECT AS PER **ACI 212-3R 2010**



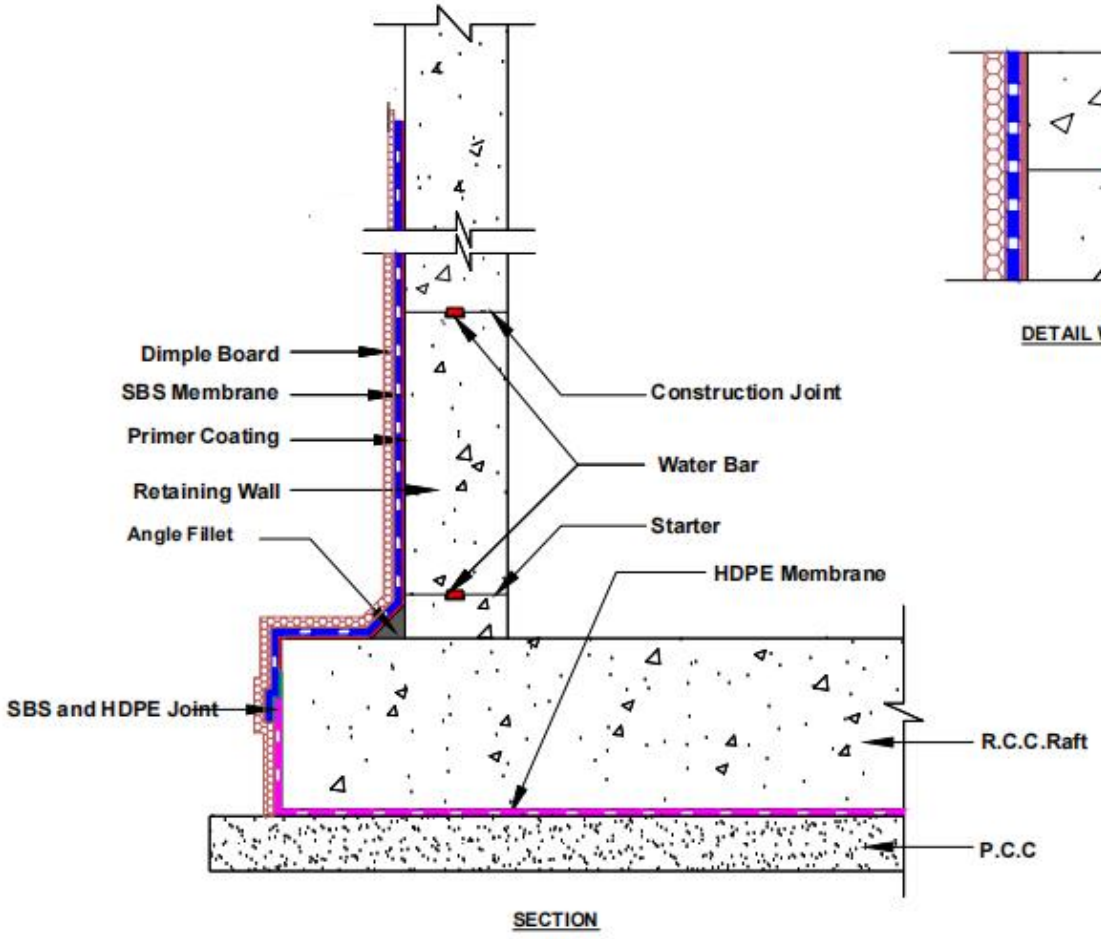
- Will not be torn or damaged during backfill, and will not delaminate, decompose, or wear out.
- Decrease maintenance costs for the entire life of the concrete structure
- Crack self-healing ability up to 0.4mm throughout the service life of the concrete
- Protection is not required & backfilling and other construction steps can proceed without delay.
- It protects concrete even facing high hydrostatic pressure of up to 20 bar pressure
- Can be considered “green.” There’s no off-gassing, no VOCs, no chemicals leaching into the soil.
- Can be applied in almost any weather in different ways
- Should increase the compressive strength

SWELLABLE BAR (28.30)

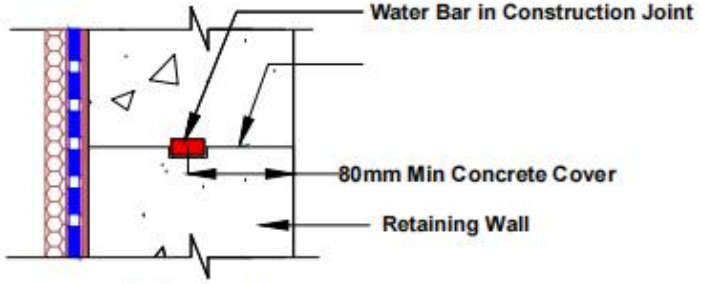
Swellable bar is a polymer based rubber which expands when comes in contact with water, and helps seal all construction joints more than 1 mm. It comes in 2 sizes, 10-20mm and 20-25 mm, and can be used according to thickness of concrete. it is generally used in retaining walls, STP, ETP, WTP, over head tanks or any other water body.



SWELLABLE BAR SECTION HSR 28.30



SECTION



DETAIL WATER BAR

Note -:
This is indicative drawing which may change as per site condition.Technical team to review the same and if required modified as per site condition.

PRODUCTS AND EXECUTION

TERRACE WATERPROOFING

Waterproofing of terraces can be complex due to constant exposure to variable weather conditions, terrace gardens, foot traffic etc. These issues often result in damp patches on ceilings as well as weakening of roof slabs. It is thus imperative that we secure the area with proper waterproofing solutions.

CRITICAL PARAMETERS IMPACTING SELECTION OF TERRACE WATERPROOFING

- OLD OR NEW TERRACES
- SMALL OR LARGE SPAN
- EXPOSED OR UNEXPOSED SURFACE
- DETERIORATING SCREED

TERRACE PROPOSED SYSTEM SOLUTION

1.1 Old Terrace

SYSTEM SOLUTION

Water based PU OR Acrylic PU Dispersion Liq. Applied Membane

1.2 New Terrace Slab with Insulation

SYSTEM SOLUTION

Pure Polyurethane OR Hybrid Polyurea Under Screed Liq. Applied Membrane OR Hybrid Polyurea - Spray Applied Membrane with PU foam Insulation for roof slabs with drain & protection system

HSR CHAPTER 28 – WATERPROOFING AND HEAT INSULATION

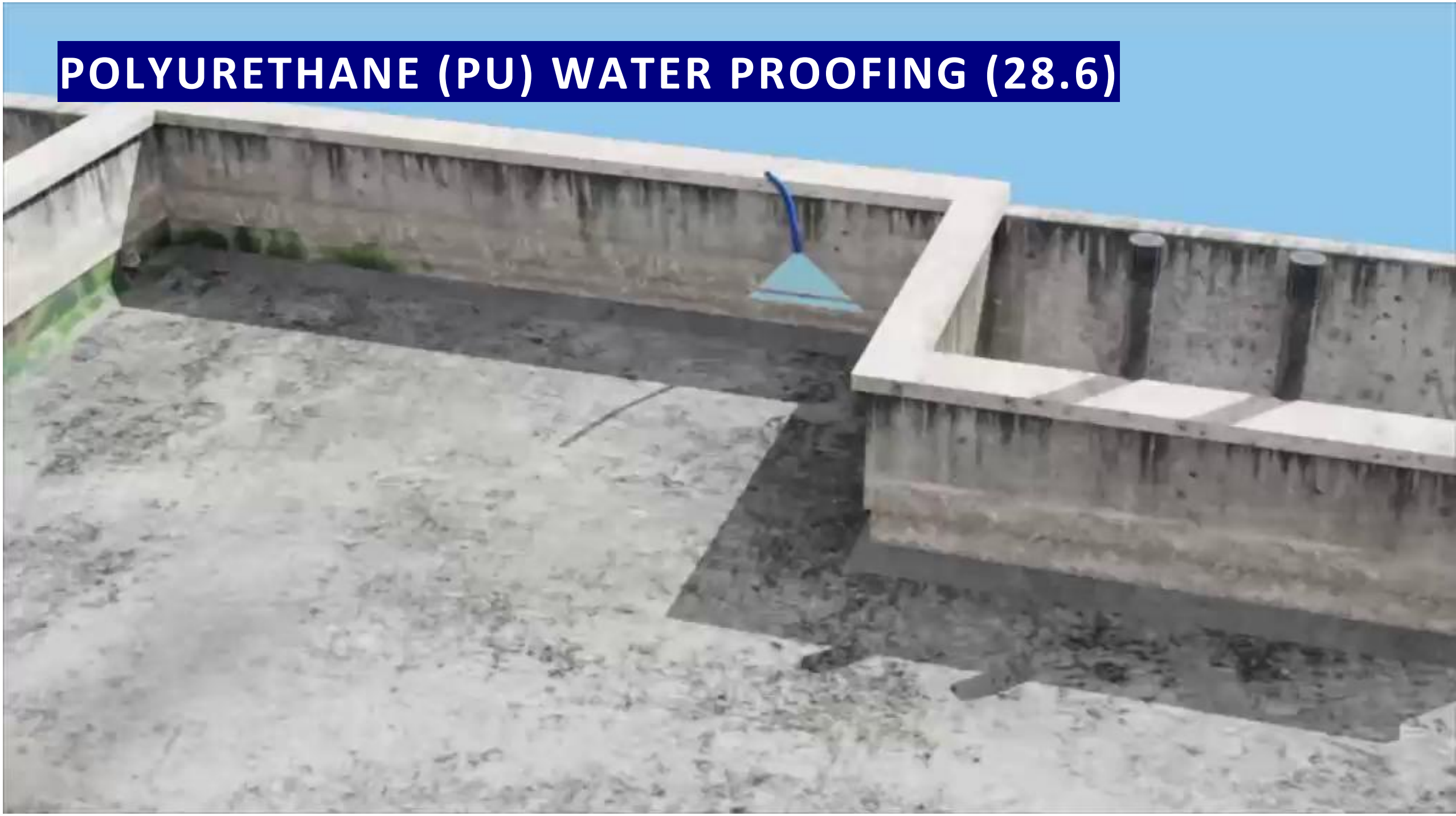
HERE FOR EASE, WE HAVE DIVIDED ALL ITEMS INTO THE PROPOSED AREAS TO BE USED

TERRACE AND PODIUMS

HSR	ITEM	CONCRETE SURFACE	WHERE TO APPLY ?	PROTECTION REQUIRED ?	Durability Ratings
28.6	POLYURETHANE (PU)	OLD OR FRESH	Area Less than 5000 Sqft	YES	☆☆☆☆
28.7	HYBRID POLYUREA	FRESH	Area more than 5000 sqft	YES	★★★★★
28.36	APP MEMBRANE 3 MM	FRESH	Area less than 7500 sqft	YES	★★★
28.17	BRICK BAT COBA	FRESH	Area less than 10000 sqft	NO	★★

NS - For Old structures waterproofing - Dr. fixit Wonderproof 100

POLYURETHANE (PU) WATER PROOFING (28.6)



HYBRID POLYUREA WATER PROOFING (28.7)

APP MEMBRANE (HSR 28.36)

ATACTIC POLYPROPYLENE MEMBRANE (APP) 3mm – HORIZONTAL SURFACE

Used in:

1. **Roof Waterproofing**: Used on flat, sloped, and terrace roofs in residential, commercial, and industrial buildings for waterproofing and protection against UV rays.

2. **Bridges, Tunnels, and Underground Car Parks:** Used in large-scale civil engineering projects for waterproofing and protection from environmental damage.

WET AREAS - KITCHEN, BATHROOMS, WC’S, CHAJJAS

HSR CHAPTER 28 – WATERPROOFING AND HEAT INSULATION

HERE FOR EASE, WE HAVE DIVIDED ALL ITEMS INTO THE PROPOSED AREAS TO BE USED

WET AREAS :BATHROOMS, WC, KITCHEN, CHAJJAS

28.15 - CEMENT SLURRY - General Purpose WP mixed with ACRYLIC Compound for Kitchen.

28.16 - WATERPROOF COATING - Cement and WP Arylic Compound with Fibre Mesh.

28.28 - SWELLABLE WATER BAR - Used in pipe sealing.

PROPOSED SYSTEM SOLUTIONS for WET AREAS

Sunken Wet Areas Bathroom & Balcony

SYSTEM SOLUTION

Two Component Polymer modified Cementitious Coating with Brick Bat **(28.21)**

Flat Wet Areas Bathroom & Balcony

SYSTEM SOLUTION

Polymer Modified Cement Slurry with Mesh **(28.16)**

HSR CHAPTER 28 – WATERPROOFING AND HEAT INSULATION

NON RECOMMANDED ITEMS AS PER TODAY'S AVAILABILITY

There are some of the items in Chapter No. 28 of HSR, which were used back in time, but not used today because of lack of labour availability, less knowledge, right material procurement and most importantly sustainability as per today's structure designs

Below are some of the items :

28.9 - PP MEMBRANE 4-5 MM

28.13 – KOTA Stone WP for Basement. Maximum Joints between Kota Slabs. More chances of Leakage.

28.14 – Integral Waterproofing, Very Basic WP Chemical, Hot blown Bitumen on top, results in anti bond issues between mortar and bitumen leads to leakage.

28.17 – BRICK COBA – Can be used only if Any PU Coat is done on mother slab, if not done, will definetly leak and cause load bearing issue with water trapped on the slab.

28.31 – Asphalt coating

28.32 – Asphalt coating

28.33 – Asphalt coating

DISADVANTAGES OF VARIOUS WATERPROOFING TREATMENTS

There are some of the items in Chapter No. 28 of HSR, which have some disadvantages. Below are some items with detailed disadvantages :

28.10 – BRICK BAT COBA

Despite its many advantages, brick coba treatment has a few drawbacks that should be considered:

- **Weight:**
  The addition of brickbats and cement mortar adds significant weight to the structure. This might not be suitable for all buildings, especially older structures with limited load-bearing capacity.
- **Time-Consuming:**
  The application process is relatively time-consuming, requiring careful preparation, multiple layers, and adequate curing time.
- **Labour-Intensive:**
  The procedure is labour-intensive, demanding skilled labour to ensure proper application and effectiveness

Source : asianpaints.com

DISADVANTAGES OF VARIOUS WATERPROOFING TREATMENTS

There are some of the items in Chapter No. 28 of HSR, which have some disadvantages. Below are some items with detailed disadvantages :

28.16 – Cementitious Waterproofing on TERRACE

The chief disadvantage is that cementitious products have no give to them probably because cement just doesn't stretch to any degree worth mentioning. They will stand up fine to a head of water, but will tolerate almost no joint or crack movement.

Source : wet2drysolution.com

DISADVANTAGES OF VARIOUS WATERPROOFING TREATMENTS

This Item belongs to Chapter 6 of HSR regarding Expansion Joint Treatment:

Expansion joints protect buildings from stress caused by thermal expansion, contraction, wind, seismic events, and loading changes by giving materials room to move.

Buildings without proper expansion joint treatment are vulnerable to damage and have a much higher risk of failures.

Water penetration becomes easier through untreated joints, resulting in erosion, weakening of foundations, mold growth, and corrosion in metal elements.

HSR ITEM NO : 6.61, 6.62, 6.63

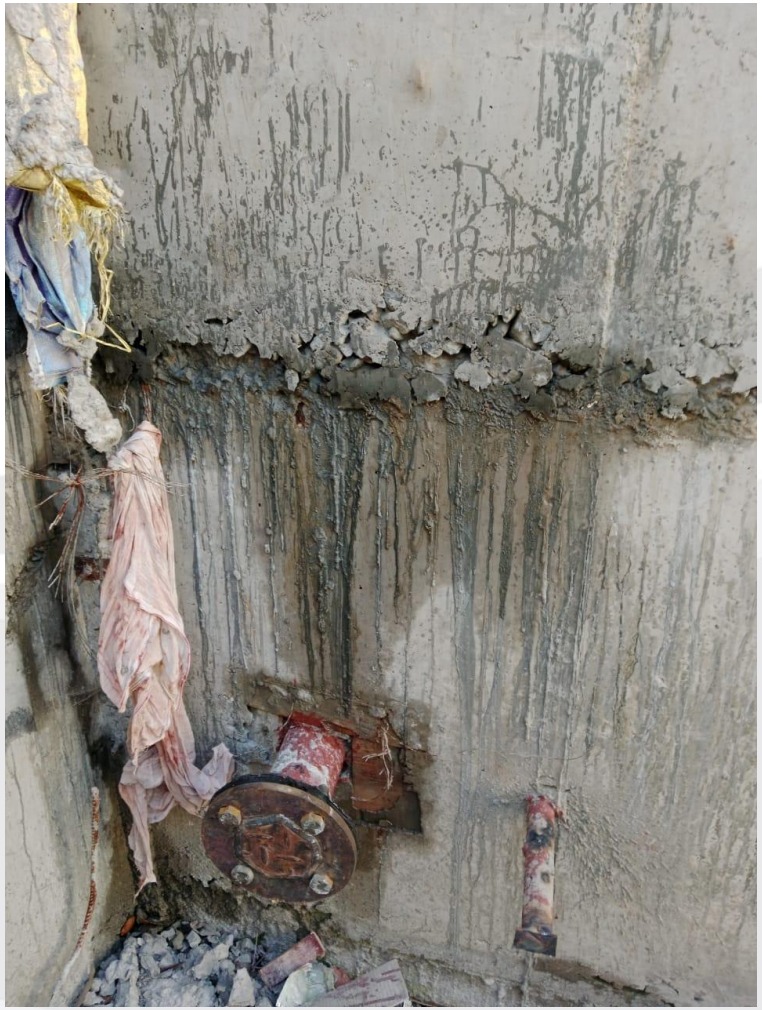
SITE REFERENCES

CURRENT WORKS FAILURES IN HARYANA

Untrained Manner, loss of Material and Money

Expansion Joint Breakage

Sealing Expansion Joint



Construction Joints resulting in leakage

SITE REFERENCES

CURRENT WORK FAILURES IN HARYANA

Basic Waterproofing item cracks due to no use of products

Fig.1 TERRACE DAMAGED

Fig. 2 WC LEAKAGE DAMAGING OUTERSIDE OF BUILDING

Fig. 3 STP PLANT CONCRETE FAULTS

SITE REFERENCES

CURRENT WORK FAILURES IN HARYANA

Basic Waterproofing item cracks due to no use of products

Fig.4 BASEMENT DAMAGED

Fig.5 CORE CUTTING ISSUES

SOME EXAMPLES WITH RESOLUTIONS

CORE CUTTING IN WC/KITCHEN

Modern building construction methods avoid sinking of toilet floors and instead take the toilet piping system down to a lower floor immediately below the ceiling through bores cut in RCC slab to have easy access to the pipe assembly in case of emergency, repairs and maintenance. It then becomes very important to treat these bores with absolute surety against water leakage. Below are a few guidelines.

1. When Core is executed, the surface of concrete is very smooth which leads to delamination of any cementitious material. To achieve good adhesion, Pure Acrylic Primer should be applied both on PVC pipe and smooth concrete surface.

2. After that, Micro concrete should be used as a not shrinkage, self leveling, high strength property and leaving gap of around 80 mm from the top slab.

3. Swellable bar should be fixed around the pipe in that 80 mm gap and covering it with micro concrete again for proper sealing.

4. The Final pouring should be done with epoxy grout for long lasting leakage free core. After all, now the waterproofing coat should be done.

SOME OF MY KEY VIEWS FOR WATERPROOFING I WOULD LIKE TO SHARE WITH YOU

WATERPROOFING ITEMS

1.Bathroom level to be decided earlier prior laying tiles.

2.After waterproofing, protection is necessary either with plaster, geo-textile, or any other form of protection.

3.Fibre Mesh is required only if company recommends as some products with high elongation.

4.The main focus of waterproofing should be Jointless.

5.Companies providing waterproofing products should provide certified WP Applicators and Warranty certificates or triparty certificates. This should be made compulsary. The applicators do's the work, the contractor does not care and WP get damages and after that the whole blame is putted the products and companies.

EXPANSION JOINTS

1.Large Building requires expansion joints, we have proper item in HSR i.e 6.61, 6.62 and 6.63, Terrace, verticals and Horizontals respectively.

2.Either making concrete slab and putting it on the terrace and waiting for the cracks to develop.

3.Expect HSR item of expansion joint with 10 years warranty.

4.Stop using cement filling between gaps, this doesnt help in expansion and contraction, either use PU whether proof sealants if gaps are less then 40mm (internal building joints).

5. While casting slabs, avoid using Thermacol, better use Filler board or Baggas board, which indirectly helps in leakage till the expansion joint treament is not executed.

YOU CAN CONTACT US ON CALL, EMAIL OR SITE VISITS FOR

- WATERPROOFING CONSULTATION
- MATERIAL PROCUREMENT
- AUDITING

YOU SCAN THIS TO SAVE CONTACT

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THANK YOU !

ANY QUERRIES ?