



BCI
TECH TALKS

08 OCTOBER 2020
THURSDAY / 11AM - 11.40AM

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CONSTRUCTION⁺
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CHOOSING THE RIGHT WATERPROOFING SOLUTION

by

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WATERPROOFING

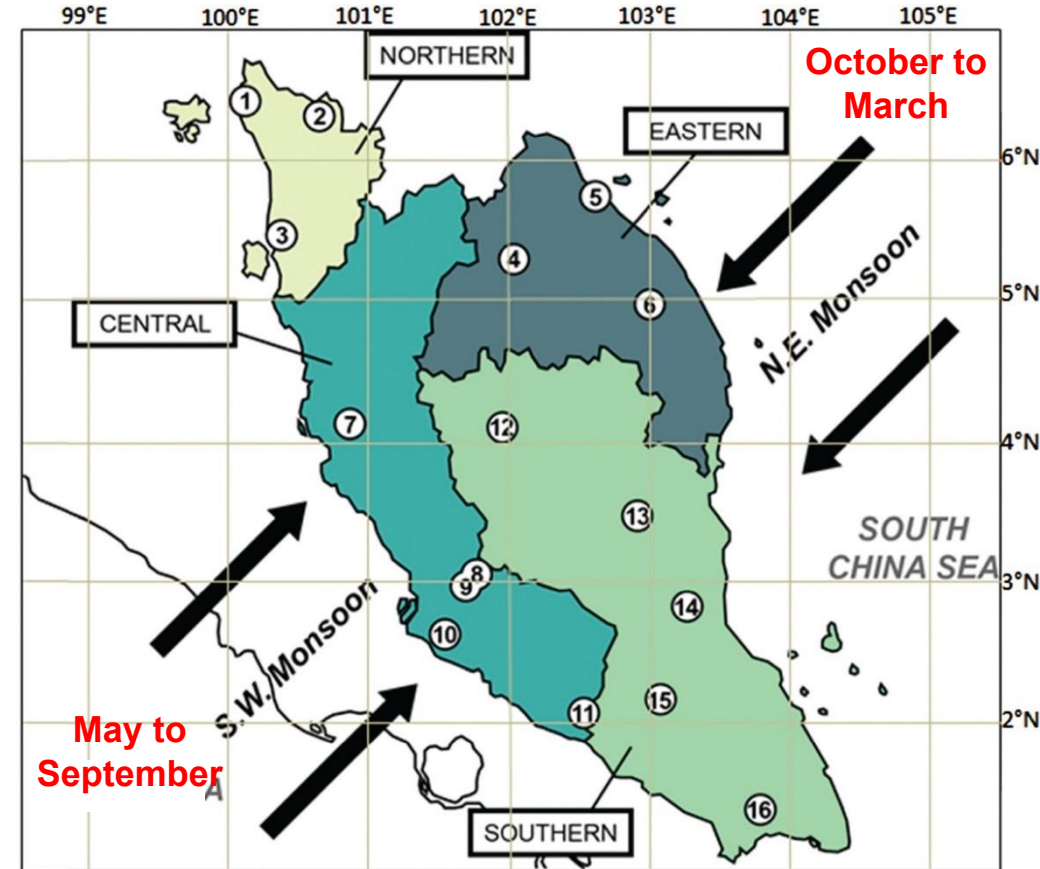
a special substance on the surface of structure/ masonry

- prevent water from going through it
- protect contents and structural integrity
- provide controlled environment in the building



LOCAL WEATHER & CLIMATE

equatorial & monsoon seasons



LOCAL WEATHER & CLIMATE

equatorial & monsoon seasons

- hot, humid & rainy whole year round



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- hot, humid & rainy whole year round
- tropical rain with intense downpours or thunderstorms



LOCAL WEATHER & CLIMATE

equatorial & monsoon seasons

- hot, humid & rainy whole year round
- tropical rain with intense downpours or thunderstorms
- building structure contracts & expands (thermal movement) regularly & suddenly
- rainfall collected on flat roof & below ground

AREA NEEDS WATERPROOFING

RC / Flat Roof

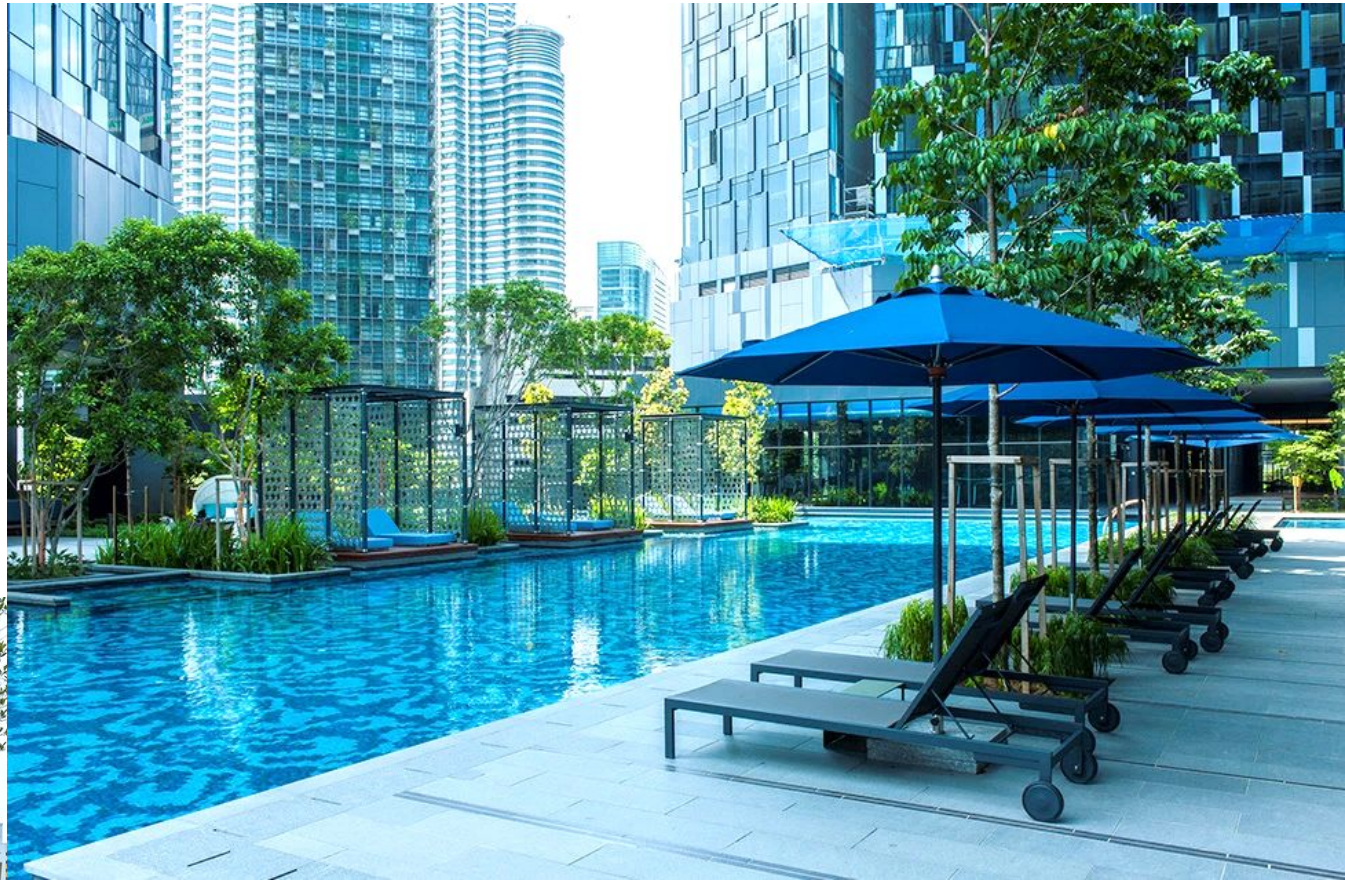
- deck & terrace
- podium roof
- basement roof



AREA NEEDS WATERPROOFING

Internal Wet Area

- toilet & bathroom
- balcony
- AC ledge with RC slab
- pool & pond
- planter box & landscape deck



AREA NEEDS WATERPROOFING

MS & RC Water Tank

- domestic water tank & fire fighting water tanks

Basement Structure

- lowest slab
- lift pit
- D-wall & CPB wall

External Wall or Façade?



HOW MUCH WATERPROOFING COST

to make a proper functional waterproofing system for a building

- average 1% of building construction cost
- construction cost for waterproofing system may be significant on the development profit; create impact on the development & reputation
- essential to keep necessary cost for the waterproofing solution system including subtrades ie. angle fillet, screeding and adhesive for optimum waterproofing performance in long run



MAJOR WATERPROOFING BRANDS

- BASF
- Greenseal
- Mapei
- Penetron
- Pentens
- Sika
- Xypex
- credibility in both product & service
- warranty for both product and application

TYPE OF WATERPROOFING

- bituminous base
- cementitious base
- polyurethane (PU) base
- HDPE lining – MS or RC water storage tank
- crystalline (admix)

GENERAL CONSIDERATION

selection criteria

1) movement in open slab

GENERAL CONSIDERATION

selection criteria

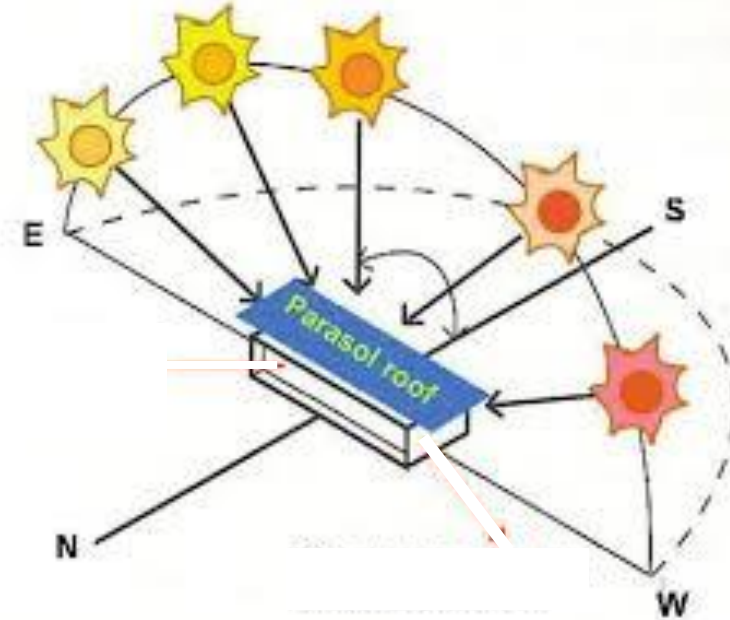
- 1) movement in open slab
 - a) ground settlement & structure deflection



GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
 - a) ground settlement & structure deflection
 - b) temperature gradient due to daily sun angle & position changes (sun path)



GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
 - a) ground settlement & structure deflection
 - b) temperature gradient due to daily sun angle & position changes (sun path)
 - c) “thermal shocks” due to thunderstorm eruption



GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
 - a) ground settlement & structure deflection
 - b) temperature gradient due to daily sun angle & position changes (sun path)
 - c) “thermal shocks” due to thunderstorm eruption
 - d) go with > WF material with “stretchable” character



GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
- 2) **weathering**

GENERAL CONSIDERATION

selection criteria

2) weathering

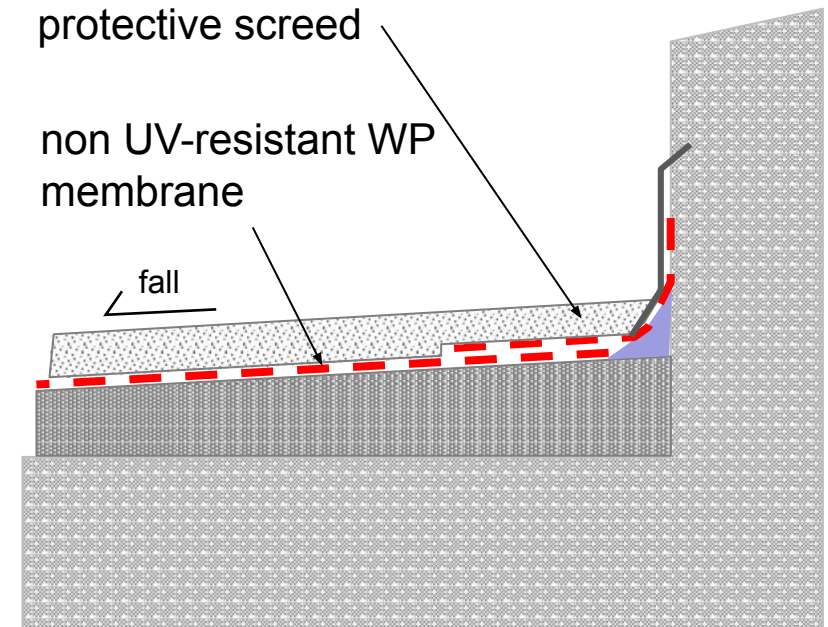
a) UV exposure

b) go with >

i) exposed WF system (UV-resistant)

ii) concealed WF system

- **disadvantage:** difficult to locate source of leak / difficult access to repair



GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
- 2) weathering
- 3) **accessibility for repairs & maintenance**

GENERAL CONSIDERATION

selection criteria

- 3) accessibility for repairs & maintenance
 - a) standard performance WF system for area easily accessible for maintenance
 - b) high-performance WF system for areas:
 - i) limited / no access to the WP system ie. basement structure directly contact with soil, green roof



GENERAL CONSIDERATION

selection criteria

- 3) accessibility for repairs & maintenance
 - a) standard performance WF system for area easily accessible for maintenance
 - b) high-performance WF system for areas:
 - i) limited / no access to the WP system ie. basement structure directly contact with soil, green roof
 - ii) low tolerance for failure / disturbance ie. penthouse

GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
- 2) weathering
- 3) accessibility for repairs & maintenance
- 4) **fully-bonded or non-fully-bonded installation**

GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) **fully-bonded installation**

GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - i) fluid-applied membrane



GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - i) fluid-applied membrane
 - ii) pre-formed membrane ie. bituminous membrane



GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - i) fluid-applied membrane
 - ii) pre-formed membrane ie. bituminous membrane
 - iii) complete bonding to ensure no migration of water beneath the WF membrane
 - iv) substrates condition – sound & properly prepared to ensure strong & secured adhesion

GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - b) non-fully-bonded installation**

GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - b) non-fully-bonded installation
 - i) loosely-laid, ballasted application



GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - b) non-fully-bonded installation
 - i) loosely-laid, ballasted application
 - ii) mechanically-fixed application



GENERAL CONSIDERATION

selection criteria

- 4) fully-bonded or non-fully-bonded installation
 - a) fully-bonded installation
 - b) non-fully-bonded installation
 - i) loosely-laid, ballasted application
 - ii) mechanically-fixed application
 - iii) advantage:
 - install over weak substrates / existing waterproofing
 - iv) critical points:
 - strong and water-tight lap joints
 - water-tight terminations/perimeter detailing
 - membrane toughness ie. tensile strength & tear resistance

GENERAL CONSIDERATION

selection criteria

- 1) movement in open slab
- 2) weathering
- 3) accessibility for repairs & maintenance
- 4) fully-bonded or non-fully-bonded installation
- 5) **budget > price vs performance**

GENERAL CONSIDERATION

selection criteria

- 5) budget > price vs performance
 - a) understand the service conditions & technical selection criteria
 - b) the most expensive solution not necessary the right solution



GOOD PRACTICE

toilet threshold detail

- RC kerb at threshold to reduce water ingress from wet to dry area

