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Wet Area waterproofing – Best Practice

Parchem Construction Supplies

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Continuing Professional Development

- Parchem offer CPD presentations for Architectural Practices

- These presentations are provided in compliance with the revised AACA/RAIA Joint CPD Policy and qualifies attendees for 1 formal CPD point under the following AACA competencies:
  - Design: Context 1.4,
    Element 1.4.1

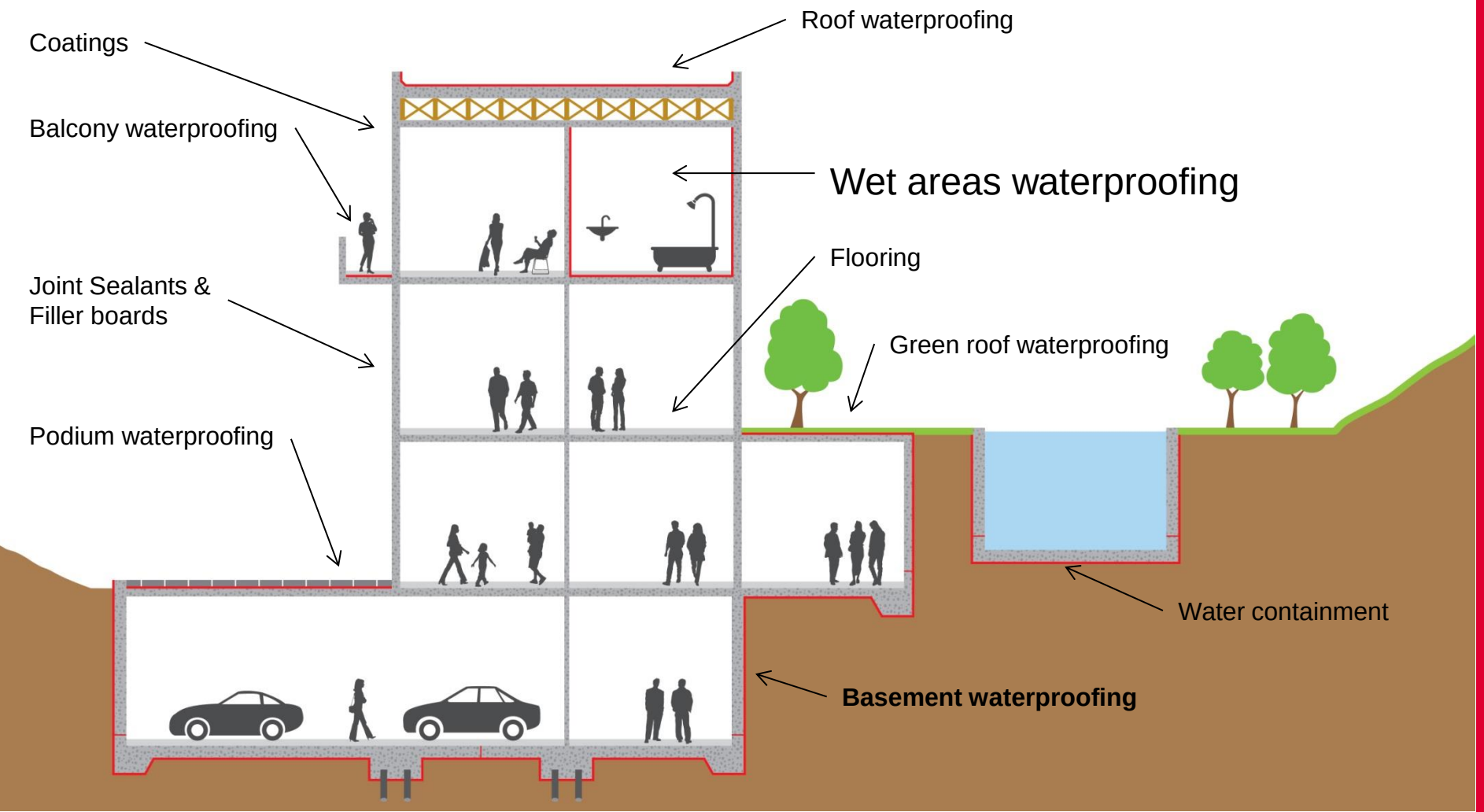
Refuel
CPD provider network

Learning Outcomes

- On completion of this presentation, you should be able to:
  - Identify the importance and potential risks of Wet Area waterproofing in design and installation.
  - Nominate the components necessary to completely waterproof the wet area.
  - Specify the key criteria and performance requirements necessary for sound wet area waterproofing in accordance with the relevant Australian Standards and industry Best Practice

Typical building

- Wet Area waterproofing is only one of the waterproofing requirements on a new construction project.



Importance of Wet Area Waterproofing

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"Waterproofing of wet areas, such as shower recesses, has consistently been among the most commonly occurring Category One (major) building defect. Homeowner complaints about defective waterproofing are consistently in the top ten received by the Building Services authority".

Source: Building Services Authority, Qld, accessed on 12 July 2012,

http://www.bsa.qld.gov.au/SiteCollectionDocuments/Builders_Contractors/Fact%20Sheets/Tech%20Info/Waterproofing%20Standard%20AS3740.pdf

Common Defects : Wet Areas

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Water leaks & Damage

- Failure at common points: wall to floor joints, pipe penetrations
- Wrong product choice
- Poor/ incorrect detailing

Efflorescence:

- Caused by water contact with the scree
- or, the base slab

Bathroom Costs

- Small / budget bathroom: $12 000 to $20 000
- Large/ premium bathroom: from $30 000+
- Total cost of waterproofing (labour & materials):
  - Minimum standard: $350
  - Best practice: $1000

Common Causes of Defects

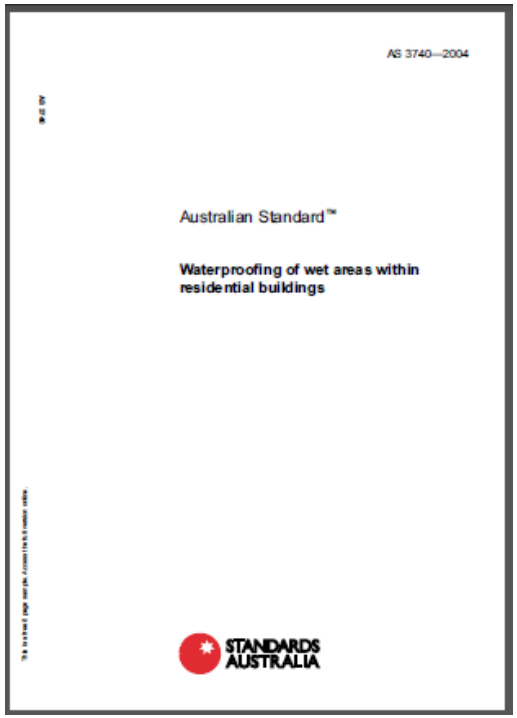
- Design defects relate to:
  - Understanding materials & properties
  - Understanding risk levels & appropriate detailing
  - Keeping up to date with revised design & installation techniques

- Installation defects relate to:
  - Workmanship, applicator skill & competence
  - Quality control, including supervision, inspection & testing
  - Fixture of fittings after waterproofing & tiling
  - Require a willingness to continue to improve to exceed the minimum requirements

Australian Standards : Wet Areas

AS3740-2010 Waterproofing of domestic wet areas

AS/NZS 4858:2004 Wet area membranes



AS3740-2010 Section 1 Scope & General

Scope

- Minimum requirement for materials, design and installation of waterproofing for domestic wet areas

Application

- This Standard applies to wet areas in Class 1, Class 2 and Class 4 buildings as defined in the BCA. It also applies to wet areas within other buildings with a similar level of use including sole-occupancy units within a Class 3 building.

AS3740 – 2010 Section 2 Materials

- Waterproofing systems recognised by the standard:
  - Stainless steel
  - Copper
  - Flexible waterproofing sheet material
  - Preformed, prefinished shower bases
  - Membranes meeting AS4858 requirements

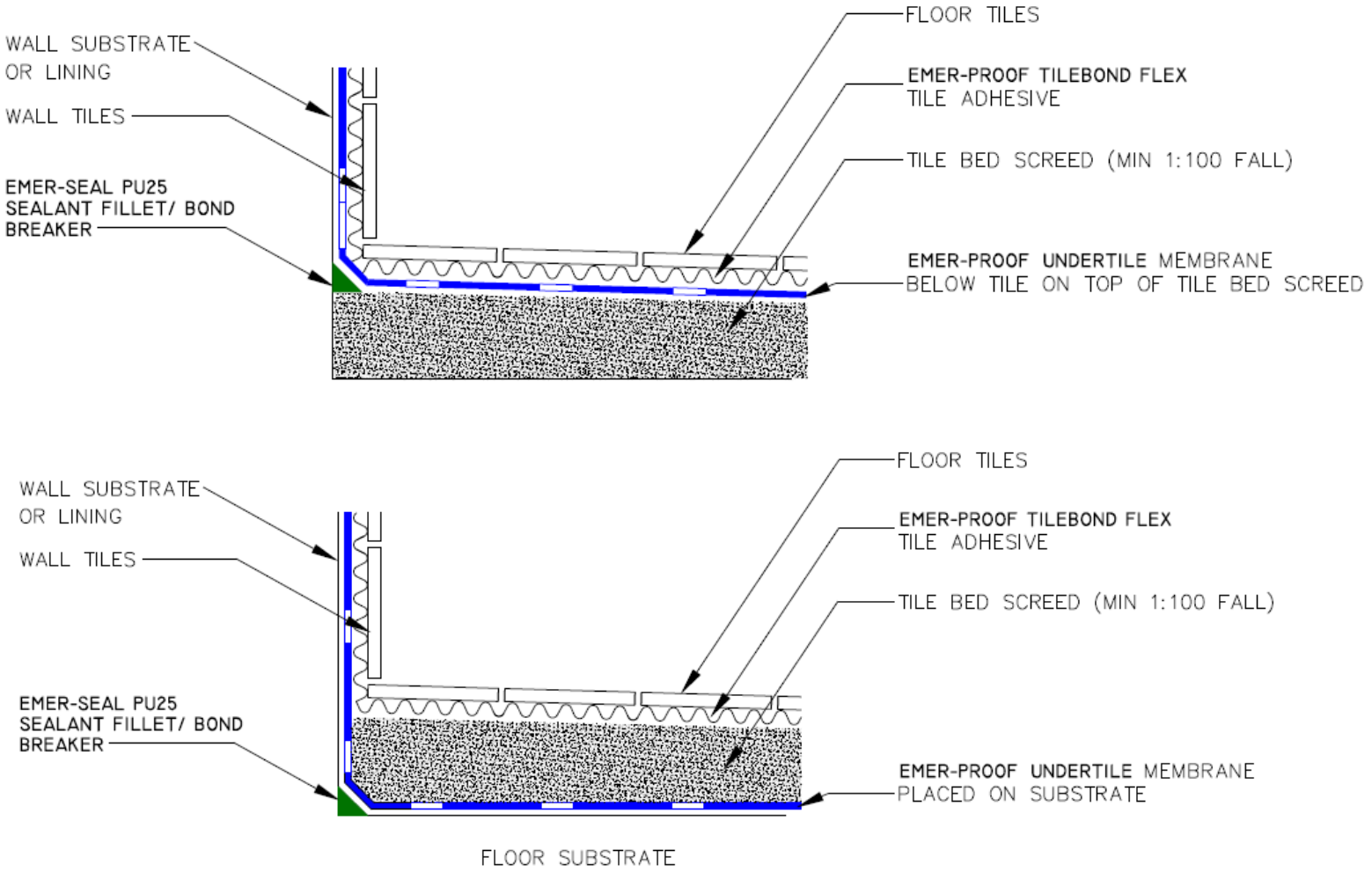
- Waterproofing systems shall be:
  - Compatible
  - Resist differential movement, in particular:
    - Wall to floor joints
    - Pipe penetrations
  - Suitable for exposure to cleaning chemicals

AS3740 – 2010 Section 3 Installation

Key points:

- Standard allows membrane to be installed above, ***or*** below, screed
- General floor area minimum fall to the waste 1:100
- Waterproof material to be minimum 25mm above finished floor surface
- Allows for part, or whole, wet area floor waterproofing
- Penetrations for taps, shower nozzles, soap holders may be waterproofed by a sealant or proprietary flange
- A range of typical detail drawings are included in the standard

AS3740 – 2010 Section 3 Installation



AS4858 : 2004 Wet Area Membranes

Scope

- Sets out to classify membranes based on elastic properties, which can then be used to give guidance on the type of detailing for a specific membrane referred to in AS 3740.

Application

- This Standard applies to buildings throughout Australia and New Zealand and is intended for use by manufacturers, suppliers and specifiers of waterproofing membranes, and appraisal bodies.

AS4858 : 2004 Wet Area Membranes

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"Materials used in waterproofing wet areas shall be waterproof or water resistant for their intended life and shall maintain their integrity in their intended use"

AS4858 : 2004 Wet Area Membranes

Class	I	II	III
Extensibility	Low	Medium	High
Joint Movement	50% of elongation at break	+35%	+200%
Elongation at break	10-59%	60-299%	≥ 300%

Class I

Class II

Class III

AS4858 : 2004 Wet Area Membranes

- Water absorption
- Acceptance of cyclic movement
  - Simulate movement caused by thermal or moisture content changes
- Durability:
  - Samples are immersed in water, bleach, detergent & heat aged
  - then tested for tensile strength & elongation at break
- Moisture vapour transmission rate to assess suitability for use over particle board

Immersion Test Failure

Waterproofing Best Practice

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1. Risk assessment
2. Product selection
3. System Application & Detailing
4. Good building practice
5. Installation & Testing

Risk Assessment

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Failure Probability

Shower Area	High Risk
Bathroom/ laundries	Medium Risk
Toilets/ WC	Low Risk

Failure Cost

- Damage & repair
- Time & reputation
- Fittings, fixtures & finishes

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Consider Value:
Waterproofing system cost ($) / Service life (years)

- Compare the installed and replacement cost to your risk assessment (failure costs)
- Compliant with AS4858
- All materials in system to be compatible ***single source*** supply preferred/ recommended
- VOC/ Green Star compliance
- Independent/ third party testing, approvals, appraisals

General Guide : Membrane Selection

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Typical examples of membrane types by class:

Class I	**Polyester (2 part)** **Chlorinated rubber/ latex (1 part)** **Epoxy (2 part)**
Class II	**Acrylic (1 & 2 part)**
Class III	**Hybrids, Modified urethane, polyurethane (1 & 2 part)**

- Single pack systems are ready to use
- 2 pack systems require mixing but cure faster than single packs
- Hybrids, Modified urethanes and polyurethanes combine the benefits of the highest elongation with the fastest curing times

System Application : Best Practice

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Preparation & Priming:

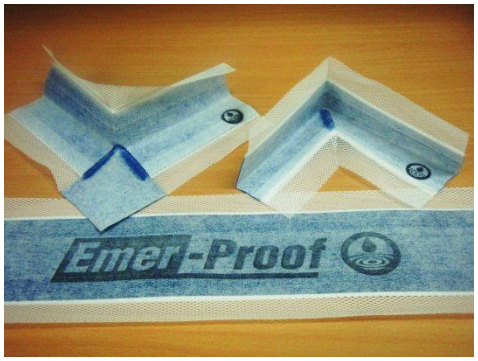
- Ensure host slab is fully cured
- Surface to be clean & contaminate free
- Surface defects should be treated
- Use right primer for substrate & membrane system noting required application rate and recommended time before membrane application

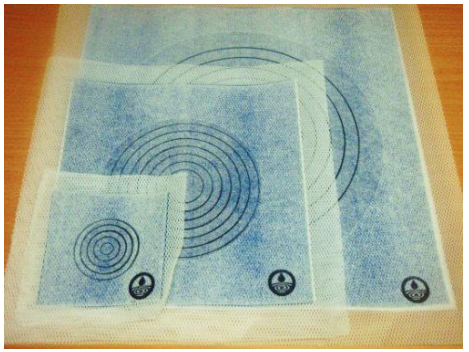
Application of the membrane:

- Ensure that the correct wet/ dry film thickness has been applied to ensure optimum performance checking each coat while wet
- Observe recoat times and cure time before tiling

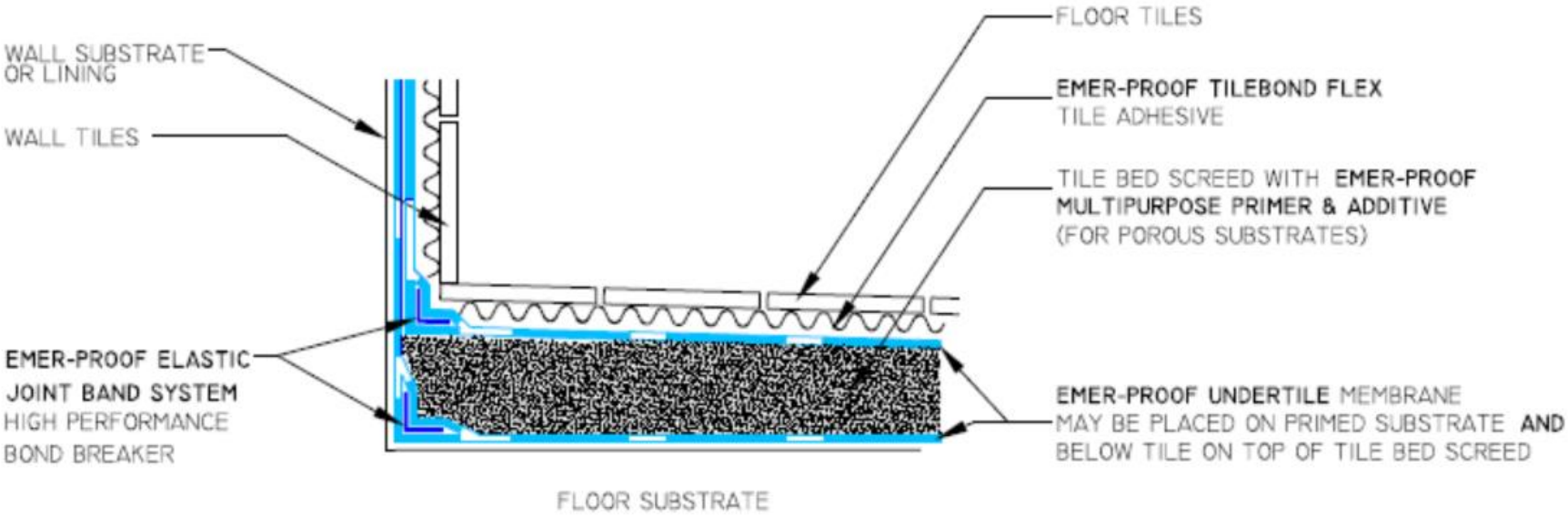
System Detailing

Wet Area: Design detail	Meets AS3740	Exceeds AS3740
Membrane placement	Under, or over, screed	Under & over screed
Membrane class	Class I, II or III	Class II or III
Screed, waterproofing additive	Optional	Recommended
Bond breaker (wall to floor joints)	As per AS3740, according to Class	Rubberised tape & pre-made corners
Pipe penetrations	Sealant or, rubberised squares	Rubberised squares





Exceed AS3740 – 2010 Section 3 Installation



Key features:

- Membrane, over & under screed
- Waterproof additive in screed
- High performance elastic joint band bond breaker

Good Building Practice

- Walls & floors are to be constructed in using AS3740 approved water resistant substrates & in compliance with current BCA

✔ Right

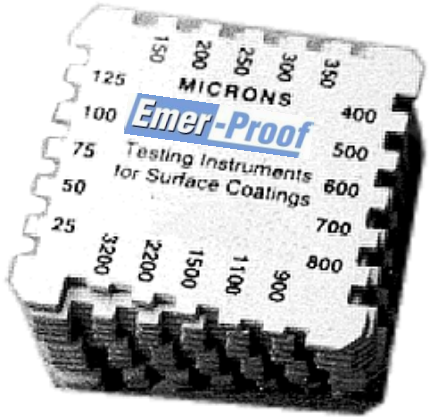
✘ Wrong

✔ Right

✘ Wrong

Installation and Testing

- Licensed and experienced waterproofing contractor
- Compliance with AS3740 as a minimum standard
- Follow manufacturer's instructions for application
  - Important to achieve correct film thickness
  - Membrane must be fully cured before tiling
- Protect membrane during construction/ prior to tiling
- Flood testing (AS3740)



Summary : Waterproofing

Design Decision	Design Solution
Risk Assessment	Consider failure cost & probability
Product & system selection	Parchem Product Selection Guide
Documentation	Parchem Standard Specification Clause
System detailing	Parchem Standard Detail Drawings

www.parchem.com.au/specification-services/

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Thank you for your attention

Any questions?