

Car Park Decking: Protection, Strength & Aesthetics

Presented By:

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Flowcrete
for the world at your feet

Part of
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Construction Products Group

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Webinar Structure

- Welcome & Learning Outcomes
- Specification Criteria for Car Parks
- Regulations, Accreditations & Testing
- Typical System Types & Build-ups
- About Flowcrete
- Case Studies
- Questions

Learning Objectives

Relevant areas of Competency: **Design and Documentation**

Upon completion of the seminar, the participants would be able to:

1. Identify the criteria for specification of a carpark decking, protection, strength, and aesthetics.
2. Will be familiar with the current NZ standards, regulations, and testing.
3. Will learn about the challenges faced in carpark decking structures and how to deal with them from the design stage.
4. Will know about the typical systems in the market, types & build-ups and identify the benefits and life cycle implications of different materials.

What is a Multi-Storey Car Park?

- Unique structures built since the 1960's to meet the growing level of car park owners and operators in New Zealand.
- Designed to have large, clear spans with minimum support.
- Exposed to water, salts, chemicals and fumes.
- Exposed to dynamic stress.

Structure Failure: Pipers Row

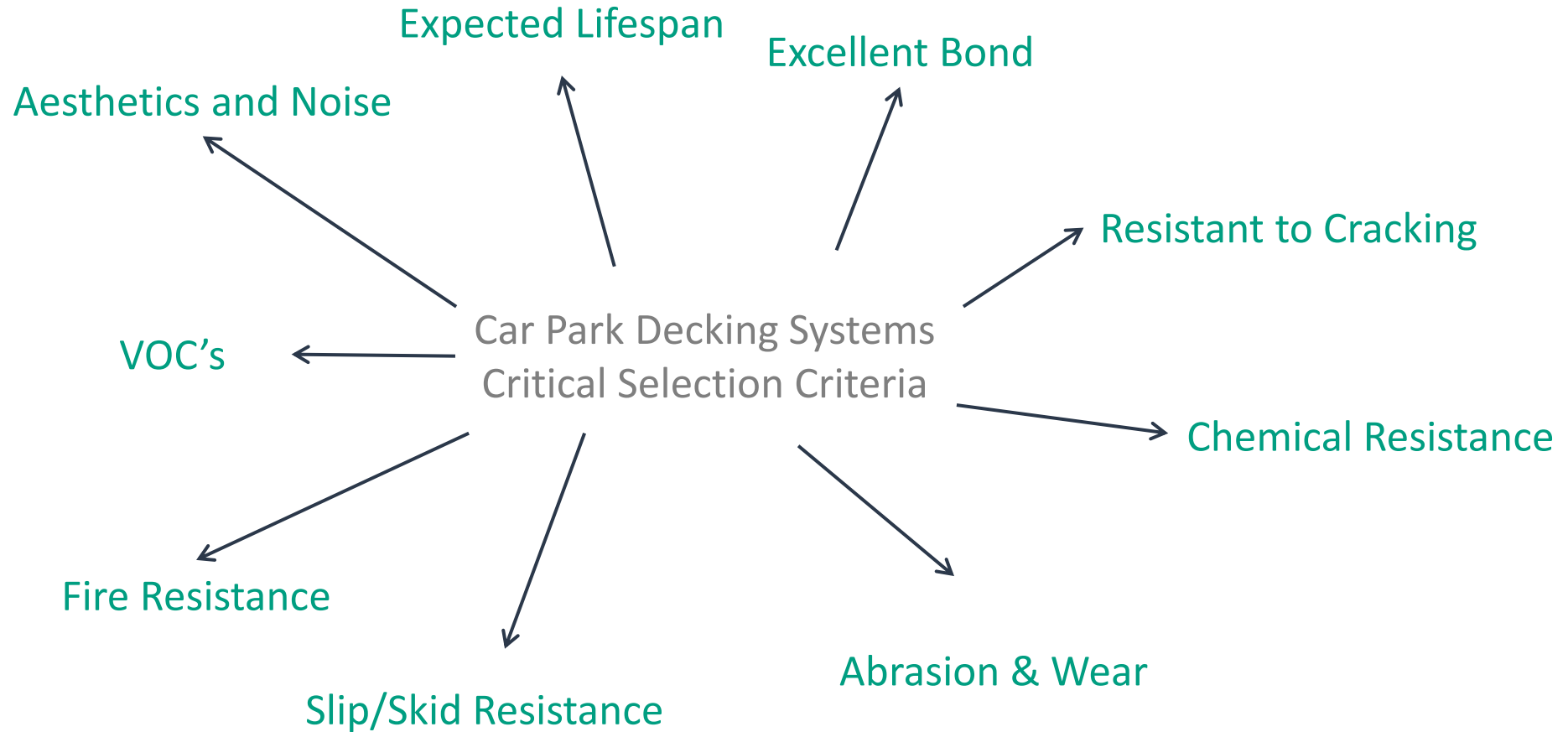


Structure Failure: Water Penetration

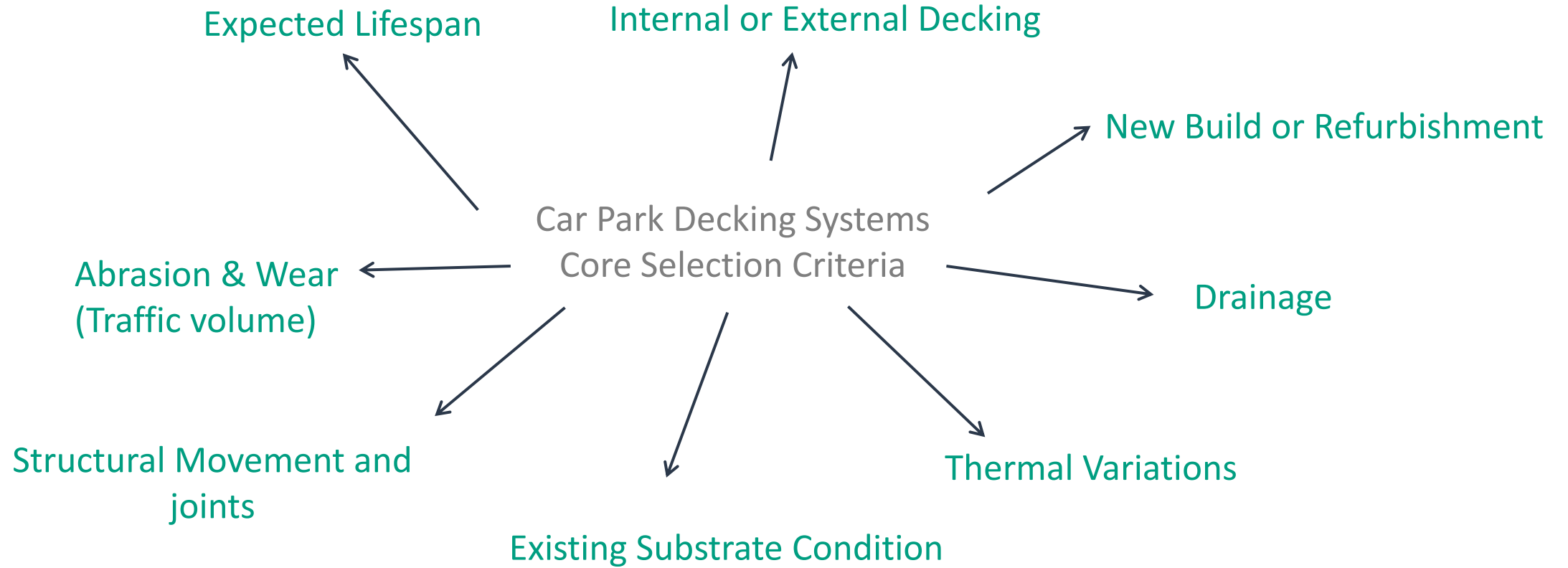


Durability of Car Park Deck Coatings...

Car Park Decking Systems: Critical Selection Criteria



Car Park Structure: Core Selection Criteria



Intermediate Decks: Design Criteria

Challenges

High traffic use
– in/out

Subject to movement

Vibration and
dynamic loading

Solutions

PU/MMA
deck coating

Epoxy Coating



Top Decks: Design Criteria

Challenges	Solutions
Most weathering and exposure to elements	Waterproofing
Thermal cycling	Elastomeric membrane
UV radiation	MMA Deck Coating
Water/contaminate ingress	
Dynamic stress	



Ramps: Design Criteria

Challenges

Mechanical impact

Vibration

Abrasion

Narrower ramps

Low floor to ceiling height

Exposure

Solutions

Heavy Duty Spec's

Anti Slip finish

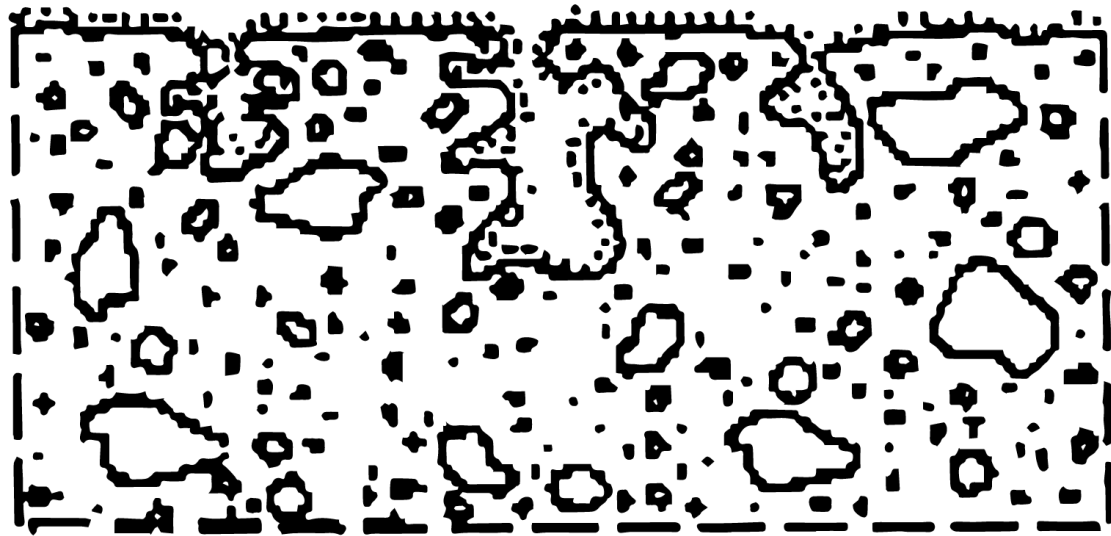
MMA

Elastomeric



Hydrophobic Impregnation

Schematic drawing of a typical hydrophobic impregnation.



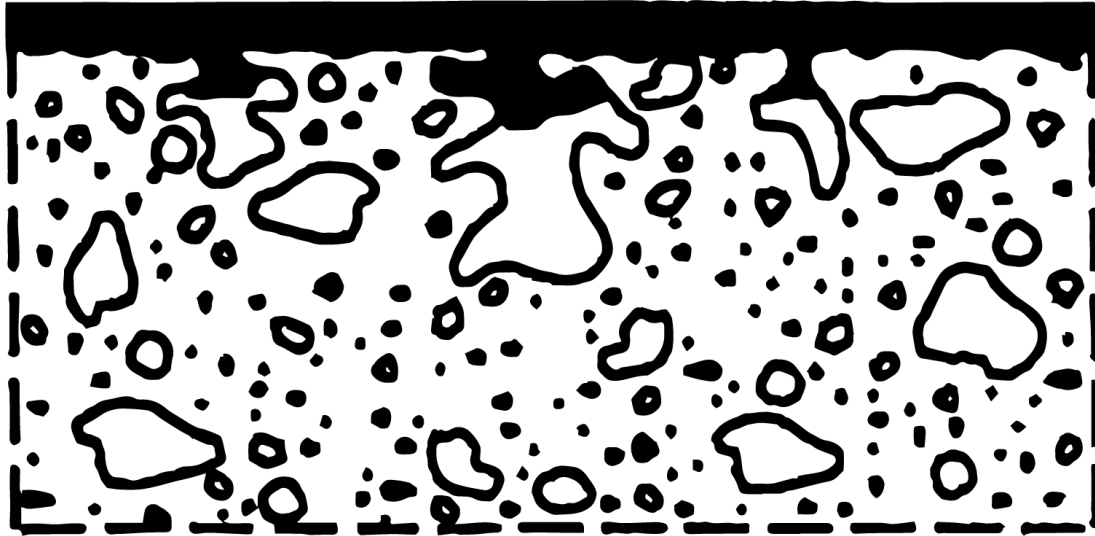
Impregnation

Schematic drawing of a typical impregnation.



Coating

Schematic drawing of a typical coating.



Evaluating Membranes

Typical test methods.

Standard Accreditation

Current Test Standard

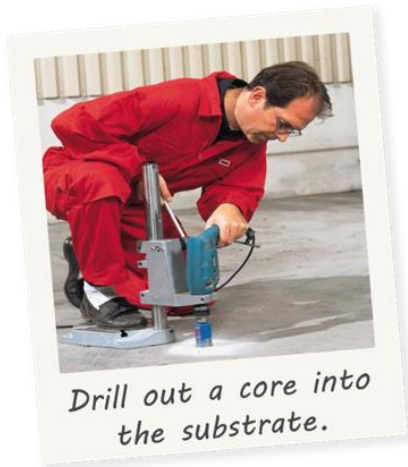
- ✓ EN1504-2:2005 "PRODUCTS AND SYSTEMS FOR THE PROTECTION AND REPAIR OF CONCRETE STRUCTURES"
- ✓ AS 4654.1.2012 "WATERPROOFING MEMBRANE SYSTEMS FOR EXTERIOR USE"

PHYSICAL TESTING

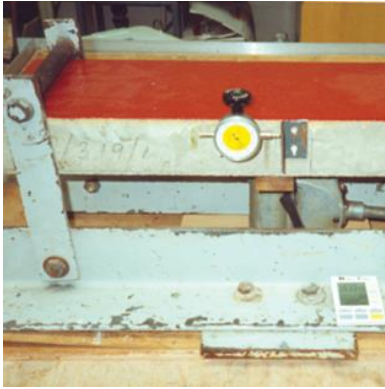
- ✓ Fire Resistance AS/ISO 9239.1
- ✓ Slip Resistance
 - ✓ AS4586-2013
 - ✓ SA HB 198:2014
- ✓ Waterproofing
 - ✓ ASTM E96/E96M – 16
 - ✓ AS/NZS 4347.9:1995
 - ✓ AS4654.1:2012
- ✓ VOC ASTM D2369-10:2005
- ✓ Tensile Bond Strength AS 1012.24:2005

In-situ Tensile Bond Test

Tensile Bond Strength AS 1012.24:2005

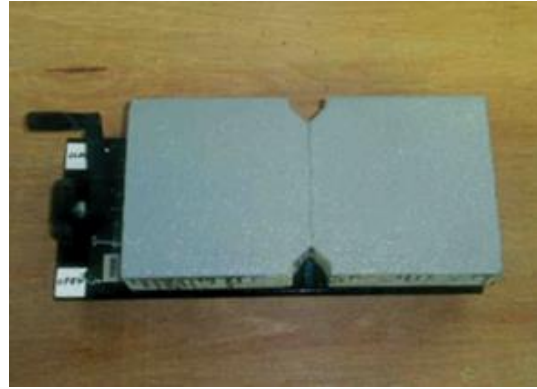


Test Methods Continued...



Resistance to Cracking

**AS4654.1:2012
Appendix B**



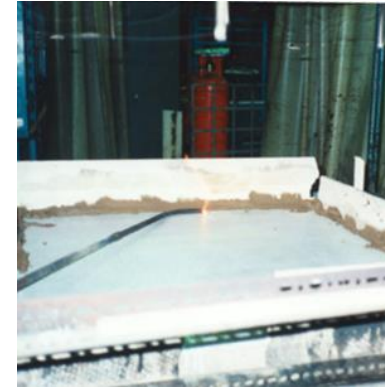
**Determination of Crack
Bridging Properties**

UNE-EN 1062-7:2004



**Abrasion
Resistance**

AS 1580.403.2



Fire Resistance

AS/ISO 9239.1



Slip Resistance

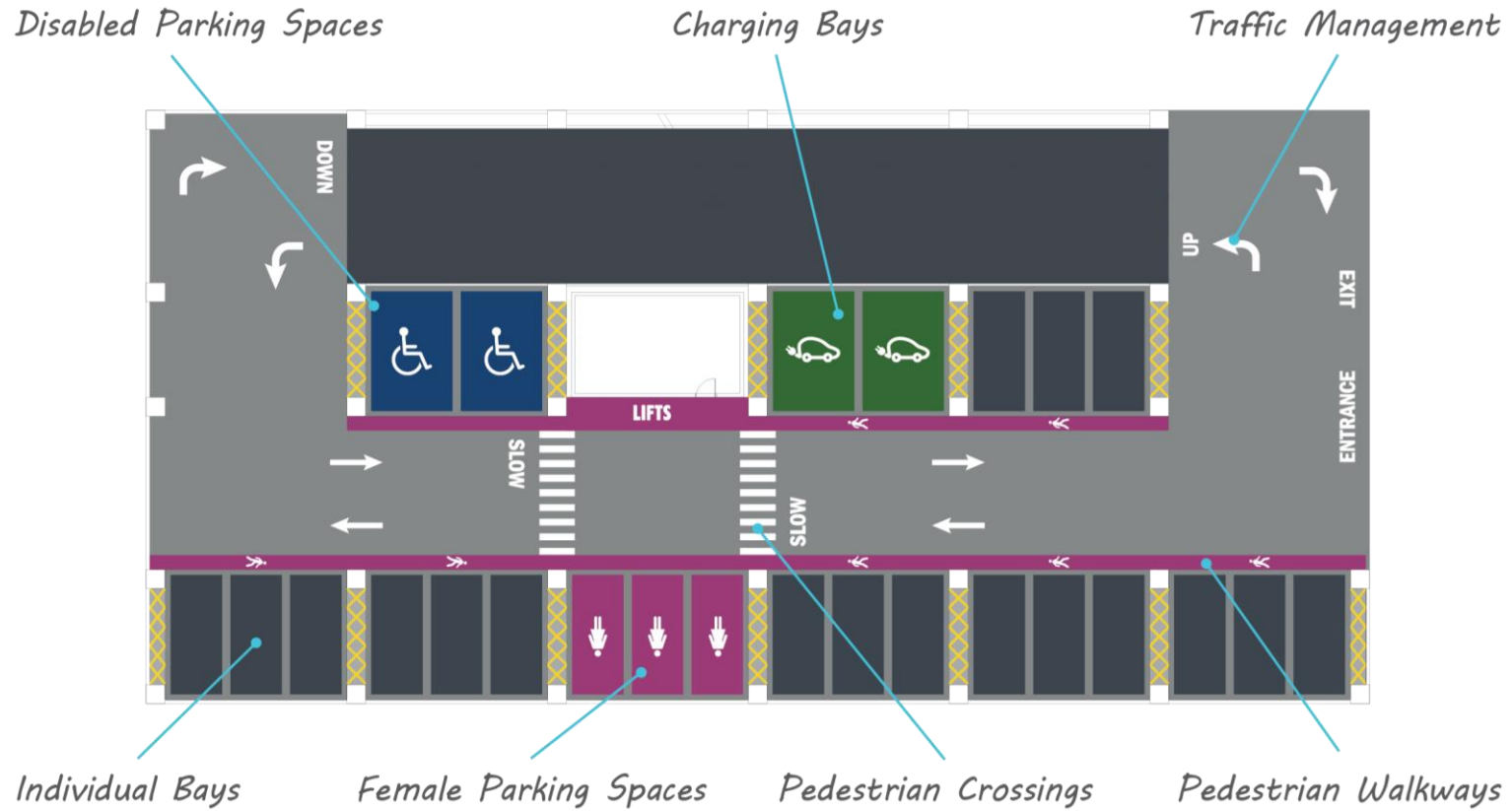
AS4586-2013

Ramps: Design Criteria

Type	Slider 96 Rubber	Slider 55 Rubber
P5	>54	>44
P4	45-54	40-44
P3	35-44	35-39
P2	25-34	20-34
P1	12-24	<20
P0	<12	

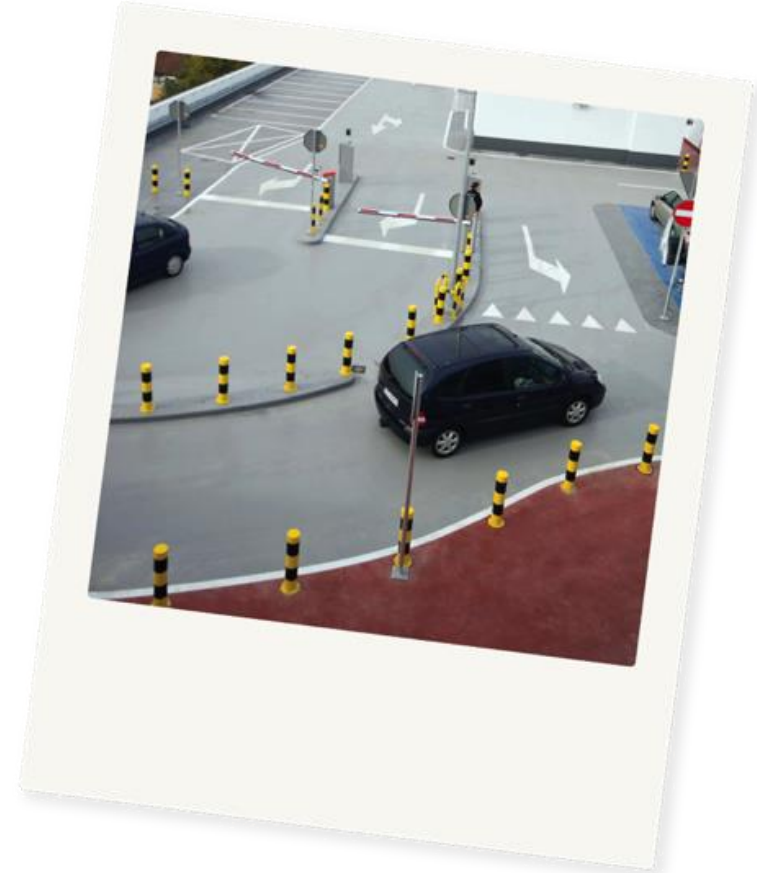


Demarcation & Safety



Maintenance

- Minimum serviceable life 10–20 years
- Easy clean on a regular basis by rotary scrubber with neutral cleaning agent



System Components for Intermediate or Underground Decks

Primers

Primers for use on concrete and asphalt substrates etc... are available

Membrane

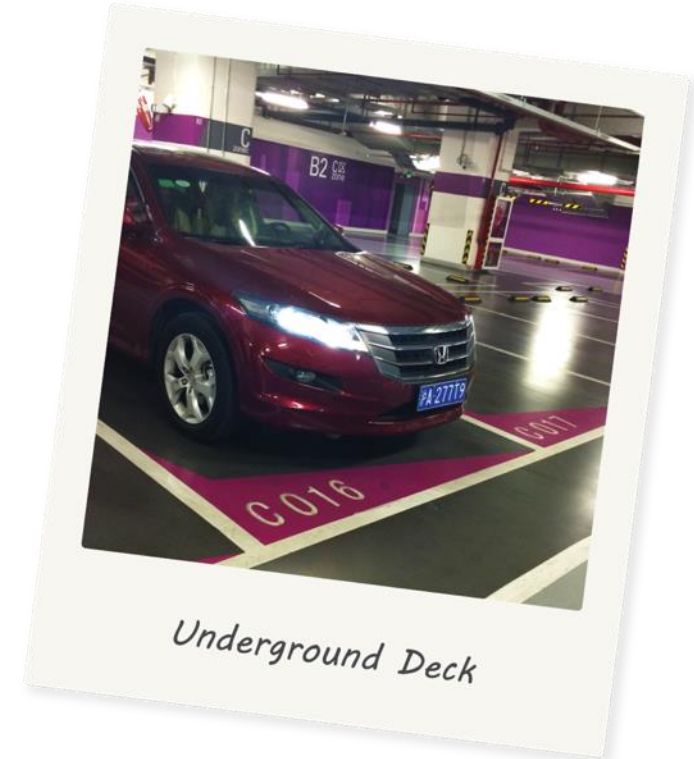
An elastomeric crack bridging membrane for banding of cracks, splits etc...

Wear layer

Using graded aggregate for slip resistance

Finish

Coloured wearing surface with UV stable options



System Components for Rapid Curing Waterproof External Decks

Primers

Rapidly curing methyl methacrylate (MMA) primer – for cementitious substrates. No primer usually required for asphalt surfaces

Membrane

An MMA based crack bridging elastomeric membrane

Wear layer

Using graded aggregate for slip resistance

Finish

Coloured seal coat with UV stable options

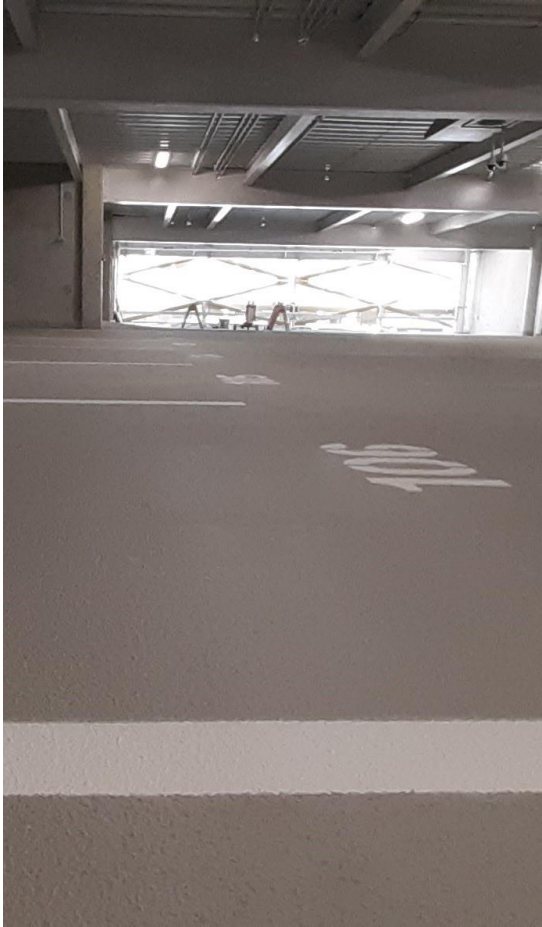
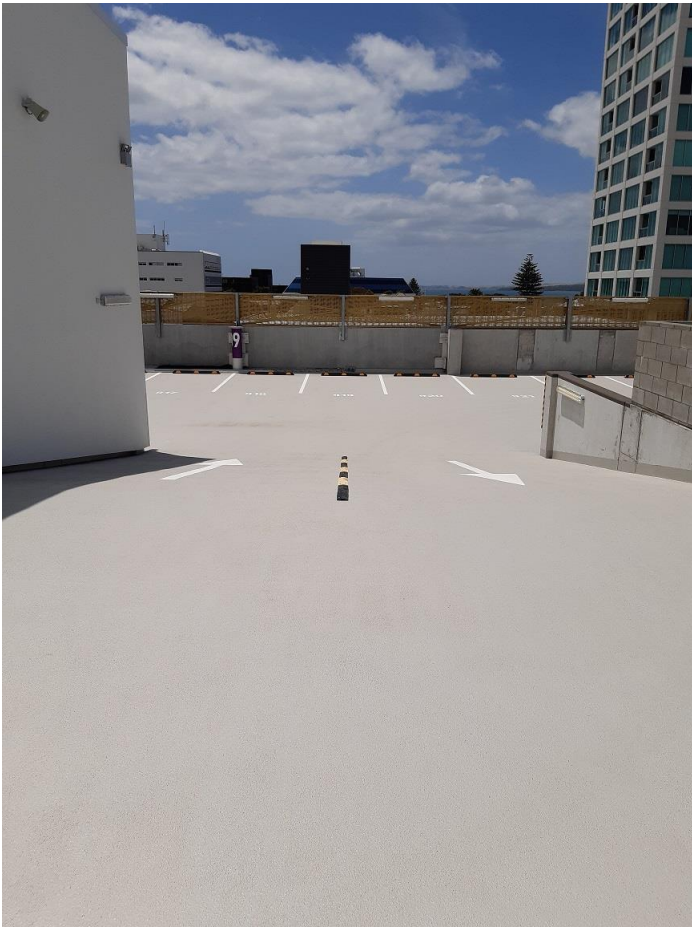


Summary

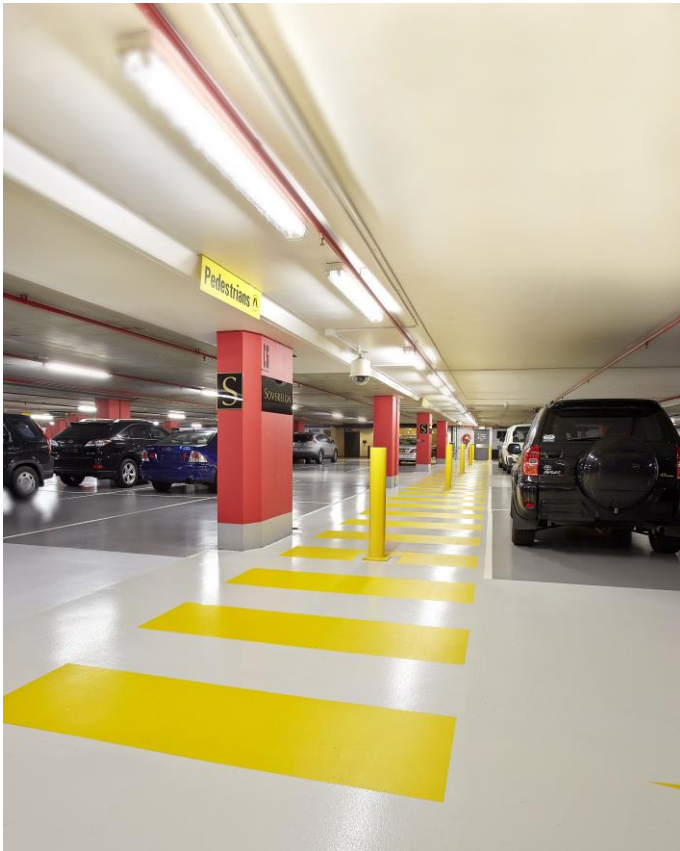
- Multi-storey car parks are unique structures requiring unique waterproofing
- Decking systems offer excellent performance characteristics and track record; often installed by a licensed applicator network
- The specifier has options for new or refurbished structures to meet the requirements of their design criteria

Case Studies

Auckland Council – Gasometer Car Park - Takapuna, Auckland NZ



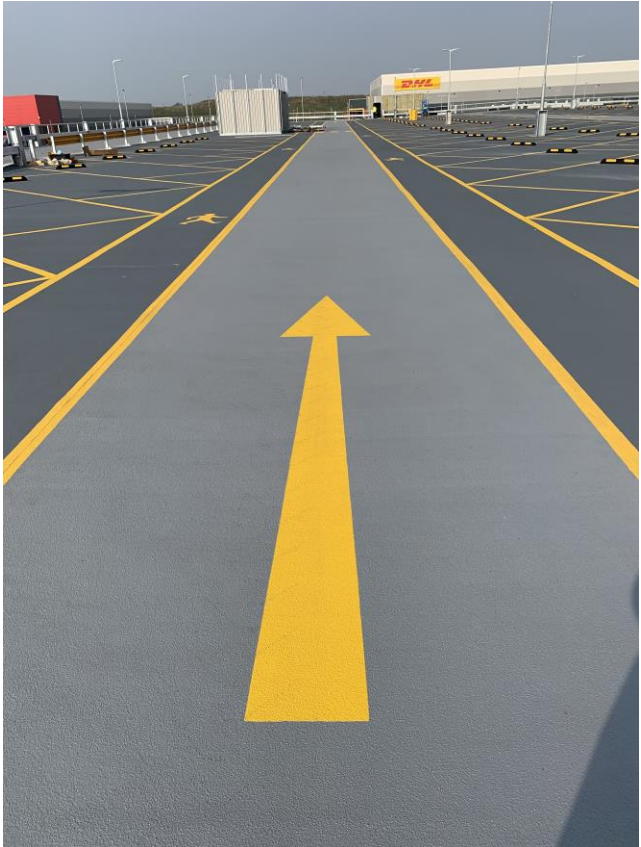
The Star Casino – Sydney AU



The Dubai Mall– Dubai UAE



Amazon – Midlands UK



Peninsula Hotel – Shanghai China



About Flowcrete & Tremco CPG Australia

Summary

**Our Industry
Leading Brands**

www.tremco.com.au



Flowcrete is represented by **Altex Coatings Ltd** in New Zealand.

www.flowcrete.co.nz

ALTEX COATINGS LTD

Q&A

Presented By:

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