AUS & NZ | ISSUE 2023

DANLEY™

Joint Edge Protection
Industrial Slab on Ground

Hyper ArmourMate™

Product Guide

Refer to the back of this booklet for contact information.

Hyper ArmourMate™

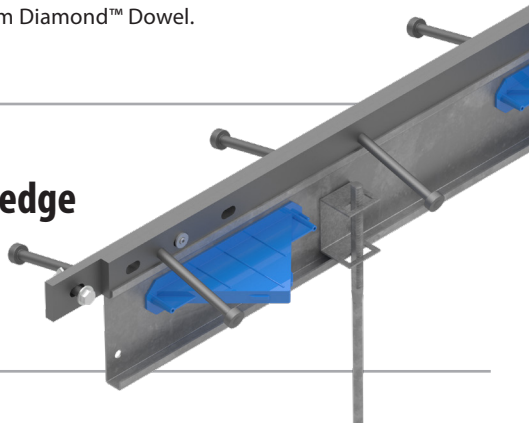
Product Description

Hyper ArmourMate™ is a premium armour edging solution and is designed for applications where the concrete edge and wear surface must withstand materials handling traffic with small hard wheels carrying high-loads on a daily basis, in particular, semi-automated and automated materials handling environments.

Features

- Top Rail or Full Joint System configurations.
- 40mm x 10mm Rails manufactured from high-quality, precision Cold Drawn Steel.
- Complies with ACI recommendations for FF and FL tolerances.
- Patented 10mm Diamond™ Dowel.

Danley™ Hyper ArmourMate™ provides slab edge protection to prevent concrete spalling.



Trade Benefits

Concreter Benefits

- Full System configuration eliminates form boards.
- Staking systems eliminates hot work (on site welding).
- Twist and turn stake systems provide fine height adjustment.
- Provides a straight edge and screed rail.
- Top Rail System includes the patented nailing plate for attachment when form boards are used.

Asset Protection Benefits

- Reduces concrete spalling damage at the joints.
- Provides a safer operating environment for tenant employees.
- Reduces floor maintenance and downtime costs over the life-cycle of the facility.
- Extends the life-cycle of the asset by protecting the floor.
- Provides a level of future proofing for environment and layout changes.
- Increases tenant satisfaction and return on investment.

Engineering Benefits

- Galvanised formwork plate is standard with all systems.
- Cold drawn rail materials provide highest impact resistance and straightness tolerances.
- Is in compliance with ACI recommendations, highest FF and FL tolerances.
- Diamond™ Dowel ensures the minimum risk of restraint due to lateral and diagonal shrinkage.
- Accuracy of dowel placement height and centres ensures the most effective load transfer performance.

Technical Data

Product codes Hyper ArmourMate™

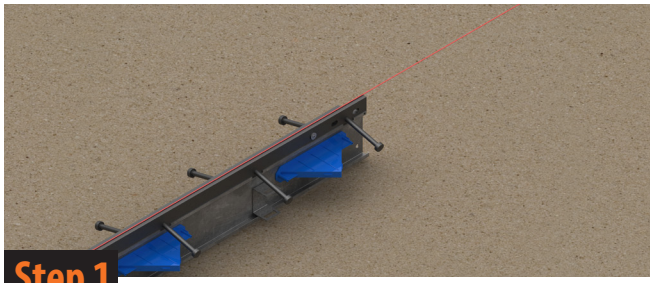
Part Number	Description
AMHY145FJSB	Hyper Edge Protection Black to suit 150-165 Slabs with 10mm DD at 450 centres
AMHY145FJSG	Hyper Edge Protection Galv to suit 150-165 Slabs with 10mm DD at 450 centres
AMHY145FJSG-EF	Hyper Edge Protection Galv to suit 150-165 Slabs with 10mm DD at 450 centres with 10mm Exp Foam
AMHY165FJS	Hyper Edge Protection Black to suit 170-185 Slabs with 10mm DD at 450 centres
AMHY165FJSG	Hyper Edge Protection Galv to suit 170-185 Slabs with 10mm DD at 450 centres
AMHY165FJSG-EF	Hyper Edge Protection Galv to suit 170-185 Slabs with 10mm DD at 450 centres with 10mm Exp Foam
AMHY190FJS	Hyper Edge Protection Black to suit 195-220 Slabs with 10mm DD at 450 centres
AMHY190FJSG	Hyper Edge Protection Galv to suit 195-220 Slabs with 10mm DD at 450 centres
AMHY190FJSG-EF	Hyper Edge Protection Galv to suit 195-220 Slabs with 10mm DD at 450 centres with 10mm Exp Foam
AMHY245FJS	Hyper Edge Protection Black to suit 250-300 Slabs with 20mm DD at 450 centres
AMHY245FJSG	Hyper Edge Protection Galv to suit 250-300 Slabs with 20mm DD at 450 centres
AMHY245FJSG-EF	Hyper Edge Protection Galv to suit 250-300 Slabs with 20mm DD at 450 centres with 10mm Exp Foam

Material Technical Data Hyper ArmourMate™

Component	Dimension (mm)	Material Type	Material Standard	Steel Grade Equivalent	Yield Stress (Mpa)	Tensile Strength (Mpa)
Hyper Rail	40 x 10	Bright Steel Cold Drawn	DIN 1.040 C22	1020	340-610	430-790
Shear Stud	100 x 10	Cold Drawn	DIN 1.040 C22	1010	415	520
Formwork	1.95	Galv G2 Z275	AS1365	≥ Grade 300	340	370
Diamond™ Dowel	110 x 110	Mild Steel Bar	AS/NZS 3679.1	≥ Grade 300	300	440

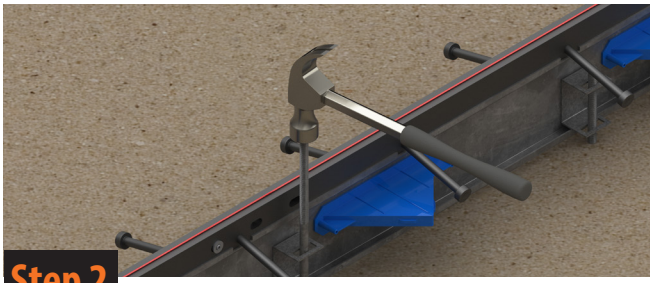
Installation Process

Full Joint System Installation Process



Step 1

- Check sub-grade for levelness and grade.
- Set string line along the joint path and position the first length of ArmourMate™.
- Ensure the plastic sleeves go on the side where the first concrete pour will occur.

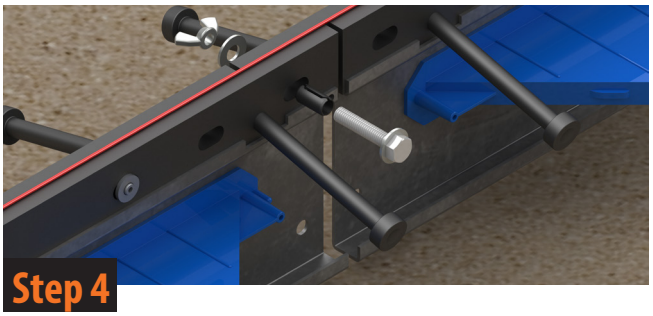


Step 2

- Insert stakes (six per length) through the stake brackets attached to the ArmourMate™ separation plate.
- Hammer the stakes into ground until they are 50 mm below the top of the joint.
- Additional staking and bracing may be required to keep sections steadyduring the concrete pour.

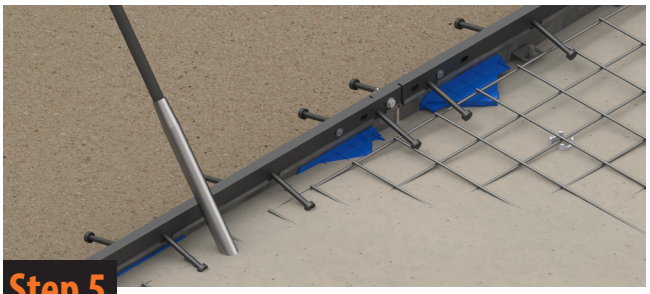
Step 3

- Adjust the height of the joint until it is level and at the required slab depth.
- Turn the stakes 90 degrees using a shifter to lock the joint in place.



Step 4

- The ArmourMate™ length has a 60 mm lap joint at either end used to bolt the separate lengths together.
- Ensure a 3 mm gap is left between each length. This allows for the lateral movement of the joint. Repeat the process for each section until the desired length is achieved.



Step 5

- Install any required concrete reinforcing.
- Pour the concrete ensuring vibration along the joint at regular intervals.
- The top of the ArmourMate™ rails can be used to screed along.

Step 6

- After the first pour has set remove any additional staking.
- Place the dowels through the separation plate slots into the sleeves in the first pour before pouring the second pour.
- Dowels should be placed within 36 hours of the first pour.

Intersections

Hyper ArmourMate™ Pre-Fabricated Intersections

Hyper ArmourMate™ is available in prefabricated intersections for easy on site installation and uninterrupted joints.

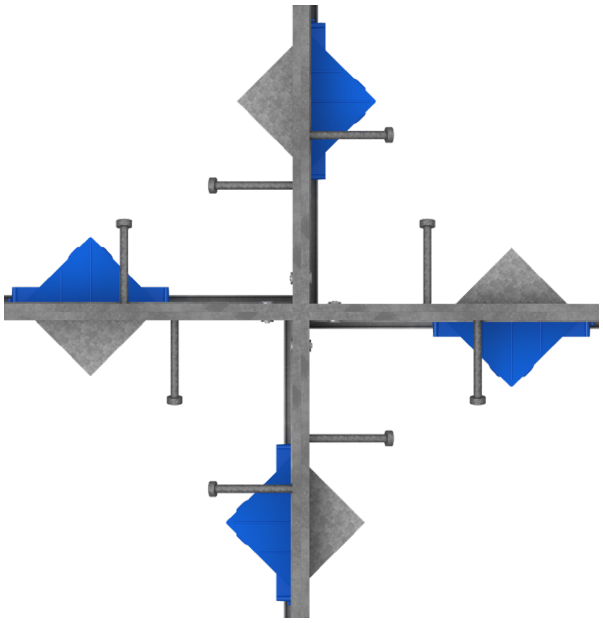
Manufactured to suit the slab height and dowel specication of the connecting Hyper ArmourMate™ joint. The design of the intersection allows it to be placed in any direction on site removing the risk of incorrect placement. Available in three standard congurations, 2-Way, 3-Way and 4-Way the intersections can be a great labour saving component to any project.

2-Way intersection

3-Way intersection

4-Way intersection

Plan View at Intersection

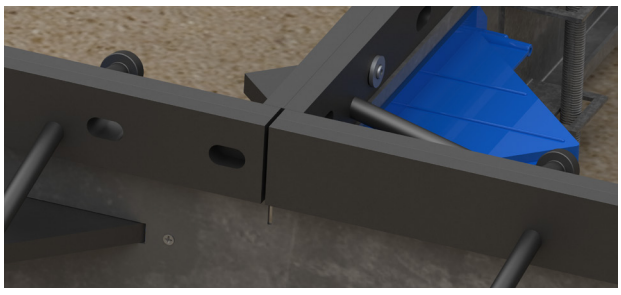


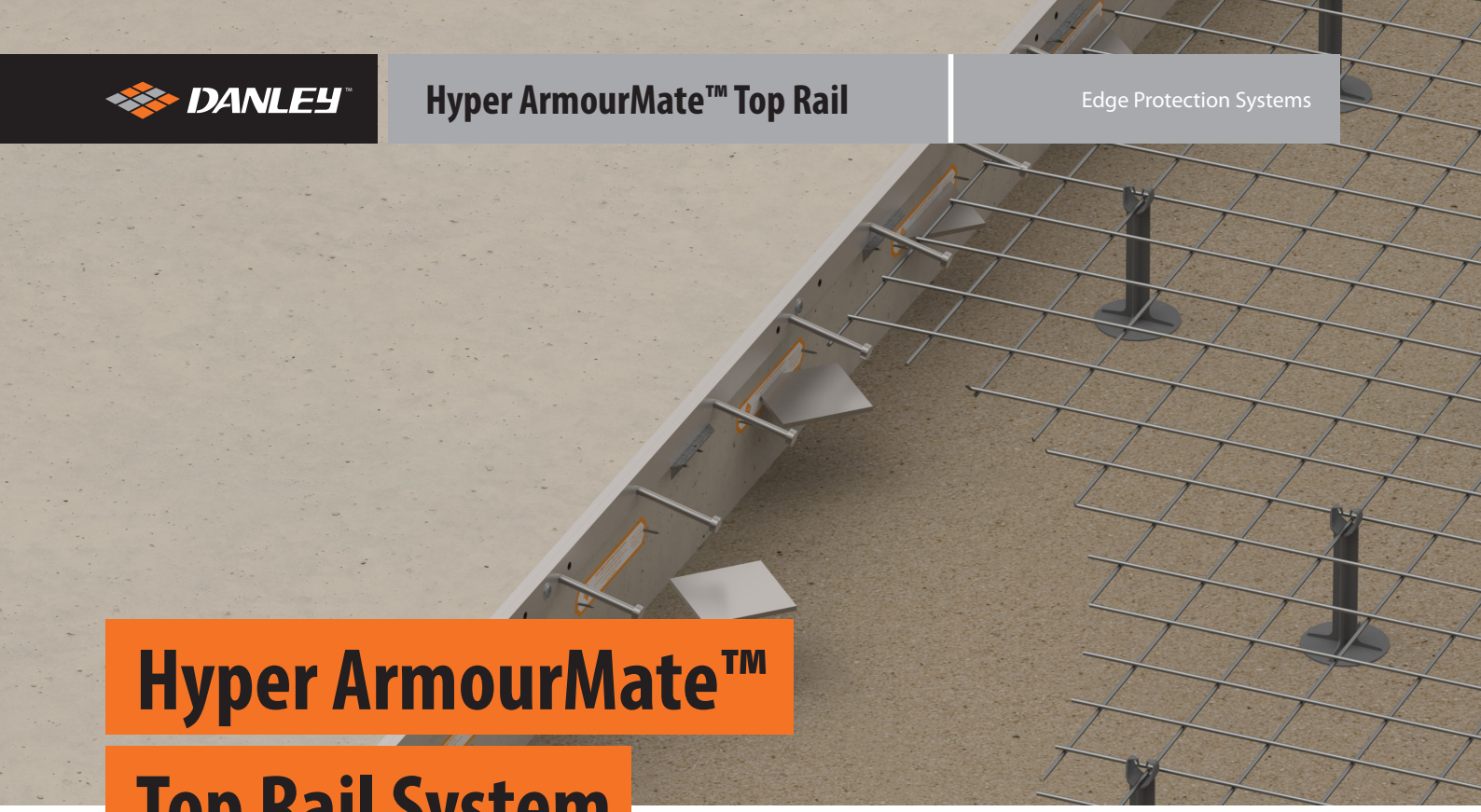
On-site Butted Intersections

Used when a prefabricated intersection is not required or cost effective. It is the process of forming an intersection with standard 3 metre lengths on-site by running a soff saw-cut through the joint. The rail section of the ArmourMate™ must be cut to allow the joint to open up effectively on all sides of the intersection.

Caution must be taken not to cut too deep, cutting into the dowels (load transfer system) will weaken the joint.

Studs should be no further than 100 mm from the cut to effectively anchor the separate pieces. If this is not the case a stud will need to be welded onto the rail on-site within this range.



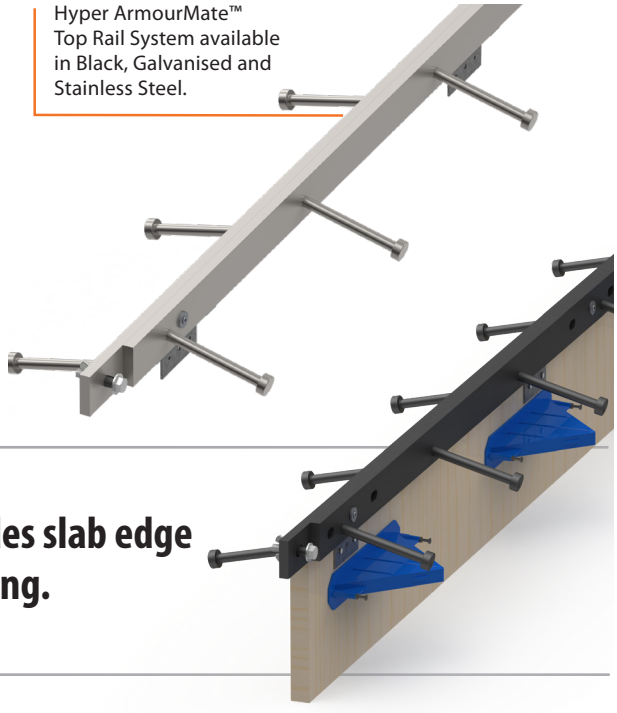


Hyper ArmourMate™ Top Rail System

Product Description

Hyper ArmourMate™ Top Rail System is used in external or corrosive environments when traditional formboard is at the perimeter of the pour. Hyper Top Rail is available in black, galvanised or stainless steel finish.

Supplied in standard 3 metre lengths, the Hyper ArmourMate™ Top Rail System incorporates a quick-nail plate system to attach the Hyper ArmourMate™ Top Rail System to the timber formboard.



Hyper ArmourMate™ Top Rail System available in Black, Galvanised and Stainless Steel.

Danley™ Hyper ArmourMate™ provides slab edge protection to prevent concrete spalling.

Trade Benefits

Concreter Benefits

- Full System configuration eliminates form boards.
- Staking systems eliminates hot work (on site welding).
- Twist and turn stake systems provide fine height adjustment.
- Provides a straight edge and screed rail.
- Top Rail System includes the patented nailing plate for attachment when form boards are used.

Asset Protection Benefits

- Reduces concrete spalling damage at the joints.
- Provides a safer operating environment for tenant employees.
- Reduces floor maintenance and downtime costs over the life-cycle of the facility.
- Extends the life-cycle of the asset by protecting the floor.
- Provides a level of future proofing for environment and layout changes.
- Increases tenant satisfaction and return on investment.

Engineering Benefits

- Galvanised formwork plate is standard with all systems.
- Cold drawn rail materials provide highest impact resistance and straightness tolerances.
- Is in compliance with ACI recommendations, highest FF and FL tolerances.
- Diamond™ Dowel ensures the minimum risk of restraint due to lateral and diagonal shrinkage.
- Accuracy of dowel placement height and centres ensures the most effective load transfer performance.

Technical Data

Product codes Hyper ArmourMate™ Top Rail

Part Number	Description
AMHYPTOPASSB	40mm H x 10mm W, 3000mm length, Black
AMHYPTOPASSG	40mm H x 10mm W, 3000mm length, Galvanised
AMHYPERTOPSS	40mm H x 10mm W, 3000mm length, 316 Grade Stainless Steel

Top Rail Product Specification

- Supplied in standard 3000mm lengths
- Rail Dimensions: 40mm H x 10mm W
- Available in Black, Galvanised or 316 Grade Stainless Steel
- 100mm x 10mm Cold Drawn Steel shear studs
- 60mm overlap/offset for butt joining of sections
- Quick-nail plate system

Stainless Steel Top Rail Material Specification

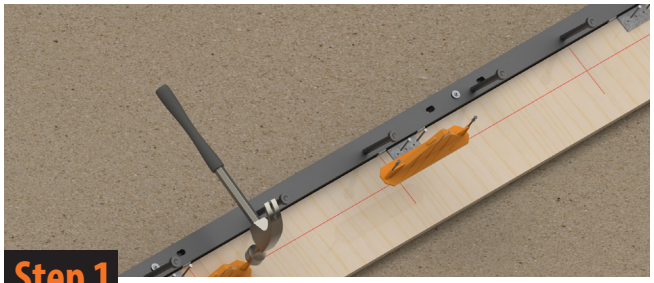
Product Code	Grade	Rail Height (mm)	Rail Width (mm)	Length (mm)	Diamond™ Dowel (6mm or 10mm)	Length Weight (kg)		Pack Weight (kg)
AMHYPTOPASSB	Black Steel	40	10	3000	Sold Separately	22	50	1100
AMHYPTOPASSG	Galvanised Steel							
AMHYPERTOPSS	316 Stainless Steel							

Diamond™ Dowel Material Specification

Component	Dimension (mm)	Material Type	Material Standard		Yield Stress (Mpa)	Tensile Strength (Mpa)
			Black	Galv		
6mm Plate **10mm Plate**	6 x 100 x 100 10 x 100 x 100	Steel	AS/NZS 3679.1:2016	AS/NZS 3679.1:2016	325	450
				AS/NZS 4680:2006		
		Stainless Steel	ASTM A240 Grade 316		205	515

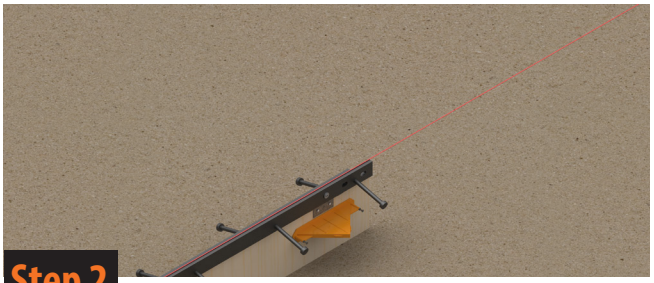
Installation Process

Top Rail Installation Process



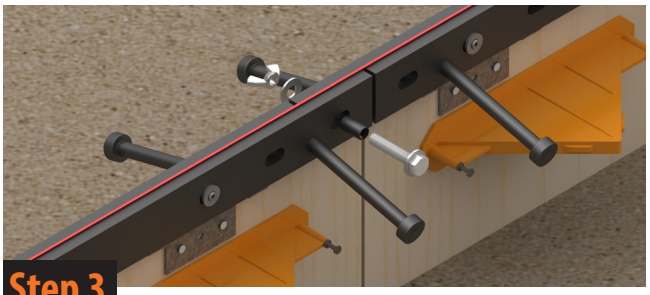
Step 1

- Nail the top rail ArmourMate™ to wooden formwork using the attached formwork brackets. Nail the required dowel sleeves at the specified centres and at ½ the required slab height along the formwork.
- The 40 mm rails need to be allowed for when calculating the sleeve positions.



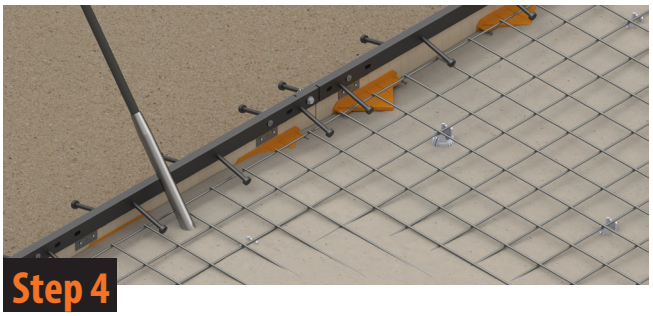
Step 2

- Ensure sub-grade is level.
- Set string line along the joint path and position the first length of woodenformwork with ArmourMate™ and dowel sleeves.
- Ensure the sleeves go on the side where the first concrete pour will occur.
- Adjust the height of the joint until it is level and at the required slab depth.



Step 3

- The ArmourMate™ length has a 60 mm lap join at either end. This is used to bolt the separate lengths together.
- Use separately supplied Nylon bolts to fix the sections together and repeat the process for each section until the desired length is achieved.
- Ensure a 3 mm gap is left between each length. This allows for the lateral movement of the joint. Repeat the process for each section until the desired length is achieved.

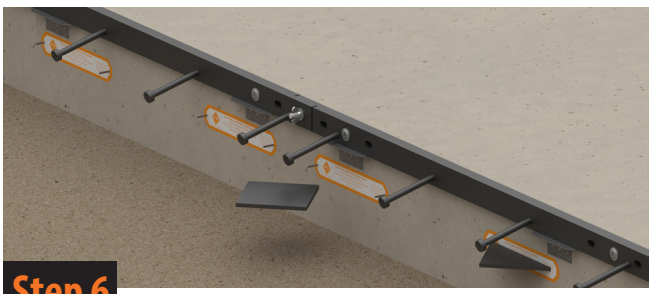


Step 4

- Install any required concrete reinforcing.
- Pour the concrete ensuring it is vibrated along the joint at regular intervals.
- The top of the ArmourMate™ rails can be used to screed along.

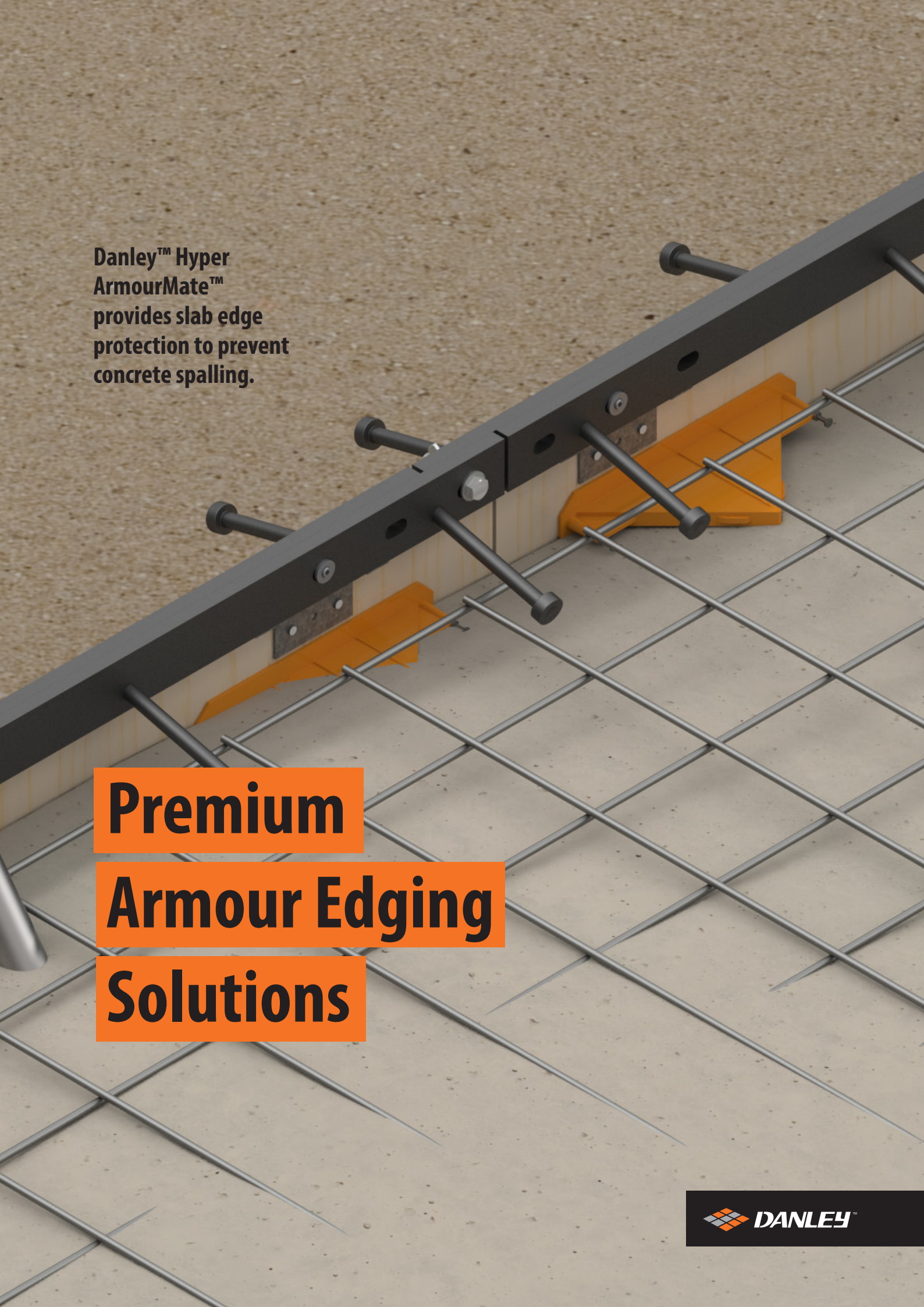
Step 5

- After the concrete has set, strip the wooden formwork from the joint (being careful not to damage the top rails).



Step 6

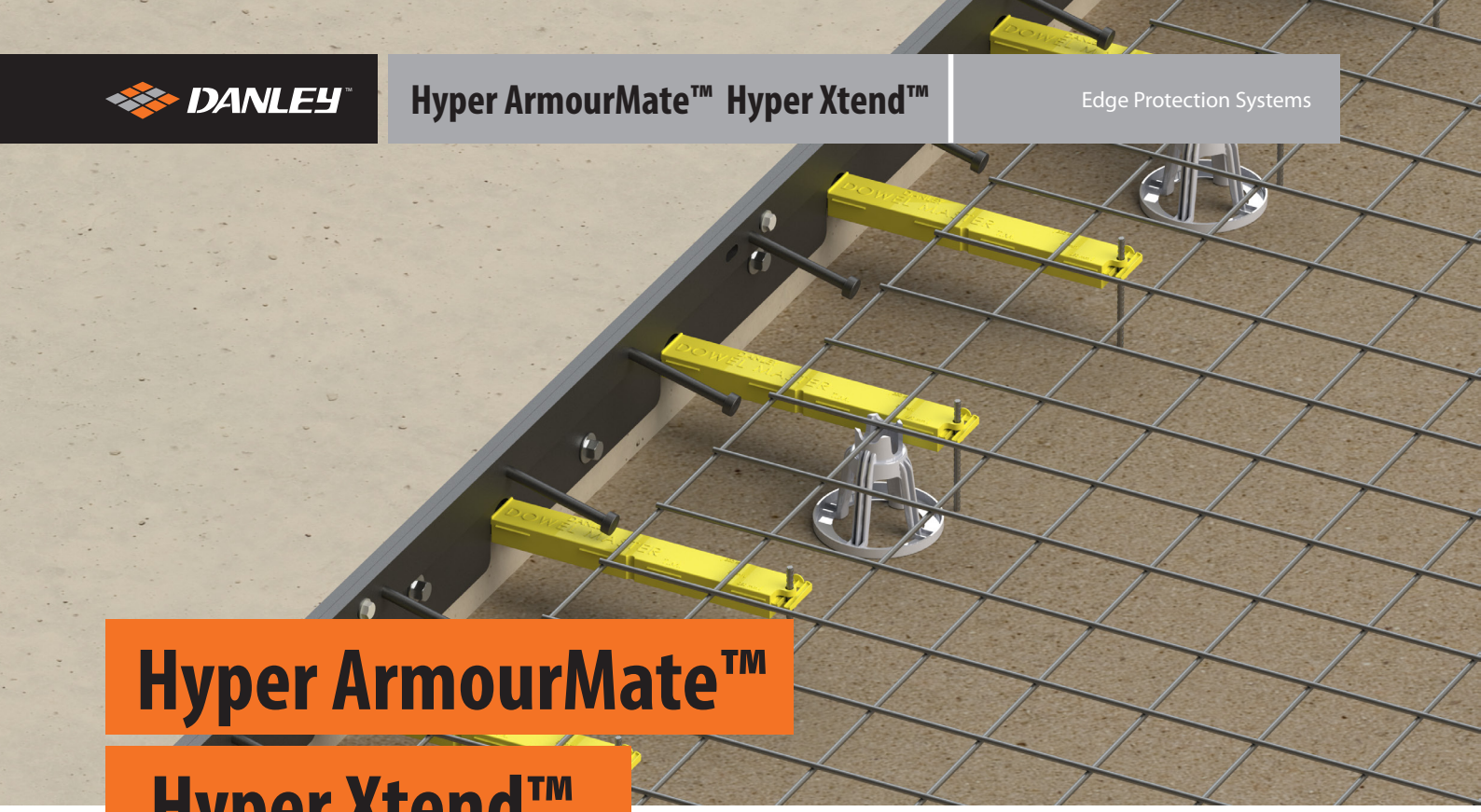
- Place the dowels into the sleeves in the first pour before pouring the second pour.
- Dowels should be placed within 36 hours of the first pour.



Danley™ Hyper ArmourMate™ provides slab edge protection to prevent concrete spalling.

Premium Armour Edging Solutions

DANLEY™



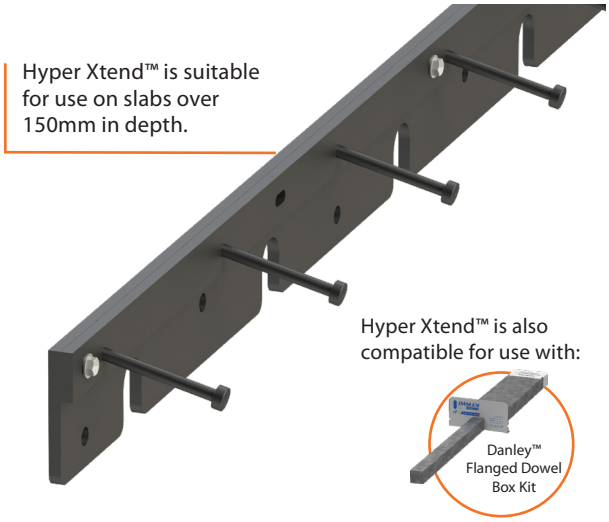
Hyper ArmourMate™ Hyper Xtend™

Product Description

Hyper ArmourMate™ is a premium armour edging solution and is designed for applications where the concrete edge and wear surface must withstand materials handling traffic with small hard-wheels carrying high-loads on a daily basis, in particular semi-automated and automated materials handling environments.

Available in standard 3 metre lengths, Hyper Xtend™ is designed for use in slabs over 150mm in depth, utilising Danley™ DowelMaster™ with 16mm, 20mm or 25mm saw cut square dowels. For slabs requiring high movement joints (up to 20mm), Hyper Xtend™ is also compatible for use with Danley™ Flanged Dowel Box Sleeve Kits. All dowels and sleeves are sold separately.

Note: For additional information regarding the specification and installation of Hyper Xtend™ please consult our Danley™ Engineering Team.



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- Is in compliance with ACI recommendations, highest FF and FL tolerances.
- Diamond™ Dowel ensures the minimum risk of restraint due to lateral and diagonal shrinkage.
- Accuracy of dowel placement height and centres ensures the most effective load transfer performance.

Technical Data

Product codes Hyper ArmourMate™ Hyper Xtend™

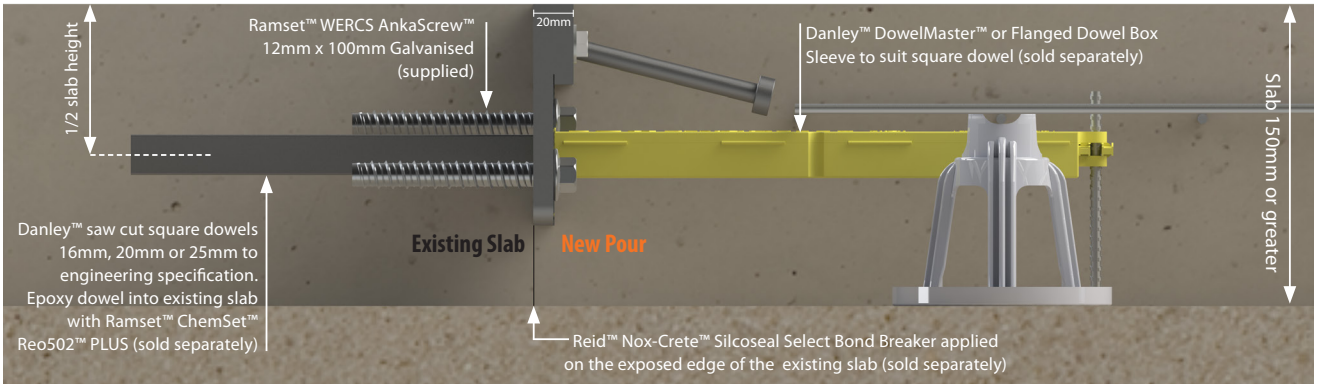
Part Number	Description
AMHYPXTDB	Hyper Xtend Edge Protection System. Black. Suits slabs 150mm & over
AMHYPXTDG	Hyper Xtend Edge Protection System. Galvanised. Suits slabs 150mm & over

Hyper Xtend™ Product Specification

- Supplied in 3 metre lengths. Product Weight: 35kg
- Steel Top Rail - available in Black or Galvanised
- Exposed Edge: 2 sections x 10mm wide
- 100mm x 10mm Cold Drawn steel shear studs
- Pre-cut dowel slots for 300mm or 600mm centres
- Supplied with 12mm x 100mm Galvanised Ramset™ AnkaScrews™

Hyper Xtend™ Typical Detail

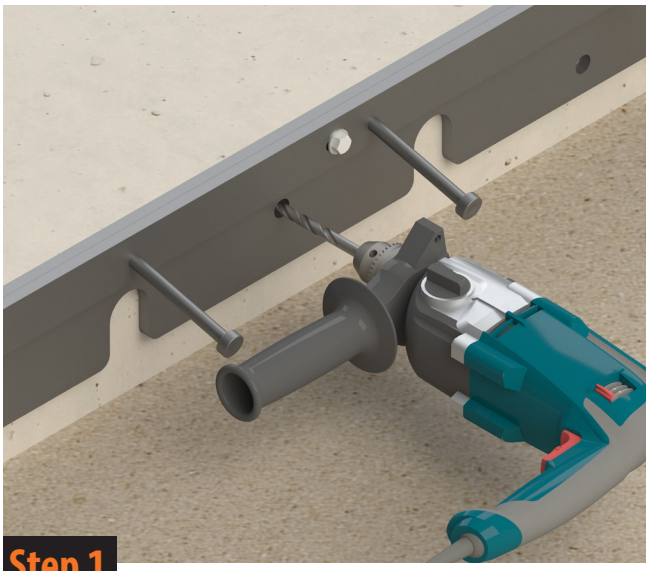
AMHYPXTDB - Hyper Xtend™ Kit (Black)
AMHYPXTDG - Hyper Xtend™ Kit (Galvanised)



Danley™ Hyper Xtend™ is used for the repair of joints in aged slabs, or extending existing concrete elements to newly poured sections.

Installation Process

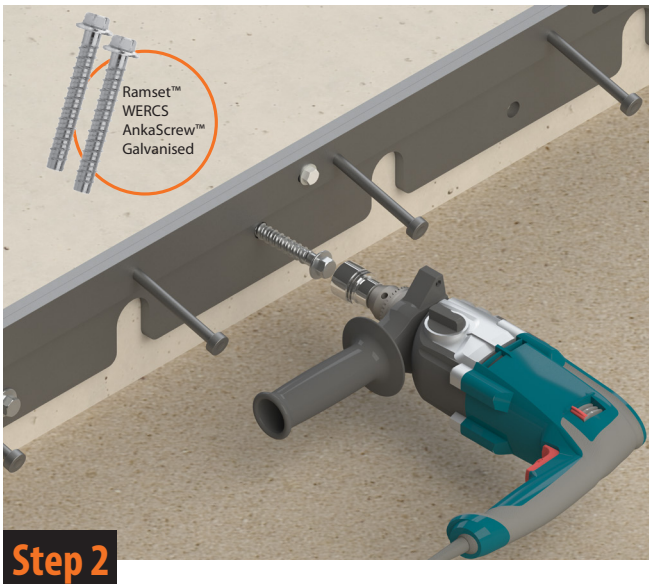
Hyper Xtend™ Installation Process



Step 1

Slab Preparation: Prior to the installation of Hyper Xtend™ ensure the existing slab edge is straight and flat. The working surface of the slab should be free debris & contaminants.

Position Hyper Xtend™ level with the top edge of the existing slab. Using a 12mm masonry drill bit in the pre-cut punched holes of Hyper Xtend™, drill a hole in the slab to a minimum depth of 94mm. Use a dustless bit, or remove the debris with a hand pump, compressed air, or a vacuum.



Step 2

Insert the provided Ramset™ WERCS AnkaScrew™ through the Hyper Xtend™ and using a 16mm diameter socket, screw it into the hole with with a socket wrench or an impact wrench (pictured). Use slight pressure until the self-tapping action begins. Tighten the Ramset™ WERCS AnkaScrew™ until the Hyper Xtend™ is held firm against the slab edge. Ensure you **do not** over tighten. Repeat the process along the slab edge until the Hyper Xtend™ is fixed in position.

Step 3

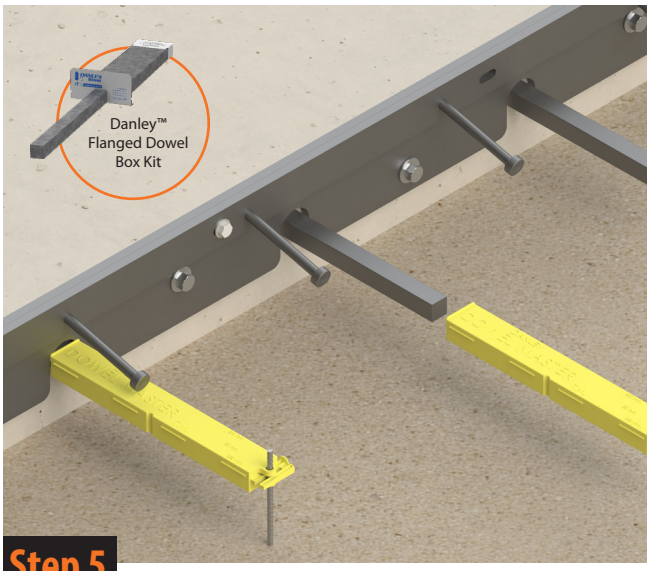
Using a Ramset™ D3 Dustless Carbide drill bit, or Ramset™ U3™ & R3™ Max Multi-Cutter Carbide drill bit, core a hole for the square dowel at the specified centres. Ensure the holes are cored at 1/2 the slab height. All drilled holes should be free of dust, debris and other contaminants.
16mm x 400mm square dowels will require a **24mm** diameter hole, 200mm in depth
20mm x 400mm square dowels will require a **30mm** diameter hole, 200mm in depth
25mm x 400mm square dowels will require a **38mm** diameter hole, 200mm in depth

Step 4

Refer to the Ramset™ ChemSet™ Reo502™ PLUS or the Epcon™ C6 PLUS Technical Data Sheets for the full application and installation guidelines.
Insert **40ml** of Reo502™ PLUS into 24mm diameter holes (for 16mm x 400mm square dowels)
Insert **62ml** of Reo502™ PLUS into 30mm diameter holes (for 20mm x 400mm square dowels)
Insert **102ml** of Reo502™ PLUS into 38mm diameter holes (for 25mm x 400mm square dowels)
Install the dowels so they are at right angles and level in all directions.

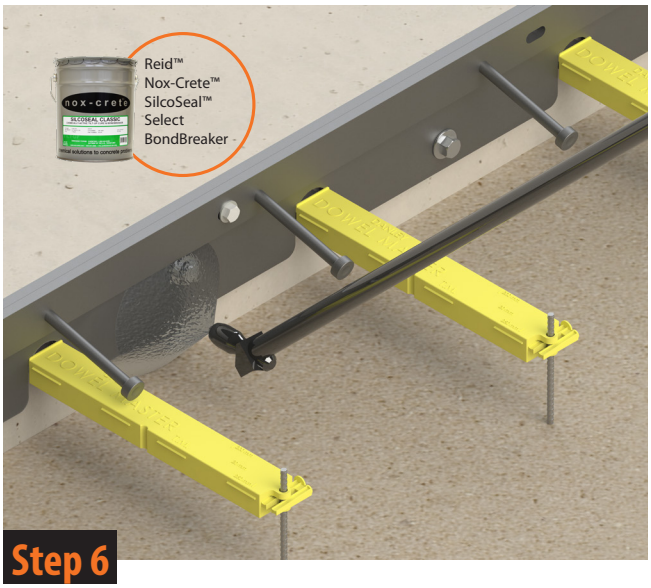
Installation Process

Hyper Xtend™ Installation Process



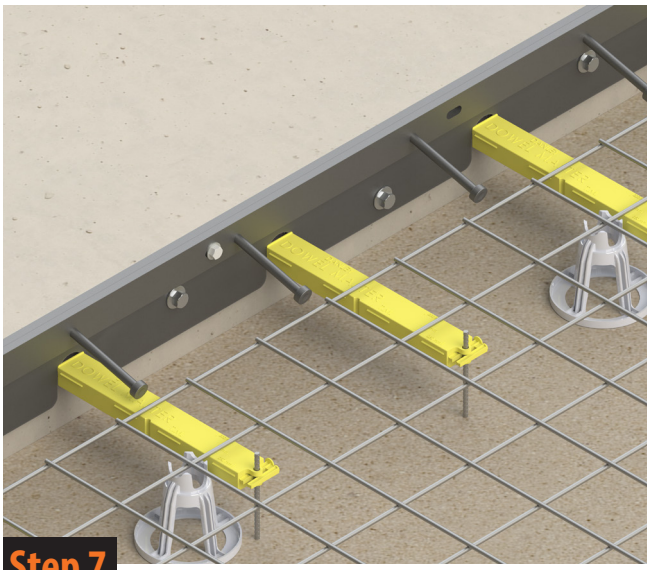
Step 5

With dowels in position and ChemSet™ Reo502™ PLUS fully cured to specifier's recommendations, insert Danley™ DowelMaster™ or Flanged Dowel Box Sleeves (pictured inset) over the dowels.



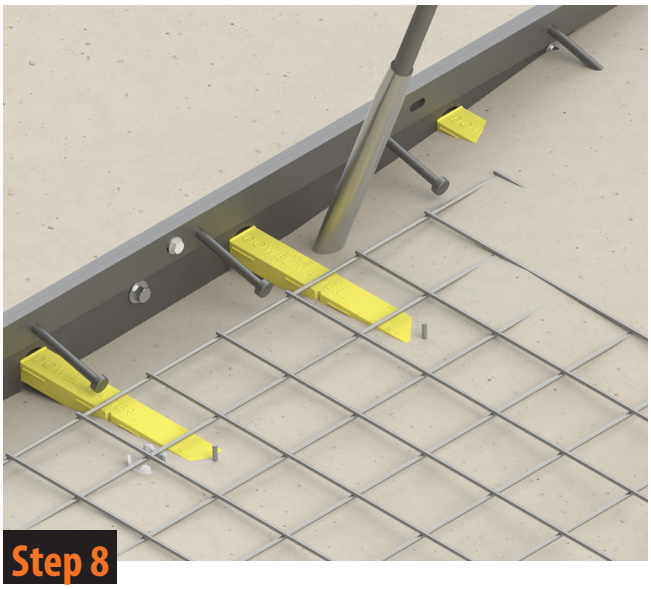
Step 6

Application of bondbreaker: It is **critical** to ensure that a bondbreaker is used. We recommend the use of Reid™ Nox-Crete™ SilcoSeal Select BondBreaker. Ensure bondbreaker is applied to the exposed concrete face of the existing slab to prevent bonding with the newly poured section.
For more information, refer to the Reid™ SilcoSeal™ Select Technical Data Sheet.



Step 7

Place reinforcing mesh in accordance to engineering specification. Ensure that the mesh is not resting on either the dowels or shear studs. Mesh should be supported by Danley™ plastic bar chairs. All Danley™ plastic chairs & spacers comply with the requirements of AS/NZS 2425:2015.



Step 8

Place the concrete. The edge of the slab must be vibrated to ensure adequate consolidation and compaction of concrete around the Hyper Xtend™ shear studs and dowel sleeves.
Avoid contacting the sleeve with the vibrator shaft. Finish concrete to the project specification.

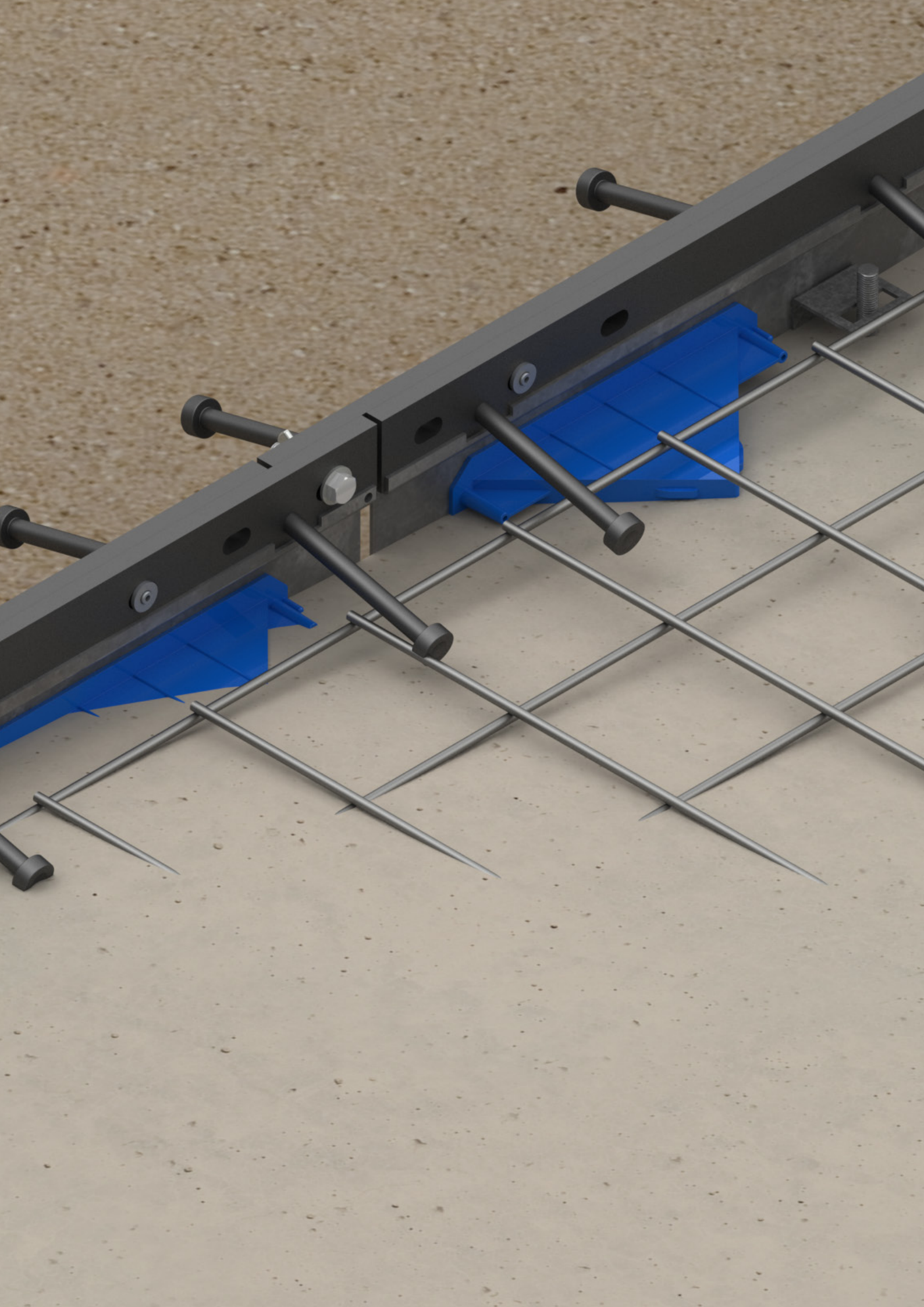
Product Compliance

Compliance statement

Danley™ ArmourMate™ complies with the New Zealand Building Code clauses identified below.

Compliance details: NZBC

NZBC Clause	Criteria	Compliance Status
B1.3.1	'Buildings, building elements and sitework shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during construction or alteration and throughout their lives.'	✓
B1.3.2	'Buildings, building elements and sitework shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during construction or alteration when the building is in use.'	✓
B1.3.3 (a), (b), (d), (e), (f), (g), (h), (j), (q)	'Account shall be taken of all physical conditions likely to affect the stability of buildings, building elements and sitework, including: (a) Self weight, (b) Imposed gravity loads arising from use . . . (d) Earth pressure, (e) Water and other liquids, (f) Earthquake, (g) Snow, (h) Wind . . . (j) Impact . . . (q) Time dependent effects including creep and shrinkage.	✓
B1.3.4	'Due allowance shall be made for: (a) The consequences of failure, (b) The intended use of the building, (c) Effects of uncertainties resulting from construction activities, or the sequence in which construction activities occur, (d) Variation in the properties of materials and the characteristics of the site, and (e) Accuracy limitations inherent in the methods used to predict the stability of buildings.'	✓
B2.3.1 (a)	'Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified intended life of the building, if stated, or: (a) The life of the building, being not less than 50 years, if (i) Those building elements . . . Provide structural stability to the building, or (ii) Those building elements are difficult to access or replace, or (iii) Failure of those building elements to comply with the building code would go undetected during both normal use and maintenance of the building.'	✓
F2.3.1	'The quantities of gas, liquid, radiation or solid particles emitted by materials used in the construction of buildings, shall not give rise to harmful concentrations at the surface of the material where the material is exposed, or in the atmosphere of any space.'	✓



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