

the **PROFESSIONAL**  
series

**SERIES G1:  
CERT-R-FIX®**

**V2**

**RONDO®**



# RONDO CERT-R-FIX®

## G1 INTRODUCTION

Our range of fasteners complement our existing wall and/or ceiling systems are suitable for Safety Critical, Cracked Concrete, Seismic and Fire Rated Applications.

### SUITABLE FOR

- Safety critical applications
- Cracked concrete
- Seismic applications
- Fired rated applications

### SPECIAL FEATURES – BOLT FASTENERS

- Fully code compliant range of fasteners complements our wall and/or ceiling systems for both C1 and C2 solutions
- Offers a single point fastener with 40mm embedment for a C1 solution backed with an ETA
- 6mm ETA certified fasteners are faster to install than 8mm fasteners – speeding up installation time and reducing labour costs
- 40mm embedment depth means that the concrete slab doesn't need to be x-rayed in most applications
- 8mm fastener complements our head and base brackets, suitable for Steel Stud, MAXIjamb® and DUPLEX Stud® profiles while offering a prequalified C2 solution
- Allows you to source fasteners and framing from the one supplier
- Backed by our product guarantee and technical design support

### SPECIAL FEATURES – POWDER ACTUATED FASTENERS

- Exceptional performance for walls in C1 applications including seismic, fire-rating, deflection heads, and cracked concrete. Fast, precise Installation - for high productivity, cost savings and minimal dust
- Innovative Helix nail tip – for better drivability when fastening to tough concrete
- High hardness (57.5 HRC) nails for better penetration in tough concrete

### APPLICATIONS

- Fixed track fastening
- Drywall track fastening for use in seismic conditions
- Drywall track fastening in cracked concrete
- Deflection head track fastening

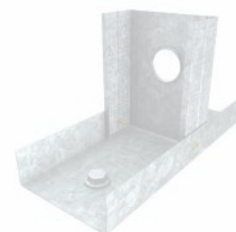
Hilti® X-X 27 MX Powder Actuated Fasteners for CERT-R-FIX® CX27

TABLE G1.1(A) RONDO CERT-R-FIX® FASTENERS

PART NO.	DESCRIPTION	COMPLIANCE PATH	SEISMIC APPROVAL		FIRE RATED
			C1	C2	
CH06	M6 x 43mm Fastener	AS5216	YES	NO	YES
CH06	M6 x 60mm Fastener	AS5216	YES	NO	YES
CH06	M6 x 80mm Fastener	AS5216	YES	NO	YES
CH08	M8 x 55mm Fastener	AS5216	YES	YES	YES
CH08	M8 x 70mm Fastener	AS5216	YES	YES	YES
CT06	M6 x 40mm Fastener with 6mm Male Thread	AS5216	YES	NO	YES
CT08	M8 x 50mm Fastener with 8mm Male Thread	AS5216	YES	YES	YES
CX27	27mm Powder Actuated Fastener	ETA 23/0911+ EXPERT OPINION	YES	NO	YES

#### Important Notes:

Rondo recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards. Rondo recommends that before acting on any advice or opinion in this manual, you should seek professional advice in light of your own architectural and building requirements.



## G1.1 STANDARDS AND BUILDING CODES

Rondo Building Services uses the following Standards in its procurement, manufacturing, testing, design and marketing policies for compliance with the respective Building Codes of Australia and New Zealand:

Design Standards:

AS/NZS1170 Part 0	Structural design actions -General Principles
AS/NZS1170 Part 1	Structural design actions -Permanent imposed and other actions
AS/NZS1170 Part 2	Structural design actions -Wind actions
AS1170 Part 4	Structural design actions -Earthquake actions in Australia
NZS1170 Part 5	Structural design actions -Earthquake actions in New Zealand
AS/NZS4600	Cold-formed steel structures
AS5216	Design of post-installed and cast-in fastenings for use in concrete

Steel is purchased to the following standard:

Quality Assurance:

ISO 9001                      Quality Management Systems

Environmental Performance:

ISO 14001                    Environmental Management Systems

NCC

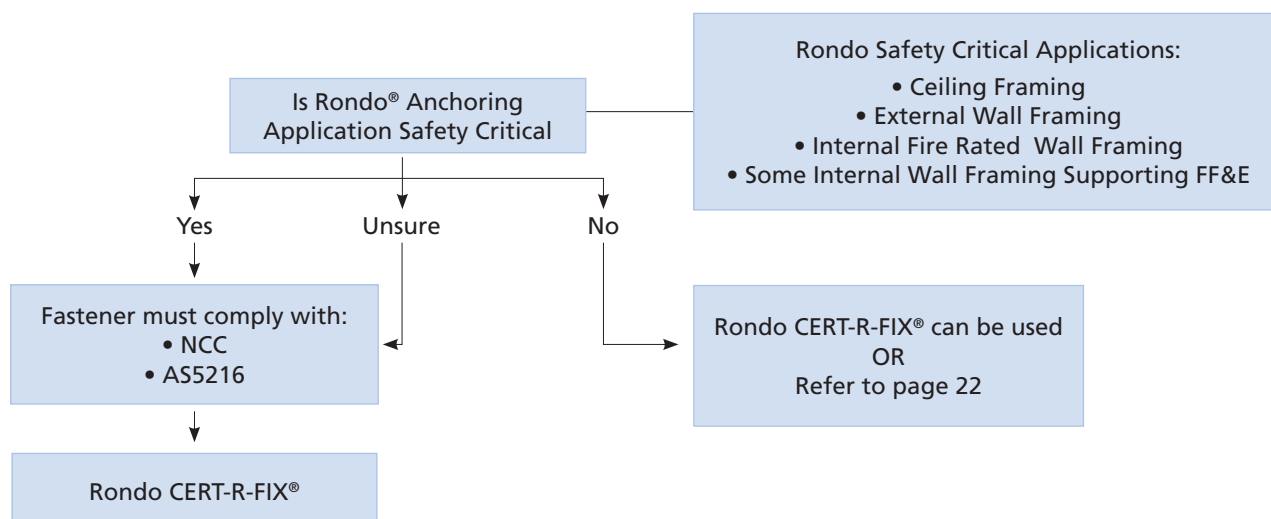
Building code of Australia volumes 1 and 2

### MEANS OF COMPLIANCE WITH AS5216 - BOLTS

European Technical Assessment (ETA) In accordance with European Assessment Document (EAD) 330232.

Note: Single point fastening such as suspended ceiling fasteners can only be verified in accordance with EAD 330232.

Rondo CERT-R-FIX® fasteners are certified under ETA-15/0514 and ETA-20/0902 in accordance with EAD 330232-00-0601.



**If using un-cracked concrete design capacities:**

- Concrete to be assessed for condition in accordance with AS5216 CL 3.3
- Rondo recommends assuming cracked concrete condition as the fastener locations throughout the slab will likely occur in both tension and compression zones

## MEANS OF COMPLIANCE WITH NCC - POWDER ACTUATED FASTENERS

The structural design actions applied to the Rondo CX27 Powder Actuated Fasteners (PAF's), including wind, seismic and fire limit state demand shall be determined in accordance with the relevant standards by Rondo engineers for specific projects in which Rondo has been engaged to provide a design specification. For these projects, the required spacing of the Rondo CX27 Powder Actuated Fasteners (PAF's) shall be determined by Rondo engineers such that the design action demand does not exceed the HILTI X-X PAF design capacity as set out in ETA – 23/0911 and summarised in document #24-0562-0 – EA001(1) prepared by KUSCH Consulting Engineers. Compliance to the NCC by the Deemed to Satisfy solution pathway remains the responsibility of KUSCH Consulting Engineers.

"APPROVED APPLICATIONS Rondo CX27 PAF's are suitable for use when the following applications/ requirements are satisfied:"		"NON-SUITABLE APPLICATIONS Rondo CX27 PAF's are not suitable for use when any of the following are true:"	
Rondo CX27 PAF's are suitable for use when the following applications/ requirements are satisfied:		Rondo CX27 PAF's are not suitable for use when any of the following are true:	
✓	Internal drywall base and deflection head track fixings	✗	Track material < 0.5mm bmt or tensile strength <270mpa
✓	Non-safety and safety critical internal wall applications, including internal fire-rated walls (see note 1)	✗	<ul style="list-style-type: none"> <li>Deflection head track clearance &gt;20mm</li> <li>external wall track fixing applications</li> <li>ceiling suspension fixings</li> <li>track fixing of non-wall systems (bulkheads and stud ceilings etc).</li> <li>Internal shaft wall track fixings</li> </ul>
✓	Non-cracked and cracked concrete (seismic design crack width of less than or equal to 0.5 mm and less than or equal to 0.35 mm non-seismic design crack width)	✗	Cracked concrete with an expected seismic design crack width of greater than 0.5 mm and greater than 0.35 mm non-seismic design crack width
✓	Concrete classes C20/25 through C40/50	✗	Concrete edge distance is < 150mm (concrete hobs or close to step down)
✓	Projects designated as building importance level 2 or 3 (IL2 or IL3)	✗	Projects with a designated building importance level 4 (il4)
✓	Fastener seismic performance category C1 is required or where seismic prequalification is not required	✗	Fastener seismic performance category C2 is required
✓	Lengths of track longer than 540mm (when slab thickness $h \geq 160\text{mm}$ )	✗	Lengths of track shorter than 540mm (when slab thickness $h \geq 160\text{mm}$ )
✓	Lengths of track longer than 940mm (when slab thickness $h = 80\text{mm}$ )	✗	Lengths of track shorter than 940mm (when slab thickness $h = 80\text{mm}$ )
✓	Minimum of 5 fixings per track with a minimum spacing of 100mm (when slab thickness $h \geq 160\text{mm}$ ) and 200mm (when slab thickness $h = 80\text{mm}$ )	✗	Less than 5 fixings per track with spacing < 100mm (when slab thickness $h \geq 160\text{mm}$ ) and <200mm (when slab thickness $h = 80\text{mm}$ )

### Note:

1. While Rondo can check the structural design actions under a fire limit state against the suggested design capacity of the Rondo CX27 Powder Actuated Fasteners (PAF's), the fire rating compliance pathway to the NCC remains the responsibility of the plasterboard manufacturer and potentially the project fire certifier.

## G1.2 RONDO CERT-R-FIX® COMPONENTS

CERT-R-FIX products are available to purchase as individual fastener components or as a completely assembled Rondo bracket via special order.

### INDIVIDUAL PARTS

CH06	CERT-R-FIX® M6 x 43mm Fastener with Hex Head (TSM6 x 43 SW13)
CH06	CERT-R-FIX® M6 X 60mm Fastener with Hex Head (TSM6 X 60 SW13)
CH06	CERT-R-FIX® M6 X 80mm Fastener with Hex Head (TSM6 X 80 SW13)
CH08	CERT-R-FIX® M8 x 55mm Fastener with Hex Head (TB PRO 8 x 55 SW13)
CH08	CERT-R-FIX® M8 x 70mm Fastener with Hex Head (TB PRO 8 x 70 SW13)
CT06	CERT-R-FIX® M6 x 40mm Fastener with 6mm Male Thread (TSM6x40 M6x11 SW10)
CT08	CERT-R-FIX® M8 x 50mm Fastener with 8mm Male Thread (TB PRO 8 x50 M8x12 SW13)
CC06	CERT-R-FIX® M6 x Hex M6 Female Rod Coupler
CC68	CERT-R-FIX® M6 to M8 x Hex Female Rod Coupler
123	ø5.3mm Zinc Plated Soft Steel Rod - M6 threaded full length (65mm, 85mm, 100mm, 120mm, 150mm and 180mm)
826	M6 Nut
CX27	27mm Powder Actuated Fastener

### DELIVERY, STORAGE & HANDLING

- All materials shall be delivered in their original, unopened packages and stored for as short a time as possible, in an enclosed shelter providing protection from exposure to the elements and damage by/to other trades. Damaged, deteriorated or obviously faulty material is not to be installed and shall be removed from the premises.
- Materials should be handled in such a manner as to prevent racking distortion or physical damage.

### INDIVIDUAL PARTS



### ASSEMBLED BRACKETS

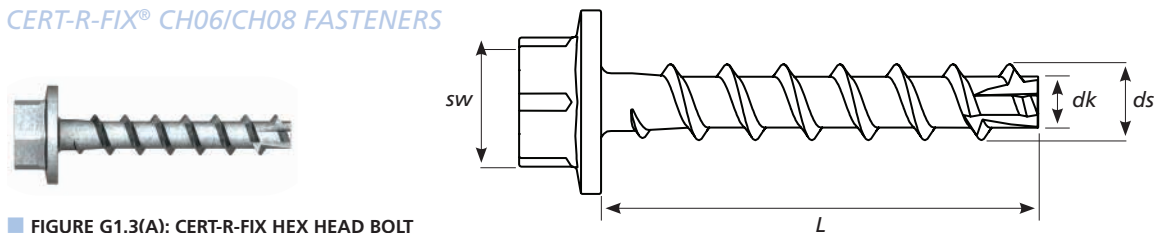
A239C	DFC for 129/308/309A Furring Channel to Concrete/Masonry with CT06 (40mm), CC06, 826 & 123
A124C	DFC for 125/127/128 Top Cross Rail to Concrete/Masonry - with CT06 (40mm), CC06, 826 & 123
STSLC	Acoustic Isolation DFC for 129/308/309A Furring Channel with CT06 (40mm), CC06, 826 & 123

### ASSEMBLED BRACKETS



## G1.3 PRODUCT DATA SPECIFICATIONS

### CERT-R-FIX® CH06/CH08 FASTENERS

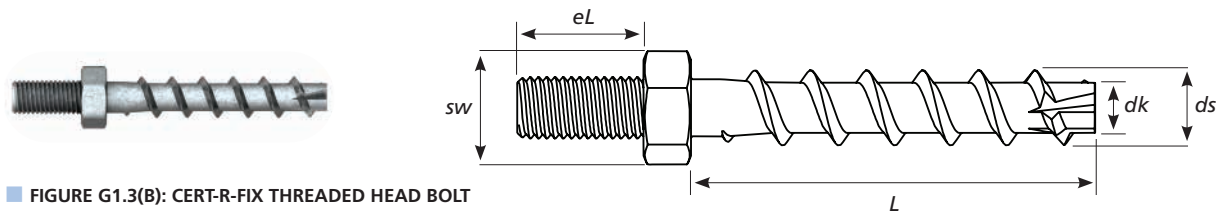


■ FIGURE G1.3(A): CERT-R-FIX HEX HEAD BOLT

■ TABLE G1.3(A): CERT-R-FIX HEX HEAD BOLT DIMENSIONS

PART NO	FASTENER DIAMETER (mm)	SCREW LENGTH (L) (mm)	CORE DIAMETER ( $d_k$ ) (mm)	THREAD OUTER DIAMETER ( $d_s$ ) (mm)	SOCKET SIZE ( $s_w$ ) (mm)
CH06	6	43	5.1	7.5	13
CH06	6	60	5.1	7.5	13
CH06	6	80	5.1	7.5	13
CH08	8	55	7.5	10.2	13
CH08	8	70	7.5	10.2	13

### CERT-R-FIX® CT06 /CT08 SCREW FASTENER

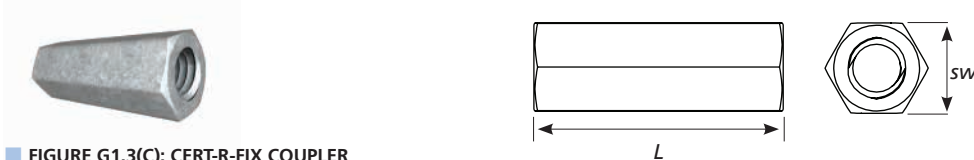


■ FIGURE G1.3(B): CERT-R-FIX THREADED HEAD BOLT

■ TABLE G1.3(B): CERT-R-FIX THREADED HEAD BOLT DIMENSIONS

PART NO	EXTERNAL THREAD DIAMETER (mm)	EXTERNAL THREAD LENGTH (eL) (mm)	FASTENER DIAMETER (mm)	SCREW LENGTH (L) (mm)	CORE DIAMETER ( $d_k$ ) (mm)	THREAD OUTER DIAMETER ( $d_s$ ) (mm)	SOCKET SIZE ( $s_w$ ) (mm)
CT06	6	12.5	6	40	5.1	7.5	10
CT08	8	13	8	50	7.5	10.2	13

### CERT-R-FIX® CC06 /CC08 COUPLER



■ FIGURE G1.3(C): CERT-R-FIX COUPLER

■ TABLE G1.3(C): CERT-R-FIX COUPLE

PART NO	INTERNAL THREAD DIAMETER (mm)	COUPLER LENGTH (L) (mm)	SOCKET SIZE ( $s_w$ ) (mm)
CC06	6	25	10
CT08	8 to 6	28	13

## CERT-R-FIX® CX27 POWDER ACTUATED FASTENERS

This fastener is uniquely marked with an "X" on the head for identification after installation

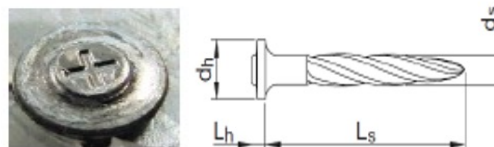


FIGURE G1.3(D): CERT-R-FIX® POWDER ACTUATED FASTENER

TABLE G1.3(D): CERT-R-FIX® POWDER ACTUATED FASTENER

PART NO	SHAFT LENGTH ( $L_s$ ) (mm)	HEAD LENGTH ( $L_h$ ) (mm)	TOTAL LENGTH ( $L_h + L_s$ ) (mm)	MAX SHAFT DIAMETER ( $d_s$ ) (mm)	MAX SHAFT DIAMETER ( $d_h$ ) (mm)
CX27	27	2.4	29.4	4.4	8.2

### G1.3.1 C1 AND C2 COMPLIANCE

AS5216:2021, Appendix F includes two tables that can be used to decide the seismic performance category of the fasteners required for safety-critical applications within a project. Table F.3.1 is based on crack width and is "normative", meaning it must be obeyed to ensure compliance with the standard. Table F.3.2 is "informative" and provides recommendations for seismic performance category if the crack widths in Table F.3.1 cannot be readily confirmed.

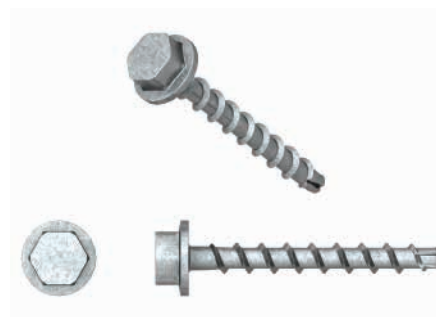


FIGURE G1.3.1(A): CERT-R-FIX BOLTS

#### G1.3.1.1 OPTION 1: MANDATORY MINIMUM REQUIREMENTS FOR SEISMIC PERFORMANCE CATEGORY (CRACK WIDTH ASSESSMENT BY ENGINEER)

Table G1.3.1.1(A) (Extracted from AS5216:2021, Table F.3.1) provides the minimum required seismic performance category of a fastener based on crack width. The concrete crack width under a design earthquake can only be determined by a competent Engineer undertaking a special study of the concrete and location in question.



FIGURE G1.3.1.1(A): CRACKED CONCRETE

TABLE G1.3.1.1(A): MINIMUM REQUIRED SEISMIC PERFORMANCE CATEGORIES FOR FASTENERS (AS5216:2021, TABLE F.3.1)

CRACK WIDTH UNDER DESIGN EARTHQUAKE <sup>a</sup>	FASTENER SEISMIC PERFORMANCE CATEGORY
$w \leq 0.3\text{mm}$	Seismic prequalification is not required <sup>b</sup>
$w \leq 0.5\text{mm}$	C1
$w \leq 0.8\text{mm}$	C2
$w > 0.8\text{mm}$ (Plastic hinge region)	Not Covered by AS 5216
<sup>a</sup> Crack width size is based off pre-qualified requirements of EOTA TR049.	
<sup>b</sup> Seismic design of the fastener is required but fastener does not require seismic prequalification	



### G1.3.1.2 OPTION 2: RECOMMENDATION FOR COMPLIANCE TO OPTION 1 IN THE ABSENCE OF A SPECIAL CONCRETE STUDY (BUILDING IMPORTANCE LEVEL, SITE HAZARD FACTOR, AND SITE SUB-SOIL CLASS)

Table G1.3.1.2(A) (Extracted from AS5216:2021, Table F.3.2) provides a method of finding the seismic performance category for the fastener based off the building importance level, site sub-soil class and the site hazard factor.

This method can provide an answer faster as the project information is more readily accessible as it is used for other calculations. The disadvantage is that Table F.3.2 has been conservatively prepared based on a broad range of building types and safety factors. Direct reference to Table 2 may result in C2 qualified fasteners being nominated in more applications than would be otherwise necessary in accordance with Table 1.

TABLE G1.3.1.2(A): MINIMUM RECOMMENDED SEISMIC PERFORMANCE CATEGORIES FOR FASTENERS (AS5216:2021, TABLE F.3.2)

IMPORTANCE LEVEL	(KpZ) FOR SITE SUB-SOIL CLASS <sup>a</sup>					SEISMIC PERFORMANCE CATEGORY
	Ee	De	Ce	Be	Ae	
2	N/A	N/A	N/A	≤ 0.10	≤ 0.12	Seismic prequalification is not required
	N/A	0.08	≤ 0.12	> 0.10 to ≤ 0.18	> 0.12 to ≤ 0.22	C1
	≥ 0.08	> 0.08	> 0.12	> 0.18	> 0.22	C2
3	N/A	0.08	≤ 0.12	≤ 0.18	≤ 0.22	C1
	≤ 0.08	> 0.08	> 0.12	> 0.18	> 0.22	C2
4	≥ 0.08					C2

<sup>a</sup>  $k_pZ$  and site sub-soil classes are to be determined in accordance with AS 1170.4, where  $k_p$  is the probability factor and  $Z$  is the hazard design factor.

Note 'Not applicable' has been written for cases for which a seismic performance category is not suitable for a certain site sub-soil class and for  $k_pZ$  values.

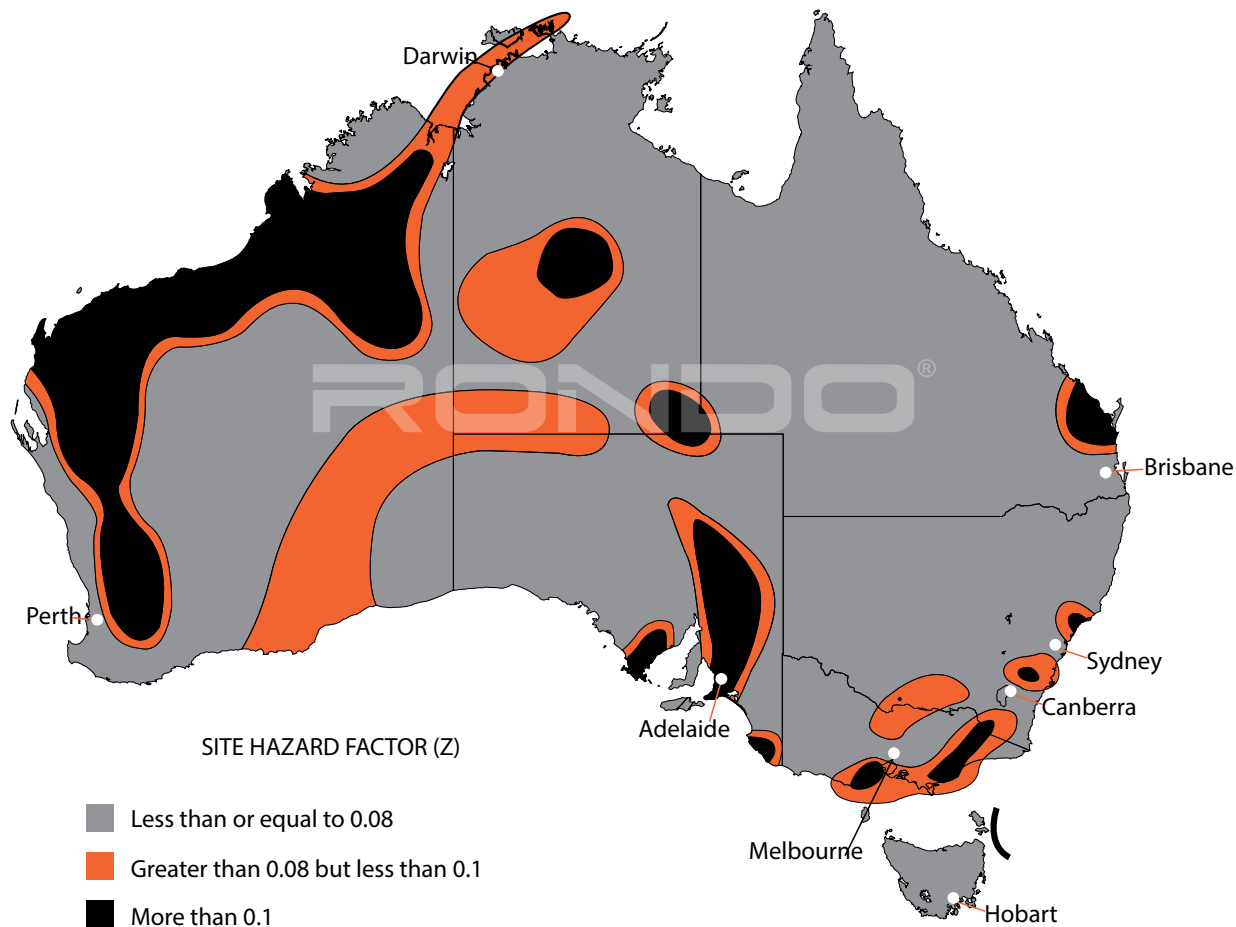
### G1.3.1.3 HOW DOES THE BUILDING'S LOCATION, IMPORTANCE LEVEL, AND SITE SUB-SOIL CLASS INFLUENCE FASTENER REQUIREMENTS?

From the 1st of May 2023, if following option 2 above, all buildings that are Importance Level 4 and some Importance Level 2 and 3 buildings will require the installation of C2 compliant fasteners for safety critical applications.

For a helpful guide as to which Importance Level 2 and 3 Buildings will be impacted, refer to figure G1.3.1.3(A) and table G1.3.1.3(A).

Figure G1.3.1.3(A) depicts Sydney, Brisbane, and most of Perth and Melbourne as grey areas. Darwin and some parts south of Melbourne are allocated as orange, whilst Adelaide is black.

Table G1.3.1.3(A) shows how the Importance Level and site Sub-soil Class influence the requirement for C1 or C2 fasteners in those regions.



■ FIGURE G1.3.1.3(A) : SITE HAZARD FACTOR FOR SEISMIC

■ TABLE G1.3.1.3(A): SELECTION OF FASTENERS BASED OFF MAP, BUILDING IMPORTANCE AND SOIL SUB-CLASS

MAP SHADING	SOIL HAZARD FACTOR	BIL 2					BIL 3					BIL 4
		Ee	De	Ce	Be	Ae	Ee	De	Ce	Be	Ae	ALL
Grey	0.08	C2	C1	C1	N/A	N/A	C2	C2	C1	C1	C1	C2
Orange	0.09	C2	C2	C1	N/A	N/A	C2	C2	C1	C1	C1	C2
Black	0.10	C2	C2	C1	N/A	N/A	C2	C2	C2	C1	C1	C2
	0.11 to $\leq 0.12$	C2	C2	C1	C1	N/A	C2	C2	C2	C1	C1	C2
	0.13	C2	C2	C2	C1	C1	C2	C2	C2	C1	C1	C2
	0.14 to $\leq 0.16$	C2	C2	C2	C1	C1	C2	C2	C2	C2	C1	C2
	0.20 to $\leq 0.22$	C2	C2	C2	C2	C1	C2					C2
	0.60	C2					C2					C2

N/A = Design of fastener for seismic action is required but the fastener does not require prequalification. C1 fasteners will be suitable in these cases.

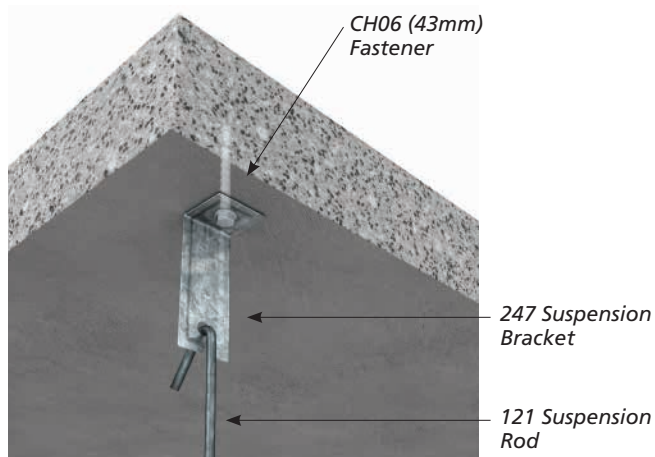
## G1.4 TYPICAL APPLICATION DETAILS

### G1.4.1 CEILINGS

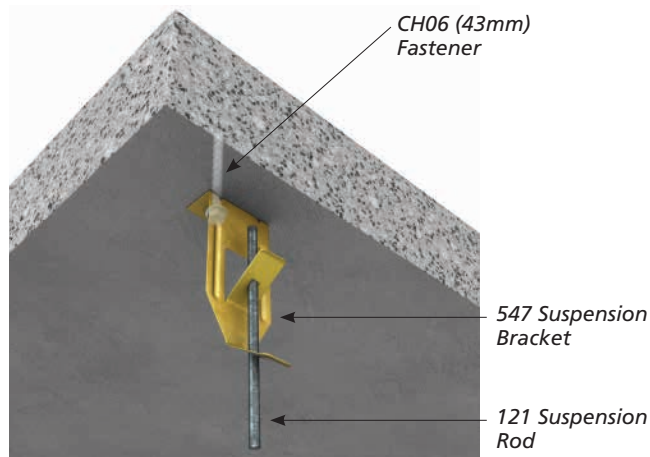
#### CERT-R-FIX® CH06 FASTENER (M6 X 43MM) AND CH06 FASTENER (M6 X 60MM) FOR C1 APPLICATIONS

The following details showcase the many uses of the Rondo CERT-R-FIX® range and are intended as a reference for possible installation scenarios.

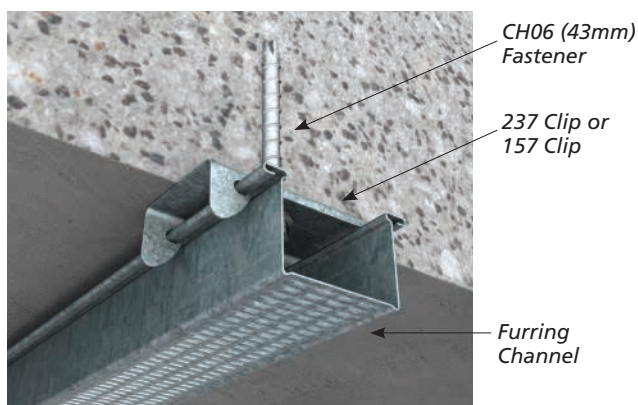
Please refer to the Rondo professional design manual or contact a Rondo representative for specific installation requirements and capabilities relevant to your project.



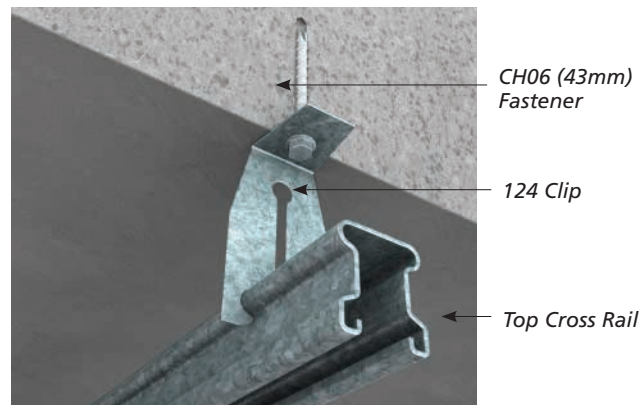
■ FIGURE G1.4.1(A): INSTALLATION OF 247 SUSPENSION BRACKET



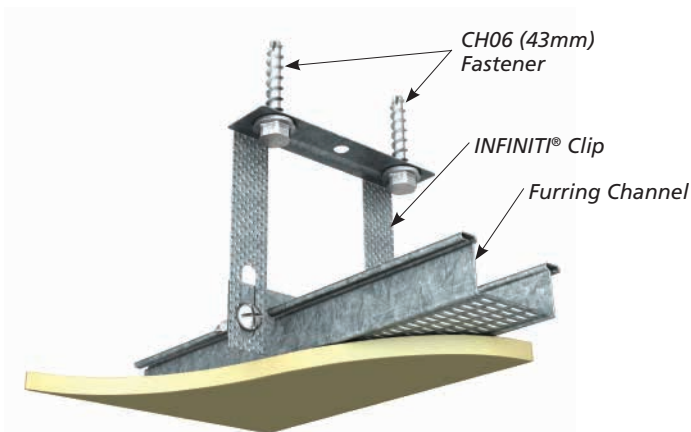
■ FIGURE G1.4.1(B): INSTALLATION OF 547 SUSPENSION BRACKET



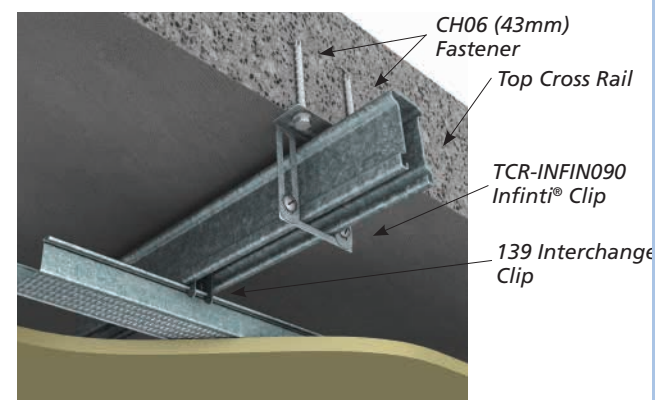
■ FIGURE G1.4.1(C): INSTALLATION OF 237 CLIP OR 157 CLIP



■ FIGURE G1.4.1(D): INSTALLATION OF 124 CLIP



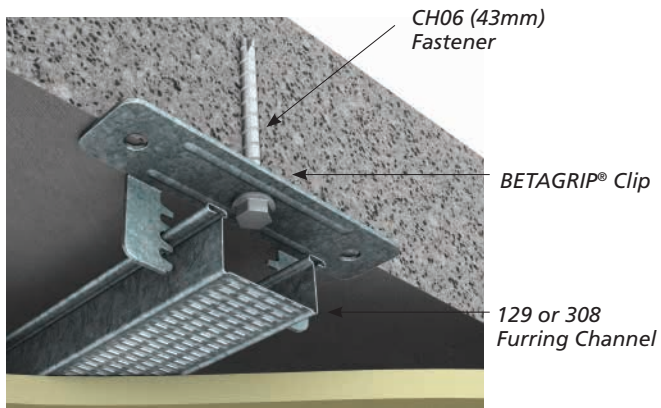
■ FIGURE G1.4.1(E): INFINITI® CLIP TO FURRING CHANNEL



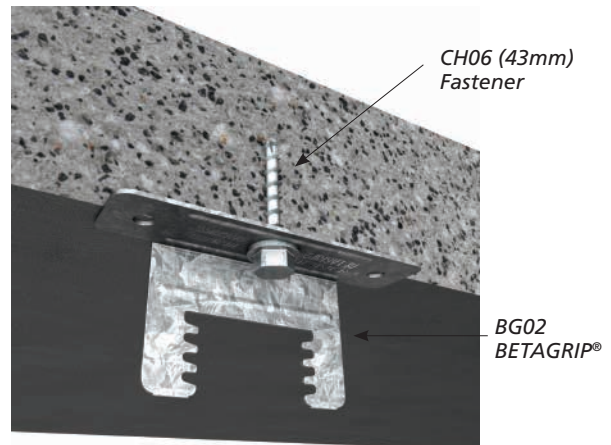
■ FIGURE G1.4.1(F): INFINITI® CLIP TO TOP CROSS RAIL

## G1.4.1 CEILINGS

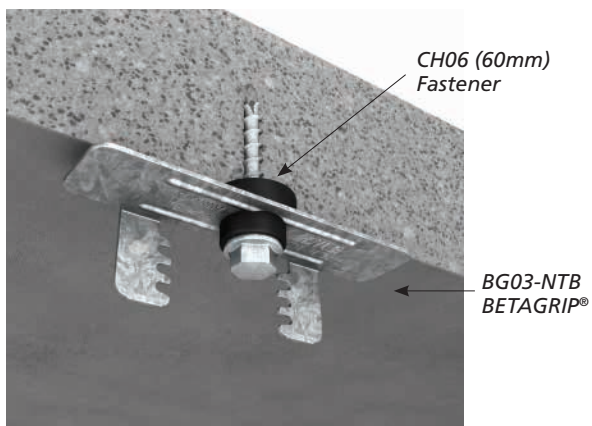
CERT-R-FIX® CH06 FASTENER (M6 X 43MM) AND CH06 FASTENER (M6 X 60MM) FOR C1 APPLICATIONS



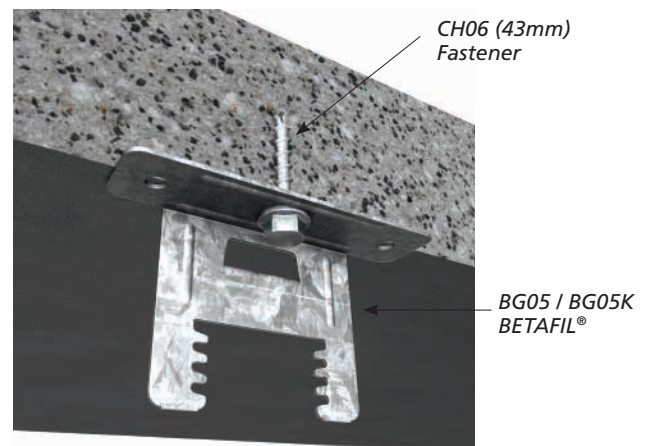
■ FIGURE G1.4.1(G): INSTALLATION OF BETAGRIP® BG01



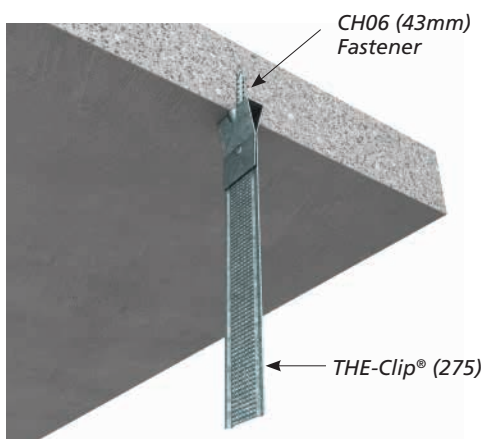
■ FIGURE G1.4.1(H): INSTALLATION OF BETAGRIP® BG02



■ FIGURE G1.4.1(I): INSTALLATION OF BETAGRIP® 3 BG03-NTB



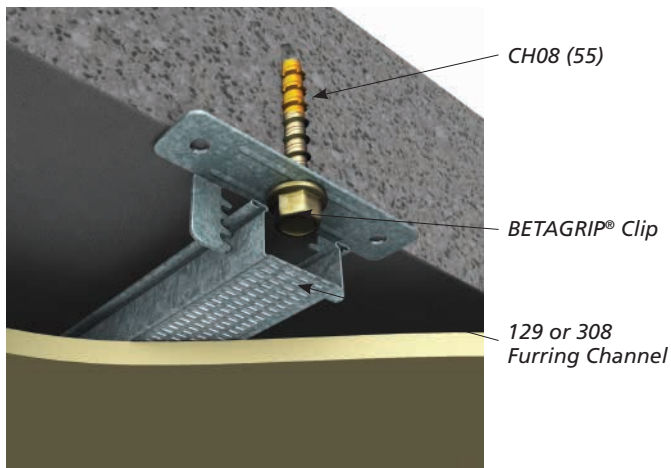
■ FIGURE G1.4.1(J): INSTALLATION OF BETAFIL® BG05 / BG05K



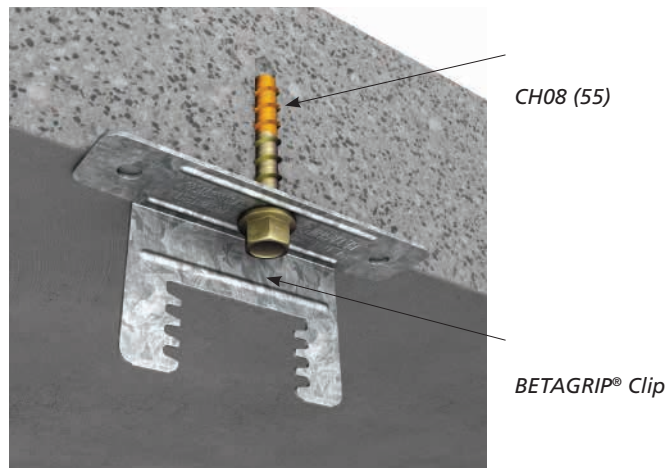
■ FIGURE G1.4.1(K): INSTALLATION OF THE-CLIP® (275)

## G1.4.1 CEILINGS

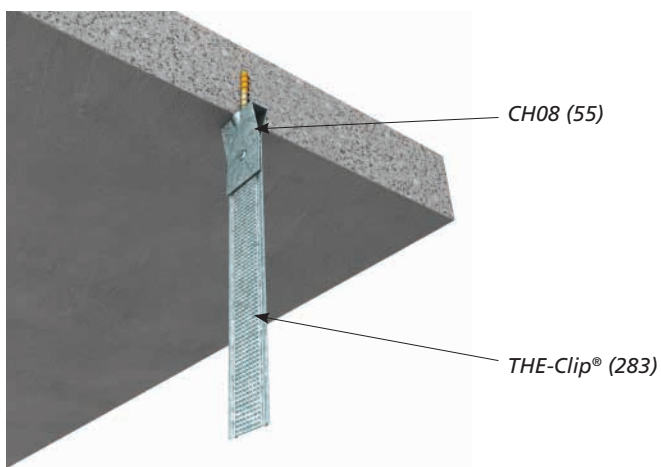
### CERT-R-FIX® CH06 FASTENER (M6 X 43MM) AND CH06 FASTENER (M6 X 60MM) FOR C1 APPLICATIONS



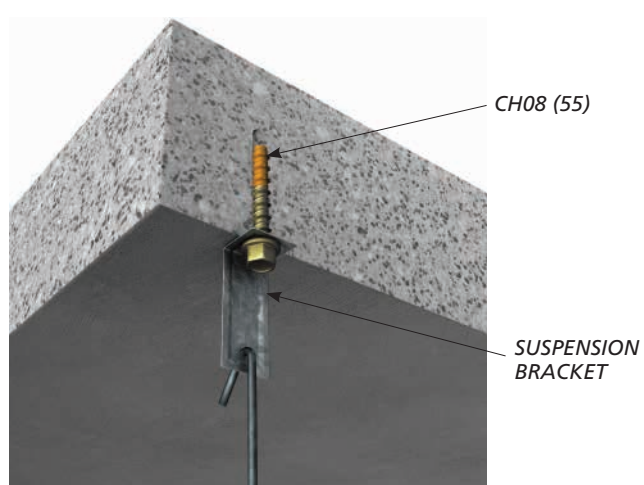
■ FIGURE G1.4.1(L): INSTALLATION OF BETAGRIP® BG06 (C2)



■ FIGURE G1.4.1(M): INSTALLATION OF BETAGRIP® BG07 (C2)



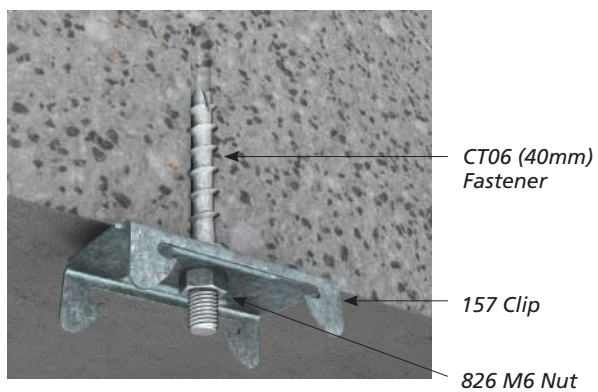
■ FIGURE G1.4.1(N): INSTALLATION OF THE-CLIP® (283) (C2)



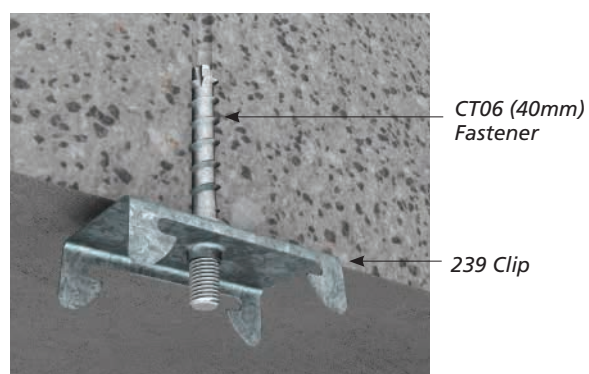
■ FIGURE G1.4.1(O): INSTALLATION OF 249 SUSPENSION BRACKET

## G1.4.2 CEILINGS (CLOSE - ADJUSTABLE)

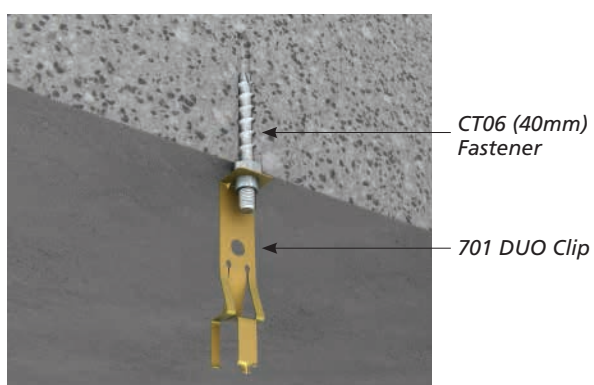
CERT-R-FIX® (CLOSE - ADJUSTABLE) CT06 FASTENER (M6 X 40MM) FOR C1 APPLICATIONS



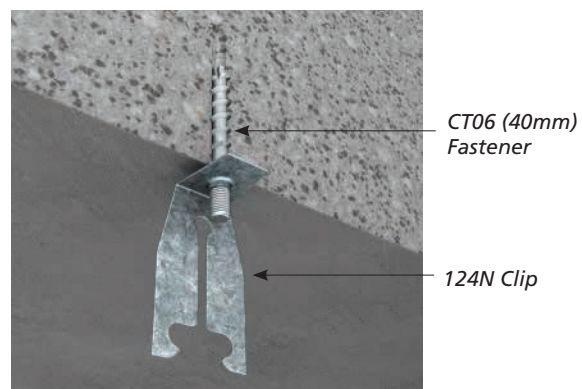
■ FIGURE G1.4.2(A): INSTALLATION OF 157 CLIP



■ FIGURE G1.4.2(B): INSTALLATION OF 239 CLIP



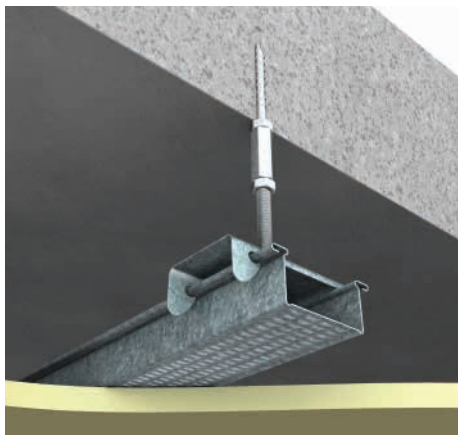
■ FIGURE G1.4.2(C): INSTALLATION OF 701 DUO CLIP



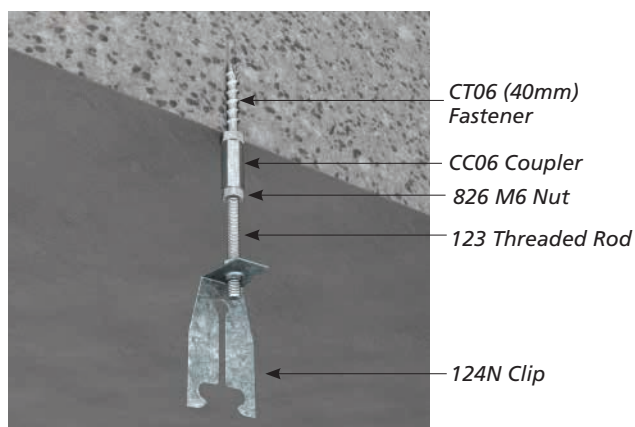
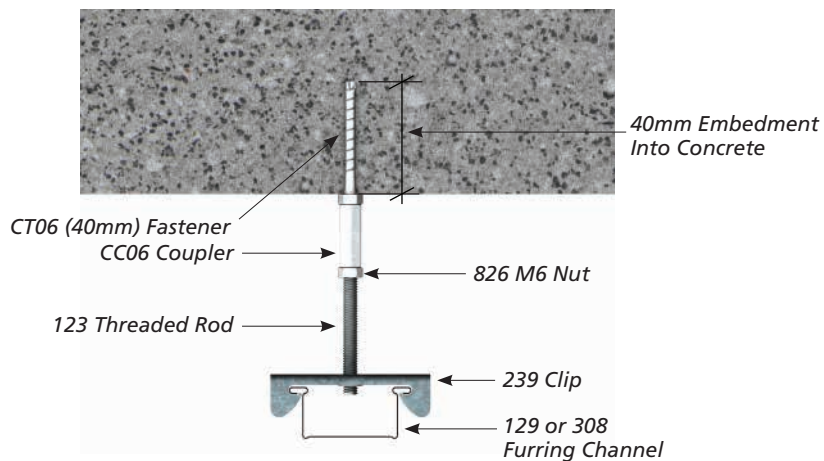
■ FIGURE G1.4.2(D): INSTALLATION OF 124N CLIP

## G1.4.2 CEILINGS (CLOSE - ADJUSTABLE)

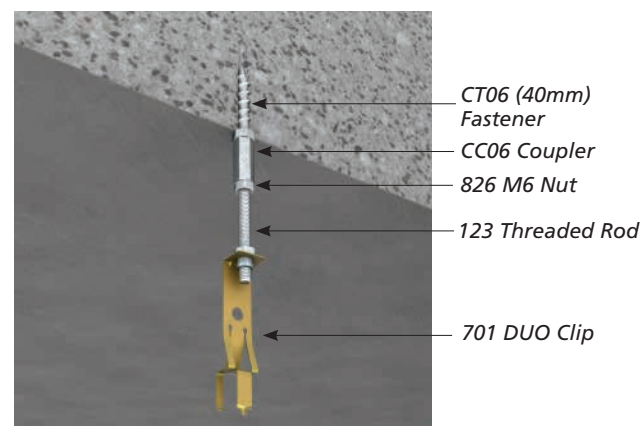
CERT-R-FIX® CT06 FASTENER (M6 X 40MM), CC06 COUPLER (M6 X 25MM) & 123 THREADED ROD (65MM, 85MM, 100MM, 120MM, 150MM AND 180MM) FOR C1 APPLICATIONS



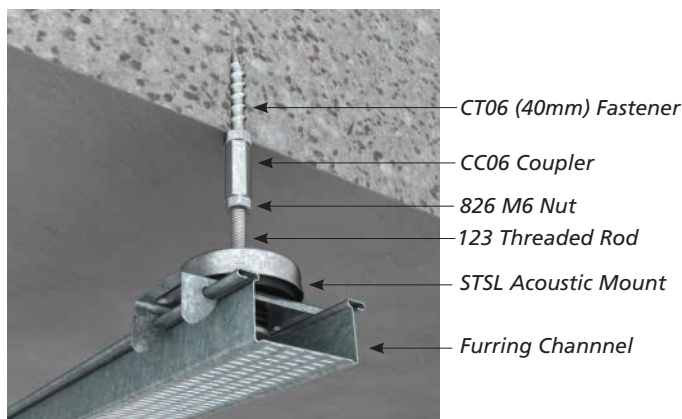
■ FIGURE G1.4.2(E): DIRECT FIX APPLICATION USING 239 CLIP UP TO 180mm SUSPENSION DROP



■ FIGURE G1.4.2(F): A 124N CLIP ASSEMBLY UP TO 180mm SUSPENSION DROP



■ FIGURE G1.4.2(G): 701 DUO CLIP UP TO 180mm SUSPENSION

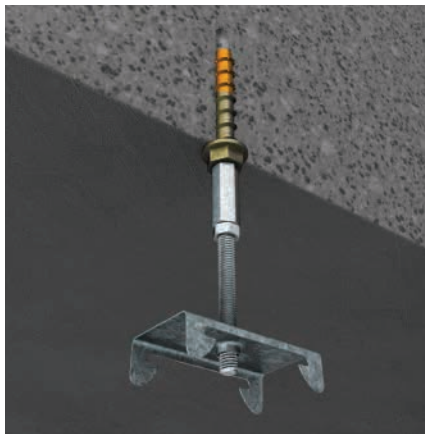


■ FIGURE G1.4.2(H): STSLC ACOUSTIC MOUNT UP TO 180mm SUSPENSION

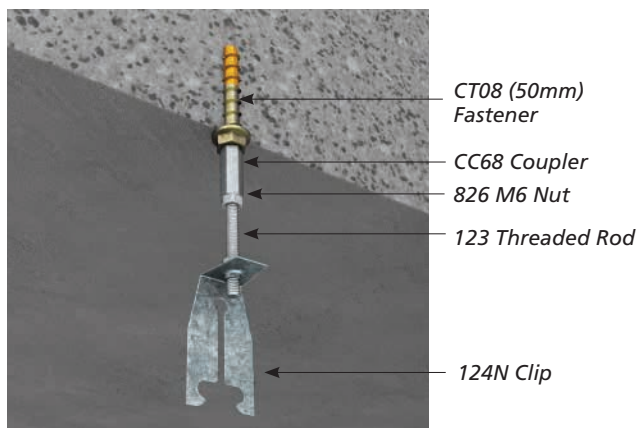
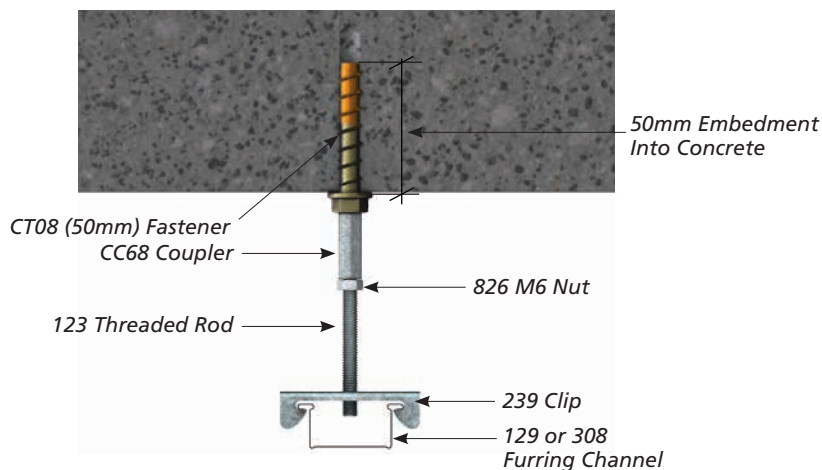
A239C and A124C can be ordered as individual parts or as a fully assembled part that includes CT06, CC06, 826 & 123. Lead times and minimum order quantities apply.

## G1.4.2 CEILINGS (CLOSE - ADJUSTABLE)

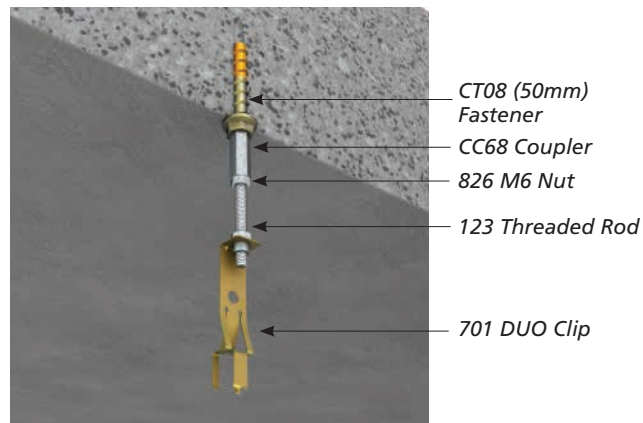
CERT-R-FIX® CT08 FASTENER (M8 X 50MM), CC68 COUPLER (M6 TO M8) & 123 THREADED ROD (65MM, 85MM, 100MM, 120MM, 150MM AND 180MM) FOR C2 APPLICATIONS



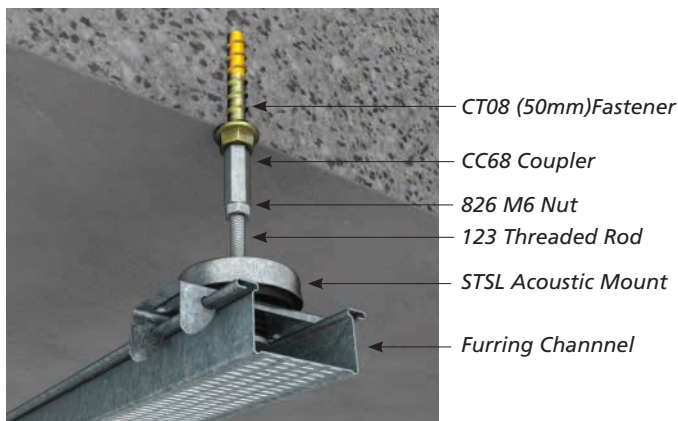
■ FIGURE G1.4.2(I): DIRECT FIX APPLICATION USING 239 CLIP UP TO 180mm SUSPENSION DROP



■ FIGURE G1.4.2(J): A124C CLIP ASSEMBLY UP TO 180mm SUSPENSION DROP



■ FIGURE G1.4.2(K): 701 DUO CLIP UP TO 180mm SUSPENSION



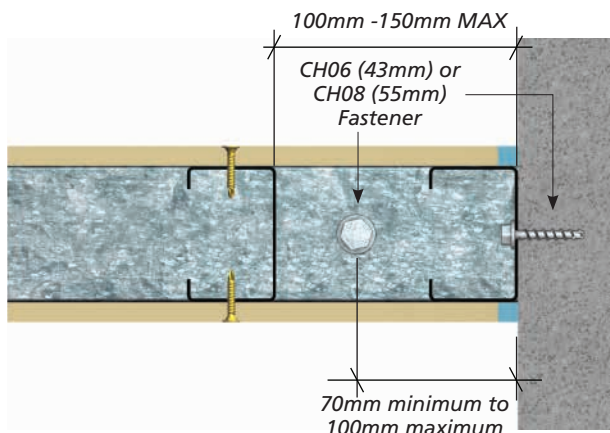
■ FIGURE G1.4.2(L): STSLC ACOUSTIC MOUNT UP TO 180mm SUSPENSION

A239C and A124C can be ordered as individual parts or as a fully assembled part that includes CT08, CC68, 826 & 123. Lead times and minimum order quantities apply.

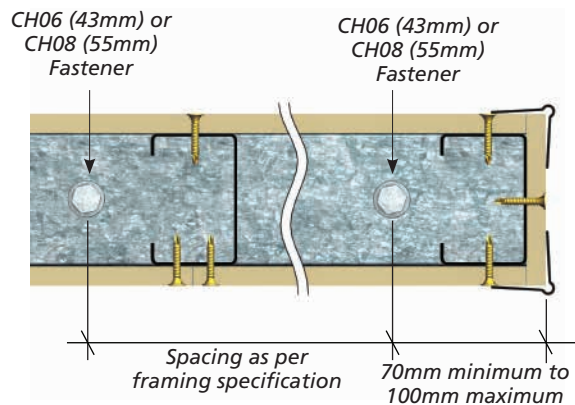


### G1.4.3 WALLS (INTERNAL)

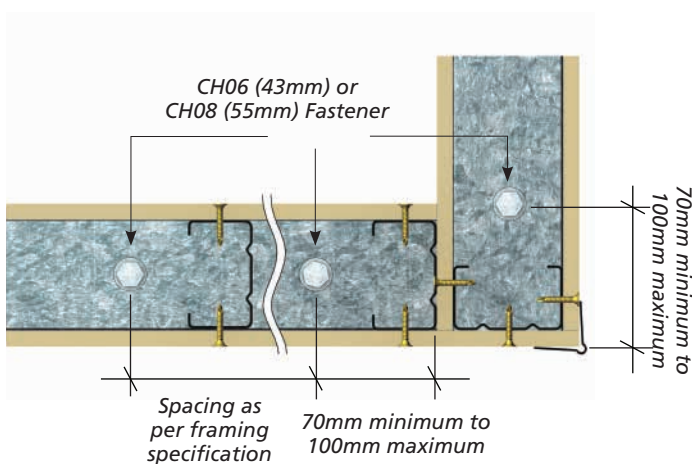
CERT-R-FIX® CH06 FASTENER (M6 X 43MM) FOR C1 & CH08 FASTENER (M8 X 55MM) FOR C2



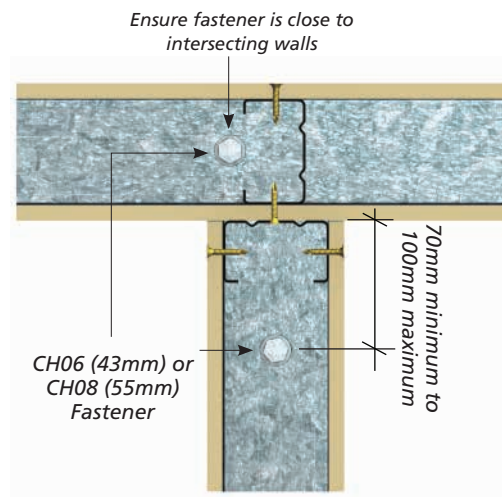
■ FIGURE G1.4.3(A): WALL INTERSECTION MASONRY / CONCRETE



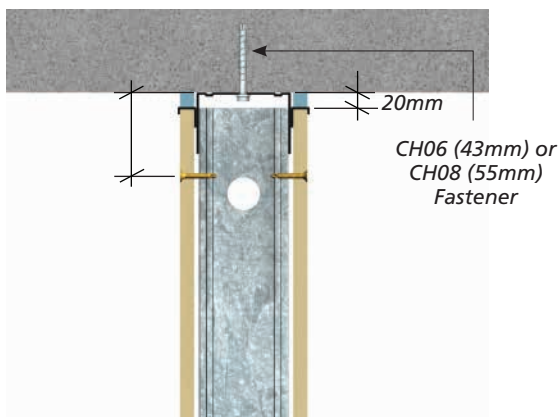
■ FIGURE G1.4.3(B): WALL END



■ FIGURE G1.4.3(C): WALL CORNER, ONE LAYER BOARD



■ FIGURE G1.4.3(D): WALL INTERSECTION, ONE LAYER BOARD



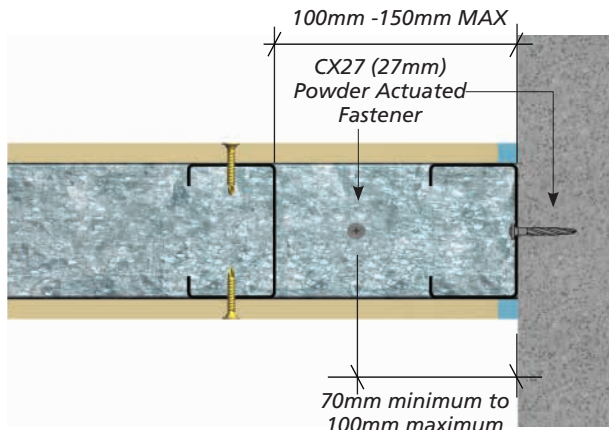
■ FIGURE G1.4.3(E): DEFLECTION HEAD TRACK FASTENER

#### NOTES:

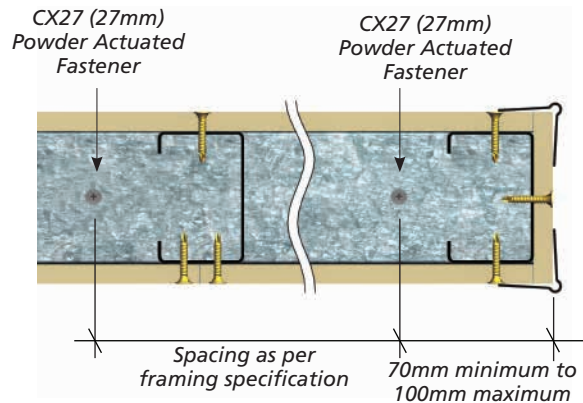
1. Fire rated wall details are to be confirmed with the board manufacturer.
2. Details shown are for internal non-load bearing walls only.
3. Details shown may not be suitable for inter-storey drift beyond HI/500 at serviceability limit state. Refer to Rondo when this limit is exceeded.

## G1.4.3 SAFETY CRITICAL WALL (INTERNAL)

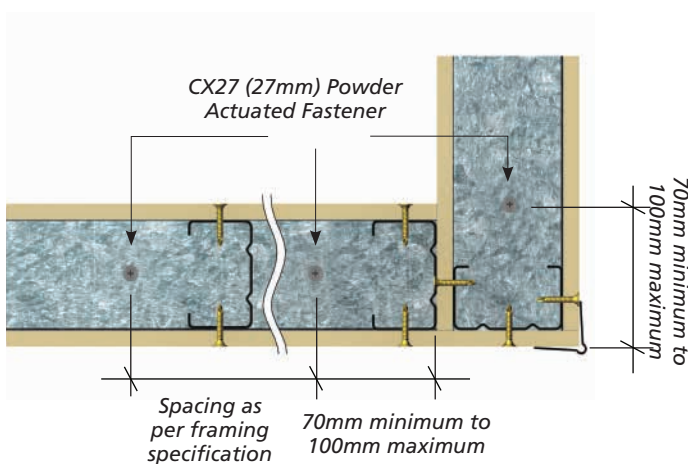
### CERT-R-FIX® CX27 POWDER ACTUATED FASTENER



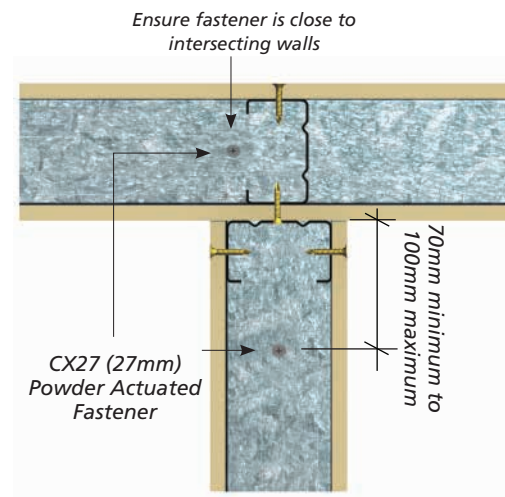
■ FIGURE G1.4.3(A): WALL INTERSECTION MASONRY / CONCRETE



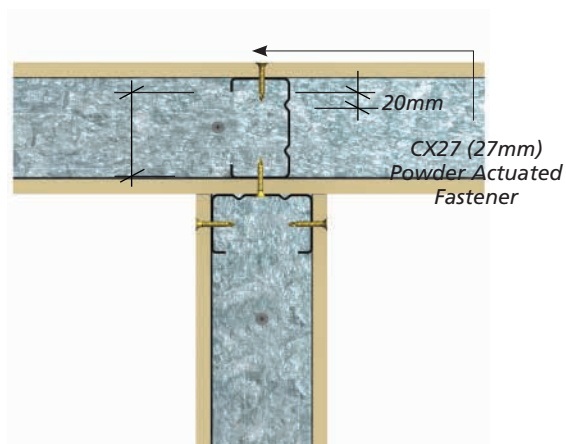
■ FIGURE G1.4.3(B): WALL END



■ FIGURE G1.4.3(C): WALL CORNER, ONE LAYER BOARD



■ FIGURE G1.4.3(D): WALL INTERSECTION, ONE LAYER BOARD



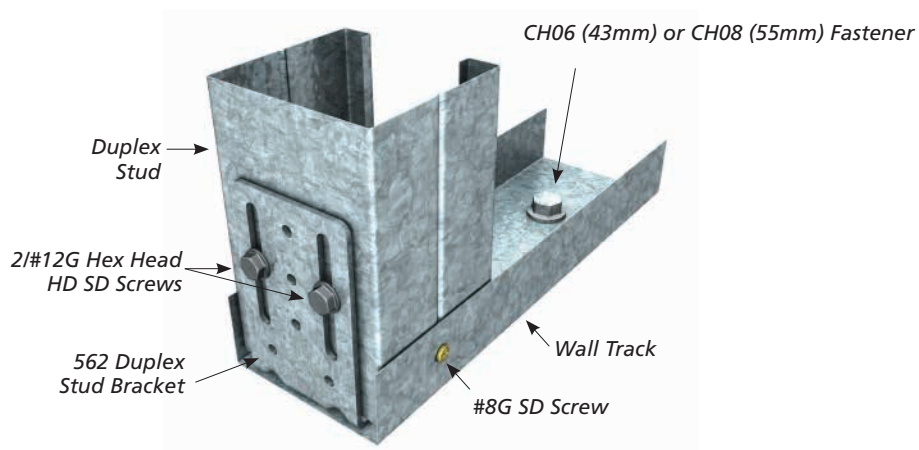
■ FIGURE G1.4.3(E): DEFLECTION HEAD TRACK FASTENER

#### NOTES:

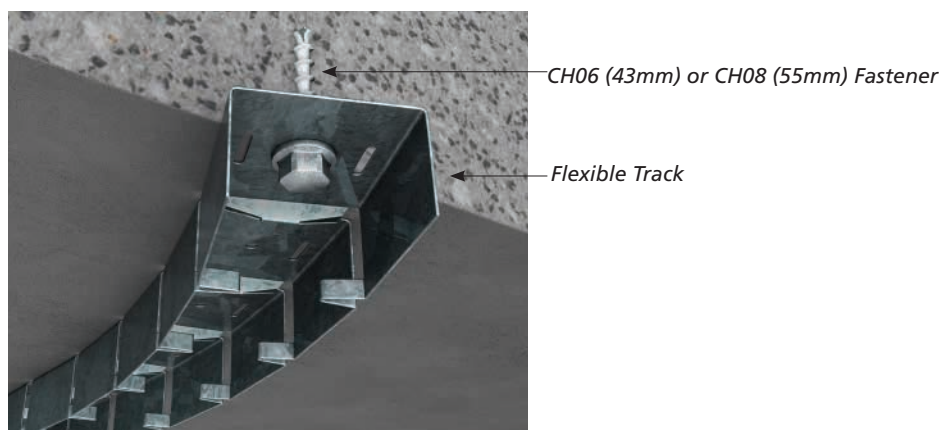
1. Fire rated wall details are to be confirmed with the board manufacturer.
2. Details shown are for internal non-load bearing walls only.
3. Details shown may not be suitable for inter-storey drift beyond H/500 at serviceability limit state. Refer to Rondo when this limit is exceeded.

### G1.4.3 SAFETY CRITICAL WALL (INTERNAL)

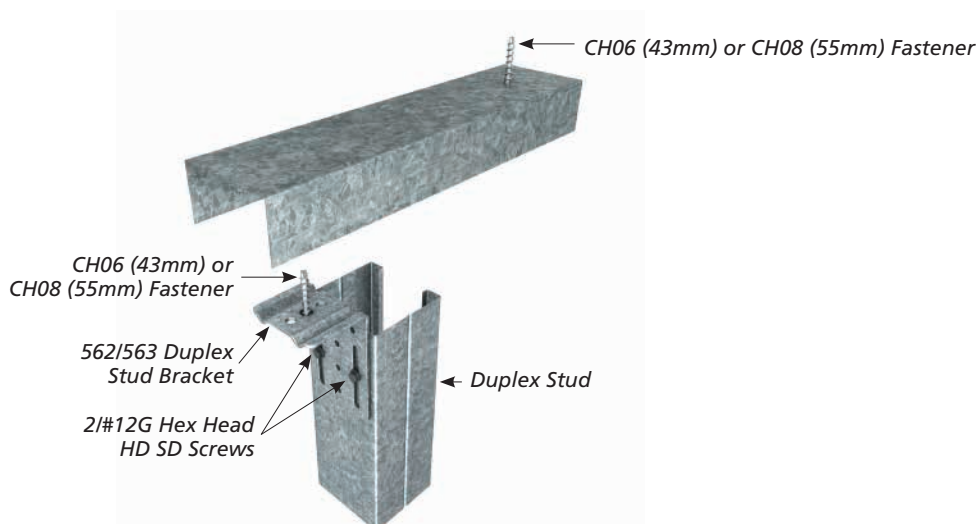
CERT-R-FIX® CH06 FASTENER (M6 X 43MM) FOR C1 CH08 FASTENER (M8 X 55MM) FOR C2



■ FIGURE G1.4.3(F): DUPLEX STUD AND DUPLEX BRACKET INSTALLATION



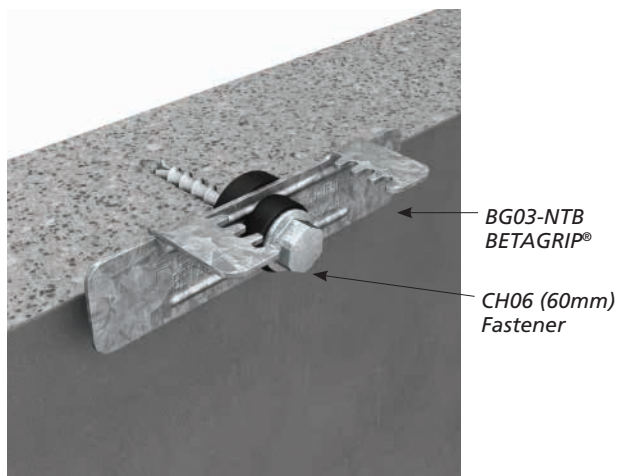
■ FIGURE G1.4.3(G): FLEXIBLE TRACK INSTALLATION



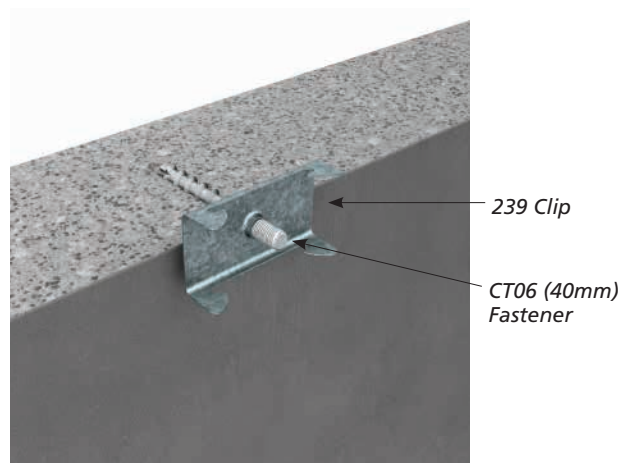
■ FIGURE G1.4.3(H): DUPLEX STUD AND DUPLEX BRACKET INSTALLATION

## G1.4.4 NON-SAFETY CRITICAL WALLS (INTERNAL FURRING\_)

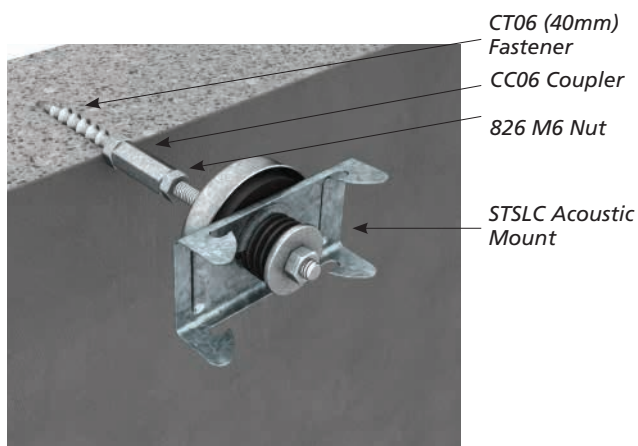
### CERT-R-FIX® FASTENER RANGE



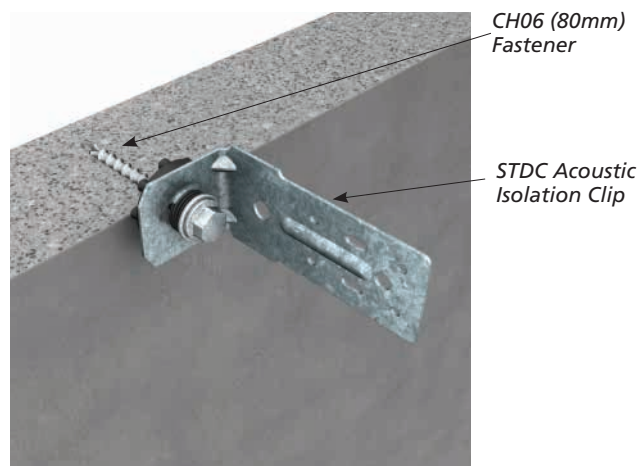
■ FIGURE G1.4.4(A): BETAGRIP® 3 BG03-NTB SYSTEM IMAGE USING CH06 (60mm)



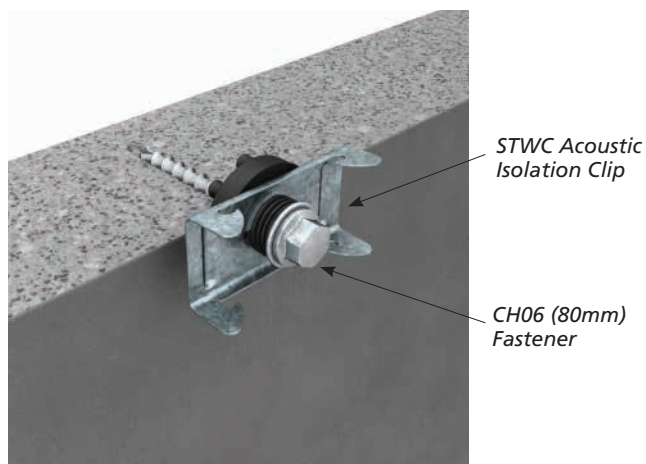
■ FIGURE G1.4.4(B): 239 WALL SYSTEM IMAGE USING CT06 (40mm) FASTENER



■ FIGURE G1.4.4(C): STSLC SYSTEM IMAGE USING CT06, CC06, 826 AND 123



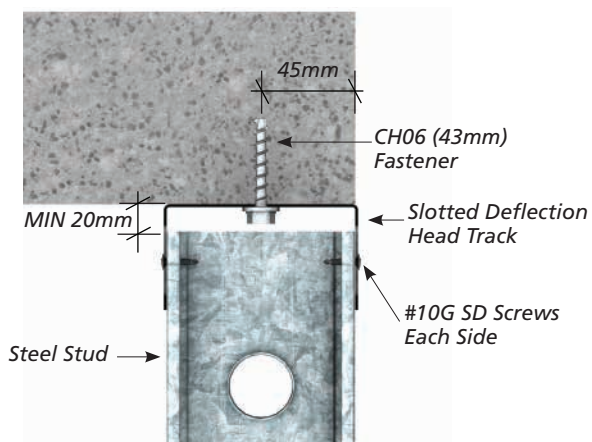
■ FIGURE G1.4.4(D): STDC WALL SYSTEM IMAGE USING CH06 (80mm)



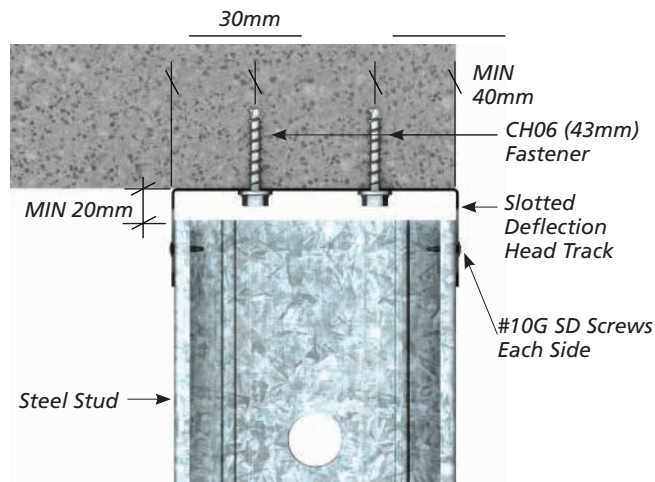
■ FIGURE G1.4.4(E): STWC WALL SYSTEM IMAGE USING CH06 (80mm)

## G1.4.5 WALLS (EXTERNAL)

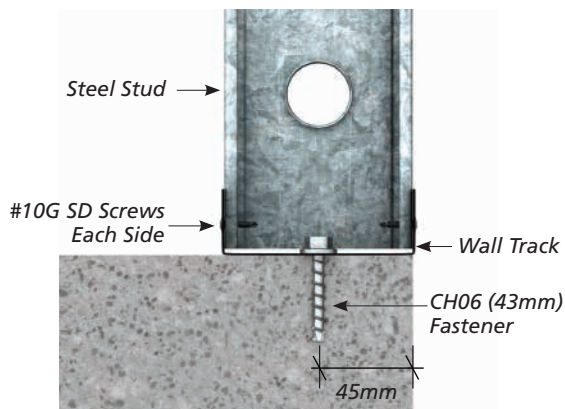
### CERT-R-FIX® CH06 FASTENER (M6 X 43MM) FOR C1 APPLICATIONS



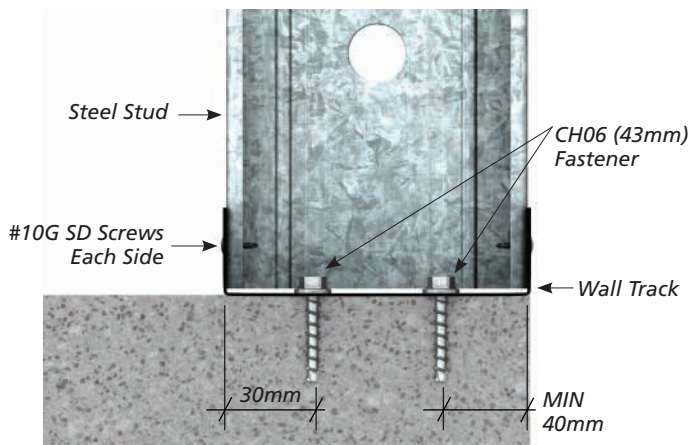
■ FIGURE G1.4.5(A): STANDARD INSTALLATION OF 92mm SLOTTED HEAD TRACK



■ FIGURE G1.4.5(B): STANDARD INSTALLATION OF 150mm SLOTTED HEAD TRACK



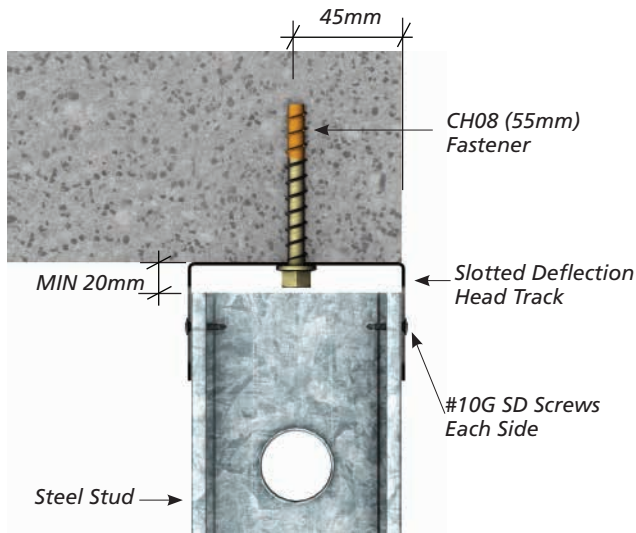
■ FIGURE G1.4.5(C): STANDARD INSTALLATION OF 92mm WALL TRACK



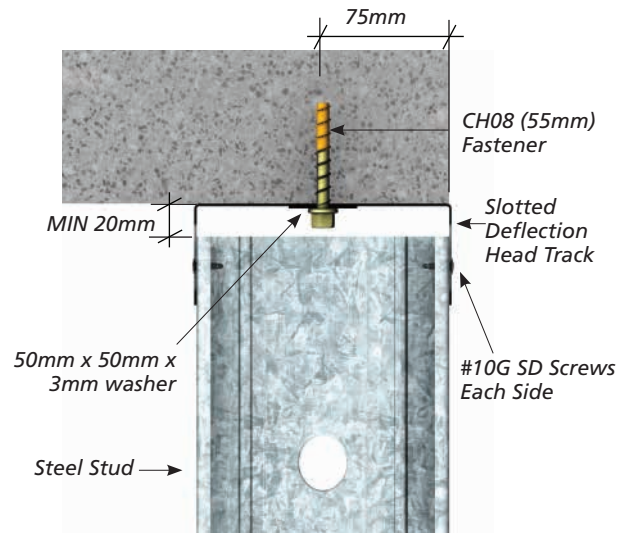
■ FIGURE G1.4.5(D): STANDARD INSTALLATION OF 150mm WALL TRACK

### G1.4.5 WALLS (EXTERNAL)

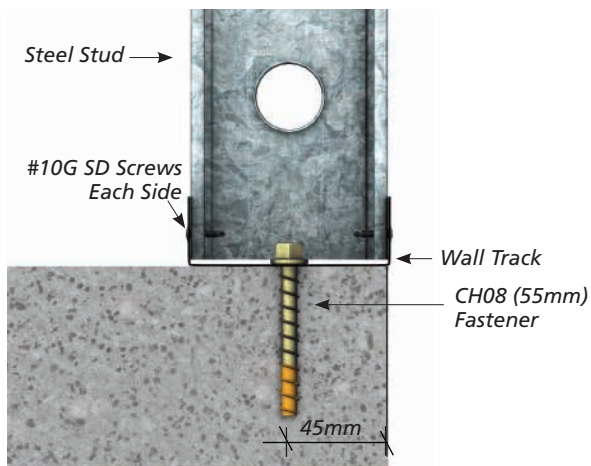
#### CERT-R-FIX CH08 FASTENER (M8 X 55MM) FOR C2 APPLICATIONS



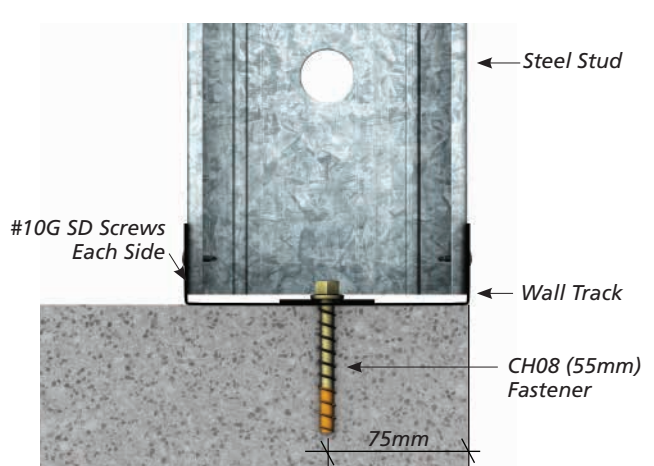
■ FIGURE G1.4.5(E): ALTERNATIVE AND C2 INSTALLATION OF 92mm SLOTTED HEAD TRACK



■ FIGURE G1.4.5(F): ALTERNATIVE AND C2 INSTALLATION OF 150mm SLOTTED HEAD TRACK



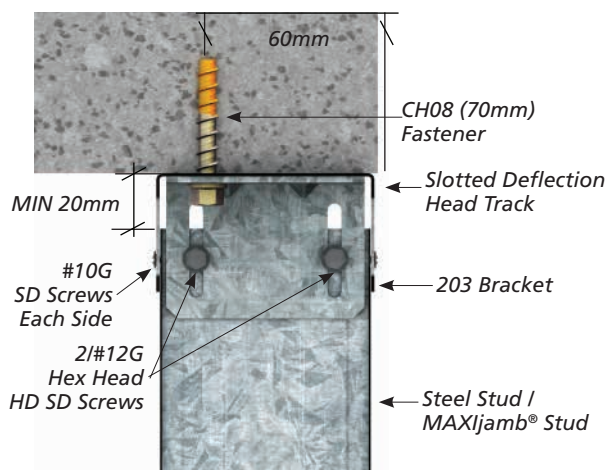
■ FIGURE G1.4.5(G): ALTERNATIVE AND C2 INSTALLATION OF 92mm WALL TRACK



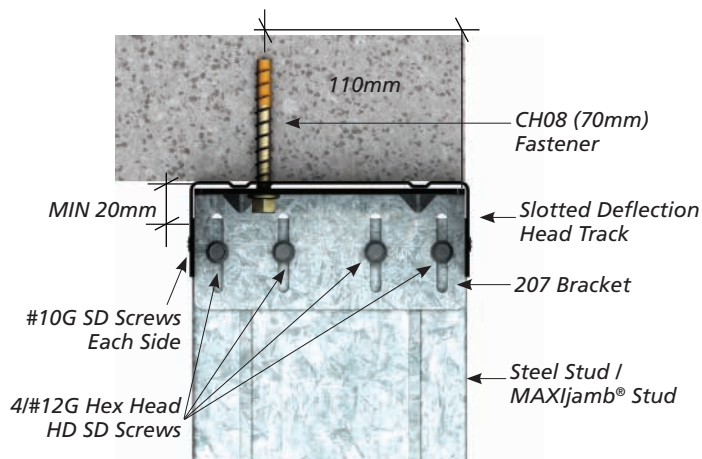
■ FIGURE G1.4.5(H): ALTERNATIVE AND C2 INSTALLATION OF 150mm WALL TRACK

## G1.4.5 WALLS (EXTERNAL)

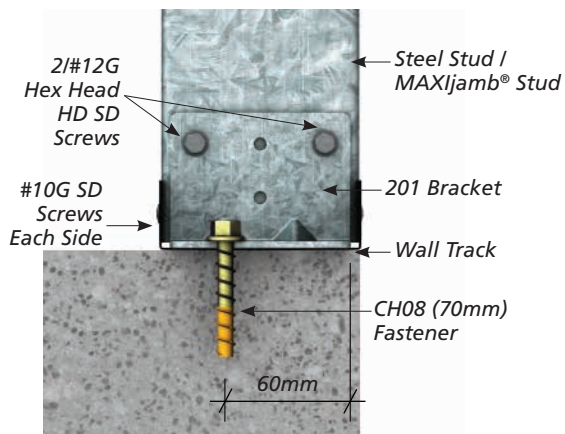
### CERT-R-FIX® CH08 FASTENER (M8 X 70MM) FOR C1 AND C2 APPLICATIONS



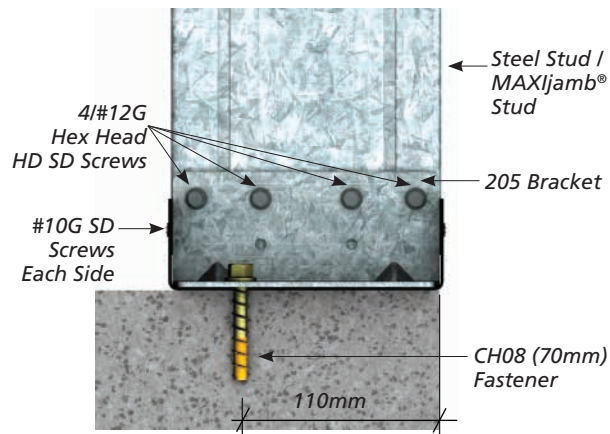
■ FIGURE G1.4.5(I): INSTALLATION OF 92mm SLOTTED HEAD TRACK WITH BRACKET FOR C1 AND C2



■ FIGURE G1.4.5(J): INSTALLATION OF 150mm SLOTTED HEAD TRACK WITH BRACKET FOR C1 AND C2



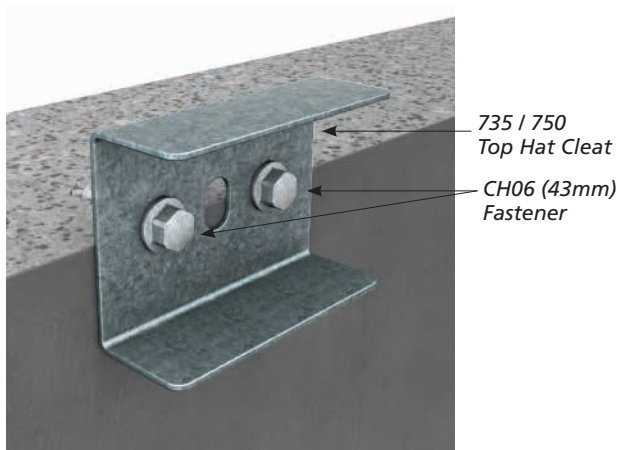
■ FIGURE G1.4.5(K): INSTALLATION OF 92mm WALL TRACK WITH BRACKET FOR C1 AND C2



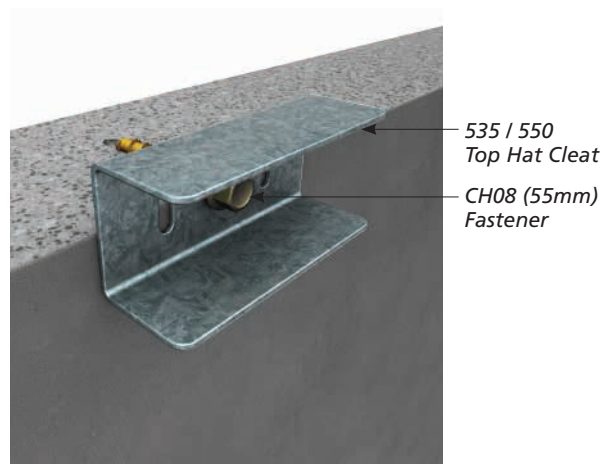
■ FIGURE G1.4.5(L): INSTALLATION OF 150mm WALL TRACK WITH BRACKET FOR C1 AND C2

## G1.4.6 TOP HATS

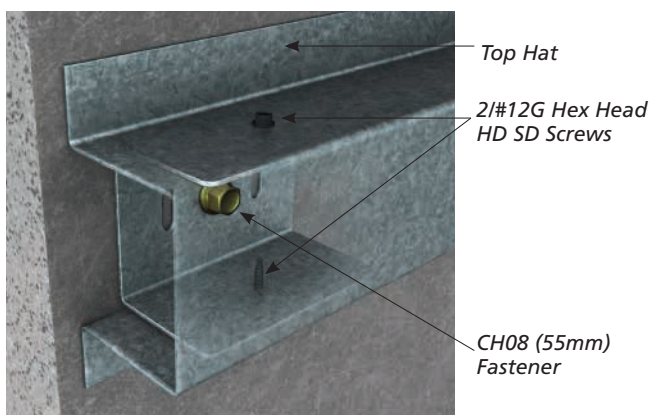
CERT-R-FIX® CH06 FASTENER (M6 X 43MM) OR CH08 FASTENER (M8 X 55MM)



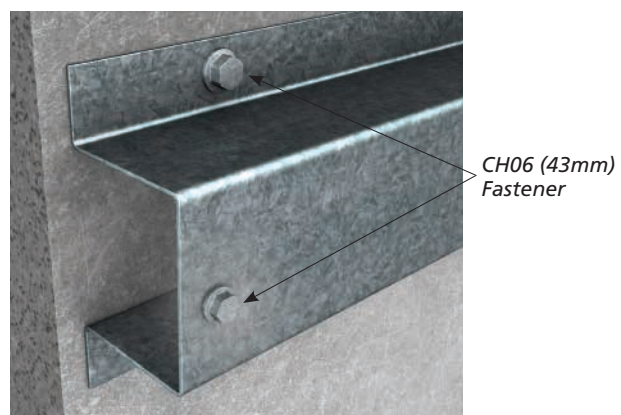
■ FIGURE G1.4.6(A): TOP HAT CLEAT WITH 2 X CH06 FOR C1



■ FIGURE G1.4.6(B): TOP HAT CLEAT WITH 1 X CH08 FOR C2



■ FIGURE G1.4.6(C): INSTALLATION OF TOP HAT TO CONCRETE FOR C2



■ FIGURE G1.4.6(D): INSTALLATION OF TOP HAT DIRECT FIX WITH 2 X CH06 FOR C1

### NOTES:

1. Fastener options shown on figure G1.4.6(A) and (B) can be used on Rondo Top Hat Cleats 535, 550, 735 and 750.

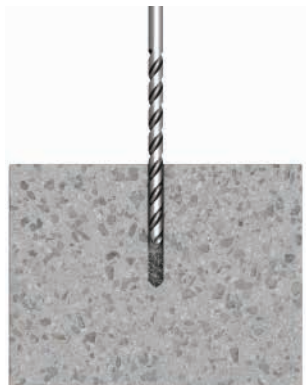


## G1.5 INSTALLATION DETAILS

### G1.5.1 TYPICAL APPLICATION DETAILS

- STEP 1** Drill a hole using a hammer drill bit\* to a minimum embedment depth of 45mm for CH06 & CT06, and to a minimum depth of 60mm for CH08, using the correct diameter drill bit to match.

*\*Alternatively for CH08 installation, a Hollow Drill Bit can be used (e.g. Heller Set-Safe DE Hollow Drill Bits) which vacuums out the dust. Proceed to Step 3 if this applies.*



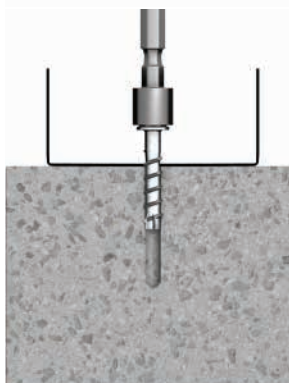
■ FIGURE G1.5.1(A):  
DRILLING A HOLE

- STEP 2** Clean the hole, ensuring you remove any dust or materials using appropriate engineering controls.



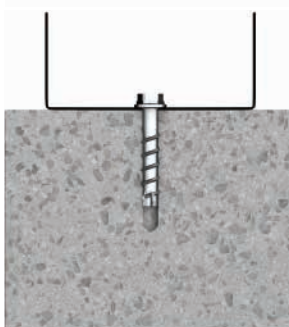
■ FIGURE G1.5.1(B):  
CLEANING A HOLE

- STEP 3** Attach the CERT-R-FIX® fastener to the correct size socket and ensure the fastener is perpendicular to the concrete. Apply pressure against the fastener and rotate to engage the first thread. Continue to tighten the fastener until the flanged head is firmly seated against fixture. Use the maximum torque guide and do not over-torque the fastener.

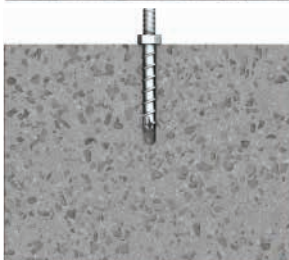


■ FIGURE G1.5.1(C):  
DRIVING BOLT INTO HOLE

- STEP 4** Look and check that the fastener has been secured properly. Installation is complete.



■ FIGURE G1.5.1(D):  
CHECK WALLS



■ FIGURE G1.5.1(E):  
CHECK CEILINGS

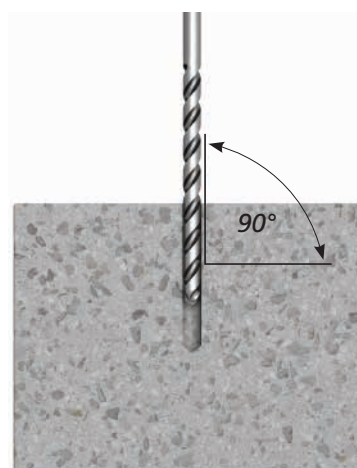
#### NOTES:

1. The fastener may be untightened a maximum of 10mm.
2. Head must be undamaged and in contact with the fixture.
3. Use appropriate engineering controls and PPE as outlined by Safe Work Australia.

## G1.5.2 TROUBLESHOOT GUIDE

### HAS THE HOLE BEEN DRILLED STRAIGHT AT A 90° ANGLE TO THE CONCRETE?

If the hole has not been drilled perpendicular to the concrete (with a maximum deviation of 5°), installing the CERT-R-FIX® fastener at an angle can cause undue bending moments and possible breakage.



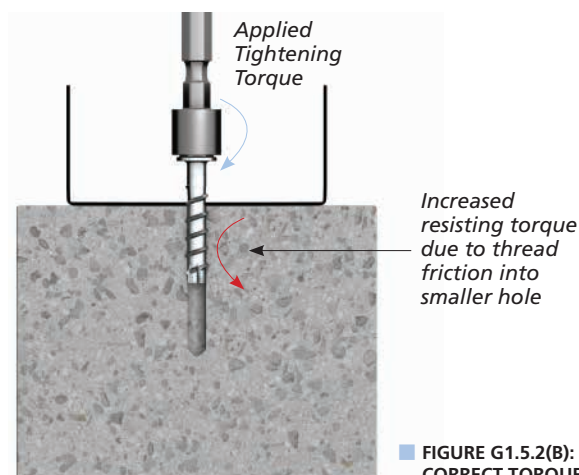
■ FIGURE G1.5.2(A):  
DRILL AT 90°

### ARE YOU USING THE CORRECT SIZE DRILL BIT?

The correct size drill bit is imperative for the CERT-R-FIX® fastener to be able to cut its thread into the concrete to obtain its full published capacities and certifications.

■ TABLE G1.5.2(A): DRILL BIT REQUIREMENTS

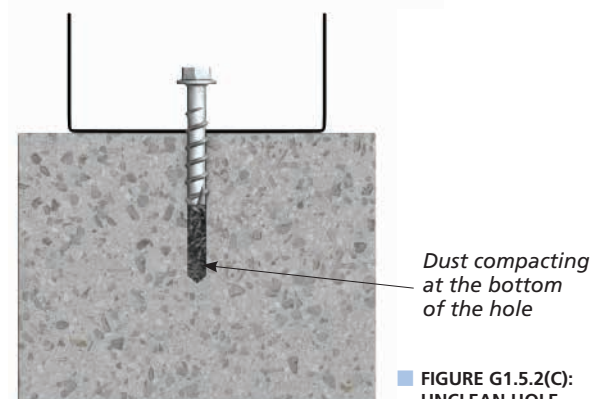
PART NO	DRILL BIT DIAMETER
CH06	6mm
CH08	8mm
CT06	6mm
CT08	8mm



■ FIGURE G1.5.2(B): APPLY  
CORRECT TORQUE

### HOW OLD IS YOUR DRILL BIT?

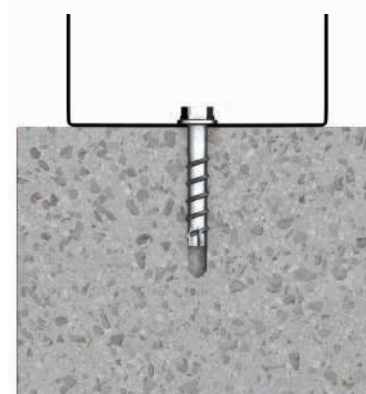
Drill bits that have been worn out can create holes that are too small for the CERT-R-FIX® fastener may cause undue stresses which can become evident either during installation or post installation.



■ FIGURE G1.5.2(C):  
UNCLEAN HOLE

### IS YOUR DRILL HOLE CLEANED?

Unless you are using a hollow drill bit, you will need to clean your drill hole. Not cleaning the hole can build up dust at the bottom of the hole effectively reducing your hole depth to be under the minimum requirements.



■ FIGURE G1.5.2(D):  
CLEAN HOLE

### ARE YOU DRILLING THE REQUIRED HOLE DEPTH?

CERT-R-FIX® fasteners require a drilled hole slightly deeper than the length of the nominal embedment depth. The deeper drill holes ensures any residual dust do not interfere with the fastener installation.

■ TABLE G1.5.2(B): DRILL HOLE DEPTH REQUIREMENTS

PART NO	MINIMUM DRILLED HOLE
CH06	45mm
CH08	60mm
CT06	45mm
CT08	60mm

### ARE YOU INSTALLING WITH AN IMPACT GUN? WHAT IS ITS TORQUE OUTPUT?

Have you checked the CERT-R-FIX® fastener maximum tool torque guide for the impact screw gun? Are you within its limits? Using an impact screw gun with too much torque can put undue stress to the fastener while it is cutting its thread into the concrete.

■ TABLE G1.5.2(C): MAXIMUM TOOL TORQUE GUIDES

PART NO	MAXIMUM TOOL TORQUE CAPACITY
CH06	160Nm
CH08	250Nm
CT06	160Nm
CT08	250Nm

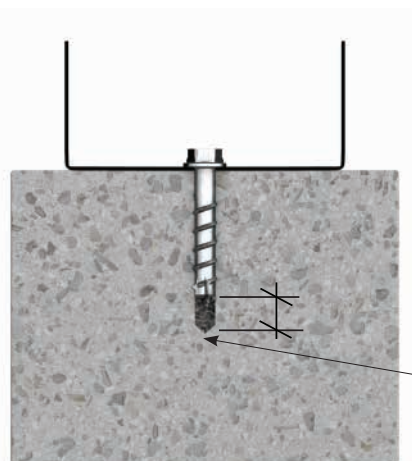
### IS THE RONDO CERT-R-FIX® BEING OVER TIGHTENED AGAINST THE FIXTURE?

Over-tightening the CERT-R-FIX® fastener against the fixture can cause a clamping force that puts undue stress on the CERT-R-FIX® fastener. The CERT-R-FIX® fastener should stop being installed once it is firmly against the fixture, as the load capacity is achieved from cutting a thread into the concrete and not from a nominated torque value.

■ TABLE G1.5.2(D): INSTALLATION TORQUE GUIDE

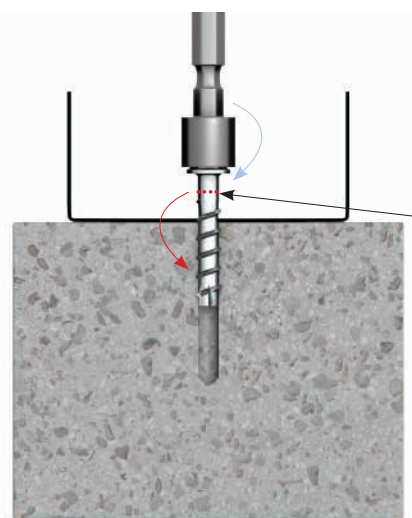
PART NO	MAXIMUM INSTALL TORQUE
CH06	10Nm
CH08	20Nm
CT06	10Nm
CT08	20Nm

Unless you are using a hollow drill bit, you will need to clean your drill hole. Not cleaning the hole can build up dust at the bottom of the hole effectively reducing your hole depth to be under the minimum requirements.



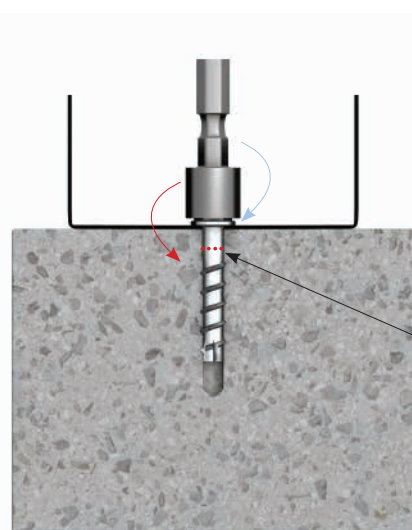
Required hole is to be slightly longer than embedment depth to catch residual dust

■ FIGURE G1.5.2(E): HOLE DEPTHS



Possible fracture when extra force is put on the fastener

■ FIGURE G1.5.2(F): MAXIMUM TOOL TORQUE CAPACITY

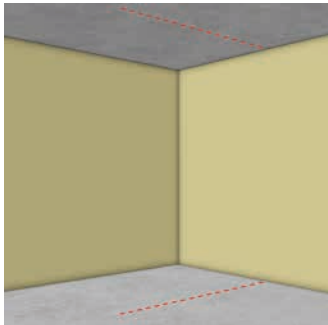


Fracture may occur

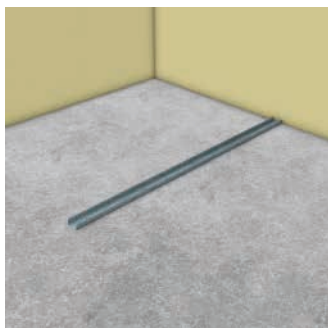
■ FIGURE G1.5.2(G): MAXIMUM INSTALL TORQUE

## G1.5.3 TYPICAL APPLICATION DETAILS – POWDER ACTUATED FASTENERS

### STEP 1: MARK TRACK LOCATION AND LAY TRACK

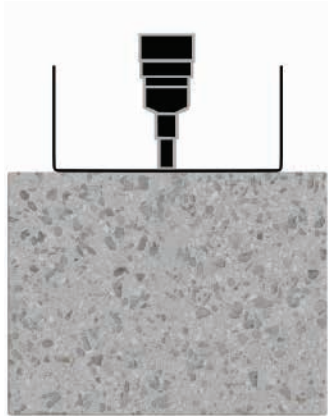


■ FIGURE G1.5.3(A) MARK OUT TRACK LOCATION

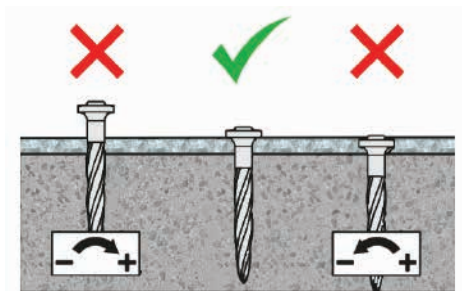


■ FIGURE G1.5.3(B) LAY TRACK

### STEP 2: SHOOT POWDER ACTUATED FASTENERS WHERE REQUIRED ALONG THE TRACK



■ FIGURE G1.5.3(C) FIRE FASTENER INTO TRACK



■ FIGURE G1.5.3(D) CORRECT PAF INSTALLATION

When fastener has been fired, ensure X can be seen clearly on fastener head. If the X cannot be clearly seen please refer to Hilti's instruction for use and direct fastening technology manual.

## G1.6 TECHNICAL AND LOAD DATA

### G1.6.1 CERT-R-FIX® CH06 FASTENER (M6 X 43MM)

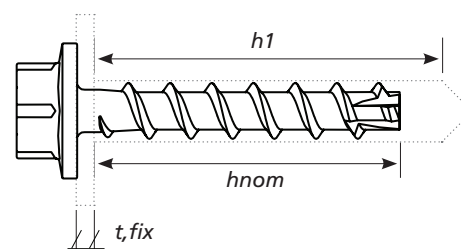


TABLE G1.6.1(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS							
EMBEDMENT DEPTH (h <sub>nom</sub> ) (mm)	DEPTH OF DRILL HOLE (h <sub>1</sub> ) (mm)	FIXTURE THICKNESS (t,fix) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1	FIRE RATED	ZINC COATING
40 MIN	≥ 45	3 MAX	YES, REFER TO ETA 15-0514				MIN 5 MICRONS

TABLE G1.6.1(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (KN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE			
STATIC / QUASI-STATIC (N <sub>Rk,p</sub> )	SEISMIC C1 (N <sub>Rk, p, eq</sub> )	FIRE 60MIN, 90MIN (N <sub>Rk, p, fi</sub> )	FIRE 120MIN (N <sub>Rk, p, fi</sub> )
2.53	2.0	0.5	0.4

TABLE G1.6.1(C): TRACK / BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)								
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		FIRE (R30 - R90)		FIRE (R120)	
	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )
40	2.40	1.69	2.40	1.33				
≥60	4.21	1.69	3.76	1.33				
≥75	5.01	1.69	3.76	1.33	0.5	0.5	0.4	0.4

#### NOTES:

##### Values in Table G1.6.1(B) assume:

1. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
2. Values are characteristic values, not design values.
3. Safety critical applications.
4. Single point fasteners (option 1).
5. Assumed Edge distance ≥62mm.
6. No annular gap between fixing and fixture.
7. For fire attack from more than one side, minimum edge distance to be ≥300mm.

##### Values in Table G1.6.1(C) assume:

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
3. Single anchors ie. Anchor spacing influence has not been considered.
4. Edge reinforcement factor  $\psi_{re}$ ,  $V = 1.0$ .
5. Some design loads may increase if concrete splitting reinforcement is used.
6. No annular gap between fixing and fixture.
7. Assumed worst case scenario with shear force acting towards edge.
8. The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms,fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms,fire} = 1.0$ .
9. Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.

## G1.6 TECHNICAL AND LOAD DATA

### G1.6.2 CERT-R-FIX® CH06 FASTENER (M6 X 60MM)

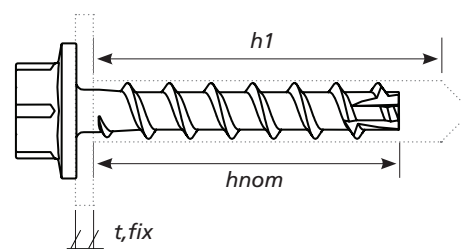


TABLE G1.6.2(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS							
EMBEDMENT DEPTH (hnom) (mm)	DEPTH OF DRILL HOLE (h1) (mm)	FIXTURE THICKNESS (t,fix) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1	FIRE RATED	ZINC COATING
60 MIN	≥ 60	5 MAX	YES, REFER TO ETA 15-0514				MIN 5 MICRONS

TABLE G1.6.2(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (KN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE			
STATIC / QUASI-STATIC (N <sub>Rk,p</sub> )	SEISMIC C1 (N <sub>Rk, p, eq</sub> )	FIRE 60MIN, 90MIN (N <sub>Rk, p, fi</sub> )	FIRE 120MIN (N <sub>Rk, p, fi</sub> )
4.0	4.0	0.8, 0.6	0.4

TABLE G1.6.2(C): TRACK BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)										
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		FIRE (R60)		FIRE (R90)		FIRE (R120)	
	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )
40	2.536	3.373	1.268	2.667						
60	4.411	3.373	2.2	2.667						
70	5.324	3.373	2.2	2.667						
75	5.6	3.373	2.2	2.667						
≥88	5.6	3.373	2.2	2.667	0.8	0.8	0.6	0.6	0.4	0.4

**NOTES:**

**Values in Table G1.6.2(B) assume:**

1. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
2. Values are characteristic values, not design values.
3. Safety critical applications.
4. Single point fasteners (option 1).
5. Assumed Edge distance ≥62mm.
6. No annular gap between fixing and fixture.
7. For fire attack from more than one side, minimum edge distance to be ≥300mm.

**Values in Table G1.6.2(C) assume:**

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
3. Single anchors ie. Anchor spacing influence has not been considered.
4. Edge reinforcement factor  $\psi_{re}$ ,  $V = 1.0$ .
5. Some design loads may increase if concrete splitting reinforcement is used.
6. No annular gap between fixing and fixture.
7. Assumed worst case scenario with shear force acting towards edge.
8. The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms, fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms, fire} = 1.0$ .
9. Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.

## G1.6 TECHNICAL AND LOAD DATA

### G1.6.3 CERT-R-FIX® CH06 FASTENER (M6 X 80MM)

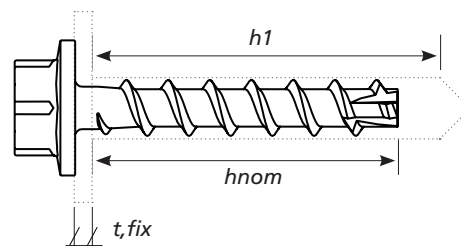


TABLE G1.6.3(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS							
EMBEDMENT DEPTH (hnom) (mm)	DEPTH OF DRILL HOLE (h1) (mm)	FIXTURE THICKNESS (t,fix) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1	FIRE RATED	ZINC COATING
55 MIN	≥ 60	25 MAX	YES, REFER TO ETA 15-0514				MIN 5 MICRONS

TABLE G1.6.3(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (KN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE			
STATIC / QUASI-STATIC (NRk,p)	SEISMIC C1 (NRk, p, eq)	FIRE 60MIN, 90MIN (NRk, p, fi)	FIRE 120MIN (NRk, p, fi)
4.0	4.0	0.8, 0.6	0.4

TABLE G1.6.3(C): TRACK BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)										
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		FIRE (R60)		FIRE (R90)		FIRE (R120)	
	SHEAR (VRd)	TENSION (NRd)	SHEAR (VRd)	TENSION (NRd)	SHEAR (VRd)	TENSION (NRd)	SHEAR (VRd)	TENSION (NRd)	SHEAR (VRd)	TENSION (NRd)
40	2.536	3.373	1.268	2.667						
60	4.411	3.373	2.2	2.667						
70	5.324	3.373	2.2	2.667						
75	5.6	3.373	2.2	2.667						
≥88	5.6	3.373	2.2	2.667	0.8	0.8	0.6	0.6	0.4	0.4

#### NOTES:

##### Values in Table G1.6.3(B) assume:

1. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
2. Values are characteristic values, not design values.
3. Safety critical applications.
4. Single point fasteners (option 1).
5. Assumed Edge distance ≥62mm.
6. No annular gap between fixing and fixture.
7. For fire attack from more than one side, minimum edge distance to be ≥300mm.

##### Values in Table G1.6.3(C) assume:

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
3. Single anchors ie. Anchor spacing influence has not been considered.
4. Edge reinforcement factor  $\Psi_{re}$ ,  $V = 1.0$ .
5. Some design loads may increase if concrete splitting reinforcement is used.
6. No annular gap between fixing and fixture.
7. Assumed worst case scenario with shear force acting towards edge.
8. The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms, fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms, fire} = 1.0$ .
9. Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.

## G1.6 TECHNICAL AND LOAD DATA

### G1.6.4 CERT-R-FIX® CH08 FASTENER (M8 X 55MM)

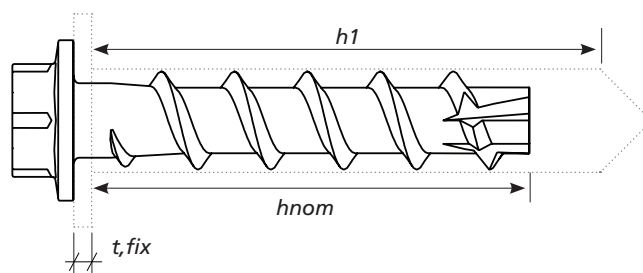


TABLE G1.6.4(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS							
EMBEDMENT DEPTH (hnom) (mm)	DEPTH OF DRILL HOLE (h1) (mm)	FIXTURE THICKNESS (t,fix) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1	FIRE RATED	ZINC COATING
50	≥60	≤5	YES, REFER TO ETA 20-0902				≥5 MICRONS

TABLE G1.6.4(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (kN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE				
STATIC / QUASI-STATIC (N <sub>Rk,p</sub> )	SEISMIC C1 (N <sub>Rk,p,eq</sub> )	SEISMIC C2 (N <sub>Rk,p,eq</sub> )	FIRE 60MIN, 90MIN (N <sub>Rk,p,fi</sub> )	FIRE 120MIN (N <sub>Rk,p,fi</sub> )
9.69	6.2	2.3	1.97, 1.33	1.0

TABLE G1.6.4(C): TRACK BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)										
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		SEISMIC C2		FIRE (R90)		FIRE (R120)	
	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )
35	2.09	3.28	2.16	3.39	2.16	1.28				
40	2.58	4.33	2.58	3.44	2.58	1.28				
50	3.49	5.06	3.49	3.44	3.49	1.28				
60	4.48	5.56	4.48	3.44	4.48	1.28				
70	5.40	5.56	5.40	3.44	5.40	1.28				
≥75	5.73	5.56	5.73	3.44	5.60	1.28	1.33	1.33	1.0	1.0

**NOTES:**

**Values in Table G1.6.4(B) assume:**

1. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
2. Values are characteristic values, not design values.
3. Safety critical applications.
4. Single point fasteners (option 1).
5. Assumed Edge distance; >60mm for static and Seismic values, >86mm for fire values.
6. No annular gap between fixing and fixture.
7. For fire attack from more than one side, minimum edge distance to be ≥300mm.

**Values in Table G1.6.4(C) assume:**

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
3. Single anchors ie. Anchor spacing influence has not been considered.
4. Edge reinforcement factor  $\psi_{re}$ ,  $V = 1.0$ .
5. Some design loads may increase if concrete splitting reinforcement is used.
6. No annular gap between fixing and fixture.
7. Assumed worst case scenario with shear force acting towards edge.
8. The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms,fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms,fire} = 1.0$ .
9. Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.



## G1.6 TECHNICAL AND LOAD DATA

### G1.6.5 CERT-R-FIX® CH08 FASTENER (M8 X 70MM)

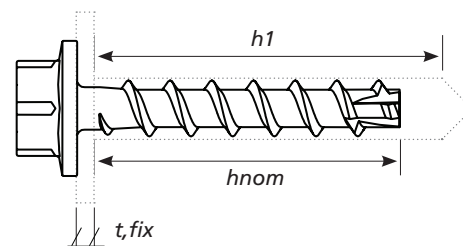


TABLE G1.6.5(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS								
EMBEDMENT DEPTH (hnom) (mm)	DEPTH OF DRILL HOLE (h1) (mm)	FIXTURE THICKNESS (t,fix) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1	FIRE RATED	ZINC COATING	
65 MIN	≥ 75	5 MAX	YES, REFER TO ETA 15-0514					MIN 5 MICRONS

TABLE G1.6.5(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (KN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE			
STATIC / QUASI-STATIC (N <sub>Rk,p</sub> )	SEISMIC C1 (N <sub>Rk,p,eq</sub> )	FIRE 60MIN, 90MIN (N <sub>Rk,p,fi</sub> )	FIRE 120MIN (N <sub>Rk,p,fi</sub> )
15.632	8.8	1.97, 1.33	1.0

TABLE G1.6.5(C): TRACK BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)												
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		SEISMIC C2		FIRE (R60)		FIRE (R90)		FIRE (R120)	
	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )
35	2.282	6.403	1.141	5.443	1.141	2.267						
40	2.722	6.849	1.361	5.822	1.361	2.267						
50	3.666	7.783	1.833	5.867	1.833	2.267						
60	4.686	8.771	2.343	5.867	2.343	2.267						
70	5.637	9.814	2.819	5.867	2.888	2.267						
80	6.327	10.421	3.164	5.867	3.465	2.267						
90	7.01	10.421	3.505	5.867	3.9	2.267						
100	7.689	10.421	3.844	5.867	3.9	2.267						
≥101	7.824	10.421	3.912	5.867	3.9	2.267	1.97	1.97	1.33	1.33	1.0	1.0

#### NOTES:

##### Values in Table G1.6.5(B) assume:

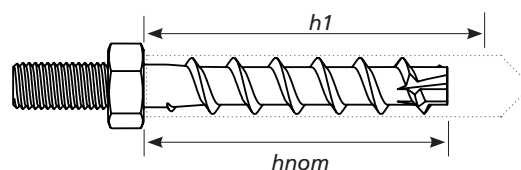
- Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
- Values are characteristic values, not design values.
- Safety critical applications.
- Single point fasteners (option 1).
- Assumed Edge distance ≥62mm.
- No annular gap between fixing and fixture.
- For fire attack from more than one side, minimum edge distance to be ≥300mm.

##### Values in Table G1.6.5(C) assume:

- Safety or non-safety critical applications.
- Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
- Single anchors ie. Anchor spacing influence has not been considered.
- Edge reinforcement factor  $\psi_{re}$ ,  $V = 1.0$ .
- Some design loads may increase if concrete splitting reinforcement is used.
- No annular gap between fixing and fixture.
- Assumed worst case scenario with shear force acting towards edge.
- The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms,fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms,fire} = 1.0$ .
- Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.

## G1.6 TECHNICAL AND LOAD DATA

### G1.6.6 CERT-R-FIX® CT06 FASTENER (M6 X 40MM)



■ TABLE G1.6.6(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS							
EMBEDMENT DEPTH (h <sub>nom</sub> ) (mm)	DEPTH OF DRILL HOLE (h <sub>1</sub> ) (mm)	FIXTURE THICKNESS (t, fix) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1	FIRE RATED	ZINC COATING
40 MIN	≥ 45	0	YES, REFER TO ETA 15-0514				MIN 5 MICRONS

■ TABLE G1.6.6(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (kN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE			
STATIC / QUASI-STATIC (N <sub>Rk,p</sub> )	SEISMIC C1 (N <sub>Rk, p, eq</sub> )	FIRE 60MIN, 90MIN (N <sub>Rk, p, fi</sub> )	FIRE 120MIN (N <sub>Rk, p, fi</sub> )
2.53	2.0	0.5	0.4

■ TABLE G1.6.6(C): TRACK BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)								
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		FIRE (R90)		FIRE (R120)	
	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )
45	2.40	1.69	2.40	1.33				
≥60	4.21	1.69	3.76	1.33				
≥70	5.01	1.69	3.76	1.33	0.5	0.5	0.4	0.4

#### NOTES:

##### Values in Table G1.6.6(B) assume:

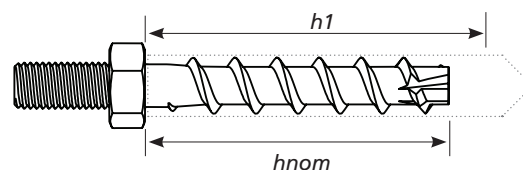
1. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
2. Values are characteristic values, not design values.
3. Safety critical applications.
4. Single point fasteners (option 1).
5. Assumed Edge distance ≥62mm.
6. No annular gap between fixing and fixture.
7. For fire attack from more than one side, minimum edge distance to be ≥300mm.

##### Values in Table G1.6.6(C) assume:

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
3. Single anchors ie. Anchor spacing influence has not been considered.
4. Edge reinforcement factor  $\psi_{re}$ ,  $V = 1.0$ .
5. Some design loads may increase if concrete splitting reinforcement is used.
6. No annular gap between fixing and fixture.
7. Assumed worst case scenario with shear force acting towards edge.
8. The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms, fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms, fire} = 1.0$ .
9. Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.

## G1.6 TECHNICAL AND LOAD DATA

### C1.6.7 CERT-R-FIX CT08 FASTENER (M8 X 50MM)



■ TABLE G1.6.7(A): INSTALLATION PARAMETERS

INSTALLATION PARAMETERS							
EMBEDMENT DEPTH (h <sub>nom</sub> ) (mm)	DEPTH OF DRILL HOLE (h <sub>1</sub> ) (mm)	FIXTURE THICKNESS (t <sub>fix</sub> ) (mm)	AS5216 COMPLIANT	CRACKED CONCRETE APPROVAL	SEISMIC APPROVAL C1 & C2	FIRE RATED	ZINC COATING
50	≥60	0	YES, REFER TO ETA 20-0902				≥5 MICRONS

■ TABLE G1.6.7(B): CEILING FASTENERS

CHARACTERISTIC VALUES FOR TENSION (kN) SAFETY CRITICAL APPLICATIONS - OPTION 1, CRACKED CONCRETE				
STATIC / QUASI-STATIC (N <sub>Rk,p</sub> )	SEISMIC C1 (N <sub>Rk,p,eq</sub> )	SEISMIC C2 (N <sub>Rk,p,eq</sub> )	FIRE 60MIN, 90MIN (N <sub>Rk,p,fi</sub> )	FIRE 120MIN (N <sub>Rk,p,fi</sub> )
10.003	6.2	2.3	0.72, 0.58	0.51

■ TABLE G1.6.7(C): TRACK BRACKET FASTENERS

DESIGN LOAD RESISTANCE (kN)										
MINIMUM EDGE DISTANCE (mm)	STATIC / QUASI-STATIC		SEISMIC C1		SEISMIC C2		FIRE (R90)		FIRE (R120)	
	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )	SHEAR (V <sub>Rd</sub> )	TENSION (N <sub>Rd</sub> )
35	2.09	3.28	2.16	3.39	2.16	1.28				
40	2.58	4.33	2.58	3.44	2.58	1.28				
50	3.49	5.06	3.49	3.44	3.49	1.28				
60	4.48	5.56	4.48	3.44	4.48	1.28				
70	5.40	5.56	5.40	3.44	5.40	1.28				
≥75	5.73	5.56	5.73	3.44	5.60	1.28	0.58	0.58	0.51	0.51

**NOTES:**

**Values in Table G1.6.7(B) assume:**

1. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
2. Values are characteristic values, not design values.
3. Safety critical applications.
4. Single point fasteners (option 1).
5. Assumed Edge distance ≥62mm.
6. No annular gap between fixing and fixture.
7. For fire attack from more than one side, minimum edge distance to be ≥300mm.

**Values in Table G1.6.7(C) assume:**

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 100mm BMT.
3. Single anchors ie. Anchor spacing influence has not been considered.
4. Edge reinforcement factor  $\psi_{re}$ ,  $V = 1.0$ .
5. Some design loads may increase if concrete splitting reinforcement is used.
6. No annular gap between fixing and fixture.
7. Assumed worst case scenario with shear force acting towards edge.
8. The Fire Design loads include the safety factor for fire exposure resistance of  $\gamma_{Ms,fire} = 1.0$  and the partial safety factor for action  $\gamma_{Ms,fire} = 1.0$ .
9. Combined tension and shear loading in accordance with EN 1992-4:2018 and AS 5216:2021 has not been included in these tables.

## G1.6 TECHNICAL AND LOAD DATA

### C1.6.8 CERT-R-FIX CX27 POWDER ACTUATED FASTENERS

■ TABLE G1.6.8(A): DESIGN SHEAR LOAD RESISTANCE (KN)

DESIGN SHEAR LOAD RESISTANCE (kN)																			
Concrete	STATIC / QUASI-STATIC				SEISMIC C1				FIRE (R60)				FIRE (R90)				FIRE (R120)		
	Base Track		Deflection Head track		Base Track		Deflection Head track		Base Track		Deflection Head track		Base Track		Deflection Head track		Base Track		
	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	Track 0.5 BMT	Track 0.75 BMT	
C40/50	0.58	0.81	0.20	0.37	0.58	0.60	0.15	0.23	0.23	0.35	0.15	0.27	0.15	0.25	0.15	0.20	0.11	0.19	

**NOTES:**

**Values in Table G1.6.8(C) assume:**

1. Safety or non-safety critical applications.
2. Assumed concrete Condition for values: Minimum concrete strength - 32MPa, Cracked Concrete, 80mm Thickness.
3. No load reduction required when minimum spacing specifications are sustained.
4. Maximum Spacing to be 600mm.
5. Minimum Spacing to be 100mm FOR SLAB THICKNESS GREATER THAN 160MM.
6. Minimum Edge Distance of 150mm.
7. Non-cracked and cracked concrete (up to a design crack width of 0.5mm).
8. Projects designated as building importance level 2 or 3 (IL2 or IL3).
9. Fastener seismic performance category C1 is required or where seismic prequalification is not required.
10. Lengths of track longer than 540mm (when slab thickness  $h \geq 160$ mm).
11. Lengths of track longer than 940mm (when slab thickness  $h = 80$ mm).
12. Minimum of 5 fixings per track with a minimum spacing of 100mm (when slab thickness  $h \geq 160$ mm) and 200mm (when slab thickness  $h = 80$ mm).

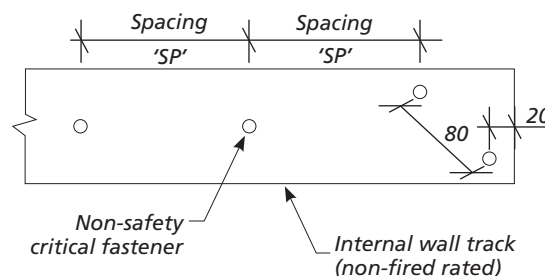
## G1.6 TECHNICAL AND LOAD DATA

### G1.6.9 NON-SAFETY CRITICAL APPLICATIONS

For non-safety critical applications not covered by AS 5216:2018 the designer should seek technical advice from the fastener supplier in relation to the suitability of the selected fastener.

While the Rondo CERT-R-FIX® range of fasteners are suitable, there are many alternative non-safety critical fasteners available in the market.

The following guide may be applied to the use of non-safety critical fasteners for fixing of head and base tracks of internal non-load bearing and non-fire rated partitions.



■ FIGURE G1.6.9(A): TYPICAL TRACK PLAN DETAIL (SCALE - N.T.S)

■ TABLE G1.6.9(A): MAXIMUM NON-SAFETY CRITICAL FASTENER SPACING

Maximum Non-safety Critical Fastener Spacing 'SP' (mm)						
Wall Height (mm) \ Ultimate Design Pressure (kPa)	0.375	0.500	0.750	1.000	1.250	1.500
2700	520	390	260	190	150	130
3200	440	330	220	160	130	110
3700	380	280	190	140	110	N/A
4200	330	250	160	120	100	N/A
4700	300	220	150	110	N/A	N/A
5200	270	200	130	100	N/A	N/A
5700	240	180	120	N/A	N/A	N/A
6200	220	170	110	N/A	N/A	N/A
6700	210	160	100	N/A	N/A	N/A
7200	190	150	N/A	N/A	N/A	N/A
7700	180	140	N/A	N/A	N/A	N/A
8200	170	130	N/A	N/A	N/A	N/A
8700	160	120	N/A	N/A	N/A	N/A
9200	150	110	N/A	N/A	N/A	N/A

**TABLE NOTES:**

1. Minimum design shear and tensile capacity of non-safety critical fastener = 0.4kN
2. Combined shear and tension interaction has been checked to  $(N^*/\phi N) + (V^*/\phi V) \leq 1.2$

G1.7 PRODUCT PACKAGING

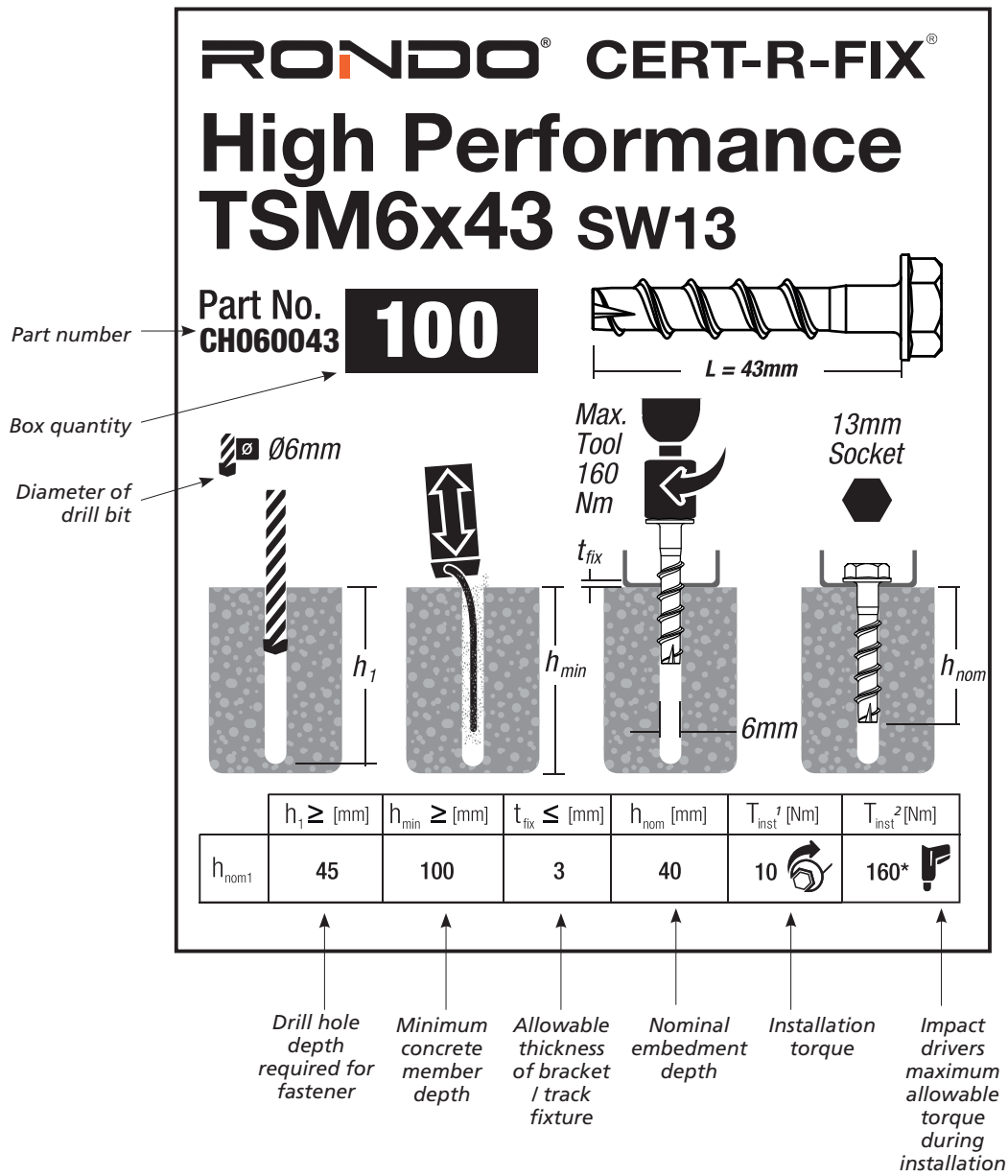


FIGURE G1.7(A): PACKAGING LABEL

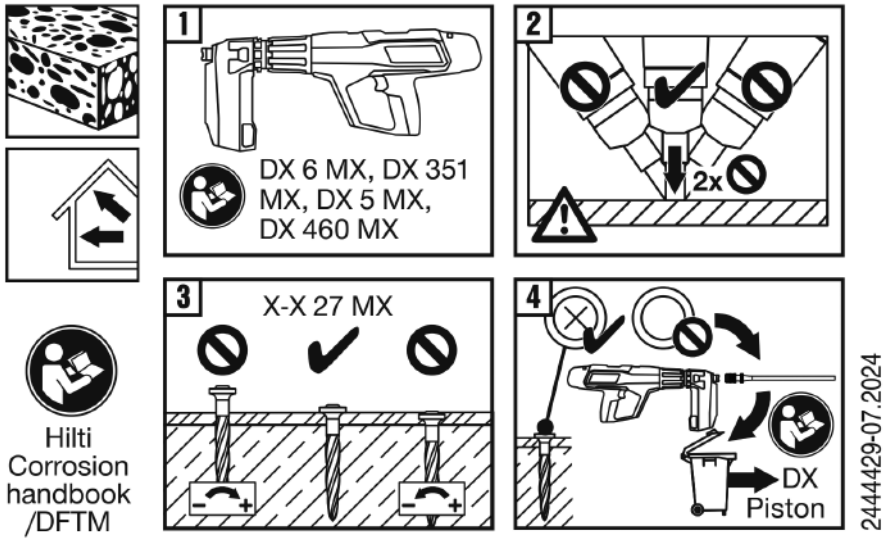


FIGURE G1.7(B): HILTI INSTALLATION INSTRUCTIONS PACKAGING LABEL

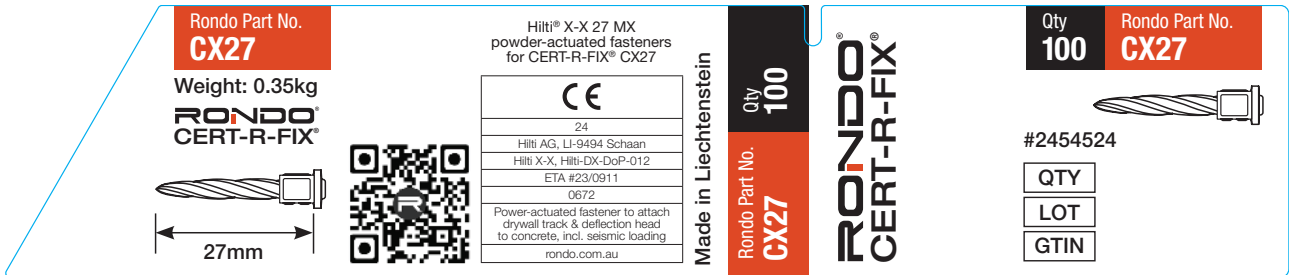


FIGURE G1.7(C): POWDER ACTUATED FASTENER PACKAGING LABEL

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