Boundaryline

PS1

DURAPANEL™

FOR: BALUSTRADES TO EXTERNAL BALCONIES

Producer **Statement - PS1**

Issue Date: 14/10/2022

Revision No. 2.00

Contents

1. Producer Statement – PS1 – Design

BUILDING CODE CLAUSE(S): B1, F4, F9 **JOB NUMBER:** 213679

ISSUED BY: Hadley Consultants Ltd **PS1#:** 213679-6

(Engineering Design Firm)

TO: Terranota Limited

(Owner/Developer)

TO BE SUPPLIED TO:

(Building Consent Authority)

IN RESPECT OF: Boundaryline Durapanel Balustrades for 0.75kN/m loading (external balconies excluding overcrowding)

(Description of Building Work)

AT:

(Address, Town/City)

LEGAL DESCRIPTION: or N/A ☐

We have been engaged by the owner/developer referred to above to provide (Extent of Engagement):
Specific Engineering design for the Boundaryline DuraPanel Balustrades for External Balconies up to 0.75kN/m loading (excluding areas susceptible to overcrowding), a various locations throughout New Zealand, subject to the attached schedule and BCA verification of the location and applicability. Note: BCA, address and legal description details above not entered by Hadley Consultants.
in respect of the requirements of the Clause(s) of the Building Code specified above for Part only, as specified in the schedule, of the proposed building work.

The design carried out by us has been prepared in accordance with:

- ☒ Compliance documents issued by the Ministry of Business, Innovation & Employment (Verification method/acceptable solution B1/VM1, B1/VM4, F4/AS1, F9/AS1 and/or
- ☐ Alternative solution as per the attached Schedule.

The proposed building work covered by this producer statement is described on the drawings specified in the Schedule, together with the specification and other documents set out in the Schedule.

On behalf of the Engineering Design Firm, and subject to:

- Site verification of the following design assumptions: Refer attached schedule.
- All proprietary products meeting their performance specification requirements;
- Conditions per the attached schedule at Section 2.

I believe on reasonable grounds that

- the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the Schedule, will comply with the relevant provisions of the Building Code and that;
- the persons who have undertaken the design have the necessary competency to do so.

I recommend a CM2 level of **construction monitoring**.

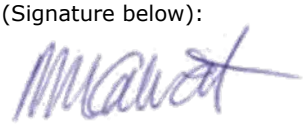
I, Nick Calvert, am:
(Name of Engineering Design Professional)

- ☒CPEng number 242062

And hold the following qualifications BE(Hons), CMEngNZ, IntPE, CPEng
The Engineering Design Firm holds a current policy of Professional Indemnity Insurance no less than $200,000

The Engineering Design Firm is a member of ACENZ.

SIGNED BY (Name of Engineering Design Professional): Nick Calvert
(Signature below):



ON BEHALF OF (Engineering Design Firm): Hadley Consultants Ltd Date: 14/10/2022

Note: This statement has been prepared solely for the Building Consent Authority named above and shall not be relied upon by any other person or entity. Any liability in relation to this statement accrues to the Engineering Design Firm only. As a condition of reliance on this statement, the Building Consent Authority accepts that the total maximum amount of liability of any kind arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in tort or otherwise, is limited to the sum of $200,000.

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

2. Schedule To PS1

Please include an itemised list of all referenced documents, drawings, or other supporting materials in relation to this producer statement below:

The attached PS1 is subject to:

1. This statement is based on generic design of the specified products, without specific knowledge of the location or intended use of the product at the site referred to. The Owner/Developer and Building Consent Authority must be satisfied the specified product and the corresponding Producer Statement and manufacturer's specifications are applicable to the situation in which the product is to be used,
2. Any ground at the site directly supporting the balustrade providing an allowable working bearing capacity of 100kPa minimum and meeting the definition of good ground as set out in NZS3604,
3. Any structure supporting the balustrade to be in accordance with the Building Code Acceptable Solutions or subject to specific design,
4. The work covered by this statement being carried out in accordance with the manufacturer's installation specifications,
5. all reinforced concrete work being carried out in accordance with NZS 3109 and NZS 3114, and
6. all structural steelwork work being carried out in accordance with NZS 3404, and
7. the engineering work covered by this statement being inspected at appropriate times during construction by the Building Consent Authority as recommended in the schedule of inspections below.

Referenced documents: Drawings numbered 213679 SK12 revision D, SK13 revision E, SK16 revision D, SK17 revision B, SK19 revision C, SK20 revision B and SK106 revision A, all dated 14/10/2022

Alternative Solutions: None

Part only Schedule:

This PS1 covers part only of the building work for the following reason(s):

- This statement only covers the elements designed by Hadley Consultants.
- The design of the substrate that the balustrade is fixed to is covered by others.

B2 Durability

The design life of structural elements is 50 years. There is no effective verification method for B2 contained within the Building Code. Durability provisions of structural elements covered under B1 are achieved as follows:

- **Concrete** Concrete covers in accordance with NZS 3101, Part 1, Section 3.
- **Timber** Supporting timber structure by others.
- **Steel** All structural members are 6063 T5 aluminium and fixings are stainless steel if in corrosion zone D or E otherwise hot dip galvanised.

Maintenance

This schedule of ongoing inspection and maintenance of structural elements shall be included with the O&M manuals and provided to the Owner/Body Corporate and building managers.

INSPECTION/MAINTENANCE TIMEFRAME AND ITEM	
(a) Half-yearly	Wash down all exposed steelwork that is not in a fully interior environment.
(b) 10-yearly	Check exposed timber fixings for corrosion; repair as required.
	Check all exposed steelwork that is not in a fully interior environment for signs of corrosion. Repair protective coatings as required.
(c) 25-yearly	Inspect all exposed, external reinforced concrete for signs of spalling and the resulting exposed reinforcing for corrosion. Repair as required.
Following any loading condition that is considered greater than SLS level or results in a permanent deflection.	Inspections and repair as per b) and c) above.

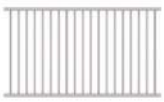
Recommended Inspections

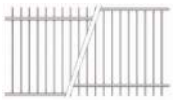
We recommend that the following elements are specifically inspected by a Building Inspector from the Local Authority:

INSPECTION SCHEDULE			
No	Description	Date Inspected	Carried Out By
1	Subgrade inspections once all topsoil and organic material have been removed from the excavation confirming good ground	TBC	Building Inspector
2	Pre-pour inspection of concrete foundations	TBC	Building Inspector
3	Steel/Timber connectors Inspection	TBC	Building Inspector
4	Timber Connection Inspection – preline	TBC	Building Inspector

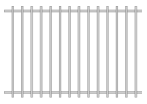
Appendix 1 Drawings

Boundaryline Specifications: For External Balconies Producer Statement 0.75kN/m loading


DuraPanel Eco/Delta

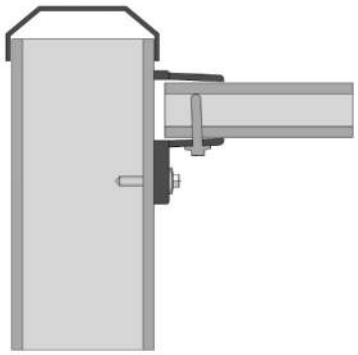

DuraPanel Vecta


DuraPanel Polo


DuraPanel Axis

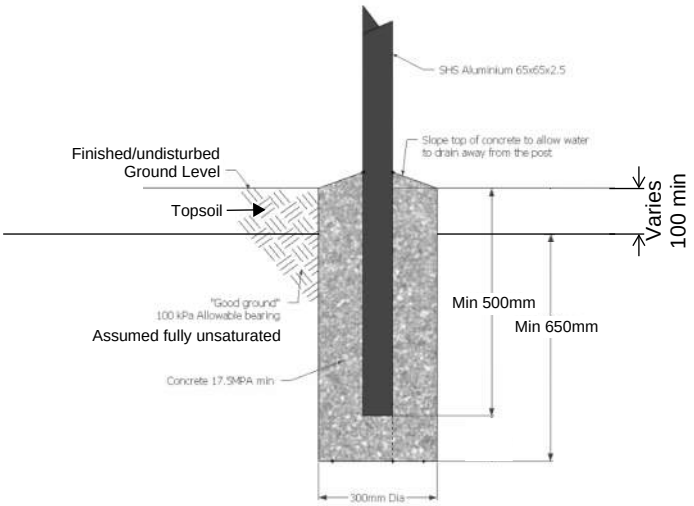
Panel Code, Name, Height	Maximum Post Spacing (centre-to-centre)	Component Specifications
DDP9522 Delta 950 **	1175mm	Rail: 40x40x1.6 SHS Vertical: 19x19x1.2 SHS Post Size: 65x65x2.5 SHS
DDP1222 Delta 1200	1175mm	Rail: 40x40x1.6 SHS Vertical: 19x19x1.2 SHS Post Size: 65x65x2.5 SHS
DVP1222 Vecta 1200 DVP1522 Vecta 1500	1175mm	Rail: 40x40x1.6 SHS Vertical: 19x19x1.2 SHS Post Size: 65x65x2.5 SHS
DPP1222 Polo 1200 DPP1522 Polo 1500 DPP1822 Polo 1800	1175mm	Rail: 40x40x1.6 SHS Vertical: 19x19x1.2 SHS (1200/1500) Vertical: 19x19x1.6 SHS (1800) Post Size: 65x65x2.5 SHS
DXP1222 Axis 1200	1075mm	Rail: 25x25x2.5 SHS Vertical: 50x25x1.2 SHS Post Size: 50x25x3.0 RHS (steel)

Panel to Post fixing:
Rail Bracket DAB4040
Rail bracket DAB3825 (Eco)
Rail bracket DAB2525 (Axis)
Bracket screwed to post through holes provided with self-drilling screws.
Bracket screwed to rail with one self-drilling screw through underside of bracket and into rail as shown.

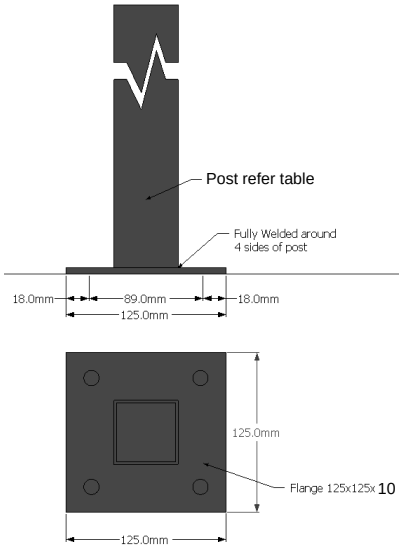


All panels, posts, and brackets are manufactured from aluminium (Axis posts only galvanised steel)
** Important Note: for 950mm panel, minimum barrier height is 1000mm above finished level.

In-ground Post:
DAP6519 or DAP6522 or DAP6525, or DSP5218 (Axis only)
Note: Posts to be installed in "Good ground" as defined by NZS3604



Bolt-down Post:
DAF6513 or DAF6519 (DSF5213 Axis only)



Fixings for flanged post:
In concrete: (minimum 120mm thick 20MPa concrete), 4/M10 Trubolts with 70mm effective embedment and minimum 70mm from centre of fixings to edge of concrete. M10x3 round washers.
In timber: solid blocking required, 4/M10x220 coach screws with M10x3 heavy round washer (pre-drill 7mm pilot hole). Note: if decking is more than 32mm thick, use longer coach screws to maintain a minimum embedment of 160mm into joist.

Issue	Description	By	Date
A	Building Consent	NMC	14/10/2022

Project: Boundaryline Barriers
Title: Durapanel Details
Client: Terranota Limited

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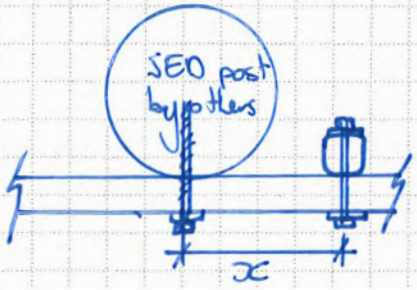
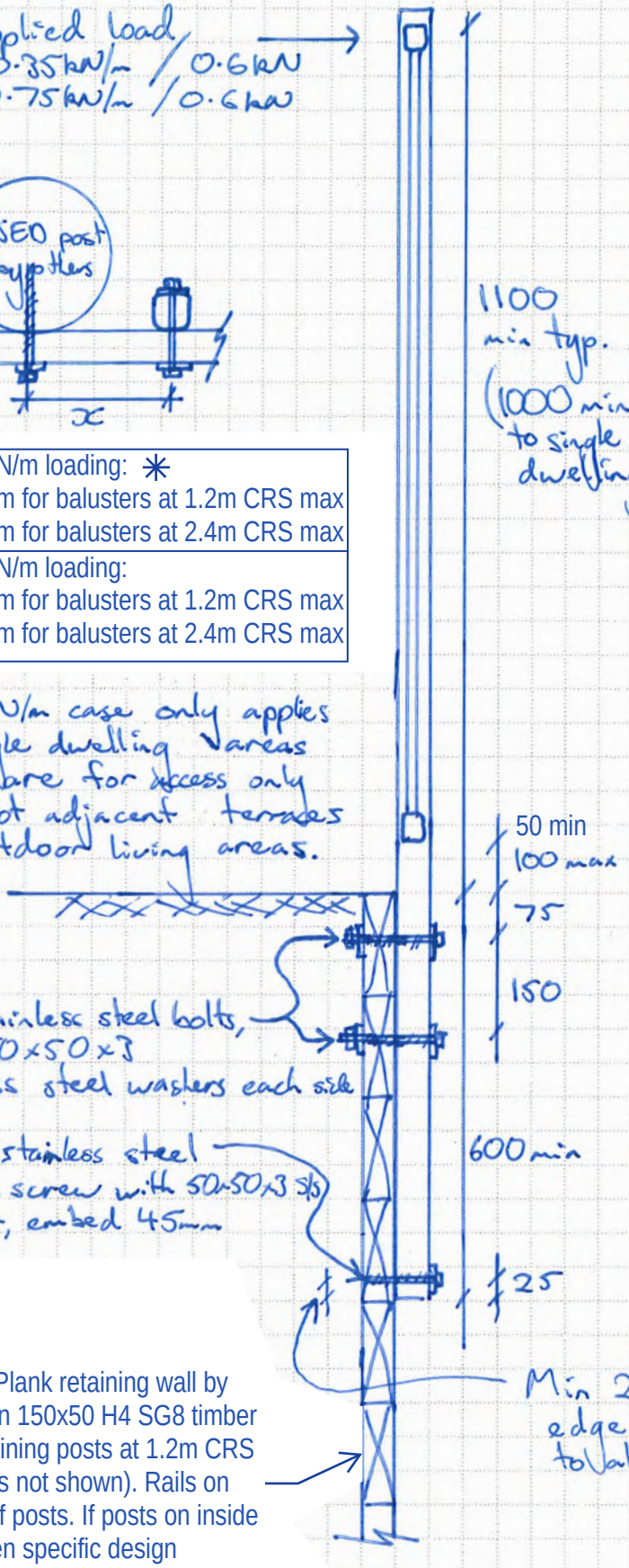
Drawn:	Checked:	Scale:	Drawing No. Project:	Sheet:	Issue:
NMC		NTS	213679	SK106	A

Applied load
= 0.35kN/m / 0.6kN
= 0.75kN/m / 0.6kN



For 0.35kN/m loading: ✳ x ≤ 600mm for balusters at 1.2m CRS max x ≤ 600mm for balusters at 2.4m CRS max
For 0.75kN/m loading: x ≤ 600mm for balusters at 1.2m CRS max x ≤ 200mm for balusters at 2.4m CRS max

✳0.35kN/m case only applies to single dwelling areas that are for access only and not adjacent terraces or outdoor living areas.

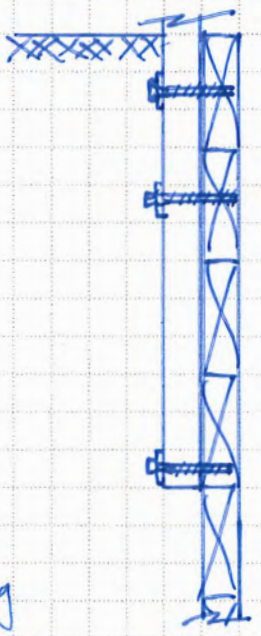


Post and Plank retaining wall by others. Min 150x50 H4 SG8 timber rails. Retaining posts at 1.2m CRS max (posts not shown). Rails on soil side of posts. If posts on inside of rails then specific design required

Notes:
1. If planks are sloping back, pack barrier Baluster to vertical and ensure coach screw embedment is maintained at 45mm min, adjust coach screw length to suit.
2. Hot dip galvanised fixings can be used in lieu of stainless steel provided fixings are covered with DPM to prevent ground contact and barrier is not located in corrosion zone D or E.

Baluster on Inside:

As per Baluster on outside except top fixings can be M12 coach screws also, embed 45mm



Fixings subject to inspection and maintenance to prevent potential bimetallic corrosion

Issue	Description	By	Date
D	Building Consent	NMC	14/10/2022
C	Update	AOM	20/3/17
B	Comment	AOM	12/12/17
A	Comment	AOM	4/12/17

Project: Boundaryline Barriers
Title: Retaining, Single Plank Fixing
Client: Terranora

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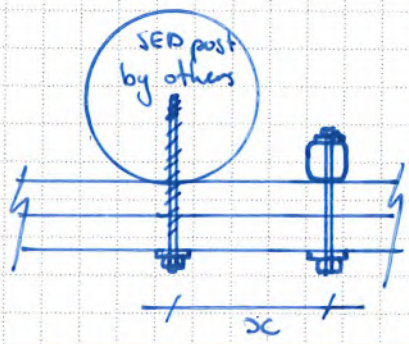
Drawn: AOM | Checked: | Scale: 1:10 | Drawing No. Project: 13246a | Sheet: SK12 | Issue: D

ORIGINAL SIZE A4 DO NOT SCALE, REFER ALL DISCREPANCIES TO THE ENGINEER

Applied load
≤ 0.35 kN/m / 0.6kN
= 0.75 kN/m / 0.6kN



For 0.35kN/m loading: *	
x ≤ 600 mm	for Baluster @1.2m crs
x ≤ 250 mm	for Baluster @2.4m crs
For 0.75kN/m loading:	
x ≤ 250 mm	for Baluster @1.2m crs
x ≤ 100 mm	for Baluster @2.4m crs

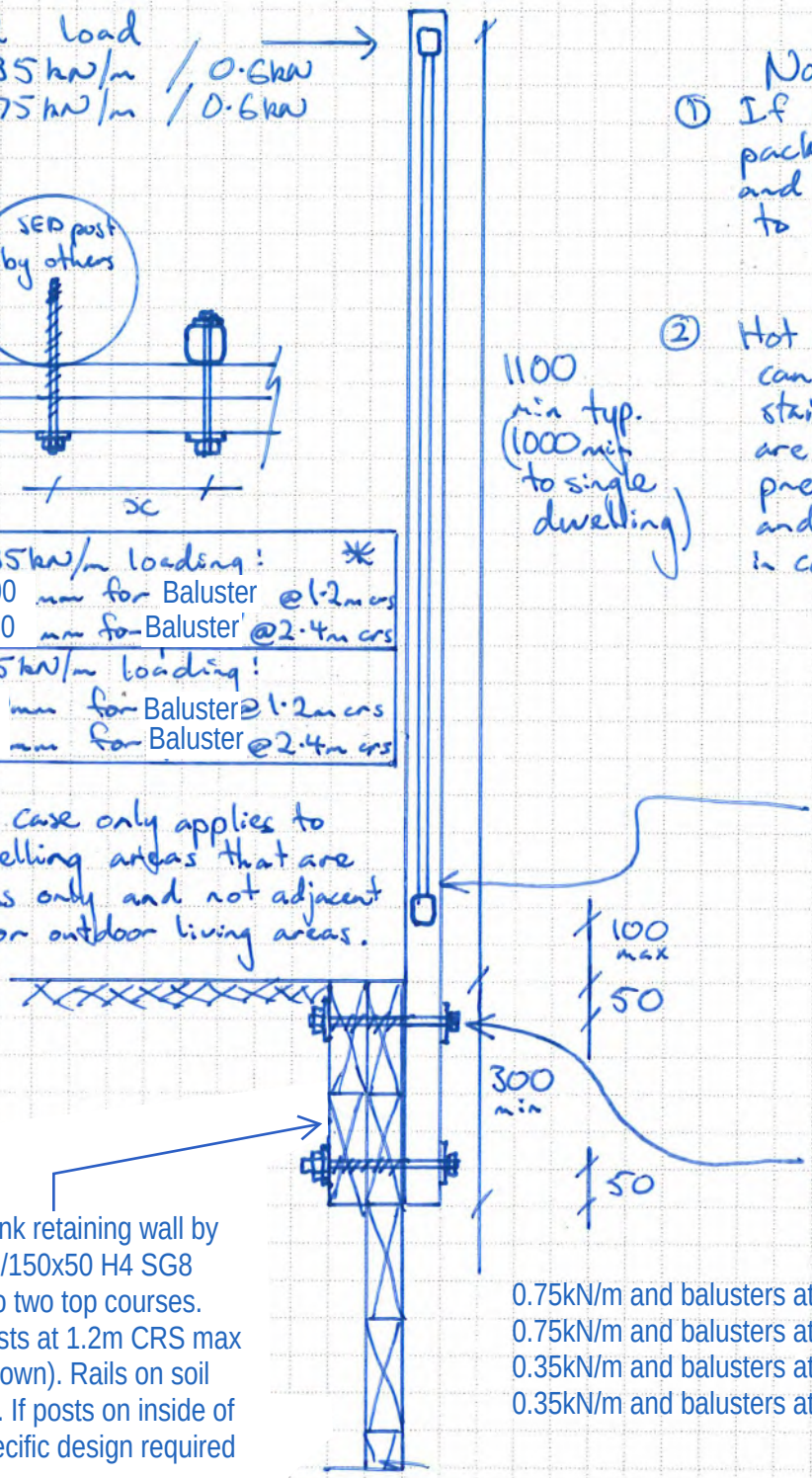
*0.35kN/m case only applies to single dwelling areas that are for access only and not adjacent terraces or outdoor living areas.

Notes;

① If planks are sloping back pack barrier Baluster (to vertical and adjust bolt length to suit.

② Hot dip galvanised fixings can be used in lieu of stainless steel provided fixings are covered with OPM to prevent ground contact and barrier is not located in corrosion zone D or E.

1100 min typ. (1000 min to single dwelling)



Baluster can be located on inside or outside of planks to suit

Post and Plank retaining wall by others. Min 2/150x50 H4 SG8 timber rails to two top courses. Retaining posts at 1.2m CRS max (posts not shown). Rails on soil side of posts. If posts on inside of rails then specific design required

M12 stainless steel bolts with stainless steel washers each side per the table below:

0.75kN/m and balusters at 2.4m crs max: 2/50x50x5 washers
0.75kN/m and balusters at 1.2m crs max: 50x50x5 washers
0.35kN/m and balusters at 2.4m crs max: 50x50x5 washers
0.35kN/m and balusters at 1.2m crs max: 50x50x4 washers

Fixings subject to inspection and maintenance to prevent potential bimetallic corrosion

Issue	Description	By	Date
E	Building Consent	NMC	14/10/2022
D	Update	ADM	20/3/18
C	Update	ADM	16/3/18
B	Comment	ADM	12/12/17
A	Comment	ADM	4/12/17

Project: Boundaryline Barriers
Title: Retaining, Double Plank Fix
Client: Terranova

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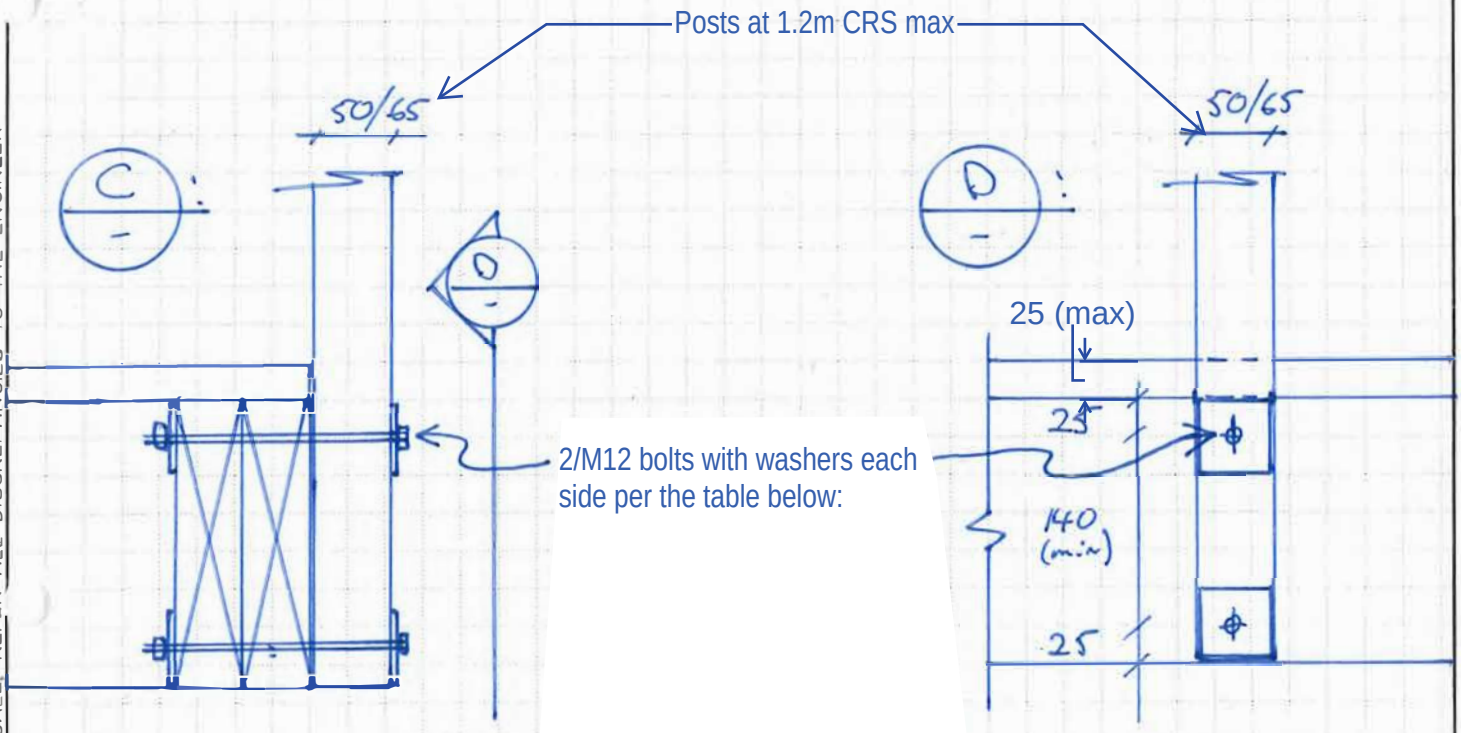
Drawn: ADM | Checked: | Scale: 1:10 | Drawing No. Project: B2469 | Sheet: SK13 | Issue: E

ORIGINAL SIZE A4 DO NOT SCALE, REFER ALL DISCREPANCIES TO THE ENGINEER

Fixings subject to inspection and maintenance to prevent potential bimetallic corrosion



Washers:
0.75kN/m and balusters at 1.2m crs max: 2/50x50x5 washers
0.35kN/m and balusters at 1.2m crs max: 50x50x4 washers
Washers to be grade 210MPa stainless in corrosion zones D&E, otherwise galvanised grade 300MPa steel

Notes:

1. Timber deck framing in accordance with NZS3604 or subject to specific engineering design by others

Issue	Description	By	Date
D	Building Consent	NMC	14/10/2022
C	Update	ADM	20/3/18
B	Coach Screw Option	ADM	2/3/18
A	Comment	ADM	8/2/18

Project: Boundaryline Barriers
Title: Timber Deck Face Fixing
Client: Terranota

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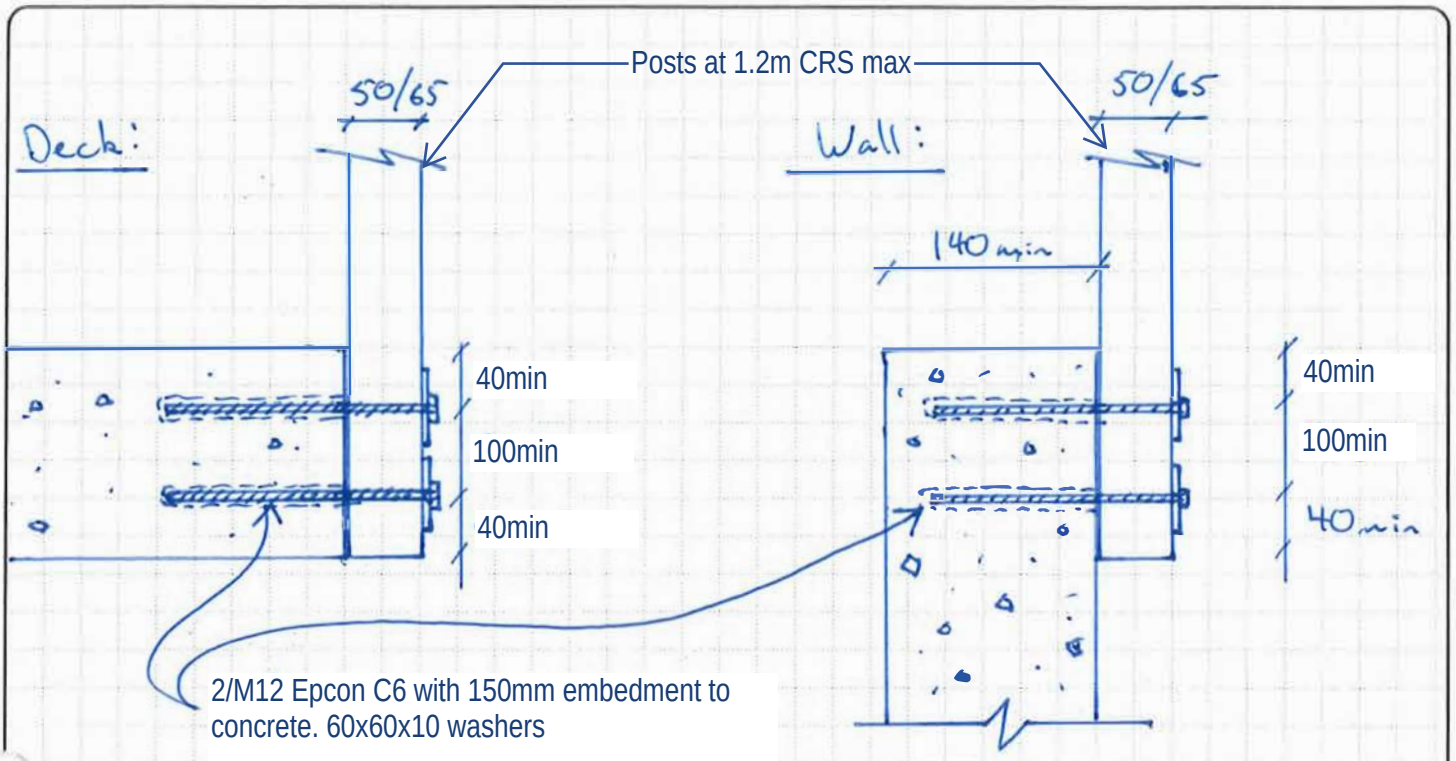
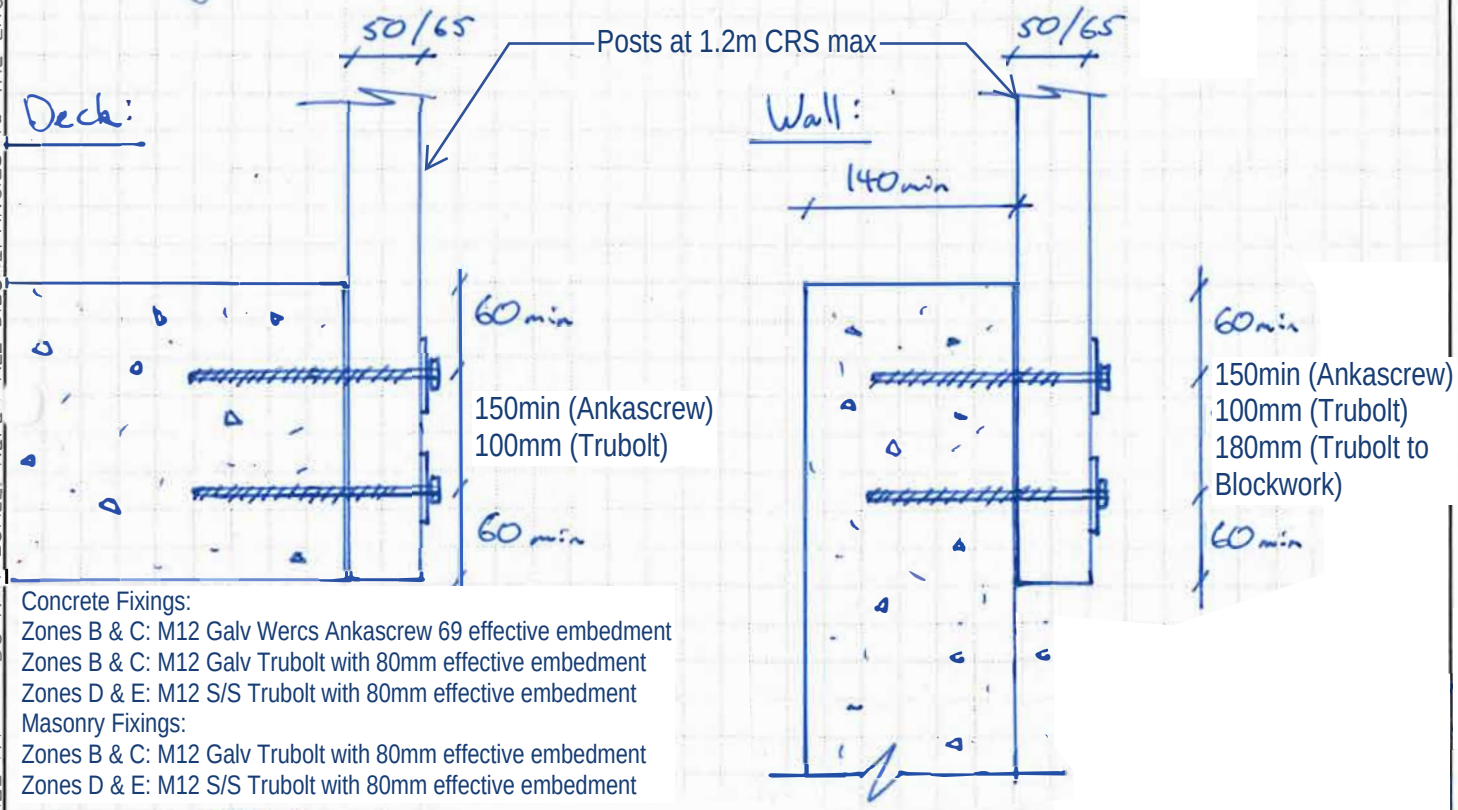
Drawn: ADM | Checked: | Scale: 1:5 | Drawing No. Project: 132469 | Sheet: SK16 | Issue: D

ORIGINAL SIZE A4 DO NOT SCALE, REFER ALL DISCREPANCIES TO THE ENGINEER



Fixings subject to inspection and maintenance to prevent potential bimetallic corrosion

Epoxy Fixing



Concrete Fixings:
Zones B & C: M12 Galv Wercs Ankascrew 69 effective embedment
Zones B & C: M12 Galv Trubolt with 80mm effective embedment
Zones D & E: M12 S/S Trubolt with 80mm effective embedment
Masonry Fixings:
Zones B & C: M12 Galv Trubolt with 80mm effective embedment
Zones D & E: M12 S/S Trubolt with 80mm effective embedment

Screw Fixing

Notes: ① Deck and wall design subject to specific engineering design by others

ORIGINAL SIZE A4 DO NOT SCALE, REFER ALL DISCREPANCIES TO THE ENGINEER

Issue	Description	By	Date
B	Building Consent	NMC	14/10/2022
A	Comment	ADM	8/2/18

Project: Boundary line Barriers
Title: Concrete Face Fixing
Client: Terranota

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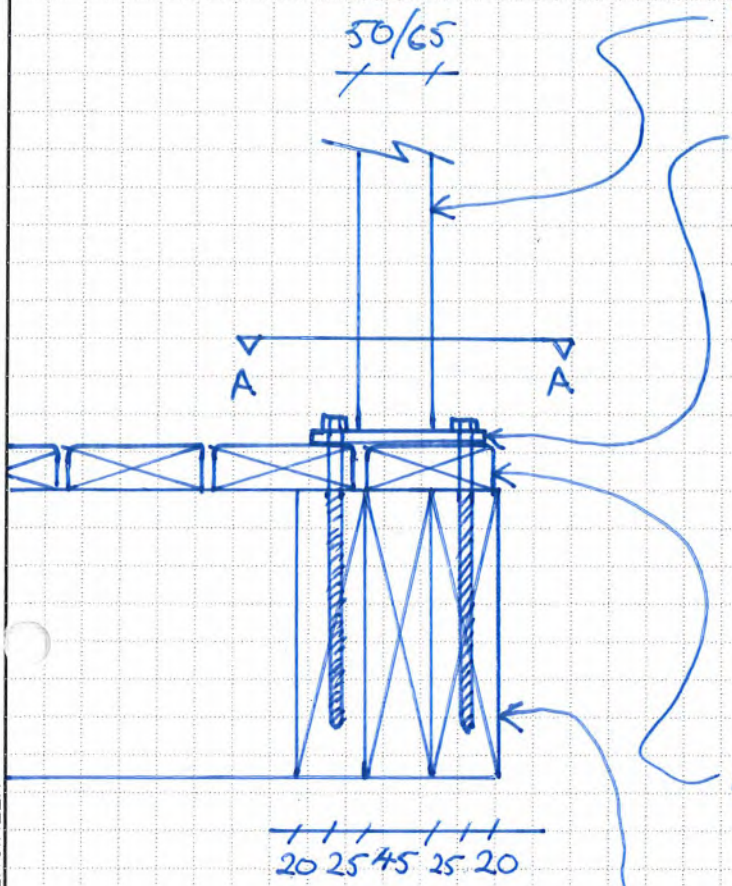
Drawn:	Checked:	Scale:	Drawing No. Project:	Sheet:	Issue:
ADM		1:5	132469	SK17	B



Posts @ ≤ 1200CRS

Refer to baseplate details and fixings from SK100

Plan A-A:

Refer to bolt arrangement from SK100

Allowance for timber decking up to 32mm thick

Timber deck framing by others, min 190mm framing, double boundary joists and full depth blocking @ posts, all fixings in accordance with NZS3604:2011 or specific design by others

Notes:

① Fixings to be hot dip galvanised except if located in corrosion zone D or E fixings to be stainless steel

Fixings subject to inspection and maintenance to prevent potential bimetallic corrosion

Issue	Description	By	Date
C	Building Consent	NMC	14/10/2022
B	Comment	AOM	20/3/18
A	Comment	AOM	26/2/18

Project: Boundaryline Barriers

Title: Timber Deck Top Fixing

Client: Terranota

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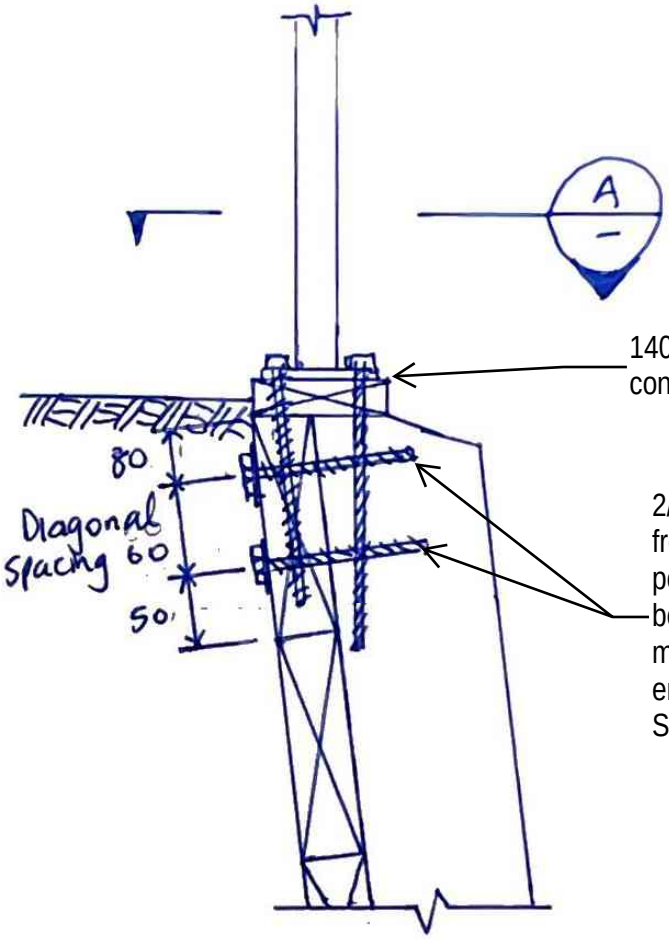
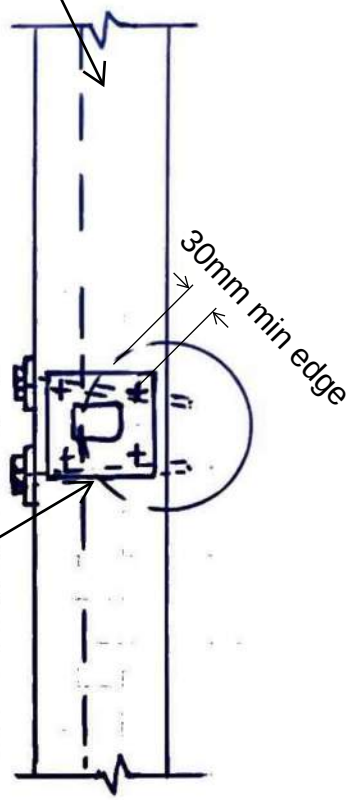
Drawn:	Checked:	Scale:	Drawing No. Project:	Sheet:	Issue:
AOM		1:5	132469	SK19	C

ORIGINAL SIZE A4 DO NOT SCALE, REFER ALL DISCREPANCIES TO THE ENGINEER



140x45 SG8 (min) plate continuous over posts

2/12x160 coach screws from top retaining board to post. 60mm min spacing between fixings which may be diagonal. 120mm embedment to pole. Standard washers.



125x125x10 G300 plate @ 1200CRS max.
5mm SP FWAR post to plate.
2/10x220 coach screws embed 150min into retaining timber. Skew screws to suit board angle and maintain 20mm edge distance.
2/12x270 coach screws embed 200min into pole end grain.

SECTION A

ORIGINAL SIZE A4 DO NOT SCALE, REFER ALL DISCREPANCIES TO THE ENGINEER

Issue	Description	By	Date
B	Building Consent	NMC	14/10/2022
A	Comment	AOM	15/6/18

Project: Boundaryline Barriers
Title: Timber Retaining Cap Plate Fixing
Client: Terranota

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Drawn:	Checked:	Scale:	Drawing No. Project:	Sheet:	Issue:
AOM		1:5	132469	SK20	B