



TS12000 PORTAL BUILDING
Producer Statement and Structural Details
(IL1, Non-habitable, Unlined, Enclosed)

CLIENT:

Mr Paul Ackroyd
2280 Moutere Highway
Upper Moutere
Nelson
7175
New Zealand
-41.198451, 173.000794

BUILDING:

Project Reference: 157861
Wind Speed: $V_{des\theta} = 42.62\text{m/s}$
Ground Snow Load: $S_g = 0.00\text{kPa}$
Span: 9.000m
Length: 14.000m
Knee Height: 3.300m
Bay Size: 3.500m, 3.500m, 3.500m, 3.500m
Roof Pitch: 15
Area: 126.000m²

NOTES

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Specifications: Section Properties
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Roof Framing Plan
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Bracing Details
Roof and Wall Bracing Layout
Details: Building
Details: Flashings

Attached:
Building Plan and Elevations

CONTRACTOR TO CONFIRM ALL DIMENSIONS ON SITE AT TIME OF CONSTRUCTION

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[NB: B2 aspects to be covered
by Totalspan's Manufacturers
Durability Statement, page 3]

Building Code Clause(s)..... **B1**

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are printed on page 2)

ISSUED BY: **Transparency Consulting Ltd**
(Design Firm)

TO: **Mr Paul Ackroyd**
(Owner/Developer)

TO BE SUPPLIED TO: **Tasman District Council**
(Building Consent Authority)

IN RESPECT OF: **12m Span Portal Building and under (IL = 1, DL = 50yrs, Sg = 0.00kPa, Vdes Θ = 42.62m/s)**
(Description of Building Work)

AT: **2280 Moutere Highway, Upper Moutere, Nelson, 7175, New Zealand**
(Address)

LOT: DP: SO:

We have been engaged by the owner/developer referred to above to provide **Structural Design**
services in respect of the requirements of
(Extent of Engagement)

Clause(s) **B1** of the Building Code for
All ☒ or Part only ☐ (as specified in the attachment to this statement), 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. **B1/VM1, AS/NZS 1170**
NZS 3101, AS/NZS 4600
(verification method / acceptable solution) OR

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled **Portal Building**
and numbered **1-2, 4-5, 7-16**;
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

(i) Site verification of the following design assumptions **225kPa Geotechnical Ultimate Bearing Capacity**
non-liquefiable, non-organic, non-expansive clay soil

(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. ~~I also recommend the following level of construction monitoring/observation:~~

~~☐ CM1 ☐ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)~~

I, **Andrew James Horton** am: ☒ CPEng **181283** #
(Name of Design Professional)
☐ Reg Arch #

I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications: **BE (Hons)**
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ: ☐

SIGNED BY **Andrew James Horton** ON BEHALF OF **Transparency Consulting Ltd**
(Design Firm)

Date: **14/November/2019** (signature)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), 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.

MANUFACTURERS STATEMENT - DURABILITY

Cladding

To satisfy the requirements of Clause B2: "Durability" of the NZBC and to ensure the cladding material meets a **15-year durability** and a 50 year intended working life (design life), the following provisions must apply:

Cladding Range of Product and Use

- Coating Type: Zinc/Aluminium & Painted (Coloured Steel).
- Steel thickness range: 0.35mm - 0.55mm BMT
- Steel grade range: G300 - G550
- Application: Standard Totalspan Roof and Wall Cladding
- Profile: Totalspan 7 Rib, Totalspan 6 Rib, Totalspan Corrugate

Requirements, Limitations and Exclusions

- Fixing and installation of the cladding must be done exactly in accordance with Totalspan Buildings instructions and specifications.
- Normal and regular maintenance must be carried out on the exterior surface of the cladding and the following guide must be followed to ensure the durability requirements are met.

Regular Maintenance

- **Normal Maintenance to be completed in accordance with Durability - Acceptable Solution B2/AS 2.1.3**
- **Corrosion Zones B and C.. (*Reference NZS 3604:2011 Corrosion Zone Figure 4.2)**
Rain-washing only required on **exposed** (open to airborne salts and rain wetting) material. **Sheltered** (open to airborne salts, but not rain washed) or protected areas such as under spouting, top-cladding sheets and tops of doors require washing every 3 months.
- **Sea Spray Zone D (Includes all off-shore islands, the area within 500m of the coastline of New Zealand, and those areas shown in white - *Reference NZS 3604:2011 Figure 4.2) and areas of Geothermal Activity (*Reference NZS 3604:2011 4.2.4 (c)).**
Rain-washing only required on **exposed** (open to airborne salts and rain wetting) areas. **Sheltered** (open to airborne salts, but not rain washed) and protected areas such as under spouting, top cladding and tops of doors require washing down every month and whenever corrosive salts are present.

Extended Maintenance, Painting or Repainting

Extended Durability

Once the metallic coating or the paint system has weathered away, signs of red rust for bare material or signs of the metallic coating for painted material, painting of the entire surface is required to extend the life of the cladding product. Paint manufacturers recommendations are to be followed for surface preparation and paint type to be used.

Evident Corrosion

- Areas that show signs of white or red rust/corrosion (typically in unwashed areas) require cleaning back with a stiff brush and cleaner to remove all dust, surface contaminants and corrosion products and present a sound substrate for painting. Priming of the surface and application of two coats of paint as per the Paint Manufacturer's recommendations is then required.
- Particular attention needs to be paid to laps (side, end, flashing etc) where earlier corrosion may start due to moisture and dirt entrapment.
If evident corrosion is not treated quickly rapid deterioration of the sheet may occur which could result in perforation. At this stage replacement of the affected sheet is the best option.

Steel Framing

To satisfy the requirements of Clause B2: "Durability" of the NZBC and to ensure the structural framing material meets a **50-year durability** life the following provisions must apply:

Steel Framing Range of Product and Use

- Coating Type: Galvanised
- Steel thickness range: 0.75mm – 2.4mm BMT
- Steel grade range: G450 – G550
- Application: Standard Totalspan Purlins, Girts, Portal Frames, Door Jambs, Wall Uprights, Bridging
- Profile: C Sections – 80x40, 150x64, 220x64, 250x85
Z Sections – 100x53, 150x65
Tophat Sections – 100x163, 120x170, 150x183

Awnings/Garaports attached to Base Buildings

- Where sections are exposed to or located in salt marine, corrosive industrial or unusually high corrosive environments **the below Regular Maintenance must be adhered to**. Please contact the manufacturer for specialist advice if unsure of requirements.
This also applies to all Steelwork that is exposed to the wind but is protected from the rain located in an open sided structure such as carports, awnings or structures closed in on one side only.
Maintenance is necessary when the Galvanised coating ceases to provide sacrificial protection to the steel base, or where the appearance is no longer aesthetically acceptable. Rust staining or the growth of rust spots usually indicates the breakdown of Galvanised coating. At the first sign of breakdown, the surface should be treated with an appropriate maintenance coating system. All maintenance should be carried out in accordance with AS/NZS 2312:2002 (Incorporating Amendment No. 1) [c] and New Zealand Steelwork Corrosion Coatings Guide (HERA Report R4-133) [d].

Regular inspections of the steel work and maintenance at the first signs of a problem will extend the durability of the sections. If any of the structure components show signs of corrosion during normal maintenance these are also easily accessible and simple to replace.

Regular Maintenance

- **Normal Maintenance to be completed in accordance with Durability - Acceptable Solution B2/AS 2.1.3 Corrosion Zones B and C. (*Reference NZS 3604:2011 Corrosion Zone Figure 4.2)**
Rain-washing only required on **exposed** (open to airborne salts and rain wetting) material. **Sheltered** (open to airborne salts, but not rain washed) or protected areas such as under spouting, top-cladding sheets and tops of doors require washing every 3 months.
- **Sea Spray Zone D (Includes all off-shore islands, the area within 500m of the coastline of New Zealand, and those areas shown in white - *Reference NZS 3604:2011 Figure 4.2) and areas of Geothermal Activity (*Reference NZS 3604:2011 4.2.4 (c)).**
Rain-washing only required on **exposed** (open to airborne salts and rain wetting) areas. **Sheltered** (open to airborne salts, but not rain washed) and protected areas such as under spouting, top cladding and tops of doors require washing down every month and whenever corrosive salts are present.

References

1. NZBC – Compliance Document – Clause B2 - Durability
2. NZS 3604, Clause 4, Durability*

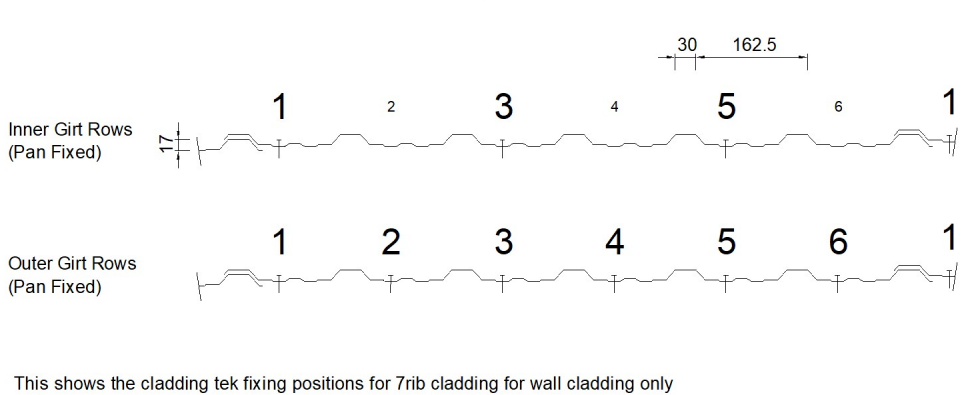
* - Totalspan Buildings acknowledges and understands that NZS 3604 is a Timber Framed Building standard. Totalspan Buildings has used NZS 3604 as a reference only to identify Corrosion Zones, Sea Spray Zones and areas of Geothermal activity.

Totalspan Buildings
112 Waterloo Rd
Sockburn
CHRISTCHURCH

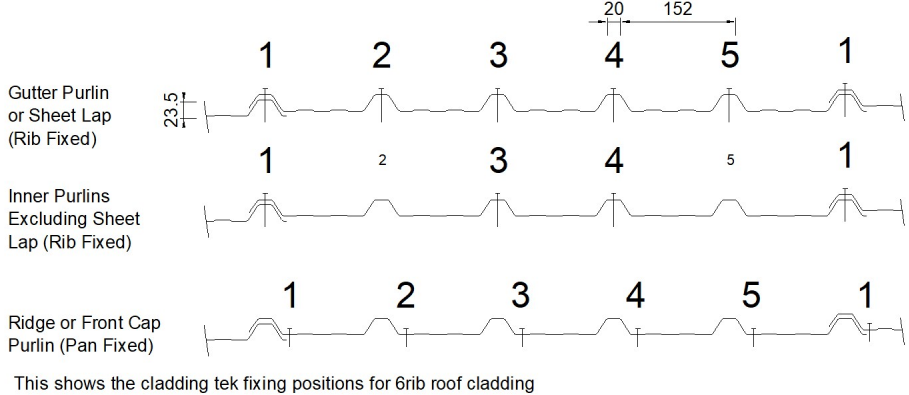
Building Tables

Span:	9.0m
Knee Height:	3.3m
Bay Size:	3.5m
Internal Portal Frame:	C22019
End Wall Portal Frame	C22019
End Wall Post On Edge:	C15015 Center / C15012 Intermediate
Lintel:	N/A
End Entry Jamb(s):	N/A
Side Entry Jamb(s):	B15010
Under Lintel Jamb(s):	N/A
Inner Purlins:	B80x40x0.75(1)
Ridge & Gutter Purlins:	C80x40x0.75
Purlin Rows:	12 (940 max crs)
Side Wall Girts:	B80x40x0.75(1)
End Wall Girts:	C80x40x0.75 (See Page 12)
Side Wall Girt Rows:	4 (1100 max crs)
(incl. gutter purlin)	

7 Rib Wall Sheet Properties and Fixings



6 Rib Roof Sheet Properties and Fixings



GENERAL

- 1 - All work shall conform to the New Zealand Building Code.
- 2 - Check diagonals to ensure building is square.

LOADINGS

- 1 - Buildings are designed to AS/NZS 1170 for:
 - wind speed, $V_{des, \theta}$ = 42.62m/s
 - roof live load, Q_{roof} = 0.25kPa

- 2 - Roof is not designed for point loads of 0.9KN.

FOUNDATIONS

- 1 - Support ground to have at least a 225kPa geotechnical ultimate bearing capacity ^{non-liquefiable, non-organic, non-expansive clay soil} ~~non-liquefiable soil~~
- 2 - Screwbolts to be:
 - M10 x 75 Excalibur HSB (Galv.)
 - M12 x 150 Excalibur HSB (Galv.)

CONCRETE SLAB

- 1 - Remove vegetation, top soil and loose material from the site of the building, backfill with compacted hardfill and lay a blinding of sand to the underside of the concrete slab and edge thickening. Ensure the surface of the slab will be at least 100mm above the highest level of cleared ground around the slab.
- 2 - Concrete shall have a maximum aggregate size of 20mm, slump of 80mm maximum and a 20MPa compression strength at 28 days.

STEELWORK

- 1 - All structural framing members shall be:
 - G550 (0.75mm or 0.95mm BMT), G500 (1.15mm or 1.45mm BMT) or G450 (1.85mm or 2.41 BMT) grade steel galvanised to Z275.
- 2 - All plates and angle brackets to be G250, G300 and G450, Z275.
- 3 - Boxed members to be flange fixed with Tek screws as detailed on Section Properties page.
- 4 - Screws to be #10 x 16 or #12 x 32 Tek screws Class 3 zinc plated, fixed at a minimum edge distance of 10mm and to a 15mm minimum pitch.
- 5 - 80 x 40 tabbed channels to be connected with 2-#10 x 16 or 2-#12 x 32 Tek screws per tab.
- 6 - Knee braces and apex ties to be 150 x 55 x 1.55 BMT (G300) angles.
- 7 - Frame personnel doors and windows with single or boxed 80 x 40 x (0.75 or 0.95) BMT lipped channels.
- 8 - Steelwork shall conform to:
 - AS/NZS 4600 Cold Formed Steel Structures Code
 - AS 1397:2011
 - AS 1562 Design and Installation of Metal Roofing
 - AS 1111/1112 Hex Commercial Bolts and Screws

CLADDING

- 1 - Wall and roof sheeting shall be G550 grade steel zincalumed to Z275 and rolled to profile as either 7 rib 0.35 BMT, 6 rib 0.35 BMT, 6 rib 0.40 BMT or corrugate 0.40 BMT.
- 2 - Roof sheets shall be fixed to ridge and eaves purlins with a Tek screw at every rib and at non-ridge and non-eave purlin locations to alternative ribs. Roof Tek's shall be complete with neoprene washers tightened firmly but not to form depressions in the roof cladding. Ensure all roof fixings are waterproof.
- 3 - Ridges, gables and all penetrations to be flashed with similar sheet steel.
- 4 - Guttering to be fixed with Tek screws and joint sealed with silicone. Fit downpipes to guttering to discharge to an approved stormwater drainage system.



TOTALSPAN
A Division of Spanbild New Zealand Ltd

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P.O.Box 11-013, Christchurch

For: Mr Paul Ackroyd
2280 Moutere Highway
Upper Moutere
Nelson
7175
New Zealand

PORTAL BUILDING
SPECIFICATIONS

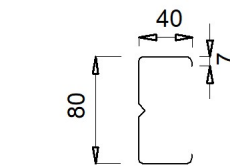
SPECIFICATIONS

ABBREVIATION KEYS

Section Sizes & B.M.T.		
Key	Description	Boxing Tek
C80-75 / B80-75	Single / Boxed - 80x40 0.75mm	#10x16
B80x60-75	Boxed - Unlipped 80x60 0.75mm	#10x16
C150-10 / B150-10	Single / Boxed - 150x64 0.95mm	#10x16
C150-12 / B150-12	Single / Boxed - 150x64 1.15mm	#10x16
C150-15 / B150-15	Single / Boxed - 150x64 1.45mm	#10x16
C150-19 / B150-19	Single / Boxed - 150x64 1.85mm	#12x32
C220-10 / B220-10	Single / Boxed - 220x64 0.95mm	#10x16
C220-12 / B220-12	Single / Boxed - 220x64 1.15mm	#10x16
C220-15 / B220-15	Single / Boxed - 220x64 1.45mm	#10x16
C220-19 / B220-19	Single / Boxed - 220x64 1.85mm	#12x32
C250-15 / B250-15	Single / Boxed - 250x85 1.45mm	#10x16
C250-19 / B250-19	Single / Boxed - 250x85 1.85mm	#12x32
C250-24 / B250-24	Single / Boxed - 250x85 2.35mm	#12x32
C300-15 / B300-15	Single / Boxed - 300x100 1.45mm	#10x16
C300-19 / B300-19	Single / Boxed - 300x100 1.85mm	#12x32
C300-24 / B300-24	Single / Boxed - 300x100 2.35mm	#12x32

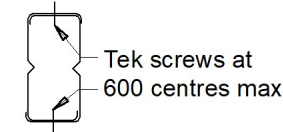
Denotes B.M.T. Abbreviation

C80 Section Properties

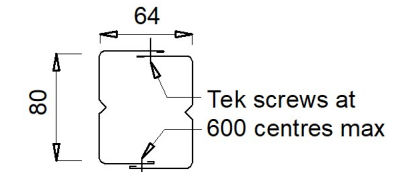


Single C80 lipped section (C80##)

BMT
0.75
0.95

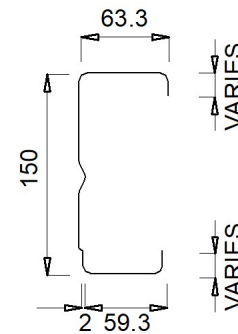


Boxed C80 lipped section (B80##)



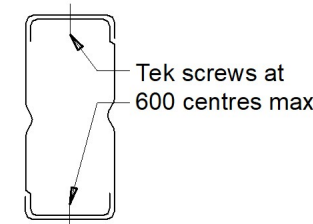
Boxed C80 unlipped section (B80##[64])

C150 Section Properties



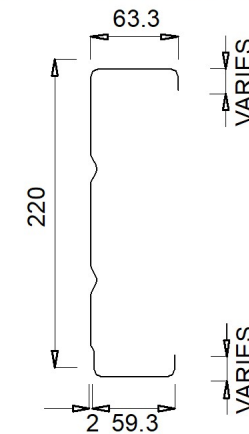
Single C150 section (C150##)

BMT
0.95
1.15
1.45
1.85



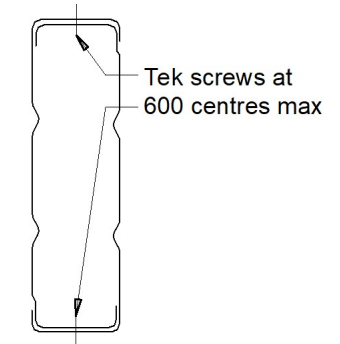
Boxed C150 section (B150##)

C220 Section Properties



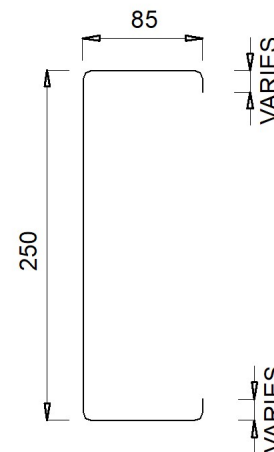
Single C220 section (C220##)

BMT
1.15
1.45
1.85



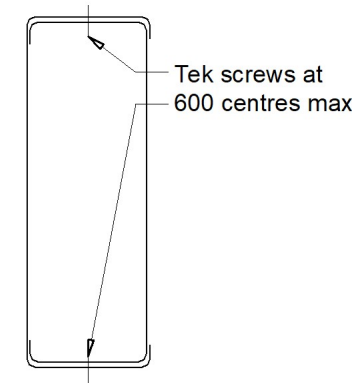
Boxed C220 section (B220##)

C250 Section Properties



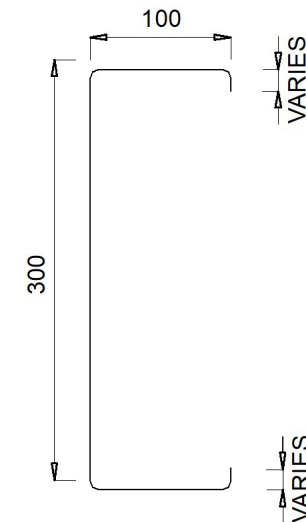
Single C250 section (C250##)

BMT
1.45
1.85
2.35



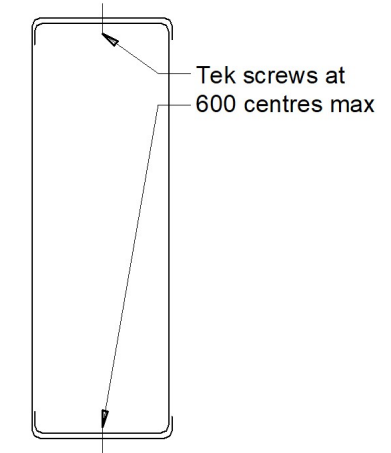
Boxed C250 section (B250##)

C300 Section Properties



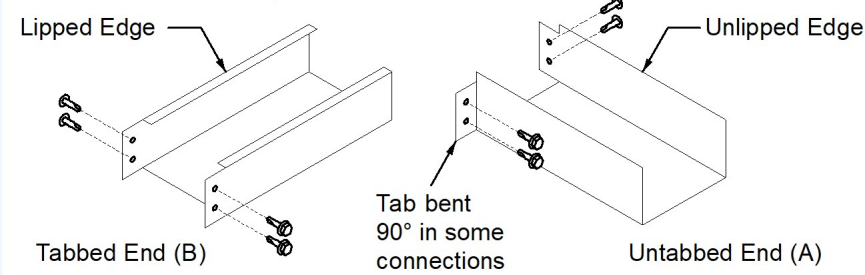
Single C300 section (C300##)

BMT
1.45
1.85
2.35



Boxed C300 section (B300##)

80x40 Section Properties



Cross Section Tab & Connection Indicators



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PORTAL BUILDING

SPECIFICATIONS

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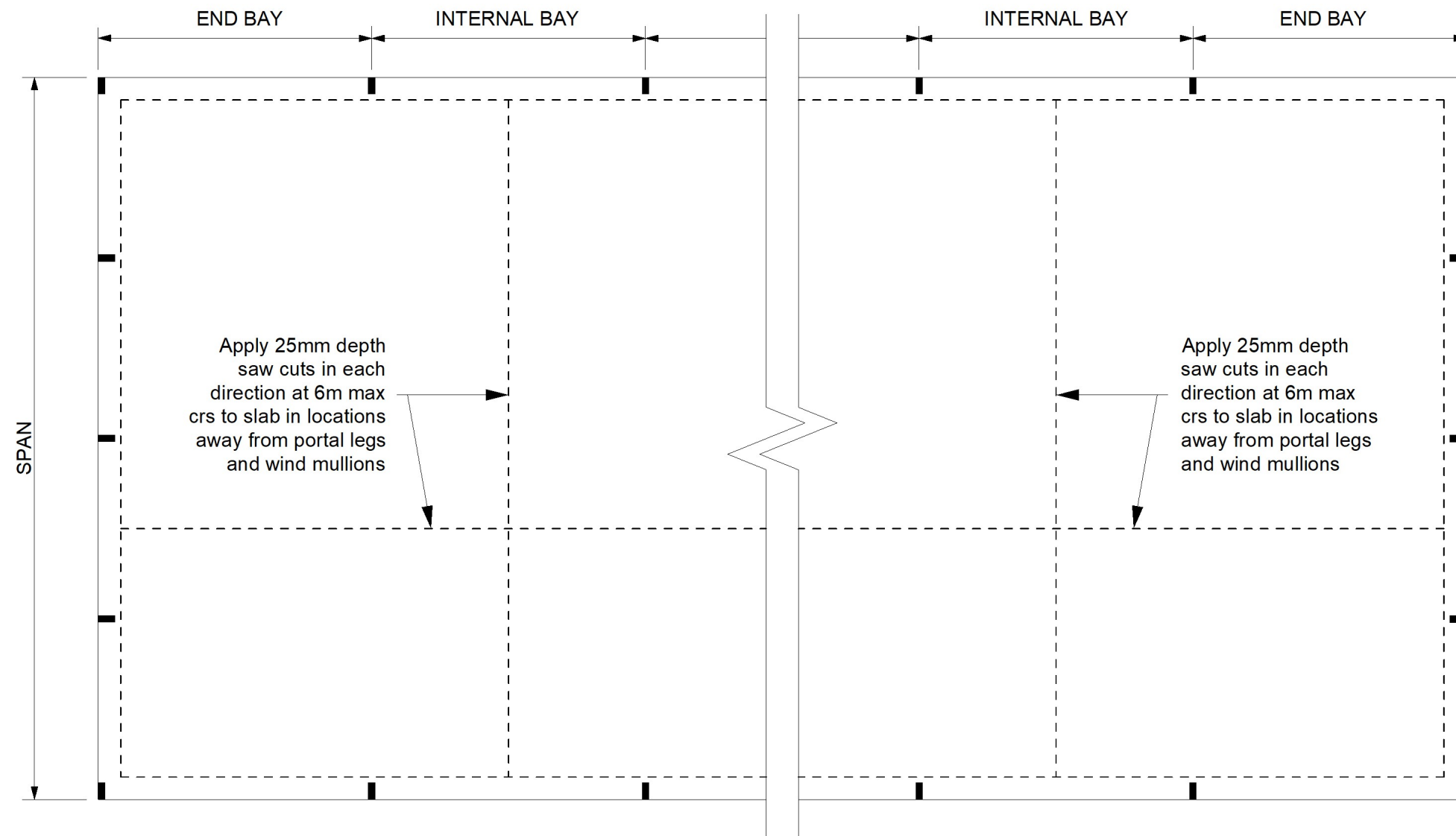
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PORTAL BUILDING

Site Plan

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TYPICAL CONCRETE SLAB PLAN



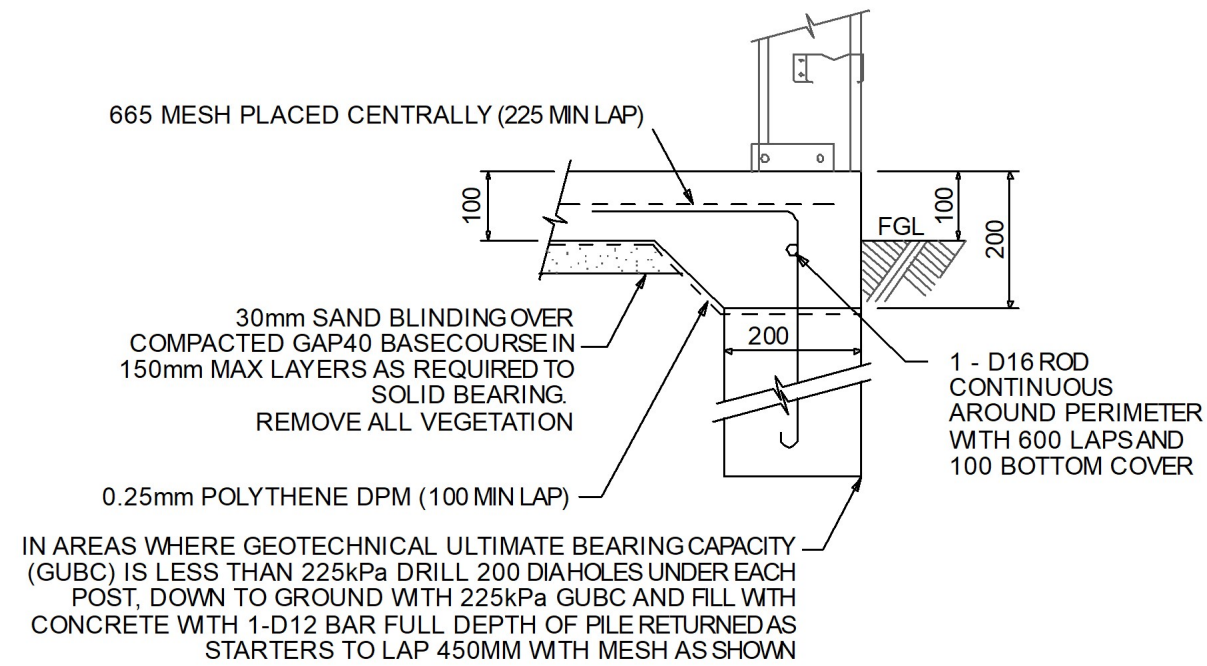
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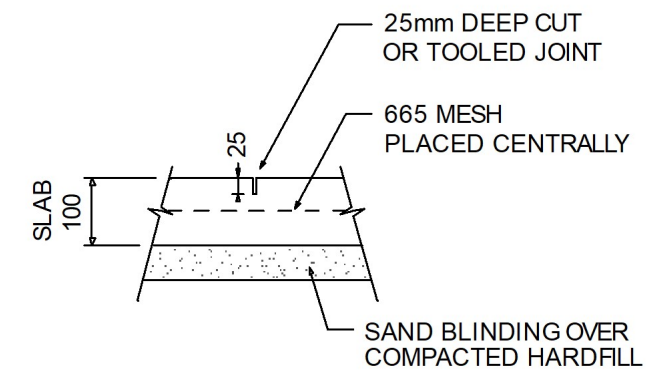
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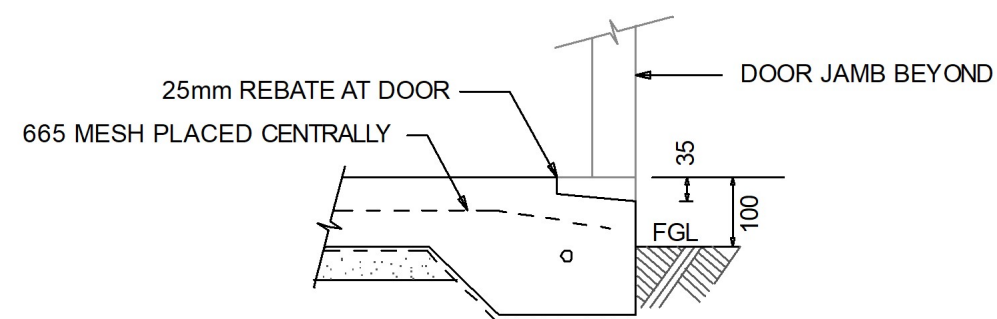
FOUNDATION PLAN



FOUNDATION FOOTING



CONTROL JOINT DETAIL (TYP.)



DOOR ENTRY SLAB EDGE DETAIL



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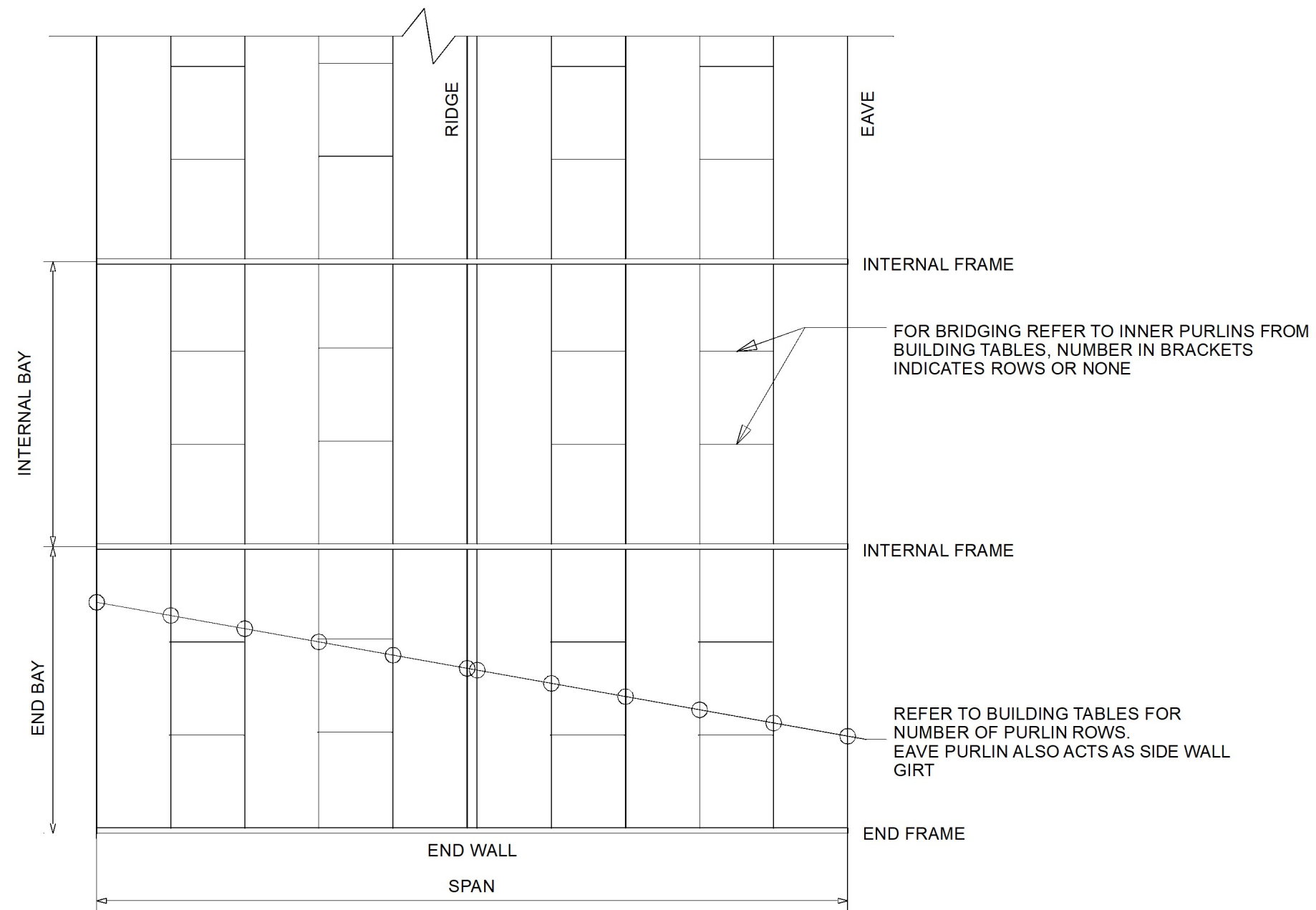
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PORTAL BUILDING

FOUNDATION DETAILS

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NOTE: FOR BRACING REFER TO PAGES TITLED BRACING DETAILS AND BRACING LAYOUT

TYPICAL FRAMING PLAN

0 x Framing TypicalRoofPlan



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PORTAL BUILDING

ROOF PLAN

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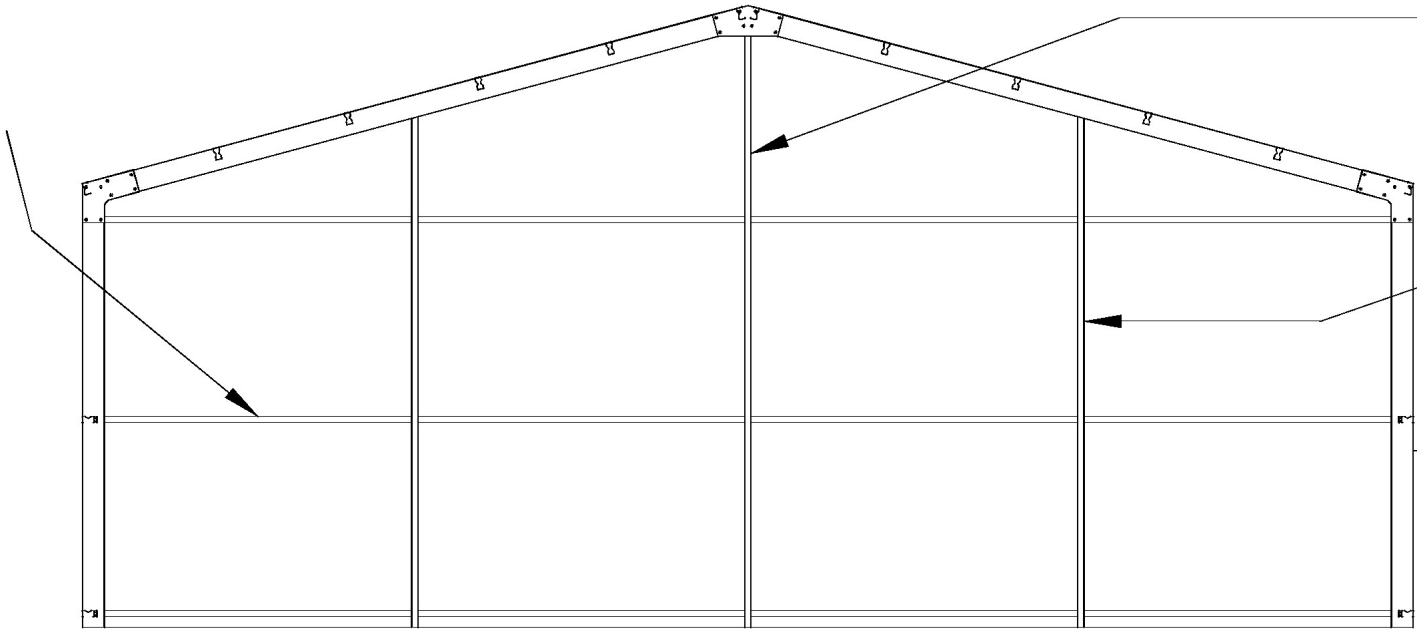
Apex Height (mm): 4506
Wall Height (mm): 3300

NOTE: For bracing refer to page titled 'Bracing Walls and Roof'.

TYPICAL SECTION END WALL FRAME

GIRTS AS SIDE WALL IN BUILDING TABLES

NOTE: FOR BRACING REFER TO PAGES TITLED BRACING DETAILS AND BRACING LAYOUT



END WALL POST (ON EDGE)
CENTER AS PER BUILDING
TABLE

END WALL POST (ON EDGE)
INTERMEDATE OR SAME AS
CENTER, AS PER BUILDING
TABLE

END WALL PORTAL FRAME
AS PER BUILDING TABLE

23 x TypicalSectionEndWallFrame-9m

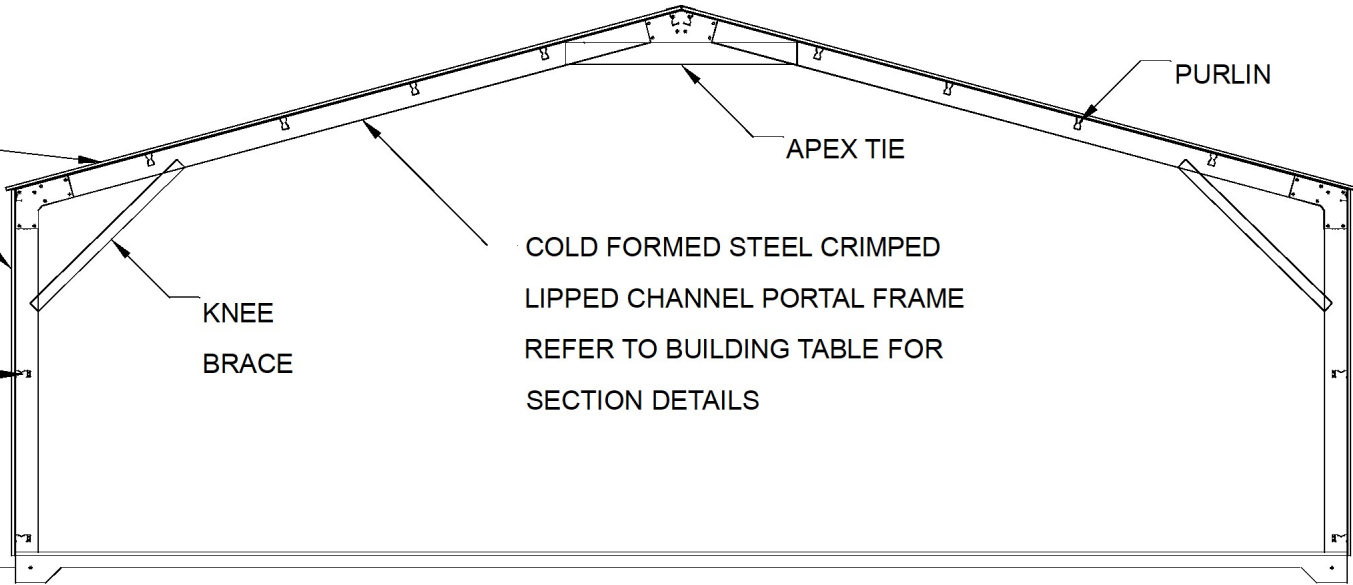
TYPICAL SECTION MID WALL FRAME

APEX TIE, KNEE BRACE

PROFILED SHEET
CLADDING

GIRT

GL



COLD FORMED STEEL CRIMPED
LIPPED CHANNEL PORTAL FRAME
REFER TO BUILDING TABLE FOR
SECTION DETAILS

PURLIN

APEX TIE

KNEE
BRACE

11 x TypicalSectionMidWallFrame-9m-apextie-kneebrace



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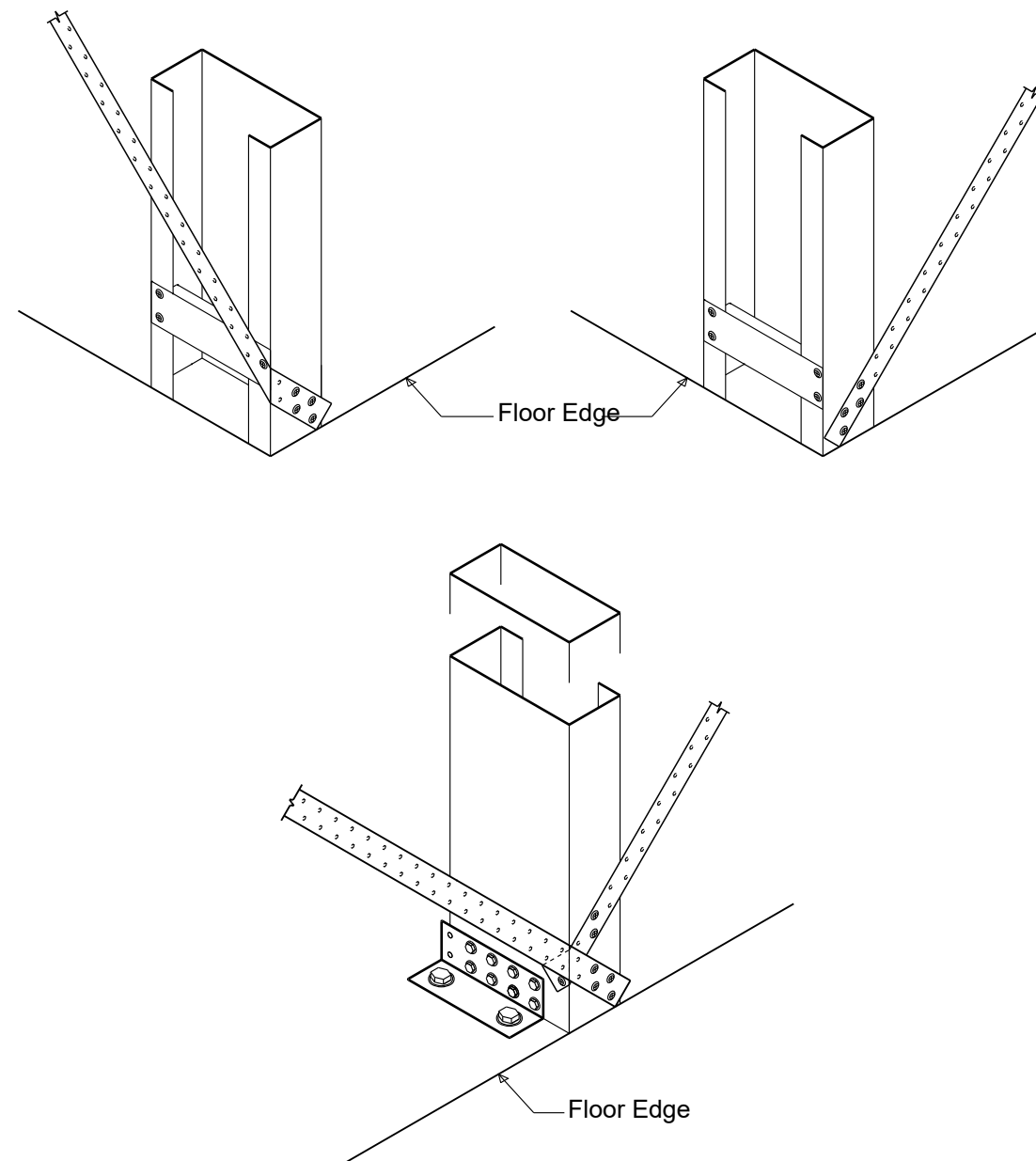
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PORTAL BUILDING
SECTION - END WALL

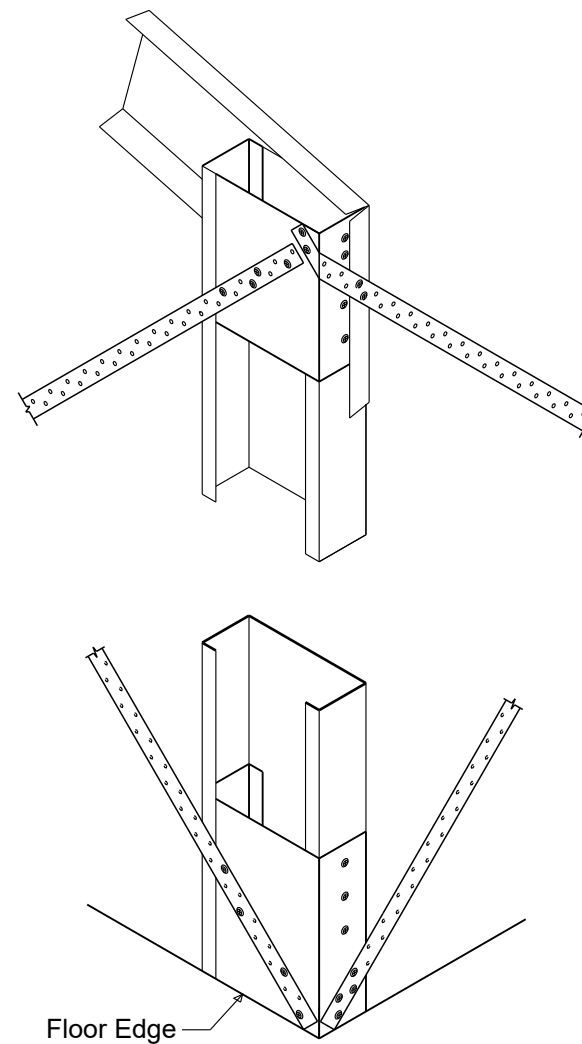
NOTES:

1. Bracing shall be 27x0.55mm G550 steel strap fixed with 4x #10 or #12 tek screws each end.
2. Connection details shown at base of portal leg only. Details similar at top.

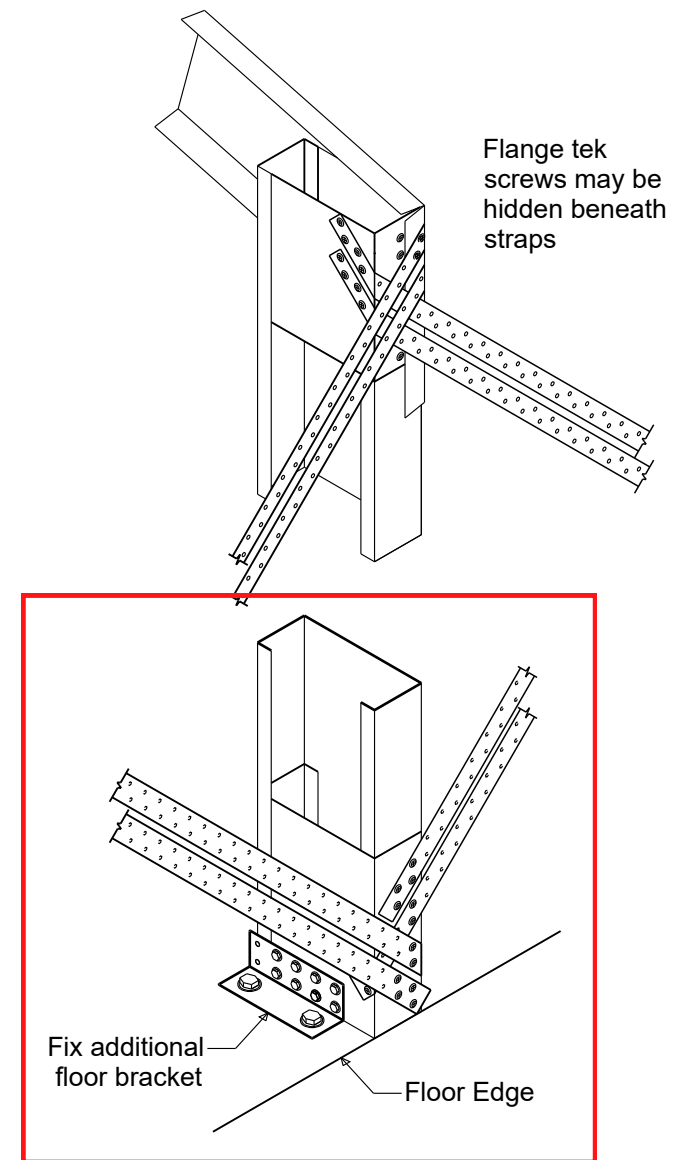


3. Where opposing straps are connected to an endwall portal leg or where a double brace is connected to an unboxed internal portal leg (or wind mullion) fix a 200mm length of boxing with 8x #10 or #12 teks, 4 teks per flange.

Endwall Portal



Internal Portal



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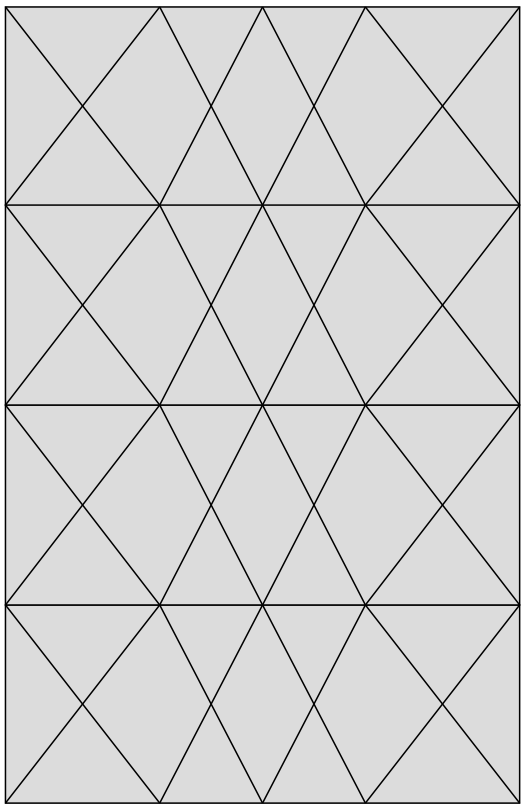
For: Mr Paul Ackroyd
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PORTAL BUILDING

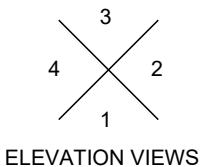
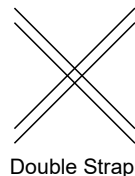
BRACING DETAILS

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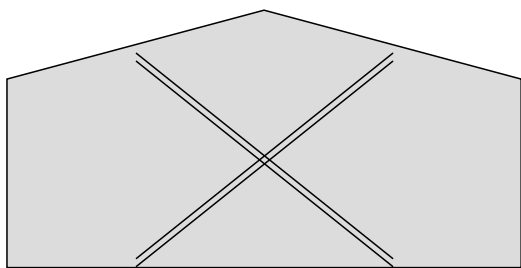
PLAN VIEW:



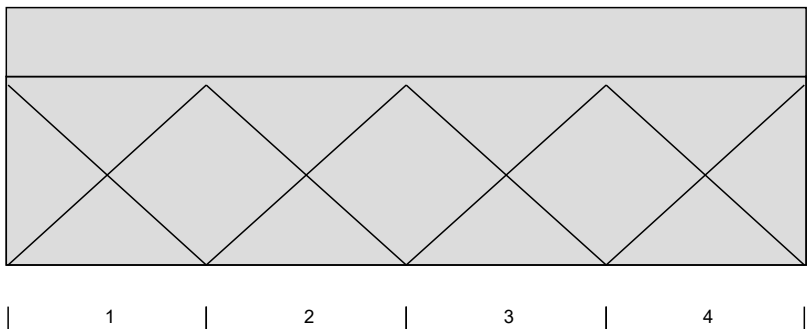
LEGEND:



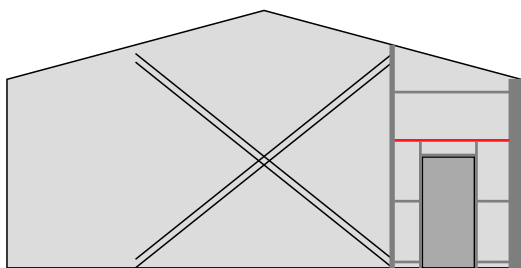
ELEVATION VIEW 1:



ELEVATION VIEW 2:

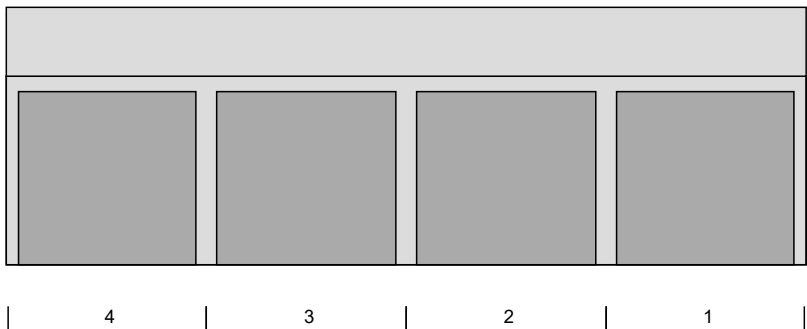


ELEVATION VIEW 3:



End wall girt supporting PA
door jambs to be B80x40x0.75

ELEVATION VIEW 4:



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PORTAL BUILDING
BRACING LAYOUT

Inside Building View

For a neat fit, cut the lipped edges down to meet the underside of the roof beam

Fix 1x H20/120mm angle bracket to the apex plate / web of the portal rafter and the web of the upright. Fix with 4 hex tek screws per face as shown.

Outside Building View

For fixing upright to portal rafter flange: H8/55mm angle bracket

For fixing upright to apex plate lip: H12/55mm angle bracket

(If required, fold the H8/55 angle bracket to be parallel to the portal rafter)

Fix 1x angle bracket (see right) to the apex plate lip / flange of the portal rafter and the web of the upright. Fix with 4 hex tek screws per face as shown.

Single Upright to Portal Frame

T

Single Frames:
Fix 1 / Apex Tie to the Web Face with 8 Framing Hex Tek Screws Each End

Boxed Frames:
Fix 2 / Apex Ties to both Sides with 8 Framing Hex Tek Screws Each End and 3 Framing Hex Tek Screws to Join the 60mm Flanges

Apex Tie

Fix a 220 Apex connector plate to the webbing side of the rafter section with 8 x M12x30 flanged bolt and nuts

2.5mm 220 apex connector plate

M12x30 flange bolt and nut

C220 Rafter

220 Apex Plate Single Frame

Fix the 150mm Support Bracket with 4 Framing Hex Tek Screws

Fix 2 Phillips Tek Screws to the Tab on the Outside of the Building

Fix 2 Hex Head Tek Screws To The Tab Inside the Building

Left hand View

Right hand View (Exploded)

80x40 to 150 C Section Open Face

A

Fix the 150mm Support Bracket with 4 Phillips Tek Screws to the Top of Apex Purlins in the Centre of the Bay.

Bend the 100x70 Plate, 15 Degs. and Fix with 6 Framing Hex Tek Screws to the Bottom of Apex Purlins in the Centre of the Bay.

Over top View

Underneath View

Apex Purlin Support Brackets

Fix 2 Phillips Tek Screws to the Tab on the Outside of the Building

Fix 2 Hex Head Tek Screws To The Tab Inside the Building

Left hand View

Right hand View (Exploded)

80x40 to 150 C Section Close Face

B

Fix the 220mm Support Bracket with 4 Framing Hex Tek Screws

Fix 2 Phillips Tek Screws to the Tab on the Outside of the Building

Fix 2 Hex Head Tek Screws To The Tab Inside the Building

Left hand View

Right hand View (Exploded)

80x40 to 220 C Section Open Face

C

Fix 2 Phillips Tek Screws to the Tab on the Outside of the Building

Fix 2 Hex Head Tek Screws To The Tab Inside the Building

Left hand View

Right hand View (Exploded)

80x40 to 220 C Section Close Face

D

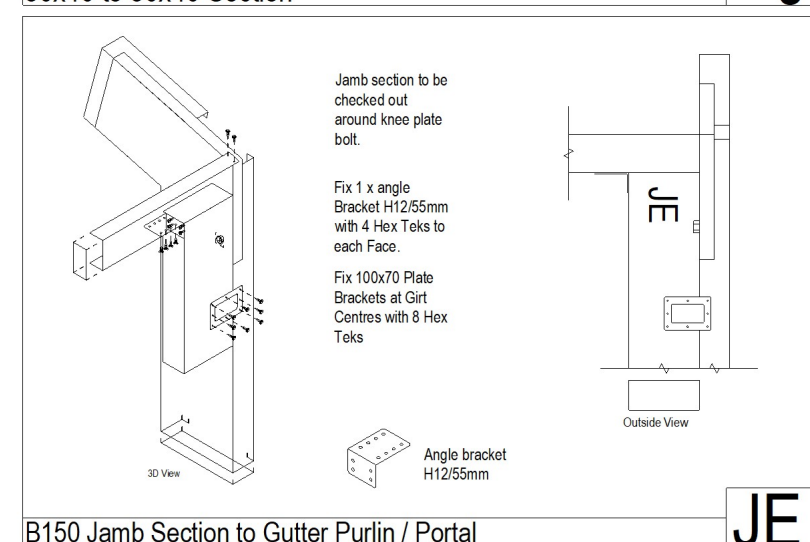
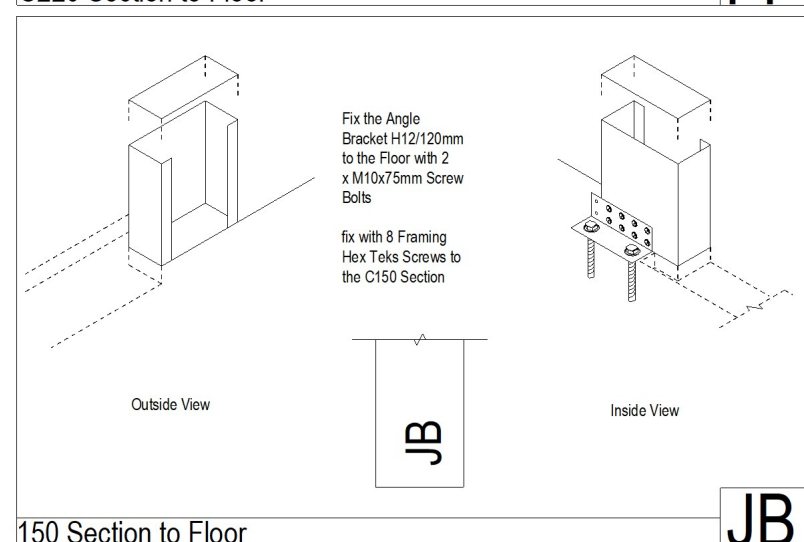
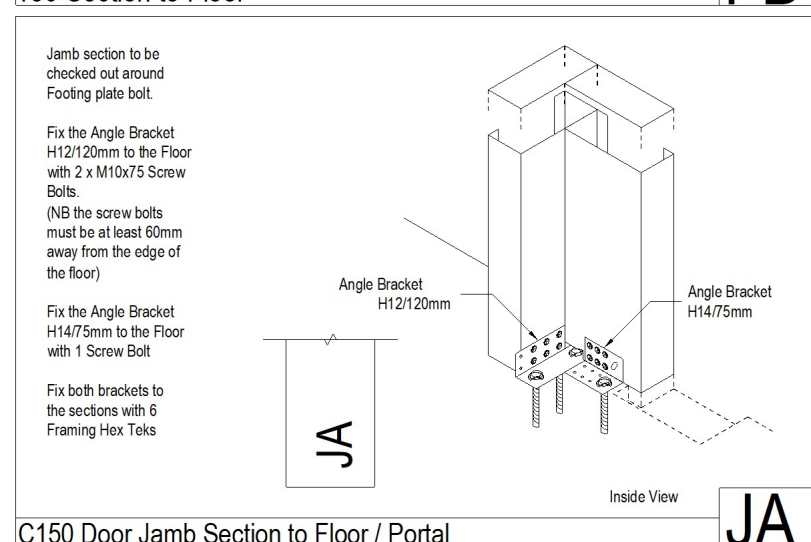
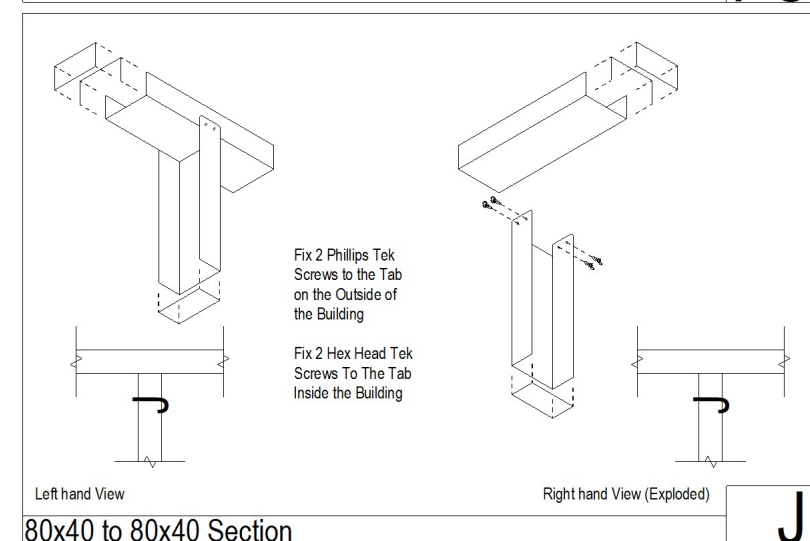
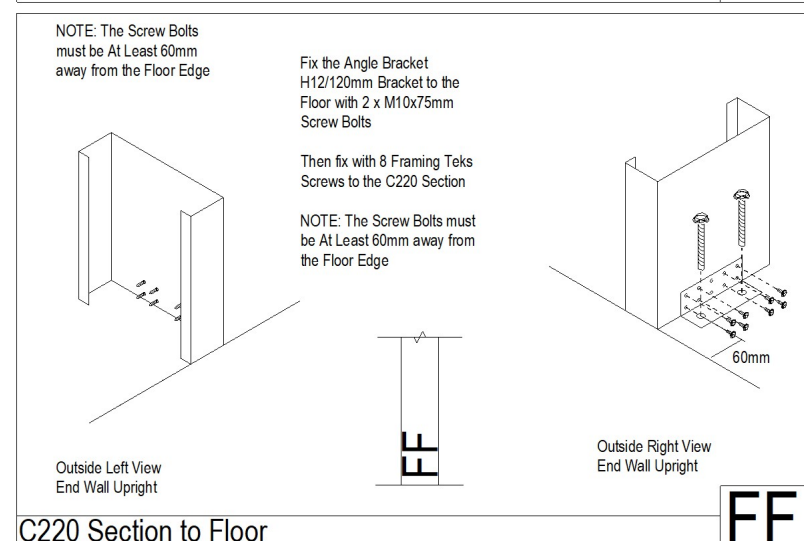
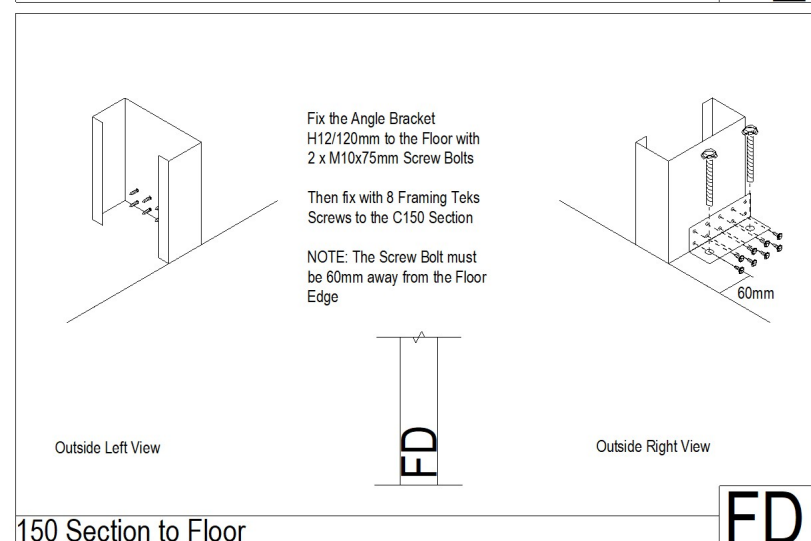
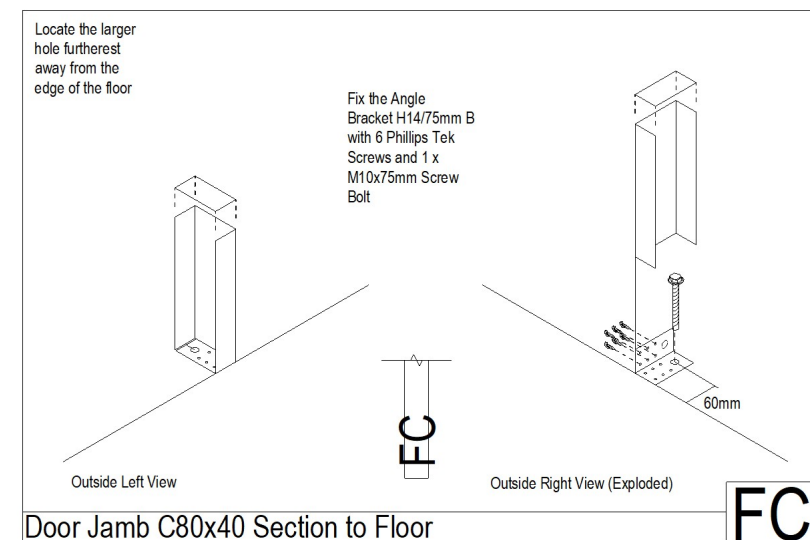
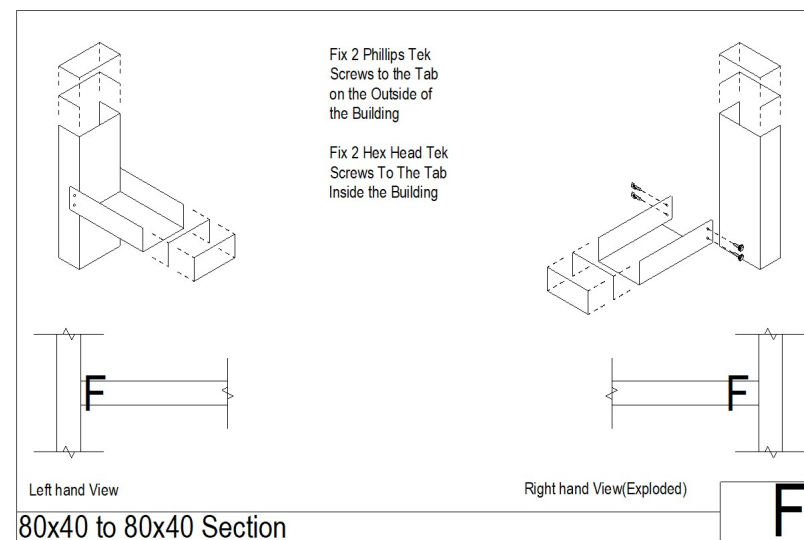
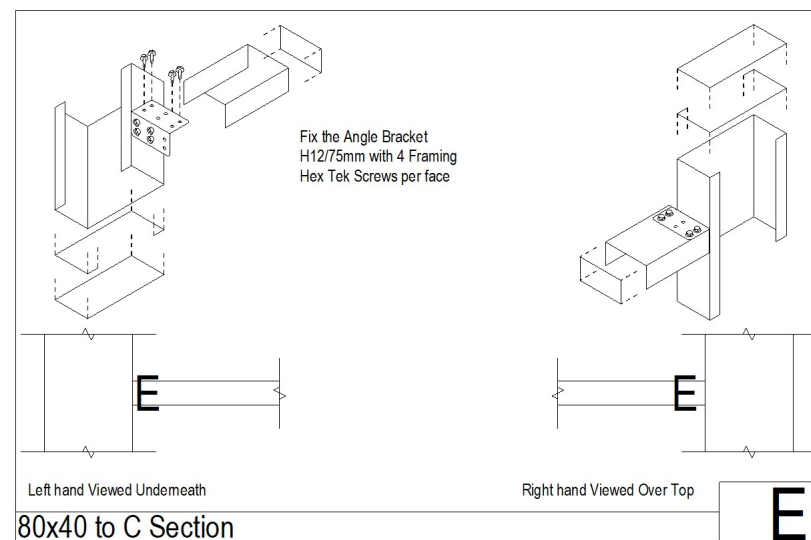


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PORTAL BUILDING
BUILDING DETAILS



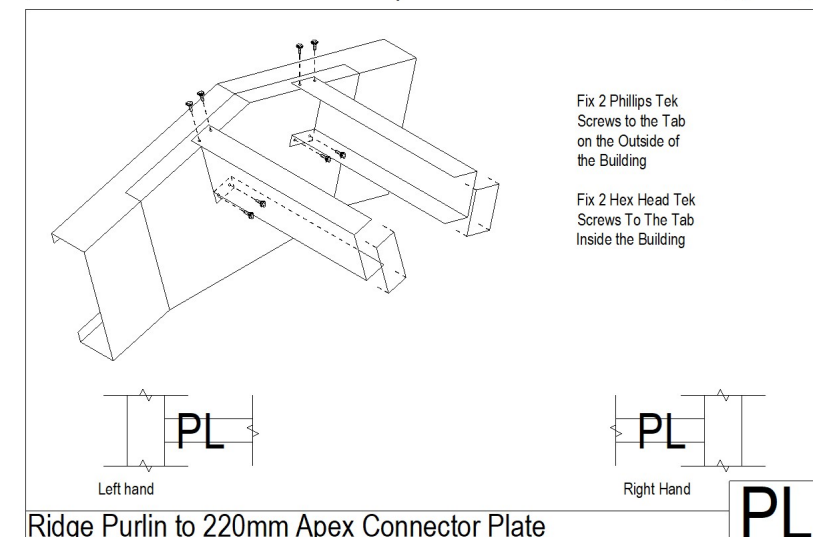
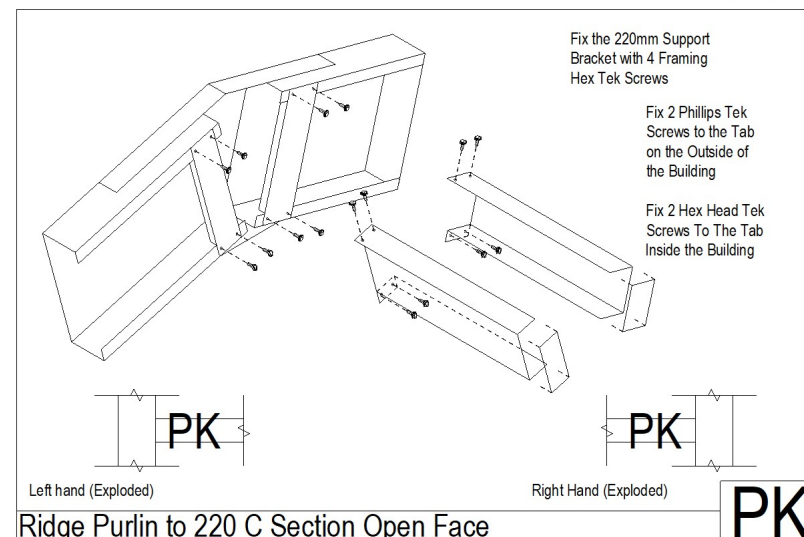
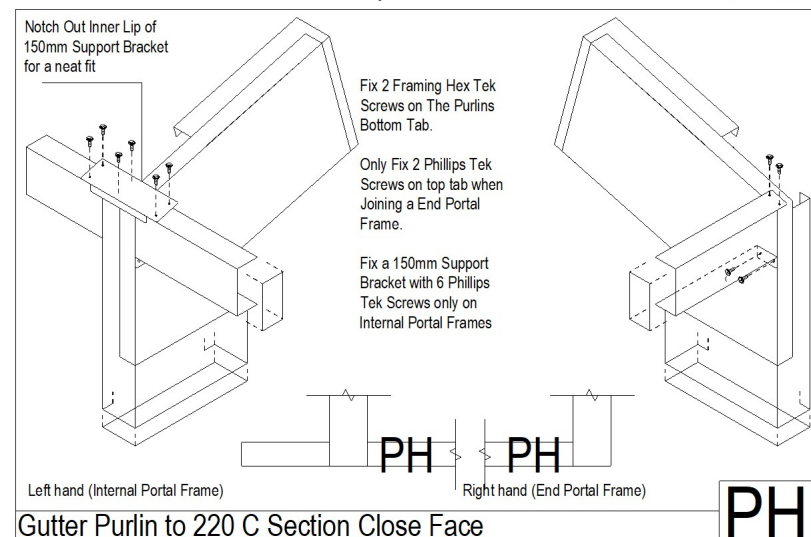
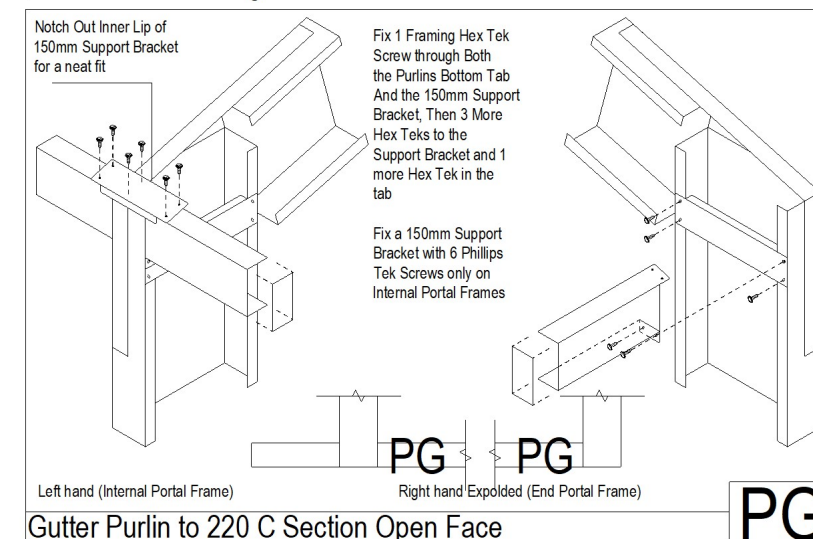
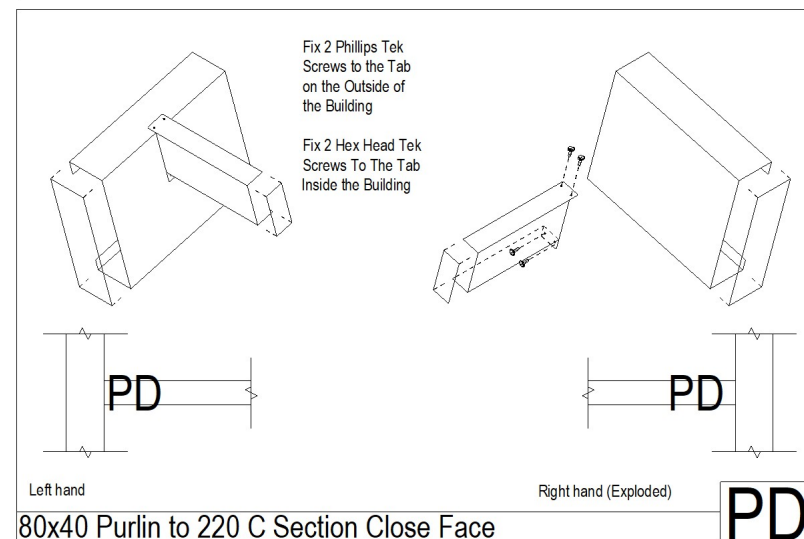
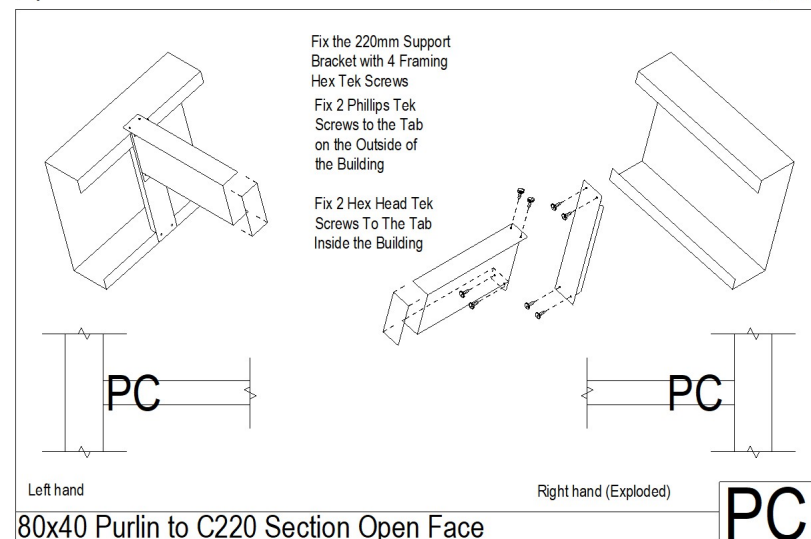
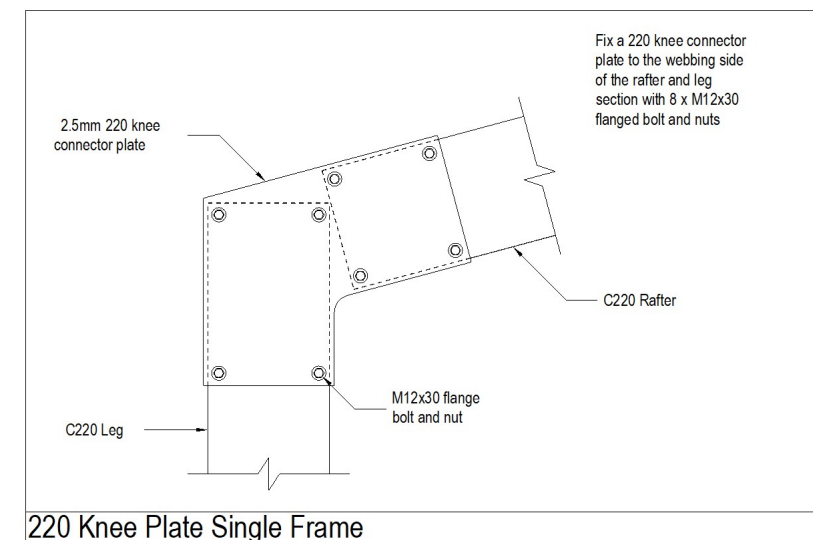
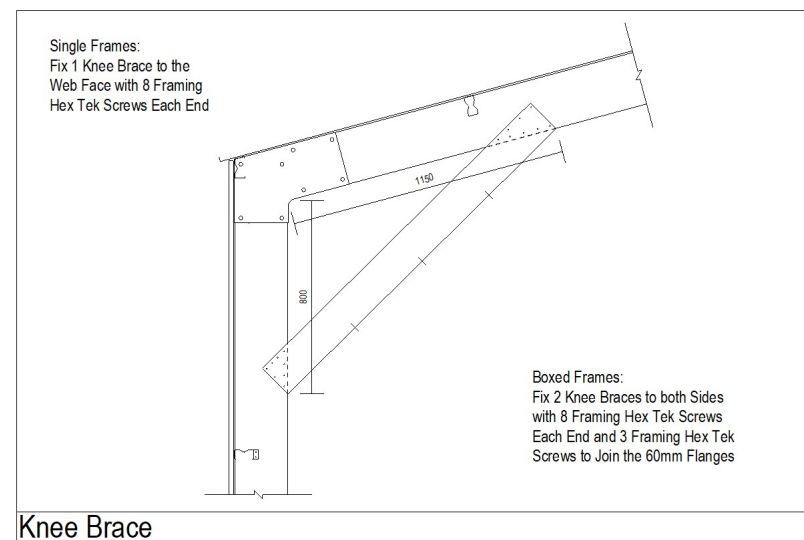
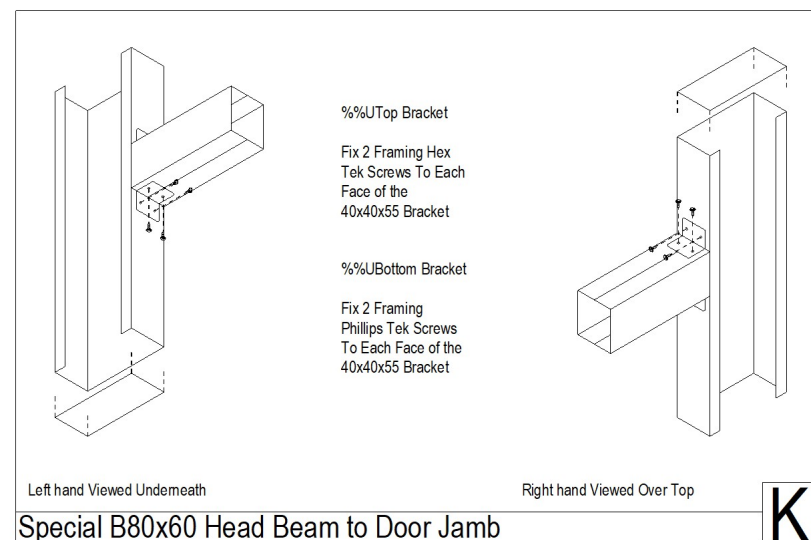
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PORTAL BUILDING
BUILDING DETAILS

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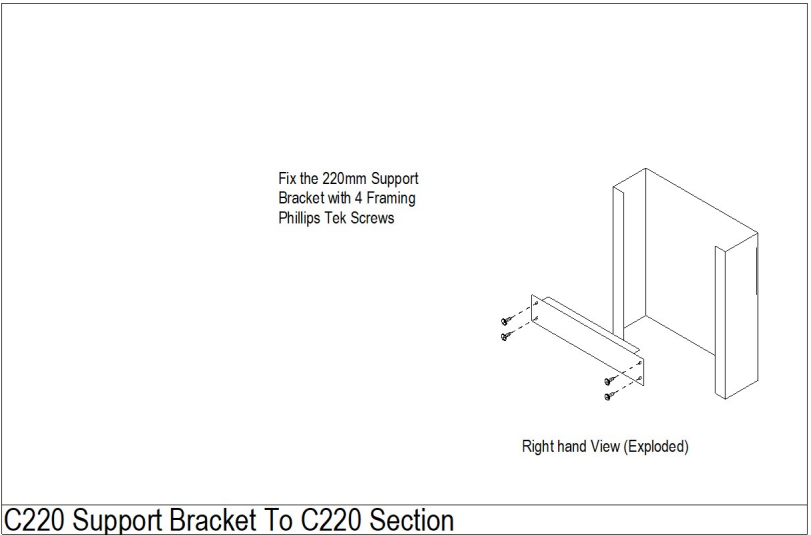
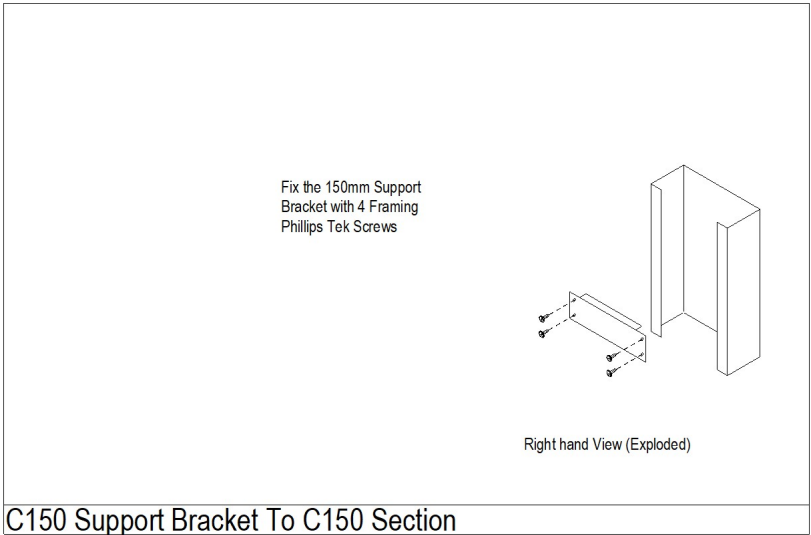
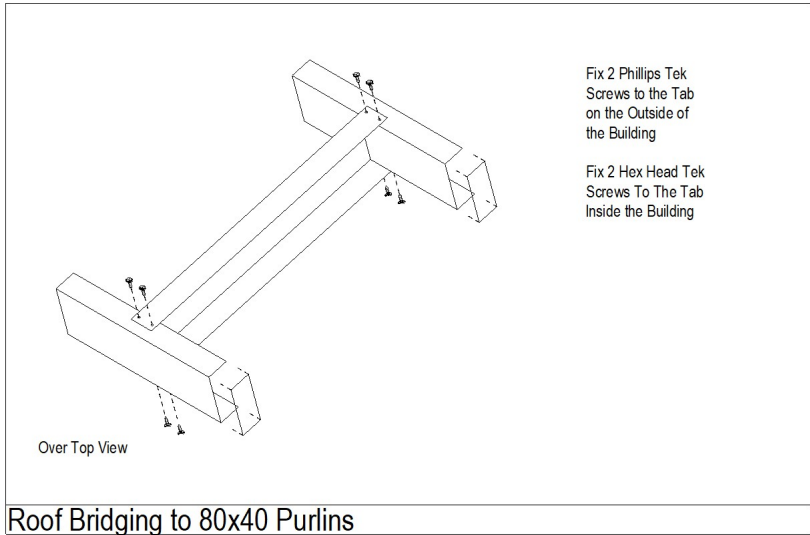


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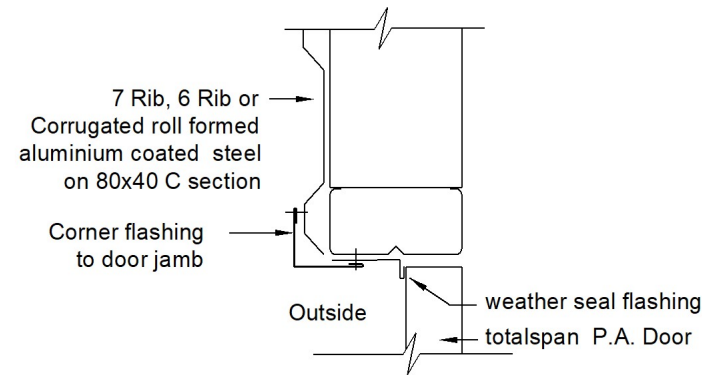
PORTAL BUILDING
BUILDING DETAILS



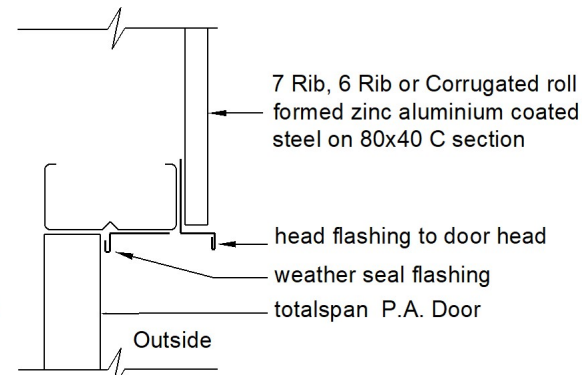
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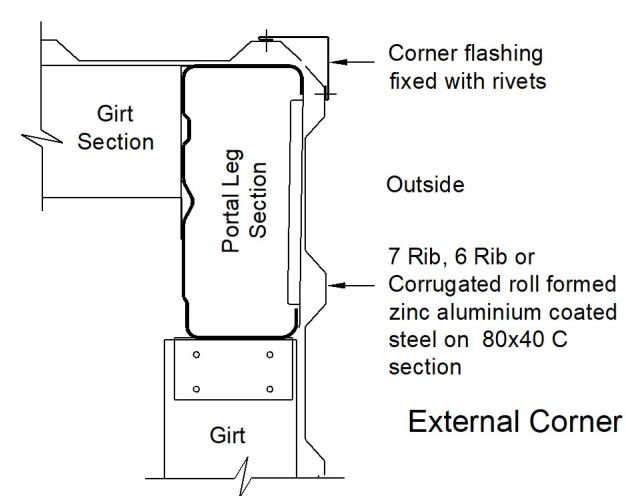
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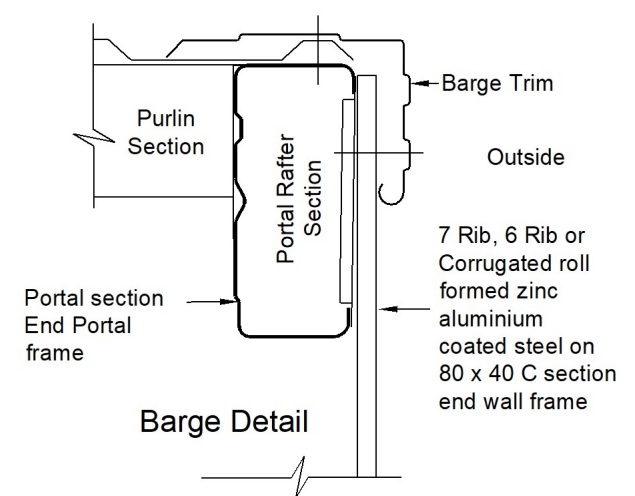
P.A. Door Jamb Detail



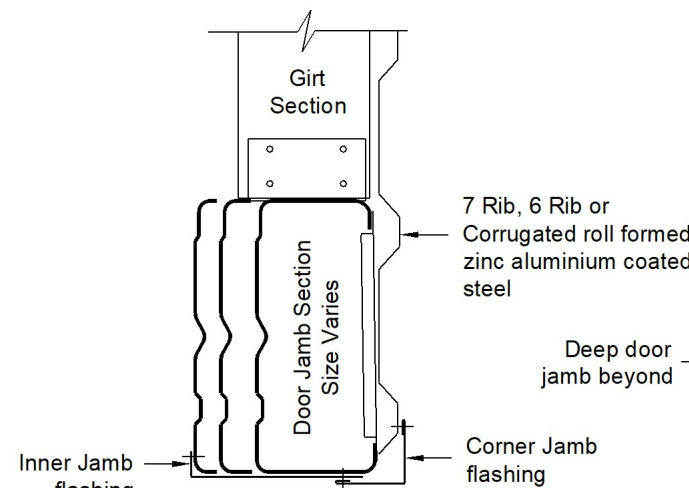
P.A. Door Head Detail



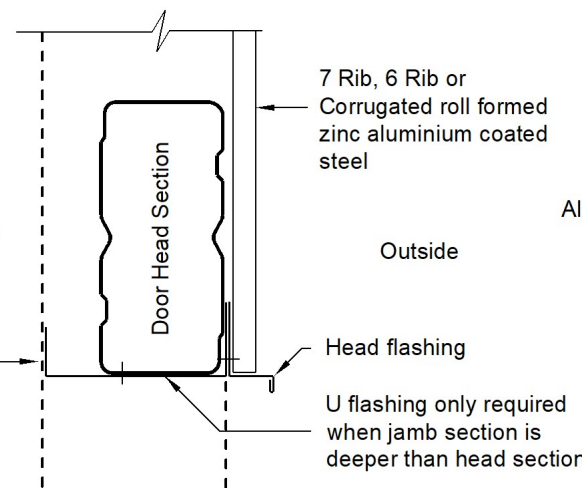
External Corner



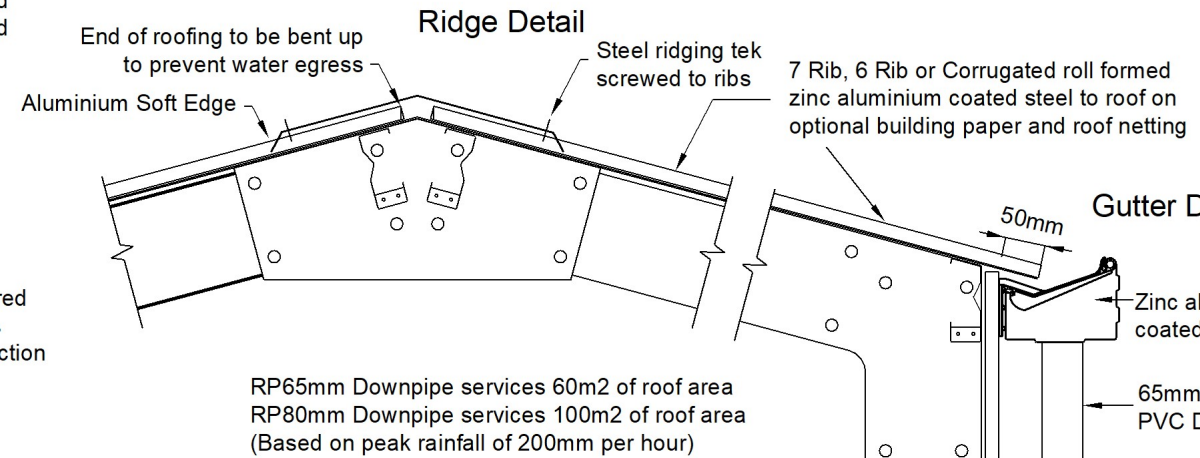
Barge Detail



Main Access Door Jamb Detail



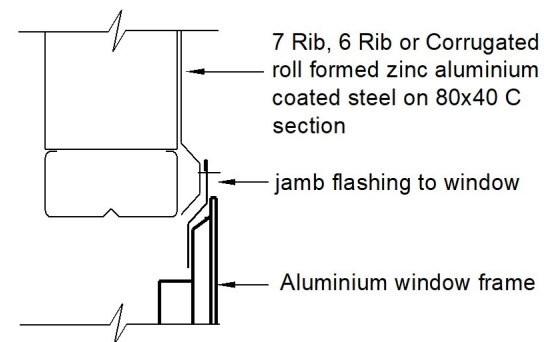
Main Access Door Head Detail



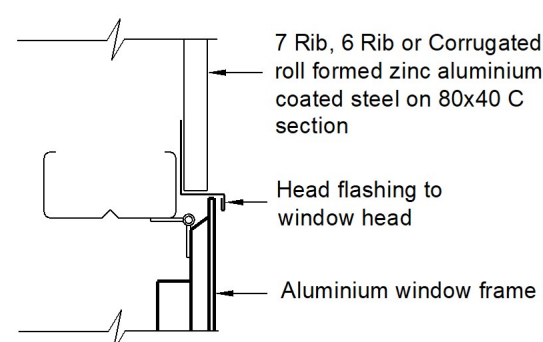
Ridge Detail

Gutter Detail

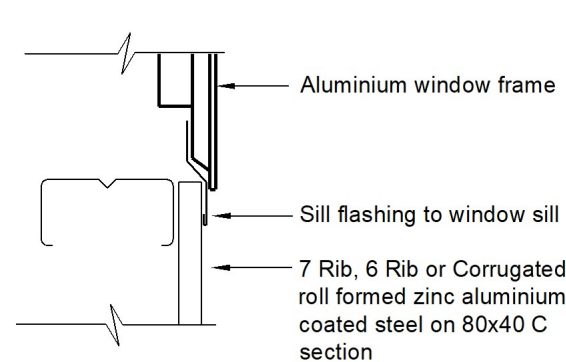
RP65mm Downpipe services 60m2 of roof area
RP80mm Downpipe services 100m2 of roof area
(Based on peak rainfall of 200mm per hour)



Window Jamb Detail



Window Head Detail



Window Sill Detail



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