PEAK® RailBlazers®
ALUMINUM RAILING

Wood Frame Adapter

use with **WOOD** Posts & Rails

Report of:

- **2019 Alberta Building Code - Part 9**
- **2018 British Columbia Building Code - Part 9**
- **2020 National Building Code of Canada - Part 9**
- **2012 Ontario Building Code - Part 9**

WARNING No representation or warranty is given that your particular application of these products complies with relevant building codes or that the fasteners provided or used are appropriate for your application. Therefore consult with professionals and local building officials before beginning work: (i) to ensure compliance with relevant building codes for your application and for your proposed use of fasteners; (ii) to ensure the integrity of the structural components in connection with which these products are to be used; (iii) to identify appropriate safety gear that is to be used during installation such as a safety harness when working above ground; (iv) to ensure that the work area is free from utilities, services and hazards; and, (v) to clarify any instructions or warnings that may not be clear. Work in a safe manner wearing protective gear such as gloves, eyewear, headwear, footwear and clothing. When using tools always comply with operation manuals and instructions. Metal and glass may have sharp edges and could fragment or splinter during or as a result of handling or cutting. Do not use these products in connection with any substance that is or may be harmful or corrosive to the products. Inspect and maintain these products and the structural components that they are used in connection with on a regular basis using professionals when appropriate. These instructions have been prepared for certain standard residential applications. Obtain professional advice for any non-standard or non-residential application.

Peak® RailBlazers® Wood Frame Adapter Kit

Engineering Review for Compliance with Canadian Building Codes Part 9 (1 and 2 Dwelling Units)

Peak Products Manufacturing Inc.
www.peakproducts.com

Submitted June 02, 2022 by
RDH Building Science Inc.
4333 Still Creek Drive #400
Burnaby BC V5C 6S6

Contents

Appendices

1 Overview

The Peak® RailBlazers® Wood Frame Adapter Kit railing system is intended to act as a guard or barrier to protect the public from a fall. The objectives were to complete a structural review of the structural components based in accordance with applicable material standards and the Part 9 (1 and 2 dwelling units) of the following Canadian building codes:

- Alberta Building Code 2019
- British Columbia Building Code 2018
- National Building Code of Canada 2020
- Ontario Building Code 2012 including updates to May 25, 2022

The following specified loads apply:

- Concentrated load of 1 kN applied in any direction at any point along the top of guard.
- Uniformly distributed load of 0.5 kN/m applied in any direction along the top of guard.
- Uniformly distributed vertical load of 1.5 kN/m applied along the top of guard.
- Concentrated infill load of 0.5 kN applied over a maximum of 300 mm x 300 mm area.

The following structural components were evaluated:

1.1 Infill Elements

- Aluminum pickets 16 mm (5/8") wide – Dwg. Title "PEAK® RailBlazers® Wood Frame Railing Assembly with Standard Pickets"
- Aluminum pickets 38 mm (1½") wide - Dwg. Title "PEAK® RailBlazers® Wood Frame Railing Assembly with Wide Pickets"
- Glass panels 6mm thick tempered glass up to 1676 mm (66") wide – Dwg. Title "PEAK® RailBlazers® Wood Frame Railing Assembly with Glass Panel"
- Glass panels 8mm thick tempered glass at 152 mm (6") wide - Dwg. Title "PEAK® RailBlazers® Wood Frame Railing Assembly with 6 Inch Glass Panels"

1.2 Rail Elements

- Posts – 4"x4" or 6"x6", SPF No.2 of better
- Top rail 2"x4" or 2"x6", SPF No.2 or better and aluminum handrail
- Bottom rail 2"x4" or 2"x6", SPF No.2 or better and aluminum base rail

1.3 Connectors

- #8 x 3" (76.2 mm) self-tapping screw
- #10 x 1-½" (38.1 mm) self-tapping screw
- #14 x 2" (50.8 mm) self-tapping screw
- Handrail aluminum bracket
- Base rail aluminum bracket

The complete list of all components (including non-structural components) for the system is included in Appendix A.

2 Infill Elements

The primary infill elements include the following:

- Aluminum pickets 16 mm (5/8") wide
- Aluminum pickets 38 mm (1½") wide
- Glass panels up to 1676 mm (66") wide
- Glass panels 152 mm (6") wide

This review is based on information and drawings provided by Peak Products Manufacturing Inc. (Peak) for the elements listed above.

2.1 Aluminum Infill Elements

Our analysis is based on the following information:

- Loads: Prescribed by the Canadian building codes. See Section 1.0 Overview.
- Resistance: Completed in accordance with CAN/CSA S157-17, Strength Design in Aluminum.
- Section properties: Information was provided by Peak. Calculations were completed in accordance with CAN/CSA S157-17.
- Load configuration: Span and bearing lengths were provided by Peak.

2.2 Glass Infill Elements

Our analysis is based on the following information:

- Loads: Prescribed by the Canadian building codes. See Section 1.0 Overview.
- Resistance: Completed in accordance with CAN CGSB 12-20 M89, Structural Design of Glass for Buildings.
- Section properties: Determined from drawings provided by Peak.
- Allowable deflection: The allowable deflection was calculated based on preventing fall-out of the glass from frame.

3 Rail Elements

3.1 General Rail Elements

The general rail elements include the wood top rail, aluminum handrail, wood base rail, aluminum base rail, and wood posts. An analysis was completed based on the worst-case configuration for these elements.

- Loads: Prescribed by the Canadian building codes. See Section 1.0 Overview.
- Resistance: Completed in accordance with CAN/CSA S157-17, Strength Design in Aluminum.
- Section properties: Information was provided by Peak. Calculations were completed in accordance with CAN/CSA S157-17.
- Fastener resistance: Completed in accordance with CAN/CSA O86-14, Engineering Design in Wood.
- Load configuration: Span and dimensions were provided by Peak. Posts were modeled as cantilevers, fixed at the base. The results from our analysis show the maximum span that can be achieved, as calculated from the material and fastener resistances. The maximum span was also validated through structural testing.

4 Connectors

4.1 General Connectors

The general connectors include self-tapping screws, aluminum handrail bracket, and aluminum base rail bracket. An analysis was completed based on the worst-case configuration for these elements.

- Loads: Prescribed by the Canadian building codes. See Section 1.0 Overview.
- Resistance: Completed in accordance with CAN/CSA S157-17, Strength Design in Aluminum and CAN/CSA O86-14, Engineering Design in Wood.
- Section properties: Information was provided by Peak. Calculations were completed in accordance with CAN/CSA S157-17 and CAN/CSA O86-14, Engineering Design in Wood.
- Load configuration: Span and dimensions were provided by Peak.

5 Results

A full set of calculations and results is presented in RDH's compiled engineering review package. The engineering package includes:

- → Dimensioned drawings of each component, including extrusion drawings.
- → Calculation sheets for the structural capacity of components listed in 1.0 Overview.

The above documents contain proprietary information, and as such, have not been included in this report.

6 Conclusion

The Peak® RailBlazers® Wood Frame Adapter Kit railing system meets the requirements within Part 9 (1 and 2 dwelling units) of the Alberta Building Code 2019, British Columbia Building Code 2018, National Building Code of Canada 2020, and Ontario Building Code 2012 including updates to May 25, 2022. Limitations of compliance are defined in the assembly drawings presented in Appendix B.

Yours truly,

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Reviewed by
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Principal
Façade Structural Specialist
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RDH Building Science Inc.

Encl. Appendix A – List of Components

Appendix B – Assembly Drawings

Limits of Commission

This report was prepared for Peak. It is not for the use or benefit of, nor may it be relied upon, by any other person or entity, without written permission of RDH Building Science Inc.

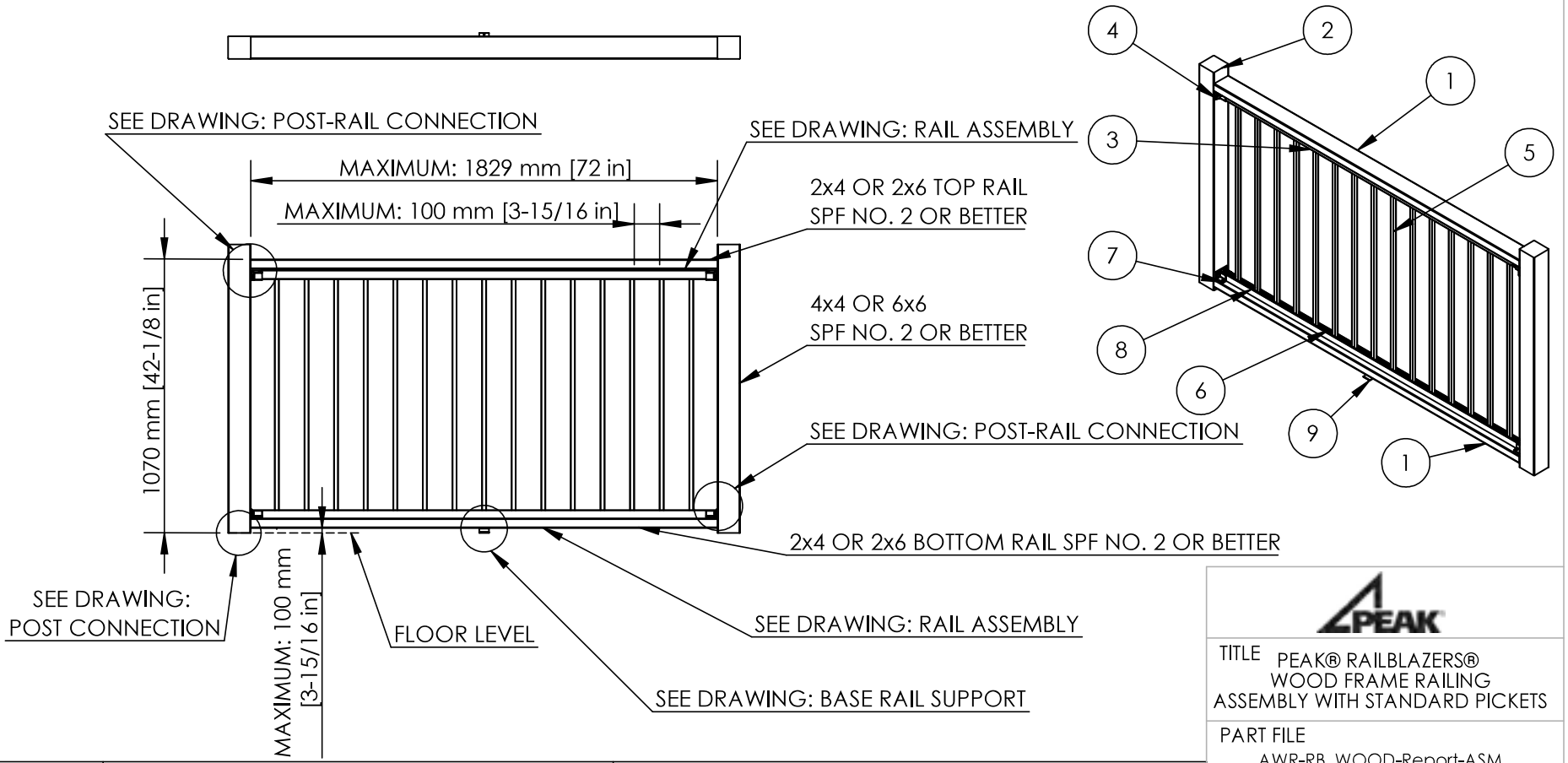
Appendix A

List of Components

SKU White	SKU Matte Black	Description
91190	91191	Wood Frame Adapter Kit
91200	91201	4' PICKET AND SPACER
91210	91211	6' PICKET AND SPACER
91300	91301	4' WIDE PICKET AND SPACER
91310	91311	6' WIDE PICKET AND SPACER
90940	90940	6' GLASS GASKET
91710	91710	6" GLASS PANEL KIT - CLEAR
91713	91713	6" GLASS PANEL KIT - TINTED
10820	10820	GLASS PANEL 18 X 36 5/16
10823	10823	GLASS PANEL 21 X 36 5/16
10830	10830	GLASS PANEL 24 X 36 5/16
10833	10833	GLASS PANEL 27 X 36 5/16
10840	10840	GLASS PANEL 30 X 36 5/16
10843	10843	GLASS PANEL 33 X 36 5/16
10850	10850	GLASS PANEL 36 X 36 5/16
10853	10853	GLASS PANEL 39 X 36 5/16
90860	90860	GLASS PANEL 42 X 36 5/16
10863	10863	GLASS PANEL 45 X 36 5/16
10870	10870	GLASS PANEL 48 X 36 5/16
10873	10873	GLASS PANEL 51 X 36 5/16
10880	10880	GLASS PANEL 54 X 36 5/16
10883	10883	GLASS PANEL 57 X 36 5/16
10888	10888	GLASS PANEL 60 X 36 5/16
10891	10891	GLASS PANEL 63 X 36 5/16
90895	90895	GLASS PANEL 66 X 36 5/16

Appendix B

Assembly Drawings



ITEM NO.	DESCRIPTION	SKU
1	WOOD RAIL	-
2	WOOD POST	-
3	ALUMINUM TOP RAIL	91191
4	TOP RAIL BRACKET	91191
5	STANDARD PICKET	91200, 91201, 91210, 91211
6	SPACER	91200, 91201, 91210, 91211
7	BASE RAIL BRACKET	91191
8	ALUMINUM BASE RAIL	91191
9	BASE RAIL SUPPORT	91191

PEAK

TITLE
PEAK® RAILBLAZERS®
WOOD FRAME RAILING
ASSEMBLY WITH STANDARD PICKETS

PART FILE
AWR-RB_WOOD-Report-ASM

DWG REV
A

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE **A** | DWG. NO. AWR-RB_WOOD-Report-ASM

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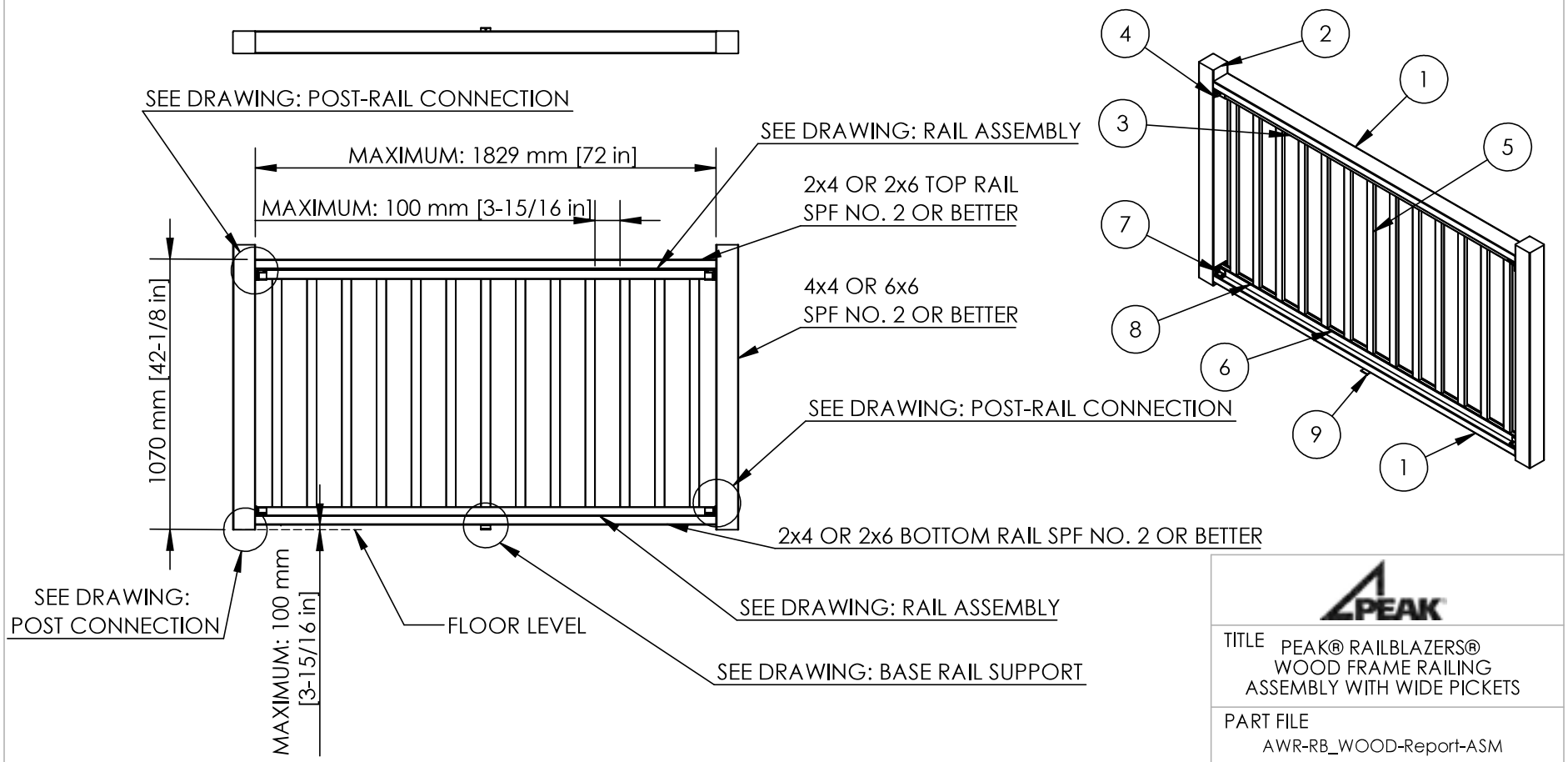

ITEM NO.	DESCRIPTION	SKU
1	WOOD RAIL	-
2	WOOD POST	-
3	ALUMINUM TOP RAIL	91191
4	TOP RAIL BRACKET	91191
5	WIDE PICKET	91300, 91301, 91310, 91311, 91350, 91351
6	SPACER	91300, 91301, 91310, 91311, 91350, 91351
7	BASE RAIL BRACKET	91191
8	ALUMINUM BASE RAIL	91191
9	BASE RAIL SUPPORT	91191

PEAK

TITLE
PEAK® RAILBLAZERS®
WOOD FRAME RAILING
ASSEMBLY WITH WIDE PICKETS

PART FILE
AWR-RB_WOOD-Report-ASM

DWG REV
A

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

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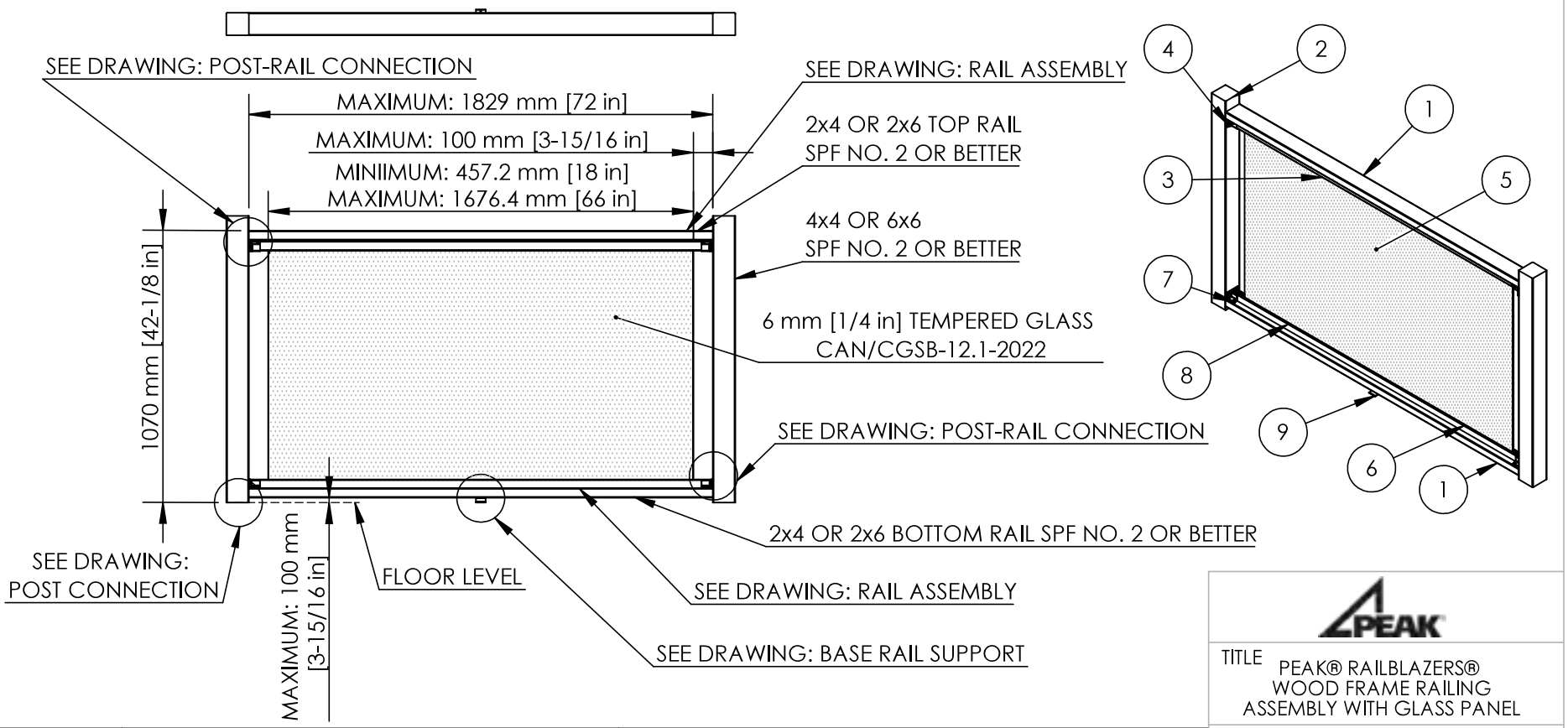

ITEM NO.	DESCRIPTION	SKU
1	WOOD RAIL	-
2	WOOD POST	-
3	ALUMINUM TOP RAIL	91191
4	TOP RAIL BRACKET	91191
5	GLASS PANEL	10820, 10823, 10830, 10833, 10840, 10843, 10850, 10853, 90860,10863, 10866, 10870, 10873, 10880, 10883, 10888, 10891, 90895
6	GLASS GASKET	90940
7	BASE RAIL BRACKET	91191
8	ALUMINUM BASE RAIL	91191
9	BASE RAIL SUPPORT	91191

PEAK

TITLE
PEAK® RAILBLAZERS®
WOOD FRAME RAILING
ASSEMBLY WITH GLASS PANEL

PART FILE
AWR-RB_WOOD-Report-ASM

DWG REV
A

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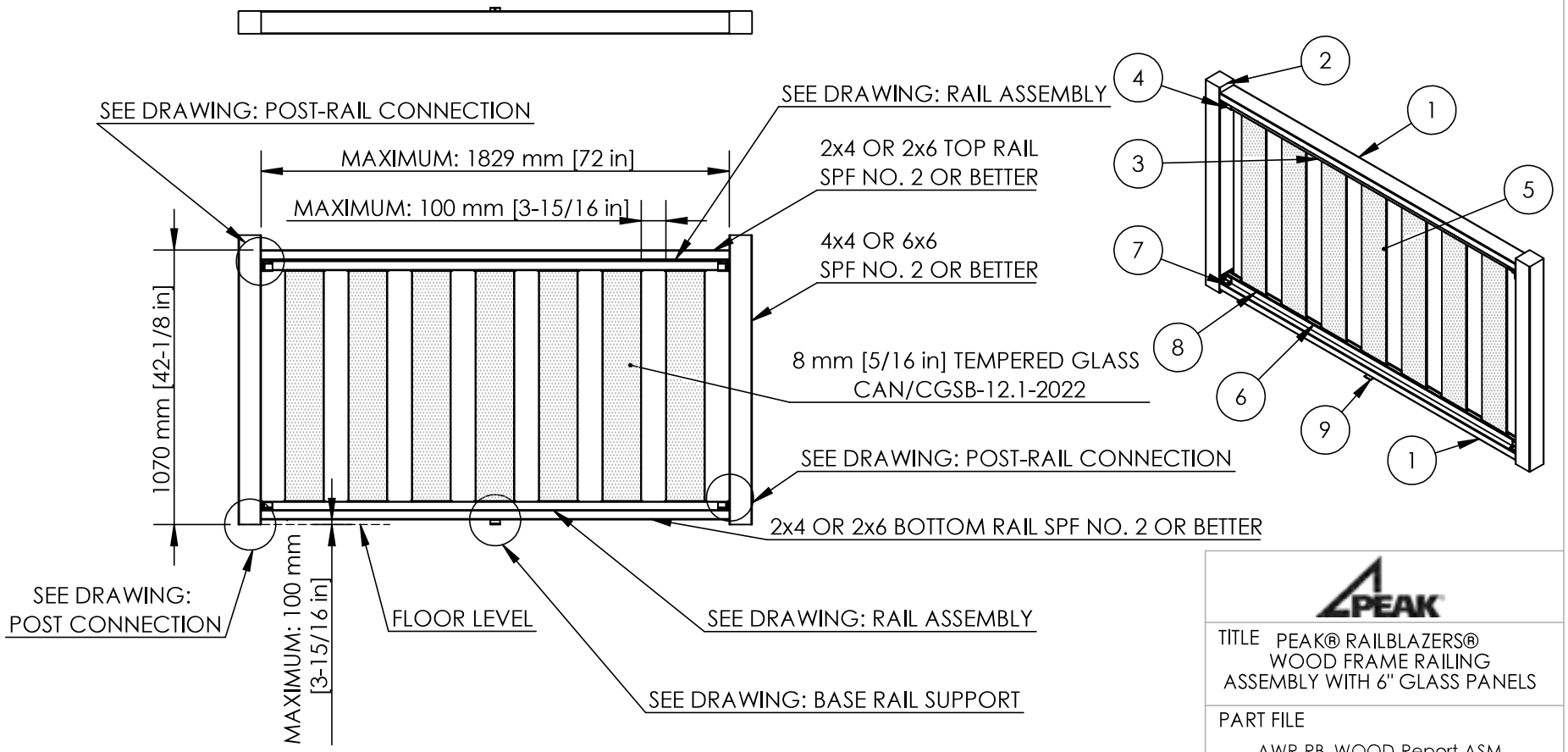

ITEM NO.	DESCRIPTION	SKU
1	WOOD RAIL	-
2	WOOD POST	-
3	ALUMINUM TOP RAIL	91191
4	TOP RAIL BRACKET	91191
5	GLASS PANEL 6" & GLASS GASKET	91710,91713
6	SPACER	91710,91713
7	BASE RAIL BRACKET	91191
8	ALUMINUM BASE RAIL	91191
9	BASE RAIL SUPPORT	91191

PEAK

TITLE PEAK® RAILBLAZERS® WOOD FRAME RAILING ASSEMBLY WITH 6" GLASS PANELS

PART FILE
AWR-RB_WOOD-Report-ASM

DWG REV A

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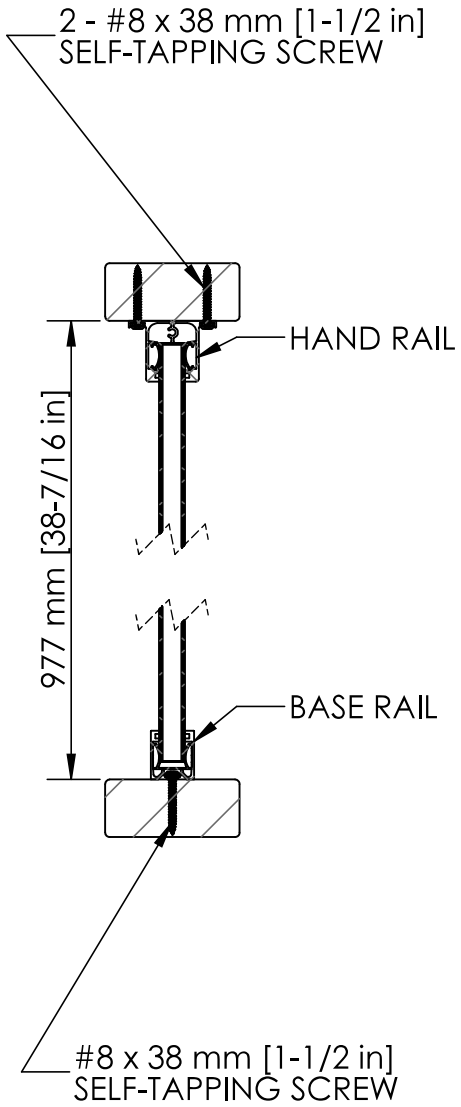

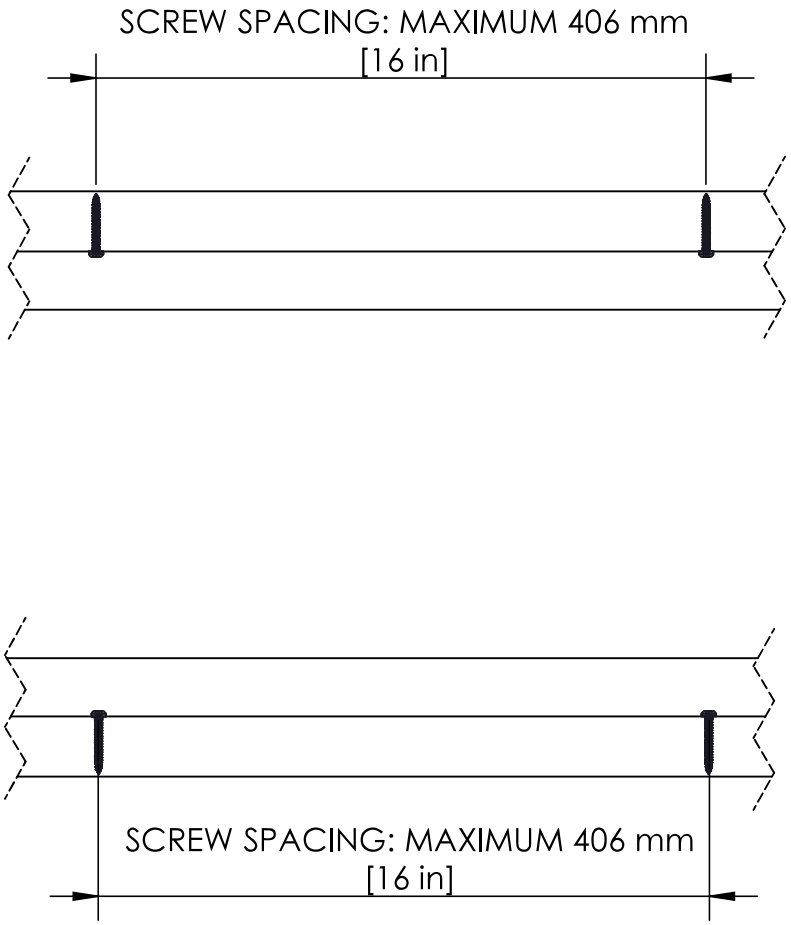

TITLE	PEAK® RAILBLAZERS® WOOD FRAME RAILING RAIL ASSEMBLY
PART FILE	AWR-RB_WOOD-ASM
DWG REV	B

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE	DWG. NO.	
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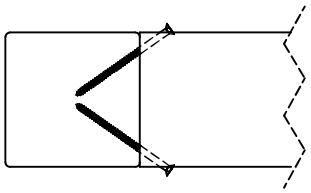
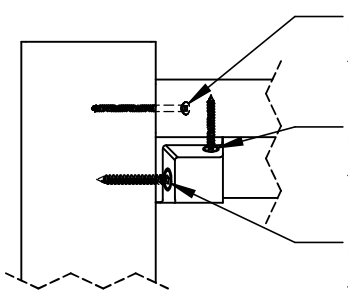
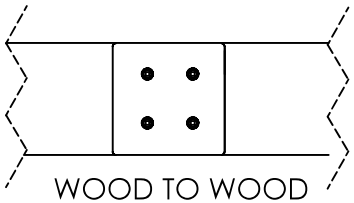


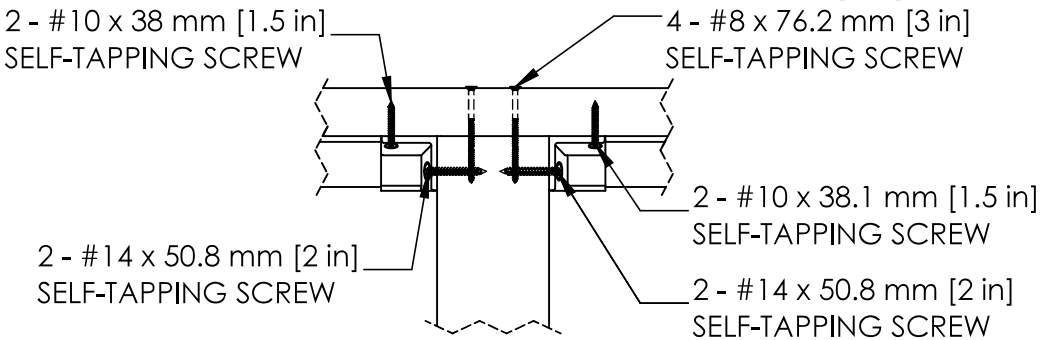
WOOD TO WOOD
SCREW DETAIL



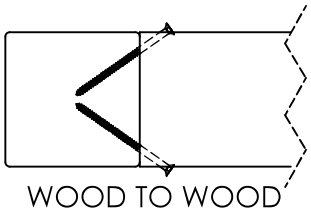
TOP RAIL TO POST CONNECTION



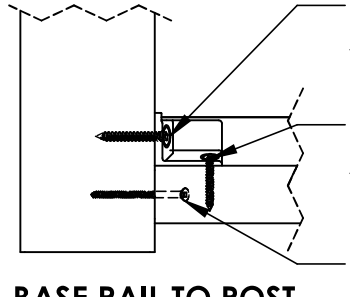
WOOD TO WOOD
SCREW DETAIL



TOP RAIL ACROSS POST CONNECTION



WOOD TO WOOD
SCREW DETAIL



BASE RAIL TO POST CONNECTION

PEAK

TITLE PEAK® RAILBLAZERS®
WOOD FRAME RAILING
POST-RAIL CONNECTION

PART FILE
AWR-RB_WOOD-REPORT POST RAIL CONNECTION-ASM

DWG REV A

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE **A** | DWG. NO. AWR-RB_WOOD-Report-POST-RAIL CONNECTION

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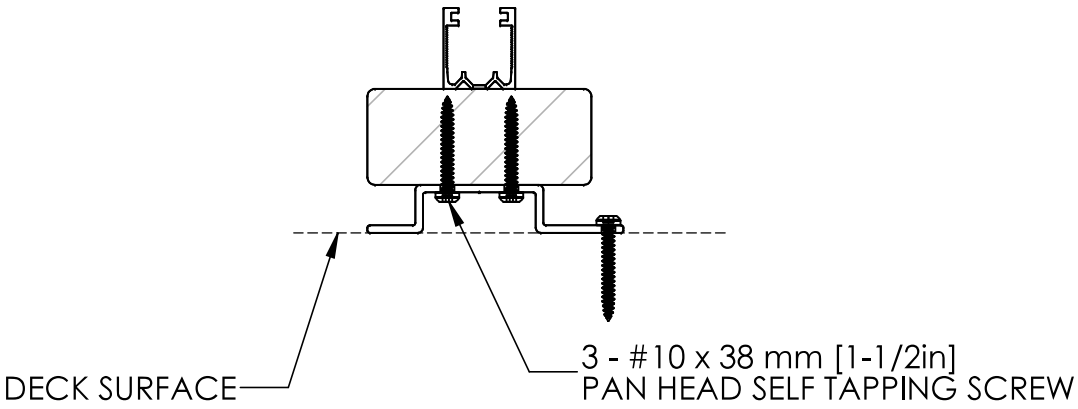
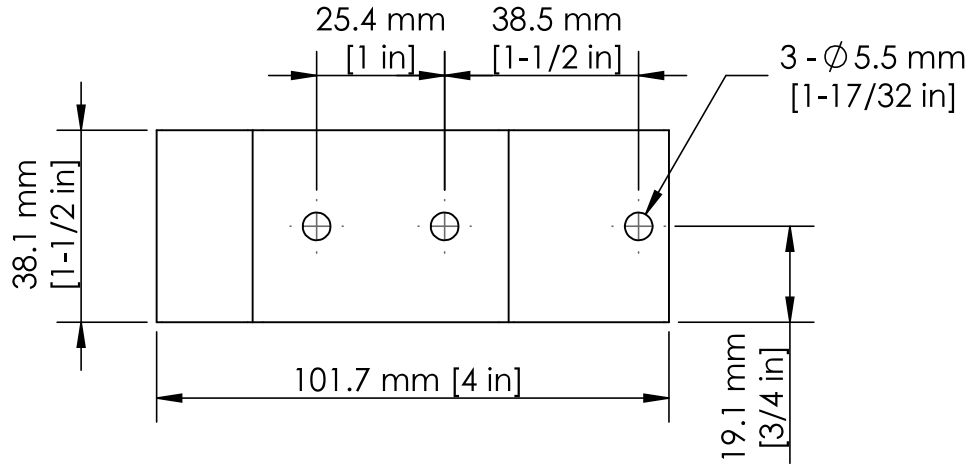
BASE RAIL SUPPORT





MOUNTING TEMPLATE

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PART FILE	AWR-RAIL-BR_Sup7
DWG REV	A
DIMENSIONS ARE IN MM UNLESS NOTED DO NOT SCALE DRAWING	

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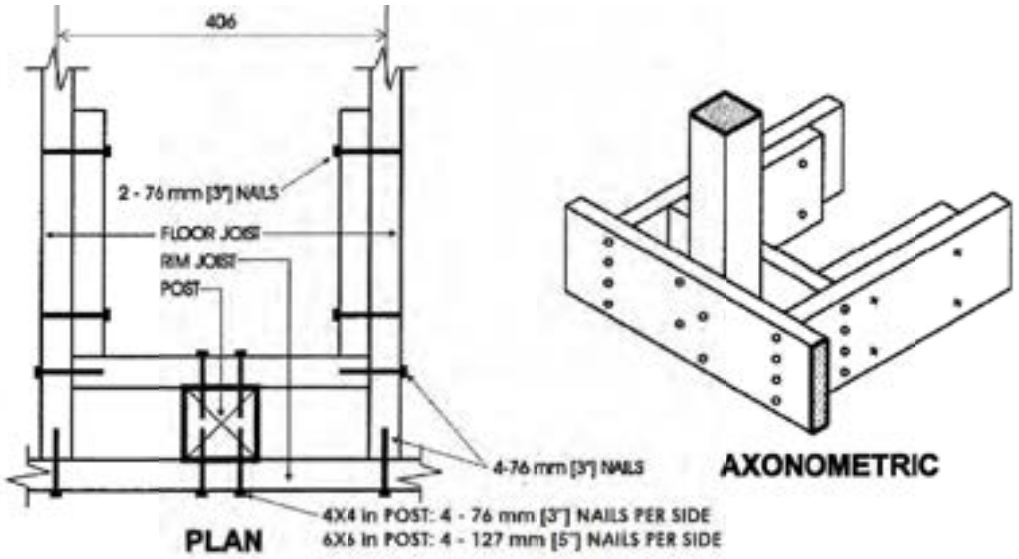
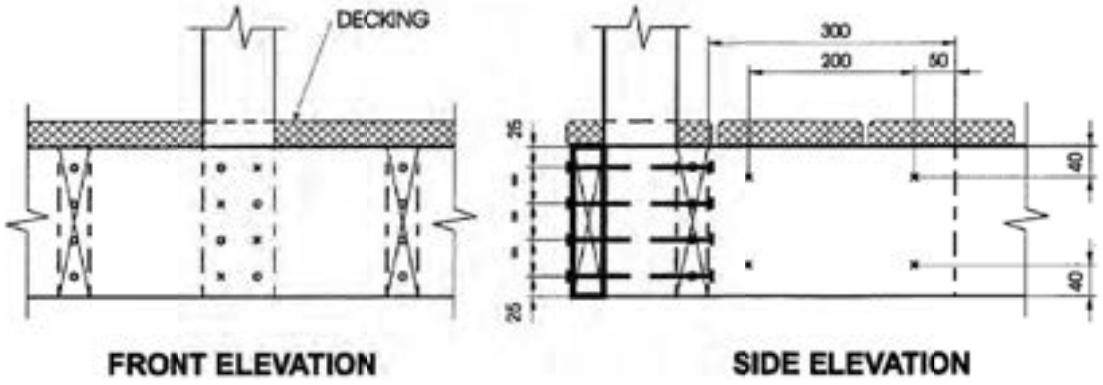


4x4 in AND 6x6 in POSTS



METHOD 1: POST NAILED TO RIM JOIST

PEAK

TITLE
Post Connection - Method 1

PART FILE

DWG REV A

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DO NOT SCALE DRAWING

SIZE B | DWG. NO. Post Connection - Option 1

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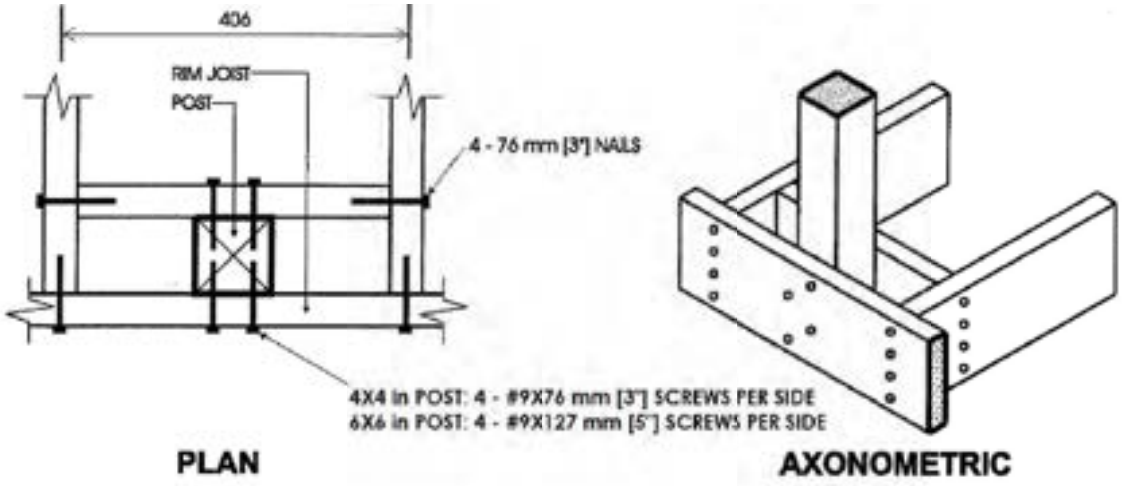
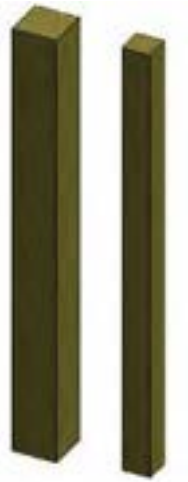
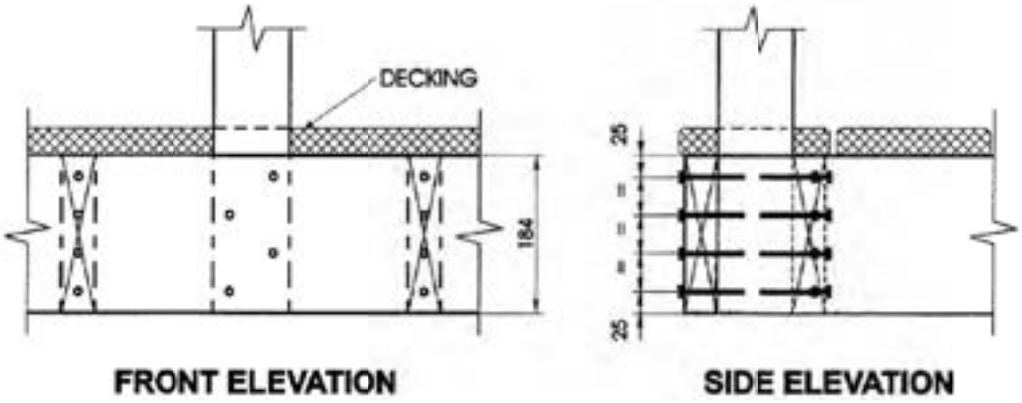




4x4 in AND 6x6 in POSTS



METHOD 2: POST SCREWED TO RIM JOIST

PEAK

TITLE
Post Connection - Method 2

PART FILE

DWG REV A

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DO NOT SCALE DRAWING

SIZE B | DWG. NO. Post Connection - Option 2

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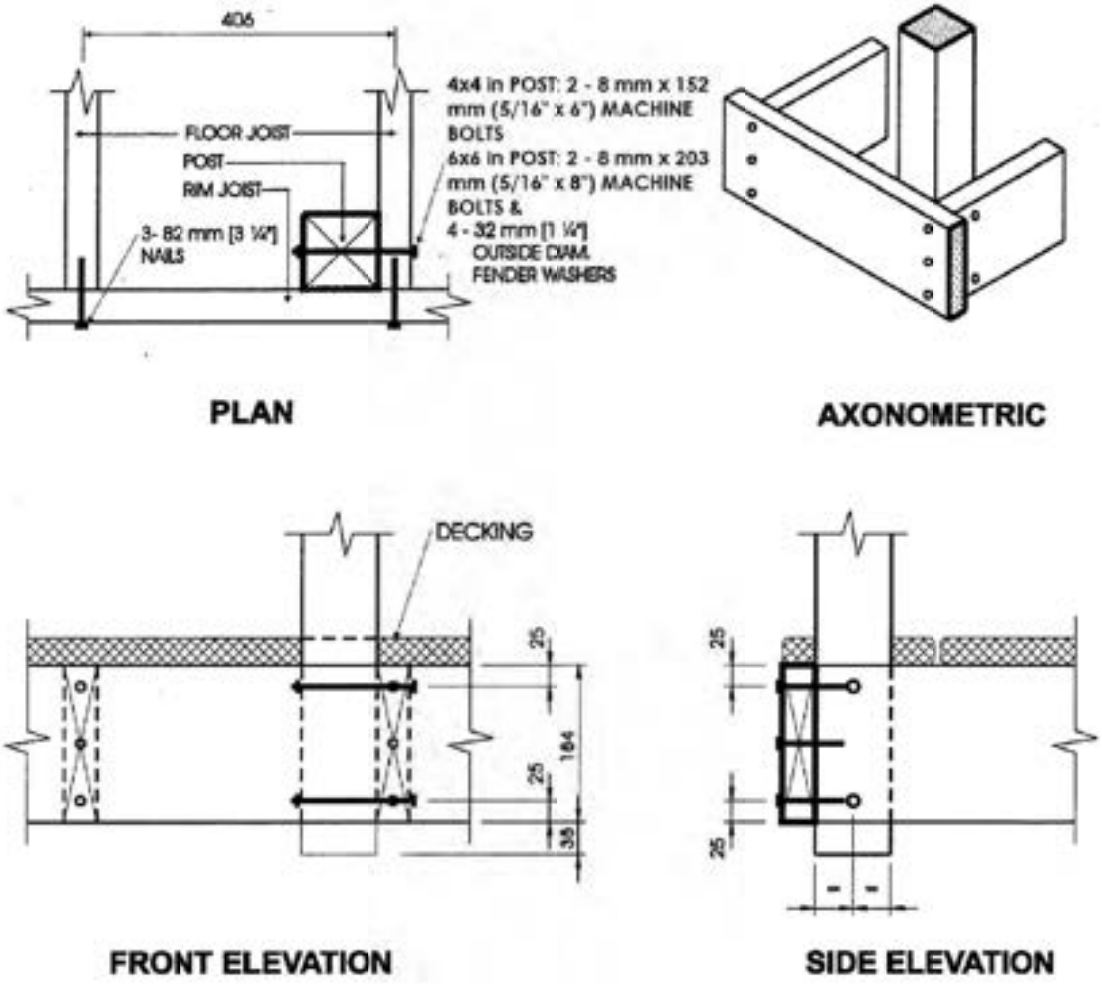

4x4 in AND 6x6 in POSTS

METHOD 3: POST BOLTED TO FLOOR JOIST - 8 mm [5/16 in] BOLTS

PEAK

TITLE
Post Connection - Method 3

PART FILE

DWG REV A

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE B | DWG. NO. Post Connection - Option 3

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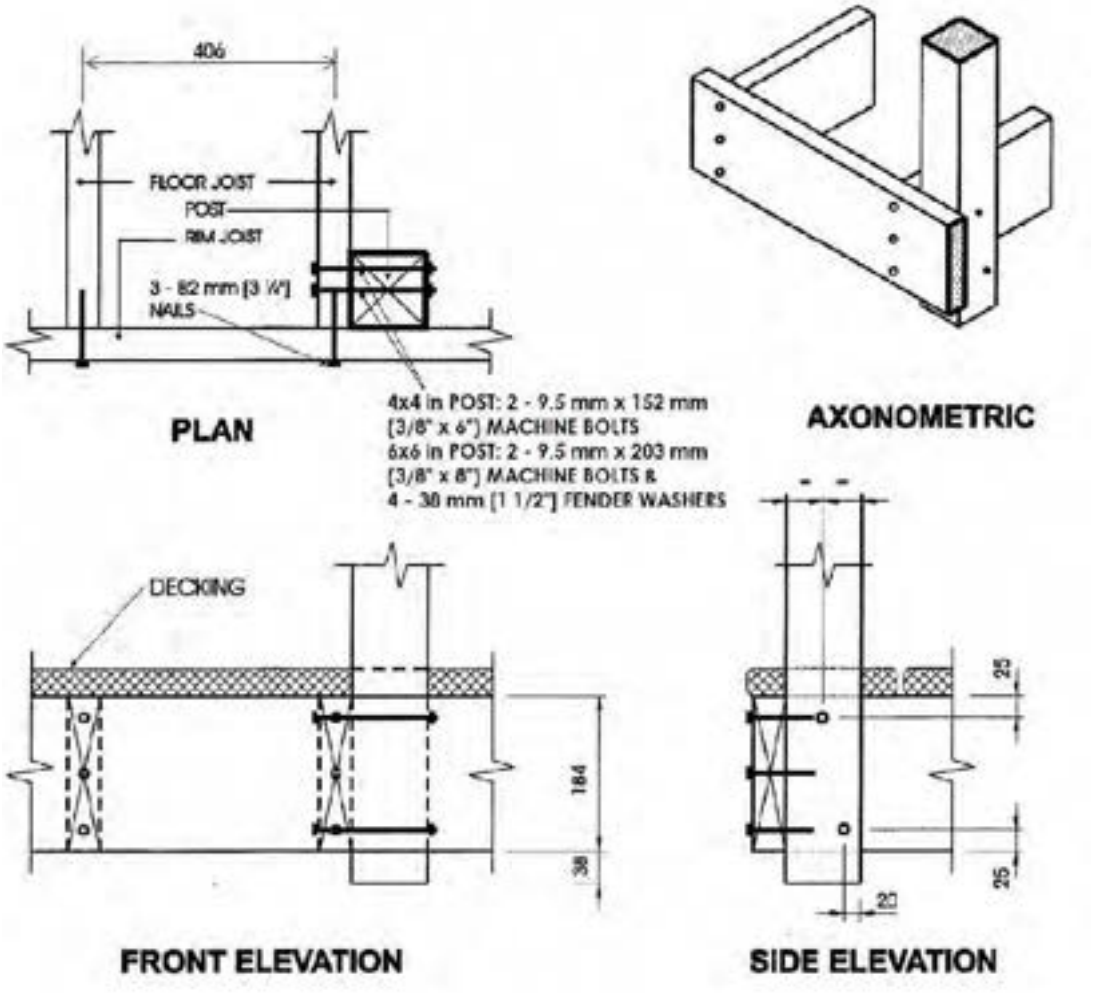
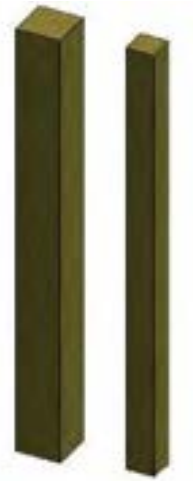




4x4 in AND 6x6in POSTS

METHOD 4: POST BOLTED TO FLOOR JOIST - 9.5 mm [3/8 in] BOLTS

PEAK

TITLE
Post Connection - Method 4

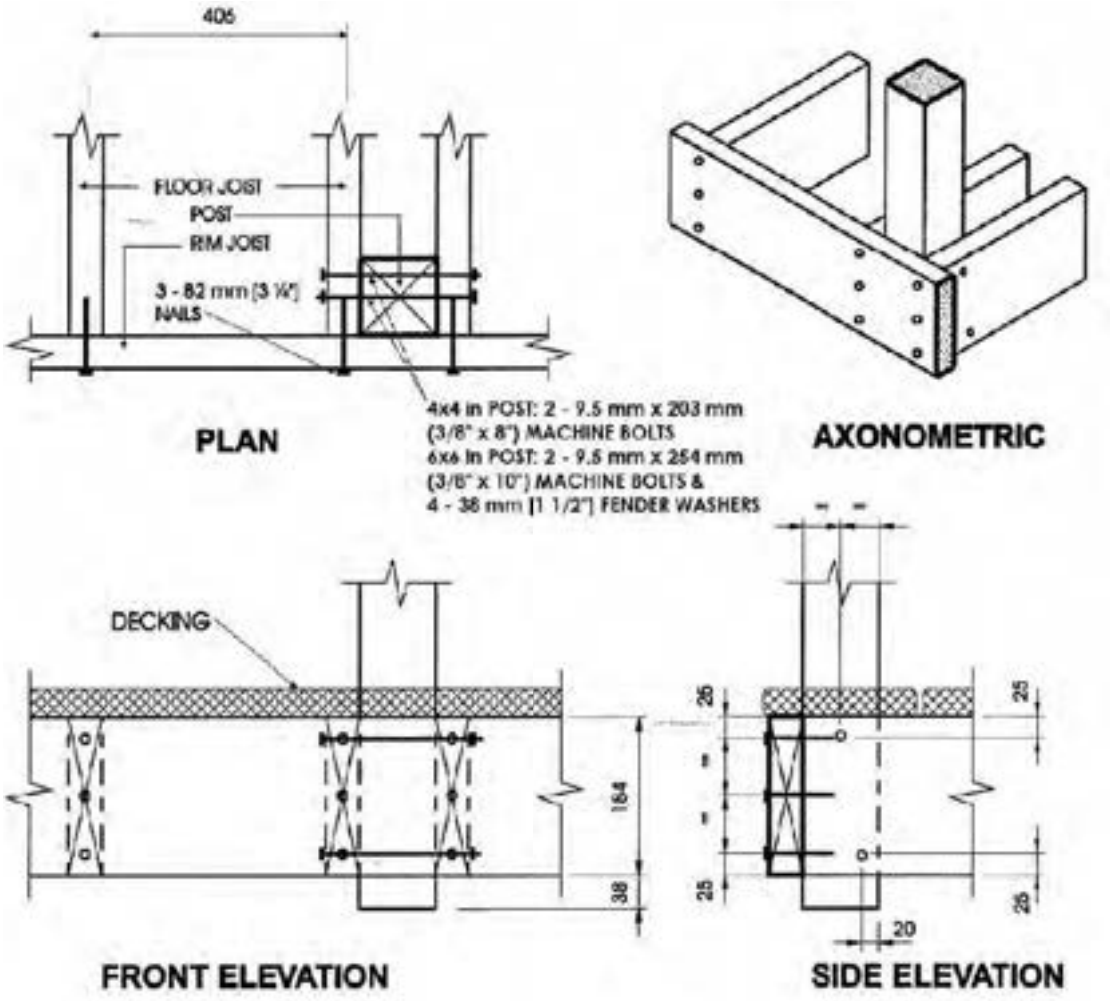
PART FILE

DWG REV A

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE B | DWG. NO. Post Connection - Option 4

SCALE: | SHT REV 2016-06-01-A



4x4 in AND 6x6 in POSTS

METHOD 5: POST BOLTED TO 2 FLOOR JOIST

PEAK

TITLE
Post Connection - Method 5

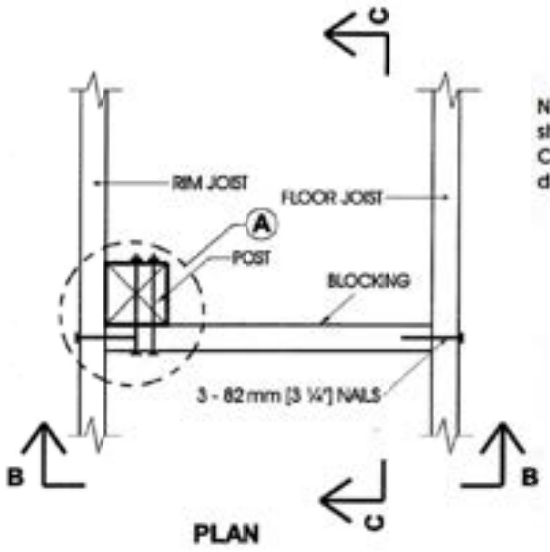
PART FILE

DWG REV A

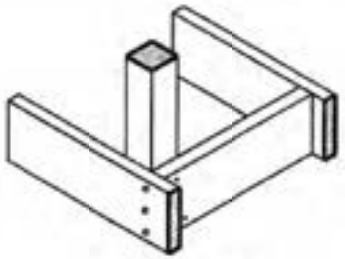
DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE B | DWG. NO. Post Connection - Option 5

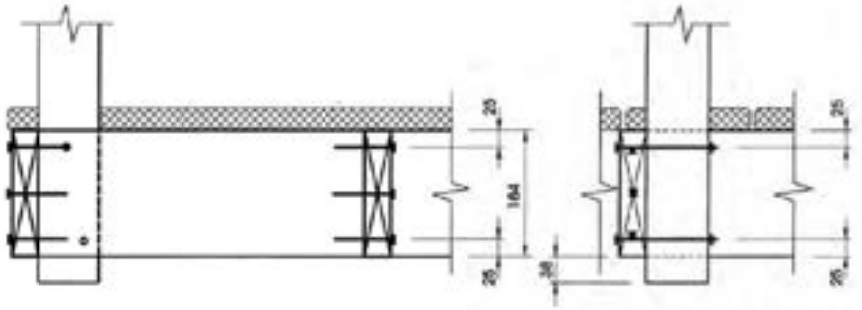
SCALE: | SHT REV 2016-06-01-A



Note: Use any of the connection details shown on Methods 1 to 5 at location "A". Connection Method 4 is shown in this detail, as an example.



AXONOMETRIC



ELEVATION B-B

ELEVATION C-C

METHOD 6: POST FASTENED TO FLOOR, GUARD PARALLEL TO FLOOR JOISTS

4x4 in AND 6x6 in POSTS

PEAK

TITLE
Post Connection - Method 6

PART FILE

DWG REV A

DIMENSIONS ARE IN MM UNLESS NOTED
DO NOT SCALE DRAWING

SIZE B | DWG. NO. Post Connection - Option 6

SCALE: | SHT REV 2016-06-01-A