

PROGUARDS[®]

PROVEN. PRO-GRADE. PROTECTION.

INSTALLATION MANUAL



WARNING

Users **MUST** read and fully understand the installation manual before installing this guardrail system. Failure to follow installation instructions could result in serious injury or death.

To avoid injury or death users **MUST ALWAYS** use the fasteners outlined in the installation manual.

Failure to do so may result in serious injury or death.

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IMPORTANT

Follow the instructions below for sourcing the proper fasteners based on the substrate material and thickness of your installation application. Failure to do so could result in serious injury and/or death.

DO NOT USE PROGUARDS IN THE FOLLOWING SCENARIOS:

- In cracked or damaged substrate.
- On slanted or pitched surfaces such as angled roofs.
- On substrates not listed in the manual unless reviewed by a professional engineer.
- The ProGuards' post, rail hooks and/or base show visible signs of damage.
- The person installing the guardrail system has not read the instruction manual.
- The application is in a country outside North America with stricter compliance loads than what is rated for.
- An application other than a temporary guardrail system without engineer approval.

TABLE 1: APPROVED SUBSTRATES AND FASTENER SPECIFICATIONS

Substrate Material	Substrate Thickness	Fastener Specifications	Screw Pattern (See Appendix A)
Solid Wood (2X Lumber)	1" or greater	Min. 1.5" #14 (1/4") lag screw	4-Screw Pattern*
Concrete	Greater than 3"	Min. of 3/16" by 1.5" masonry fastener	4-Screw Pattern
Plywood	5/8" or thicker	Min. 2" #14 (1/4") lag screw	8-Screw Pattern
Plywood	Less than 5/8" thick	Min. 2" #14 (1/4") lag screw	Screw Pattern A, B, C, D, E or F
OSB	Any thickness	Min. 2" #14 (1/4") lag screw	Screw Pattern A, B, C, D, E or F

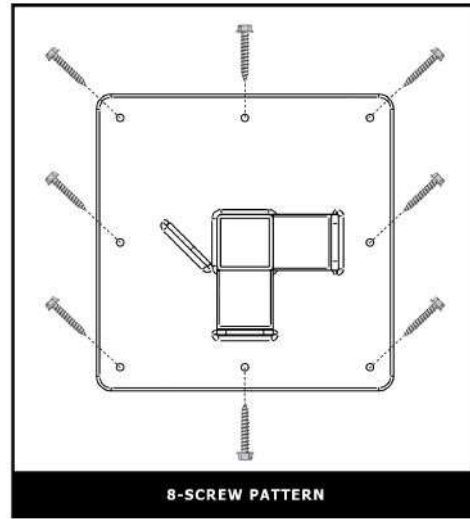
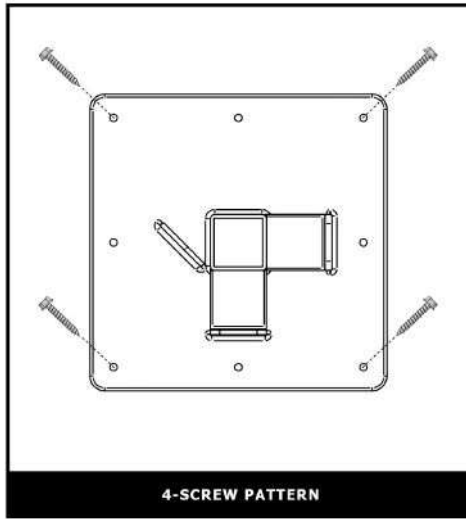
WARNING! Users using any substrate and/or fasteners other than what is listed above **MUST** verify with a professional engineer that the assembled system can withstand the required load parameters.

*Canada; Use 8-Screw Pattern for Stair Rails Installed in BC & YT.

IMPORTANT: Lag screws must be fully threaded with no sleeve like this:

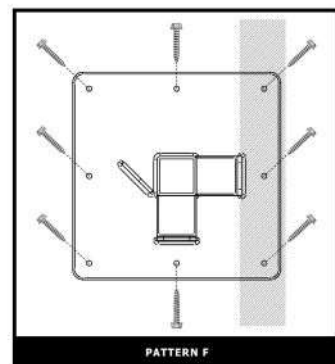
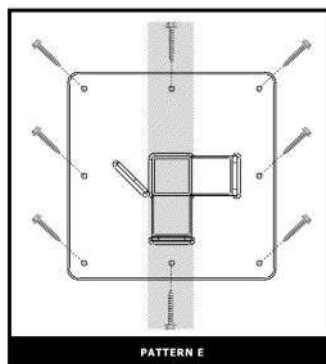
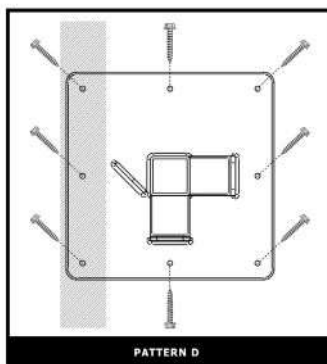
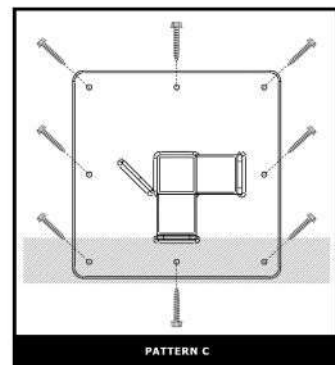
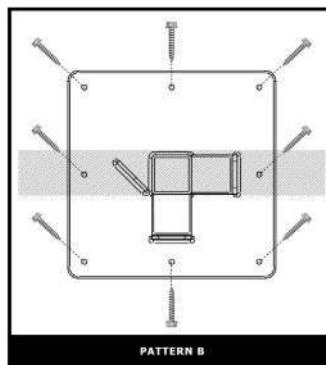
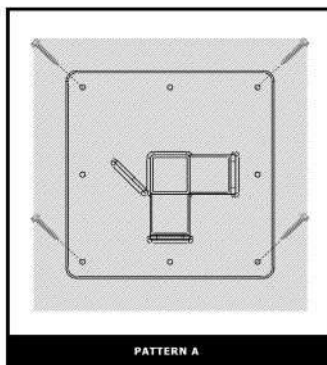


Users must follow Table 1 above to determine and use the proper screw pattern for their application.



Solid Wood Back Bracing Screw Patterns when Fastening to OSB or Plywood less than 5/8" Thick

Use any of the back bracing screw patterns below when fastening ProGuards bases to any thickness of OSB substrate or plywood that is less than 5/8" thick as the fasteners will not provide adequate pull out strength in these substrates alone.



= 2 x 10 or 2 x 12 Lumber

= floor joist or solid wood lumber

FIGURE 1: FASTENING WOODEN RAILS TO POST HOOKS

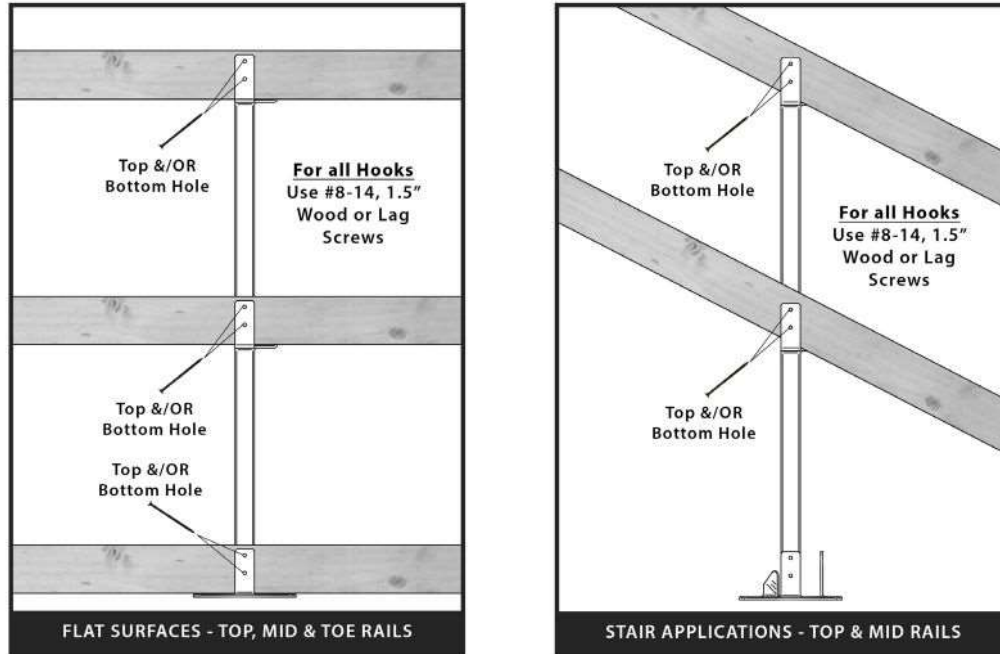


FIGURE 2: COUPLING RAILS FOR LONG SPANS

Use (2) #8-14, 3" wood screws to fasten the coupled board. Overhang the board between 3-6" past the post hook. The coupled board should be fastened on the safe side of the guardrail system

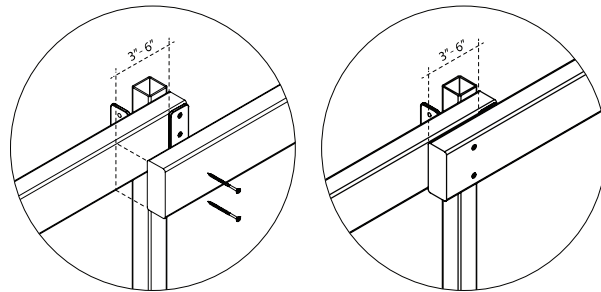
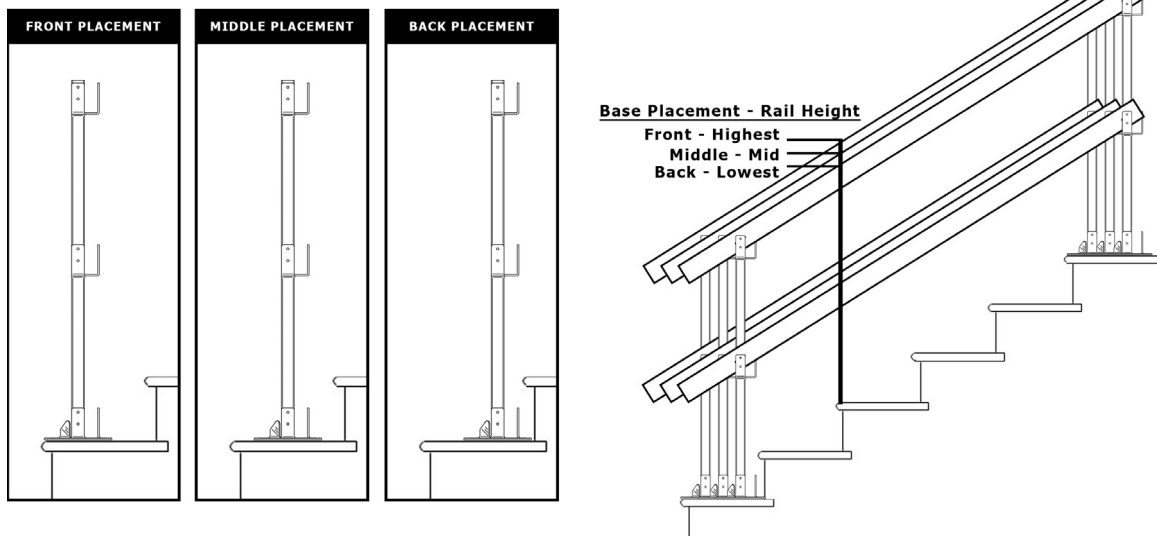
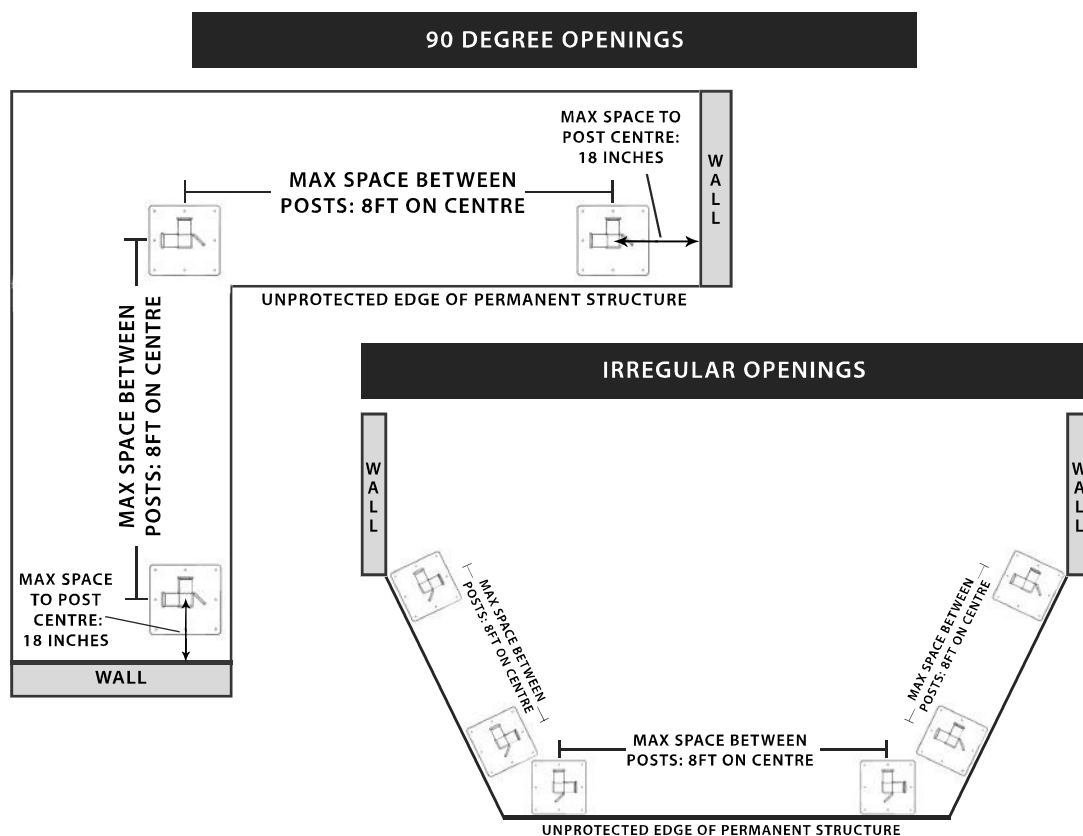
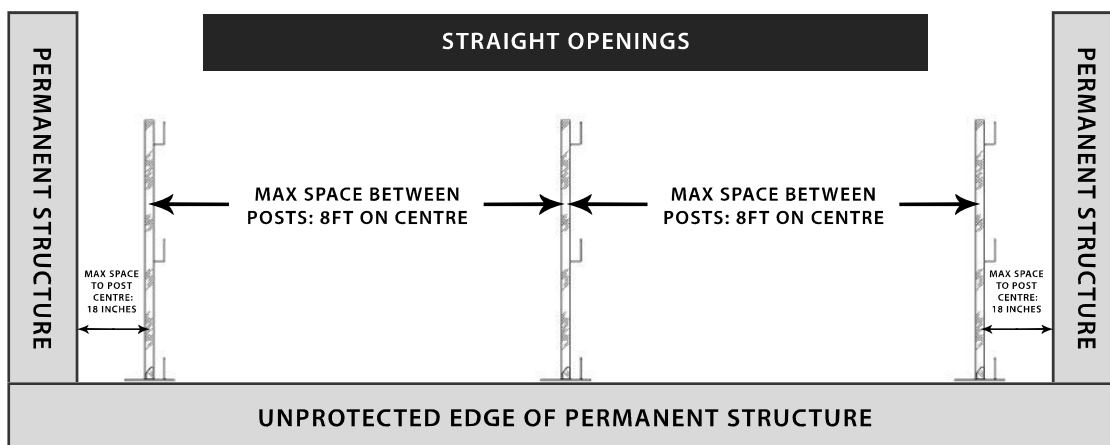


FIGURE 3: ADJUSTING HANDRAIL HEIGHT



Step 1 – Base Placement: Align posts in a straight line parallel to the exposed edge so that the post hooks are facing away from the opening or fall hazard. Ensure posts are a maximum of 8ft apart on centers and the posts closest to structural walls are a maximum of 18” from the centre of the post to the wall.

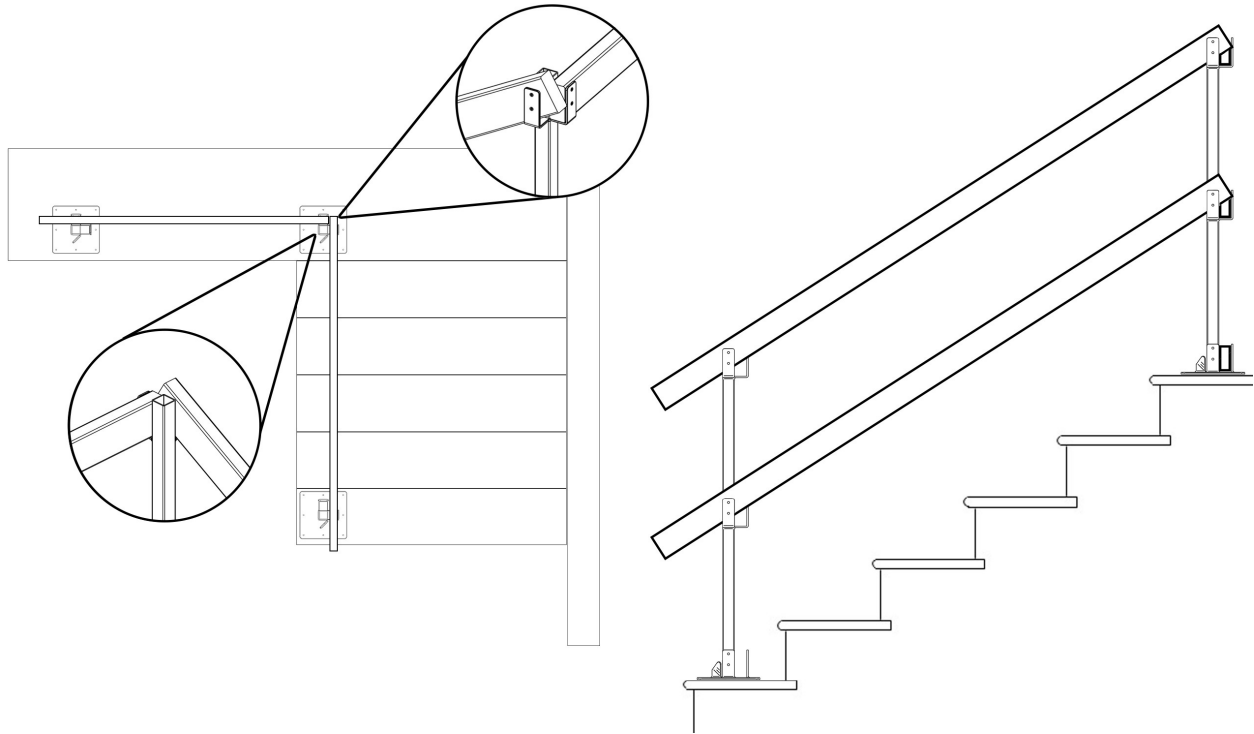


Step 2 – Fasten Base: Reference **Table 1** and determine the proper fasteners and screw pattern for your application. Screw in the fasteners to each base plate following the applicable screw pattern in Table 1.

Step 3 – Cut Wooden Rails to Length: Determine required lengths of rails for each section and cut to length. **IMPORTANT:** Use construction grade 2x4 or 2x6 lumber that is free from any splinters and sharp or rough edges for the rails.

Step 4 – Fasten Rails to Posts: Insert wooden rails into post hooks and fasten as per **Figure 1** on page 3.

Step 1 – Base Placement: Align posts in a straight line parallel to the leading edge of both the flat and stair surfaces so that the post hooks are facing away from the opening or fall hazard. Ensure posts are a maximum of 8ft apart on center. For any 90-degree corners, ensure the hooks are in the proper direction for board placement as shown below.



Step 2 – Fasten Base: Reference **Table 1** and determine the proper fasteners and screw pattern for your application. Screw in the fasteners to each base plate following the applicable screw pattern in Table 1.

Step 3 – Cut Wooden Rails to Length: Determine required lengths of rails for each section and cut to length. **IMPORTANT:** Use construction grade 2x4 or 2x6 lumber that is free from any splinters and sharp or rough edges for the rails.

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Step 2 – Fasten Base: Reference **Table 1** and determine the proper fasteners and screw pattern for your application. Screw in the fasteners to each base plate following the applicable screw pattern in **Table 1**.

Step 3 – Rail Assembly: Follow Step 1-10 below for both the top and mid rails.

RAIL ASSEMBLY

Step 1: Place rail at proper terminal length and hold in place.

Step 2: Mark cut lines using the next post's hook and cut.

Step 3: Fasten rail as per **Figure 1** on pg. 3.

Step 4: Place rail so top corner aligns with face of the post hook.

Step 5: Mark cut lines using the next post's hook and cut.

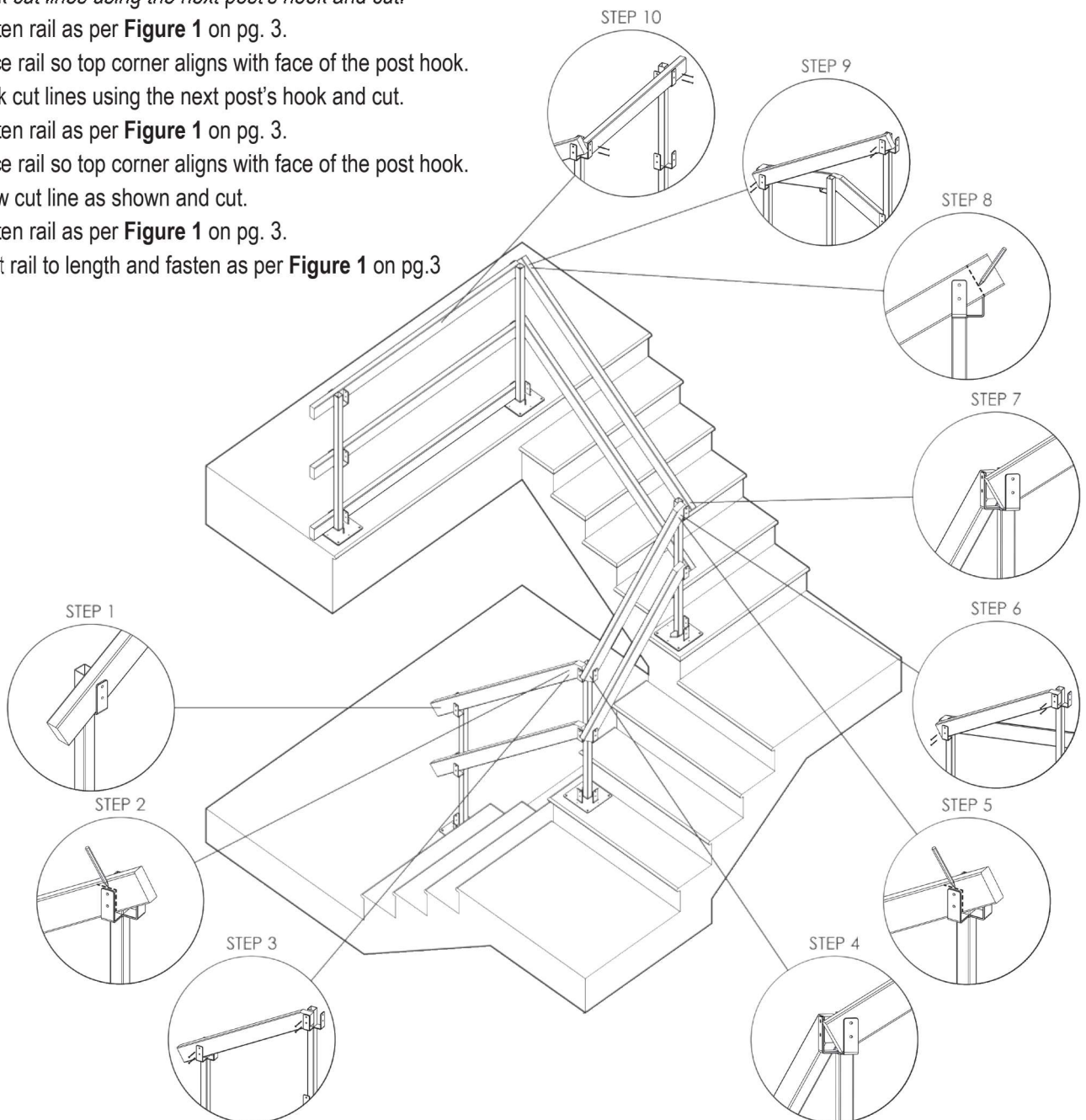
Step 6: Fasten rail as per **Figure 1** on pg. 3.

Step 7: Place rail so top corner aligns with face of the post hook.

Step 8: Draw cut line as shown and cut.

Step 9: Fasten rail as per **Figure 1** on pg. 3.

Step 10: Cut rail to length and fasten as per **Figure 1** on pg.3



Requested by: BuilderGear Corporation

Tested by: Infinity Testing Solutions Inc.

David Wang P.Eng.


January 23, 2019

At the request of BuilderGear Corporation, Infinity Testing Solutions (ITS) conducted non-destructive and destructive testing of ProGuards temporary guardrail posts to verify compliance with the Occupational Health and Safety regulations in all Canadian provinces and territories and with the Federal OSHA 1926.502 & 1926.1052 regulations in the United States. The tests performed exposed the assembled guardrail system to a series of compliance loads in a variety of directions and base assembly configurations. Included is a summary of the relevant tests performed and the results.

Ultimate stress tests concluded that the steel ProGuards post alone can withstand every applicable compliance load in both Canada and the United States. However, the strength of the assembled guardrail system varies based on the number and type of base fasteners used and the material in which the bases are fastened. All thicknesses of OSB and plywood thinner than $\frac{5}{8}$ " had insufficient pull out strength to achieve all compliance loads on their own and required supplemental solid wood back bracing for fasteners to adhere to. The compliant back bracing configuration patterns are listed in Appendix A.

When assembled in accordance to Table 1 and the applicable installation steps in this manual, ProGuards temporary guardrail system will exceed all applicable Occupational Health and Safety regulations in Canada and the Federal OSHA 1926.502 & 1926.1052 regulations in the United States for both guardrail and stair rail applications.

Reviewed by:


David Wang, P.Eng.



Summary of Test Performed by Infinity Testing Solutions

Test #	ITS Sample #	Base Material	Span	Loading Location	Loading Direction	Compliance Load (lbs)	Applied Load (lbs)	Result
1	180130366A	5/8" OSB	2 Posts 8' apart	Top Rail – Midpoint	Lateral	200	200	Pass
2	180130366C	5/8" OSB	2 Posts 8' apart	Top Rail – Midpoint	Vertical	200	200	Pass
3	180130366D	5/8" OSB	2 Posts 8' apart	Top Rail – 2" from Post	Vertical	200	200	Pass
4	180130366E	5/8" OSB	2 Posts 8' apart	Mid Rail – Midpoint	Lateral	200	200	Pass
5	180130366G	5/8" OSB	2 Posts 8' apart	Mid Rail – Midpoint	Vertical	200	200	Pass
6	180130366F	5/8" OSB	2 Posts 8' apart	Mid Rail – 2" from Post	Lateral	200	200	Pass
7	180130366H	5/8" OSB	2 Posts 8' apart	Mid Rail – 2" from Post	Vertical	200	200	Pass
8	180130366I	5/8" OSB	2 Posts 8' apart	Toe Board - Midpoint	Lateral	200	200	Pass
9	180130366J	5/8" OSB	2 Posts 8' apart	Toe Board – 2" from Post	Lateral	200	200	Pass
10	180130366V	5/8" OSB - Pattern A	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	200	200	Pass
11	180130366Y	5/8" OSB - Pattern B	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	200	200	Pass
12	180130366Z	5/8" OSB - Pattern D	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	200	200	Pass
13	180130366W	5/8" OSB - Pattern E	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	200	200	Pass
14	180130366X	5/8" Plywood	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	200	200	Pass
15	180130366O	2" by 10" Solid Wood	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	300	330	Pass
16	180130366P	2" by 10" Solid Wood	2 Posts 8' apart	Top Rail – 2" from Post	Vertical	300	300	Pass
17	180130366Q	2000 PSI Concrete	2 Posts 8' apart	Top Rail – 2" from Post	Lateral	200	432	Pass
18	180130366T	Steel T-Slot Plate	3 Posts 8' + 8'	Top Rail Coupled – 2" from Post	Lateral	Ultimate Load	457	Pass
19	180130366R	Steel T-Slot Plate	Single Post	Top Rail Hook	Lateral	Ultimate Load	520	Pass
20	180130366S	Steel T-Slot Plate	Single Post	Top Rail Hook	Vertical	Ultimate Load	1,566	Pass