

DIVISION: 05 00 00 METALS

Section: 05 14 00 Structural Aluminum Framing

REPORT HOLDER:

AZEK Building Products LLC

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Wilmington, OH 45177

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REPORT SUBJECT: *TimberTech Aluminum Framing*

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2021, 2018 *International Residential Code*® (IRC)
- 2021, 2018 *International Building Code*® (IBC)

NOTE: This report references the most recent Code editions cited. Section Numbers in earlier editions may differ.

1.2 *TimberTech Aluminum Framing* has been evaluated for the following properties:

- Structural Performance

1.3 *TimberTech Aluminum Framing* has been evaluated for the following uses:

- As described in this report, *TimberTech Aluminum Framing* is an extruded aluminum framing system used as the structural framing of an exterior deck.
- Installations shall be limited to detached one- and two-family dwellings and townhouses not more than three stories above grade.

2.0 STATEMENT OF COMPLIANCE

TimberTech Aluminum Framing complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.0.

3.0 DESCRIPTION

3.1 *TimberTech Aluminum Framing* is an assemblage of extruded aluminum components manufactured from 6063-T6 aluminum with a powder coat finish, installed with metal brackets, hangers, and fasteners.

3.2 Field joists, end joists, rim joists, ledgers and stair stringers are manufactured from 6063-T6 aluminum extrusions. See Figure 2 and Figure 3 for nominal section profiles.

3.3 Beams are manufactured from 6063-T6 aluminum extrusions. See Figure 4 for nominal section profile.

3.4 Support posts are manufactured from 6063-T6 aluminum extrusions in a 5.5-inch square cross-section. See Figure 5 for nominal section profile.

3.5 Brackets and connectors are manufactured from 6063-T6 aluminum.

- Field joist hanger (Figure 2), rim joist hanger (Figure 3), and joist spacer (Figure 6).
- 90-degree angle brackets, 135-degree angle bracket, and adjustable angle bracket (6063-T52). See Figure 7.
- Post cap and post base. See Figure 8.
- Post-to-beam full bracket and post-to-beam / joist-to-beam clip. See Figure 9.
- Rail post L-bracket. See Figure 10.
- Uplift key, rim joist end cover, beam end cover, and rim joist template. See Figure 11.

3.6 Stair treads (Figure 12) and stair stringers (Figure 3) are manufactured from 6063-T6 aluminum.

3.7 Stair landing L-brackets and stair stringer brackets are manufactured from 6063-T6 aluminum. See Figure 13.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Allowable maximum spans for joists are given in Tables 4 thru 8 with respect to joist spacing of 12 or 16



inches o.c. See Figure 1 for assembly and definition of joist spans.

4.2 Allowable maximum design loads for beams are given in Tables 9 thru 14 with respect to joist spans and beam spans. See Figure 1 for assembly and definition of beam spans.

4.3 Allowable maximum heights for aluminum support posts are given in Tables 15 thru 19.

4.4 TimberTech Aluminum Framing details of construction are presented in Tables 1 thru 3 and Figures 14 thru 23.

5.0 INSTALLATION

5.1 General: *TimberTech Aluminum Framing* must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 See Table 1 for *TimberTech Aluminum Framing* fastening schedule. Screws shall extend through the main member a minimum of three exposed threads.

5.3 Joists bear on the top flange of the beam (dropped beam construction). Beams are attached to aluminum support posts using single and double beam post brackets as illustrated in Figure 15. Wood support posts are outside the scope of this report.

5.4 *TimberTech Aluminum Framing* details for stair construction are presented in Table 2 and Figures 18 to 20

5.5 *TimberTech Aluminum Framing* details for guard support posts are presented in Table 3 and Figures 21 to 22.

5.6 Splicing of joists is outside the scope of this report.

5.7 Deck framing lateral load resistance is provided by applied deck boards. Established lateral load resistance capacities are presented in Table 20.

5.8 Deck framing anchorage for lateral load is provided by Simpson S/DTT2Z Deck Tension Tie as specified in Table 1 and Figure 21. See Paragraph 6.2.1.

5.9 Deck boards shall be directly fastened to each joist.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict, this report governs.

6.2 *TimberTech Aluminum Framing* identified in this report, is deemed to comply with the intent of the provisions of the referenced building codes subject to the following conditions in 6.2.1 through 6.2.3:

6.2.1 Additional design and construction are required for anchorage of lateral loads to the primary framing in accordance with IRC Sections R507.1 and R507.2, and IBC Section 1604.8.3.

6.2.2 Wind uplift capacity of the deck boards and deck board fasteners shall be demonstrated to the building official's satisfaction.

6.2.3 Anchorage of the support posts is outside the scope of this report and shall be performed by a qualified engineer in accordance with the referenced codes. Where required by the building official, engineering calculations shall verify that the anchorage complies with the building code for the type of framing and condition of the supporting construction.

6.3 *TimberTech Aluminum Framing* is manufactured under a quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Manufacturer's drawings and installation instructions.

7.2 Reports of engineering analysis in accordance 2020 Aluminum Design Manual.

7.3 Reports of testing in accordance with 2020 Aluminum Design Manual.

7.4 Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report.





7.5 Intertek Listing Report *TimberTech Aluminum Framing* on the [Intertek Directory of Building Products](#)



8.0 IDENTIFICATION

8.1 *TimberTech Aluminum Framing* components produced in accordance with this report shall be identified with a legible label, stencil, stamp or embossment with the following information:

- Manufacturer’s identification (AZEK Building Products LLC);
- The product name (*TimberTech Aluminum Framing*);
- The Intertek Mark as shown below;
- Code Compliance Research Report number (CCRR-0523).

9.0 OTHER CODES

This section is not applicable.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the <https://bpdirectory.intertek.com> is recommended to ascertain the current version and status of this report.

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TABLE 1 – DECK FRAMING FASTENING SCHEDULE

Connection	Figure	Fastening Description
Rim Joist to Wood Ledger	Figure 14	<ul style="list-style-type: none"> Pre-drill through both walls of the Rim Joist with a 5/16" or 3/8" drill bit, using the v-notches for vertical alignment. Alternate screws every 8", placing one high and one low across the Rim Joist in a "W" pattern, other pattern necessary for design loads. See Table 6. Secure Rim Joist to wood ledger with 5/16-7 x 3-5/8" or 5-1/2" LedgerLOK anchor screw at each pre-drilled hole in Rim Joist. Flashing is required between the aluminum ledger and the house rim board or supporting structure.
Post Base		<ul style="list-style-type: none"> Attach Post Base to pre-installed foundation (poured concrete footing, precast concrete footing, helical pile, or alternate type pier) using a threaded J-Bolt, or other approved fastening method. Foundation and attachment to foundation shall be in accordance with local requirements and per specification provided by licensed design professional. Place each Post by sliding the 2" Post Base tabs into the Post slots. Use six (6) 1/4-20 x 1" min. self-drilling screws to secure each Post to the Post Base, drilling through the Post and into 2" Post Base tabs. Use three (3) screws to opposite sides of post. 1/4-20 x 1" min. screws may be hex head screws or countersunk flat head screws.
Post Cap	Figure 15	<ul style="list-style-type: none"> Insert a Post Cap into each Post and secure with four (4) 1/4-20 x 1.25" flat head screws at each countersunk hole.
Beam to Post (Single Beam)	Figure 15	<ul style="list-style-type: none"> Install Beam Full Bracket on the front side of each Beam/Post intersection. Ensure the front of the Beam is flush with the front edge of the Post. Secure Beam Full Bracket to Post with two (2) 1/4-20 x 1.25" flat head screws. Secure Beam Full Bracket to Beam with two (2) 1/4-20 x 1.25" flat head screws. Secure Beam Clip to Beam with one (1) 1/4-20 x 1.25" hex head screw. Secure Beam Clip to Post Cap with two (2) 1/4-20 x 1.25" hex head screws. For beam splices sharing a single post, install a Beam Clip to each Beam.
Beam to Post (Double Beam)	Figure 15	<ul style="list-style-type: none"> Install Beam Full Bracket on the front side and back side of each Beam/Post intersection. Ensure the front of the Beam is flush with the front edge of the Post. Secure each Beam Full Bracket to Post with two (2) 1/4-20 x 1.25" flat head screws. Secure each Beam Full Bracket to each Beam with two (2) 1/4-20 x 1.25" flat head screws.
End Joist to Rim Joist	Figure 16	<ul style="list-style-type: none"> Attach Rim Joist Corner Template to each end of Rim Joists with two (2) 1/4-20 x 1.25" flat head screws. Fasten Rim Joist Hanger to each end of End Joist with two (2) 1/4-20 hex head screws. End Joists are hung on Rim Joist; snug to Rim Joist Corner Template. Secure End Joist to Rim Joist with Short Corner Bracket and four (4) 1/4-20 x 1.25" screws. For angled End Joist, secure End Joist to Rim Joist with Adjustable Angle Bracket and four (4) 1/4-20 x 1.25" screws.
Field Joist to Rim Joist	Figure 16	<ul style="list-style-type: none"> Fasten Field Joist Hanger to each end of Field Joist with two (2) 1/4-20 x 1.25" hex head screws. Hang Field Joist on Rim Joist; specified spacing is set with Joist Spacer. Insert Uplift Key through top opening of Joist Hanger. Install Joist Spacer to both sides of Field Joist to prevent Uplift Key movement. For angled Field Joist, secure Field Joist to Rim Joist with Adjustable Angle Bracket and four (4) 1/4-20 x 1.25" screws.





TABLE 1 (CONTINUED) – DECK FRAMING FASTENING SCHEDULE

Connection	Figure	Fastening Description
Joist to Beam	Figure 17	<ul style="list-style-type: none"> At every Joist to Beam connection, place Beam Clip such that bottom lip of joist is snug under the step of the Beam Clip. Secure Beam Clip to Joist with one (1) 1/4-20 x 1.25" hex head screw. Secure Beam Clip to Beam with two (2) 1/4-20 x 1.25" hex head screws.
Lateral Load Tieback	Figure 14	<ul style="list-style-type: none"> Use Simpson S/DTT2Z Deck Tension Tie. Secure Deck Tension Tie to side of Field Joist with eight (8) 1/4-20 x 1-1/4 hex head screws. Secure Deck Tension Tie to building floor joist in accordance with tieback manufacturer's installation instructions.

TABLE 2 – STAIR FRAMING FASTENING SCHEDULE

Connection	Figure	Fastening Description
Stair Stringer to Deck Frame	Figure 18	<ul style="list-style-type: none"> Prepare right and left stair stringers from Rim Joist profiles. For the right stair stringer, orient the Stair Landing L-Bracket so the "Top Right" arrow is snug against the "hook" of the stair stringer. Use three (3) 1/4-20 hex head screws to fasten it to the stair stringer and three (3) 1/4-20 hex head screws to fasten to the deck frame landing (Rim Joist or End Joist). Repeat for left stringer.
Stair Stringer to Landing	Figure 19	<ul style="list-style-type: none"> Fit a Stair Landing L-Bracket with the cavity of the stringer and secure with three (3) 1/4-20 hex head screws. Secure Stair Landing L-Bracket to landing with anchorage appropriate for the landing substrate.
Stair Tread Bracket	Figure 20	<ul style="list-style-type: none"> At the right stair stringer, align a Right Stair Tread Bracket with the top of the deck. Secure with two (2) 1/4-20 hex head screws. Align next Right Stair Tread Bracket on the stringer and tight to the preceding Stair Tread Bracket. Secure with two (2) 1/4-20 hex head screws. Repeat for entire length of stringer. Repeat for Left stringer.
Stair Tread	Figure 21	<ul style="list-style-type: none"> Carefully push the Front Stair Tread onto the ledge provided by the Stair Tread Brackets. Place the Back Stair Tread on the Stair Tread Brackets and interlock with the Front Stair Tread. Secure Back Stair Tread to each Stair Tread Bracket with two (2) 1/4-20 hex head screws.





TABLE 3 – GUARD POST FASTENING SCHEDULE

Connection	Figure	Fastening Description
Rail Post L-Bracket to Field Joist	Figure 21	<ul style="list-style-type: none">• Place Rail Post L-Bracket against Rim Joist such that top of Rail Post L-Bracket is flush with top of Field Joist.• Secure Rail Post L-Bracket to Rim Joist with four (4) 1/4-20 x 1-1/4" hex head screws.• Place Field Joist Blocking to support end of Rail Post L-Bracket.• Install deck board in accordance with deck board manufacturer's installation instructions.
Post Mount Base	Figure 22	<ul style="list-style-type: none">• Drill four holes through deck board that are aligned with the holes in the Rail Post L-Bracket and the Post Mount Base.• Secure Post Mount Base to Rail Post L-Bracket with four (4) 3/8-16 x 2-1/2" hex head bolts with washers, lock washer and nut.



TABLE 4 – FIELD JOIST (TFFJ) AND END JOIST (TFRJ)¹ ALLOWABLE SPANS – 40 PSF LIVE LOAD

DL/LL (psf)	SL (psf)	Joist Spacing (L/360 Deflection Limit)		Joist Spacing (L/240 Deflection Limit)		Joist Spacing (L/180 Deflection Limit)	
		12"	16"	12"	16"	12"	16"
With Joist Hanger							
10/40	0	17' 4"	15' 9"	19' 11"	18' 1"	21' 11"	19' 11"
	40	17' 4"	15' 9"	19' 11"	18' 1"	21' 11"	19' 11"
	100	15' 1"	11' 4"	15' 1"	11' 4"	15' 1"	11' 4"
	150	10' 5"	7' 9"	10' 5"	7' 9"	10' 5"	7' 9"
	200	7' 11"	5' 11"	7' 11"	5' 11"	7' 11"	5' 11"
30/40	0	17' 4"	15' 9"	19' 11"	17' 9"	21' 11"	17' 9"
	40	17' 4"	15' 9"	19' 11"	17' 9"	21' 11"	17' 9"
	100	12' 9"	9' 7"	12' 9"	9' 7"	12' 9"	9' 7"
	150	9' 3"	6' 11"	9' 3"	6' 11"	9' 3"	6' 11"
	200	7' 3"	5' 5"	7' 3"	5' 5"	7' 3"	5' 5"
With Tall L-Bracket							
10/40	0	17' 4"	15' 9"	19' 11"	18' 1"	21' 11"	19' 6"
	40	17' 4"	15' 9"	19' 11"	18' 1"	21' 11"	19' 6"
	100	11' 10"	8' 11"	11' 10"	8' 11"	11' 10"	8' 11"
	150	8' 2"	6' 1"	8' 2"	6' 1"	8' 2"	6' 1"
	200	6' 2"	4' 8"	6' 2"	4' 8"	6' 2"	4' 8"
30/40	0	17' 4"	13' 11"	18' 7"	13' 11"	18' 7"	13' 11"
	40	17' 4"	13' 11"	18' 7"	13' 11"	18' 7"	13' 11"
	100	10' 0"	7' 6"	10' 0"	7' 6"	10' 0"	7' 6"
	150	7' 3"	5' 5"	7' 3"	5' 5"	7' 3"	5' 5"
	200	5' 8"	4' 3"	5' 8"	4' 3"	5' 8"	4' 3"
With Adjustable Bracket or Short L-Bracket							
10/40	0	17' 3"	13' 0"	17' 3"	13' 0"	17' 3"	13' 0"
	40	17' 3"	13' 0"	17' 3"	13' 0"	17' 3"	13' 0"
	100	7' 10"	5' 11"	7' 10"	5' 11"	7' 10"	5' 11"
	150	5' 5"	4' 1"	5' 5"	4' 1"	5' 5"	4' 1"
	200	4' 1"	3' 1"	4' 1"	3' 1"	4' 1"	3' 1"
30/40	0	12' 4"	9' 3"	12' 4"	9' 3"	12' 4"	9' 3"
	40	12' 4"	9' 3"	12' 4"	9' 3"	12' 4"	9' 3"
	100	6' 8"	5' 0"	6' 8"	5' 0"	6' 8"	5' 0"
	150	4' 10"	3' 7"	4' 10"	3' 7"	4' 10"	3' 7"
	200	3' 9"	2' 10"	3' 9"	2' 10"	3' 9"	2' 10"

Notes

1. End Joist shall only be used at end or within 12" of end joist (Picture Frame framing). If End Joist used for Picture Frame framing, all spans shall be based on 16" joist spacing.
2. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
3. Spans shown are for single span condition and are limited by allowable bending; allowable end shear or reaction. Live loads shown are limited by all the same criteria, or by deflection limit of the span (L)/360 or (L)/240 based on live load alone.
4. Spans are based on continuous support of compression flange over the full length of the joist.
5. Rim joist anchorage to building shall be sufficient for loads and spans indicated. See Table 6.



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TABLE 5 – FIELD JOIST (TFFJ) AND END JOIST (TFRJ)¹ ALLOWABLE SPANS – 100 PSF LIVE LOAD

DL/LL (psf)	SL (psf)	Joist Spacing (L/360 Deflection Limit)		Joist Spacing (L/240 Deflection Limit)		Joist Spacing (L/180 Deflection Limit)	
		12"	16"	12"	16"	12"	16"
With Joist Hanger							
10/100	0	12' 10"	11' 4"	14' 8"	11' 4"	15' 1"	11' 4"
	40	12' 10"	11' 4"	14' 8"	11' 4"	15' 1"	11' 4"
	100	12' 10"	11' 4"	14' 8"	11' 4"	15' 1"	11' 4"
	150	10' 4"	7' 9"	10' 4"	7' 9"	10' 4"	7' 9"
	200	7' 11"	5' 11"	7' 11"	5' 11"	7' 11"	5' 11"
30/100	0	12' 9"	9' 7"	12' 9"	9' 7"	12' 9"	9' 7"
	40	12' 9"	9' 7"	12' 9"	9' 7"	12' 9"	9' 7"
	100	12' 9"	9' 7"	12' 9"	9' 7"	12' 9"	9' 7"
	150	9' 3"	6' 11"	9' 3"	6' 11"	9' 3"	6' 11"
	200	7' 3"	5' 5"	7' 3"	5' 5"	7' 3"	5' 5"
With Tall L-Bracket							
10/100	0	11' 10"	8' 10"	11' 10"	8' 10"	11' 10"	8' 10"
	40	11' 10"	8' 10"	11' 10"	8' 10"	11' 10"	8' 10"
	100	11' 10"	8' 10"	11' 10"	8' 10"	11' 10"	8' 10"
	150	8' 2"	6' 1"	8' 2"	6' 1"	8' 2"	6' 1"
	200	6' 2"	4' 8"	6' 2"	4' 8"	6' 2"	4' 8"
30/100	0	10' 0"	7' 6"	10' 0"	7' 6"	10' 0"	7' 6"
	40	10' 0"	7' 6"	10' 0"	7' 6"	10' 0"	7' 6"
	100	10' 0"	7' 6"	10' 0"	7' 6"	10' 0"	7' 6"
	150	7' 3"	5' 5"	7' 3"	5' 5"	7' 3"	5' 5"
	200	5' 8"	4' 3"	5' 8"	4' 3"	5' 8"	4' 3"
With Adjustable Bracket or Short L-Bracket							
10/100	0	7' 10"	5' 11"	7' 10"	5' 11"	7' 10"	5' 11"
	40	7' 10"	5' 11"	7' 10"	5' 11"	7' 10"	5' 11"
	100	7' 10"	5' 11"	7' 10"	5' 11"	7' 10"	5' 11"
	150	5' 5"	4' 1"	5' 5"	4' 1"	5' 5"	4' 1"
	200	4' 1"	3' 1"	4' 1"	3' 1"	4' 1"	3' 1"
30/100	0	6' 8"	5' 0"	6' 8"	5' 0"	6' 8"	5' 0"
	40	6' 8"	5' 0"	6' 8"	5' 0"	6' 8"	5' 0"
	100	6' 8"	5' 0"	6' 8"	5' 0"	6' 8"	5' 0"
	150	4' 10"	3' 7"	4' 10"	3' 7"	4' 10"	3' 7"
	200	3' 9"	2' 10"	3' 9"	2' 10"	3' 9"	2' 10"

Notes

1. End Joist shall only be used at end or within 12" of end joist (Picture Frame framing). If End Joist used for Picture Frame framing, all spans shall be based on 16" joist spacing.
2. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
3. Spans shown are for single span condition and are limited by allowable bending; allowable end shear or reaction. Live loads shown are limited by all the same criteria, or by deflection limit of the span (L)/360 or (L)/240 based on live load alone.
4. Spans are based on continuous support of compression flange over the full length of the joist.
5. Rim joist anchorage to building shall be sufficient for loads and spans indicated. See Table 6.



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TABLE 6 – JOIST SPAN LIMITS FOR LEDGERLOK FASTENING TO WOOD LEDGER

Design Loads (DL/LL/SL)	Fastening Pattern	
	8" High/Low	Pairs 8" On-Center
10 / 40 / 0	13' 2"	21' 11"
10 / 40 / 40	15' 2"	21' 11"
10 / 40 / 100	6' 11"	13' 10"
10 / 40 / 150	4' 9"	9' 6"
10 / 40 / 200	3' 7"	7' 3"
30 / 40 / 0	9' 5"	18' 10"
30 / 40 / 40	10' 10"	21' 8"
30 / 40 / 100	5' 10"	11' 8"
30 / 40 / 150	4' 3"	8' 5"
30 / 40 / 200	3' 4"	6' 7"
10 / 100 / 0	6' 0"	12' 0"
10 / 100 / 40	6' 11"	13' 10"
10 / 100 / 100	6' 11"	13' 10"
10 / 100 / 150	4' 9"	9' 6"
10 / 100 / 200	3' 7"	7' 3"
30 / 100 / 0	5' 1"	10' 2"
30 / 100 / 40	5' 10"	11' 8"
30 / 100 / 100	5' 10"	11' 8"
30 / 100 / 150	4' 3"	8' 5"
30 / 100 / 200	3' 4"	6' 7"

Notes

1. LedgerLOK fastener use shall be in accordance with ESR-1078.
2. A registered design professional shall determine anchorage to wood ledger for designs not covered by Table 6.
3. A registered design professional shall determine anchorage to wood ledger for anchors other than LedgerLOK anchors.

TABLE 7 – FIELD JOIST (TFFJ) AND END JOIST (TFRJ)¹ ALLOWABLE CANTILEVER SPANS

DL/LL (psf)	Deflection Limit L/360 Joist Spacing		Deflection Limit L/240 Joist Spacing		Deflection Limit L/180 Joist Spacing	
	12"	16"	12"	16"	12"	16"
10 / 40	3' 9"	3' 5"	4' 0"	3' 11"	4' 0"	4' 0"
30 / 40	3' 9"	3' 5"	4' 0"	3' 11"	4' 0"	4' 0"
10 / 100	2' 9"	2' 6"	3' 2"	2' 10"	3' 6"	3' 2"
30 / 100	2' 9"	2' 6"	3' 2"	2' 10"	3' 6"	3' 2"

Notes

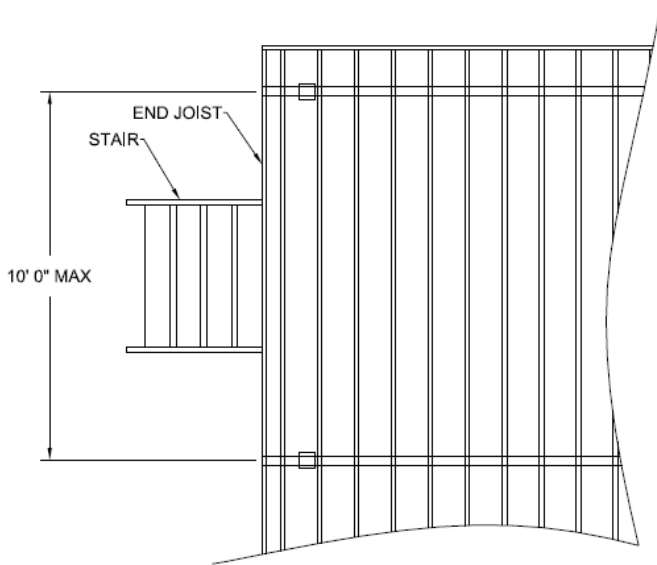
1. End Joist shall only be used at end or within 12" of end joist.
2. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
3. Minimum back span must be 8' 0". Maximum back span cannot exceed allowable spans presented in Table 2



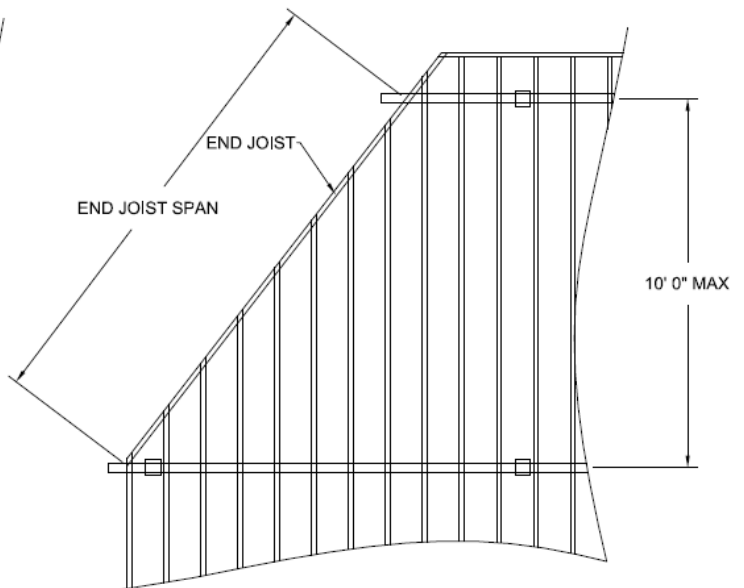


TABLE 8 – SPECIAL END JOIST (TFRJ) CONDITIONS

Condition	Limitations
End Joist Supporting Stair Stringer (see sketch below)	Maximum span of End Joist from Rim Joist to Beam: 10' 0" Maximum span of End Joist from Beam to Beam: 10' 0"
End Joist As Beam (see sketch below)	End Joist as Beam Loaded to One Side Only Maximum Span of Joist Framing to End Joist: 10' 0" Allowable Total Load for 8' Beam Span: 100 psf Allowable Total Load for 12' Beam Span: 40 psf End Support of End Joist requires review by registered design professional.



STAIR AT END JOIST



END JOIST AS BEAM





TABLE 9 – BEAM (TFBEAM) ALLOWABLE LOADS FOR EXTERIOR SINGLE BEAMS LOADED TO ONE SIDE

Total Allowable Load (psf)										
12' 0" Joist Span One Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	408	299	229	181	147	121	102	87	75	65
L/360	408	299	229	168	122	92	71	56	45	-
L/240	408	299	229	181	147	121	102	83	67	54
L/180	408	299	229	181	147	121	102	87	75	65
16' 0" Joist Span One Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	306	225	172	136	110	91	76	65	56	49
L/360	306	225	172	126	92	69	53	42	-	-
L/240	306	225	172	136	110	91	76	63	50	41
L/180	306	225	172	136	110	91	76	65	56	49
20' 0" Joist Span One Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	245	180	138	109	88	73	61	52	45	-
L/360	245	180	138	101	73	55	42	-	-	-
L/240	245	180	138	109	88	73	61	50	40	-
L/180	245	180	138	109	88	73	61	52	45	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values less than minimum Total Allowable Load of 50 psf may be used for interpolation. Values less than 40 psf not reported.
3. Values based on deflection limits may not exceed value based on strength.
4. L/360, L/240 and L/180 deflection limits applicable to Live Load only.

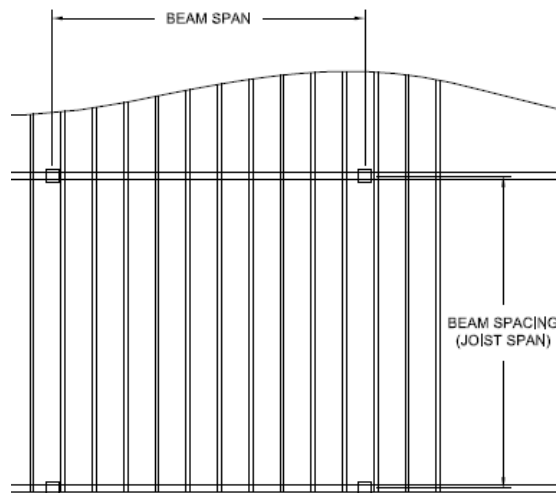




TABLE 10 – BEAM (TFBEAM) ALLOWABLE LOADS FOR EXTERIOR DOUBLE BEAMS LOADED TO ONE SIDE

Total Allowable Load (psf)										
12' 0" Joist Span One Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	815	599	459	362	293	243	204	174	150	130
L/360	815	599	459	335	245	184	142	111	89	72
L/240	815	599	459	362	293	243	204	167	134	109
L/180	815	599	459	362	293	243	204	174	150	130
16' 0" Joist Span One Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	611	449	344	272	220	182	153	130	112	98
L/360	611	449	344	252	183	138	106	83	67	54
L/240	611	449	344	272	220	182	153	125	100	82
L/180	611	449	344	272	220	182	153	130	112	98
20' 0" Joist Span One Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	489	359	275	217	176	146	122	104	90	78
L/360	489	359	275	201	147	110	85	67	53	43
L/240	489	359	275	217	176	146	122	100	80	65
L/180	489	359	275	217	176	146	122	104	90	78

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values less than minimum Total Allowable Load of 50 psf may be used for interpolation. Values less than 40 psf not reported.
3. Values based on deflection limits may not exceed value based on strength.
4. L/360, L/240 and L/180 deflection limits applicable to Live Load only.

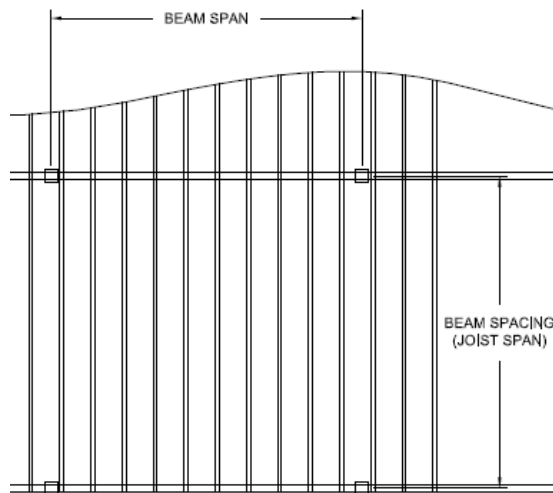




TABLE 11 – BEAM (TFBEAM) ALLOWABLE LOADS FOR EXTERIOR SINGLE BEAMS LOADED TO ONE SIDE WITH CANTILEVER

Total Allowable Load (psf)										
8' 0" Joist Span One Side of Beam, 4' 0" Joist Cantilever Other Side of Beam										
Design	Beam Span (ft)									
	6'	7'	8'	9'	10	11'	12'	13'	14'	15'
Strength	376	276	212	167	135	112	94	80	69	60
L/360	376	276	212	155	113	85	65	51	41	-
L/240	376	276	212	167	135	112	94	77	62	50
L/180	376	276	212	167	135	112	94	80	69	60

12' 0" Joist Span One Side of Beam, 4' 0" Joist Cantilever Other Side of Beam										
Design	Beam Span (ft)									
	6'	7'	8'	9'	10	11'	12'	13'	14'	15'
Strength	288	211	162	128	104	86	72	61	53	46
L/360	288	211	162	118	86	65	50	-	-	-
L/240	288	211	162	128	104	86	72	59	47	-
L/180	288	211	162	128	104	86	72	61	53	46

16' 0" Joist Span One Side of Beam, 4' 0" Joist Cantilever Other Side of Beam										
Design	Beam Span (ft)									
	6'	7'	8'	9'	10	11'	12'	13'	14'	15'
Strength	233	171	131	104	84	69	58	50	43	-
L/360	233	171	131	96	70	52	40	-	-	-
L/240	233	171	131	104	84	69	58	48	-	-
L/180	233	171	131	104	84	69	58	50	43	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values less than minimum Total Allowable Load of 50 psf may be used for interpolation. Values less than 40 psf not reported.
3. Values based on deflection limits may not exceed value based on strength.
4. Maximum 4' cantilever.
5. L/360, L/240 and L/180 deflection limits applicable to Live Load only.

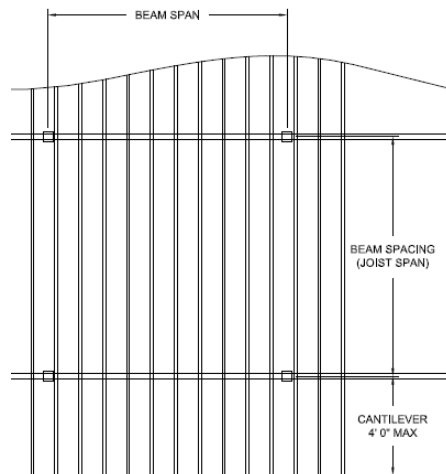




TABLE 12 – BEAM (TFBEAM) ALLOWABLE LOADS FOR EXTERIOR DOUBLE BEAMS LOADED TO ONE SIDE WITH CANTILEVER

Total Allowable Load (psf)										
8' 0" Joist Span One Side of Beam, 4' 0" Joist Cantilever Other Side of Beam										
Design	Beam Span (ft)									
	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	752	553	423	334	271	224	188	160	138	120
L/360	752	553	423	310	226	170	131	103	82	67
L/240	752	553	423	334	271	224	188	154	123	100
L/180	752	553	423	334	271	224	188	160	138	120
12' 0" Joist Span One Side of Beam, 4' 0" Joist Cantilever Other Side of Beam										
Design	Beam Span (ft)									
	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	575	423	324	256	207	171	144	123	106	92
L/360	575	423	324	237	173	130	100	79	63	51
L/240	575	423	324	256	207	171	144	118	94	77
L/180	575	423	324	256	207	171	144	123	106	92
16' 0" Joist Span One Side of Beam, 4' 0" Joist Cantilever Other Side of Beam										
Design	Beam Span (ft)									
	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	466	342	262	207	168	139	116	99	86	75
L/360	466	342	262	192	140	105	81	64	51	41
L/240	466	342	262	207	168	139	116	95	76	62
L/180	466	342	262	207	168	139	116	99	86	75

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values less than minimum Total Allowable Load of 50 psf may be used for interpolation. Values less than 40 psf not reported.
3. Values based on deflection limits may not exceed value based on strength.
4. L/360, L/240 and L/180 deflection limits applicable to Live Load only.
5. Maximum 4' cantilever.

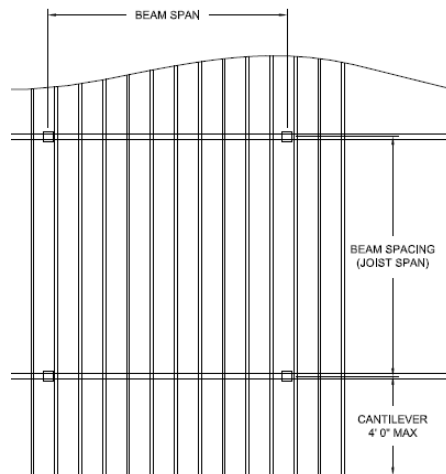




TABLE 13 – BEAM (TFBEAM) ALLOWABLE LOADS FOR INTERIOR SINGLE BEAMS LOADED TO BOTH SIDES

Total Allowable Load (psf)										
12' 0" Joist Span Each Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	204	150	115	91	73	61	51	43	-	-
L/360	204	150	115	84	61	46	-	-	-	-
L/240	204	150	115	91	73	61	51	42	-	-
L/180	204	150	115	91	73	61	51	43	-	-
16' 0" Joist Span Each Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	153	112	86	68	55	45	-	-	-	-
L/360	153	112	86	63	46	-	-	-	-	-
L/240	153	112	86	68	55	45	-	-	-	-
L/180	153	112	86	68	55	45	-	-	-	-
20' 0" Joist Span Each Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	122	90	69	54	44	-	-	-	-	-
L/360	122	90	69	50	-	-	-	-	-	-
L/240	122	90	69	54	44	-	-	-	-	-
L/180	122	90	69	54	44	-	-	-	-	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values less than minimum Total Allowable Load of 50 psf may be used for interpolation. Values less than 40 psf not reported.
3. Values based on deflection limits may not exceed value based on strength.
4. L/360, L/240 and L/180 deflection limits applicable to Live Load only

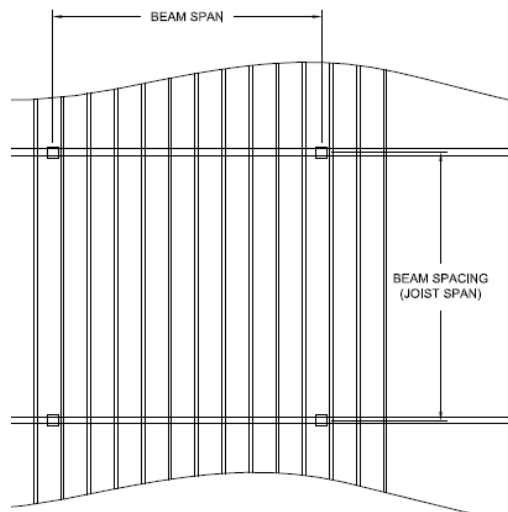




TABLE 14 – BEAM (TFBEAM) ALLOWABLE LOADS FOR INTERIOR DOUBLE BEAMS LOADED TO BOTH SIDES

Total Allowable Load (psf)										
12' 0" Joist Span Each Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	408	299	229	181	147	121	102	87	75	65
L/360	408	299	229	168	122	92	71	56	45	36
L/240	408	299	229	181	147	121	102	83	67	54
L/180	408	299	229	181	147	121	102	87	75	65
16' 0" Joist Span Each Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	306	225	172	136	110	91	76	65	56	49
L/360	306	225	172	126	92	69	53	42	-	-
L/240	306	225	172	136	110	91	76	63	50	41
L/180	306	225	172	136	110	91	76	65	56	49
20' 0" Joist Span Each Side of Beam										
	Beam Span (ft)									
Design	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'
Strength	245	180	138	109	88	73	61	52	45	-
L/360	245	180	138	101	73	55	42	-	-	-
L/240	245	180	138	109	88	73	61	50	40	-
L/180	245	180	138	109	88	73	61	52	45	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values less than minimum Total Allowable Load of 50 psf may be used for interpolation. Values less than 40 psf not reported.
3. Values based on deflection limits may not exceed value based on strength.
4. L/360, L/240 and L/180 deflection limits applicable to Live Load only.

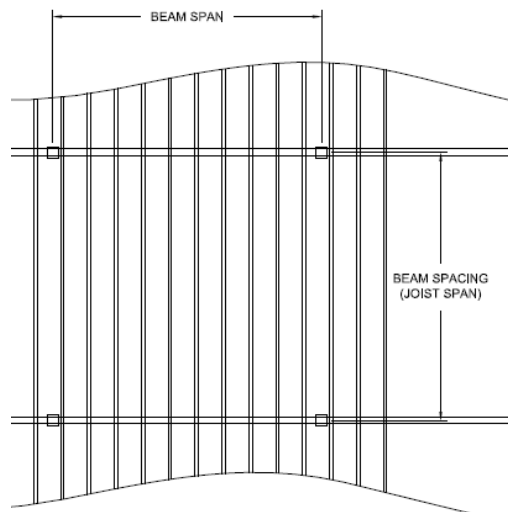




TABLE 15 – POST (TFPOST10B) ALLOWABLE LOADS

Condition	Post Height							
	6'	8'	10'	12'	14'	16'	18'	20'
Unbraced	49,200	44,600	40,200	36,000	32,000	25,400	20,000	16,200
Unbraced With 200 lb. Lateral Load ²	49,200	42,500	38,000	33,900	29,800	23,700	18,700	15,100

Notes

- 1.All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
- 2.Lateral load applied 3' 6" from end of post.





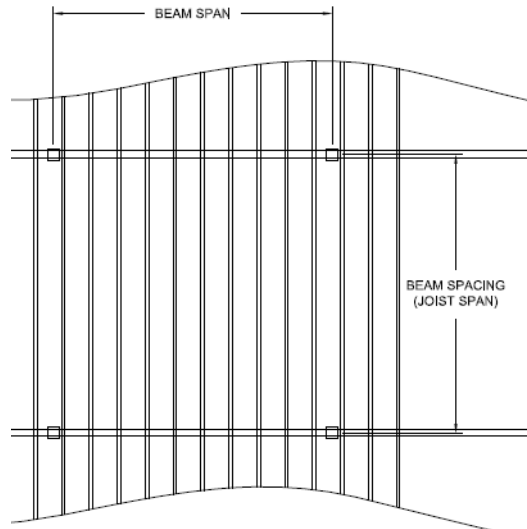
TABLE 16 – POST (TFPOST10B) ALLOWABLE POST HEIGHTS – 40 PSF LL/SL

Beam Span	10 psf DL / 40 psf LL/SL (50 psf Total Load)							
	Beam Spacing							
	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	20	20	20	20	20
8'	20	20	20	20	20	20	20	20
10'	20	20	20	20	20	20	20	20
12'	20	20	20	20	20	20	20	20
14'	20	20	20	20	20	20	20	20
16'	20	20	20	20	20	20	20	19
18'	20	20	20	20	20	20	19	18
20'	20	20	20	20	20	19	18	17

Beam Span	30 psf DL / 40 psf LL/SL (70 psf Total Load)							
	Beam Spacing							
	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	20	20	20	20	20
8'	20	20	20	20	20	20	20	20
10'	20	20	20	20	20	20	20	20
12'	20	20	20	20	20	20	19	19
14'	20	20	20	20	20	19	18	17
16'	20	20	20	20	19	18	17	16
18'	20	20	20	19	18	17	16	15
20'	20	20	20	19	17	16	15	14

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values reported are for interior columns. Values qualify exterior columns with maximum 4' cantilever.
3. Beam spacing, column spacing, and post heights capped at 20' maximum.
4. Beam spacing (i.e. joist span) may be controlled by joist tables
5. Column spacing (i.e. beam span) may be controlled by beam tables.



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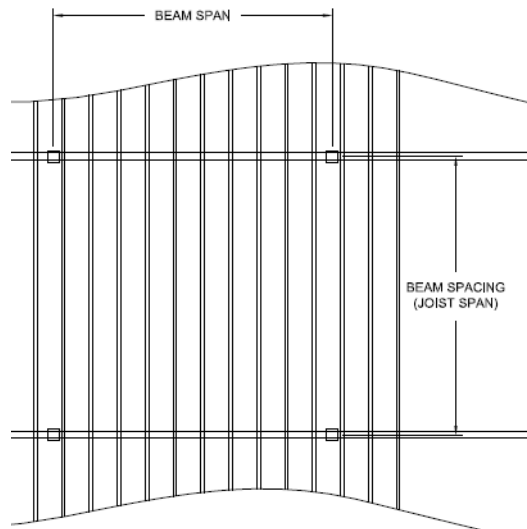
TABLE 17 – POST (TFPOST10B) ALLOWABLE POST HEIGHTS – 100 PSF LL/SL

10 psf DL / 100 psf LL/SL (110 psf Total Load)								
Beam Spacing								
Beam Span	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	20	20	20	20	20
8'	20	20	20	20	20	20	19	18
10'	20	20	20	20	19	18	17	16
12'	20	20	20	19	18	17	15	15
14'	20	20	19	18	16	15	14	12
16'	20	20	18	17	15	14	12	11
18'	20	19	17	15	14	12	11	9
20'	20	18	16	15	12	11	9	7

30 psf DL / 100 psf LL/SL (130 psf Total Load)								
Beam Spacing								
Beam Span	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	20	20	20	20	19
8'	20	20	20	20	20	19	17	17
10'	20	20	20	19	18	17	16	15
12'	20	20	19	17	16	15	14	12
14'	20	20	18	16	15	14	12	10
16'	20	19	17	15	14	12	10	8
18'	20	17	16	14	12	10	8	6
20'	19	17	15	12	10	8	6	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values reported are for interior columns. Values qualify exterior columns with maximum 4' cantilever.
3. Beam spacing, column spacing, and post heights capped at 20' maximum.
4. Beam spacing (i.e. joist span) may be controlled by joist tables
5. Column spacing (i.e. beam span) may be controlled by beam tables.



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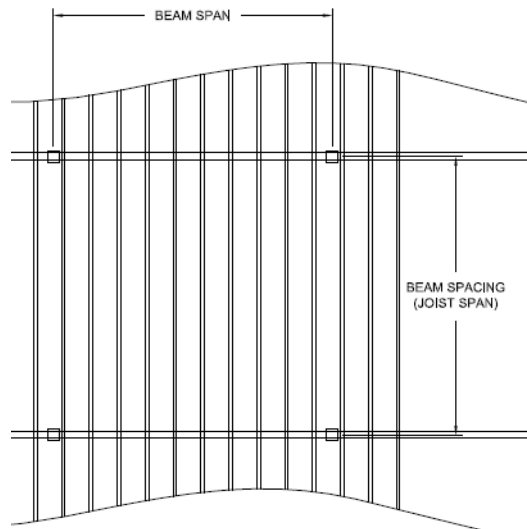
TABLE 18 – POST (TFPOST10B) ALLOWABLE POST HEIGHTS – 150 PSF LL/SL

Beam Span	10 psf DL / 150 psf LL/SL (160 psf Total Load)							
	Beam Spacing							
	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	20	20	19	18	17
8'	20	20	20	19	18	17	16	15
10'	20	20	19	17	16	15	14	12
12'	20	19	17	16	14	12	11	9
14'	20	18	16	14	12	11	8	7
16'	19	17	15	12	11	8	6	-
18'	18	16	14	11	8	6	-	-
20'	17	15	12	9	7	-	-	-

Beam Span	30 psf DL / 150 psf LL/SL (180 psf Total Load)							
	Beam Spacing							
	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	20	19	18	17	16
8'	20	20	20	18	17	16	15	14
10'	20	20	18	16	15	14	12	10
12'	20	18	16	15	13	11	9	7
14'	19	17	15	13	11	8	7	-
16'	18	16	14	11	8	6	-	-
18'	17	15	12	9	7	-	-	-
20'	16	14	10	7	-	-	-	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values reported are for interior columns. Values qualify exterior columns with maximum 4' cantilever.
3. Beam spacing, column spacing, and post heights capped at 20' maximum.
4. Beam spacing (i.e. joist span) may be controlled by joist tables
5. Column spacing (i.e. beam span) may be controlled by beam tables.



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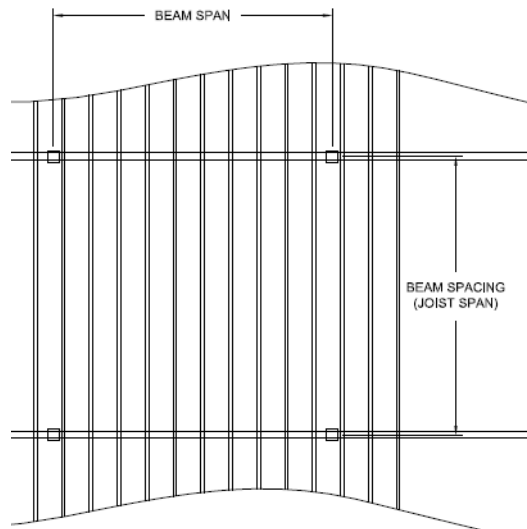
TABLE 19 – POST (TFPOST10B) ALLOWABLE POST HEIGHTS – 200 PSF LL/SL

Beam Span	10 psf DL / 200 psf LL/SL (210 psf Total Load)							
	Beam Spacing							
	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	19	18	17	16	15
8'	20	20	19	17	16	14	13	12
10'	20	19	17	15	14	12	10	8
12'	19	17	15	13	11	8	7	-
14'	18	16	14	11	8	6	-	-
16'	17	14	12	8	6	-	-	-
18'	16	13	10	7	-	-	-	-
20'	15	12	8	-	-	-	-	-

Beam Span	30 psf DL / 200 psf LL/SL (230 psf Total Load)							
	Beam Spacing							
	6'	8'	10'	12'	14'	16'	18'	20'
6'	20	20	20	19	17	16	15	14
8'	20	20	18	16	15	14	12	10
10'	20	18	16	14	12	10	8	6
12'	19	16	14	12	9	7	-	-
14'	17	15	12	9	7	-	-	-
16'	16	14	10	7	-	-	-	-
18'	15	12	8	-	-	-	-	-
20'	14	10	6	-	-	-	-	-

Notes

1. All loads are computed in accordance with the Aluminum Design Manual 2020, Specification for Aluminum Structures.
2. Values reported are for interior columns. Values qualify exterior columns with maximum 4' cantilever.
3. Beam spacing, column spacing, and post heights capped at 20' maximum.
4. Beam spacing (i.e. joist span) may be controlled by joist tables
5. Column spacing (i.e. beam span) may be controlled by beam tables.



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TABLE 20 – DECK LATERAL LOAD CAPACITIES

Deck Board	Fastener	Fastener Schedule	Lateral Load Resistance^{1,2}
TimberTech Advanced PVC	#10-12 x 1-5/8" Cortex Driller	Two fasteners at each joist	103 lb/ft
TimberTech Advanced PVC	TimberTech Hidden Deck Clip (TFLOC100)	One clip at each joist	45 lb/ft

1 Based on 8' x 8' test assembly. Lateral load resistance is applicable to decks with a width-to-length ratio of 1:1 or less.

2 Factor of safety of 3.0 applied.



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TABLE 21 – CONNECTION DESIGN CAPACITIES

Connection	Components	Capacity	Comments
Rim Joist to Wood Ledger	5/16-7 x 3-5/8" LedgerLOK 2x Wood Ledger	220 lb (Shear) 253 lb. with snow load	Minimum specific gravity of wood shall be 0.42.
End Joist to Rim Joist	Joist Hanger (TFRJHB) (2) 1/4-20 x 1.25" Screws	404 lb (Downward) 405 lb (Upward) 508 in-lb (Torsion)	Does not meet minimum torsional resistance of 544 in-lb; short L-bracket required for added torsional resistance.
Field Joist to Rim Joist	Joist Hanger (TFFJHB) (2) 1/4-20 x 1.25" Screws Uplift Key (TFUP2B)	830 lb (Downward) 770 lb (Upward) 1,136 in-lb (Torsion)	Meets minimum torsional resistance of 544 in-lb
Field Joist to Rim Joist End Joist to Rim Joist	Short L-Bracket (TF90ABSB) (4) 1/4-20 x 1.25" Screws	450 lb (Downward) 450 lb (Upward)	Two screws each flange of bracket.
	Long L-Bracket (TF90ABTB) (4) 1/4-20 x 1.25" Screws	651 lb (Downward) 651 lb (Upward)	Two screws each flange of bracket.
	Adjustable Bracket (TF135ABB) (4) 1/4-20 x 1.25" Screws	432 lb (Downward) 432 lb (Upward)	Two screws each flange of bracket.
Joist to Beam	Beam Clip (TFPBJB) (3) 1/4-20 x 1.25" Screws	377 lb (Upward) 313 lb (Parallel) 192 lb (Perpendicular)	One screw from beam clip to joist. Two screws from beam clip to beam.
Beam to Post (Single Beam)	(1) Beam Full Bracket (TFPBB) (1) Beam Clip (TFPBJB) (1) Post Cap (TFPCB) (7) 1/4-20 x 1.25" Screws	441 lb (Upward) 546 lb (Parallel) 269 lb (Perpendicular)	Secure Beam Full Bracket to Post with two (screws). Secure Beam Full Bracket to Beam with two screws. Secure Beam Clip to Beam with one screw. Secure Beam Clip to Post Cap with two screws. For beam splices sharing a single post, install a Beam Clip to each Beam.
Beam to Post (Double Beam)	(2) Beam Full Brackets (TFPBB) (1) Post Cap (TFPCB) (8) 1/4-20 x 1.25" Screws	2,500 lb (Upward) 528 lb (Parallel) 528 lb (Perpendicular)	Secure each Beam Full Bracket to Post with two screws. Secure each Beam Full Bracket to each Beam with two screws.
Post Base	Post Base (TFPCB) 3/4" Diameter Anchor Bolt (6) 1/4-20 x 1.25" Screws	1,109 lb (Upward) 400 lb (Shear)	Secure post to Post Base with six countersunk screws. 3/4" anchor bolt shall be designed by others. Capacity shall meet project load requirements.
Lateral Load Tieback	Simpson S/DTT2Z (8) 1/4-20 x 1.25" Screws	1,877 lb	Meets IRC 507.9.2 1,500 lb minimum. Connection to structure shall be designed by others.





TABLE 22 – STAIR DESIGN LIMITATIONS

Item	Components	Design Limitations
Rim/End Joist at Stringer Attachment	Rim Joist (TFRJ)	Maximum Joist Span: 10' 0" Joist shall be secured with Rim Joist Hanger and Short L-Bracket
Stair Stringer	Rim Joist (TFRJ)	Use End Joist (TF) for each stringer <u>Stringers at Ends Only (Two stringers)</u> Maximum Span Along Stair: 10' 6" Maximum Rise Without Support: 6' 0" <u>With Middle Stair Stringer (Three stringers)</u> Maximum Span Along Stair: 14' 6" Maximum Rise Without Support: 7' 0"
Stair Tread	Stair Tread – Front Stair Tread – Back	Maximum tread width: 48"
Stair Mounted Guard/Rail Post	<i>Secure Mount</i> post mount 3-1/2" x 3-1/2" x 0.137" thick steel backer plate (4) 3/8-16 x 3-5/8" hex head bolts, nuts and washers	Deck boards installed on stair tread 36" maximum post height.
Suspended Rim Joist for Drop Step Stair	Rim Joist (TFRJ) (4) Half Adjustable Brackets (2) 1/4-20 x 1.25" Screws per bracket (4) 4" Rim Joist Tabs as roll over blocking (1) 3/8" Carriage bolt per tab	Maximum Span Along Stair: 10' 6" Maximum tread width: 48"

TABLE 23 – DECK MOUNTED GUARD DESIGN LIMITATIONS

Item	Components	Design Limitations
Deck Mounted Guard/Rail Post	Rail Post L-Bracket <i>Secure Mount</i> Post Base	Deck boards installed on joists. 42" maximum post height.



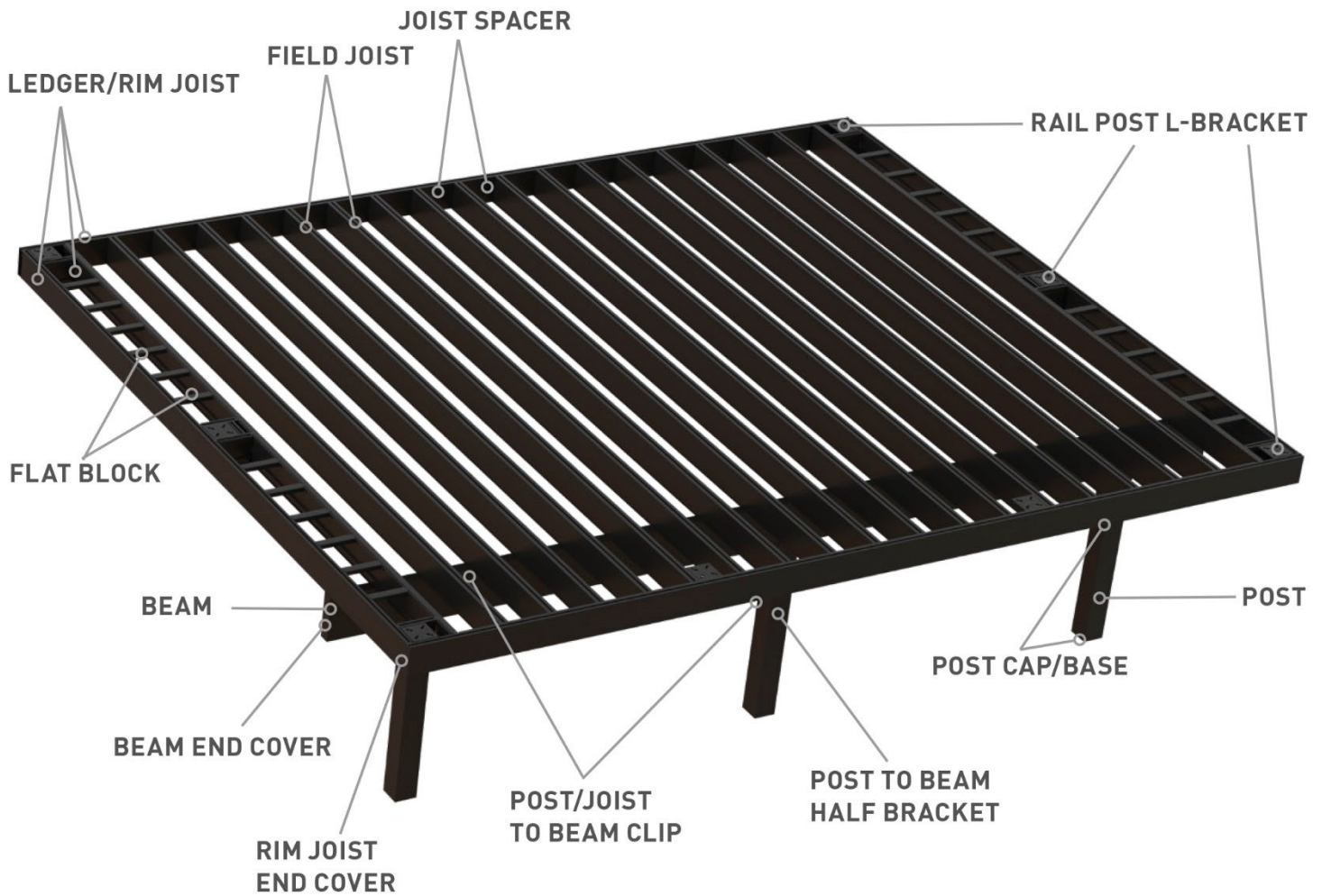


FIGURE 1 – TIMBERTECK ALUMINUM FRAMING

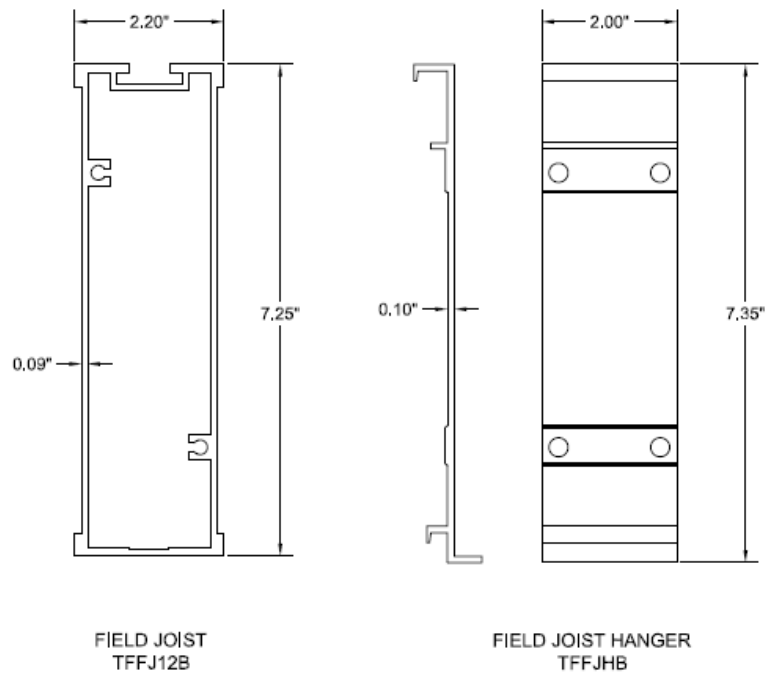


FIGURE 2 – FIELD JOIST AND HANGER

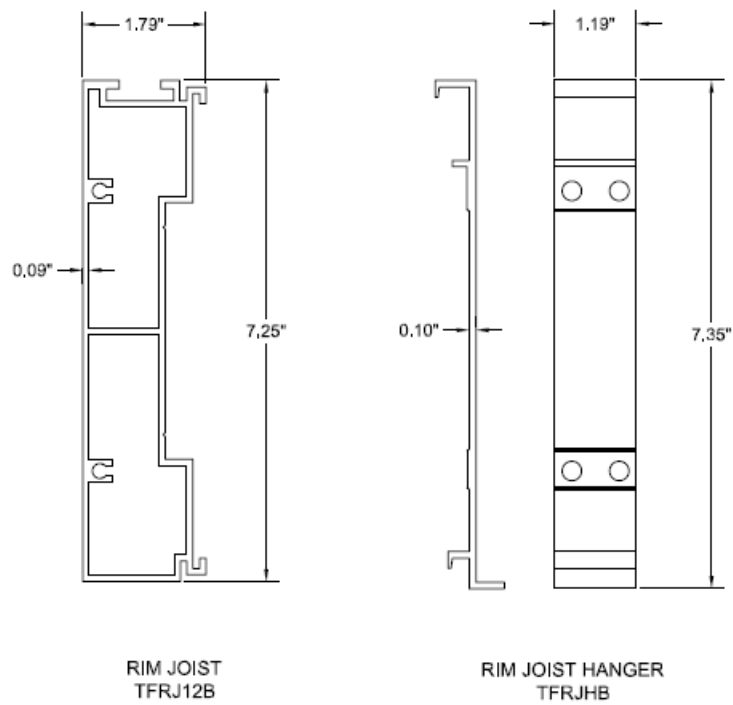
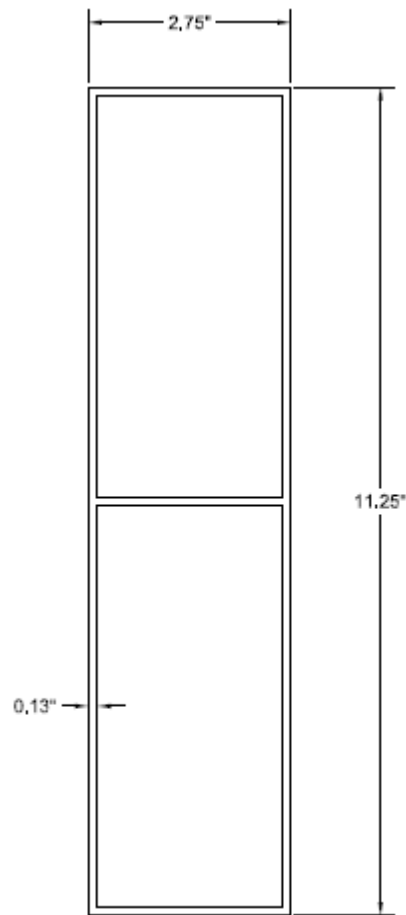
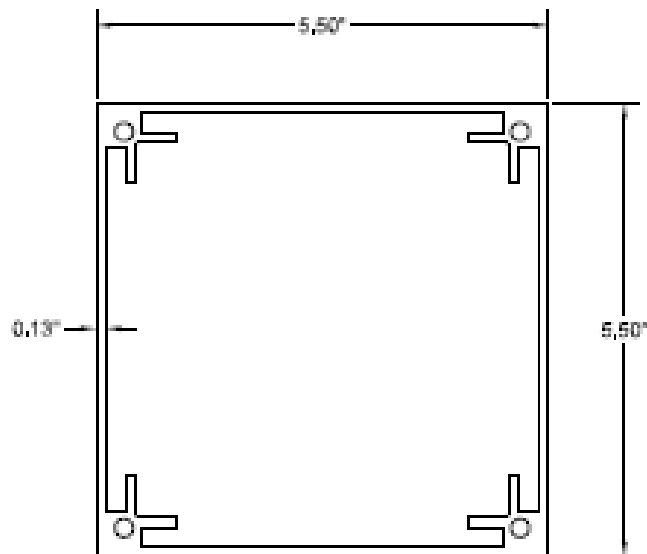


FIGURE 3 – RIM JOIST / END JOIST / STAIR STRINGER AND HANGER



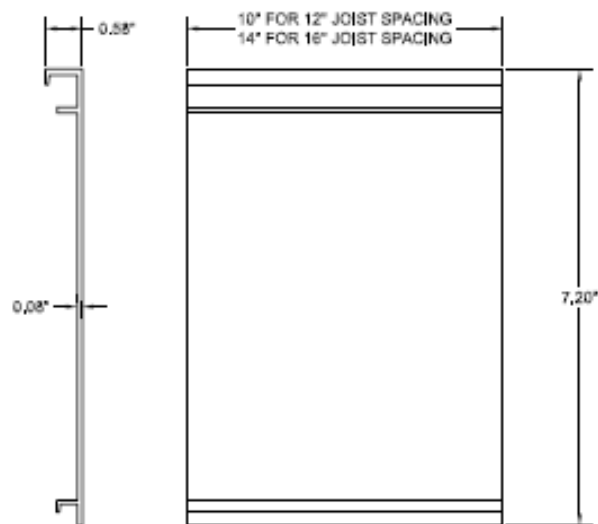
BEAM
TFBEAM12B

FIGURE 4 – BEAM



POST
TFPOST10B

FIGURE 5 POST



JOIST SPACER
TFSP10B
TFSP14B



FIGURE 6 – JOIST SPACER

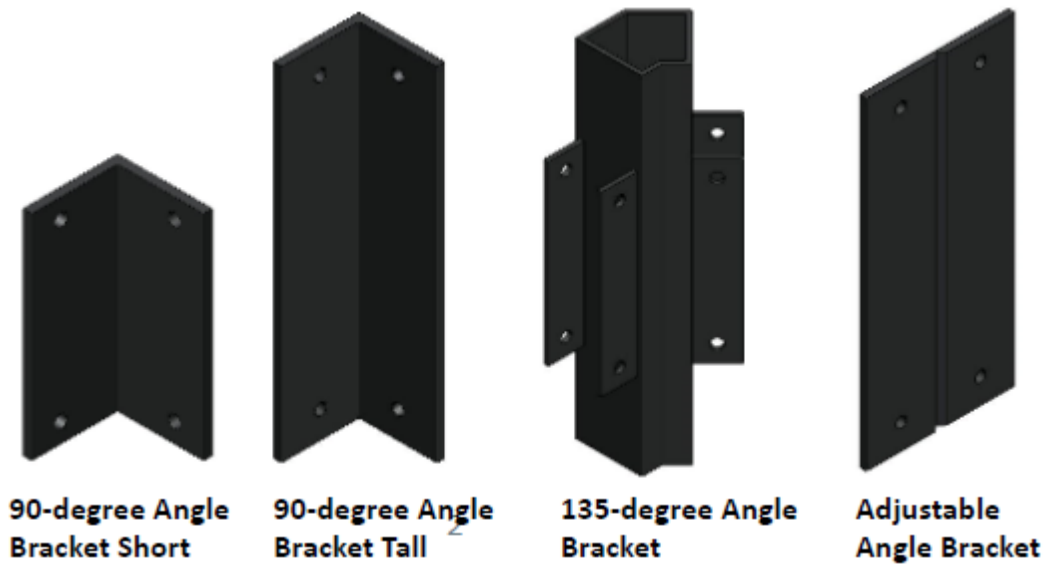


FIGURE 7 – BRACKETS (JOIST)

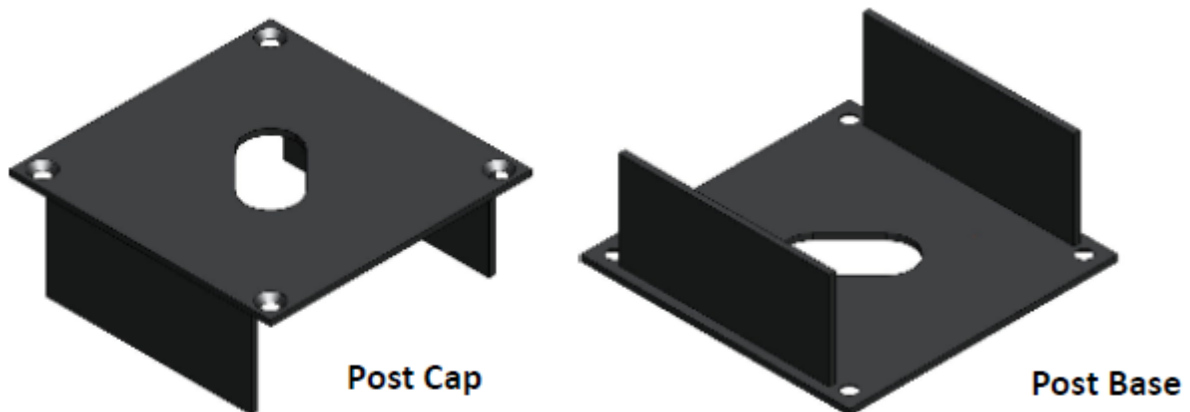


FIGURE 8 – POST CAP AND POST BASE

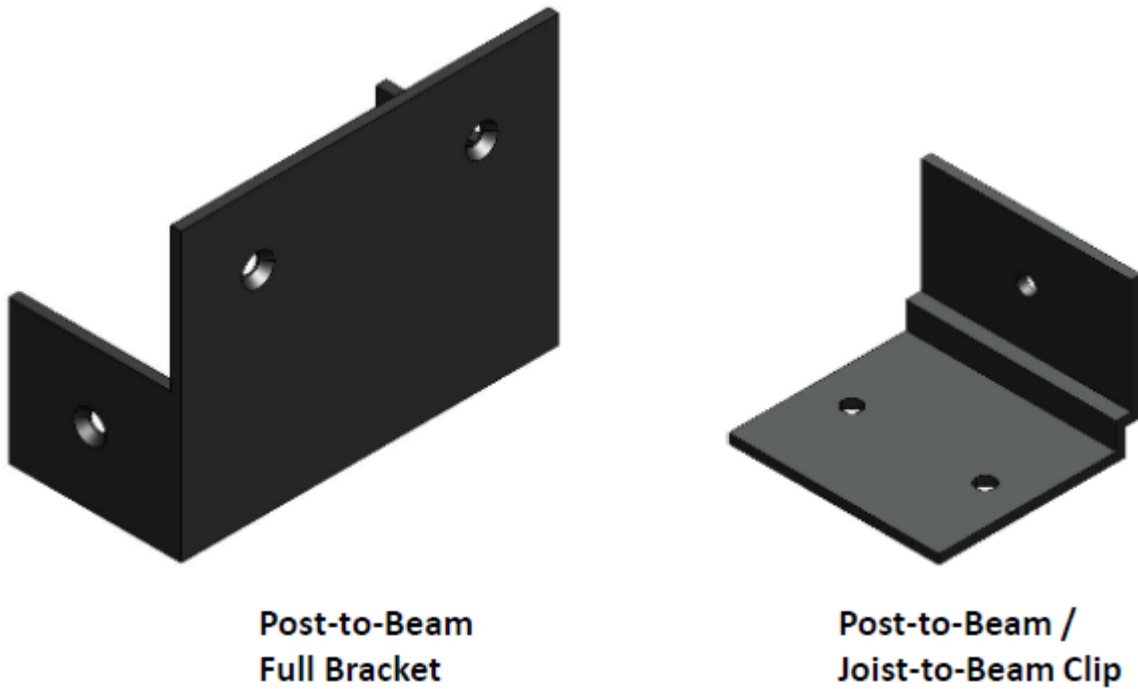


FIGURE 9 – POST BRACKETS AND BEAM CLIPS



Rail Post L-Bracket

FIGURE 10 – RAIL POST L-BRACKET

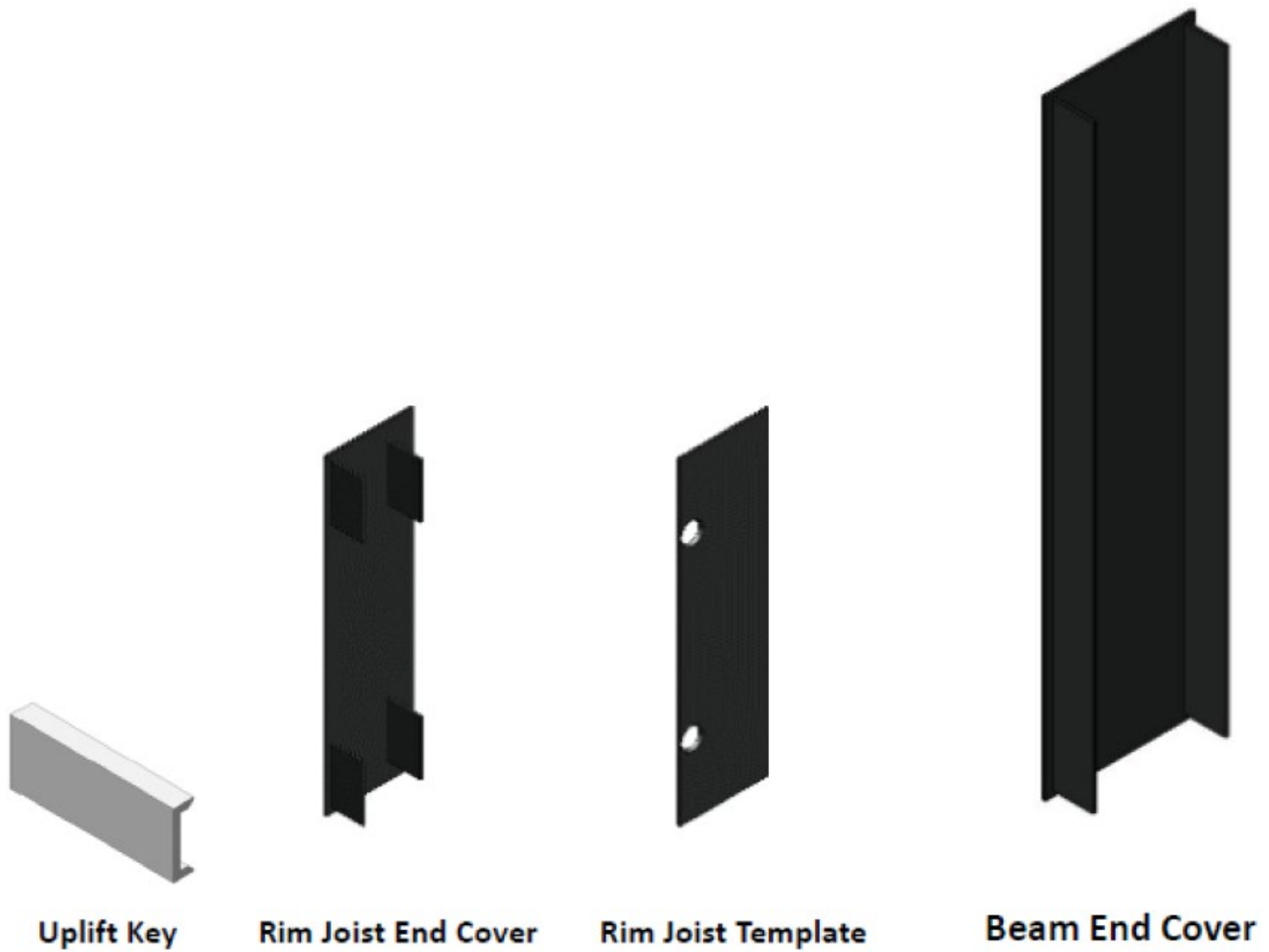


FIGURE 11 – VARIOUS COMPONENTS

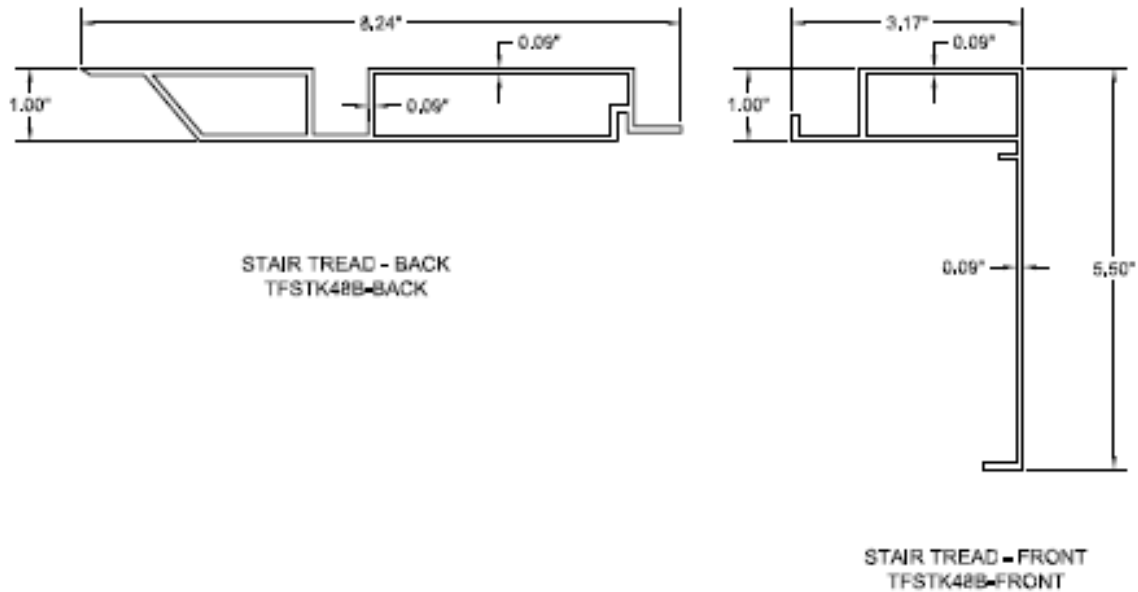


FIGURE 12 – STAIR TREADS



FIGURE 13 – STAIR BRACKETS

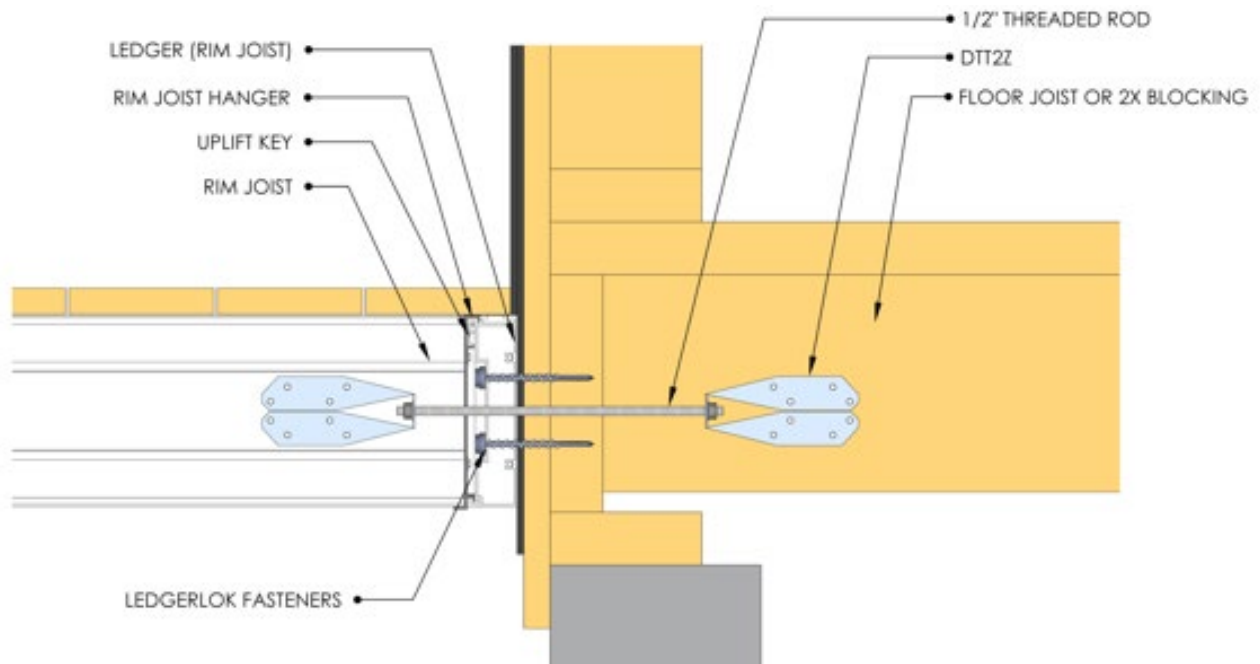


FIGURE 14 – RIM JOIST TO WOOD LEDGER CONNECTION DETAIL (DTT2Z TIEBACK AS NEEDED)

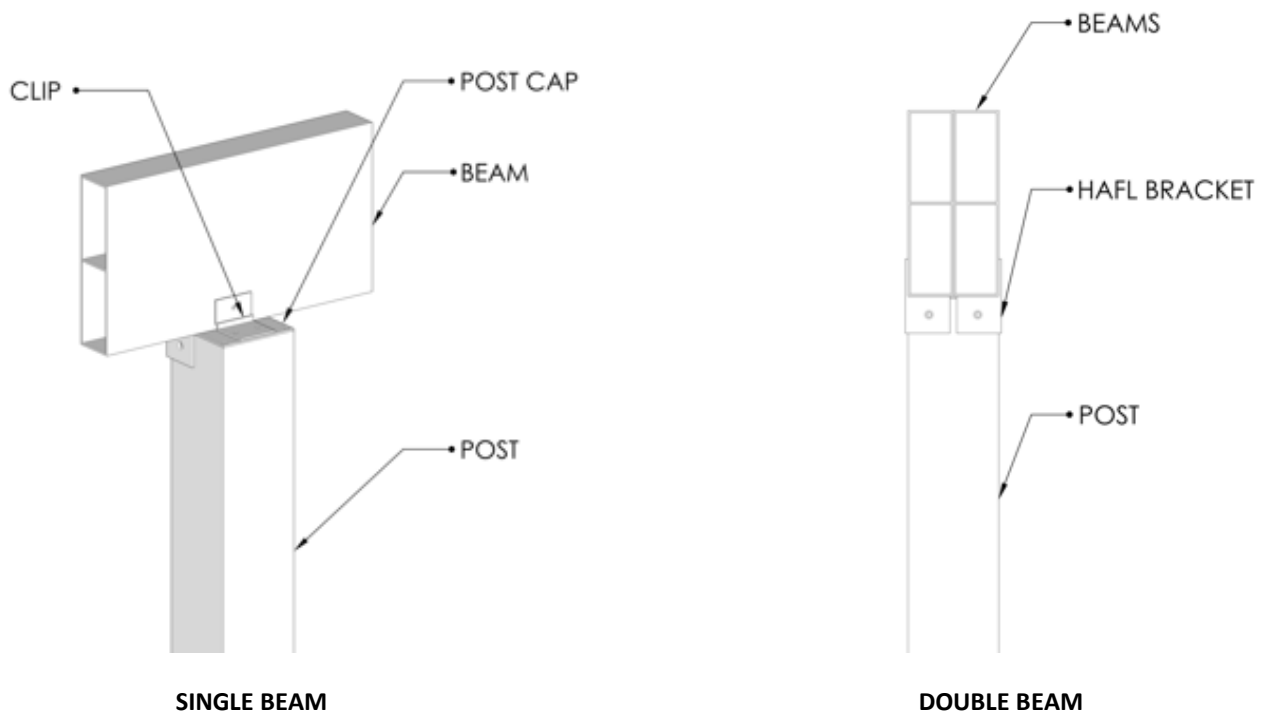


FIGURE 15 – BEAM TO POST CONNECTION DETAILS

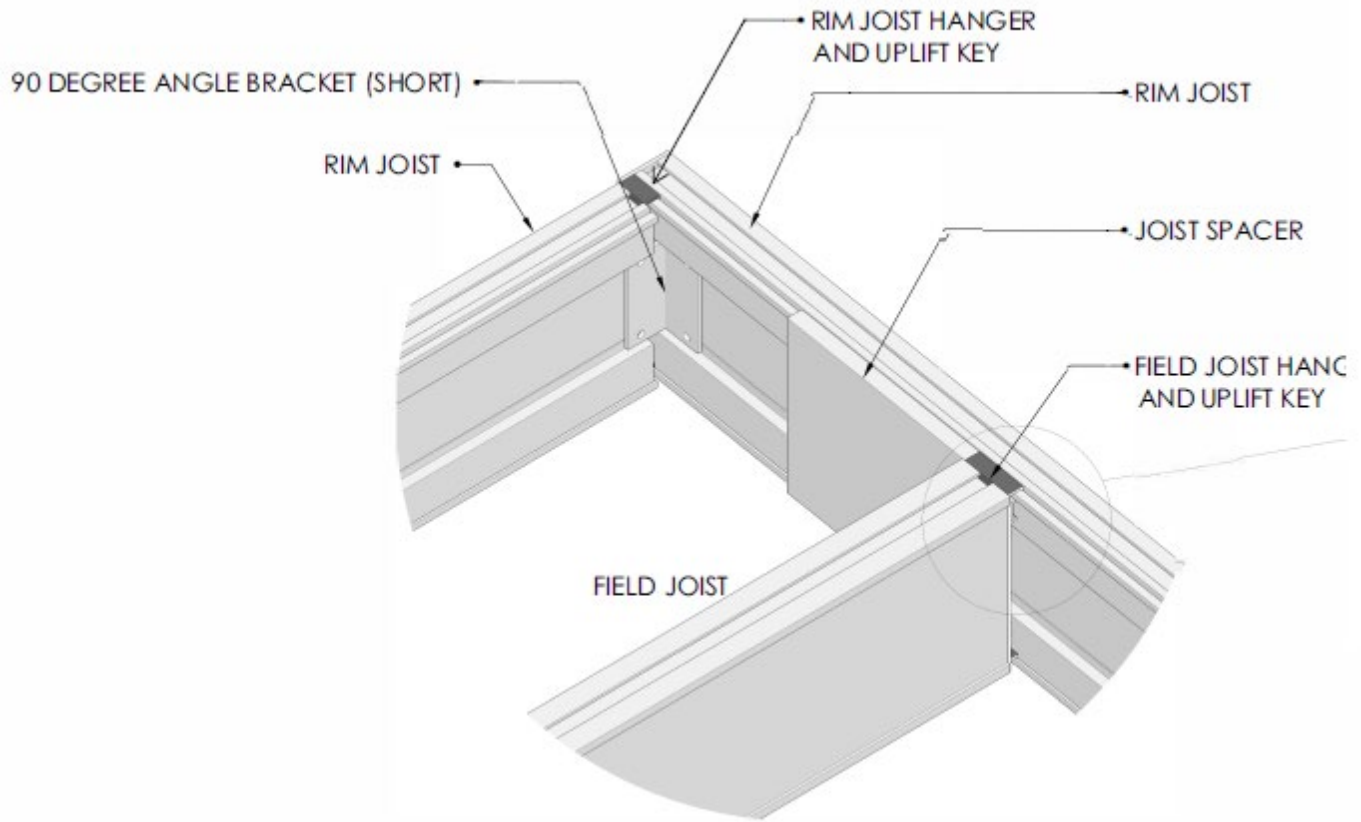


FIGURE 16 – JOIST CONNECTION DETAILS

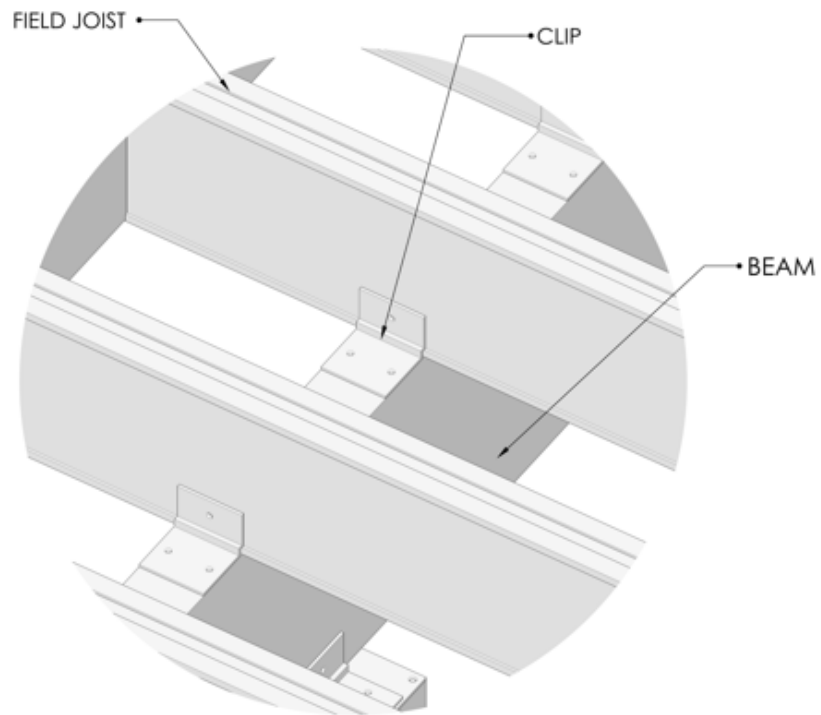
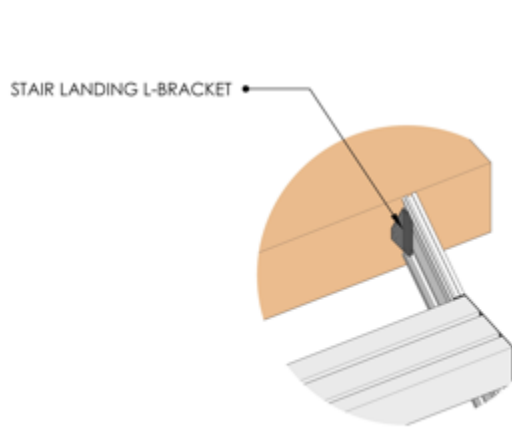
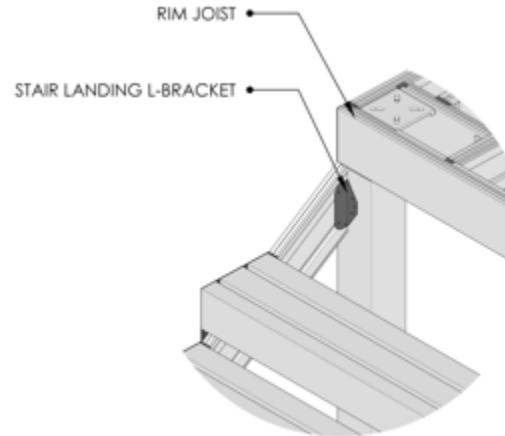


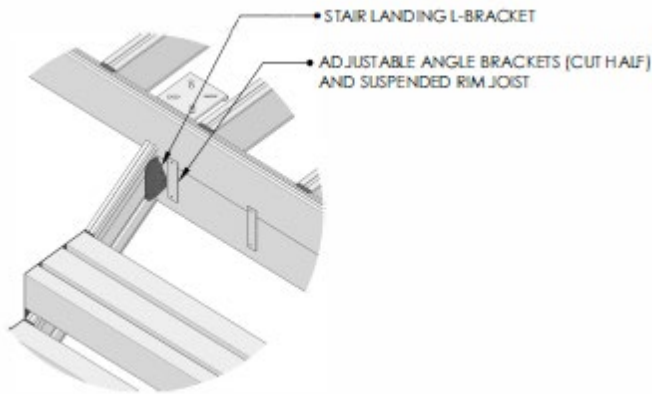
FIGURE 17 – JOIST TO BEAM DETAIL



TYPICAL FLUSH STEP STAIR LANDING L-BRACKET (UP)



TYPICAL DROP STEP STAIR L-BRACKET CONNECT TO POST (UP)



TYPICAL DROP STEP STAIR L-BRACKET CONNECT TO SUSPENDED RIM JOIST

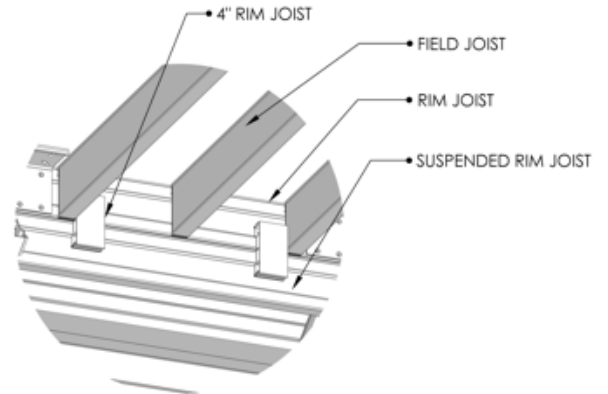


FIGURE 18 – STAIR STRINGER TOP CONNECITON OPTIONS

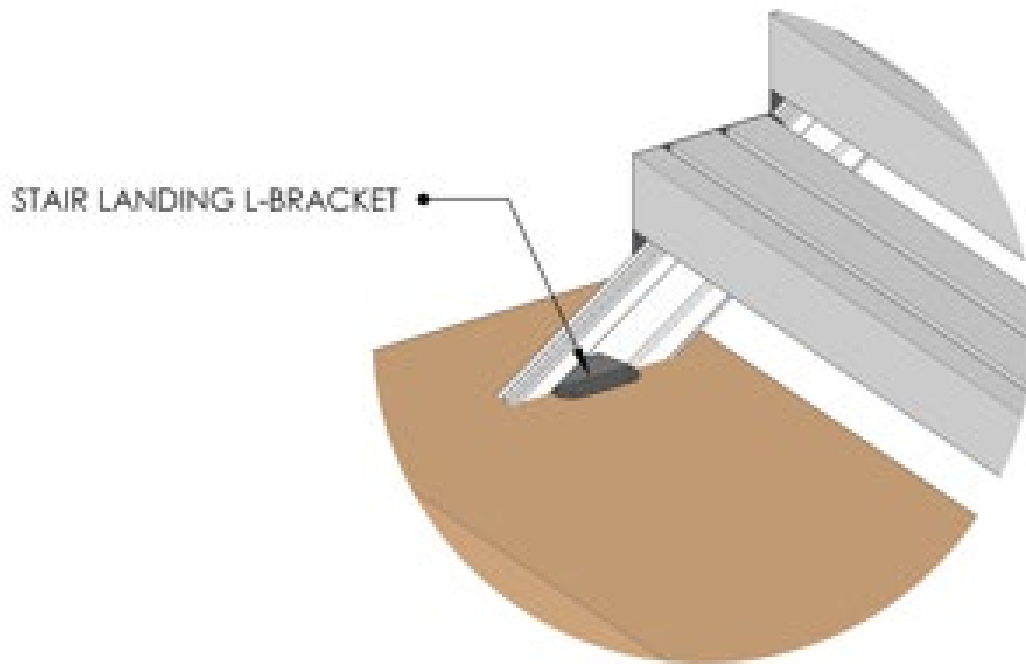


FIGURE 19 – STAIR STRINGER TO LANDING DETAIL

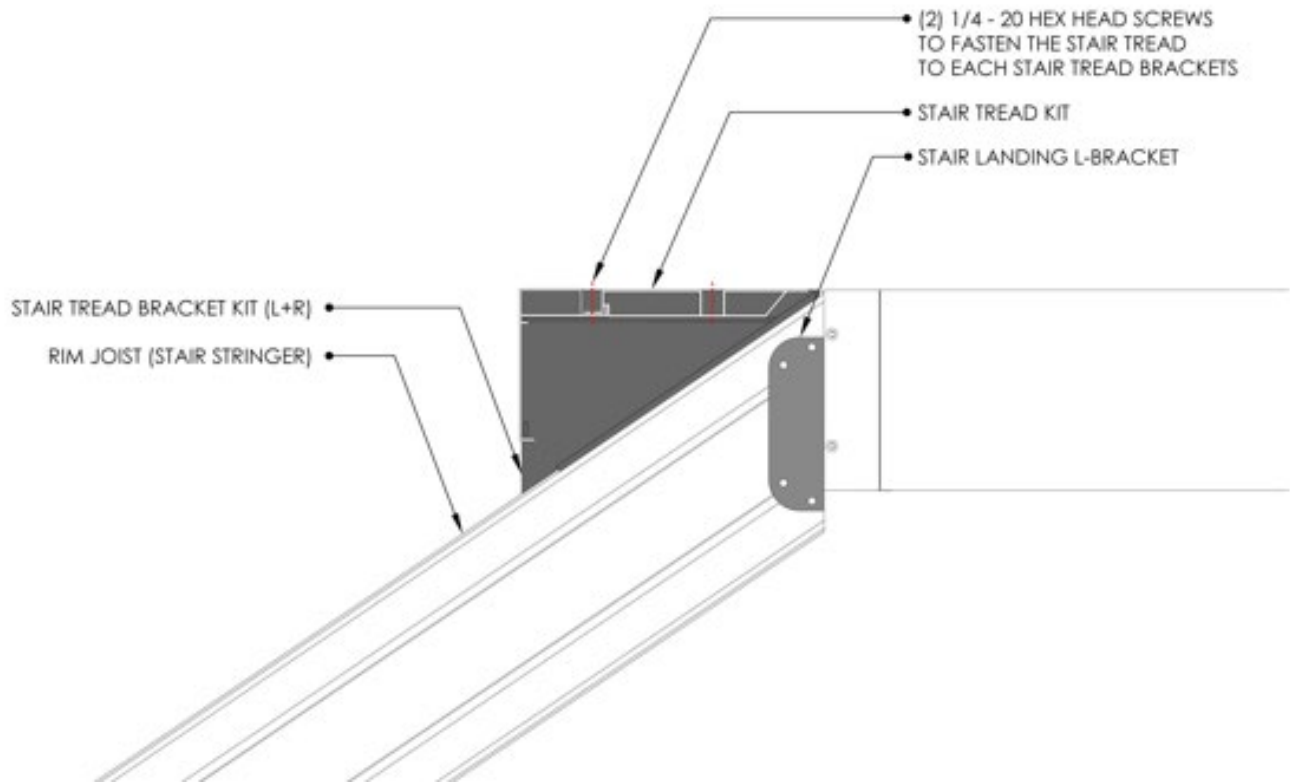


FIGURE 20 – STAIR TREAD AND STAIR TREAD BRACKET DETAIL

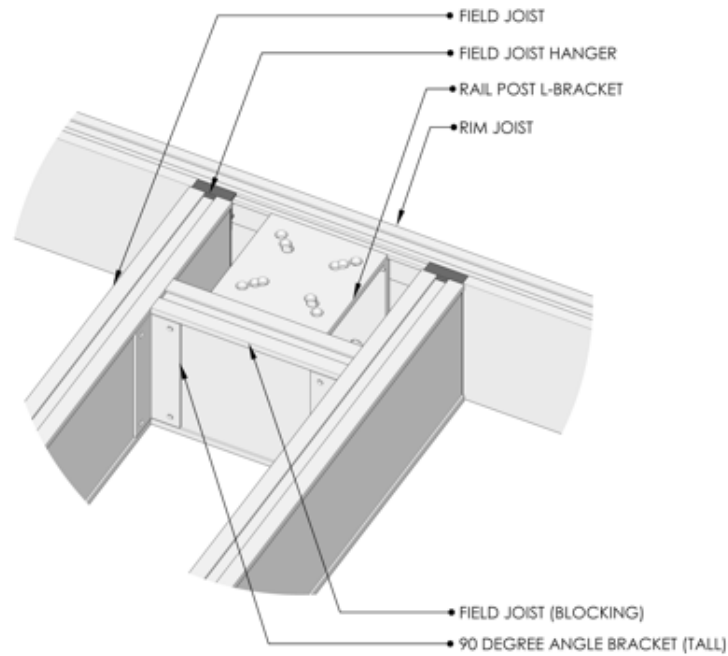


FIGURE 21 – RAIL POST L-BRACKET TO FIELD JOIST DETAIL

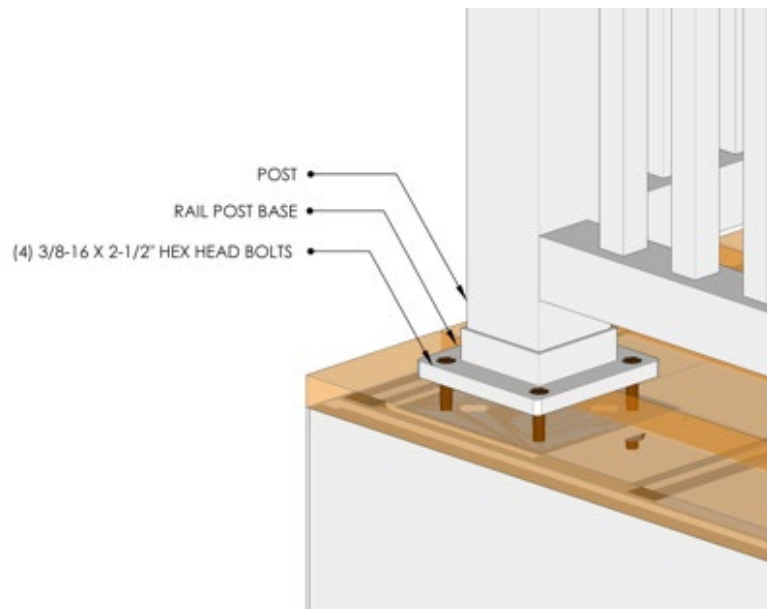


FIGURE 22 – GUARD POST MOUNT DETAIL