Probuilt Railing Design

The following information will allow the user to determine if their railing design meets the loading requirements of the Canadian National Building Code 2005.
For more extensive engineering information, please consult the Probuilt Design Manual available through your Probuilt Railing retailer.

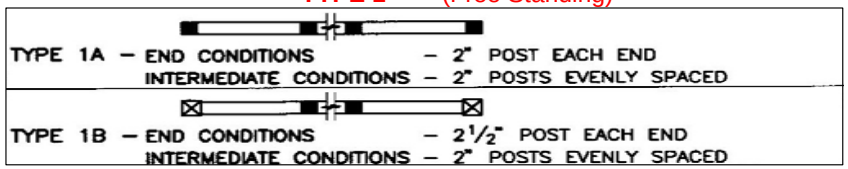
ProBuilt™ Do-It-Yourself Aluminum Railings

Railing Types

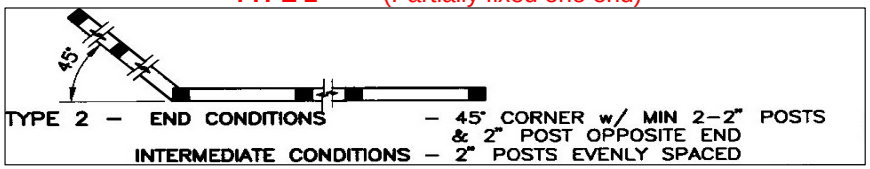
ProBuilt™ Do-It-Yourself Aluminum Railings

For the purpose of determining load capacity, "Alco" have grouped railing configurations into 6 types.
As the table that follows indicates, each type of configuration requires a different number of support posts, properly mounted, spaced along its length to ensure code compliance.

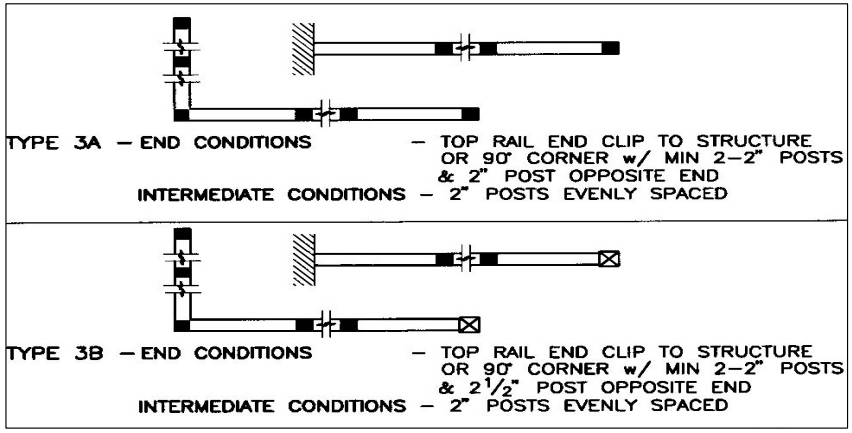
TYPE 1 (Free Standing)



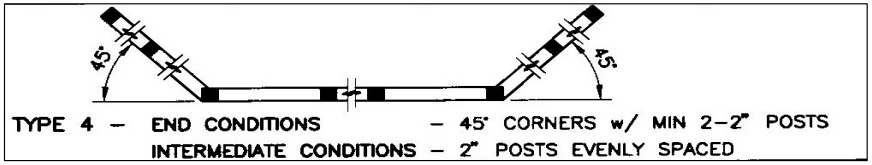
TYPE 2 (Partially fixed one end)



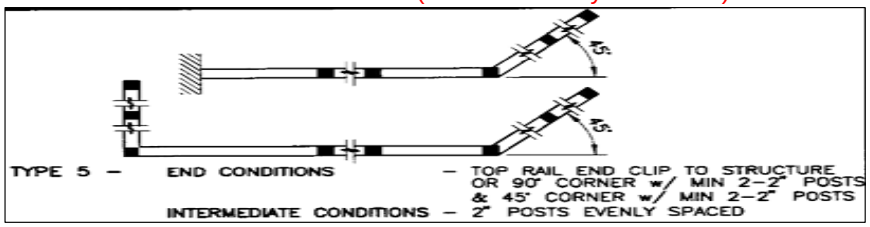
TYPE 3 (Fixed one end)



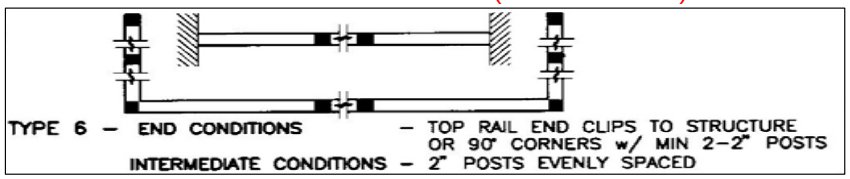
TYPE 4 (Partially fixed both ends)



TYPE 5 (Fixed & Partially fixed ends)



TYPE 6 (Fixed both Ends)



The content of this document is a summery of information contained in the 5th Edition of the Probuilt - Canadian Design Manual - September 2006.

Post spacing shown in the following table apply for both "Picket" and "Glass " Infill designs

Please use the following table to determine the number of posts required in each individual runs of railing.

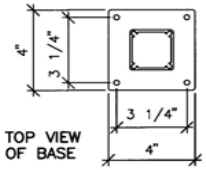
Note: This table does not include posts that may be required at the beginning or end of the run. These posts may be needed to terminate the section or to accommodate a change in direction.

	Length of Run														Length of Run													
Railing Type	1" 0" - 8' 0"	8' 6"	9' 0"	9' 6"	10' 0"	10' 6"	11' 0"	11' 6"	12' 0"	12' 6"	13' 0"	13' 6"	14' 0"	14' 6"	15' 0"	15' 6"	16' 0"	16' 6"	17' 0"	17' 6"	18' 0"	18'6"	19' 0"	19' 6"	20' 0"	20' 6"	Over 20' 6"
TYPE 1A	0	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	48" Spacings***
TYPE 1B*	0	0	0	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	48" Spacings***
TYPE 2	0	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	48" Spacings***
TYPE 3A	0	1	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	48" Spacings***
TYPE 3B **	0	0	0	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	48" Spacings***
TYPE 4	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4	48" Spacings***
TYPE 5	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4	48" Spacings***
TYPE 6	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	4	48" Spacings***

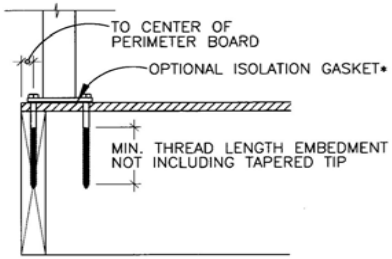
* *Both ends attaching to 2 1/2" Posts* ** *Free standing end attaching to a 2 1/2" Post* *** *Center of post to center of post*

Fastening & Backing

Adequate backing and the use of an appropriate fastener are crucial to the strength of your railing system.
Please choose an appropriate fastener and backing method from the following tables.

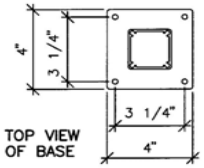


*OPTIONAL CLOSED CELL ISOLATION GASKET BETWEEN DISSIMILAR OR INCOMPATIBLE MATERIALS. (Probuilt catalogue No. 7000) (NOT INTENDED AS A WATER PROOFING ITEM)



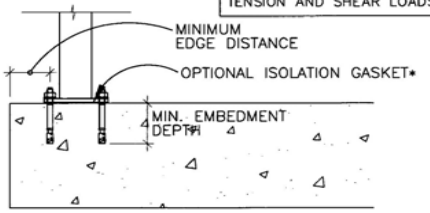
POST SIZE	LAG SCREW DIAMETER	WOOD BLOCKING SPECIES	MIN THREAD LENGTH EMBEDMENT
2"	5/16"	DOUGLAS FIR	3"
		SPRUCE–PINE–FIR	3 1/2"
	3/8"	DOUGLAS FIR	2 1/2"
		SPRUCE–PINE–FIR	3"
2 1/2"	5/16"	DOUGLAS FIR	4"
		SPRUCE–PINE–FIR	4 1/2"
	3/8"	DOUGLAS FIR	3 1/2"
		SPRUCE–PINE–FIR	4"

ALL LAGS SCREWS TO BE SET IN No.1/No.2 OR BETTER WOOD BLOCKING



POST SIZE	MIN. CONCRETE COMPRESSIVE STRENGTH	FASTENER TYPE	MIN. EDGE DISTANCE	MIN. EMBEDMENT DEPTH
2"	4000 psi (27.6 MPa)	3/8"ø HILTI KWIK BOLT III EXPANSION ANCHOR	2 1/2"	2 1/2"
2 1/2"	4000 psi (27.6 MPa)	1/2"ø HILTI KWIK BOLT III EXPANSION ANCHOR	3 3/4"	4"

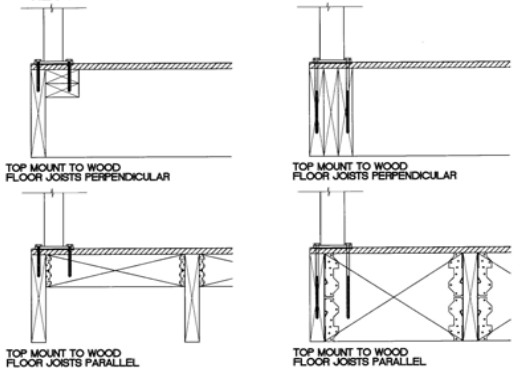
CONCRETE ANCHORS WITH EQUIVALENT OR BETTER ALLOWABLE TENSION AND SHEAR LOADS CAN BE SUBSTITUTED.



*OPTIONAL CLOSED CELL ISOLATION GASKET BETWEEN DISSIMILAR OR INCOMPATIBLE MATERIALS. (Probuilt catalogue No. 7000) (NOT INTENDED AS A WATER PROOFING ITEM)

ProBuilt™
Do-It-Yourself Aluminum Railings

RECOMMENDED WOOD BLOCKING DETAILS



NO.1/NO.2 OR BETTER WOOD BLOCKING ANCHORAGE TO MAIN STRUCTURE AND MAIN STRUCTURE LOAD CAPACITY RESPONSIBILITY OF OTHERS

Basic Non-Structural Criteria for Guardrails

1) No openings that allow the passage of a 4" sphere.
2) Guardrail height:
- **a.** Residential applications, porches, landings and balconies that are greater than 6' above ground level = 42"
- **b.** Residential applications, porches, landings and balconies that are less than 6' above ground level = 36"
- **c.** Stairs = 36"

3) No member attached to, or opening located between 4" and 36"" above the level being protected that facilitate climbing.
4) Glass used in guardrails must be "tempered", "laminated", or "wired glass".

When properly installed, the Probuilt System has been designed to meet all non-structural requirements.

Manufactured By:
Alco Ventures Inc.
9747 199A St. Langley BC. Canada V1M 2X7
www.alcoventures.com

ProBuilt™

Do-It-Yourself Aluminum Railings

Railing Design At A Glance

A quick reference to ensure adequate guardrail design.

Manufactured By:
Alco Ventures Inc.
9747 199A St. Langley BC. Canada V1M 2X7
Telephone: 604-888-7655
Product Info: 800-667-2526
Fax Toll Free: 877-888-1718