

SIMPSON

Strong-Tie

®

The Grand Opening of Moment Resistance

Strength at the Bottom
to Stabilize the Top

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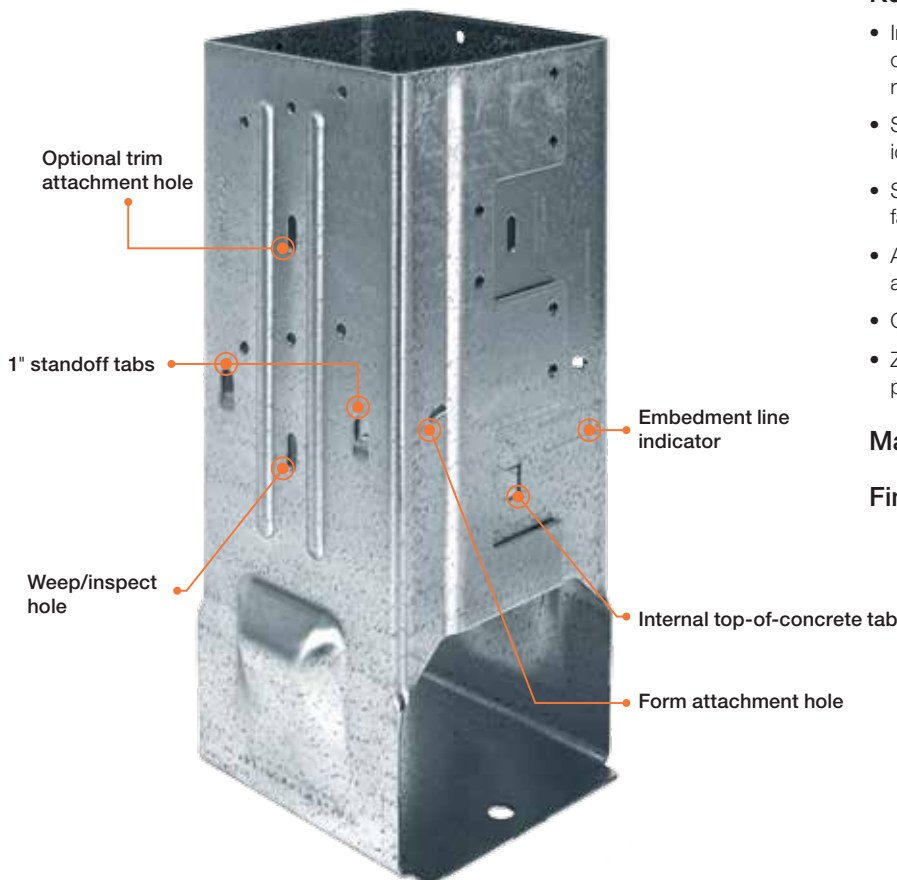
MPBZ Moment Post Base

New Moment-Resisting Post Base Offers Greater Design Possibilities

The MPBZ moment post base is the first product of its kind specifically designed to provide moment resistance for wood columns and posts. With its innovative sleeve design, the patent-pending MPBZ encapsulates the post and keeps it from rotating around its base when lateral loads are applied at the top. This provides both the specifier and the contractor with greater design options and the opportunity to create structures with wider openings and more unobstructed views.

The MPBZ is ideal for freestanding outdoor structures such as carports, fences, pergolas, decks, trash enclosures and screen walls. The moment-resisting post base can greatly reduce — and sometimes eliminate — the need for additional bracing in outdoor structures.

This innovative off-the-shelf solution has been engineered and tested to save specifiers and contractors the time and expense involved in designing, calculating and ordering custom-fabricated parts. Design tables provide moment, uplift, download and lateral load values for 4x4 and 6x6 posts.



Key Features:

- Internal tabs in the MPBZ provide the code-required 1" post standoff to help prevent rot from standing water and ground moisture
- Stamped indicators and additional internal tabs identify the required concrete embedment depth
- Strategically placed holes simplify installation and facilitate post-installation inspection
- Additional optional obround holes are included for attaching trim material
- One-piece design simplifies installation
- ZMAX® coating is ideal for most exterior and preservative-treated lumber applications

Material: 12 gauge

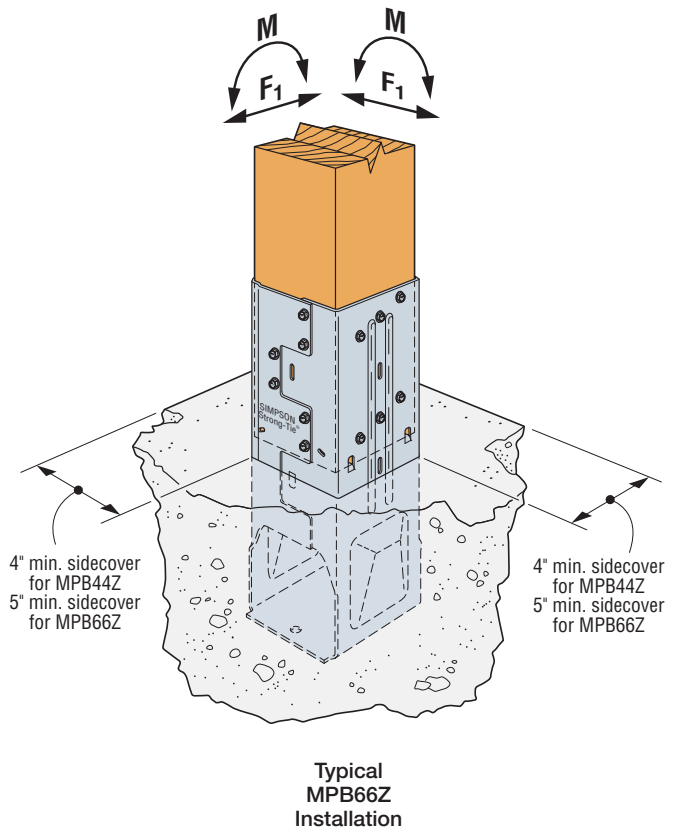
Finish: ZMAX coating

Front cover:
Pergola design by
foreverredwood.com

MPBZ Moment Post Base

Installation:

- Install MPBZ before concrete is placed using embedment level indicators and form-board attachment holes. Full concrete consolidation required.
- Place post on tabs 1" above top of concrete.
- Install Simpson Strong-Tie Strong-Drive® ¼" x 2½" SDS Heavy-Duty Connector screws, which are supplied with the MPBZ. (Lag screws will not achieve the same load.)
- Concrete level inside the part must not exceed ¼" above embedment line to allow water drainage.
- Annual inspection of connectors used in outdoor applications is advised. If significant corrosion is apparent or suspected, then the wood, fasteners and connectors should be evaluated by a qualified Designer or inspector.
- For seismic design in accordance with ASCE7, the following seismic design coefficients are recommended unless justified otherwise by analysis: $R = 1\frac{1}{2}$, $\Omega = 1\frac{1}{2}$, $C_d = 1\frac{1}{2}$.

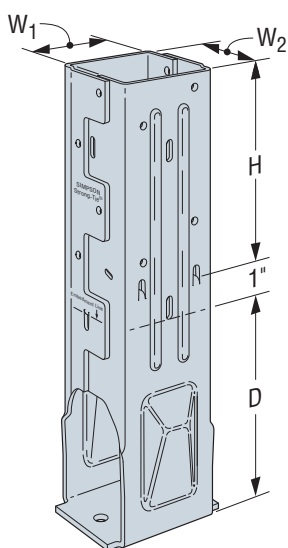


Allowable Load Table

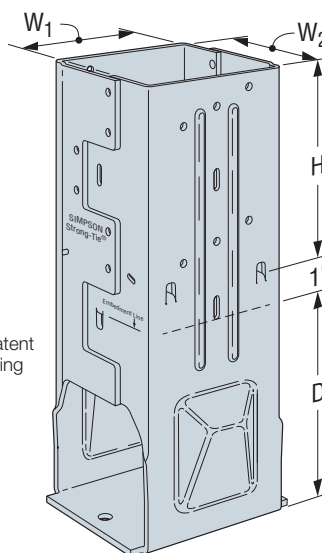
Model No.	Nominal Column Size	Dimensions (in.)			Simpson Strong-Tie SDS Screws	Concrete Allowable Loads						Wood Assembly Allowable Loads (DF/SP)			Rotational Stiffness K (in.-lb./rad.)
						Uplift (lb.)		Lateral F ₁ (lb.)		Moment M (ft.-lb.)		Download (100) (lb.)	Download (160) (lb.)	Moment M (ft.-lb.) (160)	
		W ₁ /W ₂	D	H		Non-Cracked	Cracked	Non-Cracked	Cracked	Non-Cracked	Cracked	Non-Cracked	Cracked		
Wind and Seismic Design Category A&B															
MPB44Z	4x4	3 ⁹ / ₁₆	7 ¹ / ₄	7 ¹ / ₄	(16) ¼" x 2½"	4,900	3,990	1,825	1,280	1,410	985	6,240	6,410	1,540	2,510,000
MPB66Z	6x6	5 ⁹ / ₁₆	7 ¹ / ₄	7 ¹ / ₄	(24) ¼" x 2½"	5,815	5,815	3,545	2,480	2,800	1,960	9,360	10,855	3,730	3,950,000
Seismic Design Category C-F															
MPB44Z	4x4	3 ⁹ / ₁₆	7 ¹ / ₄	7 ¹ / ₄	(16) ¼" x 2½"	4,785	3,350	1,535	1,075	1,180	830	6,240	6,410	1,540	2,510,000
MPB66Z	6x6	5 ⁹ / ₁₆	7 ¹ / ₄	7 ¹ / ₄	(24) ¼" x 2½"	5,815	5,815	2,980	2,085	2,055	1,645	9,360	10,855	3,730	3,950,000

1. Loads may not be increased for short-term loading.
2. Higher download can be achieved by solidly packing grout in the 1"-standoff area before installation of the post. Allowable download shall be based on either the wood post design or concrete design calculated per code.
3. Concrete shall have a minimum compressive strength, $f'c = 2,500$ psi.
4. Tabulated rotational stiffness accounts for the rotation of the base assembly due to deflection of the connector, fastener slip and post deformation. Designer must account for additional deflection due to bending of the post.
5. Multiply tabulated Seismic and Wind loads by 1.4 or 1.6 (1.67 for 2015 IBC) respectively to obtain LRFD capacities.
6. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
7. Download shall be limited by the design capacity of the post.
8. Foundation dimensions are for MPB anchorage only. Foundation design (size and reinforcement) by Designer.
9. Allowable load shall be the lesser of the wood assembly or concrete allowable load. To achieve full wood assembly allowable moment loads, additional concrete design and reinforcement by Designer is required.
10. For loading simultaneously in more than one direction, the allowable load must be evaluated using the following equation: (Design Uplift/ Allowable Uplift or Design Download/Allowable Download) + Design Moment/Allowable Moment + Design Lateral/Allowable Lateral ≤ 1.0 .
11. Tabulated load values may be used for rough sawn lumber without reduction factors. Rough size posts shall be planed to fit.

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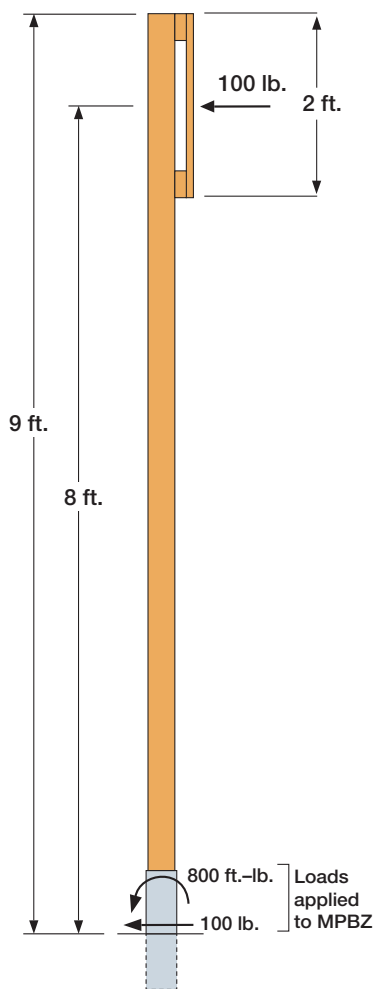


MPB44Z



MPB66Z

U.S. Patent Pending



Design Example

- The MPB44Z is used to support a 9' tall 4x4 post with a 2' x 2' sign mounted at the top. The wind load acting on the surface of the sign is determined to be 100 lb. The MPB44Z is installed into concrete that is assumed to be cracked.
 - The design lateral load due to wind at the MPB44Z is 100 lb.
 - The design moment due to wind at the MPB44Z is $(100 \text{ lb.}) \times (8 \text{ ft.}) = 800 \text{ ft.-lb.}$
 - The Allowable loads for the MPB44Z are:
 - Lateral (F_c) = 1,280 lb.
 - Moment (M) = 985 ft.-lb.
- Simultaneous Load Check: $\frac{800}{985} + \frac{100}{1,280} = 0.89$;
this is less than 1.0 and is therefore acceptable.

Deflection Evaluation

Deflection = Post Bending Deflection + Top of Post Deflection Due to Rotation About the Base

$$\Delta_{\text{bending}} = \frac{Pb^2(3h - b)}{6EI}$$

$h = 9 \text{ ft.}$
 $E = 1,600,000 \text{ psi}$ For DF No. 2
 $I = 12.51 \text{ in.}^2$ For a 4x4 Post
 $P = 100 \text{ lb.}$
 $b = 8 \text{ ft.}$

$$\Delta_{\text{bending}} = 1.75 \text{ in.}$$

$$\Delta_{\text{rotation}} = \frac{(M / K) \times h}{}$$

$M = 800 \text{ ft.-lb.}$
 $K = 2,510,000 \text{ in.-lb./radian}$
 $= \frac{800 \text{ ft.-lb.} \times (12)}{2,510,000 \text{ in.-lb./radian} \times 9 \text{ ft.} \times 12 \text{ in./ft.}}$
 $= 0.41 \text{ in.}$

$$\Delta_{\text{total}} = \Delta_{\text{bending}} + \Delta_{\text{rotation}}$$

$$= 1.75 + 0.41$$

$$= 2.16 \text{ in.}$$