

MCB™/MCBS™ Mass Timber Column Bases

Column-to-foundation concealed base connections with strength, simplicity and versatility.

The MCB and MCBS column bases provide standardized, connections between glulam columns and concrete foundations or supports. Of the two connection types, the MCB is the most economical option for use in conditions where a standoff between the column and concrete is not required. The MCBS provides the highest download capacity option for a given column size and can be used where a standoff is required. Examples include when the top of the column's foundation is located below the slab on grade, or when additional separation between the wood and concrete is desired architecturally or for moisture protection.

Features

- Concealed connection for architectural aesthetics and fire protection.
- Wide range of base sizes and load capacities.
- Simple routing for CNC fabrication of glulam columns.
- Configurable standoff height (MCBS).
- Threaded rods and leveling nuts may be used with grout pad for vertical adjustability. Base plate oversized holes provide horizontal adjustability.

Seismic Deformation Compatibility Testing:

Recommended for use at column-to-foundation connections in any Seismic Design Category. See L-C-MCBDRIFT for more information.

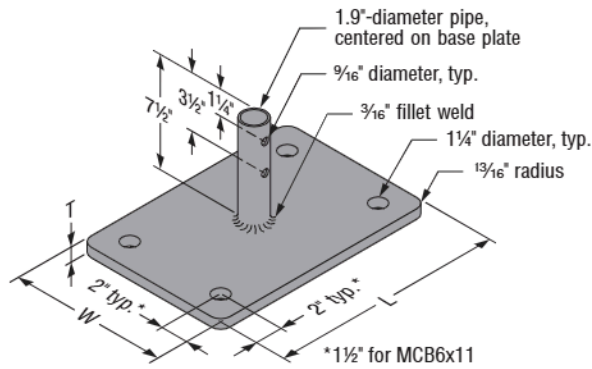
Material: Steel

Finish: Simpson Strong-Tie® gray paint. Available in HDG.

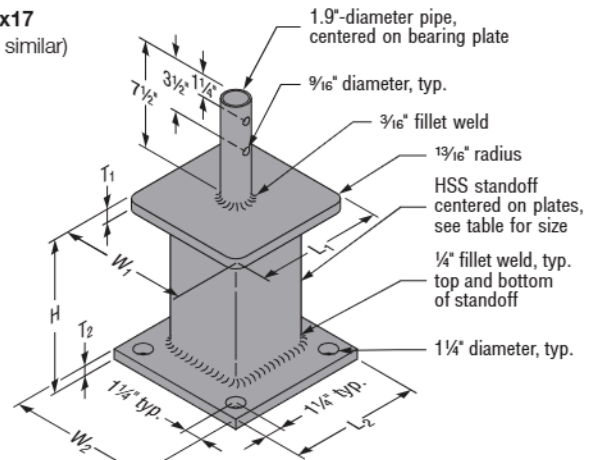
Fasteners: Dowels or bolts with $F_y = 36$ ksi min. and $F_u = 60$ ksi min. Fasteners not included with connector. 1/2"-diameter x 4 3/4"-long mechanically galvanized dowels are available (Model No. CJTPL).

Oversized holes in bases assume 3/4"-diameter anchors (not included)

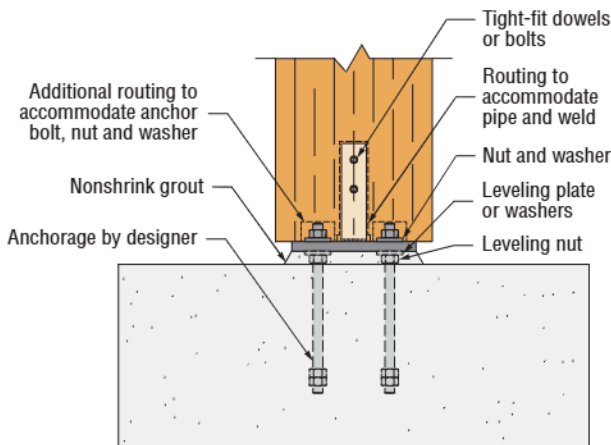
Options: Height of MCBS (H dimension) is configurable between 6" and 36"



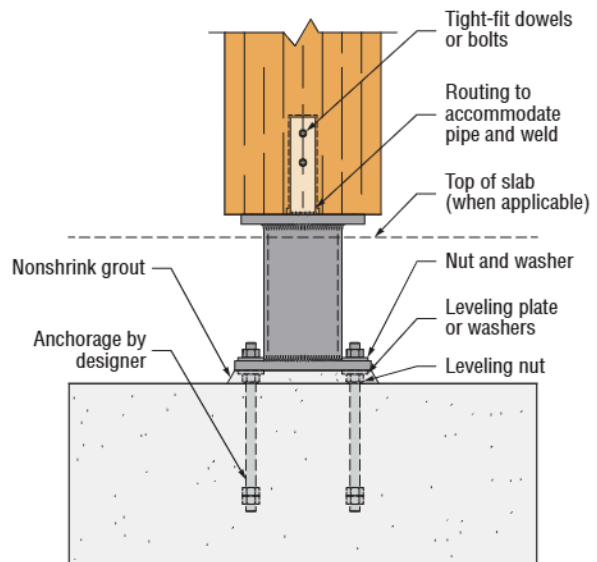
MCB11.5x17
(other models similar)



MCBS9.5x9.5
(other models similar)



MCB Installation



MCBS Installation

MCB™/MCBS™ Mass Timber Column Bases

Column Base General Notes:

1. Downloads shall be reduced where limited by capacity of the post.
2. The wood member width and depth must be greater than or equal to the base plate width and depth to achieve tabulated allowable download capacity.
3. Allowable loads are based on minimum compression parallel to grain $F_c = 1,950$ psi. For lower F_c values, reduce allowable loads proportionally.
4. The designer is responsible for concrete design and anchorage to concrete. Concrete support area (A_2) shall be 4x the base plate area (A_1). See AISC Design Guide 1, Third Edition.
5. Concrete shall have a minimum compressive strength of $f'_c = 3,000$ psi. The grout shall have a minimum compressive strength of 2x the concrete strength.
6. The base plate provides (4) 1¼" oversized anchor bolt holes to accommodate ¾" anchor bolts. Anchorage by designer.

MCB Allowable Downloads

Model No.	Base Plate Size (in.)			Allowable Downloads (lb.)
	W	L	T	
MCB6x11	6	11	¾	75,500
MCB8x8	8	8	¾	71,500
MCB8x14	8	14	¾	165,500
MCB9.5x9.5	9½	9½	¾	123,000
MCB9.5x15.5	9½	15½	¾	234,000
MCB11.5x11.5	11½	11½	¾	205,000
MCB11.5x17	11½	17	¾	328,000
MCB13.5x13.5	13½	13½	¾	302,500
MCB13.5x18.5	13½	18½	¾	434,000
MCB15.5x15.5	15½	15½	¾	415,500

1. See Column Base General Notes.
2. The MCB tabulated download values assume that the bearing area of the column has been reduced by 26.6 in² to account for a 2¾"-diameter column end routing to accommodate the pipe weld to the top of the base plate and (4) 2⅝"-diameter recesses for anchor bolt ends, nuts and washers (see routing details). For different routing dimensions, adjust the bearing area and allowable download capacity accordingly.

MCBS Allowable Downloads

Model No.	Bearing Plate Size (in.)			Standoff Dimensions (Standard HSS Sizes)	Base Plate Size (in.)			Allowable Downloads (lb.)
	W1	L1	T1		W2	L2	T2	
MCBS6x6	6	6	¾	4 x 4 x ⅝	8½	8½	¾	57,500
MCBS6x11	6	11	¾	8 x 4 x ⅝	8½	12½	¾	116,000
MCBS8x8	8	8	¾	4 x 4 x ⅝	8½	8½	¾	110,000
MCBS8x14	8	14	⅞	10 x 4 x ⅝	8½	14½	⅞	205,500
MCBS9.5x9.5	9½	9½	¾	6 x 6 x ⅝	10½	10½	¾	161,000
MCBS9.5x15.5	9½	15½	¾	12 x 6 x ⅝	10½	16½	⅞	274,500
MCBS11.5x11.5	11½	11½	¾	8 x 8 x ⅝	12½	12½	⅞	245,000
MCBS11.5x17	11½	17	1	12 x 8 x ⅝	12½	16½	1	368,500
MCBS13.5x13.5	13½	13½	¾	10 x 10 x ⅝	14½	14½	⅞	342,500
MCBS13.5x18.5	13½	18½	1	14 x 10 x ⅝	14½	18½	1	458,000
MCBS15.5x15.5	15½	15½	¾	12 x 12 x ⅝	16½	16½	1	455,500

1. See Column Base General Notes.
2. The MCBS tabulated download values assume that the bearing area of the column has been reduced by 6.0 in² to account for a 2¾"-diameter column end routing to accommodate the pipe weld to the top of the bearing plate (See routing details). For different routing dimensions, adjust the bearing area and allowable download capacity accordingly.

MCB and MCBS Allowable Uplift and Lateral Loads (Wood-to-Steel Connection)

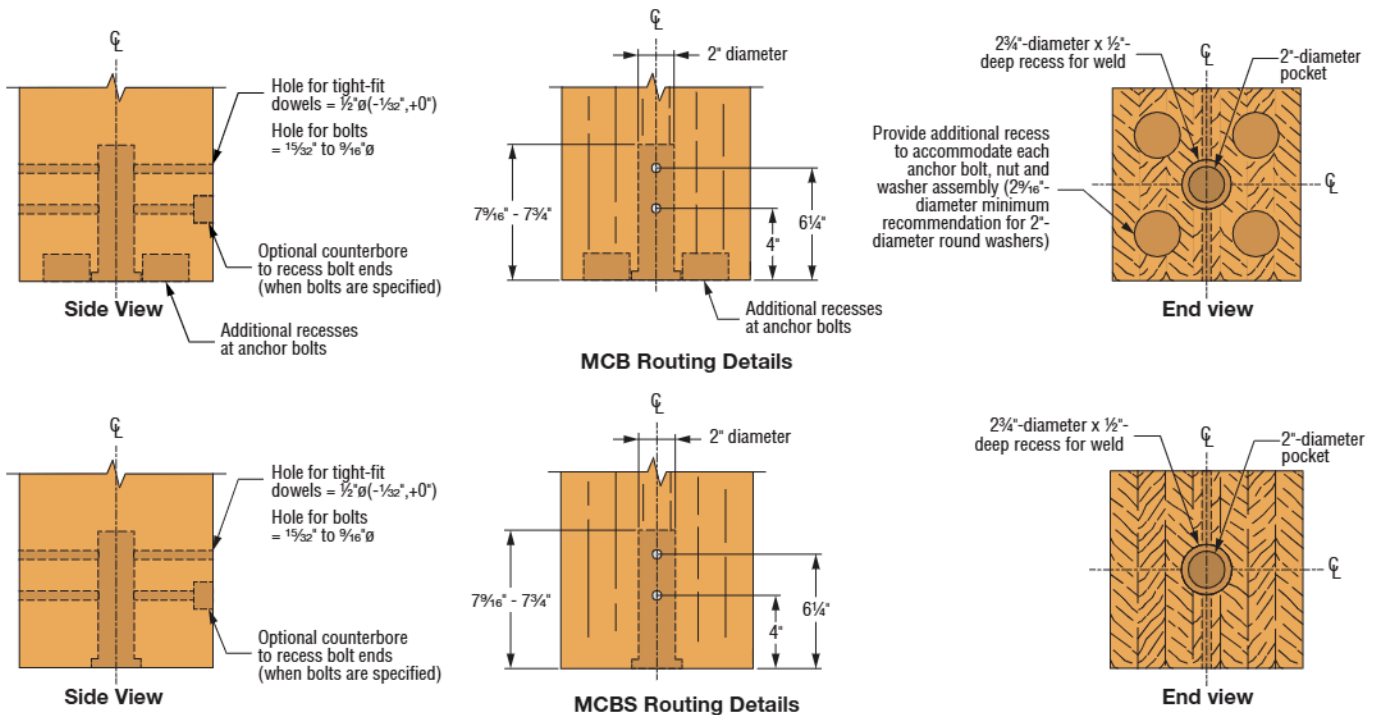
Model No.	Minimum Column Width (in.)	Minimum Column Depth (in.)	Fasteners		Allowable Load (lb.) (DF/SP)		
			Qty.	Type	Uplift (160)	Lateral (160)	
						Concurrent Axial Compression	
< 20 kips	≥ 20 kips						
MCB, MCBS	8¾	9	2	½" x 4¾" (min.) dowel or ½" bolt	3,790	1,500	3,230
	12¼	15				2,500	5,470

1. See Column Base General Notes.
2. Uplift and lateral loads have been increased for wind or earthquake loading, with no further increase allowed; reduce where other loads govern.
3. Allowable loads are based on DF/SP lumber. For SPF/HF lumber, multiply tabulated loads by 0.90 for uplift and 0.80 for lateral.
4. For SP glulam with min. column width 8½" and 12", use loads published for width 8¾" and 12¼", respectively.
5. For column width 6¾", the allowable uplift = 2,670 lb. and the allowable lateral load = 1,310 lb.
6. For simultaneous uplift and lateral loads, the connector must be evaluated using the Unity Equation: Design Uplift/Allowable Uplift + Design Lateral/Allowable Lateral ≤ 1.0.
7. Lead holes for dowels shall be drilled 0" to ½" smaller than the actual dowel diameter, per NDS 2018/2024 Section 12.1.7.1.
8. Holes for bolts shall be a minimum of ½" to a maximum of ⅞" larger than the diameter per, NDS 2018/2024 Section 12.1.3.2.

Routing and Installation

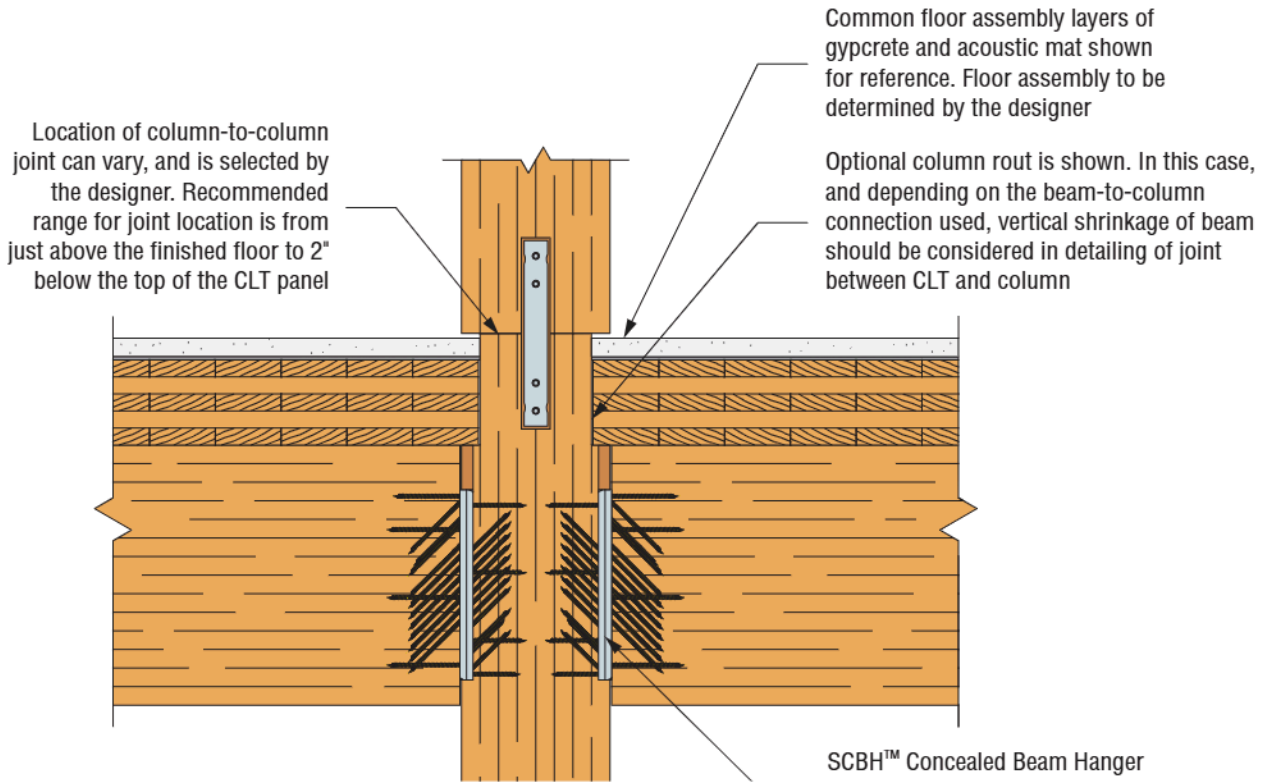
Glulam Fabrication Notes:

1. It is recommended to use CNC fabrication equipment to cut the glulam column, mill the column end and drill fastener holes. Accurate fabrication with hand tools is possible, but extra care must be taken to ensure precision.
2. The column ends must be cut level to ensure proper bearing between the columns.
3. Dowel hole and end mill locations must be located on the true centerlines of the glulam (+/- ½"). Dimensioning off of one edge can lead to mislocation errors, as the true width or depth of a glulam column can vary from the theoretical size. Refer to ANSI A190.1 for dimensional tolerances for the manufacture of glulam members. Deviating from the centerline more than ½" in either direction can lead to fit-up issues, as the connector hole oversize for the fasteners is ⅛".
4. To reduce the likelihood of the drill bit wandering at wider columns, counterboring can be used to reduce the depth of drilling required for the dowel or bolt holes. Additionally, drilling from both sides of the column can help mitigate wander and help ensure proper hole alignment.

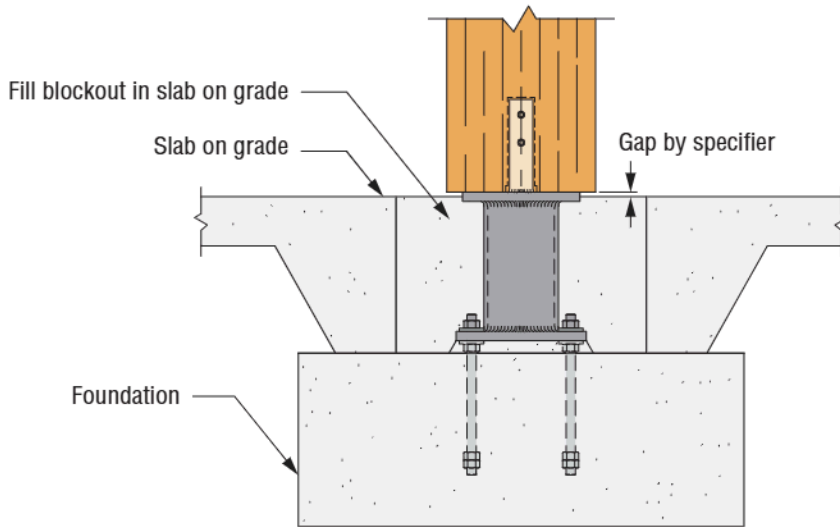


MCB/MCBS Installation Notes:

1. Ensure anchors are in the correct location in the foundation.
2. Place MCB or MCBS on the anchor rods and use leveling nuts and the oversized holes in the base plate to accurately position the base vertically and horizontally.
3. Attach plate washers and nuts to anchors and install nonshrink grout between the base plate and the foundation.
4. Lower the glulam column onto the base and install tight-fit dowels or bolts to connect the column to the base.



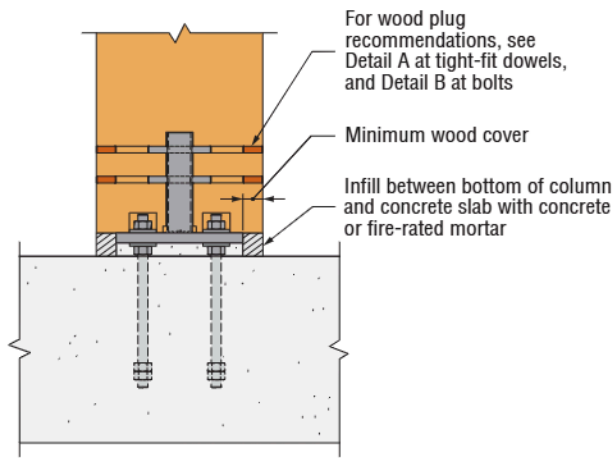
MCT™ Typical Detail with Glulam Beams Framing into Lower Column
 (SCBH shown, CBH, ACBH, HSKP concealed hangers similar)



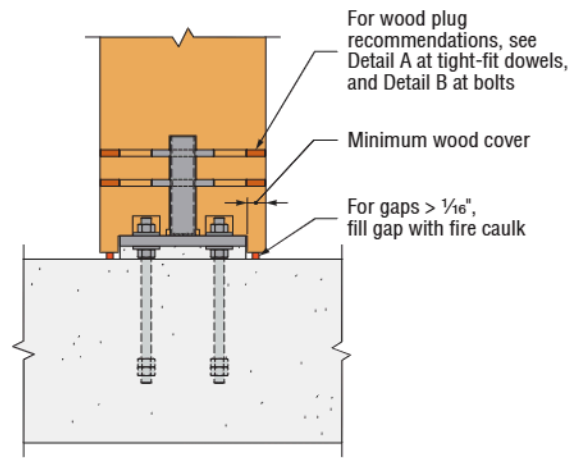
MCBS™ Typical Standoff Base Detail

Glulam Column Connections for Mass Timber

Details for Fire-Rated Column Connections

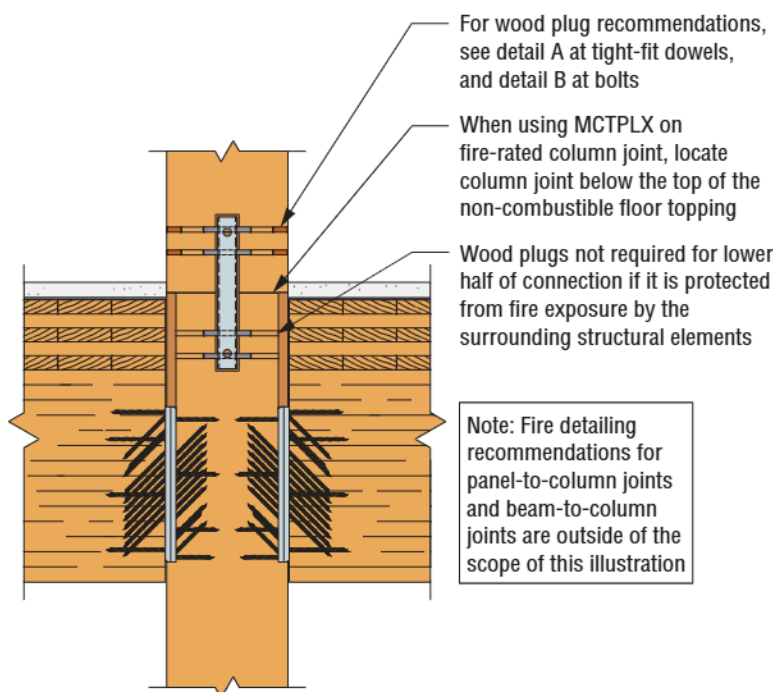


Fill gap with concrete or fire-rated mortar

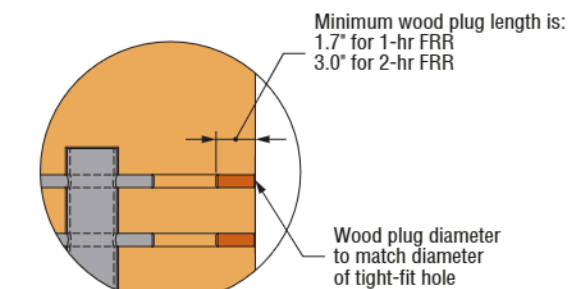


Extend wood cover and fire caulk gap

Fire Detailing Recommendations for MCB™ Column-to-Foundation Connection (MCBS™ similar)

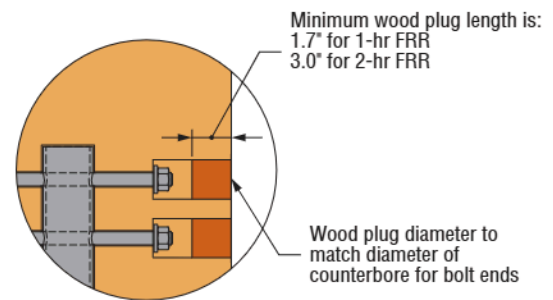


Fire Detailing Recommendations for MCT™ Column-to-Column Connection



Detail A

Wood plugs for tight-fit dowels



Detail B

Wood plugs for bolts

General Fire Detailing Notes:

1. Minimum wood cover around steel plate: 1-hr FRR = 1.7"; 2-hr FRR = 3.0". FRR = Fire Resistance Rating.
2. Wood cover and plug length calculations meet IBC Section 703.2.2 (3), via ANSI/AWC *National Design Specification for Wood Construction*, Chapter 16. Calculation methods meet AWC Technical Report #10 *Calculating the Fire Resistance of Wood Members and Assemblies* (2018) or ANSI/AWC *Fire Design Specification for Wood Construction* (2024).
3. At wood plugs, apply fire caulk at any gaps > 1/16".
4. Fire caulk, putty, and mortar products:
 - 3M Fire Barrier Sealant CP 25WB+.
 - 3M Fire Barrier Moldable Putty Stix MP+.
 - 3M Fire Barrier Mortar.
5. The details and fire resistance products provided are not exhaustive, and other detailing strategies and products can be used to achieve a fire resistance rating. Consult a qualified design professional.