

# MANUFACTURING AND MACHINING SPECIFICATIONS

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**Applicant:**  
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ATTENTION: Andreas Bolz, Business Manager Fire Protection Materials

## APPLICABLE REQUIREMENTS:

<b>CAN/ULC S104-15 (R2020)</b>	<i>Standard Method for Fire Tests of Door Assemblies</i>
<b>UL 10B (2020)</b>	<i>Fire Tests of Doors Assemblies</i>
<b>UL 10C (2021)</b>	<i>Fire Tests of Doors Assemblies</i>
<b>NFPA 2521 2022</b>	<i>Standard Methods of Fire Tests of Door Assemblies</i>

## SUBJECT:

MANUFACTURING AND MACHINING SPECIFICATIONS FOR WOLMAN – 90 MINUTE  
CATEGORY “C” NEUTRAL AND POSITIVE PRESSURE FIRE RATED FRAMES WITH HOSE  
STREAM

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**90-MINUTE FIRE DOOR FRAME:**

**Materials:**

Medium Density Fiberboard (MDF)

- Meeting ANSI A208.2
- Minimum 31 lbs./ft<sup>3</sup> density

Hardwood

- Minimum 27 lbs./ft<sup>3</sup> density

Proprietary Wolman Laminated Core:

Palusol SW 60-1 Core (0.6250" Thickness)

Palusol SW 20-1 Core (0.3125" Thickness)

- Composite continuous core type
- Integrated edge seal

**Maximum Sizes:**

Swing Type:	Maximum Dimensions		Figure:
	Width:	Height:	
Single Swing	3'6" (1067 mm)	9'0" (2743 mm)	1
Standard Pairs	7'0" (2134 mm)	9'0" (2743 mm)	
Single Swing*	3'6" (1067 mm)	10'0" (3048 mm)	2
Double Egress Pairs	Not Permitted		

\*Note 10 ft. frame is limited to 5/8" stop depth and maximum 4" by 4 1/2" hinges

**Limitations:**

Minimum Frame Width:	4-3/4"
Maximum Frame Width:	Equivalent to wall thickness
Minimum Frame Thickness:	5/8" (-1/16")
Minimum Rabbet for Door:	1-3/4"
Minimum Stop Height:	1/2" except 5/8" for 10 ft. high frame
Minimum Stop Width:	1-3/16"

**Frame Sections:**

Frame:	Palusol SW 60-1 Core Palusol SW 20-1 Core (3 Layers)
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Frame thickness additions (See Figure 4):

- Addition of MDF and SW20-1 Cores to the backside of the frame cores. Also see Figure 4 and 8 for built-up frame for frames with or without invisible hinges.

Frame depth additions (See Figure 4):

- Addition of MDF or Hardwood to the frame section equivalent to the wall thickness.

Flat Laminated: Maximum Thickness on frame opening side = 1/8" hardwood veneer.

Veneer Wrapped: Maximum Thickness = 1/40" veneer may be laminated over MDF.

Hardwood Facings: Maximum 1/4" x frame depth to maximum 1" Hardwood Facing adhered to the face of the frame.

### **Stops:**

Single Rabbet or Double Rabbet (applied: flat laminated or "T" Stop).

Material: MDF (minimum 31 lbs/ft<sup>3</sup> density) or Hardwood (minimum 27 lbs./ft<sup>3</sup> density).

Stops must be applied with a small bead of glue or silicone behind the stop and fastened with finishing nails at 12" on center. Stops may be field applied to ensure proper fit with fire door.

### **Adhesives:**

Any PVA or PUR listed adhesives for use in 90 minute fire rated door assemblies.

Follow the adhesive manufacturers' instructions and bulletins for mixing, application rates, pressing parameters, cure temperatures, and safe use practices.

### **Frame Corner Connections and Installation Instructions**

See Figure 9.

### **Frame Leg Extensions for frames taller than 8 ft.**

See Figure 5.

### **Frame Build-Up Design for Concealed Closer and Electric Strike**

See Figures 6 and 7.

**Hinges and Hardware:**

All hinges and applicable hardware must be Listed and fire rated for use in openings at or above the fire rating of the frame system being installed, for the same type of frame (composite type) and to conform to UL10C. See Figure 8 for special construction and preparation for invisible hinges. – Tectus TE 526 and 527 series.

Preparation of all hinges and hardware shall be made in accordance with NFPA 80, the hinge or hardware manufacturer's installation instructions and templates.

**Electric Raceways:**

A ¼" diameter hole is permitted anywhere below 40" above the floor on the hinge or latch frame leg. Wire can then be routed through the hole for electronically controlled hardware. The hole may be left open or sealed with silicone caulking.

**Mortised Door Closer:**

Concealed closer allowed in the frame header. Maximum 2-1/6" x 3-5/8" x 12" pocket dimensions lined with Interdens Type 15 on 4 sides [See Figure 6].

Header is constructed with layers of Palusol SW cores. Minimum 3/8" frame header thickness above the concealed closer pocket [See Figure 6].

**Mortised Electric Strike:**

Frame thickness shall be built up to fully enclosed the closer body. Maximum mortise height 3 ½". See Figure 7.

**Installation:**

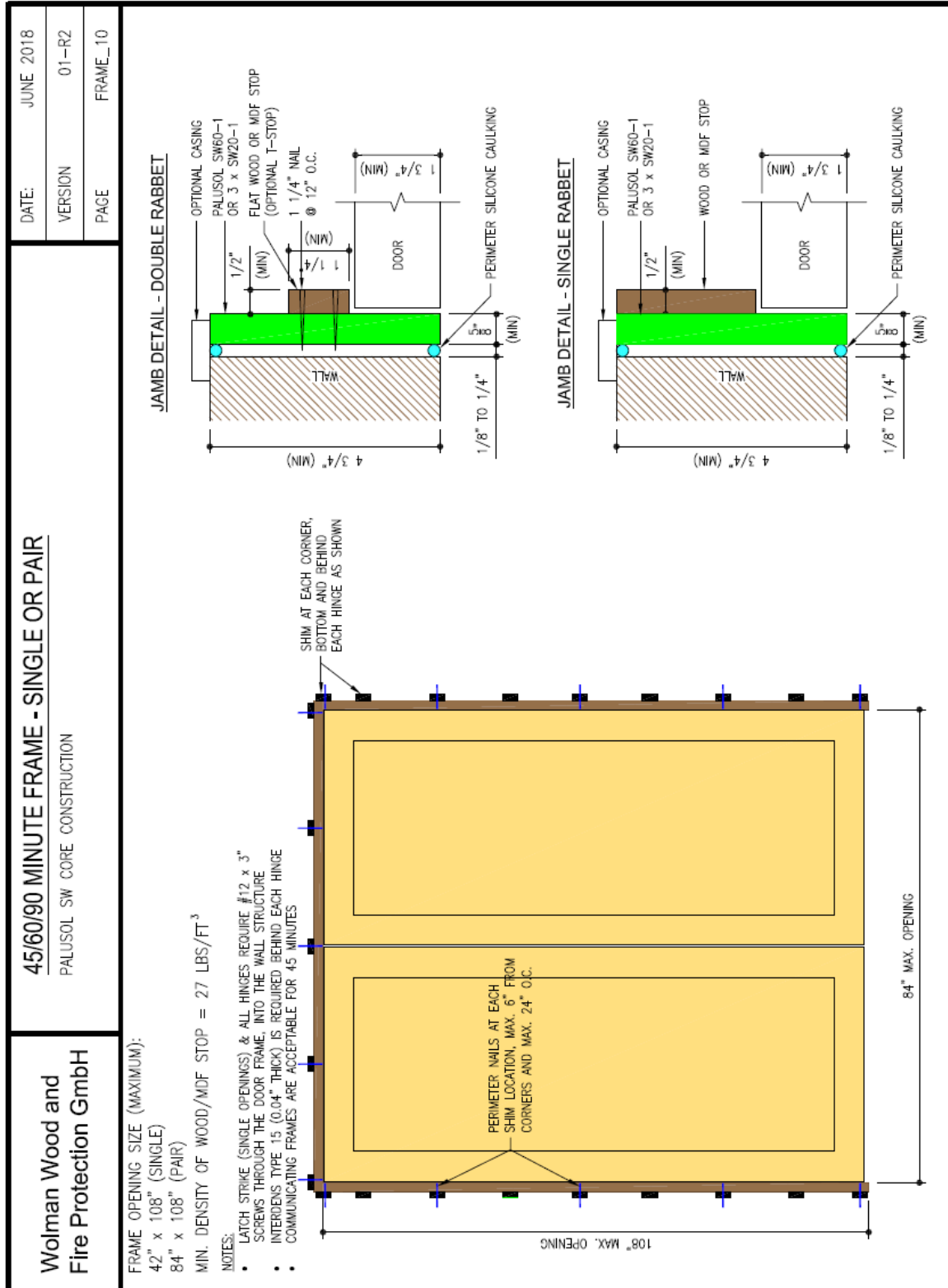
Shims need to be installed as per the drawing in Figure 1. Silicone caulking applied between the jamb and rough opening on both sides of the assembly. Each hinge needs to be fastened through the shim into the frame with at least #12 x 2-1/2" screws. The frame can then be fastened at all non-hinge shim locations with 2" finishing nails. Follow NFPA 80 Installation guidelines. Installation instructions shall be supplied with frames (See Figure 9)

**Test Reports:**

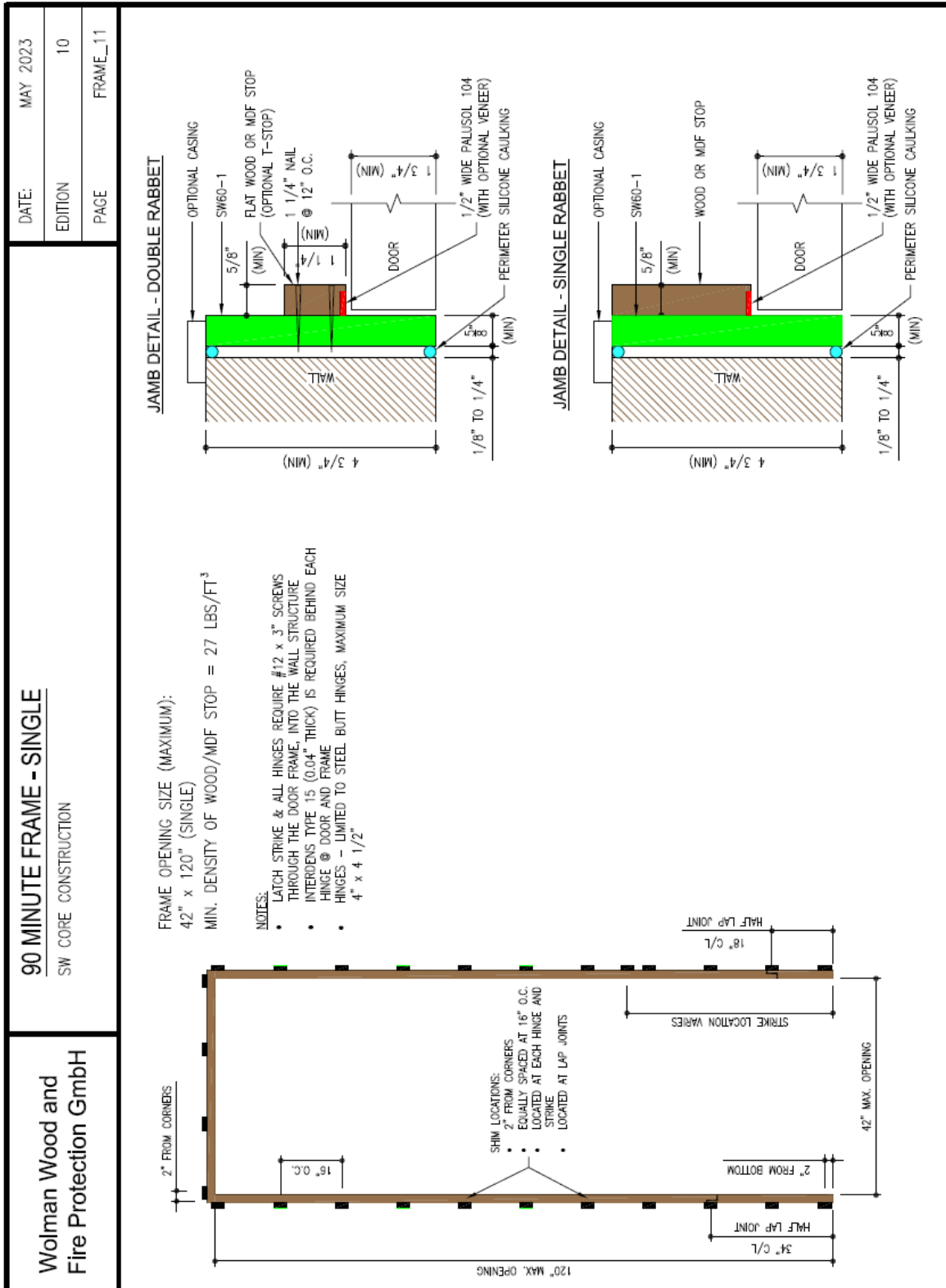
Test Report #	Date Issued
QAI Test Report # T848-4	June 2, 2014
QAI Engineering Evaluation # F411-5-6	April 15, 2015
QAI Engineering Evaluation # F411-5-8	April 16, 2015
QAI Engineering Evaluation # F411-5-27	October 16, 2017
QAI Engineering Evaluation # F411-5-28	October 16, 2017
QAI Engineering Evaluation # T848-22b	February 27, 2018
QAI Engineering Evaluation # T848-22c	June 10, 2020
QAI Test Report # T1470 – 3A	March 1, 2022
QAI Test Report # T1470 - 3B	March 23, 2022
QAI Engineering Evaluation # T1470 - 4B	May 29, 2023

**APPENDIX A - Drawings**

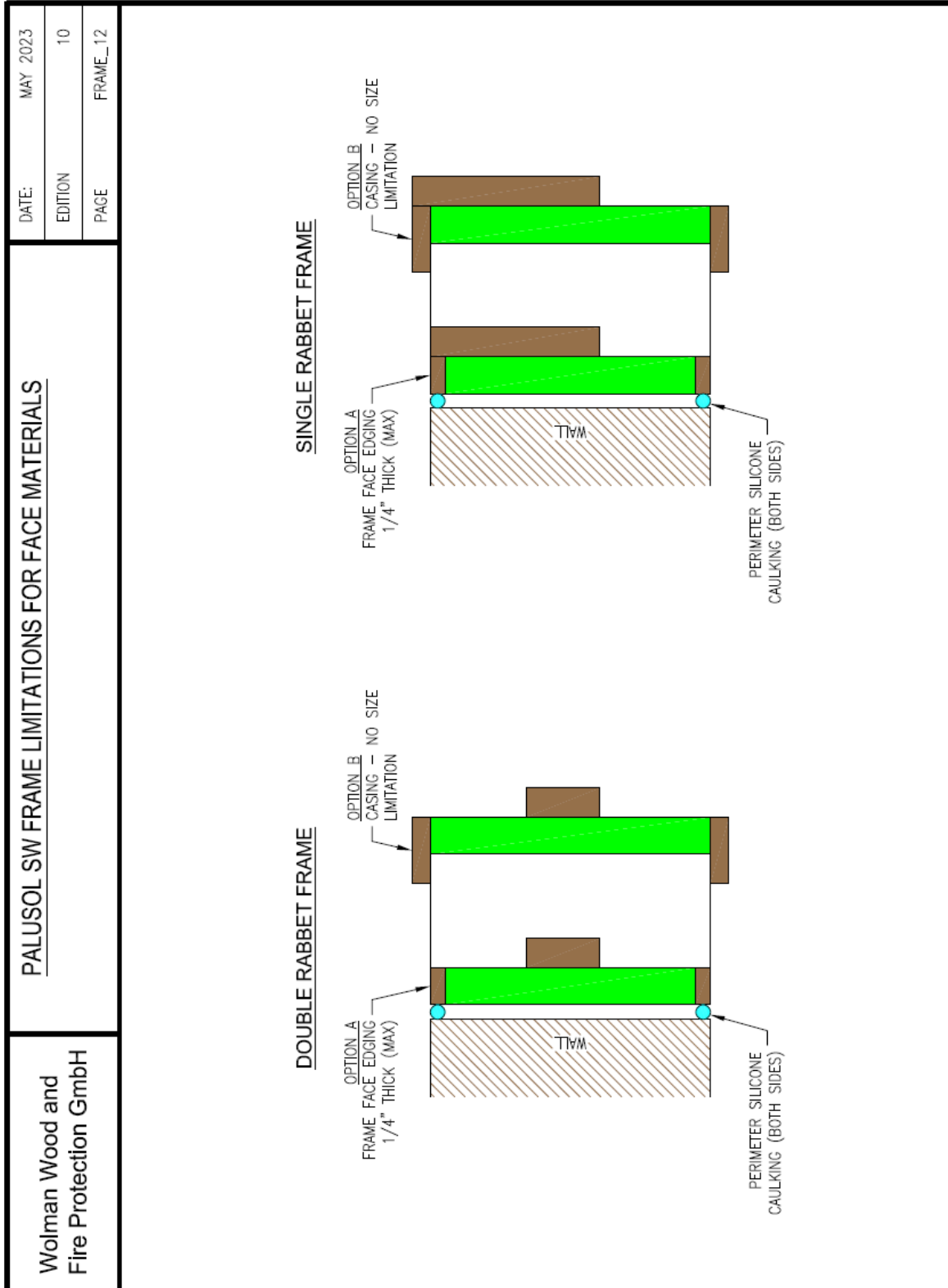
Page	Title
A1	<b>Figure 1:</b> 90 min door frame assembly details
A2	<b>Figure 2:</b> 10 ft. height frame construction details
A3	<b>Figure 3:</b> Frame facing options
A4	<b>Figure 4:</b> Options for extending frame depth and thickness
A5	<b>Figure 5:</b> Frame Leg extension details
A6	<b>Figure 6:</b> Construction details with concealed closer body in the frame
A7	<b>Figure 7:</b> Electric Strike Preparation
A8	<b>Figure 8:</b> Invisible Hinge Preparation
A9	<b>Figure 9:</b> Frame Installation Instructions



**Figure 1: 90 minute rated frame assembly.**

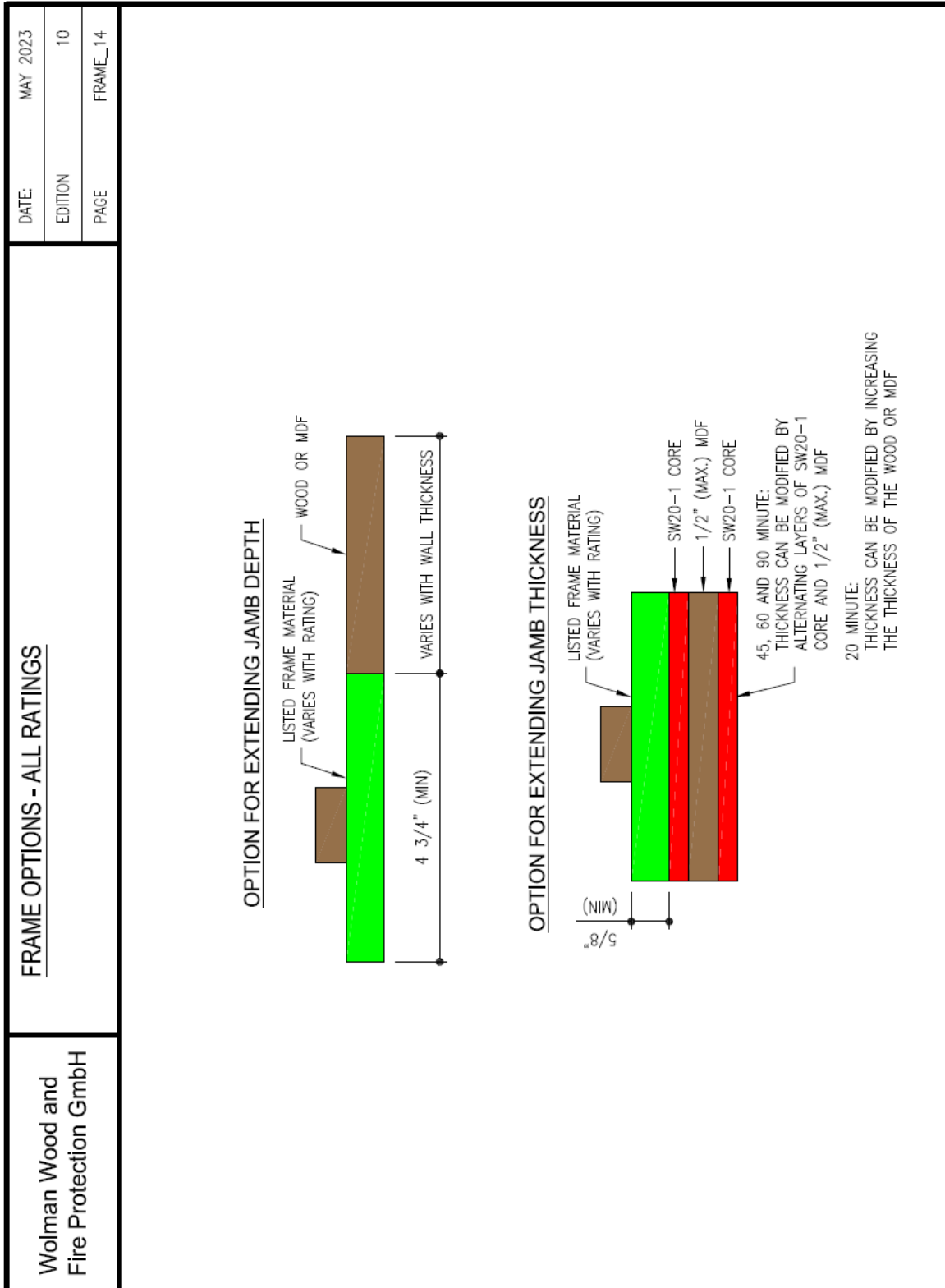


**Figure 2: 10 ft. high rated frame assembly.**

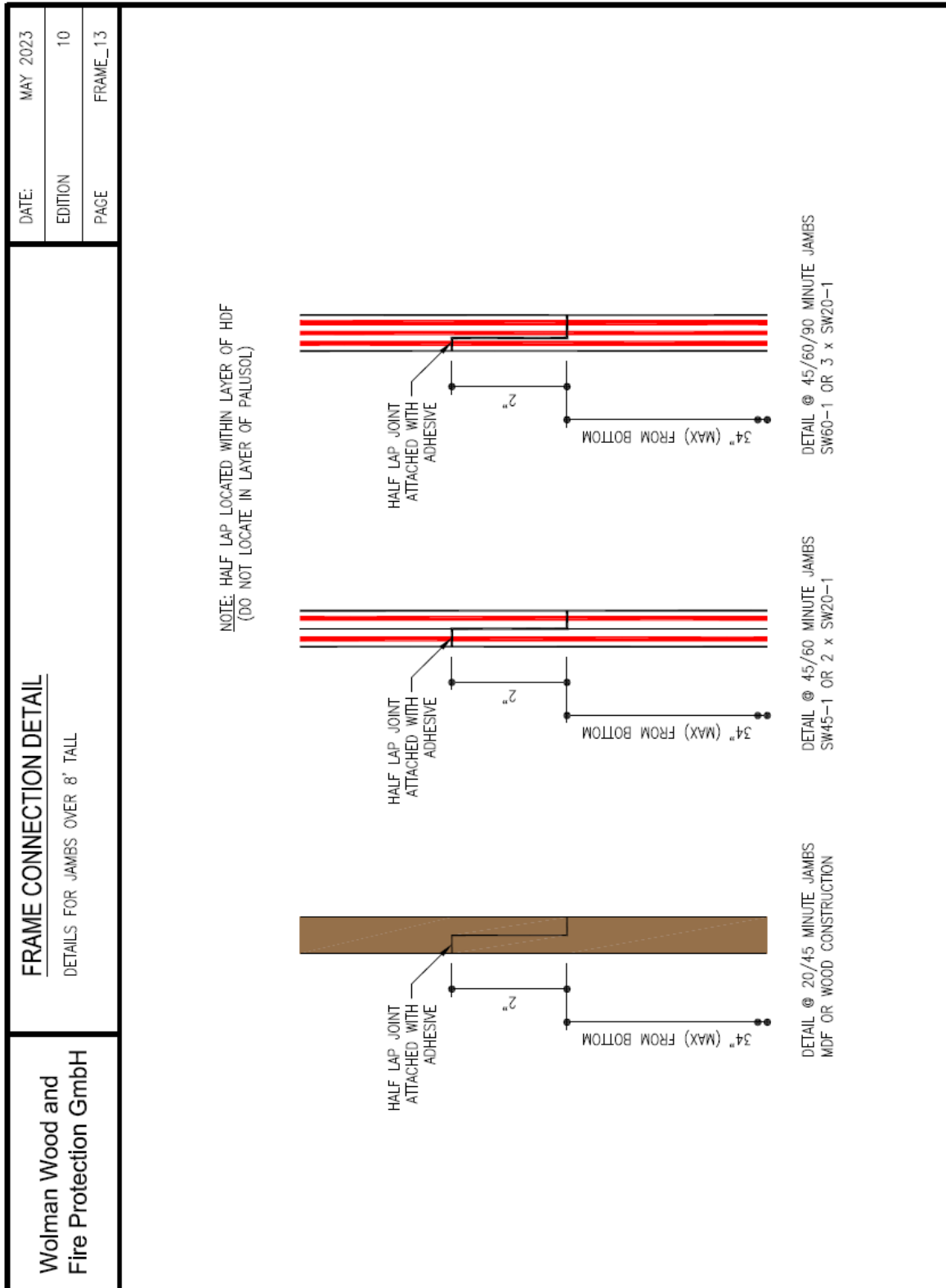


**Figure 3: Frame facing options.**

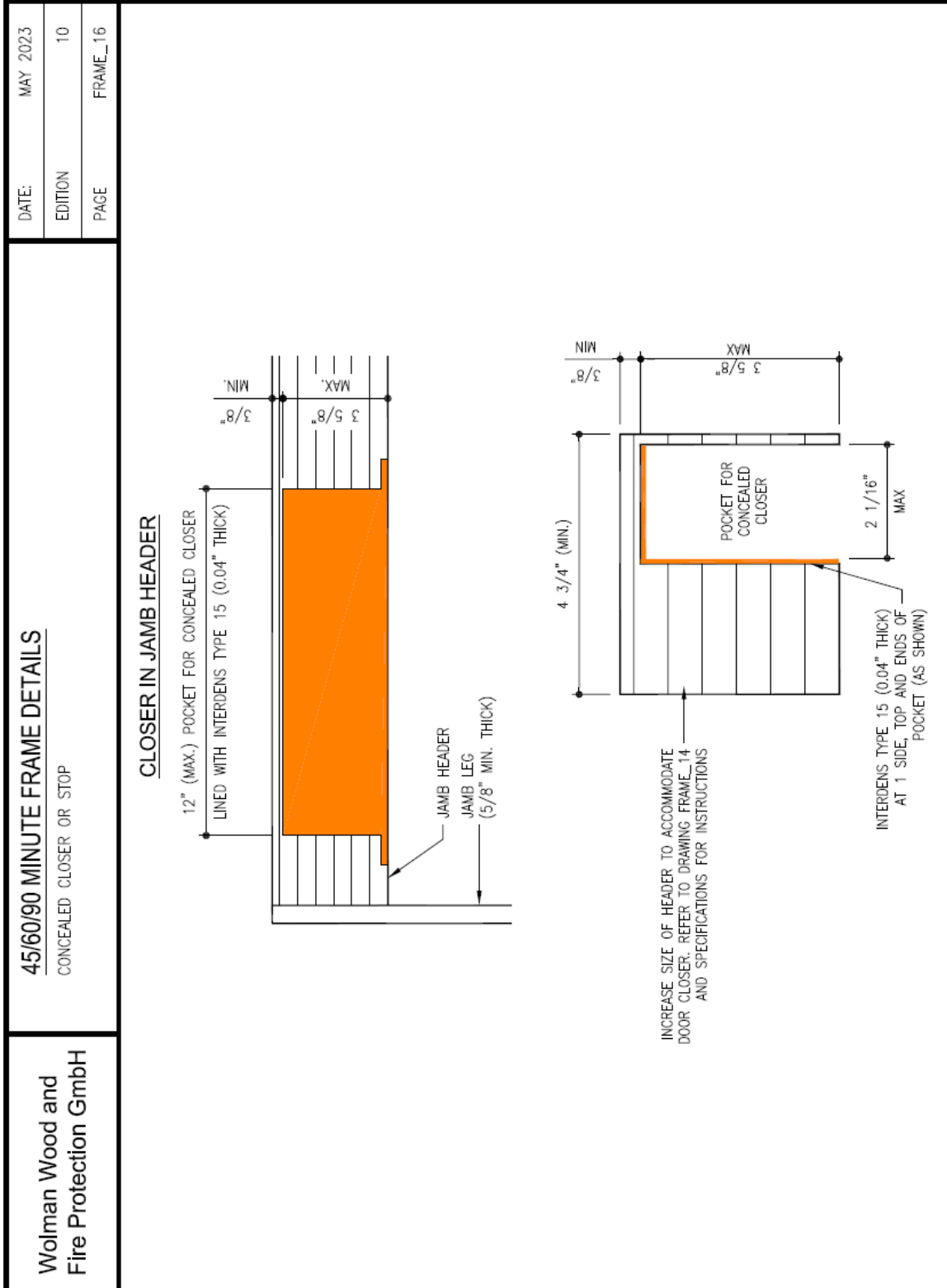




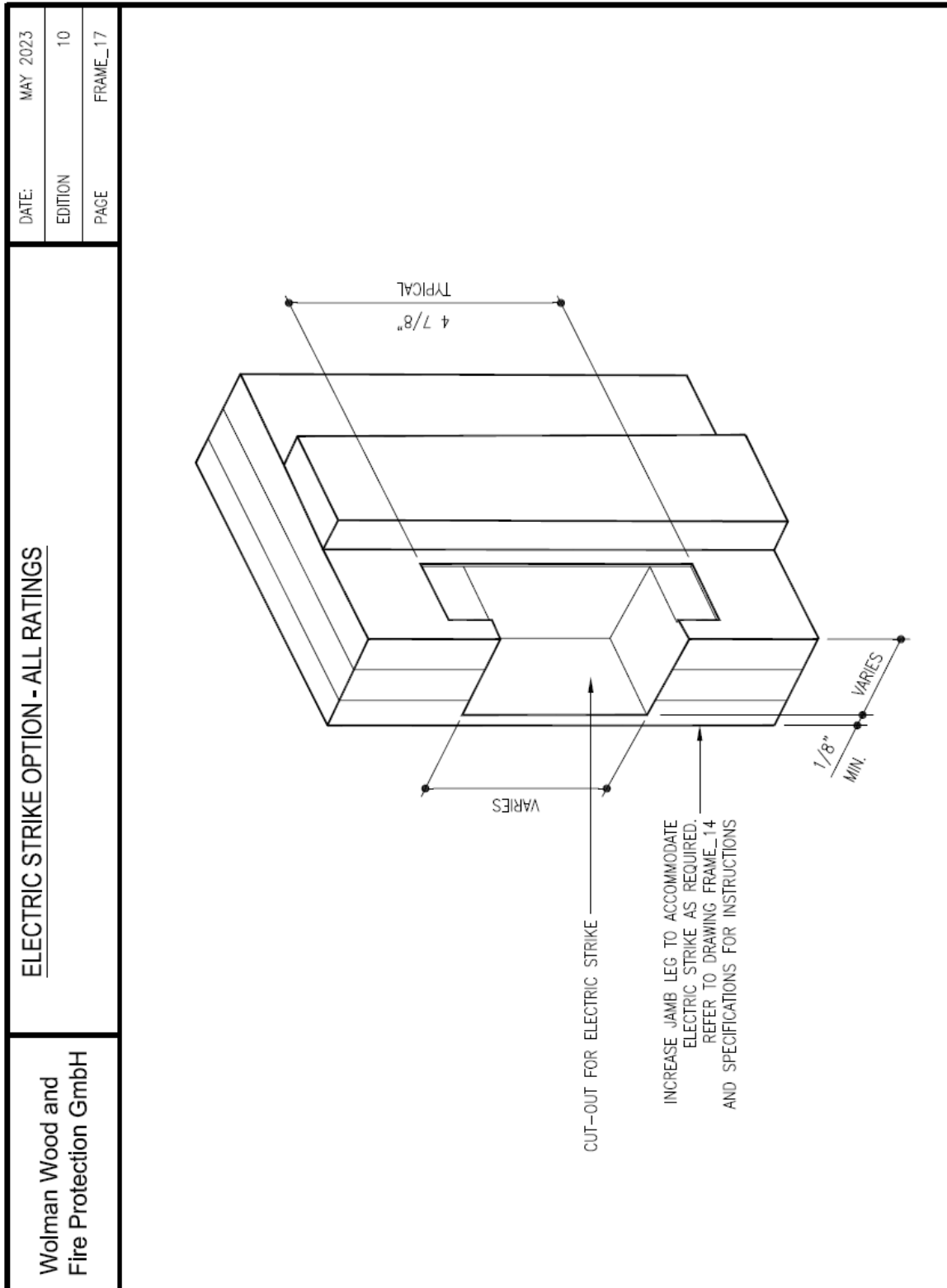
**Figure 4:** Options for extending jamb depth and thickness.



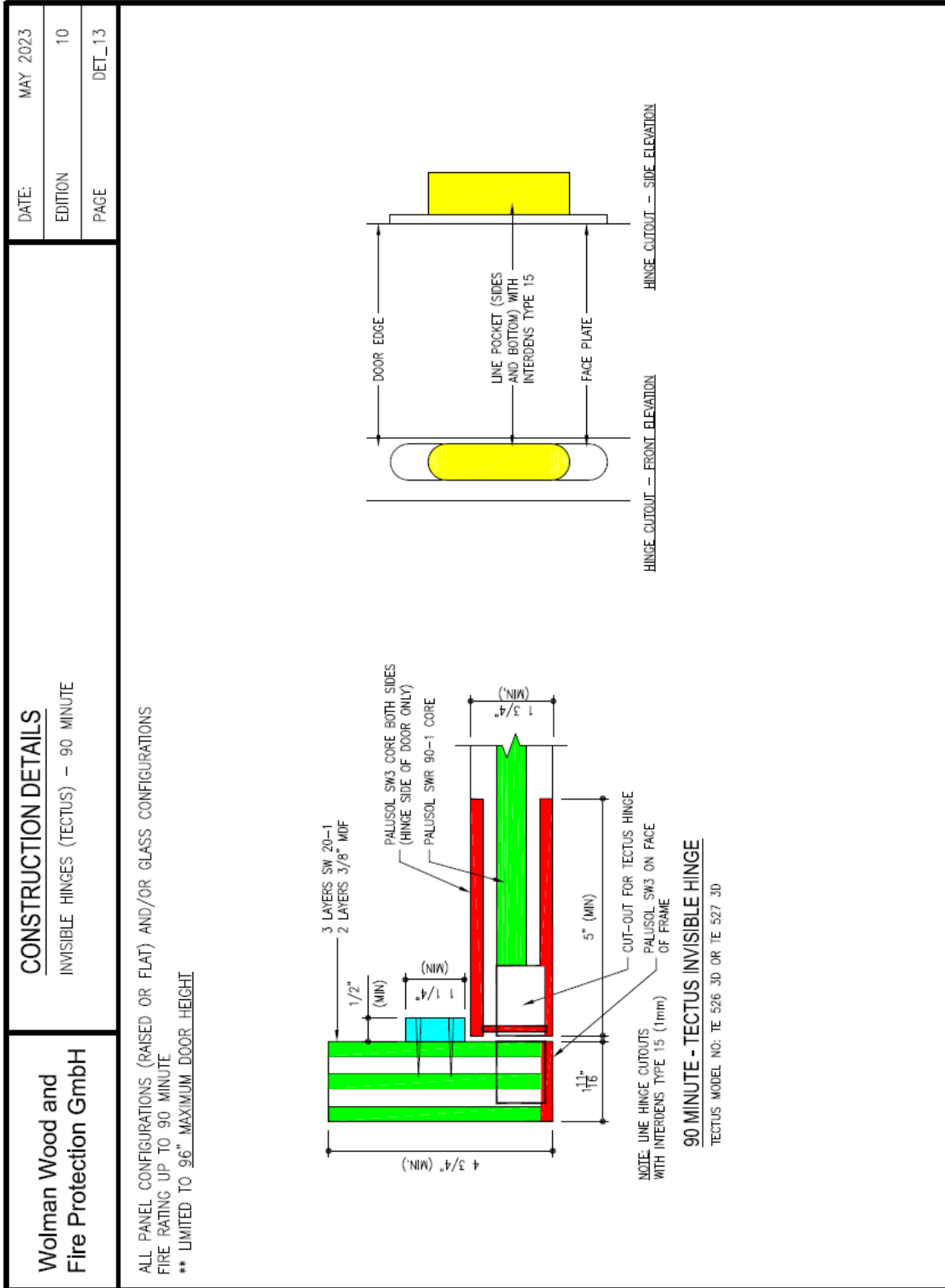
**Figure 5: 20 to 90 minutes leg length connection details.**



**Figure 6:** 45 to 90 minutes frame construction details with concealed closer body in the frame.



**Figure 7:** 45 to 90 minutes frame construction details for mortise electric strike body.



**Figure 8:** 90 minutes frame construction details for invisible hinges.

<p><b>Wolman Wood and Fire Protection GmbH</b></p>	<p><b>FIRE RATED FRAME INSTALLATION INSTRUCTIONS</b></p> <p>20, 45, 60 AND 90 MINUTE FIRE RESISTANCE RATINGS</p>	<p>DATE: MAY 2023</p> <p>EDITION: 10</p> <p>PAGE: FRAME_18</p>
<p><b>A. Frame header to leg connections</b></p> <p>Use minimum four (4) No. 8 or larger wood screws to connect frame legs to header. Screws shall penetrate at least 1" depth into header, and be evenly spaced. Pre-drill holes. For frames with depth larger than 6", add an additional screw.</p> <p><b>B. Shim Space, Shims and Fastening Frame to Wall</b></p> <p>Maximum 1/4" shim space. Shim at each hinge, latch and screw fastening location. Fasten frame near base and every 18" to 20" of frame leg. Shim and fasten header 3" from edge, and at the center of door leaf. For pairs of doors, this will require six fastening points per header.</p> <p>Fasten frames with two (2) No. 8 or larger wood screws or finishing nails per fastening location. One screw or nail is hidden behind the stop, the other is located in the door rabbet. The screws shall be long enough to penetrate at least 1" into the wall studs.</p> <p><b>C. Preparation for installation in steel stud wall construction</b></p> <p>The steel stud opening shall be lined with minimum 1/2" plywood or solid wood to provide holding strength for the frame screws or nails. The wood lining shall be fastened with screws every 18" to 20" with screws installed through the back side of the steel studs and header track. The gypsum wallboard will extend to cover the exposed edge of wood lining.</p> <p><b>D. Preparation for installation in concrete or masonry construction</b></p> <p>The opening is lined with minimum 1 1/2" wood stud attached to the masonry with lag bolts or equivalent fastening method every 30" maximum. The exposed 1 1/2" faces of the wood lining is protected using Type X gypsum wallboard, appropriate for the wall rating, on both sides of the wall.</p> <p><b>E. Caulk and Casing</b></p> <p>Once the frame is installed and fastened, the shim space is sealed with 3/8" depth bead of acrylic sealant (20 minute rated frames) or silicone sealant (20 to 90 minute rated frames) on both sides of the wall.</p> <p>Wood casing or molding of minimum 3/16" is attached to the frame to cover the shim space.</p> <p><b>F. Hardware Installation and Security</b></p> <p>The two hinge screws closest to the door stop shall be replaced with wood screws that penetrate at least 1" into the wall stud, for each hinge. The two screws for the strike plate for the latch are also required to penetrate at least 1" into the wall stud. These screws are required in all installations, for all fire resistance ratings.</p>	<p>The diagrams illustrate three connection methods: 1. Butt joint: Shows two frame members meeting at a 1/4" gap, secured with two #8 x 1 1/2" screws. A note states the joint can be horizontal or vertical. 2. Dado joint: Shows a frame leg fitting into a groove in the header, secured with two #8 x 1 1/2" screws. 3. Typical Jamb Detail: Shows a cross-section of a door jamb assembly including casing, jamb leg or header, shim space (1/4" max), stop, door, wall, and perimeter sealant.</p>	

**Figure 9:** 20 to 90 minutes frame installation instructions with connection details.