

Frames Basics

The **frame** supports the door and its controls in the opening. Frames often serve other esthetic or functional purposes, such as trimming a wall opening without a door, or enclosing glazed areas that provide through-wall visibility.

FRAME TYPES

In most commercial applications, the door frame is metal. It can be aluminum or steel, mitered or butt-joint, welded or a “knock down,” for drywall or masonry walls.

Each of the different types of frames has an advantageous feature that prompts the architect or contractor to choose it. It may be the design value—such as crisp or rounded edges—or it may be factors of structural integrity or the portability and ease of installation.

What Hull Supply sells:

- **Hollow metal frames.** These are welded in our shop with materials from **Deansteel**, or ordered pre-fabbed from **Curries** or **Steelcraft**. These free-standing steel frames are prepped and reinforced for the specific hinges, strike, and accessory hardware.
- **RACO** frames are modular, snap-together aluminum frames. This system is very versatile and allows the simple creation of partition walls and sidelites in addition to the door frame. (See the lesson on RACO)
- **Timely** steel frames come to us as knock-downs or as parts, and are packaged in boxes. We cut stick to size to make custom frames. (See the lesson on Timely)

MATERIALS

The material of a frame is called **stick**.

The **hollow metal frame** stick is formed by bending 14-, 16-, or 18-gauge flat cold-rolled or galvanized steel. While the steel is flat, it is cut to size and dies are used to cut out the hardware preps and miter cuts, etc. Then it is bent into shape by either roll-forming or break-forming. The corners of the bends are therefore slightly rounded.

The **RACO aluminum** stick and the **Timely steel** stick are formed by extrusion, and so have crisp contours and corners. The mortise cutouts and miter cuts are made to the formed stick.

Pieces of stick are then joined to form the **header, hinge jamb, and strike jamb**.

- The **header** is the top of the frame.
- The **hinge jamb** is the vertical side of the frame that supports the hinges.
- the **strike jamb** is the vertical side that houses the **strike**, the point where the lock makes contact.

DAILY BLAB

We Were Framed!

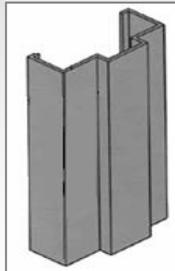
SUSPECTS DECLARE INNOCENCE!!!

A mob of Door Hangers protested their arrest Friday, claiming mistaken identity being the cause of their apprehension.

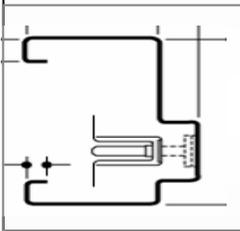
Deansteel said "I don't know who put us up for the job, but they had to be unhinged to think that we are all the same!"

"We are tired of being told 'you guys all look alike!'" said Curries, incensed.

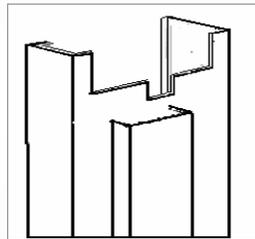
"Sure, every one of us has faces, throats, jamb depths, rabbets and stops, but we each have our own uniqueness," RACO agreed emphatically.



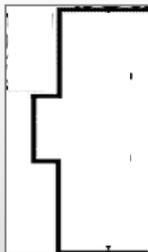
CURRIES



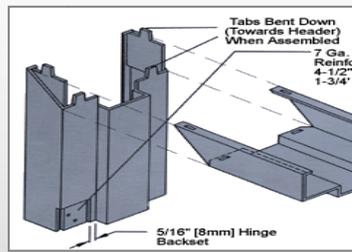
STEELCRAFT



RACO



TIMELY



DEANSTEEL

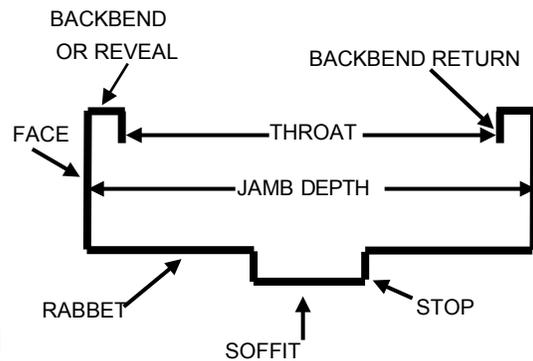
"Recognize us for who we are!" exclaimed Timely, who went on to point that he was much slimmer and better looking than others.

SteelCraft, emotionally overwrought by the melee, fumed, "How could anyone mistake us for one another! Anyone can see that I am *much* curvier and robust than *that* stick,"

Contractors on the scene blamed...CONTINUED ...

PARTS OF A FRAME

Besides from the header, hinge and strike jambs, all frames have common components of the stick which define the **profile**. The profile is what shape the material has to serve a purpose. *Each surface* of any profile has a name, whether you're talking about hollow metal framing from Curries, SteelCraft, DeanSteel or Hull, or knockdowns from Timely and RACO:



backbend: the edge of the frame bent 90° from the face toward the wall material, provides rigidity

backbend return: on drywall frames, a short bend, 90° from the backbend, parallel to the face and turning toward the rabbet; it allows the frame to slip over the wall without damaging it.

face: the exposed part of frame parallel to the wall

jamb depth: the distance measured from the outside face to the opposing outside face of the stick

rabbet: the recess or offset space from the stop to the edge of the frame, formed to receive the door

reveal: the distance from the face of the frame to the face of the finished wall

soffit: the area between the rabbets parallel to the jamb depth. The width of the soffit varies with the width of the jamb depth.

stop: the molded or attached strip that stops the door swing.

throat: the open side of the channel, which is also the width of the wall over which the frame fits; a critical dimension

PROFILES & FRAME TYPES

Now that you know the names of each facet of the stick, you will see that the names of the profiles make perfect sense.

The **profile** configuration of the frame meets a particular use, such as a **single rabbet**, **double rabbet**, **double egress**, **communicating** or **cased opening** (or **flush**). Profiles can be modified by adding glazing stops or channels, but the basic frame is there.

The profiles are used to make frame types including the **Standard Frame**, **Flush** or **No-Stop**, **Communicating**, **Paired Opening** (double door), frames with **sidelights**. The stick can be used to frame other openings, such as **windows** or **borrowed lights**.

Single Rabbet has one rabbet.

Double Rabbets have two rabbets.

Equal rabbets are the same dimension, so the soffit and stop are centered in the jamb depth.

Unequal rabbets are different widths, meaning that the soffit and stop are offset from center of the jamb depth.

Double Egress profiles may be specific to a manufacturer, such as a stair-step profile or a double rabbet with a mullion.

Communicating frames are similar to the double rabbet but have 2 sets of hinges and 2 strikes on opposite sides of the frame.

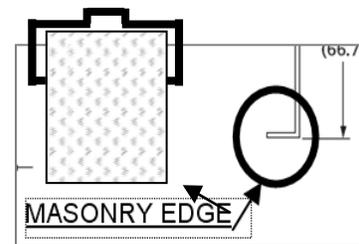
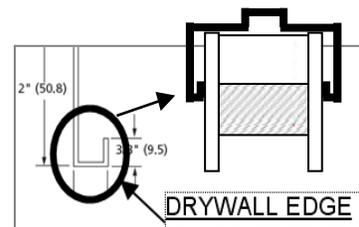
Cased Opening or **Flush**, is flat, with no stop or rabbet.

Some Writing on the Wall

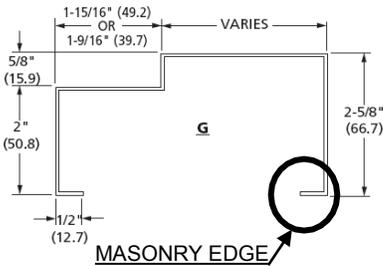
Wall construction and wall thickness determine what type of frame should be used. Frames are made to fit either a **Masonry** opening or a **Drywall** opening.

Frames installed in **drywall** partitions fit over the drywall, so the overall thickness of the wall is a critical dimension, to match the throat of the frame. Also, the drywall frame has a **backbend return** that allows the throat of the frame to slide easily over the drywall without damaging it.

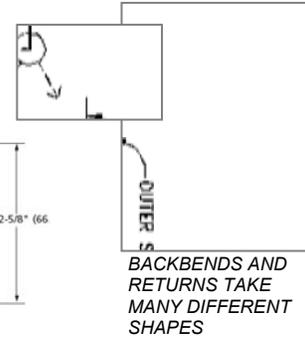
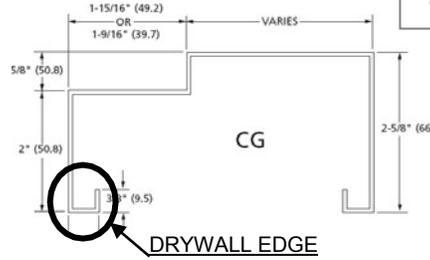
In **Masonry** walls, the overall height of the **Masonry frame** matches the height of the courses of the masonry. Therefore, so the frame will host the door size, the face of the header may be deeper than ordinary to drop the rabbet to the correct height for the door (for example, a 4" header). Masonry frames do not have a backbend return.



Single Rabbet Masonry

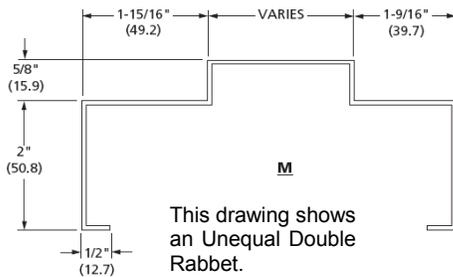


Drywall

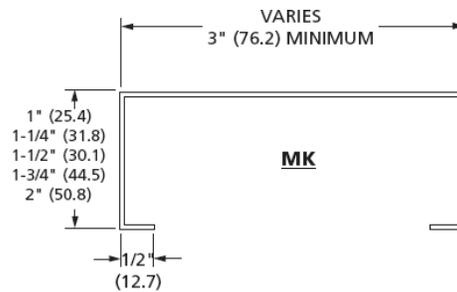


Double Rabbet

May have **equal** or **unequal** rabbets
Often called the **Standard Frame**, used on openings requiring a Single Swing, Pair, Transom, Sidelite or Borrowed Lite Frame.



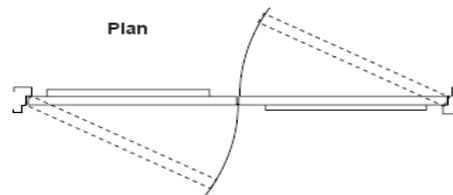
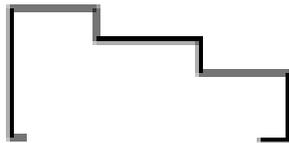
Cased Opening / Flush Or No-Stop



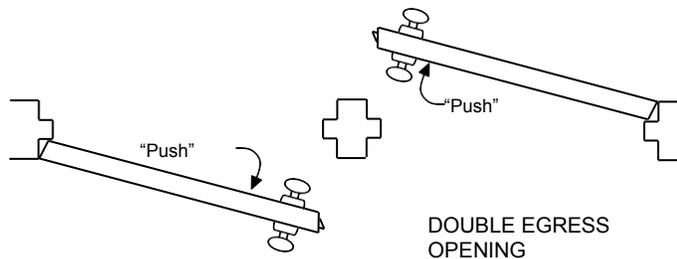
Double Egress

A double egress door can be formed using different profiles, depending on the manufacturer.

This is a SteelCraft double egress profile. This setup does not require a mullion.

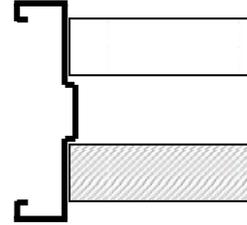


The double egress opening below is formed with double rabbet framing and a mullion in the center.



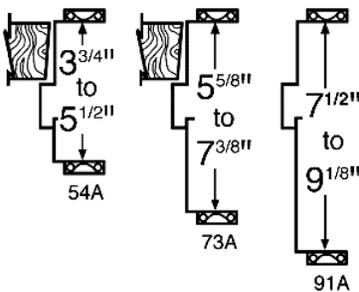
Communicating Frame

This frame supports two doors in one opening on a double rabbet frame. Often the doors are different thicknesses, so you may see an unequal rabbet used. You most often will see hinge mortises on both rabbets of a single jamb, but it is possible that mortises will be on opposing jambs.



Adjustable Frames

Both RACO and Timely have Adjustable frames. The illustrations below are from Timely.

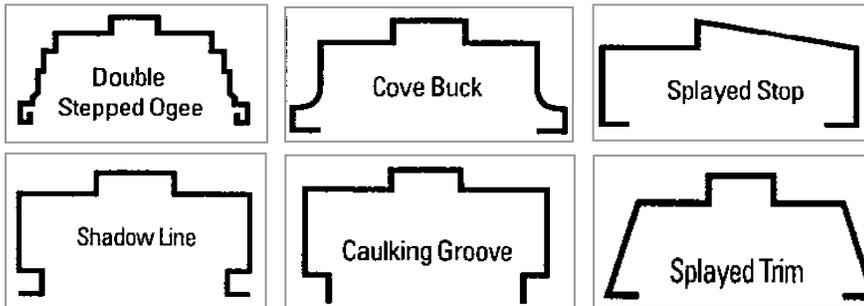


Adjustable Frame

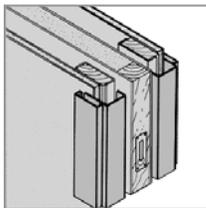
For Openings with varying wall thicknesses or requiring a pre-hung assembly. Timely offers Adjustable Frames to accommodate wall sizes from 3-3/4" to 9-1/8". This is accomplished by using 1 of 3 available closure sections that slide behind or away from the door side of the frame.

Other Profiles

Just so you know they exist: many other profiles are available in hollow metal stick for design esthetics. You would encounter these on a special order item.



Special Applications



Pocket Door Trim Kit—(special order items) for openings where the door slides into the wall to gain more usable room space. Timely's configuration, shown at left, consists of two (2) pieces of J-trim for the pocket, two (2) pieces of J-trim for the header and one (1) piece of no-stop frame for the strike side of the opening for a single opening.

A special header track is installed that accommodates the rolling suspension hardware that allows the door to operate.

Glossary for Frames

Header: the topmost horizontal part of the frame.

Jamb: The vertical member forming the side of a door, window or wall opening frame.

Hinge jamb: the jamb at which the hinges or pivots are installed.

Strike jamb: the jamb in which a strike may be installed. The door swings toward it, "striking" it.

Blank jamb: a jamb that has not been prepared to receive hardware. Used for **Cased Opening**.

Break formed: a series of press brakes exert up to 600 tons of pressure to bend the stick.

Butt joint: Two 90° or straight cuts that touch

Cased Opening: A three sided frame without hinge or strike preparations. May be with or without a stop.

Casing: Flat Molding used as framing around a window or door. Also referred to as Trim.

Jamb Stop: In exterior door frames, the attached or molded-in rebate surface of a frame member against which door panels close and seal.

Knock-Down: not assembled.

Miter: An angled cut across the end of a lineal part, usually done to join with a similarly-cut part at a corner.

Mullion: A post or divider which runs from sill to frame top in a pair of doors, or door and sidelite assembly. Also maybe used to refer to **muntins** for glazed areas.

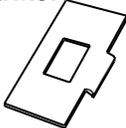
Muntins: dividers in glazed opening to form panes.

Rabbet: the recess or offset space from the stop to the edge of the frame, formed to receive the door.

Roll Formed: flat steel forced through a series of rollers that progressively shape it into the desired profile.

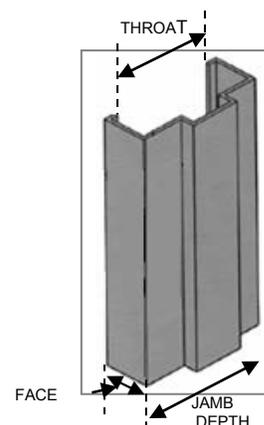
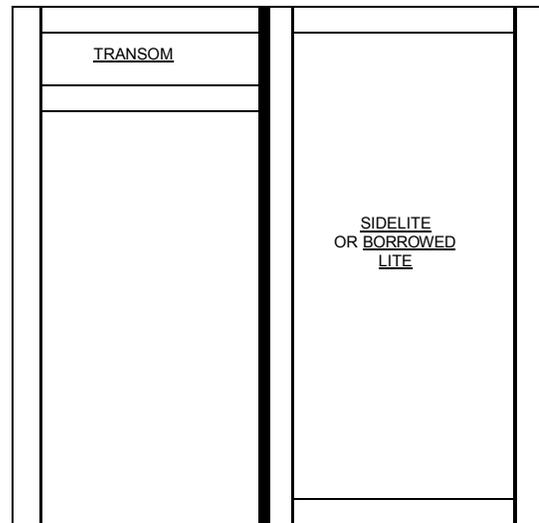
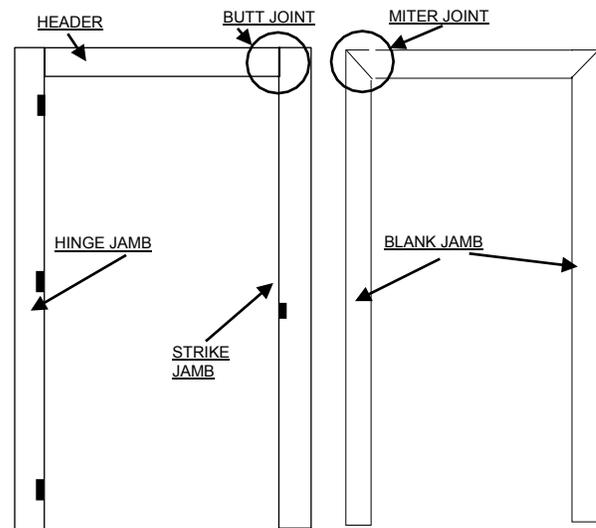
Stop: see jamb stop.

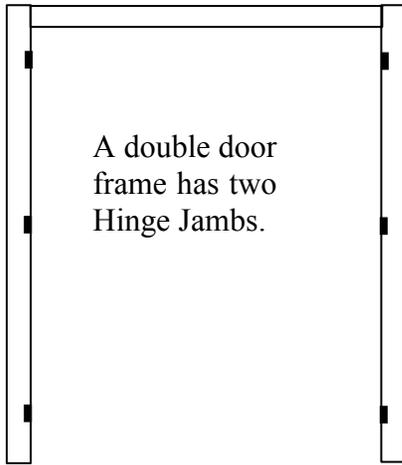
Strike: A metal part with a hole or recess for receiving a door latch, with a curved or ramped face so a spring-loaded latch contacts it when closing. Strikes fit into mortises in door jambs or mullions.



Transom: A framed glass assembly mounted atop a door assembly.

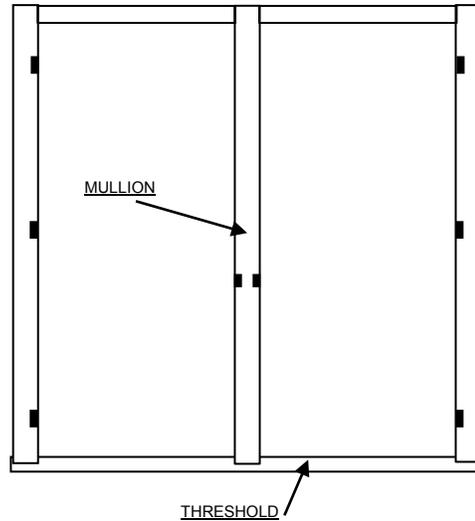
Sidelight: a framed-in glass section adjoining the door frame, formed with the addition of glazing stops or mullions.





A double door frame has two Hinge Jamba.

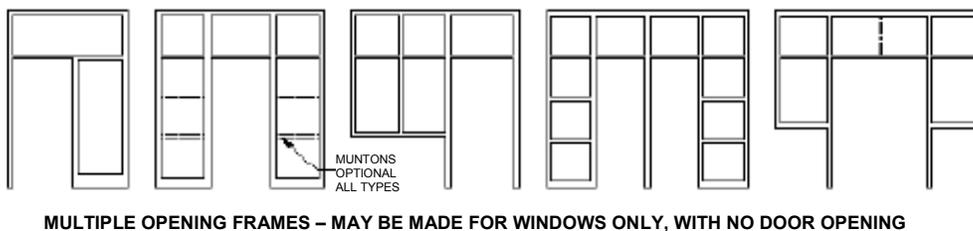
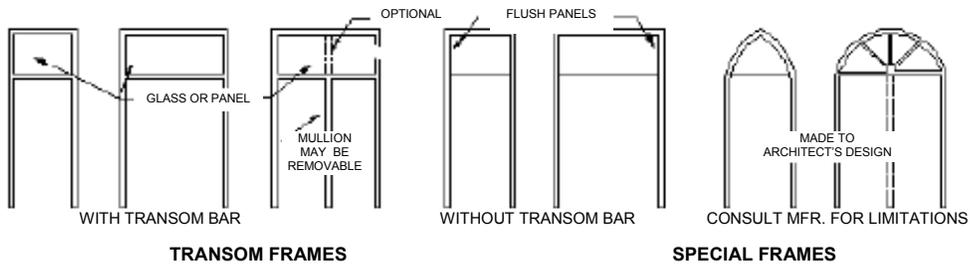
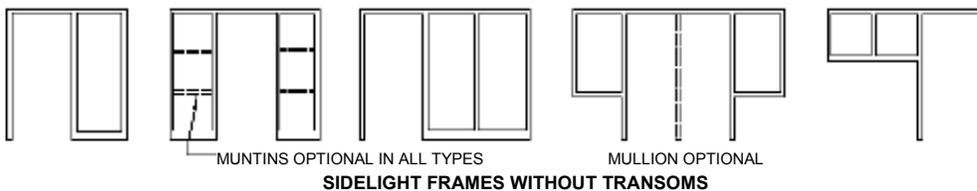
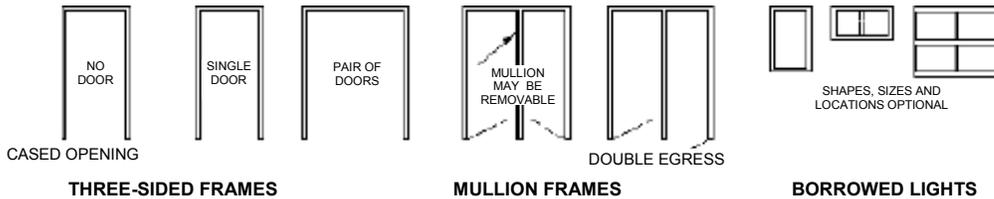
A double door frame may have a mullion in the center. The mullion will have the strikes on both sides.



Sill- the threshold or bottom plate of the wall

Threshold: Another term for **Sill**. Sold separately from the frame, it is the horizontal part of a door assembly, fixed under the door panel and bearing on the floor. It completes the door opening, and may have weather-seal incorporated into it.

FRAME OPENING TYPES



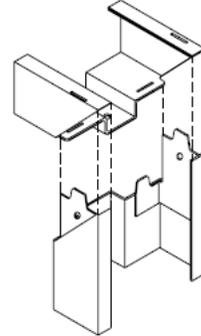
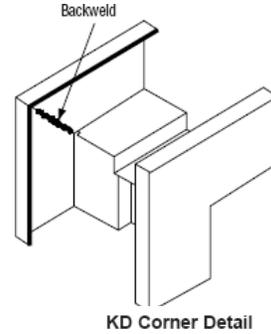
WELDED OR KNOCK DOWN?

Welded Frames are hollow metal frames.

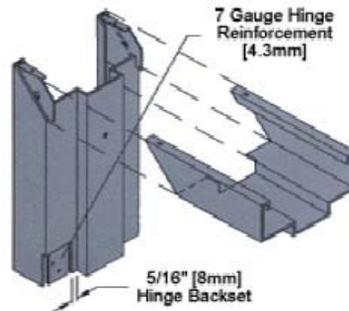
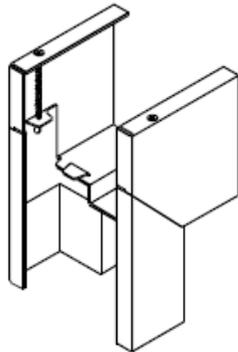
A stabilizing piece of steel called a **spreader bar** is spot welded between the bottom legs of the frame to keep the frame from twisting or becoming entangled during transport. These frames are stored upside down, headers on the floor.

After the frames are welded, the faces and exposed surfaces are ground smooth if necessary, filled with Bondo, sanded, and primed to protect the frame from rusting.

The **Knock-Down frame** is transported in pieces and assembled in place at the construction site, and can be hollow metal, steel or aluminum. The “head ends” of the jambs will have tabs or clips to secure them to the header. You can see from the illustrations at right that the tabs may look a little bit different from manufacturer to manufacturer, but the idea is the same.

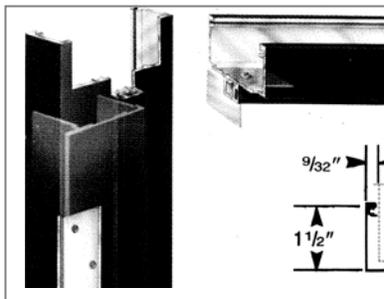


Optional 4" (102mm) Head Detail



RACO KNOCK-DOWN

We stock two types of RACO framing systems. Both Freestanding and Top Track are KD frames.



Freestanding Frame Detail. The FS-1 header fastens to the FS-2 hinge jamb between the ears with a built-in bracket.



Top Track Frame Detail. The jamb butts into the top track PR1, reinforced with an R18S bracket.

TIMELY KNOCK-DOWN

We stock Timely to fit several different size walls.

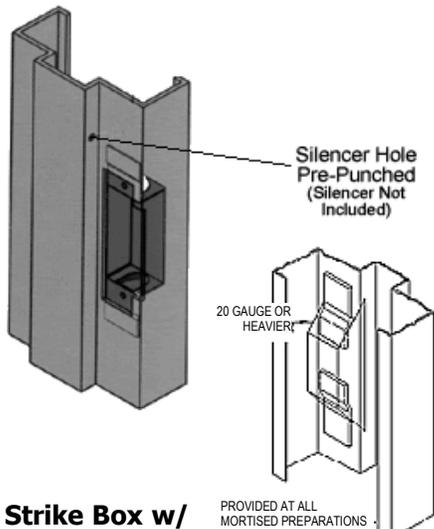


Timely is unique with a flat frame installed, clips added, and separate casing pieces that snap on to make the finish. The casings are available in a number of profiles.

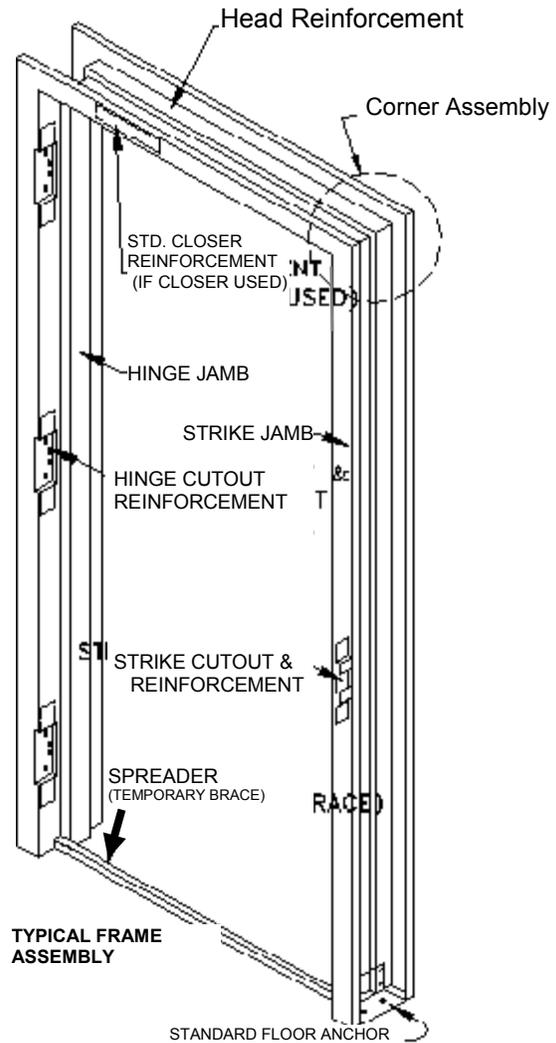
HARDWARE PREPS FOR FRAMES

Frames are **mortised, reinforced, drilled or tapped** for hardware as required, using the hardware manufacturer's template. The "hand" of the door comes into play when the frame is prepared.

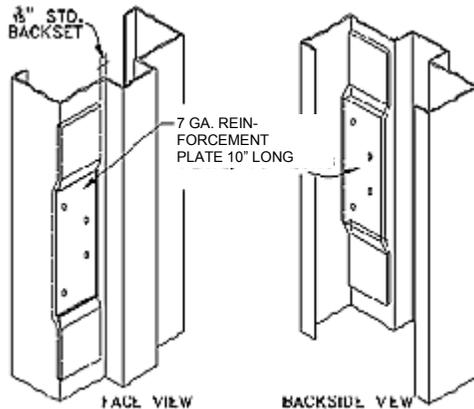
To support the hardware, the frame can be reinforced with extra plates to add thickness and strength. For knockdowns, these may be screwed into place; on hollow metal they are welded.



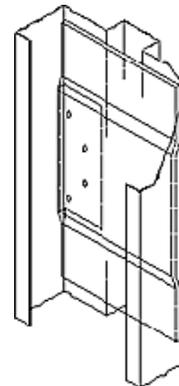
Strike Box w/ mortar guard on back



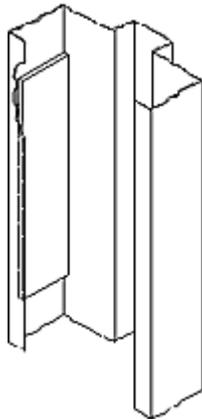
TYPICAL FRAME ASSEMBLY



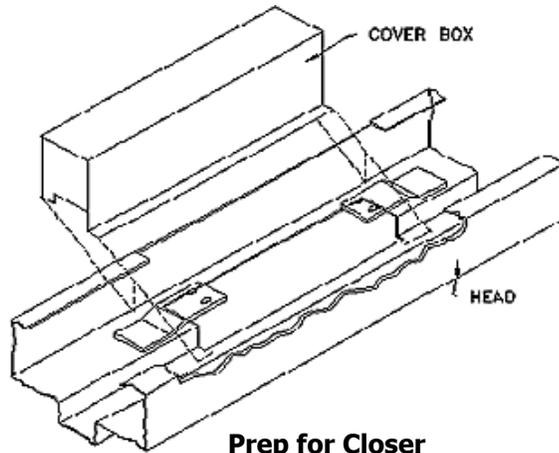
Standard Hinge Prep



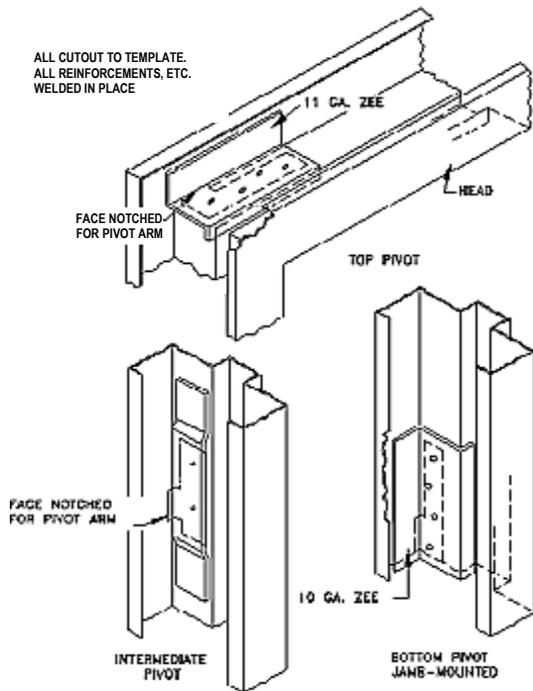
Full-Width Hinge Reinforcement



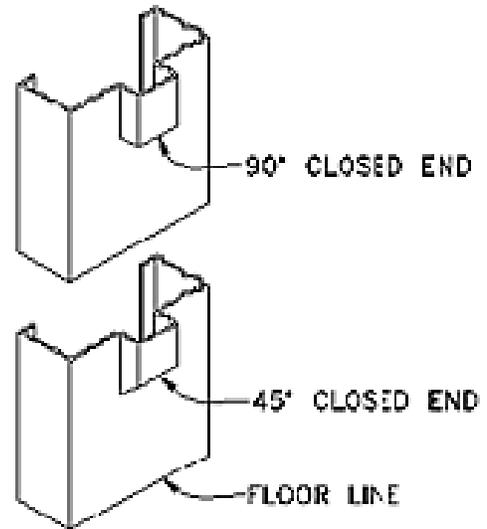
**Reinforcement
for Surface
Mounted Hinge**



**Prep for Closer
Concealed in Head**



Preps for Pivots



Cut Off or Sanitary Stops

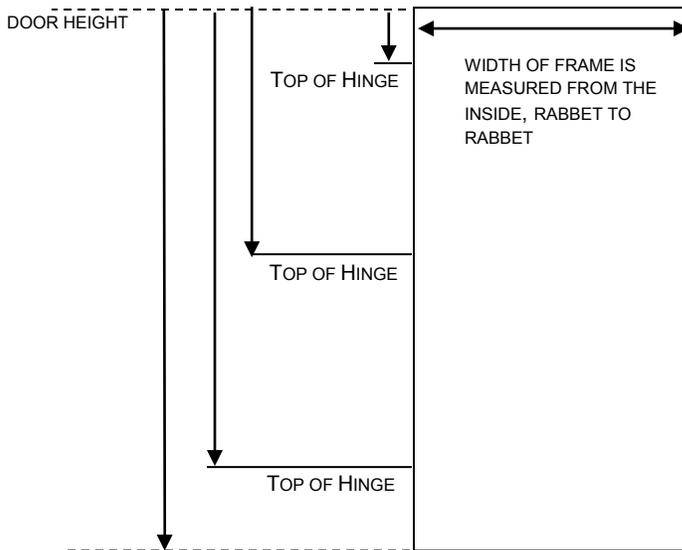
Preps, continued

Hinge Positions vary depending on the Door and/ or Frame Manufacturer. (It's a marketing strategy to get you to buy both frame and door from a particular manufacturer, so each manufacturer puts the hinge and strike locations in a different spot.)

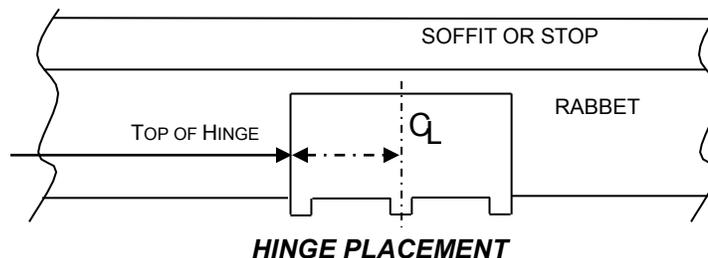
Since hinges and other hardware come in a variety of sizes, the positions are indicated by the distance from the top of the door to the top of the hardware. The installer must determine the centerline of the hardware item, and measure from the top line indicated on the door.

The **center line** dimension symbol is the letter "C" superimposed by the letter "L": CL . It's exactly what it sounds like: it is the center line of the hardware item. It is used by installers to determine template placement when they are prepping a frame or door, along with the **backset**, which is the distance the item is set from the edge, also specified by the manufacturer.

Measurements for hinges are made from the inside of the frame, from the header rabbet down to the top edge of the hinge.



Since hinges vary in size, the dimension from the edge of the hinge to the centerline of the hinge is determined and added to the top-of-hinge dimension to get the placement for the template.



ANCHORING THE FRAME

Drywall frames are placed after the drywall has been installed. They are sometimes referred to as slip-on frames, because they slide over the wall section. The dimension of the throat is critical. One compression anchor on either jamb is used on openings up to 7'6" in height.

Masonry frames are most often set into a new wall as the masonry is laid, using either a 'T', wire, or 'yoke and strap' anchor to hold them into the wall. One end of the anchor fits into the frame and the other end is placed between the courses of masonry. Three anchors on each jamb are used on openings up to 7'6" in height.

On an existing masonry opening, an expansion bolt is driven through the soffit and the "existing opening anchor," which consists of a tube-shaped section welded against the back of the soffit, and into the wall. The frame soffit will be dimpled to recess the head of the bolt.

