



**VLRB**  
**LRB**

---

**INSTALLATION OF DOORS AND FRAMES**  
**Very Low Range (VLRB)**  
**Low Range (LRB)**

Excerpts From:  
Hollow Metal Technical and Design Manual  
The National Association of Architectural  
Metal Manufacturers

Overly Door Company  
574 West Otterman Street  
Greensburg, Pennsylvania 15601

Tele: 724-834-7300  
Fax: 724-830-2871

---

## **2 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS**

---

The proper performance of most manufactured building products depends not only on how they are made but how they are put in place. This is particularly true of blast doors and frames. Any one acquainted with building construction knows that the installation of doors and frames is an operation demanding care and skill, if the doors are to operate properly. Even the best designed and most carefully made frames and doors, if improperly installed, will not function properly. Installation work is usually done by carpenters, but in some areas the ironworkers may have jurisdiction.

Overly Manufacturing is concerned that our product is properly handled and protected after delivery, and that the necessary care and skills are exercised in the setting of our frames and hanging of our doors. Frames out of true alignment and doors not operating properly are deficiencies that can not be tolerated. It is important to all concerned, therefore, that attention be given to the essential requirements of good practice in field installation work. Use of these installation instructions along with the shop drawings provided and your attention to good workmanship will provide the proper installation for Overly doors and frames.

### **Delivery and Receiving of Material**

Blast doors and frames are fabricated in accordance with the shop drawings approved by the architect or engineer. Preparation for hardware or other items to be supplied by others is provided in accordance with the information furnished to the manufacturer by the hardware supplier or by those other suppliers or trades with whom he is required to coordinate his work.

Should any material be damaged in shipment, claims should immediately be filed by the General Contractor, who should notify the delivering carrier's regional office by telephone or in writing, requesting inspection of the damaged material. If desired, Overly Manufacturing will cooperate by furnishing copies of shipping papers to help expedite the claim.

If a claim is to be made for any error or deficiency in the metal work itself, it is imperative that the manufacturer be so notified in writing before initiating any corrective work in the field. Overly Manufacturing has our own field representatives who are qualified not only to do expert repair work but to determine whether the fault lies with the manufacturer or with some other party.

### **On-Site Storage**

Improper storage of doors and frames at the construction site often results in deterioration of the primer coat of paint. Such deterioration is a continuing source of aggravation to all concerned.

Particular attention must, therefore, be given to steel products having only a shop coat of paint, if corrosion is to be avoided. Because the protective shop coat must be porous to properly receive and hold top coats, water or moisture in contact with prime-coated steel will seep through to the steel by capillary action. An electrolytic action then follows, resulting in corrosion and causing the paint to lose adhesion. The presence of oxygen at the water-air interface behind the loosened paint film accelerates corrosive action and further prime coat deterioration.

Manufacturers of metal doors have found that one week of product exposure to

### 3 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS

water because of improper storage is equivalent to at least a year of outdoor exposure to the elements.

It is imperative, therefore, that those parties who are responsible for the storage of primed metal work at the job site be carefully instructed as to proper storage procedures. All ferrous metal products should be stored where they are least likely to be exposed to contact with water.

The following procedures should always be observed in storing hollow metal doors and frames at the job site:

1. Store all materials in a dry area, under cover.
2. Place all material on planking or blocking, at least 4" off of ground, 2" off a paved area or floor slab.
3. Do not stack material flat; store doors and frames in an upright position with heads uppermost.
4. Place no more than 5 single-opening or 3 multi-opening frames in a group.
5. Provide, by means of wood strips, a space of at least 1/4" between all units, to permit air circulation between them.
6. Do not permit cardboard or paper containers or wrappings to become wet. If this should occur, remove them immediately.

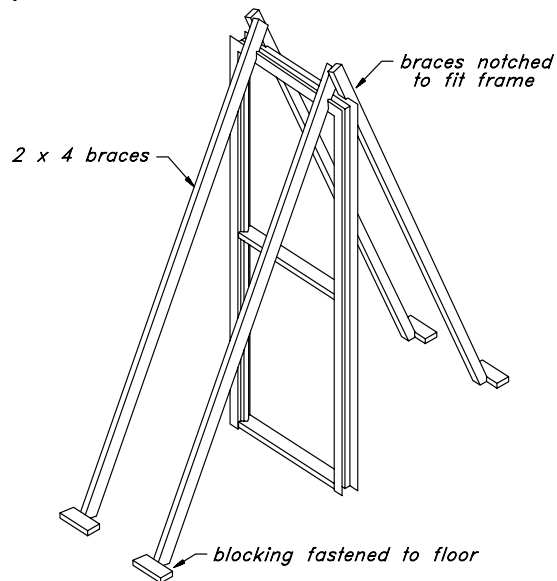
#### **Installation of Pre-set Welded Frames**

Three-sided welded door frames are checked at the factory to insure that they are square and that no jamb twists have occurred during their fabrication. Spreader bars are then attached to the

jamb bases to minimize misalignment or other damage during shipment, and the frames are loaded on the carrier by personnel experienced in frame packing. In spite of these precautions, however, the frames can, and sometimes do, arrive at the job site with minor alignment deviations.

Most minor deviations from true form and alignment can readily be corrected during installation if the General Contractor will see that the following procedures are followed:

1. Use some type of triangular support and bracing device that will securely hold the frame in the exact location and alignment required. Usually such bracing is made of wood, as shown in Figure 1. However, metal "jacks" or supporters, designed specifically for this purpose are commercially available, and their use is recommended.

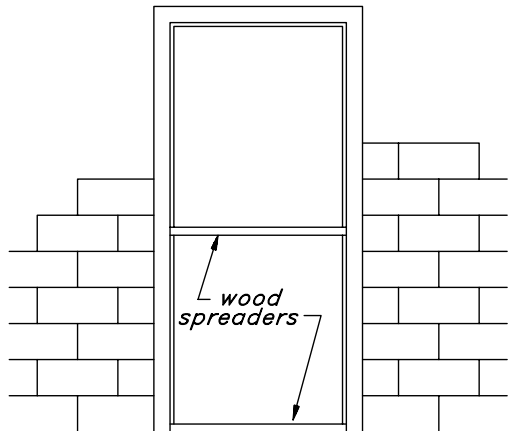


**FIGURE 1 WOOD BRACING SYSTEM**

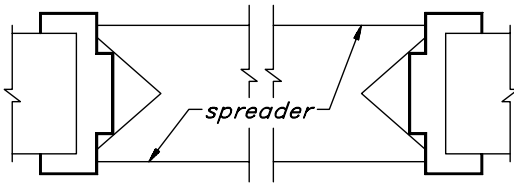
2. Use temporary wood spreaders, not less than 3/4" thick and cut to accurate dimension, at midheight and sill (see

## 4 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS

Figure 2), removing the steel spreader at the floor.



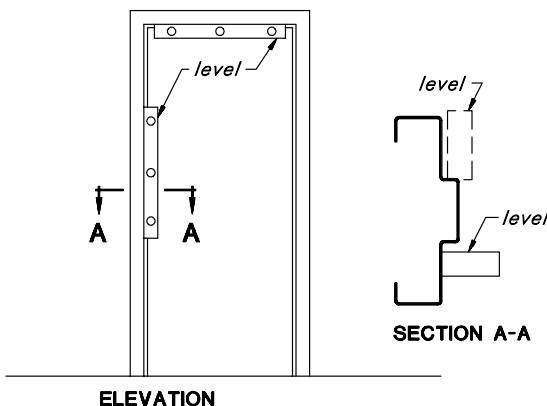
**ELEVATION**



**PLAN**

**FIGURE 2  
USE OF WOOD SPREADERS**

3. Check the frame for squareness and alignment (Figure 3), then secure floor anchors to the floor slab if floor anchors are provided.



**ELEVATION**

**SECTION A-A**

**FIGURE 3  
PLUMBING AND SQUARING OF FRAME**

4. Protecting the frame from accidental abuse, build walls to the frame, making sure that its proper alignment is maintained.

5. After frame is permanently built into the wall, with all anchors installed, remove the wood spreaders.

### Floor Anchors

The standard floor anchor (Fig. 4, Type 2.1 or 2.2) is spot welded to the foot of the frame and, if firmly secured to the floor by proper fasteners, provides solid anchorage for the base of each jamb. However, as it does not provide for adjustability, shimming must be used if the floor is not level. This type of anchor cannot be used in prepared openings.

The adjustable floor anchor (Type 2.2) is designed for use where there are significant irregularities from level, or an intended slope in the floor. Like the standard anchor, it cannot be used in prepared openings.

### Jamb Anchors

As shown on the Frame Details sheet, a variety of jamb wall anchors is available for the various types of wall construction. HMMA specifications require that the number of anchors used on each jamb, in all cases, be as follows:

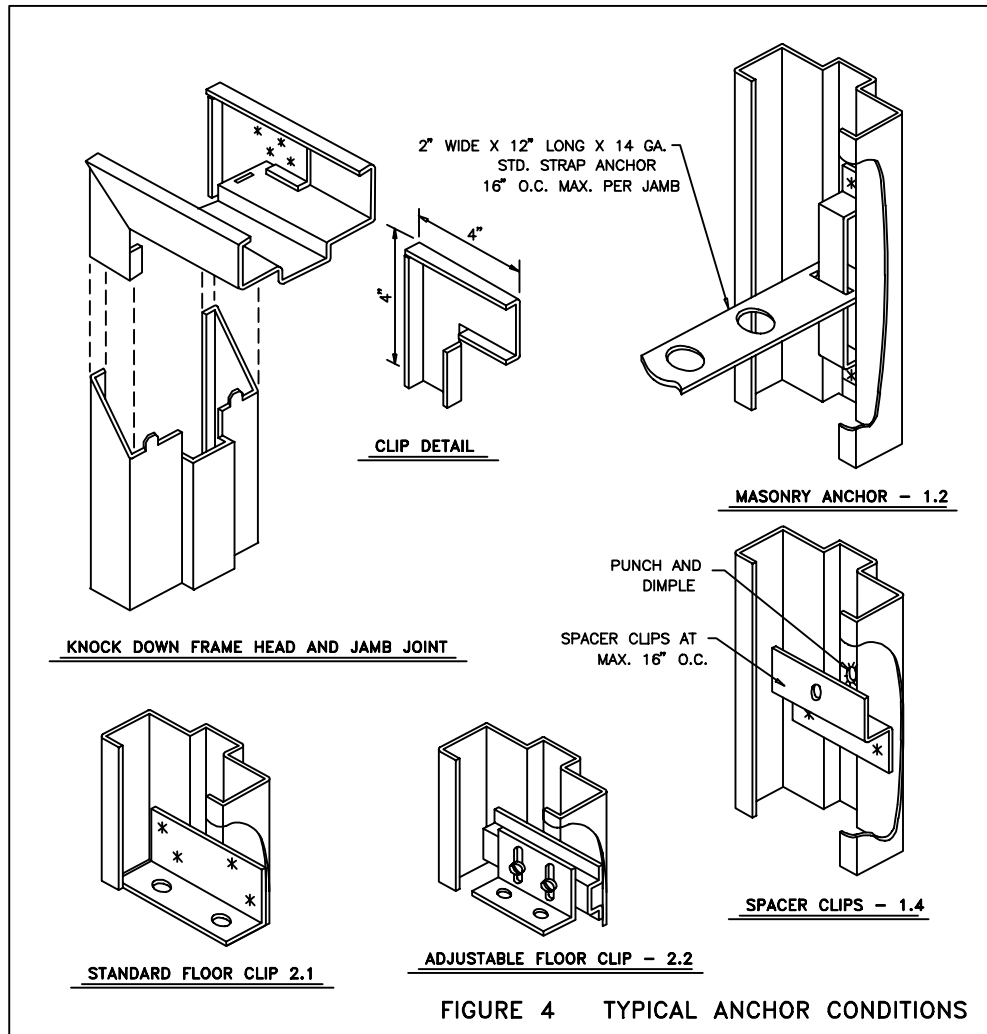
for openings up to 7'-6" in height  
--3 anchors, opposite hinges

for openings 7'-6" to 8'-0" in height  
--4 anchors

for openings over 8'-0" in height  
--1 anchor for each 2' of height or fraction thereof.

These may vary for U.L. Fire Label requirements.

## 5 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS



### a. Masonry Anchors: (Figure 4, Type 1.2)

The adjustable strap-and-stirrup type is normally used on custom frames and is approved for use of U.L. labeled frames. The stirrup or "yoke" is spot welded to the back of the jamb soffit. It is critically important, as stated above, that one anchor be placed near the bottom. This type of anchor can be used in either masonry or poured concrete construction and provides sufficient adjustment for

masonry coursing as well as access for full grouting of jambs.

### b. Punch and Dimple: (Type 1.4)

Frames are prepared with countersunk holes that can be used with flat head expansion anchors for existing concrete or masonry construction, or with flat head bolts for steel embed frames. Bolt diameter and location is determined by the Overly design group.

## 6 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS

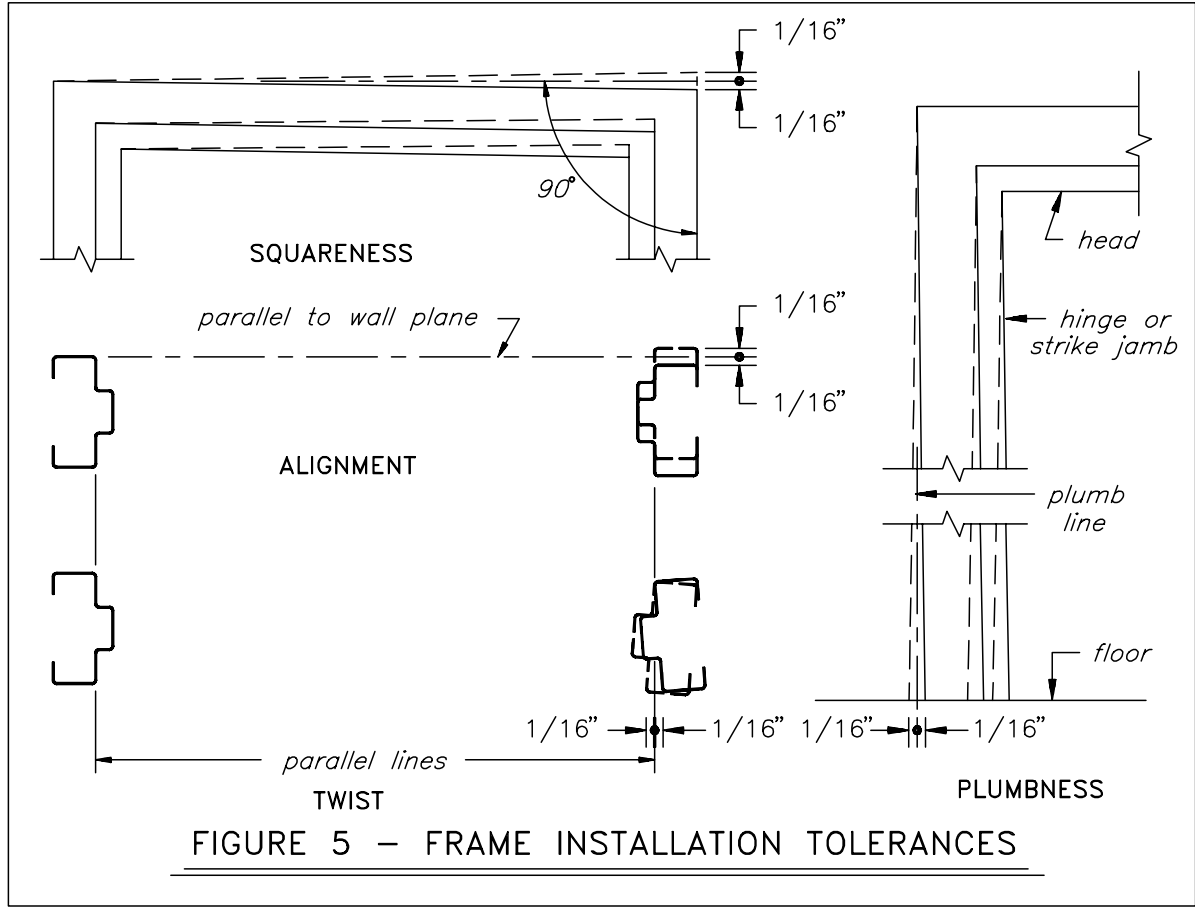
### Backpainting and Grouting of Frames

When the frames are to be fully grouted, or when the temperature conditions necessitate the use of anti-freezing agents in plaster or mortar, the inside of the frames must be coated with a

bituminous paint by the contractor responsible for installation.

### Installation Tolerances

The maximum tolerances that should be permitted in respect to squareness, plumbness, alignment and twist of the installed frame are shown in Fig. 5.



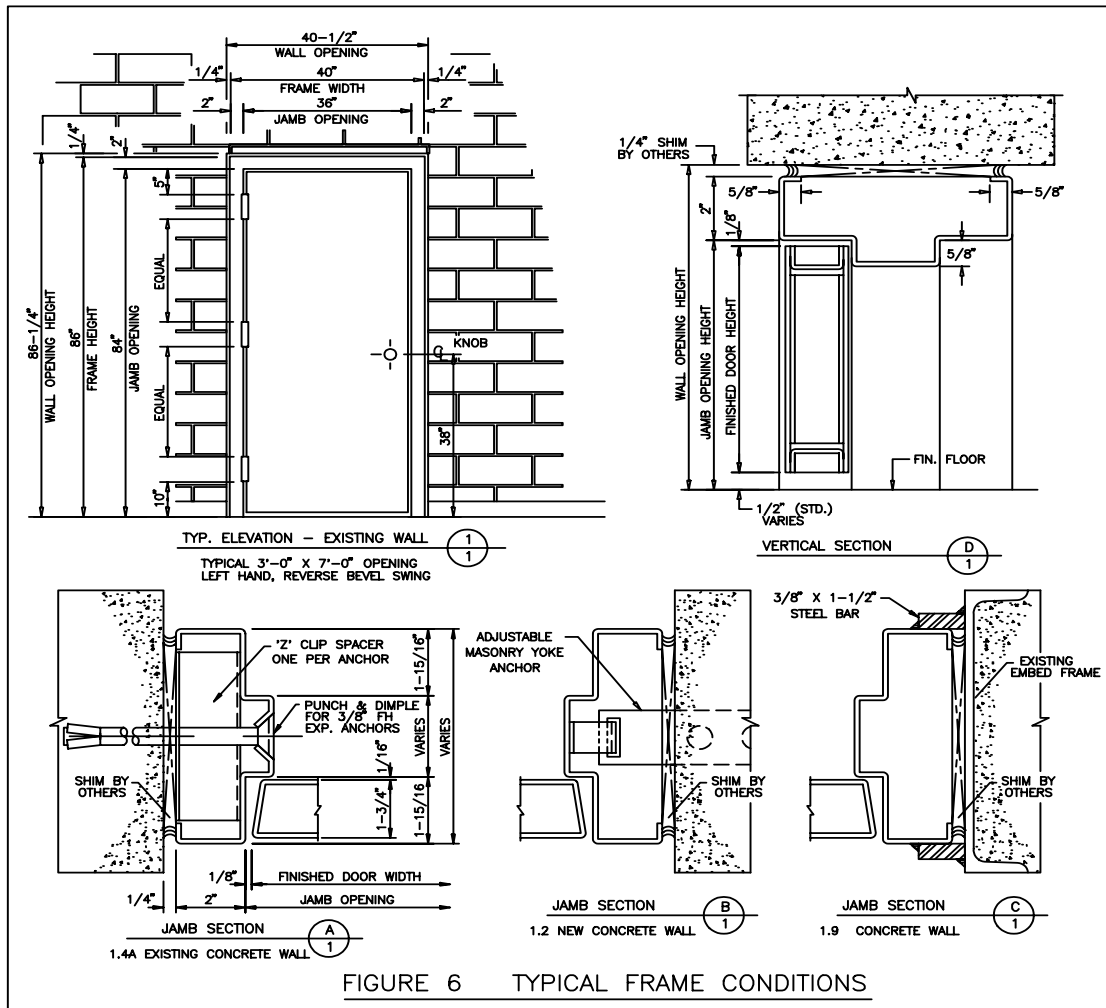
### Installation of Welded Frames in Prepared Openings

Masonry openings that are to receive preassembled welded frames must be accurately constructed. They should be 1/2" wider than the overall frame width and 1/4" higher than the overall frame height above the finished floor, to provide a 1/4" clearance on all sides, and the

jamb must be plumb within a maximum tolerance of 1/8"

**Anchorage:** As shown in Figure 6, section A/1, the frame may be anchored directly to the masonry by using flat head machine screws into expansion shields. A minimum of four (4) anchors should be used on each jamb for doors up to and including 7'-6" in height, five (5) on each jamb for higher doors.

## 7 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS



### Installation of Knocked-Down Frames

Knocked-down or "KD" frames are those which are shipped as disassembled members, for assembly at the job site. Such frames are assembled and set in place, like a welded frame, before the wall is built around them, then anchored by the appropriate methods as described previously.

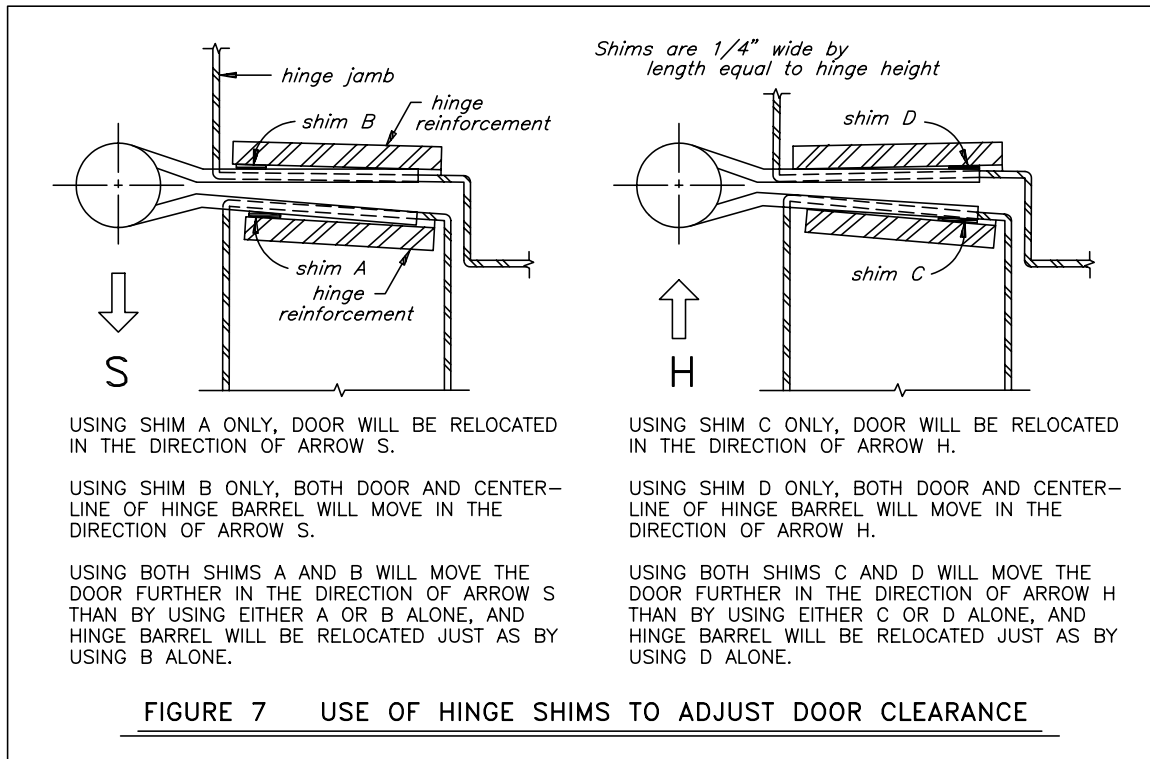
The obvious advantages of the knocked-down frame are that it is easier to pack for shipment and requires less shipping space than a preassembled frame. Such frames, however, place much greater

responsibility on the installer, who must assemble them and make sure that, in spite of job conditions they are square and in true alignment. Some frames of this type use screw or bolt fasteners in their assembly, and these may be lost in shipment or at the job site. Overly Manufacturing recommends welding the miters after all adjustments are made and the frame is positioned correctly.

### Hanging of Doors

It is the responsibility of the installer to hang all doors and install all

## 8 - OVERLY BLAST DOORS - INSTALLATION INSTRUCTIONS



hardware. Holes for the mounting of template hardware are drilled and tapped at the factory. This is not true, however, of preparations for surface mounted items. The drilling and tapping of holes for mounting such items is the responsibility of the installer.

Experienced craftsmanship and care are essential in the hanging of metal doors. The use of hinge shims, as illustrated in Fig. 7, is normally a requirement, to provide uniform clearance around the door and alleviate "hinge bind", especially if a frame has been racked during shipment, handling or installation.

The door-to-frame clearance adjustment toward the strike jamb (in the direction of arrow S) can be accomplished by placing a shim or shims under the hinge leaf or leaves along the barrel edge of the hinge. Adjustment toward the hinge jamb (in the direction of arrow H) can be done by

placing a shim or shims under the outer edge of the hinge leaf or leaves.

For recommended edge clearances refer to Overly Manufacturing Co. shop drawings for each individual opening.