



**ERECTION MANUAL**  
**BALLY REFRIGERATED WAREHOUSES**  
***(Supported by interior structural steel)***

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Erection of Refrigerated Warehouses without prefab floor sections, using floor screeds.  
*(This section covers complete erection up to roof sections.)*

- Section I. Erecting structural steel
- Section II. Erecting screeds and side walls
- Section II-A. Erecting screeds and side walls (which are close to building walls)
- Section II-B. Erecting screeds and side walls (that are not close to building walls)
- Section III Erecting partitions

SECTION B: ..... 7

Erection of Refrigerated Warehouses with prefab floor section. *(This section covers complete erection up to roof sections.)*

- I. Installation of floor sections
- II. Erecting structural steel
- III. Installation of vertical sections

NOTE: bally floor sections are designed to withstand uniformly distributed stationary floor loads up to 300 pounds per square foot (psf). Where carts, hand trucks or other mobile equipment will be used, and the floor must be reinforced with diamond tread steel plate. If fork lift trucks are to be used, a minimum of 4" reinforced concrete must be poured on top of the floor sections.

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Erection of roof sections on Refrigerated Warehouses using prefab floor sections or floor screeds.

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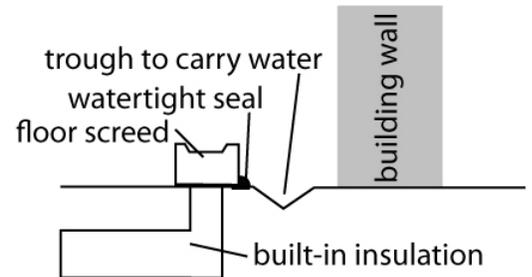
IMPORTANT: before attempting to erect the warehouse, read this instruction carefully. Enclosed with this instruction is a plan view showing all sections and steel numbered to insure their proper location before placing any section into position, check plan view for location.

**Note: It is important NEVER to walk on top of a Bally ceiling that is not supported by interior steel or other temporary structural supports. Failure to support ceiling will cause joint failure and likely cause serious injury or death.**

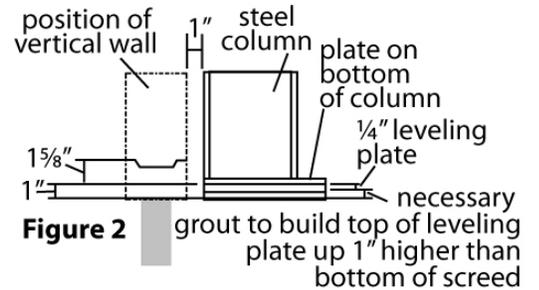
## SECTION A: ERECTING A REFRIGERATED WAREHOUSE USING FLOOR SCREEDS

If warehouse is to be erected on a newly built-in floor it must be constructed as shown on Bally engineering drawings submitted for your particular job. When finished floor is applied, it is expected that it will be level within  $\frac{1}{4}$ ".

If the warehouse is to be erected close to a building wall, where ventilation is poor, condensation may form on both the warehouse and the building wall. The larger the walk-in the more water will collect due to this condensation. To prevent this water from going down into the built-in floor insulation, a water-tight seal must be provided between the floor screed and the building floor. To remove this water, it is recommended that a trough be provided between the building wall and the warehouse wall as shown in *Figure 1*.



**Figure 1**



**Figure 2**

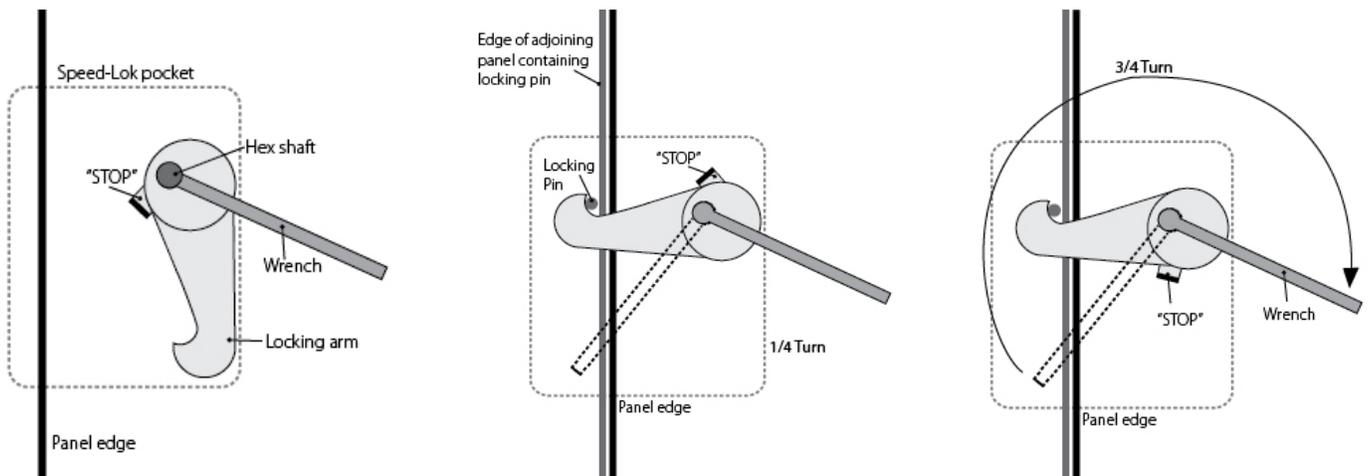
### SECTION I. ERECTING STRUCTURAL STEEL

When structural steel is supplied by Bally, all pieces are numbered for identification. BEFORE ERECTING STRUCTURAL STEEL ALWAYS CHECK THE PLAN VIEW FOR ITS PROPER LOCATION.

1. Mark on the concrete floor the exact outside perimeter of the warehouse with a chalk line (*make sure area marked is perfectly square*).
2. Mark position of all steel posts as indicated on your plan view. (*Care must be taken so these positions are marked accurately*.)
3. Find the highest point of steel post positions and perimeter chalk line.
4. On any post position, build up leveling plate with grout so that top of leveling plate is 1" higher than high point found in Step #3. (*All posts are 1" short to allow for 3/4" grout and 1/4" leveling plate, unless otherwise specified. See Figure 2.*)
5. Build up remaining leveling plates with required grout so that top of all leveling plates are level.
6. Place all posts into position and secure to building floor (*When securing to building floor where anchor bolts have not been provided, use 1/2" D. x 6" long lead anchors*.)
7. Set "I" beam into position and secure to post top plate.
8. Plumb all posts and install lateral bracing. (*If warehouse is multi-height install "U" channel struts at this time*.)
9. All structural steel must be self-supporting.

### SECTION II. ERECTING SCREEDS AND SIDE WALLS

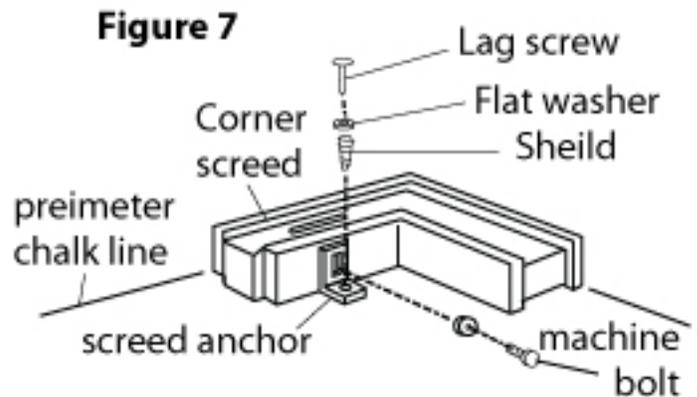
A. Before attempting erection of sections, operation of Speed-Loks must be learned. This can easily be done by studying *Figures 3, 4, and 5*.



B. If the warehouse is to be erected in an area where its walls will not be close to a building wall, proceed and erect warehouse as described in *Section II-B*, if the warehouse will be located in a position where one or more walls will close to an existing building wall erect such warehouse walls as described in *Section II-A*.

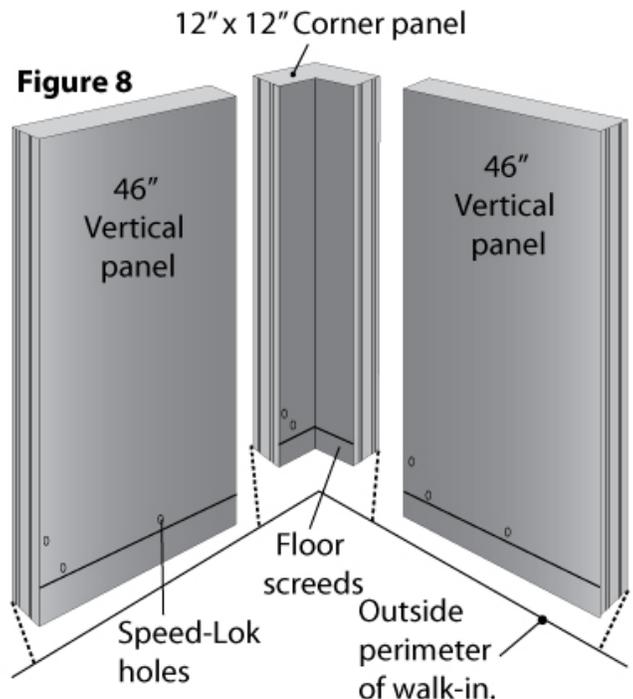
**SECTION II- A. ERECTING SCREEDS & SIDE WALLS  
(THAT ARE CLOSE TO BUILDING WALLS)**

1. Start with a corner screed. Place a bead of silicone caulking (or equal) on the outside bottom flange only. Do not caulk on the interior.
2. Place the outside edge directly on the line marked in Section I, Step 1. Position screed anchor and secure to floor with lag screws and shields. *See Figure 7. (Do not fully tighten machine bolts at this time.)*
3. Position the next required screed by applying silicone caulking and placing the outside edge of it to the line. Secure to floor in same manner as corner screed. *(Before securing the screed to the floor make sure the joint between the screeds is tight.)*
4. Level these screeds so that top of screed is 1-5/8" above top of leveling plate. *(It is very important that this dimension be held for proper fitting of top sections.)* Do this by placing wooden shims under screeds at point of screed anchors. When screeds are level to 1-5/8" above top of leveling plate tighten machine screws.
5. Continue with this procedure until all screeds are installed on sides where the warehouse walls will be close to a building wall. Place a bead of silicone caulking along the entire length of screed on the exterior where screed touches floor as shown in *Figure 1*.
6. Erect a 12" x 12" vertical corner section. When erecting, the holes for the Speed-Lok wrench must always be on the left hand side when facing the interior of the section. *NOTE: Before installing a vertical section with a number always check plan view for its proper location.*
7. Set up several required verticals. At this point check length of combined installed verticals *(Example: If four 46" verticals have been erected, overall combined length of verticals must measure 15'4")*
8. Continue with this procedure until all walls, which are "Close to a building wall, are erected. For erection of other walls and if warehouse is multi-tier see *Section II-B*.

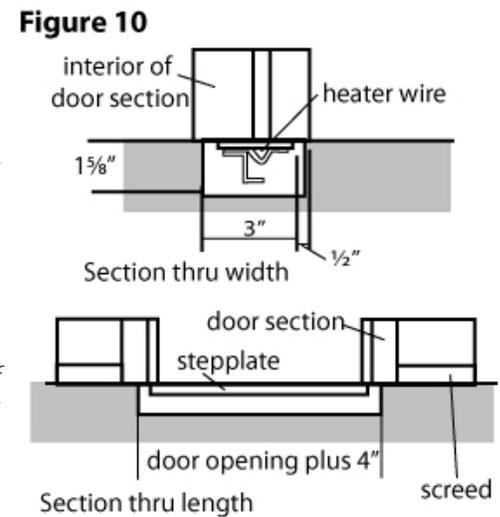
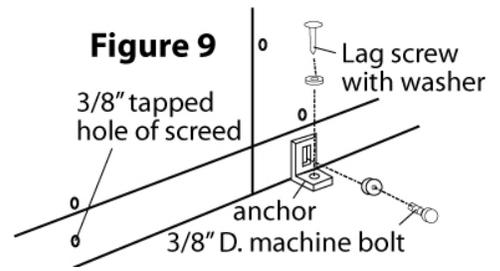


**SECTION II- B. ERECTING SCREEDS & SIDE WALLS  
(THAT ARE NOT CLOSE TO BUILDING WALLS)**

1. Start by Speed-Loking a corner screed to the bottom of a corner section. Position this assembly to line marked in step 1 under heading "Erecting Structural Steel". *See Figure 8.*
2. Speed-Lok required screed to bottom of either a 23" or 46" section *(Whichever size the section plan view indicates)* and set into position. Speed-Lok this vertical to corner section.
3. Speed-Lok screed to bottom of vertical section required to the left or corner and Speed-Lok into position. The erection of this section will prevent wall from falling in either direction.
4. Level these sections so that top of screed is 1 5/8" above top of leveling plate. *(It is very important that this dimension be held for proper fitting of top section.)* Do this by placing wood shims under screeds at positions where screeds are Speed-Locked to verticals.



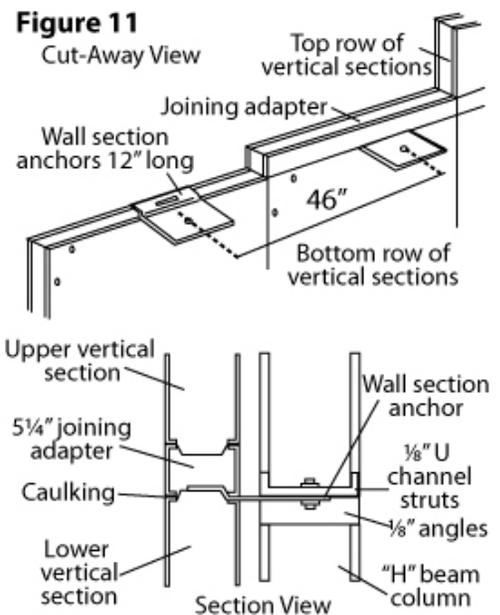
4. Level these sections so that top of screed is  $1\frac{5}{8}$ " above top of leveling plate. (It is very important that this dimension be held for proper fitting of top section.) Do this by placing wood shims under screeds at positions where screeds are Speed-Locked to verticals.
5. Set up three required verticals to the right of the corner section: Speed-Lok required screed to bottom of vertical, then Speed-Lok into position.
6. Check length of combined verticals. (Example: If four 46" verticals have been erected, overall length of sections must measure 15' 4") If length of verticals is correct, proceed with erection of verticals always Speed-Loking required screed to bottom of vertical before setting into position. Secure these verticals to building floor. See Figure 9. If length of combined verticals is not correct, adjust sections before continuing with erection.
7. When erecting door section, it is first necessary to chip a hole in the concrete floor as shown in Figure 10. Set door section into position similar to all other vertical sections letting door sill extend down into chipped out hole. Do not fill in with concrete around door anchor until erection is complete. See Section E. Door sections for warehouses with a height greater than 8' 6" are furnished with filler panels. These filler panels must be installed above the door before proceeding with erection of remaining vertical sections. (Note: Door sections with openings of 60" x 84" are shipped with a brace extending from top corner of section to bottom corner. DO NOT REMOVE THIS BRACE UNTIL DOOR SECTION IS ERECTED AND ADJACENT SECTION IS SPEED-LOKED INTO POSITION.)
8. Continue erecting screeds and vertical sections making sure they are plumb and that length of combined verticals is correct. The last vertical section to be erected is the fourth corner section.
9. If warehouse is multi-height, position wall section anchors and Speed-Lok joining adapters to the top of bottom row of vertical sections as shown in Figure 11. Wall section anchors are 12" long. One is to be positioned over second Speed-Lok on vertical section to the right of corner and then over Speed-Lok s every 46" center to center.
10. Secure wall section anchors to "U" channel struts by either bolting or "tac" welding.
11. Install top row of vertical sections in same manner as bottom row.



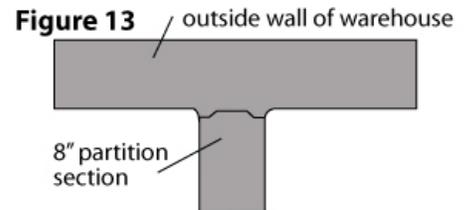
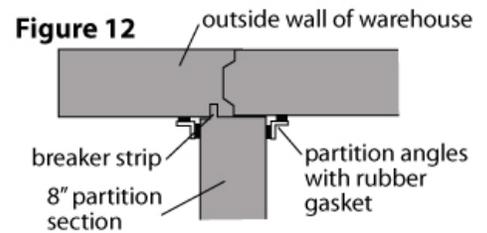
### SECTION III. ERECTING PARTITIONS

There are two types of partitions; the difference is in the vertical section where partitions butt against outside walls. The most common is the "T" construction as shown in Figure 13; this is used where partitions are located in the center of a 23" or a 46" wide vertical section. The second type of partition panel, as shown in Figure 12, will only be used where partitions are located off the center of vertical sections. When installing a partition that is not centered in a vertical section, it may be necessary to Speed-Lok the vertical section containing the breaker strip and the adjacent vertical section together before placing them into position. This is necessitated by the partition butting outside wall at a joint of sections.

1. Speed-Lok required screeds to bottom of all partition sections.
2. Erect one outside wall of warehouse past position of partition, making sure that outside wall section has a breaker strip where partition will butt against it. NOTE: If partition butts against outside wall at section joint, containing breaker and adjacent section will have to be Speed-Loked together and installed as one unit.
3. Check plan view to see which side of partition must contain access holes to Speed-Loks. (This is very important or when top sections are to be installed, Speed-Loks of partition will not line up with Speed-Loks of top sections and assembly of warehouse will be impossible).



4. Speed-Lok an 8" partition section together with the required adjacent partition vertical section and set into position.
5. Continue erecting partition with same procedure as outside wall sections, always leveling sections so that top of screed is 1<sup>5</sup>/<sub>8</sub>" above leveling plate.
6. If partition contains a walk-in door, chip concrete out to accept door anchor as shown in *Figure 10*.
7. After erection of warehouse is complete, install partition angles as shown in *Figure 7*. Use a 1/8" D. bit and drill thru pre-punched holes of angles and secure with #8 metal screws. "T" type construction does not require these angles.



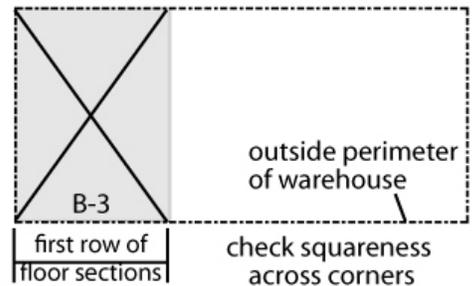
## SECTION B: ERECTING A PREFAB REFRIGERATED WAREHOUSE WITH FLOOR SECTIONS

**NOTE: Before beginning, study operation of Speed-Loks. Figures 3, 4, & 5.**

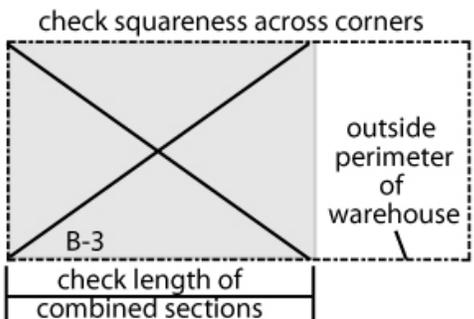
### I. INSTALLATION OF FLOOR SECTIONS

**IMPORTANT: if there is any possibility of moisture under concrete floor where warehouse is to be erected upon, a coating of hot asphalt must be applied to concrete before erecting warehouse. This condition usually exists where concrete floor is poured directly over ground floor.**

1. Mark on the building floor the exact outside dimensions of the warehouse. Make sure corners of area marked are perfectly square.
2. Check this entire area for highest point.
3. Place and level bottom section number B3. See *Figure 14*. To level, place shims under each corner until underside of section is level to highest point.
4. Lift section up and fill between shims with dry sand to approximately the required height. Replace section and pack additional sand under section. (Note: Entire outside perimeter of warehouse floor must have solid shims to prevent leakage of sand.)
5. Position required section next to B3. Level this section by shimming. Remove section and fill with required amount of sand. Reposition section and align section edges with B3. Speed-Lok these two sections together. (Note: Care must be taken so sand is not pushed up between sections.)
6. Use this procedure until entire first row of floor sections are installed.
7. Install next row of floor sections in same manner as first row.
8. Measure across corners of both rows of installed floor sections, as shown in *Figure 15*. If sections are not square, adjust before proceeding with next row of sections. Also check length of combined rows of floor sections. If dimensions do not correspond with that of plan view, tighten or release Speed-Loks until corrected.
9. Continue with this procedure until entire floor is installed, always checking squareness, levelness, and length of combined rows of sections.



**Figure 14**



**Figure 15**

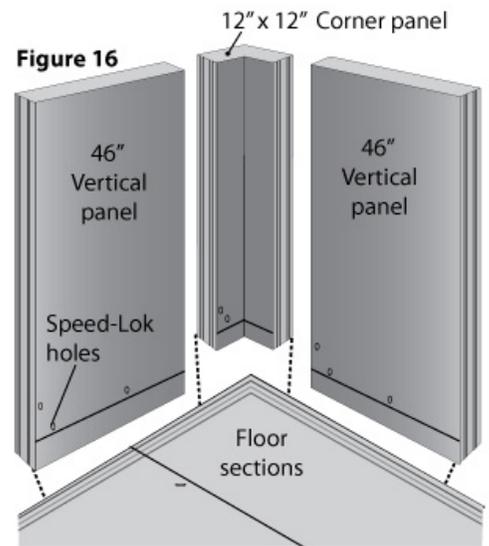
### II. ERECTING STRUCTURAL STEEL

1. Mark on the installed floor sections position of all steel posts. (This must be done very accurately.)
2. Position steel posts. (On indoor installations, secure to floor with 1<sup>1</sup>/<sub>4</sub>" long #10 wood screws.)
3. Set "I" beam into position and secure to top post plate.
4. Install lateral bracing and "U" channel struts if required.

### III. INSTALLATION OF VERTICAL SECTIONS

All Walk-In side sections are furnished with an alignment device which is to be installed in either the top or the bottom Speed-Lok pocket (containing the locking arm) on the vertical edge of the section. This device is to be installed one per vertical, just prior to erection. This insures proper alignment and easier Speed-Locking of vertical sections. For proper installation see *Figure 6*.

1. Start by erecting a 12" x 12" vertical corner section. When erecting, the holes for the Speed-Lok wrench must always be on the left hand side when facing the interior of the section. See *Figure 16*.
2. Next erect either a 23" or 46" wide vertical section, whichever the plan calls for, to the right of the corner section. Engage the Speed-Loks on the vertical section to engaging position only - Do not put them into "full locking position".
3. Set up the required vertical section to the left of the corner. This will prevent the wall from tilting in either direction. Engage the Speed-Loks between these two vertical sections to full locking position.
4. Set up four verticals to the right of the corner section with same procedure as above.
5. Check combined length of vertical sections erected. Example: If four 46" verticals have been erected, combined length must measure 15'4". If dimensions do not check out, tighten or loosen Speed-Loks of vertical joints until corrected. If length of verticals is correct, put bottom Speed-Loks in full locking position.
6. Set door section into position similar to all other vertical sections. (If warehouse is higher than 8'6" high, door section is provided with a filler panel; install it above door before adjacent vertical section is installed. Door sections with openings of 60" x 84" are shipped with a brace extending from top corner of section to bottom corner; do not remove this brace until door section is erected and adjacent section is locked into position.) Continue erecting verticals checking for plumbness and the length of combined verticals is correct. The last vertical section to be erected is the fourth corner section.
7. If warehouse is multi-height, position wall section anchors and Speed-Lok joining adapters to the top of bottom row of vertical sections as shown in *Figure 11*. Wall section anchors are 12" long. One is to be positioned over second Speed-Lok on vertical section to the right of corner and then over Speed-Loks every 46" center to center.
8. Secure wall section anchors to "U" channel struts by either bolting or "tac" welding.
9. Install top row of vertical sections in same manner as bottom row.



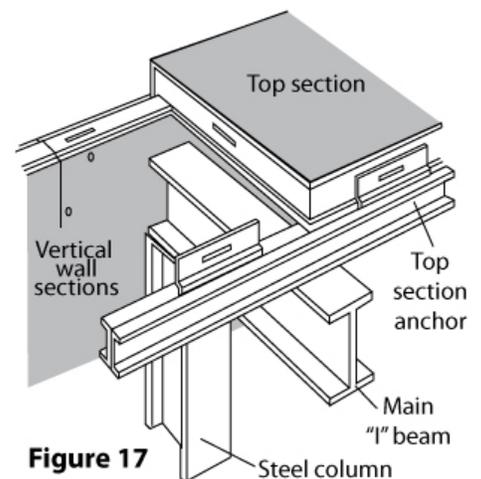
### SECTION C: ERECTING TOP SECTIONS ON WARE HOUSES WITH FLOOR SCREEDS OR WITH PREFAB FLOOR SECTIONS

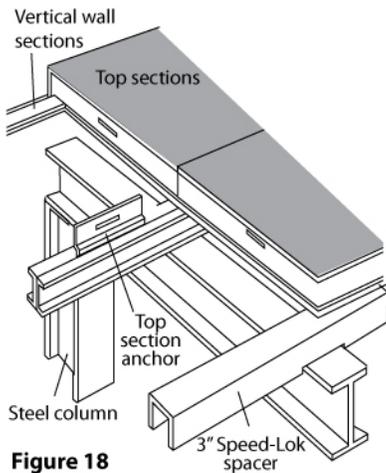
1. Erect the top sections always starting with top end section numbered T3.
2. Insert top section anchor as shown in *Figure 17*.
3. Place a bead of caulking on flange of section that is to butt against top section T3 (see plan view for proper section.)

Note: Caulking is to be applied to joints only where top section anchors are installed.

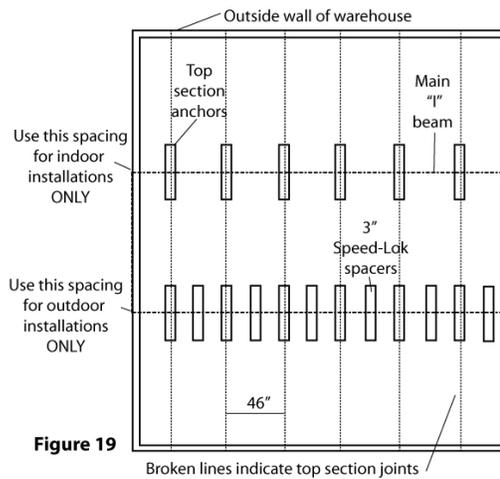
Position this section and place a 3" Speed-Lok spacer under corner of section, as shown in *Figure 15*, and engage Speed-Loks (engaging position.) Check the alignment of each edge and adjust if necessary. (If installation is made outdoors 3" Speed-Lok spacers must be placed every 23". If installation is made indoors place 3" Speed-Lok spacers at every section joint.) Note: Top section anchors are to be used at the end of each "I" beam and above all center posts for both indoor and outdoor installations. In addition, all outdoor installations to have top section anchors every 8 ft. *Figures 19* and *20* show required spacing for both 3" Speed-Lok spacers and top section anchors.

4. Continue with remaining top sections in that row, checking each one and locking it individually. When installing last top section, of first row, check to see that outside edge of it is flush with outside metal of vertical section. If sections are not flush make necessary adjustments and then put all Speed-Loks into full locking position.
5. Use this procedure for all rows of top sections.
6. Secure all top section anchors to "I" beams with clamping devices as shown in *Figure 20*.



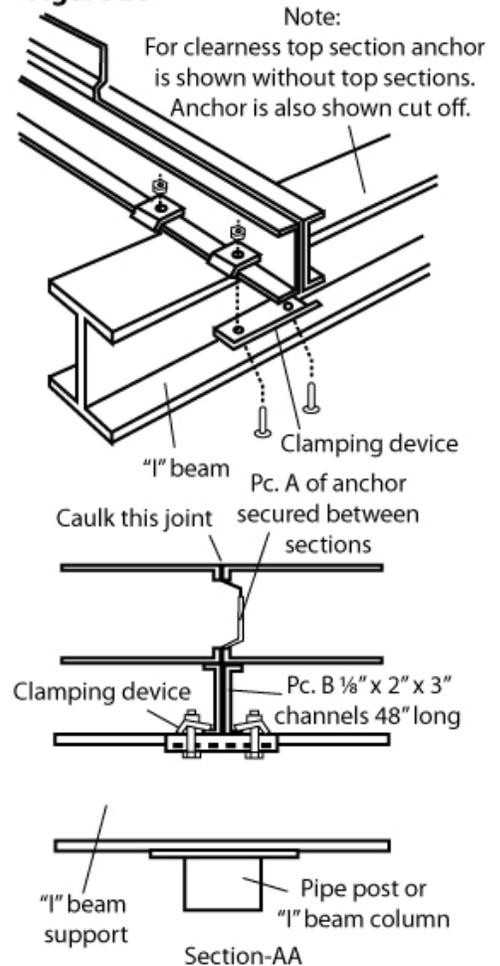


**Figure 18**



**Figure 19**

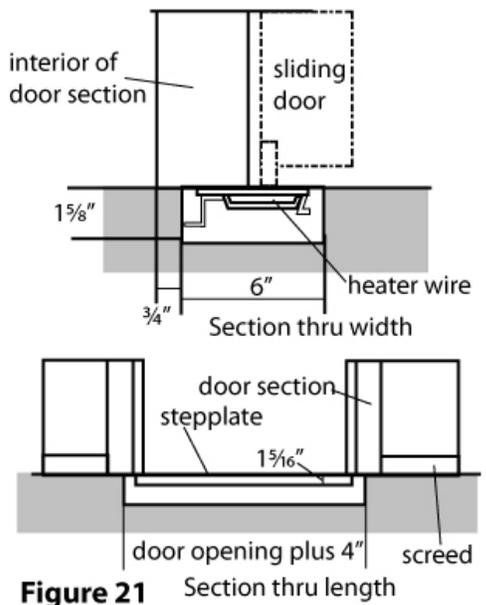
**Figure 20**



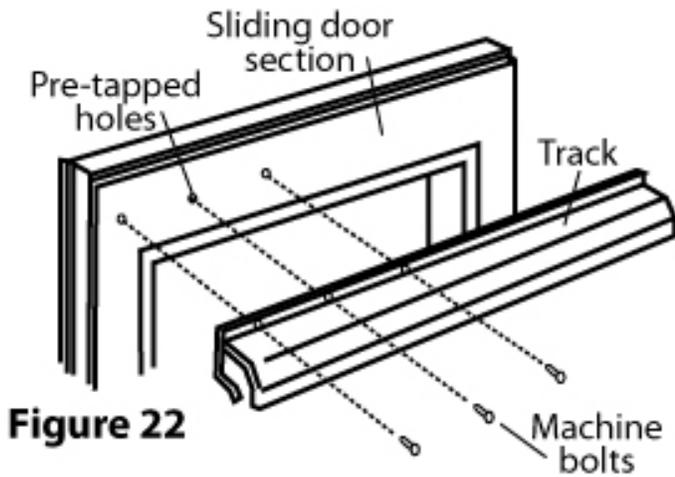
## SECTION D: INSTALLING SLIDING ENTRANCE DOORS ON REFRIGERATED WAREHOUSES WITH PREFAB FLOORS OR WITH FLOOR SCREEDS.

In order to install these sliding entrance doors in warehouse using floor screeds, it is first necessary to provide a cutout in concrete floor as shown in *Figure 21*. (All sliding entrance doors are pre-hung at the factory to insure proper fit and operation. However, for shipment the door and the track must be removed from the section. To reassemble door proceed with the following.)

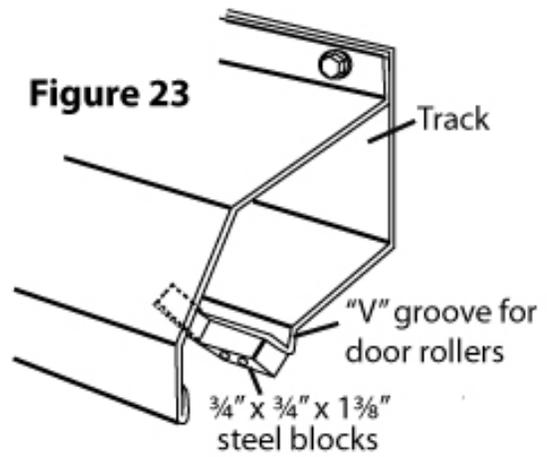
1. Position track, as shown in *Figure 22*, and secure with 3/8" machine bolts.
2. Remove 3/4" x 1-3/8" steel block from one end of track, as shown in *Figure 23*. (If door is right slide, remove steel block from right side of track. If door is left slide, remove from left side of track.)
3. Position door onto track by guiding rollers into "V" groove from end where steel block was removed.
4. Push door toward opening and guide bottom of door onto bottom roller, as shown in *Figure 24*.
5. Replace 3/4" x 3/4" x 1 3/8" steel block.
6. All door sections that have 60" wide door openings require a support at the far end of the track. This support is a 2" x 2" angle iron with an adjusting device attached at the bottom. Locate and secure into position, as shown in *Figure 25*; adjust so that track does not sag when door is opened completely.
7. Check for proper seal all around opening. (This can be done by placing a piece of paper between gaskets and with door in locked position, paper should be held securely.) If paper is not held securely at all points, it is due to the door frame being twisted. This can easily be corrected by backing off Speed-Loks and adjusting door section to match door for proper seal.
8. On warehouses using floor screeds cement door anchor into position. On warehouses using floor sections secure stepplate to floor with self-tapping screws.



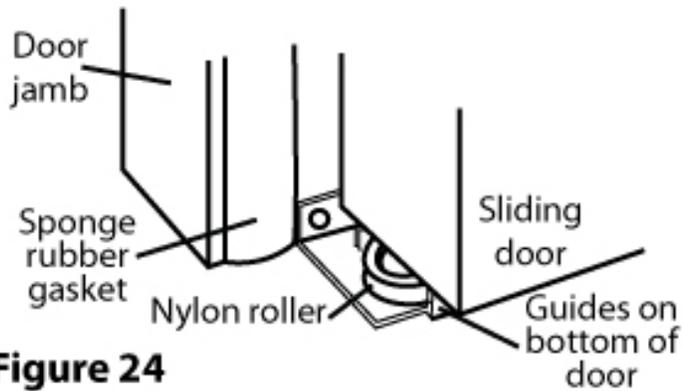
**Figure 21** Section thru length



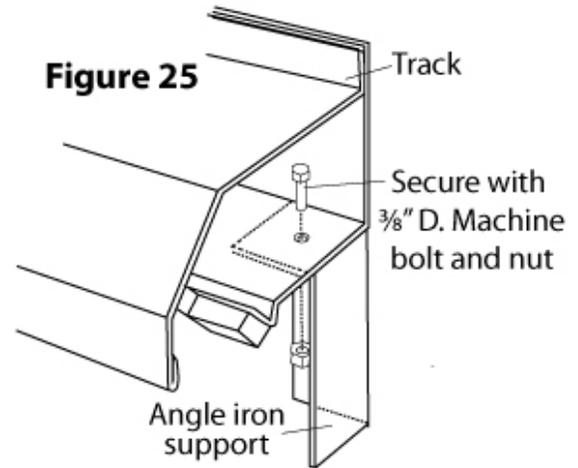
**Figure 22**



**Figure 23**



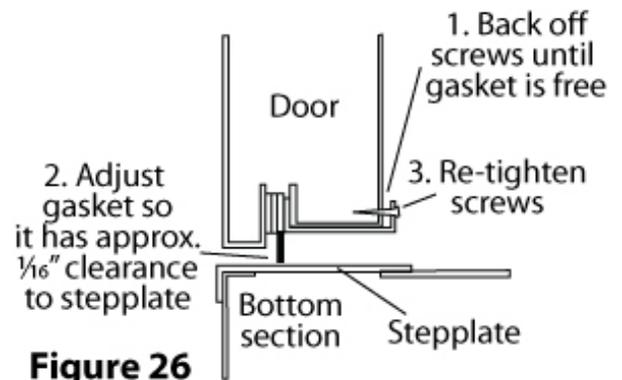
**Figure 24**



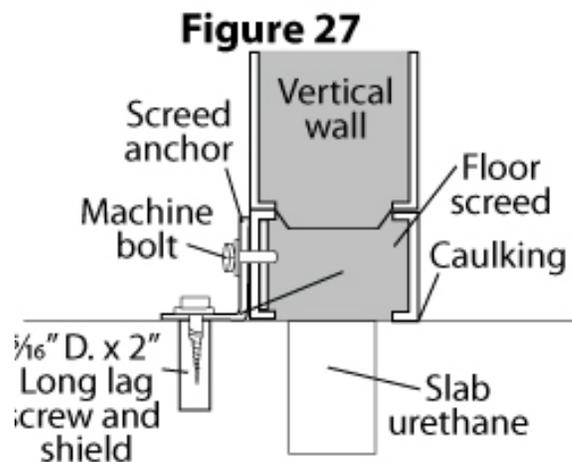
**Figure 25**

## SECTION E: COMPLETING ERECTION

1. Cover all Speed-Lok holes with 3/4" D. plug buttons.
2. Connect 115 volt, 60 cycle, single phase to inlet box on all entrance door sections.
3. Check the following on all hinged doors.
  - A. Place a piece of paper between stainless steel door strike and magnetic gasket. With door in closed position, paper should be held snugly in position. If paper falls free, disengage vertical Speed-Loks and adjust door section to match door until paper is held snugly.
  - B. With door in closed position, check to see that the wiper gasket located on the bottom of the door does not have excessive drag. When door is closed, wiper gasket should just barely touch stepplate. If gasket drags, adjust as shown in *Figure 26*.
  - C. If floor screeds are used, cement all door anchors in position
4. If warehouse uses screeds rather than floor sections and is installed outdoors, caulk as shown in *Figure 27*.



**Figure 26**



**Figure 27**