Strongback System

Strongbacks

When openings are required in a tilt-up panel, they often create extreme bending stresses in the remaining concrete sections. If additional reinforcing steel is not an option, strongbacks can be used effectively to stiffen the panel. Strongbacks may be fabricated from lumber, aluminum or steel and are usually reusable.

Strongback-Shore

The strongback-shore system is used to reduce stresses during the lifting process and stabilize the panel during and after erection. Generally, this system should be utilized on panels where an offset opening is equal to or greater than 1/2 the panel width. The concrete leg section must be checked for stresses to determine if additional reinforcing steel or strongbacks are needed.

Strongback size should be of sufficient width and depth to carry erection loads and consist of material strong enough to withstand repeated use. The shore depth should be the same nominal size as the panel thickness, i.e., a 6" panel would require a 4x6 or 6x6 shore.
## Strongback System

### Strongbacks

When strongbacks are specified, they must be of the proper number, size and located as shown on the Panel Layout Sheet.

Strongbacks, depending on type specified, must meet the following requirements:

- Aluminum strongbacks must be Dayton Superior T-63 Aluminum Strongbacks.
- Lumber strongbacks must be free of knots or defects, have a minimum $f_y$ (allowable bending) stress of 1,500 psi.
- Steel strongbacks must meet ASTM Standard A-36.

Bolts used to attach strongbacks must be securely tightened to resist movement of the strongbacks during the erection process.

Maximum space between strongbacks is the bolt diameter plus 1/2”.

### Strongbacks Using Coil Inserts, Coil Bolts and Flat Washers

When strongbacks are specified, they must be of the proper number, size and located as shown on the Panel Layout Sheet.

Strongbacks, depending on type specified, must meet the following requirements:

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### Strongbacks Using Quick Release Strongback Inserts and Quick Release Strongback Bolts

#### Single Quick Release Strongback Insert and Bolt

- T-61 Insert
- 1/2” x 5” x 5” Plate Washer
- Strongbacks
- B-11 Plate Washer
- B-14 Coil Bolt or B-12 Coil Rod and Nut
- T-1 Strongback Insert
- 8” Centers
- Single Quick Release Strongback Insert and Bolt

#### Double Quick Release Strongback Insert and Bolt

- T-62 Bolt assembly
- Cut Washer
- T-76-A Strongback Plate
- Single Quick Release Strongback Insert and Bolt

Note: Install the insert’s horizontal load carrying wire perpendicular (90°) to the center line of the strongbacks as shown above.

### WARNING

To prevent failures resulting in property damage, serious injury or death:

- Properly install strongbacks of the specified size and material at the specified locations.
- Properly install all specified strongback blocking, bracing, shore post or end foot.
- Properly install all specified “burn-out” bars.
**T-13-D Strongback Anchor Bolt**

The T-13-D Strongback Anchor Bolt is designed to be used in emergency situations. The T-13-D allows the contractor to locate a strongback on a panel after the panel has been poured. This is accomplished by using the same procedure as the T-13 Bolt, drilling a 3/4" diameter hole in the panel and installing the Strongback Anchor Bolt by torque to a minimum of 200 ft. lbs. 3/4". Refer to pages 80 and 81 for additional installation details.

B-12 Coil Rod or 3/4" B14-A Adjustable Coil Bolts, with B-11 Plate Washers then are screwed into the top of the Strongback Anchor Bolt and the strongbacks are attached to the panel. Once the panel is erected and the strongbacks are removed, the T-13-D Strongback Anchor Bolt is removed and reused on future panels. The reusable bolt is available in both a 4-1/2" length and a 6" length.

<table>
<thead>
<tr>
<th>T-13D Length</th>
<th>SWL @ 2:1 SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-1/2&quot;</td>
<td>4,500 lb.</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6,000 lb.</td>
</tr>
</tbody>
</table>

**Note:** T-13 Tang not shown on above drawing. One Tang and Round Washer supplied with each T13-D Strongback Anchor. Additional T-13 Tangs available by contacting Dayton Superior Customer Service Department.
Strongback System

T-61 Quick Release Strongback Insert

The T-61 Quick Release Strongback Insert is designed to provide access for the strongback hardware and adequate lifting capacity for the assigned project. The insert is furnished as an assembly, complete with locator cap and plastic tipped feet.

To Order:
Specify: (1) quantity, (2) name, (3) panel thickness.
Example:
48, T-61 Strongback Inserts for 6” panel thickness.

Available exclusively through Certified Dayton Tilt-Up 3 Dealers.

T-62 Quick Release Strongback Bolt

The Dayton Superior T-62 Quick Release Strongback Bolt is a simple coil threaded unit designed to quickly engage and tie strongback beams to a tilt-up concrete panel. The unit requires no tools for installation or removal and works well with steel, aluminum or wood strongbacks.

To Order:
Specify: (1) quantity, (2) name.
Example:
12, T-62 Quick Release Strongback Bolts.

Available exclusively through Certified Dayton Tilt-Up 3 Dealers.

Typical Quick Release Strongback System Application

Warning: Strongbacks are intended to stiffen tilt-up panels and are not to be used for attaching the lifting apparatus. Failure to heed this warning may result in a panel failure and/or personal injury.

T-76 Double Strongback Plate

Dayton Superior produces two strongback plates. The T-76 Strongback Plate has holes spaced at 12” centers and is used with double inserts. The T-76-A Strongback Plate is used with inserts spaced at 8” centers.

To Order:
Specify: (1) quantity, (2) name.
Example:
100, T-76 Strongback Plates
T-63 Aluminum Strongback Beams

The Dayton Superior T-63 Aluminum Strongback beams are heavy aluminum channels available in 10’, 15’, 20’ and 25’ lengths for use as strongbacks for concrete tilt-up panels. T-63 beams are furnished in sets of two channels each.

NOTE: All product located on the West Coast only.

To Order:
Specify: (1) quantity, (2) name, (3) length.
Example:
12 sets, T-63 Aluminum Strongback Beams, 20’ long.

T-63-S Splice Plate for T-63 Beams

The Dayton Superior T-63-S Splice Plate is available for splicing T-63 beams to extend their effective strongbacking length.

To Order:
Specify: (1) quantity, (2) name.
Example:
6 sets, T-63-S Splice Plates.

Strongback Assemblies

T-63 Aluminum Strongbacks are available in stock lengths of 10 ft., 20 ft., 15 ft., and 25 ft. However, by using the T-63-S Aluminum Splice Plate Assembly to splice together various combinations of stock length strongbacks, you can also make up 30 ft., 35 ft., 40 ft., 45 ft. and 50 ft. lengths.

One method of attaining the various lengths of strongbacks is illustrated below.