usable space under your garage

**8” form - 8” Hollow Core**

**section properties**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1'-3/8&quot;</td>
<td>338</td>
<td>3063</td>
<td>3.92</td>
<td>4.08</td>
<td>781</td>
<td>751</td>
<td>520</td>
<td>65</td>
</tr>
<tr>
<td>1' - 3-1/2&quot;</td>
<td>12</td>
<td>10314</td>
<td>7.08</td>
<td>5.42</td>
<td>1457</td>
<td>1903</td>
<td>970</td>
<td>121</td>
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</tbody>
</table>

* Based on form fluctuations and residual gravel remaining in cells

Precast f' c  = 5000 psi f' ci  = 3500 psi Topping f' c  = 3000 psi

**maximum safe superimposed live load (psf)**

with 4-1/2” topping

<table>
<thead>
<tr>
<th>Span (ft)</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
<th>30</th>
<th>32</th>
<th>34</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 ½</td>
<td>620</td>
<td>460</td>
<td>360</td>
<td>290</td>
<td>240</td>
<td>200</td>
<td>170</td>
<td>145</td>
<td>125</td>
<td>105</td>
<td>90</td>
<td>80</td>
<td>55</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**12” form - 8” Hollow Core**

**section properties**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-3/8&quot;</td>
<td>403</td>
<td>8320.9</td>
<td>5.87</td>
<td>6.13</td>
<td>1417</td>
<td>1358</td>
<td>616</td>
<td>77</td>
</tr>
<tr>
<td>1’ - 3-1/2&quot;</td>
<td>12 ½</td>
<td>21742</td>
<td>9.66</td>
<td>6.84</td>
<td>2251</td>
<td>2119</td>
<td>1666</td>
<td>133</td>
</tr>
</tbody>
</table>

* Based on form fluctuations and residual gravel remaining in cells

Precast f' c  = 5000 psi f' ci  = 3500 psi Topping f' c  = 3000 psi

**maximum safe superimposed live load (psf)**

with 4-1/2” topping

<table>
<thead>
<tr>
<th>Span (ft)</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
<th>30</th>
<th>32</th>
<th>34</th>
<th>36</th>
<th>38</th>
<th>40</th>
<th>42</th>
<th>44</th>
<th>46</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 ½</td>
<td>325</td>
<td>280</td>
<td>240</td>
<td>210</td>
<td>185</td>
<td>165</td>
<td>145</td>
<td>130</td>
<td>115</td>
<td>100</td>
<td>80</td>
<td>55</td>
<td>65</td>
<td>45</td>
<td>---</td>
</tr>
</tbody>
</table>

Indicates that temporary shoring is required during placement of topping.

Calculations based on moment and shear capacity, deflection (L/240), stresses and using (12) 1/2” Ø 270 ksi strand.
Hollow Core 3

shelf bearing detail

#4 bars x 5'-0" @ 1'-6" O.C. unless otherwise specified

concrete sealer (by others)

#4 bar @ 18" O.C. both ways (by others)

bend bar into topping after panel erection

water barrier recommended in this area

1/2" x 3" cont. Celotex Brg.

paper dam (by others)

2' - 8"

2' - 0"

6"

8"

4"

8" min
top of foundation bearing detail

- #4 bars x 5'-0" @ 1'-6" O.C. unless otherwise specified
- concrete sealer (by others)
- #4 bar @ 18" O.C. both ways (by others)
- bend bar into topping after panel erection
- paper dam (by others)
- water barrier recommended in this area
- 1/2" x 3" cont. Celotex Brg.
- 4" min.
**joint detail & inside wall non-bearing detail**

### joint detail

- 3/8" x 3/4" DP caulked score (by others)
- 9" max x cont. waterproof membrane strip (by others)
- #4 bar @ 18" O.C. both ways (by others)
- grout keyway

### inside of wall non-bearing detail

- concrete sealer (by others)
- #4 bar @ 18" O.C. both ways (by others)
- 1/2" Ø dowels @ 1'-6" O.C.
  - epoxy in holes (by others)
foundation non-bearing detail

- Water barrier recommended in this area
- Concrete sealer (by others)
- #4 bars x 5'-0" @ 1'-6" O.C. unless otherwise specified
- #4 bar @ 18" O.C. both ways (by others)
- Bend bar into topping after panel erection
center of web and stem spacing

<table>
<thead>
<tr>
<th>Overall 7' - 11-3/4&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>6' - 6-7/8&quot;</td>
</tr>
<tr>
<td>5' - 3-3/8&quot;</td>
</tr>
<tr>
<td>3' - 11-7/8&quot;</td>
</tr>
<tr>
<td>2' - 8-3/8&quot;</td>
</tr>
<tr>
<td>1' - 4-7/8&quot;</td>
</tr>
<tr>
<td>9-1/8&quot;</td>
</tr>
<tr>
<td>2' - 0-5/8&quot;</td>
</tr>
<tr>
<td>3' - 4-1/8&quot;</td>
</tr>
<tr>
<td>4' - 7-5/8&quot;</td>
</tr>
<tr>
<td>5' - 11-1/8&quot;</td>
</tr>
<tr>
<td>7' - 2-5/8&quot;</td>
</tr>
</tbody>
</table>

center of void spacing

anchor zone 1-1/4" min. from edge of Precast Garage Floor

drop in hanger installation guidelines 8" & 12"

Installation procedure

1. Follow manufacturer’s installation procedures. See following page for the Confast drop-in anchor procedure.
2. Anchors may be placed in shaded area all along bottom side except within 1-1/4" edge.
3. Other types of anchors may be used as long as they are placed between the webs to avoid pre-stressed cables and must be approved by the engineer of record.
### Allowable Tension and Shear Loads for 3/8" and 1/2" Short Drop-In Anchor in Normal Weight Concrete

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Rod Size (in.)</th>
<th>Drill Bit Dia. (in.)</th>
<th>Emb. Depth (in.)</th>
<th>Tension Critical Edge Distance (in.)</th>
<th>Shear Critical Edge Distance (in.)</th>
<th>Critical Spacing (in.)</th>
<th>Normal-Weight Concrete, $f'_c \geq 2500$ psi</th>
<th>Normal-Weight Concrete, $f'_c \geq 4,000$ psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIA37S</td>
<td>1/8</td>
<td>1/2</td>
<td>3/4</td>
<td>4 1/2</td>
<td>5 1/4</td>
<td>3</td>
<td>Ultimate (lb.) 1,500</td>
<td>Ultimate (lb.) 2,274</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Allowable (lb.) 375</td>
<td>Allowable (lb.) 570</td>
</tr>
<tr>
<td>DIA50S</td>
<td>1/2</td>
<td>3/8</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>Ultimate (lb.) 2,039</td>
<td>Ultimate (lb.) 3,224</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Allowable (lb.) 510</td>
<td>Allowable (lb.) 805</td>
</tr>
</tbody>
</table>

1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may not be increased for short-term loading due to wind or seismic forces.
3. Refer to allowable load-adjustment factors for edge distances and spacing on page 234.
4. Allowable loads may be linearly interpolated between concrete strengths.
5. The minimum concrete thickness is 1 1/2 times the embedment depth.

### Allowable Tension and Shear Loads for 3/8" and 1/2" Short Drop-In Anchor in Hollow Core Concrete Panel

| Model No. | Rod Size (in.) | Drill Bit Dia. (in.) | Emb. Depth (in.) | Tension Critical Edge Distance (in.) | Shear Critical Edge Distance (in.) | Critical Spacing (in.) | Hollow Core Concrete Panel, $f'_c \geq 4,000$ psi |
|-----------|----------------|---------------------|------------------|------------------------------------|----------------------------------|------------------------|---------------------------------|---------------------------------|
| DIA37S    | 1/8            | 1/2                 | 3/4              | 4 1/2                              | 5 1/4                            | 3                      | Ultimate (lb.) 1,860            | Ultimate (lb.) 3,308            |
|           |                |                     |                  |                                    |                                  |                        | Allowable (lb.) 465            | Allowable (lb.) 825             |
| DIA50S    | 1/2            | 3/8                 | 1                | 6                                  | 7                                | 4                      | Ultimate (lb.) 2,650            | Ultimate (lb.) 4,950            |
|           |                |                     |                  |                                    |                                  |                        | Allowable (lb.) 660           | Allowable (lb.) 1,235           |

1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may not be increased for short-term loading due to wind or seismic forces.
3. Refer to allowable load-adjustment factors for edge distances and spacing on page 234.
4. Allowable loads may be linearly interpolated between concrete strengths.
Titen® screws are hardened screws for attaching all types of components to concrete and masonry. These fasteners are commonly used in applications such as attaching electrical boxes, light fixtures or window frames into concrete or masonry base materials.

**Features**
- Available in ¼” and ⅜” diameter sizes
- Available in hex and Phillips flat-head designs in two colors
- Drill bit included with each box

**Material:** Carbon steel

**Coating:** Zinc plated with a baked-on ceramic coating

**Codes:** Florida FL-2365.1

**Installation**

**Caution:** Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Steps must be taken to prevent inadvertent sustained loads above the listed allowable loads. Over tightening and bending moments can initiate cracks detrimental to the hardened screw’s performance. Use the Simpson Strong-Tie installation tool kit. It is designed to reduce the potential for over tightening the screw.

**Caution:** Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor’s load capacity.

1. Drill a hole in the base material using the appropriate diameter carbide drill bit as specified in the table. Drill the hole to the specified embedment depth plus ½” to allow the thread tapping dust to settle and blow it clean using compressed air. Overhead installations need not be blown clean. Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling and tapping.

2. Position fixture, insert screw and tighten using drill and installation tool fitted with a hex socket or phillips bit.

Preservative-treated wood applications: suitable for use in non-ammonia formulations of CCA, ACQ-C, ACQ-D, CA-B, BX/DOT and zinc borate. Use in dry, interior environments only.

Use caution not to damage ceramic barrier coating during installation. Recommendations are based on testing and experience at time of publication and may change. Simpson Strong-Tie cannot provide estimates on service life of screws.

**Installation Sequence**

![Installation Sequence Diagram]

1½” max

Titen® Phillips head screw available in white and standard blue
attachment guidelines

**PRECAST GARAGE FLOOR** Preparation
1. Email or send a layout of the area (footing & foundation) with dimensions and thickness of foundation walls.
2. A proposal will be faxed or sent to you showing the total cost, which includes; Precast Garage Floor, transportation, installation, and grouting of Precast joints. To proceed with the order, simply sign and return the “Agreement”, found on the last page of the proposal.
3. Once the foundation has been poured, we “field measure” to verify the final dimensions.
4. Please allow 2 to 3 weeks from the day we field measure until installation.

**FOUNDATION** Preparation
1. Place #4 rebar in foundation extending 2'-8” above the top of foundation at 18” O.C., or closer if required by your engineer. Keep these bars aligned 2-1/2” from outside of foundation wall. This will provide 4”- 5” clearance for the Precast Garage Floor bearing.
2. Make sure the top of foundation walls, or recessed ledge, are level and cleared of any debris, gravel, etc. so the Precast Garage Floor bearing is evenly distributed.

**SITE** Preparation
1. The site needs to be prepared to allow access for a 65-ton crane and 45’ trailer and semi. A 30’ X 30’ area within ten feet of the foundation should be leveled and compacted to adequately assure the crane can set-up and install the Precast Garage Floor.
2. Backfill foundation walls and compact soil as noted above. Verify with your engineer before backfilling.
3. All overhead lines and other obstructions need to be moved prior to Precast Garage Floor installation.
4. Forterra will send a representative to the job site to assess the site preparation and address any issues prior to installation.

**INSTALLATION** by Forterra
1. Forterra will provide the trucks for hauling and the crane for installation of the Precast Garage Floor suspended concrete slabs.
2. Bearing pad is supplied by Forterra and placed on the bearing foundation walls.
3. Precast Garage Floor suspended slabs are set in place and the keyway joints are then grouted.

**AFTER PRECAST GARAGE FLOOR INSTALLATION**
1. Insert paper dam into Precast Garage Floor voids at least 6” from each end. Paper dam can be any object to stop the flow of concrete into the void, i.e. newspaper.
2. Bend the #4 bars extending from top of foundation at a 3” radius over the top of the Precast Garage Floor, leaving enough clearance for the concrete topping to consolidate around the rebar.
3. Waterproof the perimeter and seams prior to placement of concrete topping!
4. Forterra recommends using a reputable waterproofing contractor to assure proper waterproofing of your new Precast Garage Floor suspended concrete floor system. If you elect to do your own waterproofing, please contact us for instruction details.
5. Tie #4 rebar to bent bar at 18” O.C. each way (see details on previous pages)
6. Pour 3” of concrete topping minimum onto the Precast Garage Floor. Slope topping slab from 6” to 3” toward front of garage for proper drainage.
7. Place control joints directly above Precast Garage Floor keyway joints. These may be tooled during concrete placement, or saw cut afterwards.
8. Additional waterstops, damproofing, and sealers can be used. Consult Forterra.
Add more than 600 square feet of usable, livable space under the garage in your new home:

- Media room
- Family room
- Workshop
- Crafts room
- RV garage
- Exercise room
- Sports court
- Game room
- Storage room
- Man cave

Join other smart homeowners who are not willing to waste usable space beneath the garage. In many cases, the cost of Precast Garage Floor is partially offset by the savings in backfilling and compaction, especially on sloped lots with walk-out basements.

When you build with Precast Garage Floor you get:

- Installation in only half a day
- A room the size of your garage, with no columns or beams
- A ceiling with smooth concrete finish

Don’t miss the chance to add more than 600 square feet to your new home. Just send us the layout of your garage, and we’ll take care of the rest!

Delivery and installation are always included.

Call today for a free estimate!
801.966.1060

Get the extra space you need and increase your home’s value, for little effort and expense!
Forterra

Forterra is a leading manufacturer of water and drainage pipe & products for a variety of water-related infrastructure applications. Based in Irving, Texas, Forterra is comprised of Drainage Pipe & Products, Water Pipe & Products, Structural & Specialty Products and Stormwater Management Systems. We employ more than 5,500 people and operate more than 100 facilities, with products available throughout the U.S. and Eastern Canada.