

Span Notes



No. 12

How to Use Spancrete Precast for Inexpensive Space Under Your Garage

Thousands of residential garages have been built with *Spancrete*[®] floors, providing large, open spaces below for additional parking, storage, shop and living space – even swimming pools and storm shelters. The following information is intended to assist you in planning additional space under your garage floor.

WORKING WITH SPANCRETE IS EASY

Spancrete precast is a prestressed concrete hollowcore plank for floors and roofs. It is machine-extruded and sawed to specified lengths for each project. Widths, depending upon local manufacturer standards, will be 3'-4", 4'-0" or 8'-0". Where required, narrow widths will be provided from standard width units.

Spancrete plank is manufactured in standard depths of 4", 6", 8", 10" and 12". The depth required for your project is dependent upon plank spans and loading requirements. The most common plank depths used for residential garages, based on typical loading, are 8" for spans to 30'-0" and 12" for spans to 40'-0".

Plank notches and/or openings required for your floor layout will be cut prior to shipping or in the field, depending upon your local manufacturer's standard practice. Note that small openings are usually provided by others.

Live-load design requirements for residential garage floors in most areas of the country are 50 lbs. per square foot. Additional loads for which *Spancrete* garage plank would be designed include such items as unbonded concrete topping (topping adhered directly to plank is considered bonded) and walls or roof supported by plank.

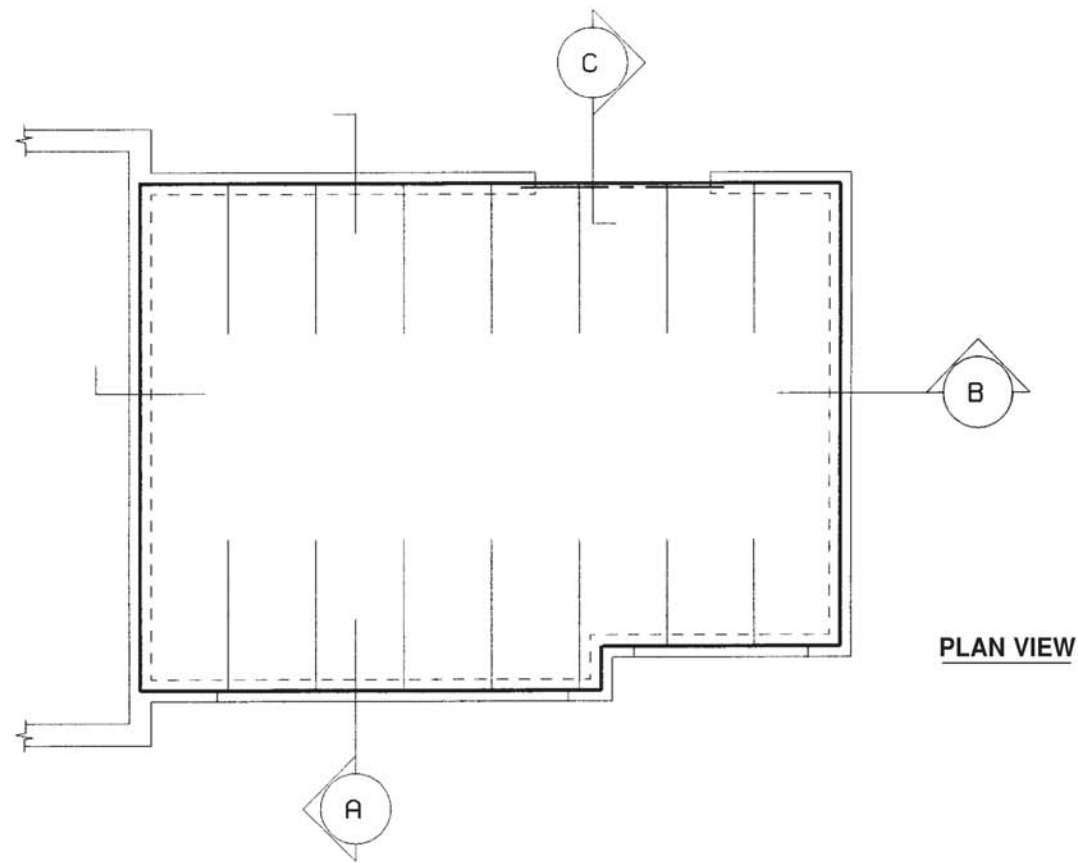
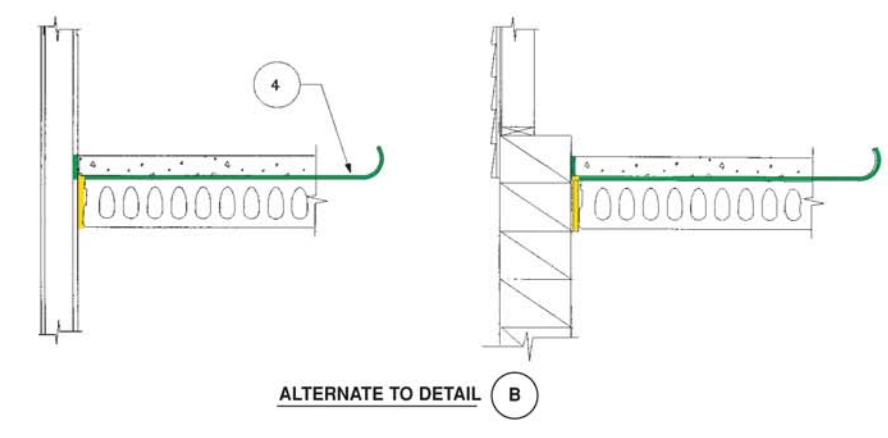
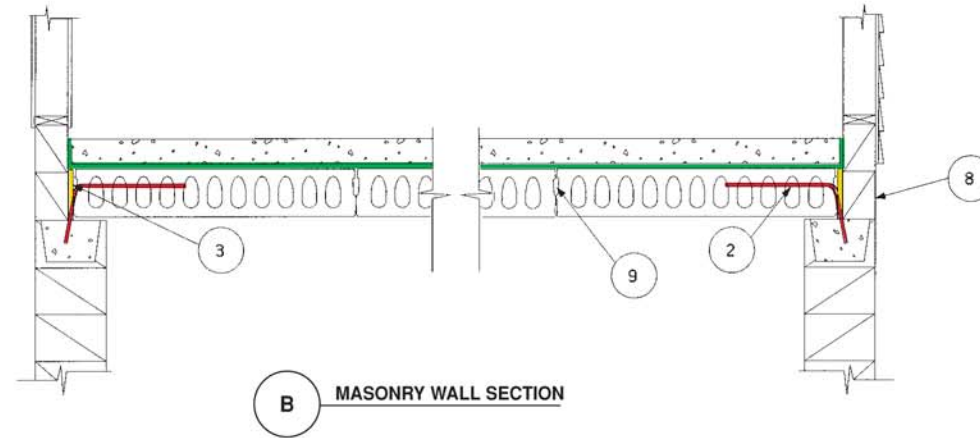
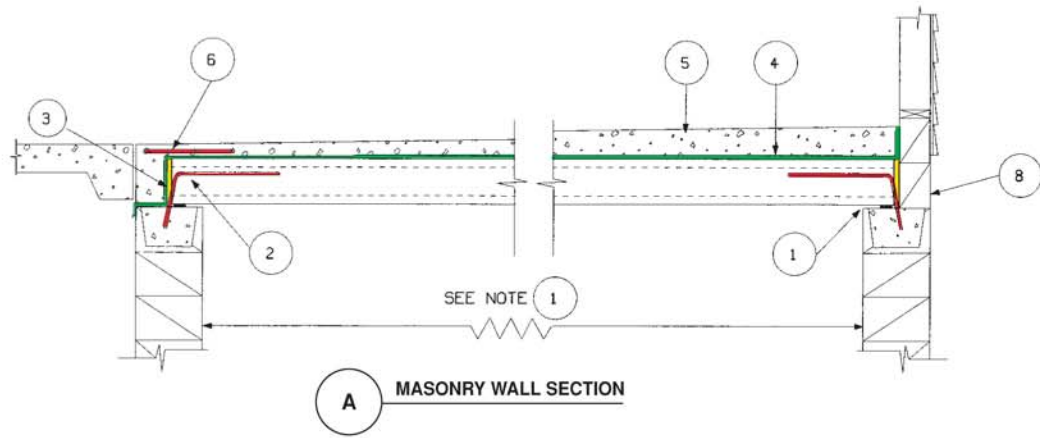
The erection process for a typical garage floor takes less than a day. A mobile crane and experienced erection crew hoist the plank from a truck's flatbed trailer, place it directly on the supporting structure and make all necessary plank-to-wall and/or beam connections. Plank-to-plank joints are first leveled and then grouted, which transforms the plank floor into a monolithic unit.

A residential garage floor would typically be designed for a minimum one-hour fire rating but can be fire rated to four hours. *Spancrete* precast also is resistant to high levels of sound transmission and noise impact. It is durable and is rot and termite proof.



ORDERING SPANCRETE PRECAST IS EASY

1. For a firm estimate, provide your *Spancrete* manufacturer with a plan showing dimensions, type and thickness of bearing walls, size and location of any beams, as well as size and location of openings. Also advise of any problems for crane or truck access.
2. Upon ordering *Spancrete* precast, provide a schedule and final plans with a map locating your project. *Spancrete* will prepare and submit to you, for approval, an erection drawing showing your garage plank layout with dimensions and details.
3. Completely review and check all dimensions and details on the drawing submittal. Mark any changes and discrepancies, return promptly and note, with your signature on the drawing, "approved," "approved as noted" or "revise and resubmit." Your project will not be produced until written approval is received.
4. Confirm your delivery/erection schedule requirements with your *Spancrete* producer when you have assurance of a completion date for the walls as well as the steel beams and lintels. Note that concrete and masonry walls require curing time prior to plank erection.

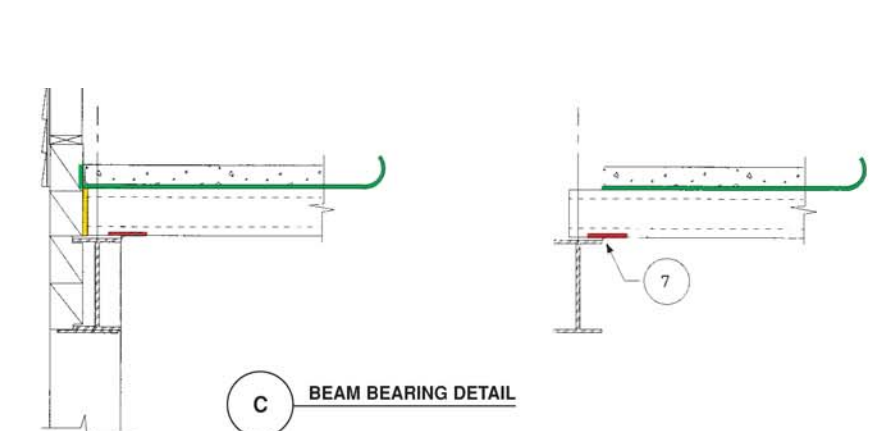
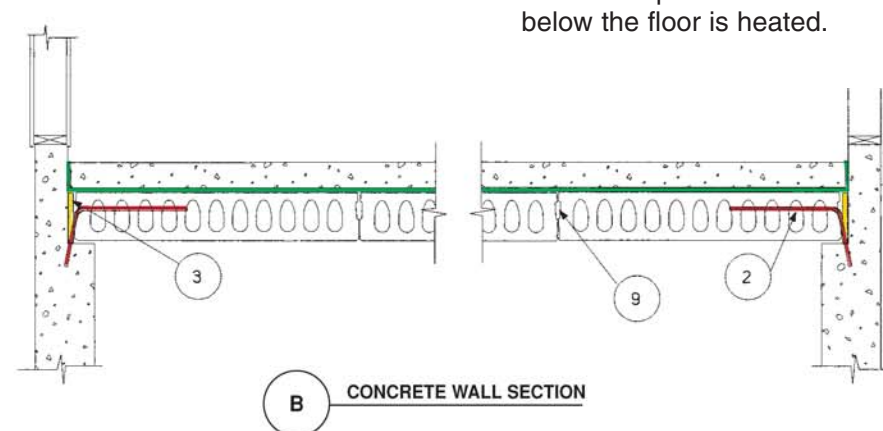
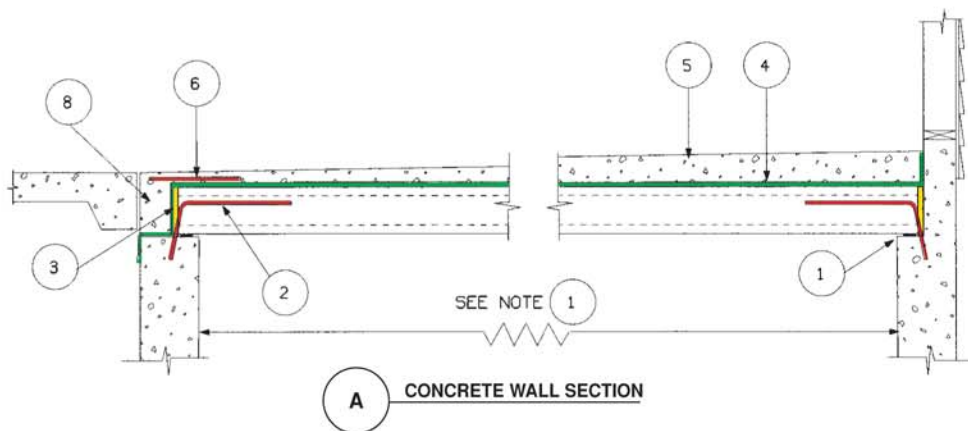


1. Plank length is determined by adding the amount of plank bearing to the inside-to-inside dimension of your bearing walls. The plank bearing surface typically required for concrete and masonry is 3-1/2". For masonry bearing, a bond beam is required. Note that a multi-monomer plastic hardboard strip (or approved equal) is placed on the wall 1/2" from the inside edge to ensure proper plank bearing.
2. A mechanical connection between the *Spancrete* plank and your structure may be required. Shown here are drilled bent bar connections, which are provided by your erector. Your local *Spancrete* producer may use other connection types. Connections will be shown on the erection drawings.
3. In cold weather areas, insulation should be placed around the entire perimeter between the plank and the wall and at the entrance between the plank and topping edge. Insulation is provided and installed by the home builder.
4. A commercially available waterproofing membrane is recommended to be installed on top of the plank prior to placement of concrete topping. The membrane should be capable of flexibly bridging the insulation and small gaps around the perimeter walls. It should return up the walls and terminate at the top of the topping slab.

The membrane is necessary to prevent water from penetrating the plank, which could cause deterioration of plank reinforcing and concrete in future years. It will also act as a vapor barrier in cold climates where the area below the floor is heated.
5. Quality, high-strength, air-entrained concrete, placed by qualified personnel, is the final important step to your project. Minimum concrete topping thickness is 2" and must be positively sloped to the garage door, to ensure drainage and prevent water from ponding on the floor. If interior drains are used, the concrete should be sloped to the drains, and drain fixture detail should be capable of draining moisture from the membrane.

Reinforcing is recommended in the topping, and a concrete sealer should be applied after curing.
6. Additional reinforcing such as mesh, properly placed in the topping at the door entrance, can minimize the possibility of a crack developing in the topping along the base of your overhead door.
7. At steel beams, plank bearing must extend at least 1" past the beam-web center to prevent beam rotation. A weld plate, or other mechanical connection, is required. This detail should be shown on the erection drawing.
8. Masonry should not be installed above plank-bearing elevation prior to plank erection, as it is highly susceptible to damage during plank erection.

In poured concrete wall situations, at least one edge lip (above plank bearing elevation) on the plank bearing wall has to be left down to provide ample space for erection tolerances.
9. Plank keyway joints must be grouted.



SPECIFICATION

for Precast, Prestressed Hollowcore Plank

1. GENERAL

1.01 Description

- A Work included: Manufacture, transportation, and erection of precast, prestressed concrete hollowcore plank, including grouting of joints between adjacent slab units.
- B Work excluded: Caulking, round openings and rectangular openings less than 8 in. on all sides, cast in place embedments and rebar, plank-bearing lintels and underlayment such as concrete and gypsum toppings.

1.02 Quality Assurance

- A Manufacturer's Qualifications: The precast concrete manufacturing plant shall conform to the requirements of the Prestressed Concrete Institute Plant Certification Program. The manufacturer shall retain a registered qualified engineer to ensure that production is in accordance with design requirements.
- B Erector Qualifications: Regularly engaged for at least 5 years in the erection of precast structural concrete similar to the requirements of this project. Retain a qualified registered engineer to certify that erection is in accordance with design requirements.
- C Qualifications of Welders: In accordance with AWS D1.1.
- D Testing: In general compliance with applicable provisions of Prestressed Concrete Institute MNL-116.
- E Requirements of Regulatory Agencies: All local codes plus applicable sections of ACI 318, AWS and ASTM.

1.03 Submittals and Design

- A Shop Drawings and Design Criteria: Provide plans locating all hollowcore plank, all major openings, sections and details showing connections, weld plates, and support conditions. List all dead, live and other applicable loads used in the design. Also list fire rating, which shall be a ____ hour per applicable codes.
- B Approvals: Submit ____ copies of erection drawings for approval prior to fabrication. Fabrication shall not proceed prior to receipt of approved drawings.
- C Test Reports: Test reports on concrete and other materials shall be submitted upon request.

2. PRODUCTS

2.01 Materials

- A Portland Cement (Type I, II or III), admixtures and aggregates in accordance with applicable ASTM standards.

- B Water: Potable or free from foreign materials in amounts harmful to concrete and embedded steel.
- C Reinforcing Steel and Welded Studs: Bars, wires and structural steel shapes in accordance with applicable ASTM standards. Studs in accordance with AWS D1.1.
- D Prestressing Strand: Uncoated, 7-Wire, Low Lax Strand: ASTM A416 (including supplement) - Grade 250K or 270K.
- E Grout: A mixture of not less than one part Portland Cement to three parts fine sand. Grout that seeps from the joint shall be completely removed before it hardens. Minimum 28-day compressive strength - 3000 psi.
- F Bearing Strips: Multi-monomer plastic, hardboard or approved equal.

2.02 Concrete Mixes

- A 28-day compressive strength: 5000 psi. or other as used by the local manufacturer

2.03 Manufacture

- A Hollowcore plank shall be machine cast under the trade name Spancrete.
- B Finishes: Bottom surface shall be flat and uniform as resulting from an extrusion process without major chips, spalls and imperfections. Top surface shall be machine finished.

3. EXECUTION

3.01 Product Delivery, Storage & Handling

- A Delivery and Handling: Hollowcore plank shall be lifted and supported during manufacturing, stockpiling, transporting and erection operations only at the lifting or supporting points, designated by the manufacturer. Transportation, site handling, and erection shall be performed with acceptable equipment and methods, and by qualified personnel.
- B Storage: Store all units off ground, on firm level surfaces, with dunnage placed at bearing points. Place stored units so that identification marks are discernible. Separate stacked units by dunnage across full width of each plank.

3.02 Erection

- A Site Access: Erection access suitable for cranes and trucks to move unassisted from public roads to all crane working areas as required by erector, or otherwise indicated herein, will be provided and maintained by the general contractor. Obstructing wires shall be shielded or removed and, when applicable, snow removal and winter heat will be provided by the general contractor.

- B Preparation: The general contractor shall be responsible for providing true, level bearing surfaces on all field-placed bearing walls and other field-placed supporting members. Masonry wall bearing surfaces shall be bond beams with properly filled and cured concrete. All pipes, stacks, conduits and other such items shall be stubbed off at a level lower than the bearing plane until after the plank is set. Masonry, concrete or steel shall not be installed above plank-bearing surface until after the plank is in place.
- C Installation: Installation of hollowcore slab units shall be performed by the manufacturer. Members shall be lifted with slings at points determined by the manufacturer. Bearing strips shall be set, where required. Grout keys shall be filled. If field cut openings are required, they shall only be cut after grout has cured, unless authorized by the manufacturer's engineer.
- D Alignment: Members shall be properly aligned. Variations between adjacent members shall be reasonably leveled out by jacking, bolting, loading, or any other feasible method, as recommended by the manufacturer.

3.03 Field Welding

- A Field welding is to be done by qualified welders, using equipment and materials compatible to the base material.

3.04 Attachments and Small Holes

- A Subject to approval of the architect/engineer, hollowcore plank units may be drilled or "shot," provided no contact is made with the prestressing steel. Round holes and those less than 8 in. on any side shall be drilled or cut by the respective trades. Should spalling occur, it shall be repaired by the trade doing the drilling, shooting or cutting.

3.05 Clean Up

- A Remove rubbish and debris resulting from hollowcore plank work from premises upon completion.

3.06 Safety

- A The general contractor will provide and maintain all safety barricades and opening covers required for plank after grouting is completed.

Spancrete Manufacturers' Association, Providing Quality Worldwide

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Spancrete products are also manufactured in:

Armenia	Australia	Belgium
Brazil	China	Denmark
Egypt	Guatemala	Hungary
Ireland	Japan	Korea
Spain	Switzerland	UAE

SPANCRETE®

