

Oasis

Foundation Wall System

by  Oldcastle Precast,® Inc.

START WITH A FINISHED BASEMENT™

Factory Insulated • Dens Armor® Plus Paperless Drywall • Ready for Finish & Utilities



Product & Installation Guide

Table of Contents

1) Oldcastle – Engineering and Documentation.....	2
a) Design Assumptions	2
b) Oldcastle Shop Drawings to include	2
c) Approvals	2
2) Owner – Site Preparation.....	2-3
a) Excavation (see figure 1, Pg. 4)	2
b) Stone Placement (see figure 1, Pg. 4)	2
c) Foundation Wall Location	3
3) Oldcastle – Site Preparation.....	3
a) Foundation Layout	3
b) Final Compaction	3
c) Level Crushed Stone	3
4) Oldcastle – Precast Installation.....	3-4
a) Site Access	3
b) Crane	3
c) Setting Precast Walls	3
d) Connections	4
e) Joint Treatment	4
5) Owner – Before Backfill Requirements.....	5
a) Damp-proofing	5
b) Drainage (see figure 1, Pg. 4)	5
6) Owner – Basement Floor Installation.....	5-6
a) Vapor barrier (see figure 3, Pg. 7)	5
b) Concrete Slab (see figure 3, Pg. 7)	6
c) Wall/ Slab Connections (see figure 4, Pg. 7)	6
7) Owner – Dwelling Structure Framing and Blocking.....	8
a) Joists Parallel (see figure 5, Pg. 9)	8
b) Joists Perpendicular	8
c) “I” Joists	8
d) Floor Trusses and Light Gauge Steel Joists (see figure 6, Pg. 9)	8
8) Owner – Dwelling Structure Attachment.....	10
a) Sill Plate	10
b) Strong-Tie Strap Connection (see figure 7, Pg. 11)	10
c) Conventional Framing Connection (see figure 7, Pg. 11)	10
9) Owner – Backfilling.....	10-11
a) Procedure	10
b) Height above Finished Grade	10
c) Material	11
10) Owner – Cold Weather Procedures.....	11
a) Excavation and Stone Footing Placement	11
b) Stone Footing Protection	11
c) Procedure	11
11) Owner – Non-Insulated Wall Installation.....	12
a) Frost Walls for Daylight Basements	12
b) Garage Walls (see figure 8, Pg. 12)	12
c) Garage Wall Haunch Connections (see figure 9, Pg. 13)	12
12) Owner Miscellaneous Details (figure 2, pg. 6; figure 11, pg. 14)	

1) Oldcastle – Engineering and Documentation

a) Design Assumptions

- i) Precast Concrete to be 6000 psi @ 28 days and have an entrained air content of not less than 5%.
- ii) Concrete sections to be designed for a maximum uniform load applied at the top of the foundation wall of 5300 lbs/lf.
- iii) Lateral earth pressure, 60 lbs/sf per foot of depth.
- iv) Precast foundations are assumed not to be subject to hydrostatic pressure from ground water.
- v) Soil bearing capacity used for stone footing calculation to be stated on Oldcastle Shop Drawings.

b) Oldcastle Shop Drawings to include

- i) Foundation Wall Panel layout and details.
- ii) Structural configuration and details.
- iii) Typical installation cross section.
- iv) Designed soil bearing capacity (psf).
- v) Stone footing design and materials.
- vi) Maximum allowable total uniform load (lbs/lf).
- vii) Concentrated loads and their points of application.
- viii) Installation Guidelines document.

c) Approvals

- i) Drawings to be submitted to the owner for his approval.
- ii) Owner to forward to local building officials as required.
- iii) One approved set to be returned to Oldcastle and one set to remain on jobsite thru construction.

2) Owner - Site Preparation

a) Excavation (see figure 1, Pg. 4)

- i) Soil – Stone Footings shall be supported on undisturbed natural soils or engineered fill.
- ii) Depth - Foundation shall be excavated to the proper depth to accommodate stone footings under walls and pads (**see figure 10, Pg.13 for pad detail**).
- iii) Size - Excavation and stone footing shall extend a minimum of 2'-0" beyond all exterior faces of walls.
- iv) Excavation shall be in compliance with current OSHA regulations.

b) Stone Placement (see figure 1, Pg. 4)

- i) Material – Clean crushed stone. Maximum size shall be 1/2".
- ii) Depth of Stone – Shall be in accordance with the owner approved Oldcastle Shop Drawings.
- iii) Compaction – Crushed Stone Footings shall be consolidated using a vibratory plate in a maximum of 8" lifts.
- iv) Tolerance – Stone shall be placed to grade at +/- 1/2".

Owner – Site Preparation continued

c) Foundation Wall Location

- i) Elevation Benchmark – A benchmark shall be provided by owner to establish bottom of foundation wall elevation.
- ii) Location Reference – A minimum of two foundation corner pins shall be placed by owner to establish finished structure location.

3) Oldcastle - Site Preparation

a) Foundation Layout

- i) Layout Interior Wall offsets
- ii) Layout Lally Column Pad locations
- iii) Layout Beam Pocket Pad locations
- iv) Tolerance – Walls +/- 1/4", Pads +/- 1"

b) Final Compaction

- i) Consolidate using a vibratory plate compactor.
- ii) Consolidate an area 6" wider than proposed precast placement.
- iii) Verify elevation following compaction – Tolerance +/- 1/4".
- iv) Re-rake and compact as necessary.

c) Level Crushed Stone

- i) Walls and Beam Pocket Pads - Rake or screed to proper elevation. Tolerance, +/- 1/4".
- ii) Lally Column Pads - Rake or screed to proper elevation. Tolerance, +/- 1/4".

4) Oldcastle – Precast Installation

a) Site Access (provided by owner)

- i) Roadway to safely support a 80,000 lbs. vehicle.
- ii) Roadway to accommodate a tractor with a 55' trailer.

b) Crane

- i) Accessible and stable 40' square pad area adjacent to foundation required.
- ii) Crane to be sized for greatest reach/weight condition.
- iii) Site needs to be clear from above ground obstructions and underground utilities.
- iv) Site conditions must provide a safe distance from all overhead wires

c) Setting Precast Walls

- i) Oldcastle to provide and be responsible for installation crew
- ii) First section set to be independently braced, next sections to be connected to the previously set sections.
- iii) All sections to be set +/- 1/4" from true line as determined by offsets.
- iv) All sections to be set +/- 1/4" from plumb.

Precast Installation continued

d) Connections

- i) Foundation sections to be secured using 1/2" recessed bolt provided at top of wall.
- ii) Foundation sections to be secured using 1/2" bolt and plate provided at bottom of wall.

e) Joint Treatment

- i) All vertical joints to be caulked using Urethane Caulk.
- ii) Joints with an annular space greater than 1/2" shall use a foam back-up if joint depth exceeds 3/8".

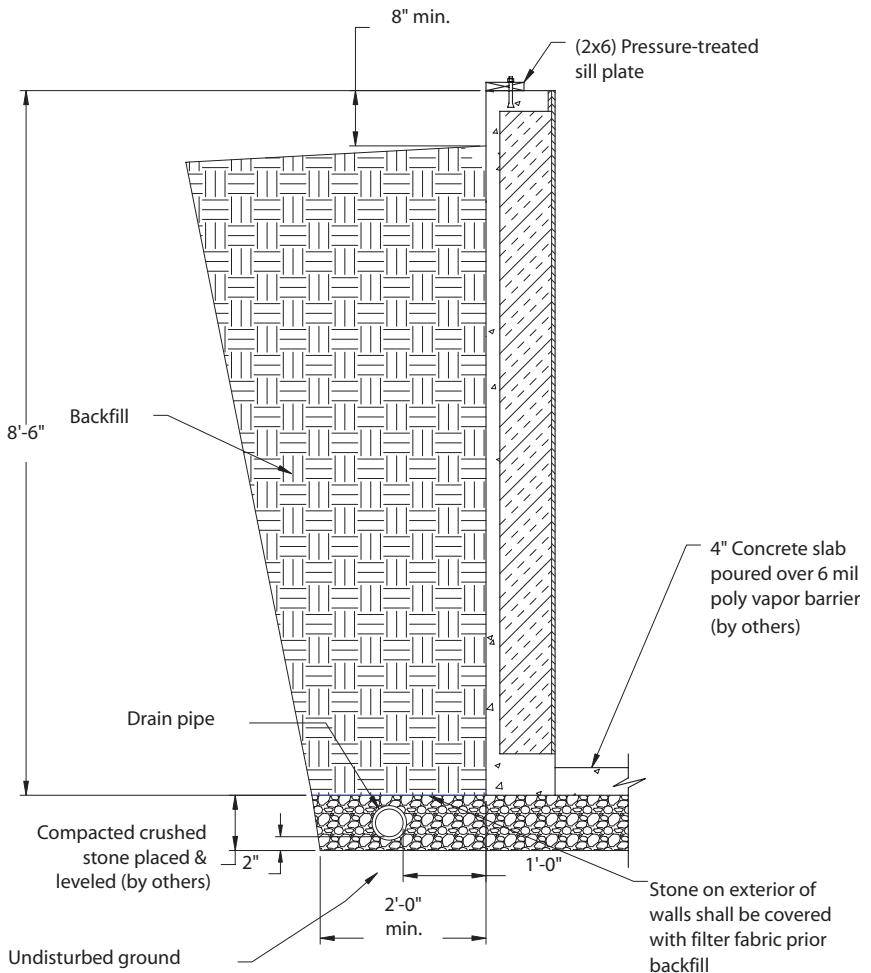


Figure 1
TYPICAL WALL SECTION

5) Owner – Before Backfill Requirements

a) Damp-proofing

- i) Damp-proofing is not required by Oasis Foundation Wall systems but may be required by local building code.
- ii) Damp-proofing shall not be applied to the wall surface until after the foundation joint caulk has adequately cured.

b) Drainage (see figure 1, Pg. 4)

i) General Requirements

- (1) Porous or perforated drainage pipes shall be provided (by others) when Precast Walls enclose usable or habitable space below ground.
- (2) Stone on exterior of wall shall be covered with filter fabric prior to backfill.
- (3) Drain Discharge – All drains shall go to daylight by either gravity or sump pump discharge.
- (4) Lots shall be graded to drain surface water away from foundation wall. Grade shall fall a minimum of 6" within the first 10'.
- (5) Window well systems shall be drained to daylight or into the perimeter drain around foundation.

ii) Pipe (see figure 1, Pg. 4)

- (1) Size - Shall be a minimum of 4" diameter and in accordance with the owner approved Oldcastle Shop Drawings.
- (2) Placement – Drainage pipe shall be placed in crushed stone below base of Precast wall where required.
- (3) Location – Drainage pipe shall be located at the exterior perimeter of the foundation walls in accordance with the owner approved Oldcastle Shop Drawings.

iii) Sump

- (1) When groundwater from beneath the basement floor slab is anticipated, the installation of a basement sump pit is required.
- (2) Specifically manufactured, sealed HDPE devices should be used to minimize hazards from an open pit.
- (3) If the site allows, the sump pit should drain to daylight. If this is not practical an ejector pump is required.

6) Owner – Basement Floor Installation

a) Vapor barrier (see figure 3, Pg. 7)

- i) Prior to placement of concrete slab, a minimum 6 mil. polyethylene (or similar) vapor retarder membrane to be placed over exposed crushed stone.
- ii) Joints in vapor retarder membrane must overlap a minimum of 6" and extend vertically up the foundation wall 4".
- iii) To protect the interior wall finish while pouring the basement floor, a minimum of 36" wide 6 mil polyethylene, may be taped to the lower inside wall if needed.

Basement Floor Installation continued

b) Concrete Slab (see figure 3, Pg. 7)

- i) All concrete shall comply with the American Concrete Institute (ACI) and shall have a minimum compressive strength of 3000 psi after 28 days and a maximum slump of 5".
- ii) The concrete shall be placed at a minimum thickness of 4".
- iii) To inhibit cracking, a 6 x 6 WWF reinforcing mesh is recommended to be placed prior to the concrete slab pour.
- iv) For large slab areas and in-side corner conditions, tooled joints are also suggested.

c) Wall/Slab Connections (see figure 4, Pg. 7)

- i) When foundation walls are to be backfilled less than 3'-0" above stone footing threaded inserts will be provided in the bottom of the precast wall sections in the appropriate locations.
- ii) Threaded rod will be provided and shall be cast into the concrete slab.

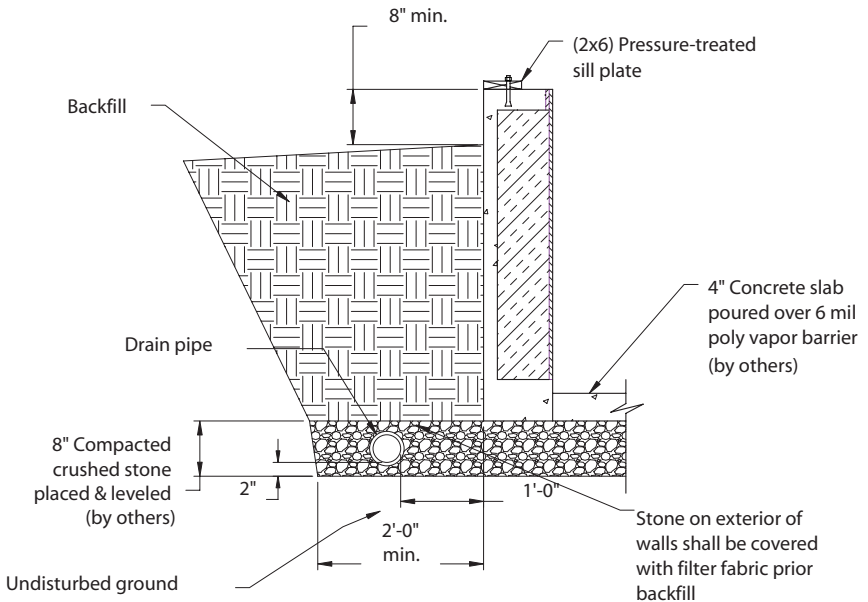


Figure 2
TYPICAL CRAWL SPACE

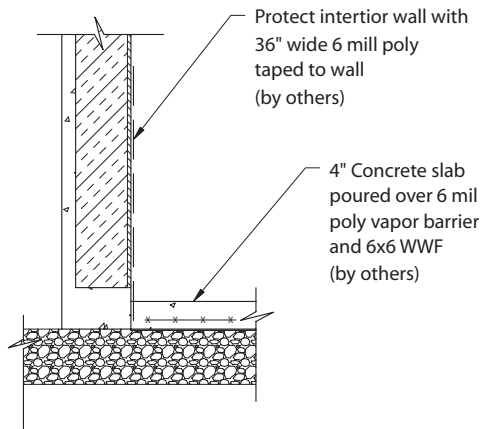


Figure 3
BASEMENT FLOOR CONSTRUCTION DETAIL

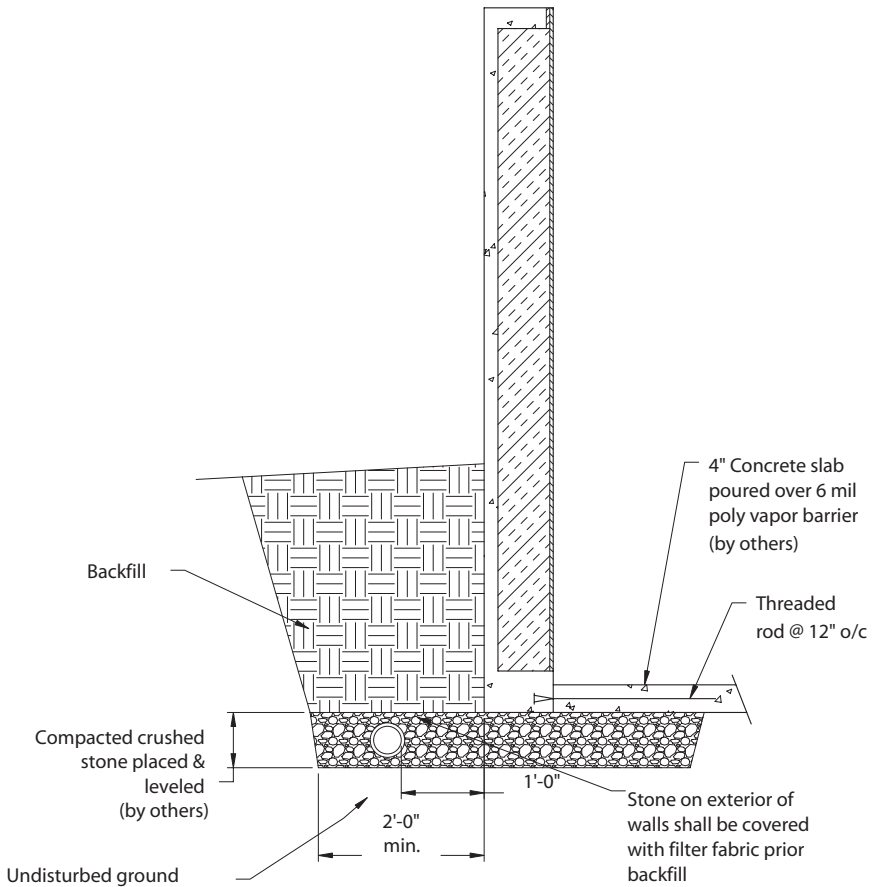


Figure 4
TYPICAL WALL SECTION AREA WITH LESS THAN 3' OF BACKFILL

7) Owner – Dwelling Structure Framing and Blocking

a) Joists Parallel (see figure 5, Pg. 9)

- i) Where dwelling structure floor framing members run parallel to the foundation wall, additional bracing may be required to transfer lateral load from the top of the foundation wall to the floor framing.
- ii) Bracing and blocking shall be at 48" on-center spacing.
- iii) Bracing shall consist of a 2 x 6 flat placed directly on the sill plate and spanning between the rim-joist and the bottom edge of the first floor joist. The 2 x 6 brace shall be secured to the sill with 5-10d nails minimum.
- iv) Solid blocking, consisting of solid lumber, "I"-joist sections, or engineered lumber shall be equal in dimension to the floor joists at the area to be braced.
- v) Where planned backfill height exceeds 7-1/2' and floor joists exceed 10" in height, a minimum of 3 blocks shall be installed at each brace point.
- vi) Where planned backfill height exceeds 7-1/2' and floor joists are less than 10", a minimum of 2 blocks shall be installed at each brace point.
- vii) Where planned backfill is less than 7-1/2', a minimum of 1 block shall be installed at each brace point.
- viii) All blocking shall be secure with a minimum of 6 -10d nails placed through the structural sub floor into the blocking.

b) Joists Perpendicular

- i) Where dwelling structure floor framing members run perpendicular to the foundation wall, the lateral load from the top of the foundation wall may be transferred to the floor framing without the use of additional blocking or bracing.

c) "I" Joists

- i) Where "I"-joists are used for floor framing, a minimum 1-1/2" by full web height web-stiffener must be installed at the blocking side of the last I-joist to be blocked.

d) Floor Trusses and Light Gauge Steel Joists (see figure 6, Pg. 9)

- i) Where wood floor trusses or light-gauge steel floor joists are utilized the blocking methods and materials shall be in accordance with the manufacturer's recommendations.

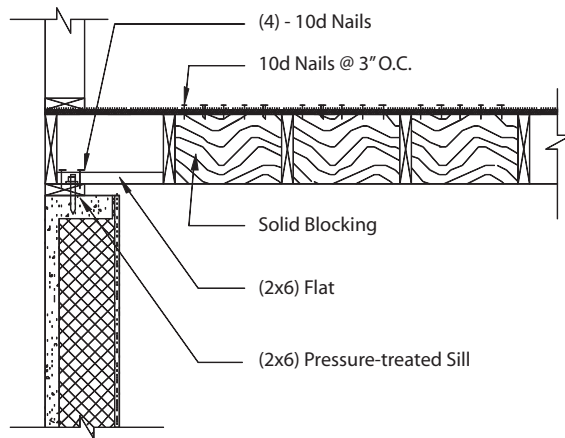


Figure 5
WOOD JOIST FLOOR BRACING

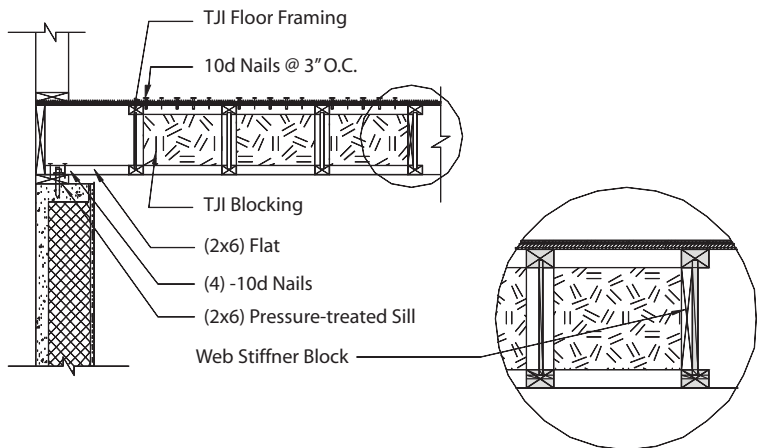


Figure 6
I-JOIST FLOOR BRACING

8) Owner – Dwelling Structure Attachment

a) Sill Plate

- i) Precast wall sections are provided with 1/2" threaded rod at 48" spacing around entire top of wall and no more than 12" from panel ends.
- ii) Sill plate shall be attached to the top of the foundation wall using 1/2" diameter anchors with washers at all anchor locations.
- iii) Sill plate must consist of one treated 2 x 6 at a minimum.
 - (1) Where required for additional capacity, an additional 2 x 6 may be utilized.
 - (2) In the case where a garage wall runs into a foundation wall, a 2 x 10 treated sill plate must be used in place of the 2 x 6 to properly distribute the loads.
- iv) The sill plate shall be set in a double bead of construction adhesive where it contacts the top of the concrete wall sections.
- v) Butt joints in the sill plate shall not be within 6' of precast wall butt joints.

b) Strong-Tie Strap Connection (see figure 7, Pg. 11)

- i) Prior to the setting of the modular home sections onto the foundation, "Z" shaped 18 gauge (minimum) steel straps shall be secured to the 2 x 6 plate(s). The strap spacing shall be no greater than 48" on-center. (Simpson Strong-Tie MST18 or equal. See wall panel detail drawings).
- ii) All steel straps are to be secured as per manufacturer's specifications.
- iii) Steel straps are not required where walls are equally backfilled on both sides.

c) Conventional Framing Connection (see figure 7, Pg. 11)

- i) To provide maximum lateral bracing performance at the top of the foundation wall, "Z" shaped 18 gauge (minimum) steel straps shall be secured to the 2 x 6 plate(s). The strap spacing shall be no greater than 48" on-center. (See wall panel detail drawings).
- ii) All steel straps are to be secured as per manufacturer's specifications.
- iii) Where limited lateral soil pressures or alternative bracing methods are employed, exterior surface attachment straps may be utilized. Straps shall be a minimum of 2" x 16" 18 gauge. Vertical surface straps must be located to align with the vertical wall studs.
- iv) Steel straps are not required where walls are equally backfilled on both sides.

9) Owner – Backfilling

a) Procedure

- i) Backfilling shall not be done until:
 - (1) Filter fabric is placed on stone bed outside foundation (see Figure 1, Pg. 4).
 - (2) The sill and floor above have been properly secured.
 - (3) The basement floor has been poured (see Figure 3, Pg. 7).
 - (4) Exception: Bracing may be provided by owner to sufficiently restrain walls to prevent damage by backfill.
 - (5) Backfill material shall not be placed against wall sections until joint sealant material has adequately cured.

b) Height above Finished Grade

- i) Concrete Walls shall extend a minimum of 8" above finished grade.

Backfilling continued

c) Material

- i) Backfill with a well drained soil. Expansive soil or topsoil shall not be used.
- ii) Backfill shall not exert an equivalent lateral fluid soil pressure of greater than 60 psf per foot of depth.

10) Owner – Cold Weather Procedures

a) Excavation and Stone Footing Placement

- i) Stone footings shall not be placed on frozen ground.
- ii) If excavating during cold weather all frozen earth shall be removed.
- iii) If excavation depth is increased to remove frozen earth, then the crushed stone depth shall be increased to fill the additional space.
- iv) All excavated areas shall be protected from freezing using an insulation material until crushed stone is placed.

b) Stone Footing Protection

- i) The stone footing and the earth beneath shall be protected from freezing until the basement floor is poured and exterior of foundation is backfilled.

c) Procedure

- i) Insulating materials that are commonly used are fiberglass batts, EPS board, XPS board, straw and insulated blankets.
- ii) Care shall be taken to keep insulation dry.

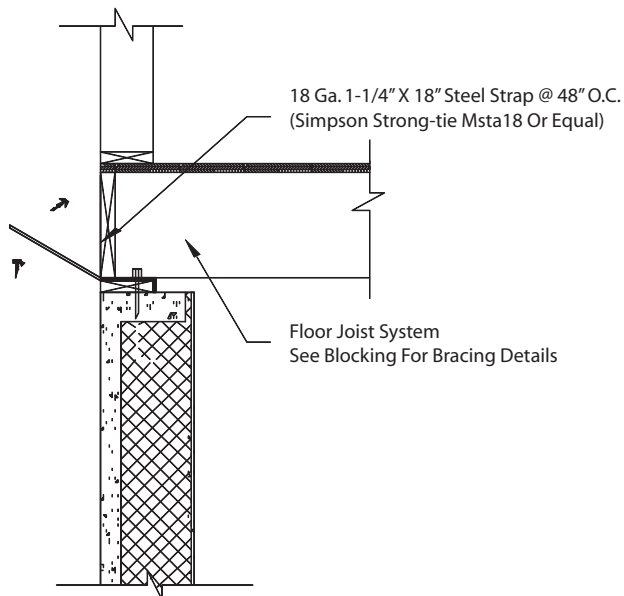


Figure 7
STRAP CONNECTION DETAIL

11) Owner – Non-Insulated Wall Installation

a) Frost Walls for Daylight Basements

- i) Frost walls are required when backfill height is less than maximum local frost depth.
- ii) Frost walls do not need to be insulated unless required by code or design.
- iii) Excavate and provide stone footing as shown on the owner approved Oldcastle Shop Drawings.
- iv) Compact backfill in lifts (per code requirements) on each side of frost wall to maintain position and provide support for wall above.

b) Garage Walls (see figure 8, Pg. 12)

- i) Garage walls are not required to be insulated unless required by code or design.
- ii) Excavate and provide stone footing as shown on the owner approved Oldcastle Shop Drawings.
- iii) Compact backfill in lifts (per code requirements) on each side of garage wall to maintain proper position.

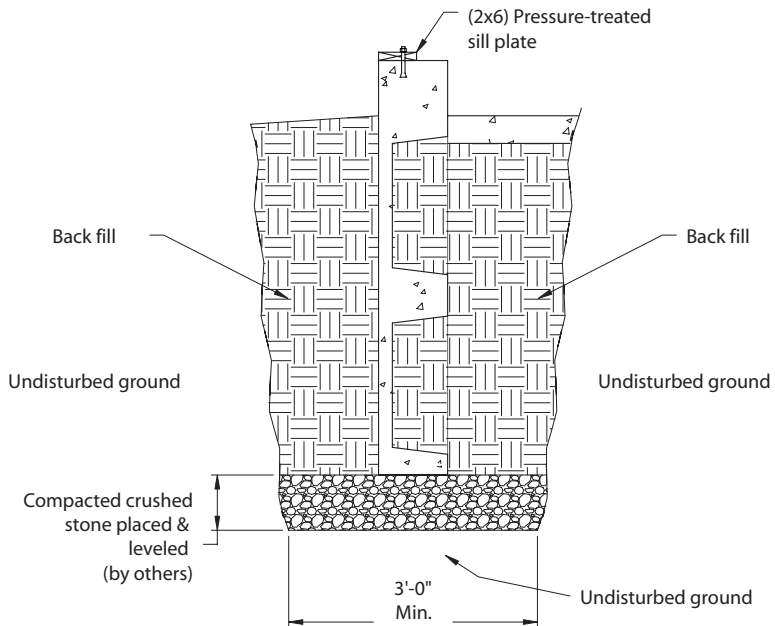


Figure 8
TYPICAL GARAGE WALL TRENCH

c) Garage Wall Haunch Connections (see figure 9, Pg. 13)

- i) Haunch connections are required and provided for all garage walls that are required to span over an excavated space.
- ii) If the excavation exceeds half the dimension of the length of the panel (or greater than 5') then the excess area must be filled and compacted.
- iii) Backfill at and adjacent to haunch connections shall be compacted to the underside of suspended wall in 12" lifts.

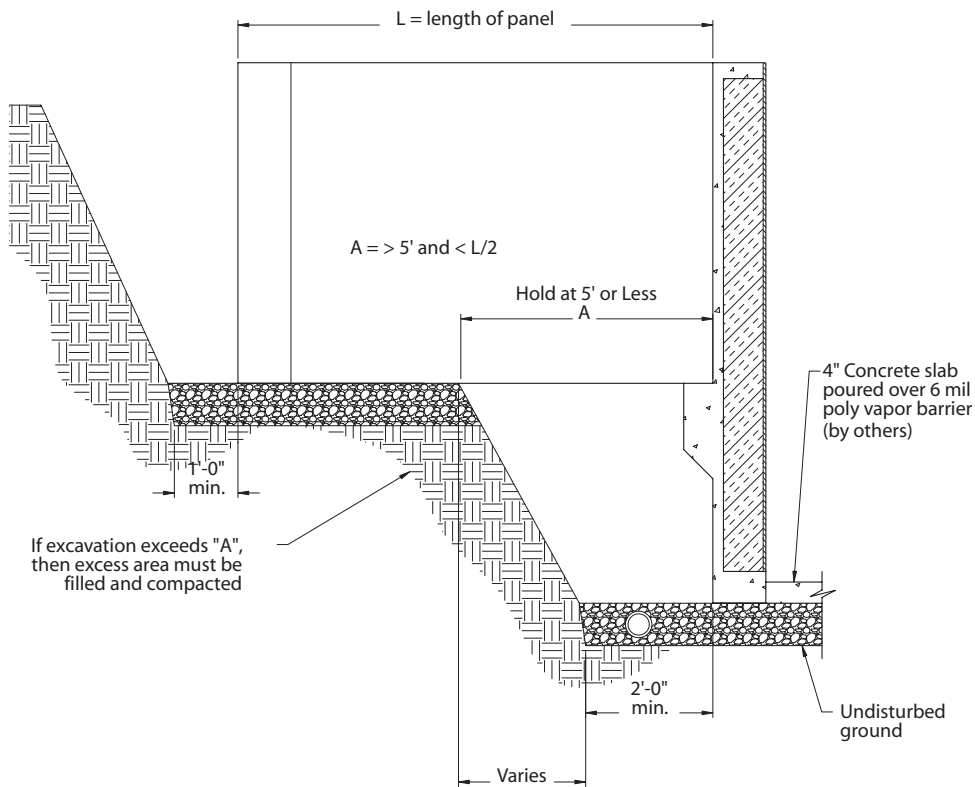


Figure 9

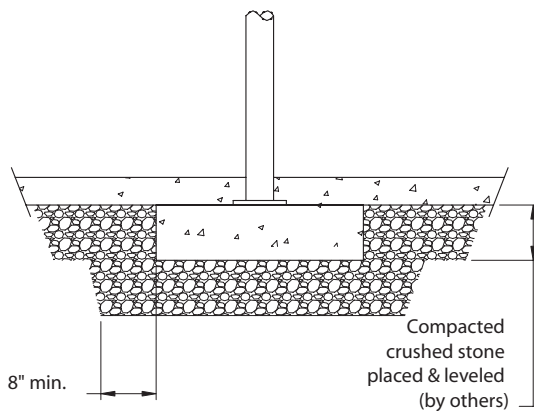


Figure 10

LALLY COLUMN FOOTING DETAIL

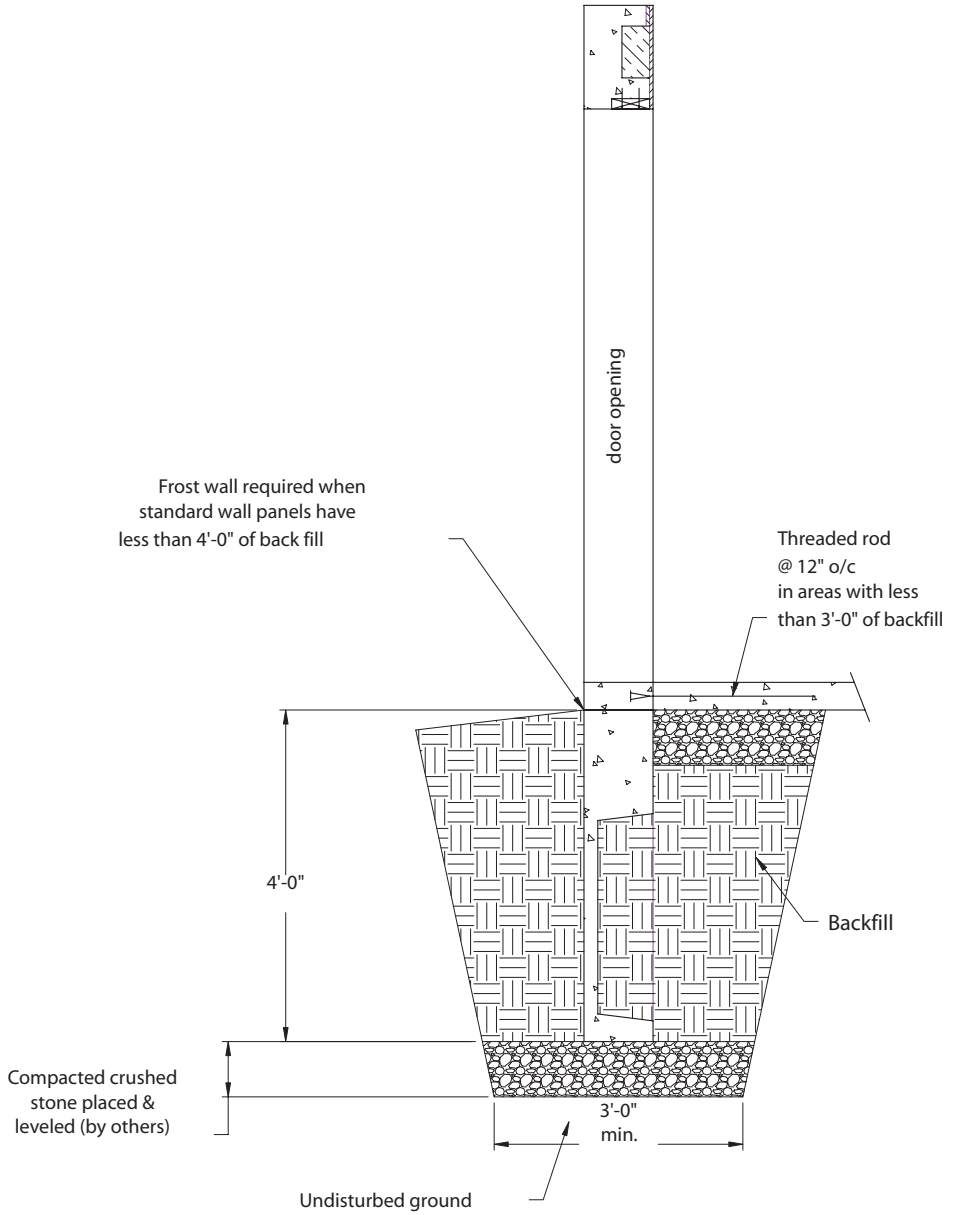


Figure 11
WALK OUT BASEMENT WALL SECTION

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