

WATERPROOFING DETAILS FOR SHOTCRETE / PNEUMATICALLY PLACED CONCRETE WALLS

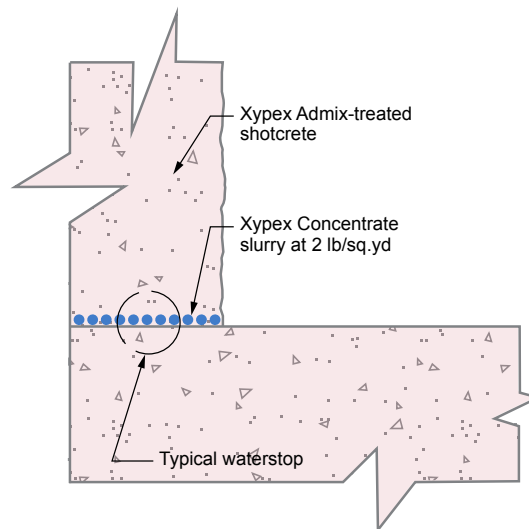
2017-10

Shown below are suggested joint and other details to be used when creating vertical concrete elements by pneumatic placement (shotcreting).

The details below make suggestions in regards to joints that that are both subject and not subject to hydrostatic conditions.

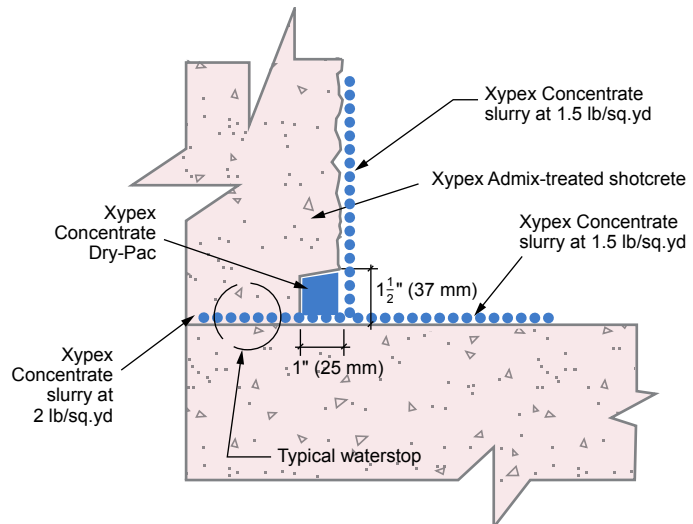
Xypex suggests a combination of a 2 lbs/sq. yd. (1 kg/ m²) Xypex Concentrate slurry coat along with a preformed slot filled with Xypex Concentrate in dry-pac form be placed at all cold and construction joints in wall structures subject to hydrostatic conditions. The following images illustrate joint details that achieve this with the approximate size of the detail to achieve the quantity of Xypex Concentrate that is desired at these types of joints. Suggestions for forming/ achieving these” slot geometries” in the hardened concrete are also given.

**Detail 1 – Wall onto Slab Interface Joint Detail
1A) Not Subject to Hydrostatic Pressure**



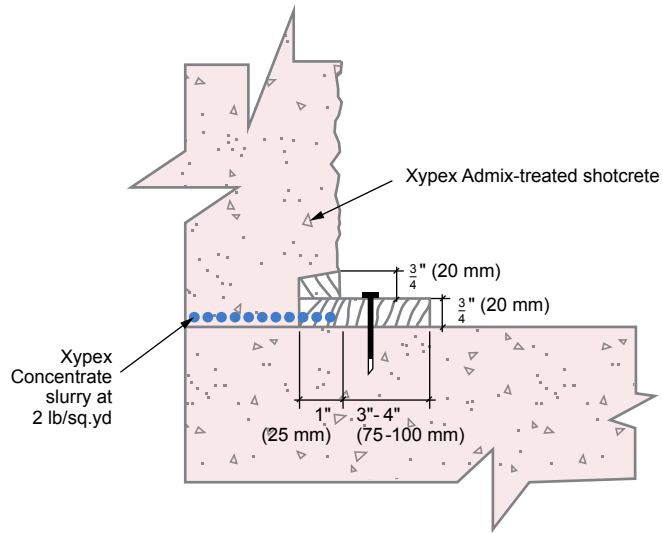
Notes: Apply Xypex Concentrate slurry coat at 2 lbs/sq.yd. or (1.0 kg/m²) to the prepared slab/wall construction joint. When dry, install either a hydrophilic expanding waterstop strip per the manufacturers’ specifications or if a sheet waterstop is specified the Xypex slurry coat is applied to the concrete on either side of the specified waterstop.

**1B) Subject to Hydrostatic Pressure
1B-i) Overall View**

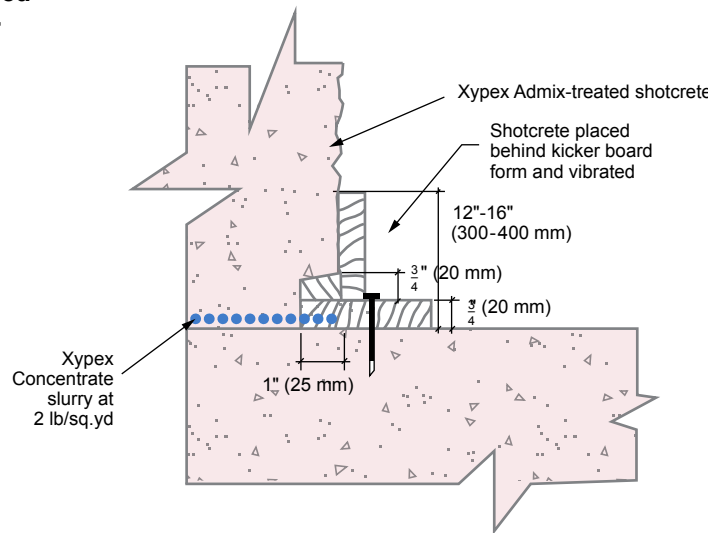


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1B-ii) Typical Joint Forming Method



1B-iii) “Kicker Board Assembly” to be used at pilaster or in areas of congested rebar



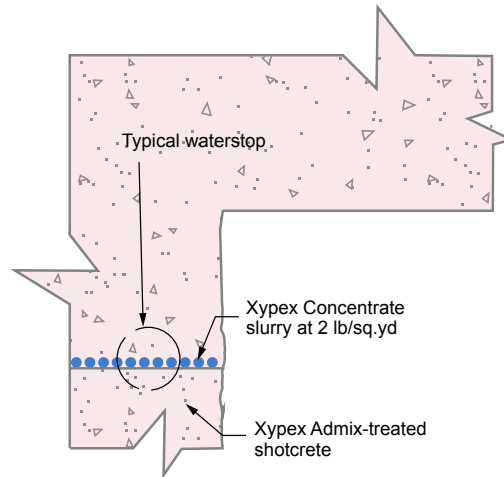
Notes: Apply Xypex Concentrate slurry coat at 2 lbs/sq.yd. or (1.0 kg/m²) to the prepared slab/wall construction joint. When dry, install either a hydrophilic expanding waterstop strip per the manufacturers’ specifications or if a sheet waterstop is specified the Xypex slurry coat is applied to the concrete on either side of the specified waterstop. A forming board is to be used to create a 1 1/2” x 1” (37 x 25 mm) cavity. The form board also provides a guide surface when cutting back the shotcrete wall face.

A kicker board assembly as shown may be used in areas of congested rebar or at pilasters. Concrete is sprayed or pumped and then vibrated into this form.

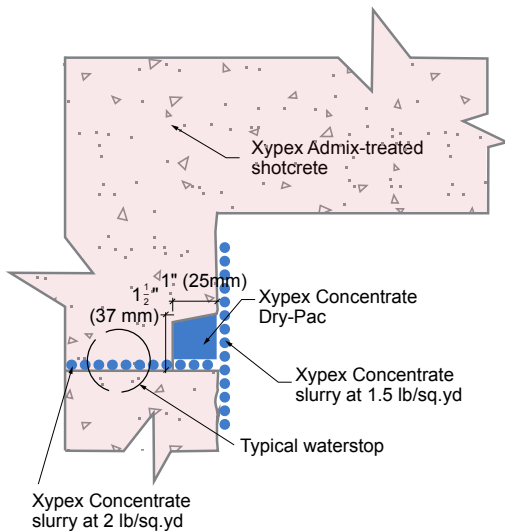
At some point during the project, the cavity left after stripping the form board or kicker board is coated with a Xypex Concentrate slurry coat at 1.5 lb/sq yd (0.8 kg/m²), filled with Xypex Concentrate in dry-pac form and then covered over with a slurry coat of Xypex Concentrate at the rate of 1.5 lbs/ sq.yd. or (0.8 kg/m²) to create a Xypex “seal strip”. The slurry coat extends about 6” (150 mm) up the wall and 6” (150 mm) onto the slab.

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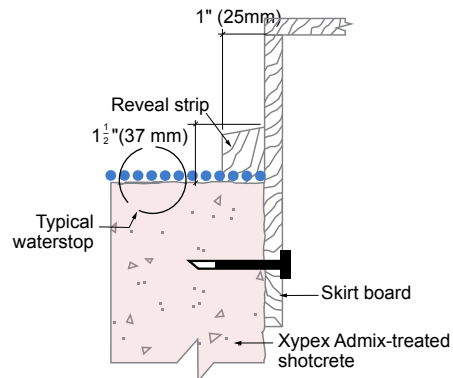
**Detail 2 – Slab onto Wall Interface Joint Detail
2A) Not Subject to Hydrostatic Pressure**



**2B) Subject to Hydrostatic Pressure
2B-i) Overall View**



2B-ii) Typical Joint Forming Method

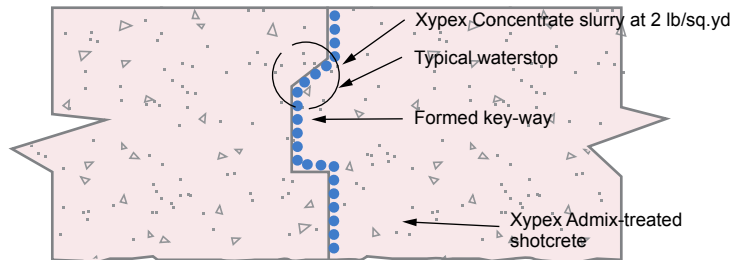


Notes: The shotcrete wall is to be placed such that the top of the wall is below the elevation of the bottom of the slab to be placed. The top / front surface of the wall is to be flat and level to allow installation of the reveal strip/ skirt board assembly shown. The skirt board should be installed first and the reveal strip then fastened to the inside of the skirt board so that it sits on the top surface of the previously placed concrete wall and thus sits at the elevation of the construction joint. A Xypex Concentrate slurry coat at 2 lbs/sq.yd. (1 kg/m²) is applied to the wall / slab construction joint. When dry, install either a hydrophilic expanding waterstop strip per the manufacturers' specifications or if a sheet waterstop is specified the Xypex slurry coat is applied to the concrete on either side of the specified waterstop.

At some point during the project, the cavity left after stripping the skirt board and reveal strip is coated with a Xypex Concentrate slurry coat at 1.5 lb/sq yd (0.8 kg/m²), filled with Xypex Concentrate in dry-pac form and then covered over with a slurry coat of Xypex Concentrate at the rate of 1.5 lbs/ sq.yd. (0.8 kg/m²) to create a Xypex "seal strip". The slurry coat extends about 6" (150 mm) down the wall and 6" (150 mm) onto the slab.

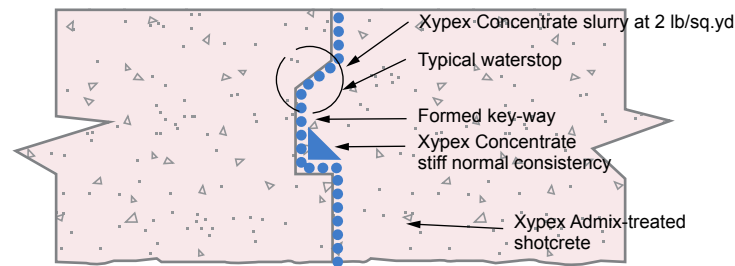
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**Detail 3 – Wall to Wall Vertical Interface Joint Detail
3A) Not Subject to Hydrostatic Pressure**



Notes: The wall bulkhead form shall be constructed with a 2” x 4” (50 x 100 mm) keyway such that after shooting of the wall and removal of the bulk head a keyway remains running the full height of the wall. Apply a Xypex Concentrate slurry coat at 2 lbs/ sq.yd. (1 kg/ m²) to the bulkhead formed wall end. When dry, install either a hydrophilic expanding waterstop strip per the manufacturers’ specifications or if a sheet waterstop is specified the Xypex slurry coat is applied to the concrete on either side of the specified waterstop.

3B) Subject to Hydrostatic Pressure



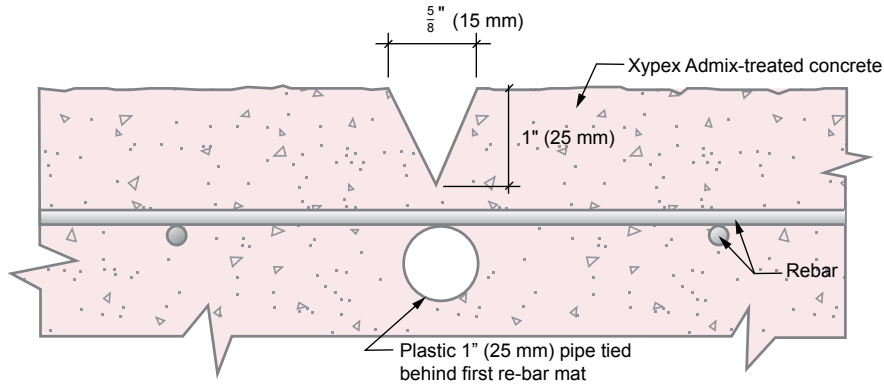
INNER FACE

Notes: The wall bulkhead form shall be constructed with a 2” x 4” (50 x 100 mm) keyway such that after shooting of the wall and removal of the bulk head a keyway remains running the full height of the wall. Apply a Xypex Concentrate slurry coat at 2 lbs/sq.yd. (1 kg/m²) to the bulkhead formed wall end. When dry, install either a hydrophilic expanding waterstop strip per the manufacturers’ specifications or if a sheet waterstop is specified the Xypex slurry coat is applied to the concrete on either side of the specified waterstop. 24 hours prior to shooting of the connecting wall section, dampen the inside corner of the keyway and allow the water to be absorbed by the dry Xypex Concentrate slurry coat. Using a gloved hand, install a cant of Xypex Concentrate in stiff mortar consistency into the corner of the keyway.

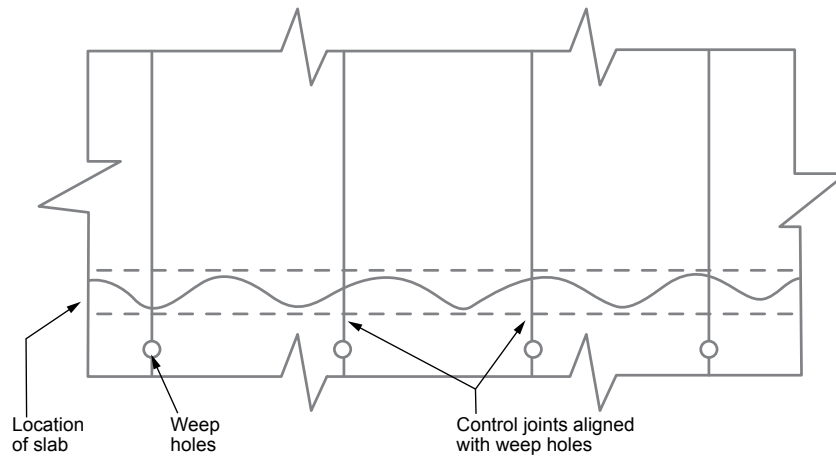
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Detail 4 – Vertical Control Joint Detail

4A) Plan View



4B) Isometric View



SECTION VIEW OF WALL

Control joints are to be spaced such that the crack width that forms will be no greater than 0.3 mm. Joint spacings of 12' - 15' (3.6 m - 4.5 m) in 10" - 12" (250 mm - 300 mm) thick walls are typical. If weep holes are included in the design, the control joints shall align with the weep holes in the bottom of the wall. A 1" (25 mm) outside diameter plastic pipe shall be tied behind the first matt of reinforcing steel to further promote cracking at this location. If the wall is greater than 14" (350 mm) thick it is recommended that 2 pipes be placed in line with the joint, one tied to the inner rebar matt and one to the outer rebar matt.

Should any cracks not self heal then normal Xypex repair methods may be used to repair the leak.

Limitation

The above assemblies and procedures are suggestions only. Xypex will review potential variation of the above details as requested. Further, inclusion of waterstops, Xypex Dry-Pac sealing strips and all other details are at the discretion of the designer of record.