

Grouting

Pre-Grout Checklist

Upon completion of the installation process and prior to the grouting of the completed wall segments, checking the following items will help ensure a successful pour:

1. Make sure that all PERFORM WALL™ panels are glued or securely installed and add extra backing at questionable areas.
2. Brace any long straight runs, thus minimizing any movement that would make the wall difficult to walk when grouting. Bracing can also be used to maintain straightness of walls and to insure stability against high winds prior to grouting.
3. Install all electrical and plumbing to be embedded in concrete cell areas of wall.
4. Cut all window and door openings.
5. Place all rebar horizontally or vertically per engineer's design.
6. Place all PERFORM WALL™ end panels or bucking.
7. Brace all PERFORM WALL™ end panels, corners, wall ends and bucking to withstand the force of the grout. Add extra staples or spot glue if desired.
8. Place any anchor bolts and ledgers that are needed (ledgers and anchor bolts may be held in place prior to the pour by bolting them to the wall using all –thread rod).
9. Verify that all walls are straight and plumb; adjust as needed.
10. Complete any needed inspections from the local building authority. Remember, some corner end caps may have to be left off for reinforcement inspection to take place.
11. Schedule with the concrete company to deliver the grout per engineer's mix design.
12. Schedule the grout pump.
13. If openings for windows have been cut out of solid walls, check those openings for cuttings that may have fallen into the wall channels. These cuttings may be removed with a vacuum or washed out with a water hose.
14. Hose down the inside of the PERFORM WALL™ panels – this not only promotes and improves the flow of grout into the wall, but also helps increase cure strength by raising humidity and lowering temperature on hot days. However, do not do this operation if the slump is greater than 9", as too much moisture can cause the core concrete to separate from the inertia surface of the cells, resulting in a non-monoolithic pour.
15. If the slab floor is already in place, cover the perimeter area against the wall with polyfilm under cardboard or kraft paper to catch spillage. This makes cleanup after pour much easier.

Mix Design

The concrete mix design should require a slump of at least 6.5" regardless of the concrete strength (psi). Preferred slump range is 8" ± 2". This will provide sufficient slump for pumping and also allow the grout to penetrate into the panel, thus integrating the form and the structural core.

Lift Heights

The height of the first grout will depend on the building itself and local code requirements. Grouting of lifts, which exceed a height of 10 feet, are not recommended as hydraulic pressure at the base of the lift could exceed material capacities. It has been found in testing that vibration of grout is not required either during or after grouting even if slump is in the lower range (6.5" to 8"). If 4-foot lifts are required by building authorities, walls can still be constructed to 10 feet or greater heights. All that is required is to cut grouting access holes into the wall at a 4-foot height and about 5 feet apart. Then the cutouts can be glued back into place and grouting resumed for the next lift.

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If Only One Lift

If there is to be only one lift, it will be necessary to make sure that the top of the rebar is below the top of the wall by at least 3," and that the grout is struck off flush with the top of the wall upon completion. The placement of any top plate anchor bolts should also be done at this time.

Second Story or Lift

If the structure being grouted will need two separate grout applications, it should be noted that the rebar will need to extend past the point of the first grout by at least 5 bar diameters to provide the overlap required to offset the cold joint.

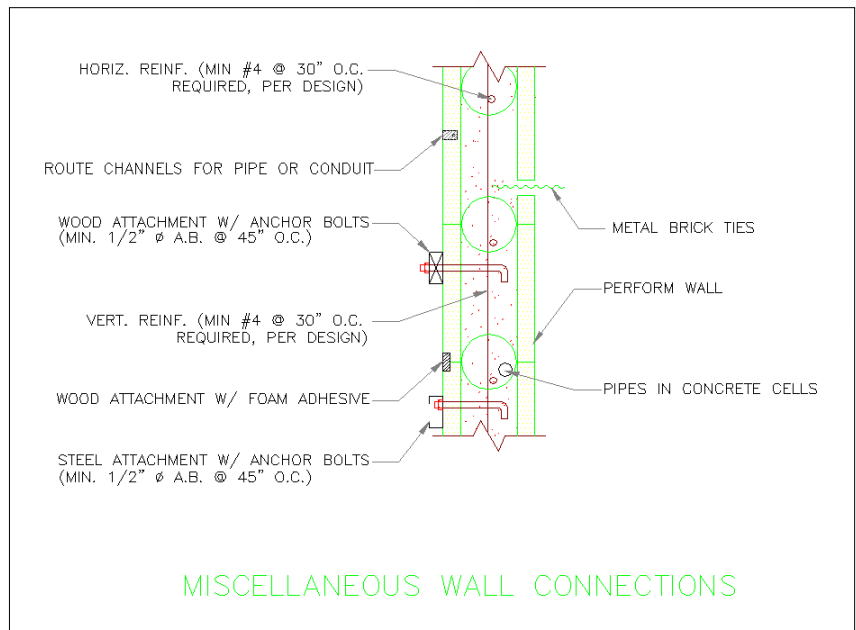
This may be accomplished in one of two ways, stop the grout application below the top of the bar the necessary distance, or cut your bars so that they protrude out above the top of the first grout lift to the prescribed overlap.

Anchor Bolts and Other Connections

As the wall is being grouted, be sure all anchor bolts for ledger plates, adjoining walls and any other connections are mounted in the wall in such a fashion that will permit proper connection and tightening.

Pumping the Grout

Upon starting installation of the grout, place grout first in the bottom of any window openings that are over 5 feet wide. To do this, cut a hole in the end panel or just below the bucking to let the grout pass through. The cut out can be replaced if desired. With bucking, it may be necessary to remove the bottom piece and replace it when the section is full, to ensure the grout stays below the level of the bucking and that there will be a smooth opening when removed or less of a void if bucking is left in place.



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After grouting under the windows, start grouting near a corner (but not directly in the corner) and move around the building. In essence, create a wave and surf the top leading edge of that wave around the building. Continue to fill the wall, remembering that the grout, if at the right slump will flow at a 45° angle as it fills. Be prepared to move along the wall as the grout reaches about the 2/3 full mark. Keep moving two to four cells at a time and watch that the grout is filling to the desired level.



Try to avoid over-filling, as cleanup will have to be performed after completion of the grouting. If a slab floor has already been poured, using the polyfilm under cardboard or kraft paper next to the wall makes cleanup easier. If grout is spilled on the finished concrete slab it will need to be scraped up right after the grouting is completed so it does not stick to the concrete.

Grouting the Second Lift or Story

Installing PERFORM WALL™ panels for the second story is accomplished in the same manner as with the first story. Start at one corner and go around the building. If you set panels horizontally, level and plumb each layer as you go. Glue each layer after leveling and plumbing. Fabricate any openings in the same manner as done in the first lift. Again, each pour can be made in lifts up to 10 feet. Follow the same checklist for grout preparation. Pour the grout in the same manner as before, large window bottoms first and then from the top, working around the building.

When building multi-story buildings, it is sometimes helpful to proceed floor by floor. By this it is meant to build the walls to the height just past the first floor ledger height and then after grouting, placing the floor joist and sub-flooring. This will create a surface to work from and eliminate the need for additional scaffolding. This is purely optional, as the walls could be installed to full height and the floors added later. If, however, a concrete floor is to be used, each story shall need to be finished and grouted before starting over with the next story.



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Grouting Tip

A good trick to ensure thorough filling of concrete inside the wall, is to completely wet down the inside of the PERFORM WALL™ panels from top to bottom either the evening before the pour or several hours beforehand. Excess water will bleed out and any puddles that may occur at the bottom will be displaced by the grout flowing into and throughout the wall. In hot weather, wetting down the inside of the wall helps to cool down the wall and add extra humidity, which can improve the concrete cure. However, remember previously mentioned rules and grout slump when wetting down the inside of the wall. Verification of complete grouting can be done by visual inspection or by penetration of the panel by a sharp instrument in the area in question.

Clean Up

When completed, remember to clean any grout off the slabs. If there are colored concrete slabs and they are going to be left exposed, then it will be necessary to cover the concrete slabs before grouting for protection from stains.

Small Jobs

If a small amount of concrete is required for a project such as a planter or bench, small batches of concrete may be hand poured. Note that the slump test cone can be inverted and used as a funnel for filling cells.

