

## Building Corners - Korfil Hi-R H Walls



**K**orfil Hi-R H from CBIS and the Concrete Products Group is a versatile high performance wall system that allows fast construction of energy efficient walls. The finished wall combines the durability of double exposed masonry with integral insulation. In this Design Note, we are going to demonstrate how to build insulated corners that meet structural requirements while maintaining insulation at the corner locations.

### Superior R-Value

Hi-R H offers superior thermal performance. Conventional uninsulated concrete masonry walls typically have R-Values of approximately R-2 depending on the density of the concrete. With Hi-R H, we can attain R-Values in excess of R-15 or better if lightweight concrete is used.

Hi-R H performs this well for two reasons. First, the units are designed to minimize thermal bridging by limiting the cross sectional area of the block webs by using a single reduced height cross web. Korfil Hi-R H is compliant with the latest version of the standard relating to concrete masonry units, ASTM C90. Second, the units are pre-insulated with thick insulating inserts that when placed in a wall form lap joints with the inserts in adjacent blocks above, below and to each side.

### QUICK POINTS

- Corners can be built with Korfil Hi-R H by using insulated corner units.
- One style uses an L-Shaped veneer unit and a soap.
- Another style uses a 12-8-16 unit that has been cut to accommodate corners.

## Versatility



Hi-R H units are not only advanced from a thermal properties standpoint, they also are a versatile construction unit. They can serve both as stretcher and bond beam unit without any modification. The reduced web height accommodates horizontal rebar. They are designed for construction of fully grouted and reinforced walls because they can be placed at rebar locations without the need to lift the unit over the top of the rebar as would be necessary with a more traditional CMU design, and grout will flow laterally at every course due to the reduced web heights. Hi-R H units can also combine readily with conventional masonry fittings for construction of a variety of wall assembly details, including corners, joints, ends, and sills.

## Building Insulated Corners

Corners can be built with Korfil Hi-R H by using insulated corner units along with the Hi-R H units. Below we are going to demonstrate two alternative corner details that will maintain insulation at the corner location while providing Code compliant structural design.

On one corner, we are building the corner using a traditional three web 12x8x16 concrete masonry unit that has been saw cut to convert it into a corner unit. Some manufacturers may offer this style of unit pre-made so that field cutting is unnecessary. On the other corner, we are using an 8x8x16 L shaped veneer to form the corner. This approach will require the use of a masonry soap piece or slug at the inside of the corner.

Both designs have been reviewed for Code compliance from a structural standpoint to assure that they have adequate strength when insulated prior to grouting. Both designs allow the placement of two 90° rebar sections at the corner in bond beam courses.



A traditional 12x8x16 CMU cut to convert it into a corner unit.



An 8x8x16 L shaped veneer to form the corner.

## Corners using a 12-8-16 Masonry Unit

To build the corner using the 12x8x16 corner unit, on the first course the corner unit is laid and leveled first. Note that the unit has been cut in a large L-shaped configuration so that the portion that extends to the inside of the corner will form the first section of the wall as it turns the corner. The Hi-R H units are then placed to extend the wall away from the corner. Once the corner is formed, insulation may be placed in the corner unit to maintain the superior thermal properties of the wall at that location. There is still room for the placement of horizontal rebar at this location if the wall design calls for a bond beam at this level. On succeeding courses, the orientation of the corner unit is flipped on alternate courses to maintain the running bond pattern of the wall. Horizontal joint reinforcement will be placed between the courses of the units at a spacing of 16" between layers of reinforcement. After the units are laid to an appropriate height and all reinforcement is in place, the wall will then be fully grouted in standard lifts or high lift grouting techniques may be used.

## Corners with "L" Veneer Unit

The L-shaped veneer corner is built in a similar fashion. The corner piece is laid above the foundation and leveled. Adjacent Hi-R H units are laid to form the first course of the wall above the foundation. After the Hi-R H units are laid, the mason will place a slug or soap at the inside corner. The orientation of the L-Shaped veneer and the soap will flip on each succeeding course to maintain the running bond pattern. Insulation is placed at the corner to maintain the wall's thermal properties. This design will also provide room for both the insulation and any horizontal rebar that is needed at the corner location.

## Conclusion

**The two designs are virtually indistinguishable when viewing the finished wall. Both will provide an attractive and structurally sound corner while maintaining the insulation in the wall to provide energy efficiency, durability and long lasting beauty.**



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