

Section 5D: Hebel AAC Block Installation Guide

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5D.1 Introduction

The purpose of this block installation guide is to serve as a reference for the installation of AAC blocks to masons and those seeking experience in Hebel AAC block construction. The tools below ensure proper execution and accuracy when installing Hebel AAC blocks.

Installation tools:

1. Rubber mallet: for aligning and adjusting blocks
2. Torpedo level: for measuring level of blocks
3. Wooden sawback rasp: for leveling course
4. Tin-plated rasp: to smooth wall surface
5. Joint knife: to remove excess mortar
6. Hebel AAC notched trowels: to lay mortar
7. Hebel AAC thin-bed mortar: to adhere blocks
8. Mixing paddle: attach to power drill to mix mortar
9. Connectors: to fasten walls
10. Spade bit or forstner bit: for outlets and small openings
11. Coated deck screws: for securing forms, etc.



Other tools:

- | | |
|---------------------------------|--|
| Mason's level (4' and/or 6') | Hebel AAC band saw |
| Plastic bucket (square or oval) | Router |
| Hand saw | Safety equipment (Hard hat, gloves, goggles, dust mask, apron) |
| Hebel AAC square | |

5D.2 General Installation Guidelines

- **Prior to commencement of construction make sure you are working with the latest approved set of construction documents including all revisions and addendums.**

- Unload block using pallet forks. Consult an appropriate safety consultant or knowledgeable OSHA trainer for “rigging” or other safety considerations.

- Stored areas should be accessible to delivery trucks and convenient to material staging areas. If possible, drop-deliver the material right to the material staging areas.

- Storage material should always be stored away from other construction activities on a flat-grade area that is not susceptible to standing water, erosion or settling.

- Keep the material covered and packaged until ready for installation.

- Excessive handling may cause damage. Set delivery schedule to match the erection sequence.

- Chips and spalls can be repaired. All damaged surface areas may be repaired using a compatible AAC patching compound.

- Stored or staged materials should always be set on flat, stable grade on pallets or dunnage.

- Observe and provide all necessary temporary support and bracing in addition to following all safety laws and requirements.

- **Caution:** Use safety gear: Hard hat, gloves, dust mask and goggles to avoid excessive inhalation of dust and protection of the eyes when handling Hebel AAC.

5D.3 Preparation

Before Installation of Hebel AAC Blocks

1. Check Slab

- Before the slab is poured, check slab dimensions and reinforcement to comply with construction drawings. Ensure the pipes, drains and other penetrations through the slab have been located properly.
- The slab should be placed within a tolerance of $\pm 1/4$ " per 10'-0" (max) in order to maintain a straight and accurate first leveling course.
- Reinforced AAC block requires that vertical reinforcing bars are placed in accordance with the Engineer of Record structural construction documents. Vertical reinforcing is typically placed at all openings, such as doors, windows and louvers. Vertical reinforcing can be wet set or drilled and epoxied into the slab, with size and location according to the Engineer of Record structural construction documents.

2. Receiving and Distribution of Hebel AAC Blocks

- Carefully unload the Hebel AAC pallets using an all terrain forklift. Rubbing between pallets can cause damage to some pieces.
- Place pallets around the slab (above ground level), close to work area. Block must remain dry and water protected up to time of installation.

3. Mark and Layout on the Slab

- After slab placement is complete, use a transit and chalk line to layout the position of the walls and openings (Verify all rough openings with window and door frame types prior to layout).
- Check the wall lines marked on the slab to locate the highest point with a laser level or level transit. At the highest point on slab add 8 1/4" (7 7/8" for AAC block and 3/8" for large grain heavy set mortar joint). This will be the top of your leveling course. Use batten boards with string line pulled taught. This will be set at the height of the leveling course. At the same time, the line should be checked using a line level or laser.
- The first course must be set perfectly straight and level.



Figure 5D.1: Transporting Hebel AAC block

4. Mix Thin-bed Mortar and Prepare Large Grain Mortar for Base Course

- Use Hebel AAC thin-bed mortar or a thinbed mortar that is code compliant and AAC specific.
- Prepare in a plastic bucket and add clean water. Follow directions on the bag. Mix thoroughly for a minimum of 5 minutes. Remix before application. The consistency should allow mortar to flow easily through a notched trowel, leaving the shape of the teeth in the mortar bed (mortar will have a toothpaste like consistency).



Figure 5D. 2: Mixing thin-bed mortar



Figure 5D.3: Applying Hebel AAC thin-bed mortar to vertical joint with notched trowel

- Mortar workability time is 4 hours.
- Prepare large grain mortar in a separate bucket, following directions on the bag.

5D.4 Installation of Hebel AAC Blocks

Laying the First Course

1. Start with Mock-up, then Set Corner

- First lay a mock-up of the first course. Then, start with setting corner blocks, and lay the first course over large grain mortar leveling bed (minimum thickness 3/8" maximum thickness 1").
- For the remaining first course of blocks, apply Hebel AAC thin-bed mortar to the vertical joints using an appropriate Hebel AAC notched trowel (the outside edges of the trowel should just fit over the block).
- Once the first course is placed, use a brush to clean the block surface before applying the AAC mortar.
- Thin bed mortar joints must be a minimum of 1/16" thick, and no more than 1/8".
- After installing each block, immediately check to make sure they are level and plumb. Any correction must be done within 5 minutes by tapping lightly with a rubber mallet.
- The leveling course should be placed and allowed to set prior to proceeding to the next course.



Figure 5D.4: Checking level and plumb, modify by tapping Hebel AAC block with rubber mallet

2. Cutting Blocks (Adjustments and Chases)

- Use an AAC hand saw or AAC band saw to cut blocks to specific lengths (adjustment pieces).
- A large square or framing square is useful in marking blocks for straight cuts.
- A wooden sawback rasp can be used to even out openings and leveling blocks.

3. Utility Chases Using Hebel AAC Cored-block in First Course

- When cutting in chases, do not exceed 1/3 the depth of the block on non load-bearing block and consult your Engineer of Record for depths both vertically and horizontally on load-bearing block (typically 1 ¼" maximum on an 8" block).
- In the case when the pipe diameter exceeds the maximum depth of chases, consult Engineer of Record for a solution.



Figure 5D.5: Cutting AAC with band saw

4. Installing Hebel AAC Cored-block for Vertical Reinforcing in First Course

- Use AAC cored-block to place vertical grouted reinforcing.
- If the vertical reinforcing was not wet set, locate and install by drilling, and epoxy as per the manufactures installation requirements.

5. Layout Control Joints in First Course

- The location of control joints should be specified in the Engineer of Records construction documents. Control joints are vertical joints taken through the full wall thickness and from bottom (first course) to top.
- The width of the control joints should be a minimum of 3/8" wide, but no more than 1/2" wide.
- Control joints shall be provided at a spacing of 3 times the wall height or at a maximum of 24' -0" on center unless otherwise noted by the Engineer of Record.

Laying Subsequent Courses

6. After the First Course has Set, Begin Laying Subsequent Courses

- For subsequent courses, use only Hebel AAC thin-bed mortar on all joints between Hebel AAC blocks.
- When laying block to block, set backside of block down and then set butting face of block into position. **Do not set block then slide into place.**
- Use a brush to clean the block surface before mortar application.
- After block installation, remove spilled mortar using a joint knife. When using the knife, hold at an angle towards the block and scrape at a downward 45 degree angle. This will help avoid catching the blade in the joints.
- Overlapping of block minimum is 6" and should be kept consistent for a running bond.
- Check alignment and level after each unit installation to achieve a plumb wall.
- Metal strip ties should be placed every two courses at:
 - Connection of secondary walls to main walls.
 - Connection of walls to columns.
 - Control joints.



Figure 5D.6: Applying thin-bed mortar on all vertical joints



Figure 5D.7: Applying thin-bed mortar on horizontal joints



Figure 5D.8: Laying block by first setting backside down, then butting face of block is set into position



Figure 5D.9: Removing spilled mortar from joints



Figure 5D.10: Checking alignment and level of wall



Figure 5D.11: Connection of secondary wall to main wall

7. Installing Hebel AAC Cored-block in Subsequent Layers for Vertical Dowels and Utilities

- The cored openings on Hebel AAC cored-blocks must be properly aligned when installing between courses.
- Ensure that vertical reinforcing bar from the slab overlaps with additional vertical reinforcing bar in the wall to comply with reinforcement requirements.
- See structural Engineer of Records construction documents for all lap splicing requirements.



Figure 5D.12: Laying Hebel AAC cored-block

8. Control Joints in Subsequent Layers

- Metal strips (connectors) folded at midpoint (V-shaped) should be set at every 2 courses to accommodate water proofing the joint.
- Coordinate all joint water proofing requirements with architectural construction documents.

9. Hebel AAC Lintels Installation

- Select Hebel AAC Lintel size and site location as specified in Engineer of Record construction drawings.
- Hebel AAC Lintels can be lifted into position by manual means, if raised to intermediate heights first. Equipment can also be used for lifting, such as a long reach forklift or small crane. Care should be taken to avoid breakage.

10. Building On-site Lintels Using U-block

- When the use of Hebel AAC Lintels is not possible, and depending on the span and service loads, lintels over door and window openings can be made on site using Hebel AAC U-blocks.
- All reinforcing for building on site AAC U-block lintels is as per Engineer of Records construction documents.
- Install temporary bearer and shoring before placing U-blocks.
- Apply Hebel AAC thin-bed mortar to the vertical joints.
- Once the U-blocks are set, place reinforcing and fill with non-shrink grout as per the Engineer of Records contract documents.

11. Installing U-blocks to Build Bond Beams

- Generally, bond beams are required through the top of the exterior and interior walls.
- Place one U-block course, applying Hebel AAC thin-bed mortar on all joint surfaces.
- At each vertical dowel location, drill at a minimum of 3" diameter hole using a standard paddle bit in the bottom side of the U-block so that vertical bars can be engaged into the bond beam, to comply with the reinforcement requirements.
- All reinforcing and anchor bolts must be in place and checked prior to grouting solid.

12. Utilities Installation After Walls are Built

- For electrical conduits and piping installation, cut a chase using an electrical router or a chasing tool.
- A power drill (drill bits) or router can be used to install electrical boxes. Use shallow receptacle boxes and junction boxes when possible.
- In the event additional depth is required in a load bearing wall, consult the Engineer of Record for acceptance or alternate solution.
- The use of AAC cored block is an acceptable practice for vertical chasing in conjunction with the Engineer of Records approval.
- After installation, use Hebel AAC thin-bed mortar to fill in the exterior chases and Hebel AAC block patch mortar to fill in the interior chases.



Figure 5D.13: Cutting chases into AAC wall

13. Surface Patching

- Use Hebel AAC repair mortar to patch chips, breaks and other imperfections on the wall surface.
- Hebel AAC repair mortar is prepared in a plastic bucket. Add water and mortar from the bag (see instructions on the bag) and mixed with a paddle using a power drill.
- Keep in mind repair mortar has a very short workability time. Mix minimum amounts at one time.
- Before application, clean the surface using a brush. Apply using a joint knife.
- After application, a sanding rasp is used to smooth the wall surface.

14. Fiber Glass Mesh

- The use of fiber glass mesh is recommended when crossing over discontinuous substrates, consult with finish supplier for additional information.

- Fiber glass mesh can be installed directly over one layer of render (without nails) at patch locations if mortar is leaching.
- Once the fiber glass mesh is installed, the wall is ready for rendering or finish application.

15. Finishes

- Hebel AAC walls can be finished with AAC specified stucco, acrylic texture coat, elastomeric finishes, cement based finishes, ceramic or clay tiles.
- For more information refer to Section 4: Architectural Design, of the Hebel AAC Technical Manual.

16. Window and Door Installation

- Windows can be installed directly to AAC depending on the finish of the exterior or buck strips may be used for fastening window fins (buck strips must be pressure treated wood and can be installed with 3" coated deck screws).
- An adhesive substrate should be used when installing buck strips. Silicon caulk is acceptable to use against any clean AAC surface.
- Doors can be installed directly to AAC.
- In commercial applications, welded frames with grouted solid jambs and headers are recommended.

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