

# Installation Guide

for AB Fence™



*Providing  
an efficient  
and easy  
installation  
process.*



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# System Concept

AB Fence is a mortarless fencing system comprised of concrete block with reinforced concrete posts. The concrete posts are integrated into concrete piles to provide stability to the system.

The AB Fence system has two main components; posts and panels. The system includes blocks that are specific to each component of the AB Fence. Post structures are constructed with concrete piles below grade and AB Fence post blocks above with reinforced steel and concrete grout. The AB Fence panel sections are comprised of AB Panel Block, dry-stacked on a compacted gravel base. Reinforcement steel and concrete grout are also utilized to form bond beams, giving the panels the desired rigidity.

The details of each specific AB Fence design are determined by wind and seismic loads transmitted from the panels to the reinforced posts. The stability of the system is dependent on the size and depth of the concrete piles, and the frequency of the reinforced fence posts. The AB Fence panels are free to move vertically, eliminating the need for frost footings below the panels.

The design provisions on the following pages are in accordance to the AB Fence Engineering Manual. Consult with a local registered engineer for design details for your projects. The following information is for use with Allan Block products only.



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## AB Fence™ Installation Guide

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### AB Fence Post Block



Approx. Dimensions  
 18 in. L (460 mm)  
 12 in. W (305 mm)  
 8 in. H (200 mm)  
 70 lbs (35 kg)

### AB Fence Panel Block



Approx. Dimensions  
 18 in. L (460 mm)  
 6 in. W (150 mm)  
 8 in. H (200 mm)  
 50 lbs (25 kg)

### AB Fence Half Panel Block



Approx. Dimensions  
 9 in. L (230 mm)  
 6 in. W (150 mm)  
 8 in. H (200 mm)  
 25 lbs (12 kg)

### AB Fence Lite Panel Block



Approx. Dimensions  
 18 in. L (460 mm)  
 6 in. W (150 mm)  
 4 in. H (100 mm)  
 25 lbs (12 kg)

### AB Fence Corner Block



Approx. Dimensions  
 12 in. L (305 mm)  
 12 in. W (305 mm)  
 8 in. H (200 mm)  
 50 lbs (25 kg)

### AB Fence Cap Block



Approx. Dimensions  
 18 in. L (460 mm)  
 12 in. W (305 mm)  
 5 in. H (130 mm)  
 65 lbs (30 kg)

# Before Installation Begins

## Plan and Design Before you Build

This installation manual provides overall guidelines to professional contractors for proper installation of the AB Fence System. All commercial and large-scale residential projects using the AB Fence require engineering provided by a qualified local engineer. While this manual provides general guidelines, the actual construction drawings provided by a local engineer should be referred to for final requirements and specifications.

## Safety

Remember, safety first! Follow the guidelines for worker and job safety established by your state's Department of Labor. Take special precautions for OSHA requirements, which include excavation and scaffolding. Material Safety Data Sheets (MSDS) for materials used in construction of the AB Fence are available from your local manufacturer.

## Before Starting Construction

Review the approved site plan to confirm the fence location, length and height as well as lot lines.

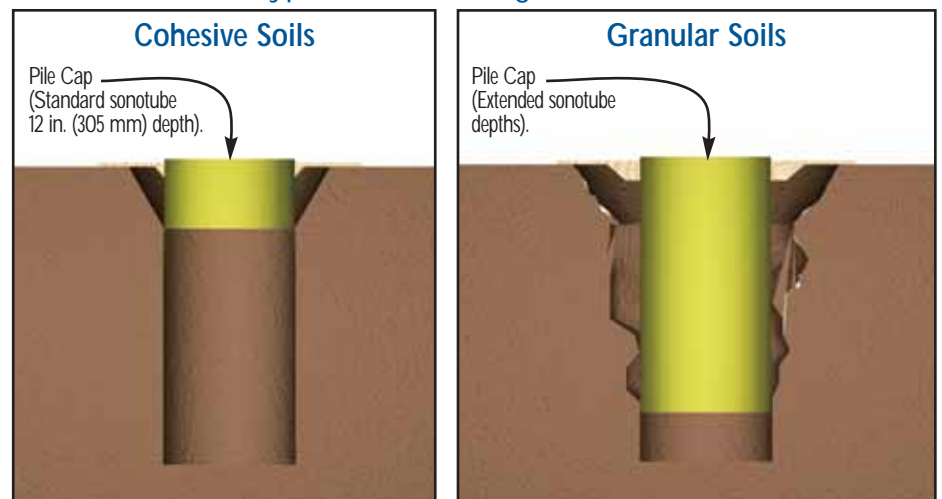
- Check to make sure the fence location layout can be accommodated by the AB Fence System. Odd shaped angles in the layout may need to be redesigned or cutting of the block will be required.
- Confirm the on-site soils. The fence pile footings rely on the soil to provide stability. Work with a local engineer to confirm the soil conditions and footing designs.
- Obtain all necessary building permits and verify local building code requirements. An approved plan may be needed to obtain a building permit for fences over a certain height.
- Call the local utility companies to confirm the location of underground utilities. Make sure to consider the pile footing locations.
- Consider drainage and water management to avoid erosion or buildup of water behind the fence. Openings within the panel can be installed to allow water to flow through the fence when required. See page 14 for Construction Details.



## On-Site Soils

The properties of the soil under the fence must be identified in the planning stage. This soil provides the lateral support for the fence footings as well as bearing capacity for the panel sections. Granular soils provide additional strength when compared to clay soils. However, keep in mind that typical construction requires that the soil be augered out to the dimensions of the pile footing. With soil comprised of sands and gravels, the sides of footing hole may collapse when the auger is removed, while the cohesive properties of clay soils will minimize this collapse and make it easier to construct the footing.

## Typical Pile Footing Excavation



The depth of the pile cap, formed with sonotubes, will need to accommodate the conditions remaining after the holes have been excavated.

## Curves

The post and panel connection offers the flexibility to create fluid curves and radiuses unmatched by other fencing systems. The length of the panel and what type of connection, Standard or Modified, will determine the radius of the fence, see the Minimum Radius Chart below.

Other dramatic transitions can be achieved by mitering the panel blocks at the post to the needed angle. See page 12 for Construction Details.



Minimum Radius Chart							
Post/Panel Connection	Panel Width*						
	7.2 ft. (2.2 m)	8.8 ft. (2.7 m)	10.3 ft. (3.1 m)	11.8 ft. (3.6 m)	13.2 ft. (4.0 m)	14.7 ft. (4.5 m)	16.2 ft. (4.9 m)
<b>Standard</b> <small>(see page 12 for description)</small>	65 ft.	79 ft.	92 ft.	106 ft.	119 ft.	133 ft.	146 ft.
	20 m	24 m	28 m	32 m	36 m	40 m	44 m
<b>Modified</b> <small>(see page 12 for description)</small>	20 ft.	24 ft.	28 ft.	33 ft.	37 ft.	41 ft.	45 ft.
	6 m	7 m	9 m	10 m	11 m	12 m	13 m

\* All dimensions are approximate and will vary by manufacturer. Check with your local manufacturer for exact specifications and availability.

## Corners

The AB Fence Corner Unit makes the construction of a 90 degree corner easy. No special tools or cutting of blocks are required. When laying out the fence to include the corner and adjacent post locations, keep in mind the post spacing is slightly shorter than a panel without a corner post. This will eliminate cutting panel blocks later in the installation process.



## Step Downs

The floating panels of the AB Fence do not require continuous footings, making steps and elevation transitions easy, while dramatically reducing construction costs. For slight grade changes it is easy to step the panels at the post locations, but more severe grade changes might require additional changes within the panel itself. Always try to keep a portion of the fence buried when locating and making the transitions. See page 13 for Construction Details.



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## Gates

The concrete-filled post blocks provide a secure backing for nearly any gate type and configuration for commercial or residential applications. Heavy gates may require wheels of their own to keep the posts from deflecting under the gate's weight. Always confirm with the project engineer for the best way to support the gate structure. See page 12 for Construction Details.



# Installation

AB Fence is designed to utilize the advantages of dry-stacked masonry. This mortarless technology provides an efficient and easy installation process. The installation process can be broken into the following steps:

## Layout

### Step 1

- Review the approved construction design for post spacing and horizontal alignment.
- To ensure accurate post spacing, **line up the panel block on a flat surface and measure the actual panel length nub to nub.** Use this field-measured length to assist in pile spacing and in constructing the panel spacers in *Figure 1 and 2*. For layout procedures for the corner block, see AB Fence Tech Sheet #2005.
- Mark out the center of each pile per the requirements of the approved construction design. Suggested methods of doing this include: string line to establish the overall layout of your fence, a steel chain to develop precise duplicated spacing between posts, or by having the points set by a surveyor.
- Establish offsets to the center of the piles for later reference by using a substantial grade stake that is not easily displaced.
- Excavate a 6 in. (150 mm) deep by 12 in. (300 mm) wide trench the entire length of the fence. The centerline of the trench should also be the centerline of the AB Fence placement.
- Relocate post center locations using construction offsets and fence string line.
- Excavate the pile holes to the depth and diameter specified in the approved construction design.
- When drilling the holes keep in mind that the hole positioning is critical. A maximum allowable deviation of  $\pm 1$  in. (25 mm) is required for the horizontal locations.
- Soils engineers will need to verify bearing capacity at base or pile.

### Step 2

- Use a sonotube, or alternate cylindrical tubing material, to form up the top of the pile hole. The tubing should have the same inside diameter as the design pile diameter, and be a minimum of 12 in. (300 mm) deep.
- Place the tubing in the hole, making sure that the center of the tubing is in alignment with the centerline of the AB Fence to  $\pm 1$  in. (25 mm).
- Using a laser level, transit or string level, set the top of the tubing level with or no more than 1 in. (25 mm) below the design elevation of the top of the pile. A mortar bed will be required during the installation of the first post block to achieve a consistent starting elevation. Mortar must be the same strength or greater than the concrete mix used to fill the post block. Use hand levels to level each sonotube pile cap individually.
- The tubing can either be braced against the sides of the hole or staked to maintain elevation and location during casting. For a cross section of the pile hole see *Figure 4*.

### Step 3

- Construct a jig similar to the one shown in *Figure 1*. This will be used to set the exact relative spacing between each AB Fence post.
- Mark the pile steel placement template similar to *Figure 3* for placing steel reinforcement during the pile pour.
- Spacing between each pile must be maintained to a tolerance of  $\pm 0.5$  in. (13 mm) to allow for proper interlock between post and panel sections.

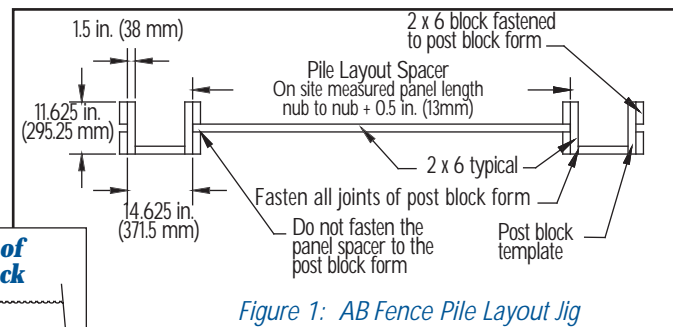
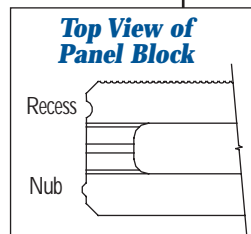


Figure 1: AB Fence Pile Layout Jig

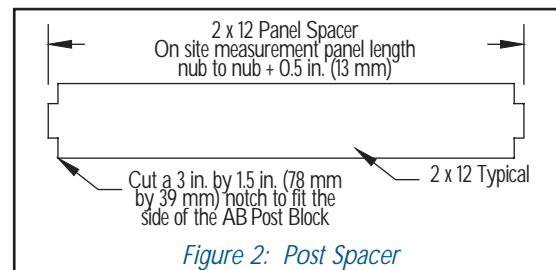


Figure 2: Post Spacer

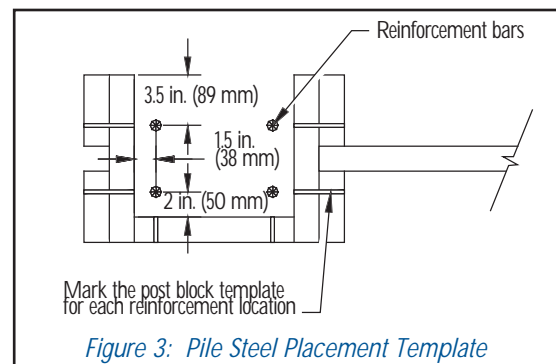


Figure 3: Pile Steel Placement Template

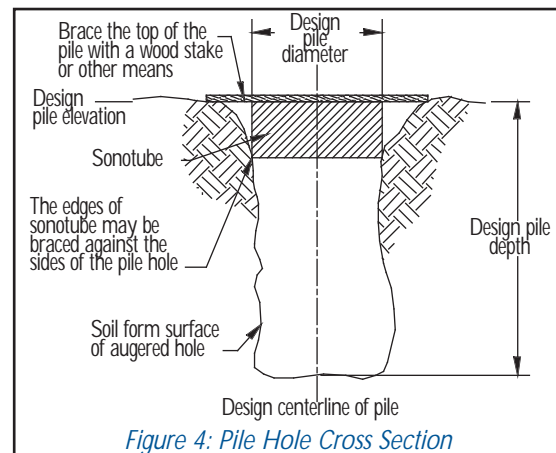


Figure 4: Pile Hole Cross Section

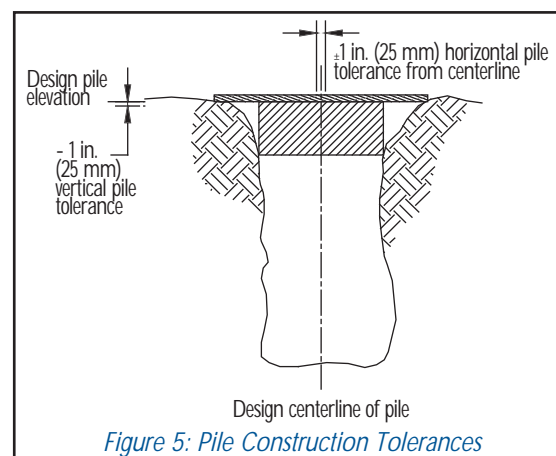


Figure 5: Pile Construction Tolerances

## Pile Construction

### Step 1

- Place the steel cage, if required by the design for the AB Fence, in the pile hole. Block up the bottom or tie off the cage to maintain 3 in. (75 mm) of clear cover at the bottom of the pile.
- Pour concrete meeting or exceeding the minimum strength requirements specified in the approved construction design into the pile holes.
- For mixing and placing concrete in cold weather see AB Fence Tech Sheet #2006.
- During the pour of each pile, ensure that the tubing is braced to maintain the correct elevation and horizontal location. Double check with laser and hand levels to maintain tolerance; minor adjustments will have to be made during the pour. Refer to *Figure 5*.
  - Horizontal Tolerance:  $\pm 1.0$  in. (25 mm)
  - Vertical Tolerance:  $-1.0$  in. (25 mm)
- Finish concrete using hand trowel or other equipment to create flat surface for post placement.

### Step 2

- Immediately following the concrete pour, relocate the center of the AB Fence post using the layout jig, and make an impression in the wet concrete to mark it.
- Place the vertical steel reinforcement bar using the placement template shown in *Figure 3*. Pay close attention to make sure that the center of the template is at the center of the AB Fence post and square to the adjacent AB Fence post. This can be done using offsets and string lines.
- The vertical steel reinforcement bar must be placed to  $\pm 0.5$  in. (13 mm) of the design's horizontal location. When placing vertical steel, a tolerance of  $\pm 0.5$  in. (13 mm) must be maintained to allow for proper interlock between post and panel sections.
- The vertical steel reinforcement bar must extend into the pile to the depth specified in the approved construction design.
- The vertical steel reinforcement bar should extend out of the top of the pile to a length equal to or greater than the minimum lap splice requirements set by the approved construction design or a minimum of 24 in. (610 mm).
- Maximum stacking lifts are 6 courses or 4 ft. (1.2 m).

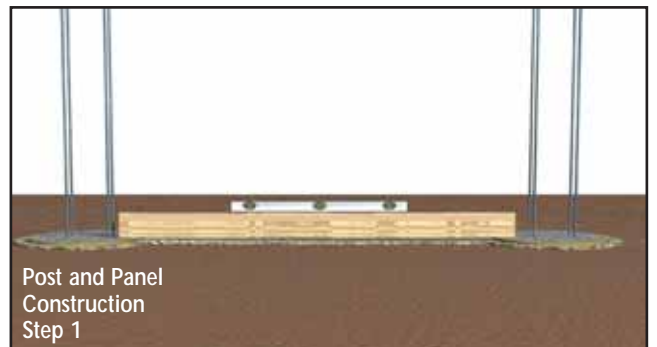
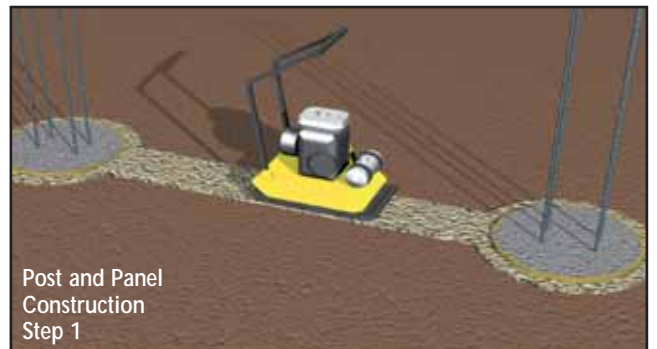
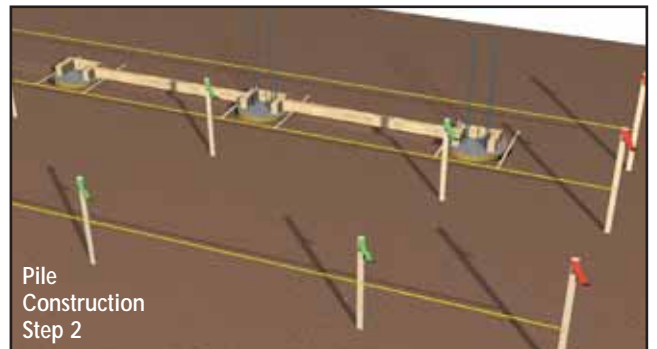
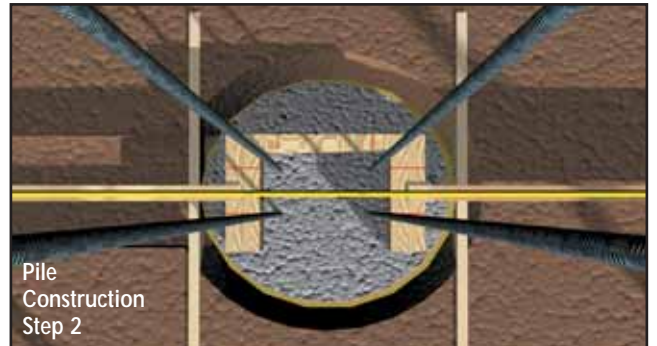
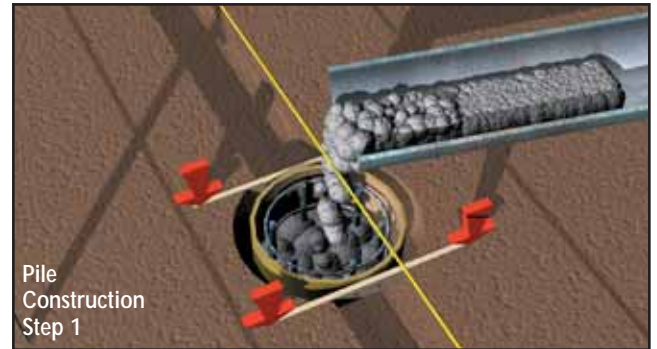
### Step 3

- Before setting any AB Fence Post Blocks, allow the concrete to harden approximately four hours, or until hard enough to resist more than surface scratching when scraped with steel rebar.

## Post and Panel Construction

### Step 1

- Fill the trench between each hardened pile with well-graded, granular compactible aggregate.
- Screed the aggregate from pile to pile to create a level base for the panel.
- Use a mechanical plate compactor, or other acceptable means, to compact the aggregate.
- Check base for level using a hand level and screed.
- In place of the compacted aggregate base an unreinforced concrete leveling pad can be used.



## Step 2

- Check the elevation of each hardened post pile.
- Post blocks may be placed on a mortar bed, a maximum of 1.0 in. (25 mm) thick, to achieve consistent starting elevation.
- Set the first AB Fence Post Block on each pile and/or on a mortar bed.
- Check the post blocks for level in all directions, and in a straight line from pile to pile, using a string line for reference.
- Use the pile layout jig shown in *Figure 1 (page 5)* or a 2 x 12 post spacer shown in *Figure 2* to help keep the post blocks square and aligned. When errors in spacing occur on post layout, adjustments should be confined to the panel between the two incorrect posts.
- Check for proper elevation from one post to the next.

## Step 3

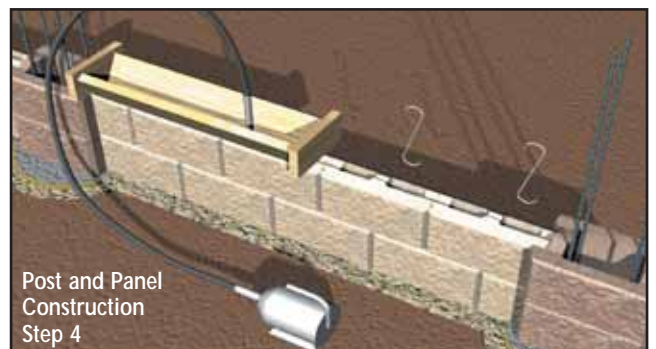
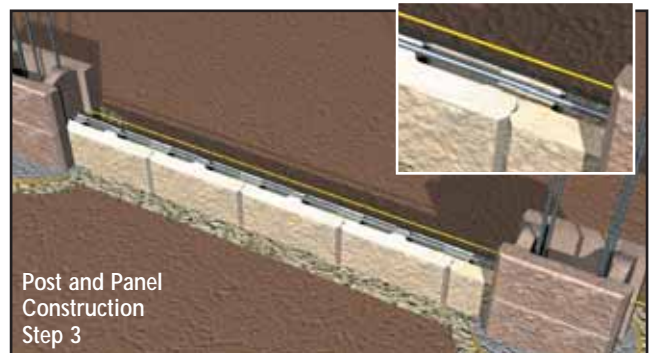
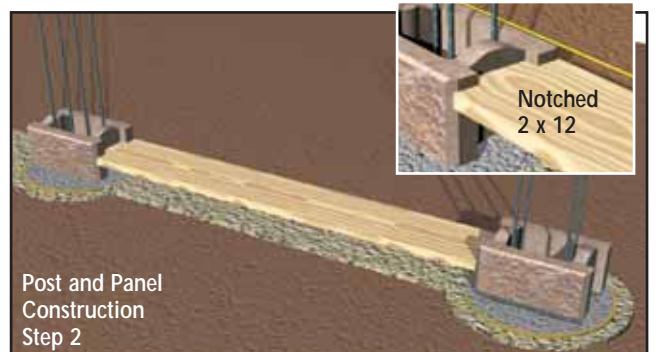
- Once the first post block and mortar bed have hardened, stack a second post block on each post column.
- Check the post blocks for plumb; shim with high strength construction adhesive or asphalt shingles as necessary. Level in all directions.
- If available, install a precast bond beam from post to post on the compacted granular aggregate base.
- If a precast bond beam is not available, place a course of AB Fence Panel Blocks from post to post on the compacted granular aggregate base. The blocks should be installed level in all directions and in a straight line from post to post. Moving the string line inside the post block to the receiving notch provides a point of reference. A total deviation of 0.125 in. (3 mm) is allowable. The panels must extend 1 in. (25 mm) minimum into each post.
- Place the #4 (10 m) rebar for the horizontal bond beams on the recesses formed into the AB Fence Panel Block.

If building a patterned fence project, skip ahead to page 10 to finish Step 3.

- Stack a second course of panel blocks. The panel blocks should be stacked so that the vertical (head) joints align with the midpoint of the block on the course below in a "running bond pattern." A Half Panel Block will be required at the ends of the panel on alternate courses. If a manufactured Half-Panel Block is not available, an AB Fence Lite Panel Block must be cut to obtain a Half-Panel Block.
- Check the first two courses of panel block for alignment and plumb. Shim and adjust as necessary.

## Step 4

- Fill the cores of the two courses of panel blocks with fine (sand) mix concrete grout. Using a funnel, similar to the one shown at right, allows for easy installation and keeps the grout off the face of the panel block.
- As the cores are filled, place vertical steel stirrups in alternating block cores.
- **Consolidate the grout with a concrete vibrator** to ensure the cores on the bottom course are filled.
- Remove any excess grout from the top of the panel block.
- Allow the concrete to harden a minimum of four hours.



## Step 5

- Stack additional post blocks in maximum of 6 courses or 4 ft. (1.2 m) lifts. Always double check for alignment and plumb. Shim and adjust as necessary.
- Maintain minimum lap splice per block code requirements at each construction joint.
- Check the post columns for plumb and brace as required. Again, the 2 x 12 post spacer can be used by sliding it through the panel area.
- Fill the posts with grout or concrete mix in lifts not to exceed the 6 courses.
- Consolidate the grout or concrete with a concrete vibrator.
- If additional vertical steel reinforcement is required, place it into the grouted cells in conjunction with the stacking of post blocks.
- Allow the concrete to harden a minimum of two hours.
- Post blocks must be installed within a  $\pm 1/2^\circ$  from vertical.

If building a patterned fence project, skip ahead to page 10 for Step 6.

## Step 6

- Stack AB Fence Panel Blocks in between the post columns up to the course below the next bond beam. The panel blocks should be stacked in a running bond pattern, paying attention to level and plumb.
- Place a 4 in. (100 mm) strip of grout stop material, such as duct tape or building paper, on the top course.
- Stack the first course of the next bond beam directly on top of the grout stop in a running bond pattern.
- Place the #4 (10 m) rebar for the next horizontal bond beam on the recesses formed into the AB Fence Panel Block.
- Stack the second course of the next bond beam in a running bond pattern.
- Seat and straighten the panel with a dead blow hammer by striking the front and back sides of the panel.
- Panels must be installed to a tolerance of 1 in. (25 mm) in the horizontal direction over the length of panel and a tolerance of 0.375 in. (8 mm) in the vertical direction.

## Step 7

- Repeat Step 4 to construct the bond beam. Allow the concrete to harden a minimum of two hours.

## Step 8

- Continue constructing the post columns and panels to desired height.
- Follow Steps 5 through 7 for each lift of the post column or panel.

## Step 9

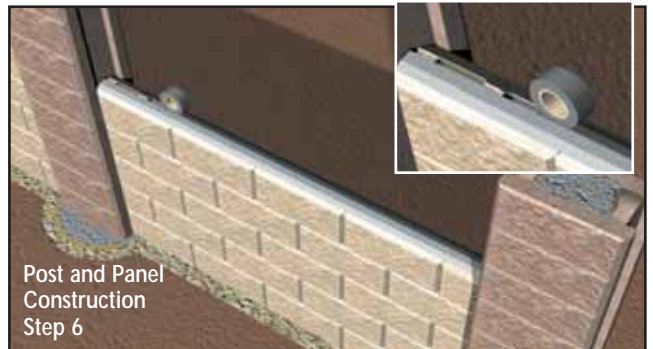
- Place AB Fence cap blocks on top of the post columns and the panels. The panel cap blocks should be installed in a running bond pattern.
- Cut one AB Fence cap block to fit each panel.
- All cap blocks must be attached with a construction adhesive designed for exterior use on concrete surfaces.
- Place a 0.375 in. (9 mm) bead of construction adhesive the length of the block on both angled contact surfaces between the caps and post or panel blocks.
- Using a dead blow hammer and 4 ft. level, set cap in place to obtain a level top-surface.



Post and Panel Construction Step 5



Post and Panel Construction Step 5



Post and Panel Construction Step 6



Post and Panel Construction Step 7



Post and Panel Construction Step 9

# Building AB Ashlar Blend™ Patterned Walls with AB Fence



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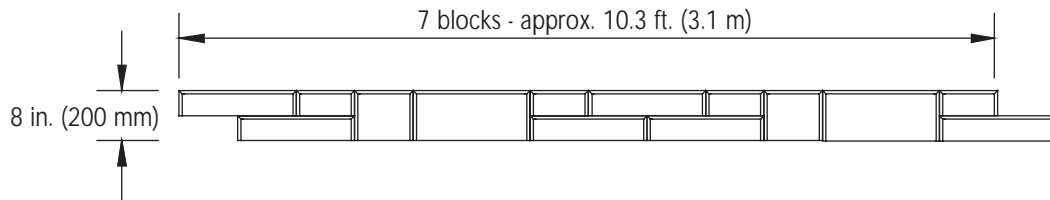
Patterned walls resemble hand-laid stone walls and add a whole new look to the AB Fence System. Similar to patterned retaining walls, they require a certain level of detail and craftsmanship to construct. Plan on taking a little extra time to build a patterned fence, particularly when building one for the first time.



## Wall Patterns

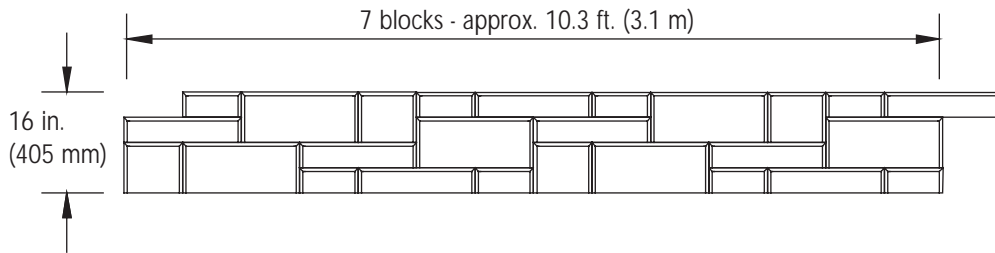
To assist in block estimating and to ease the construction process there are pre-set patterns available. A pre-set pattern is repeated for a particular pattern height and length. Remember, a single course consists of a full size block, approx. 8 in. tall (200 mm). Combine the different pre-set patterns to build any height fence required and these pre-set patterns can be flipped or reversed to keep the panels random.

### Standard Single Course Pattern



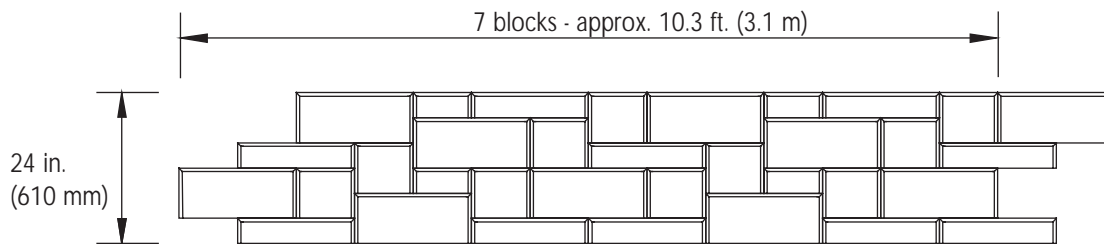
- AB Fence Blocks needed:**
- 2 Panel Blocks
  - 2 Half Panel Blocks
  - 6 Lite Panel Blocks
  - 4 Half Lite Panel Blocks\*

### Standard Two Course Pattern



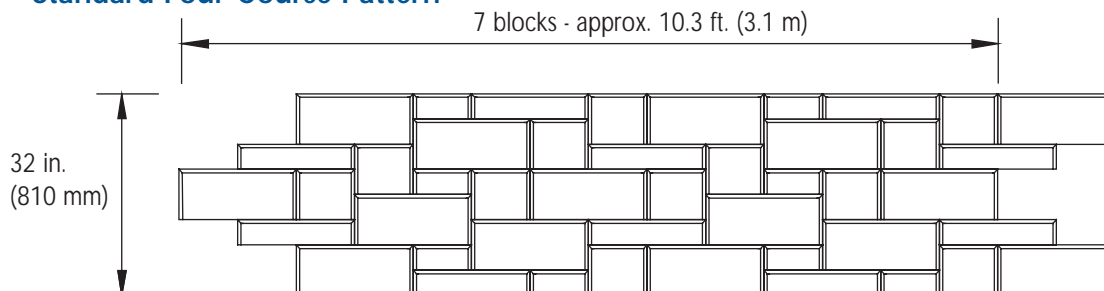
- AB Fence Blocks needed:**
- 6 Panel Blocks
  - 4 Half Panel Blocks
  - 8 Lite Panel Blocks
  - 8 Half Lite Panel Blocks\*

### Standard Three Course Pattern



- AB Fence Blocks needed:**
- 10 Panel Blocks
  - 10 Half Panel Blocks
  - 10 Lite Panel Blocks
  - 4 Half Lite Panel Blocks\*

### Standard Four Course Pattern

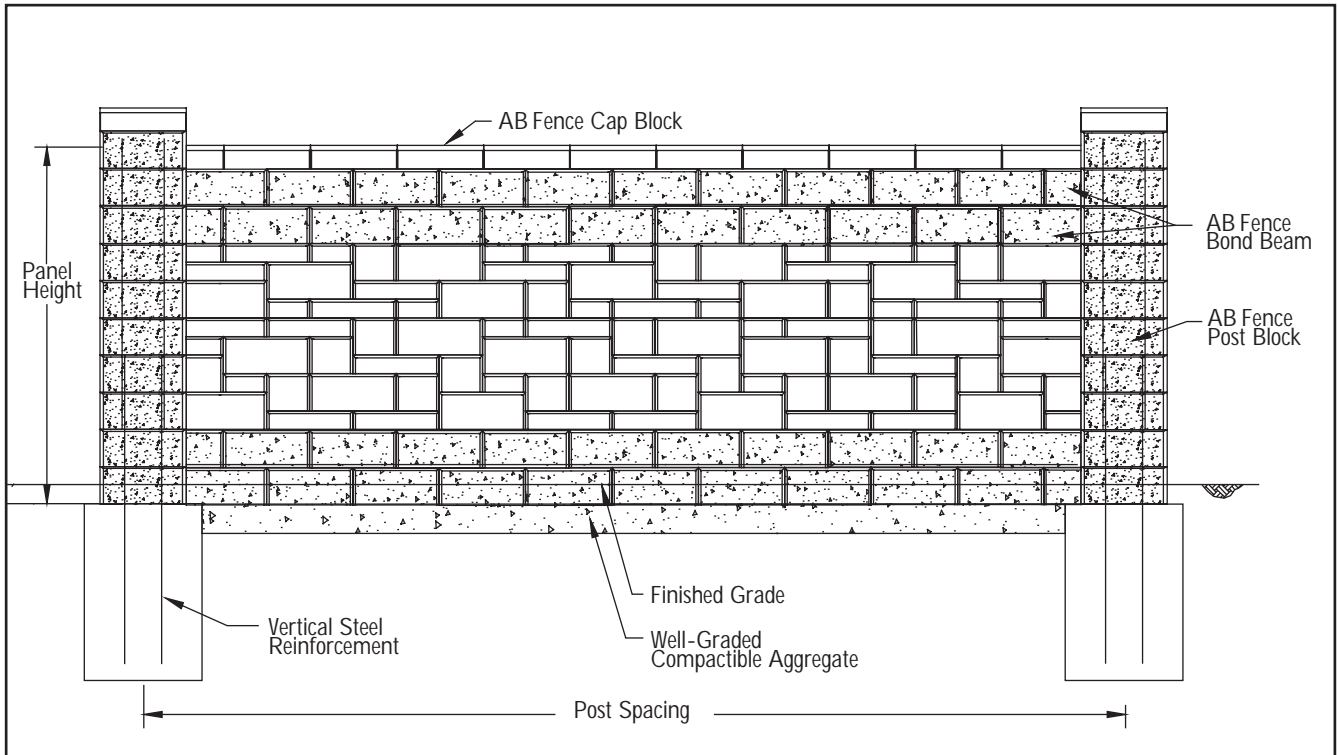


- AB Fence Blocks needed:**
- 15 Panel Blocks
  - 12 Half Panel Blocks
  - 10 Lite Panel Blocks
  - 8 Half Lite Panel Blocks\*

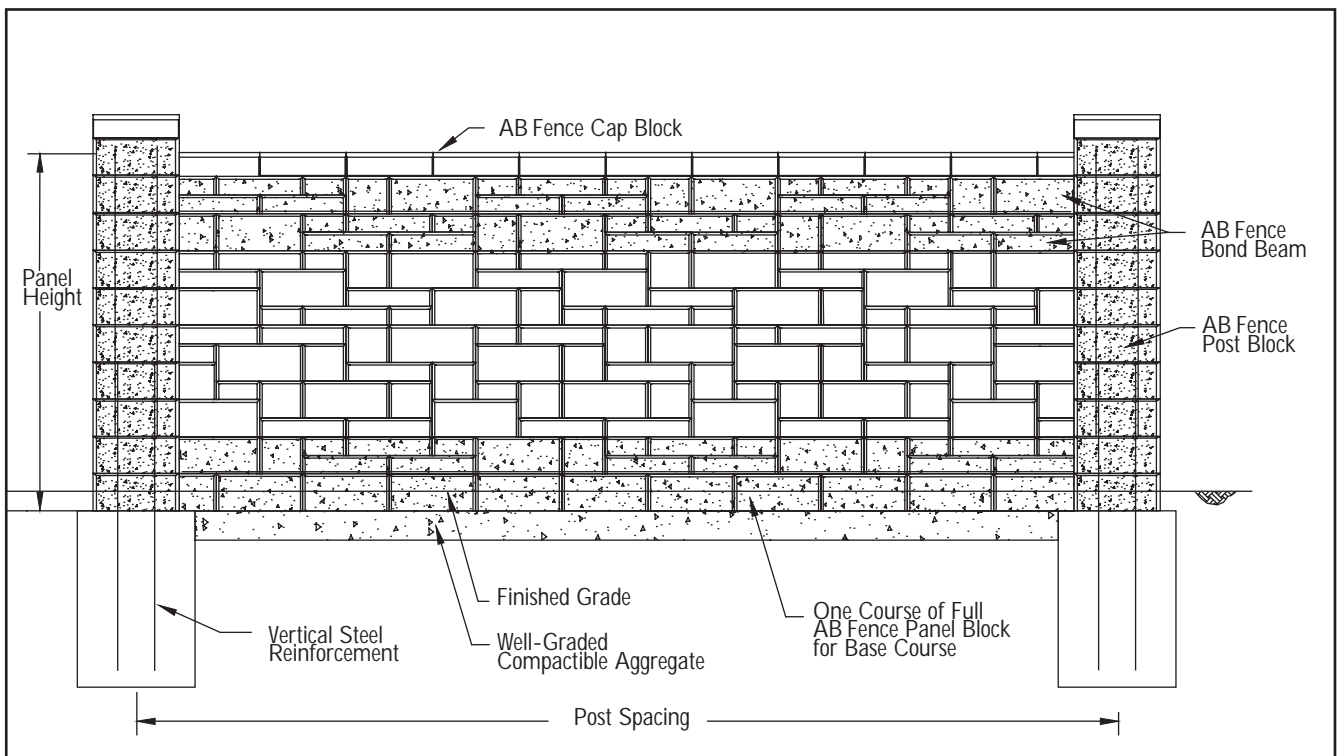
\* Check with your local manufacturer on availability. Use a Lite Panel Block cut in half to create a Half Lite Panel Block.

## Bond Beam Considerations

To construct a bond beam a single course above and below, the #4 (10M) bar must be filled with fine (sand) mix concrete grout. When building a patterned fence, the bond beam can be constructed either with full height blocks as shown in *Figure 5*, or by using the single course pre-set pattern as depicted in *Figure 6*. Proper consolidation of the concrete grout as well as placement of the horizontal steel and wire stirrups are required for both options.



*Figure 5: AB Ashlar Blend Pattern Fence - Standard Bond Beam Construction*



*Figure 6: AB Ashlar Blend Pattern Fence - Patterned Bond Beam Construction*

## Wall Patterns

Refer to page 4 for a detailed description on how to start the fence construction. The initial steps include proper layout of the fence, jig construction, placement of the sonotubes, construction of the pile footings, location of the vertical steel within the pile footings, trench preparation and initial block coursing of posts and panels.

**Note:** The base course of the panel should always use a full course of the AB Fence Panel Block. This will speed the leveling and installation of the panel.

The following steps will compliment the installation procedure outlined on the previous pages. The changes to the typical installation for the construction of a patterned fence are as follows.

### Step 3: Post and Panel Construction

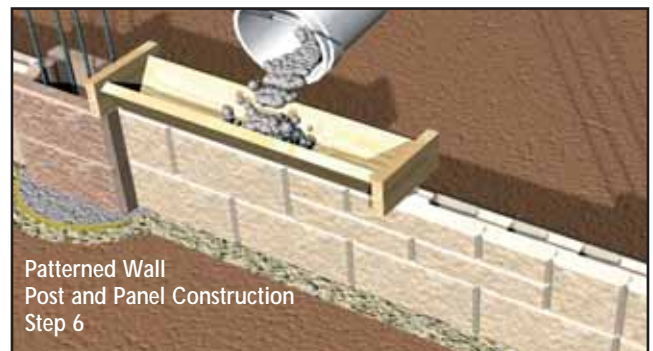
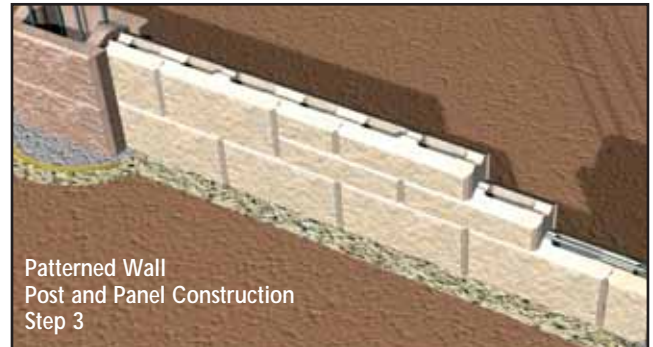
- Stack a second course of panel blocks following the pre-set single course pattern. Repeat the pattern if the panel is longer than 10 ft. (3.0 m). If a manufactured Half-Panel Block is not available, an AB Fence Lite Panel Block must be cut to obtain a Half-Panel Block. By following the pre-set single course pattern the bond beam will still consist of two full courses.
- Check the first two courses of panel block for alignment and plumb. Shim and adjust as necessary.
- Additional vertical stirrups will be needed to meet the one per block minimum.

Continue with Steps 4-5 starting on page 6 to continue the fence construction.

### Step 6: Post and Panel Construction

- Using the pre-set patterns in any combination, stack the panel blocks in between the post columns up to the course below the next bond beam. For example, if there are seven courses between the bond beams, use a combination of the 4-course and 3-course pre-set patterns. The panel blocks should be stacked tight, paying attention to level and plumb.
- Place a 4 in. (100 mm) strip of grout stop material, such as duct tape or building papers, on the top course.
- Using the pre-set single course pattern, stack the first course of the next bond beam directly on top of the grout stop material.
- Place the specified-size rebar for the horizontal bond beam on the recesses formed into the AB Fence Panel Block.
- Stack the second course of the next bond beam using the single course pre-set pattern. This patterned course should be offset or flipped from the pattern below to avoid a repetitive look.
- Seat and straighten the panel with a dead blow hammer by striking the front and back sides of the panel.
- Panels must be installed to a tolerance of 1 in. (25 mm) in the horizontal direction over the length of panel and a tolerance of 0.375 in. (8 mm) in the vertical direction.

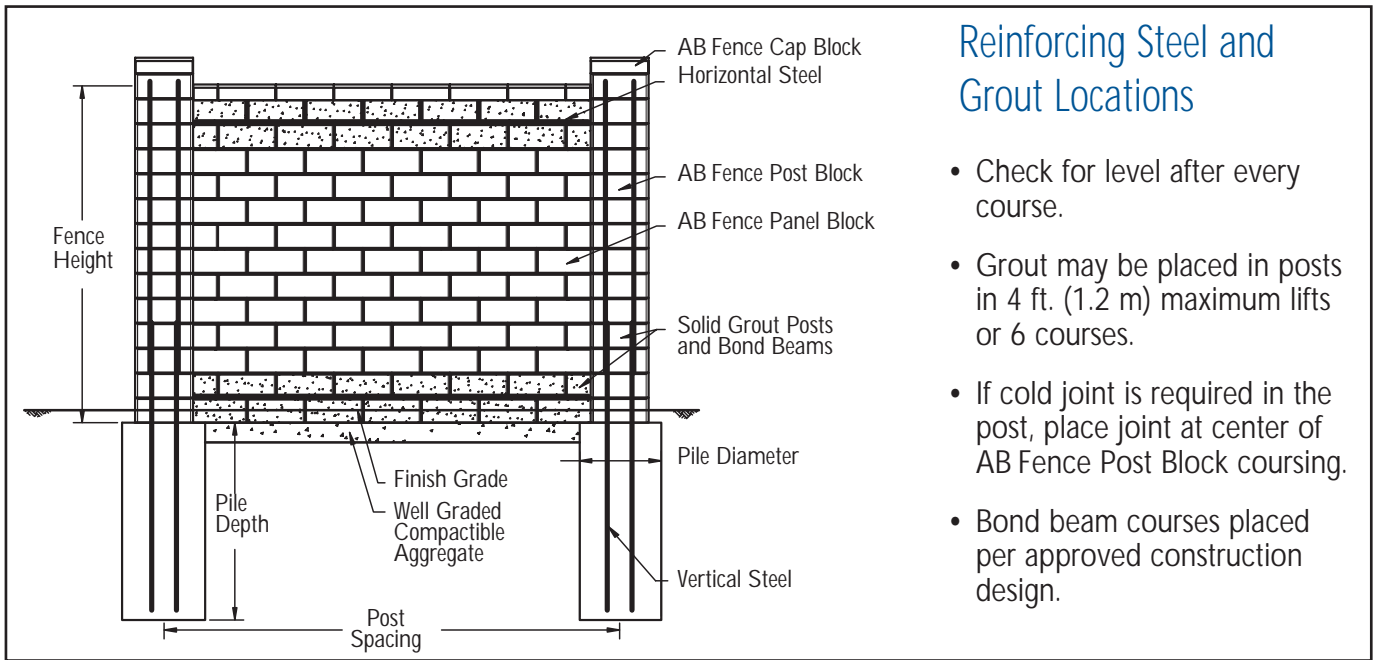
Continue with Steps 7-9 on page 7 to complete the fence construction.



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# Construction Details

The following drawings provide details for basic construction and design options available with the AB Fence System.



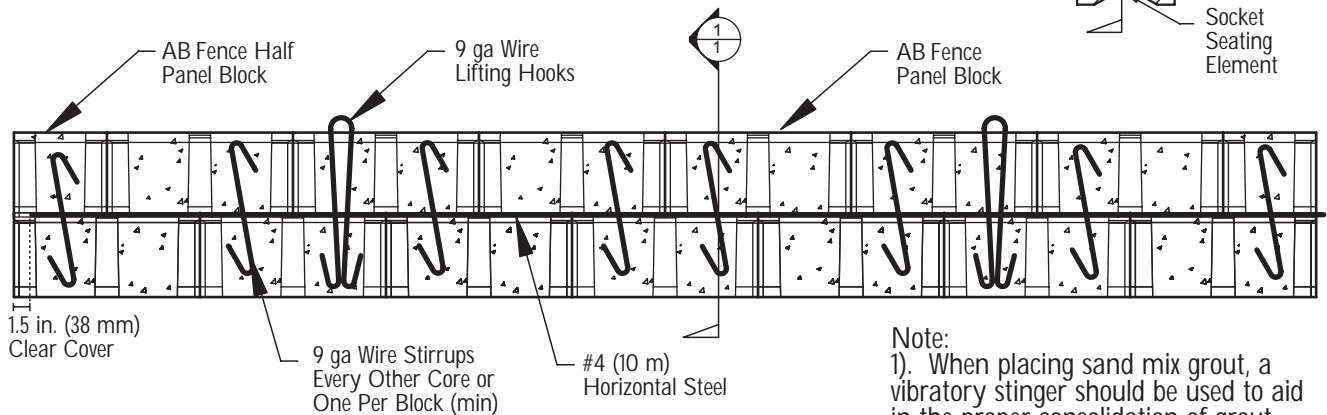
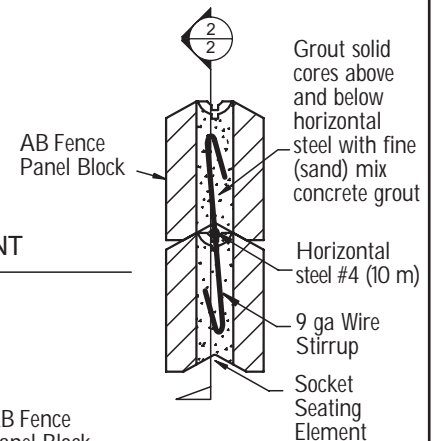
## Reinforcing Steel and Grout Locations

- Check for level after every course.
- Grout may be placed in posts in 4 ft. (1.2 m) maximum lifts or 6 courses.
- If cold joint is required in the post, place joint at center of AB Fence Post Block coursing.
- Bond beam courses placed per approved construction design.

## Precast Bond Beam

- Place stirrups and hooks before placing grout in second course.
- Place bond beam on course of block or on manufactured form to maintain bottom socket receiving element.
- Bond beam must be cast in one continuous pour.

1 HORIZONTAL STEEL PLACEMENT  
SCALE: Not To Scale

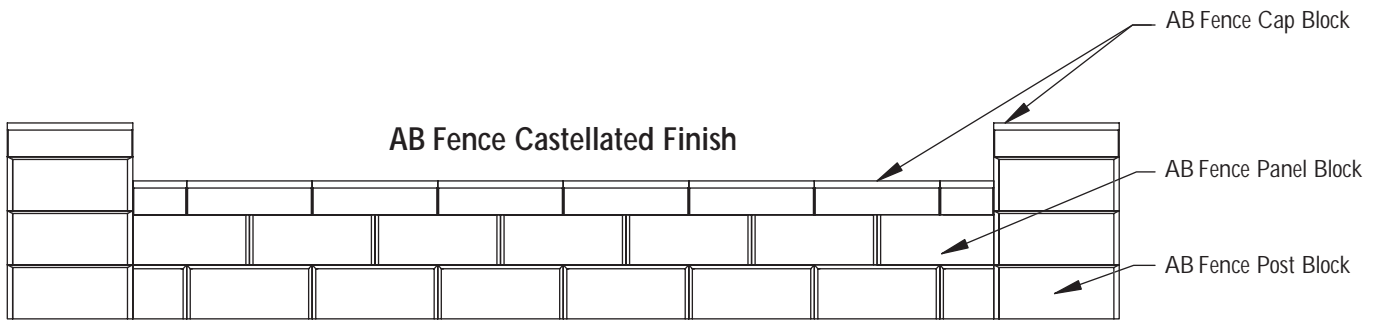
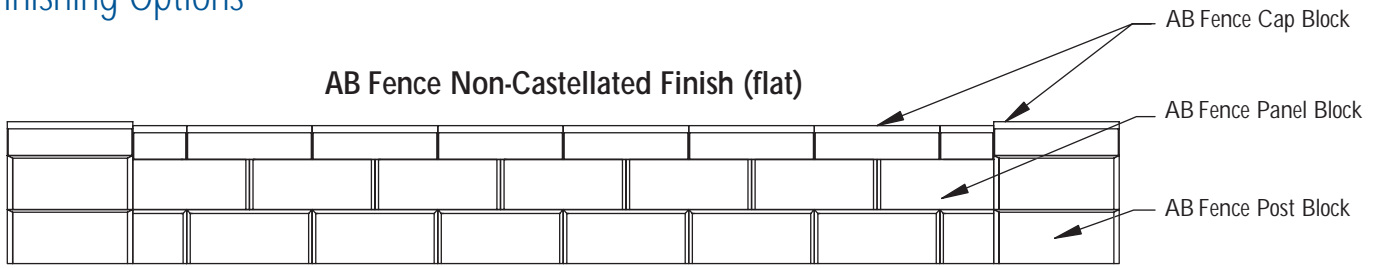


2 LONGITUDINAL CROSS SECTION  
SCALE: Not To Scale

Note:  
1). When placing sand mix grout, a vibratory stinger should be used to aid in the proper consolidation of grout.  
2). Seven panel block long bond beam shown.

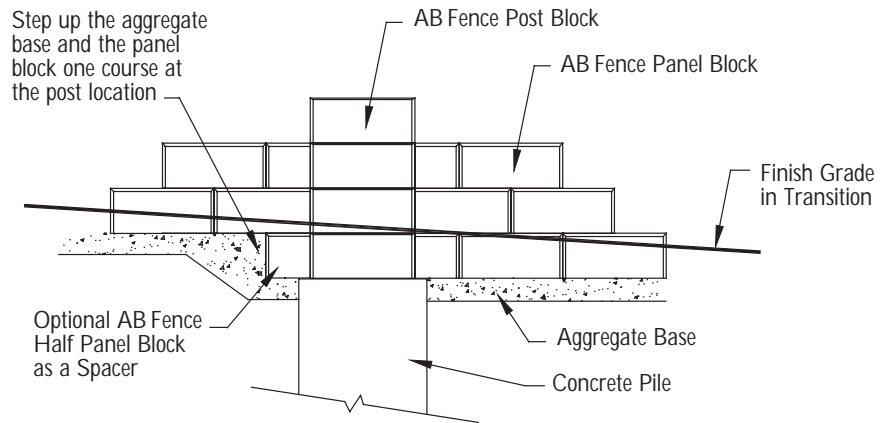
# Construction Details - Continued

## Finishing Options

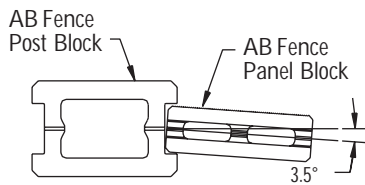


(Note: Castellated finish recommended in areas with frost heave.)

## Step-Ups and Step-Downs

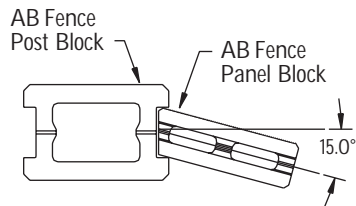


## Standard Connection



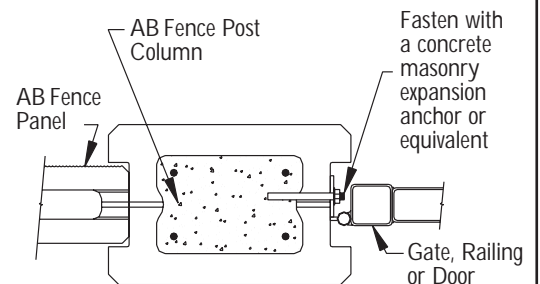
Rotate the AB Fence Panel Block a maximum of 3.5° to create radiuses

## Modified Connection



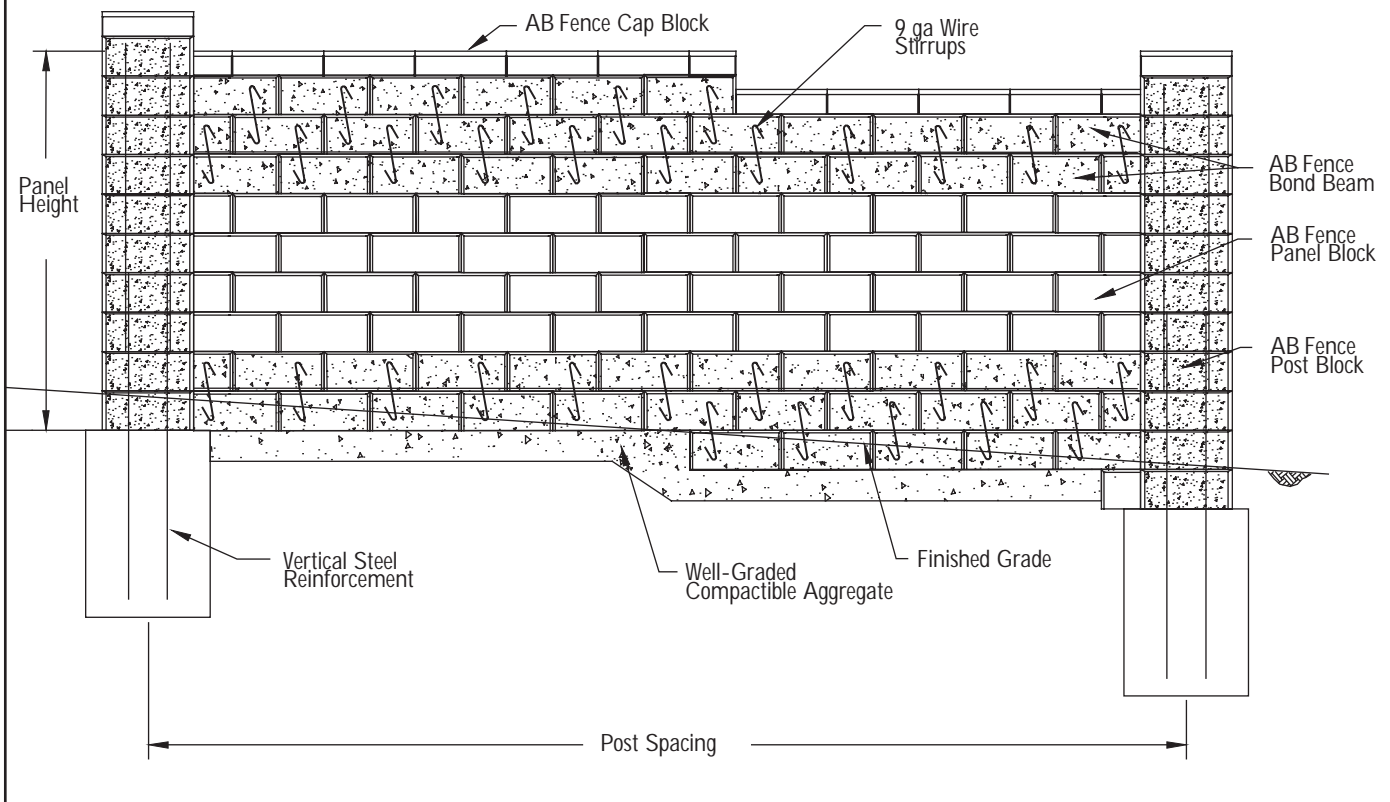
Cut and rotate the AB Fence Panel Block a maximum of 15.0° to create tighter radiuses

## Gates, Railings or Doors

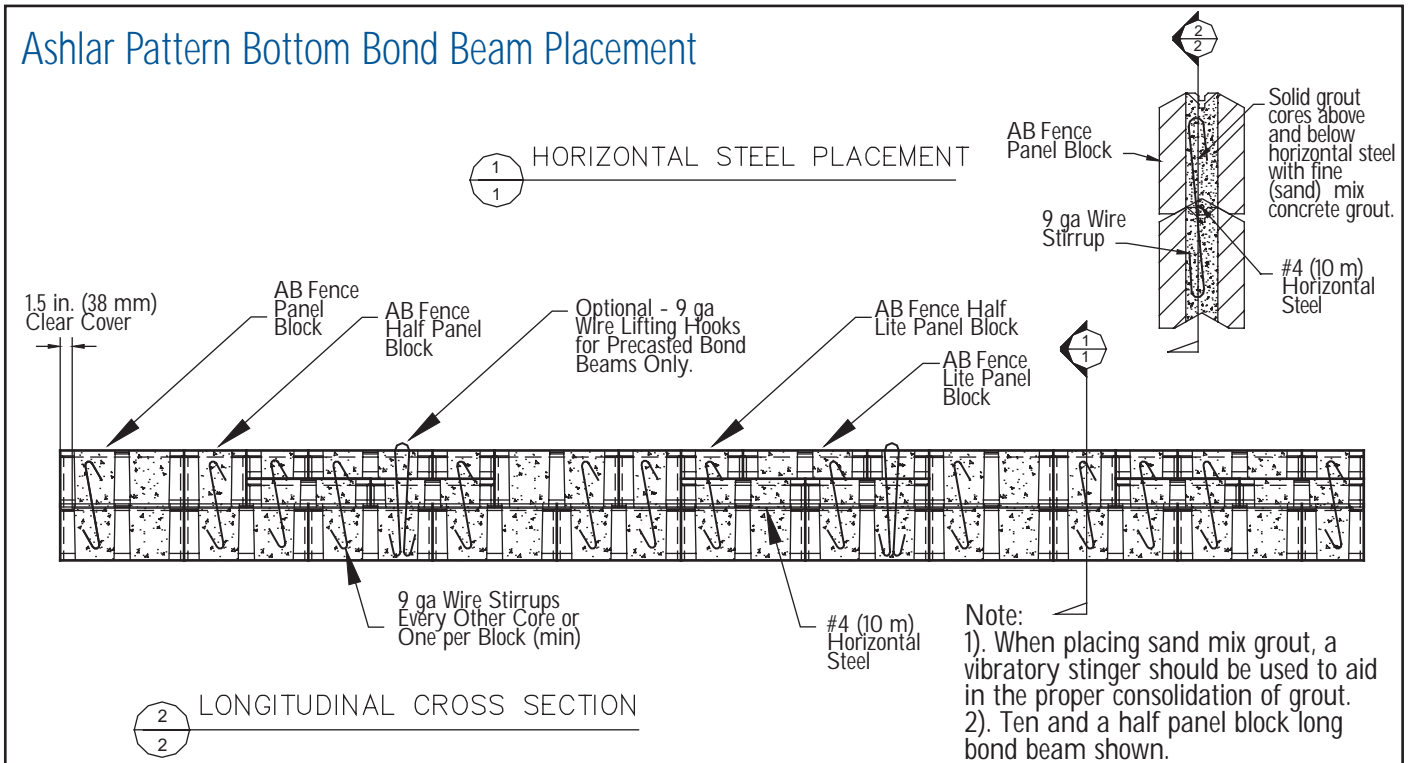


# Construction Details - Continued

## Panel Step Down

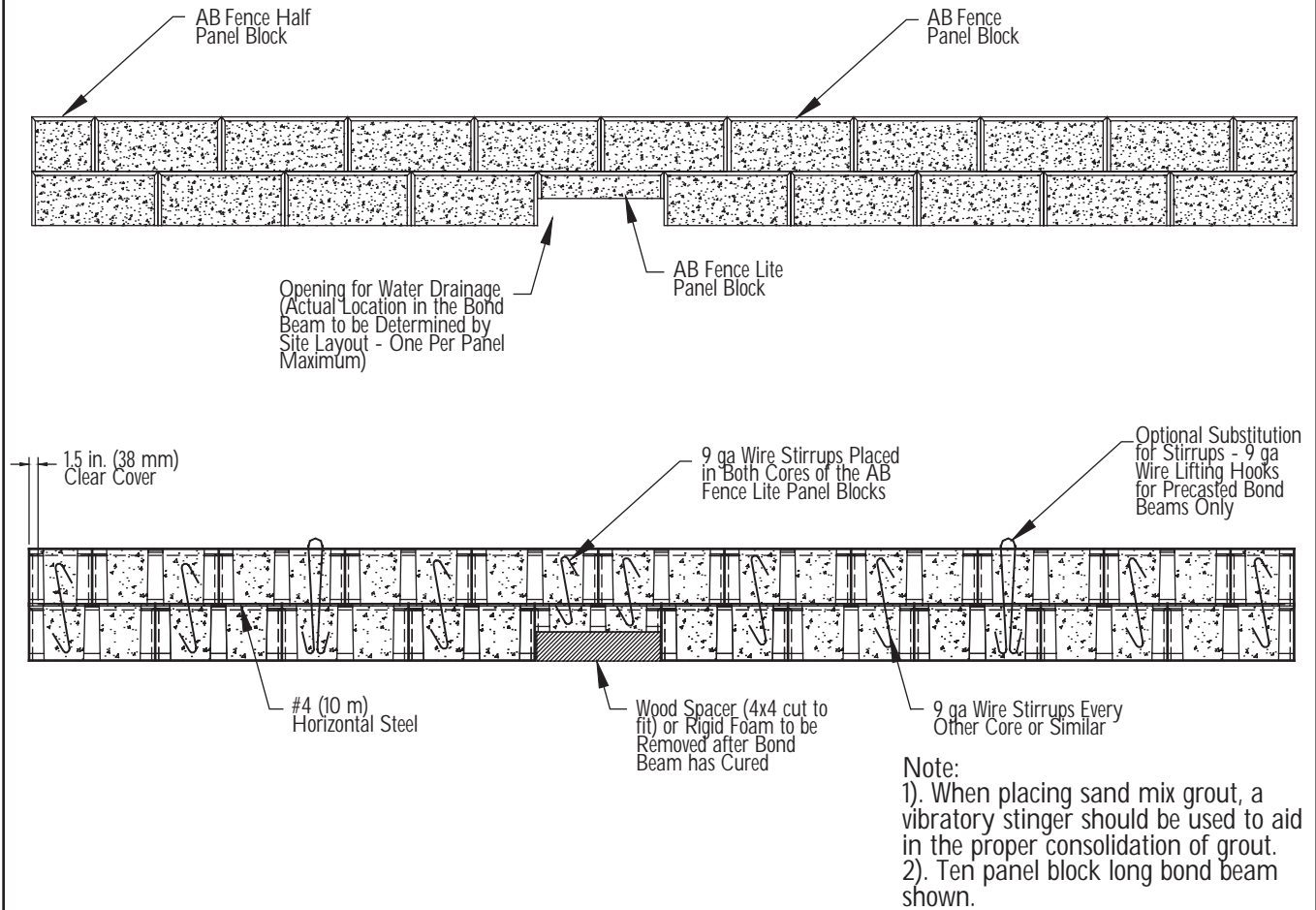


## Ashlar Pattern Bottom Bond Beam Placement

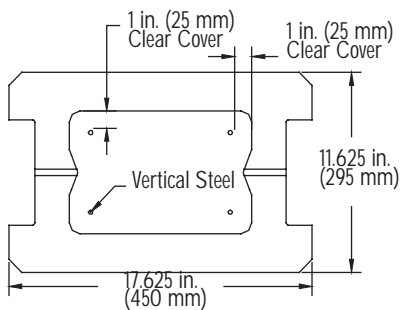


# Construction Details - Continued

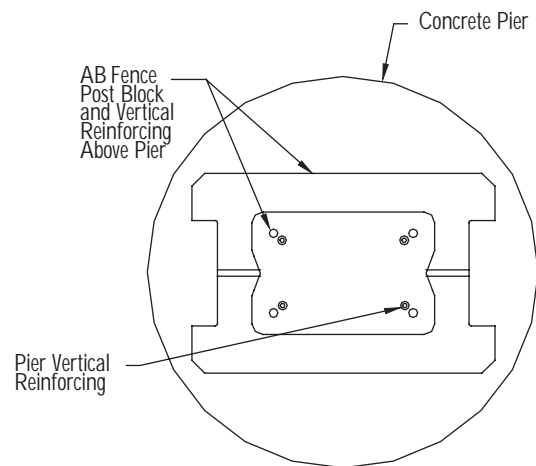
## Drainage Detail



## Vertical Steel Placement



## Pier Reinforcement Placement



# AB Fence Construction and Inspection Checklist

We have prepared the following Construction and Inspection Checklist to provide a list of items covering the basics for your fence project. It may also be used during the bidding process and at preconstruction meetings to ensure that all special provisions are complied with. Always check with local building codes, document any changes to the plan in writing and notify the fence design engineer with any concerns.

## Review Fence Design Plans For:

### A. Compliance of Site to Latest Site Plan

- Yes  No - Does the site plan and fence layout in both height and length coincide with the current Site Plan?
- Yes  No - Are the changes in direction within the capabilities of the fence system (3°, 15°, 45°, 90°)?
- Yes  No - Does the fence design contain a castellated system (post block one course higher than panel) as recommended? If not, is it possible to change to this format?
- Yes  No - How are slopes and grade changes accounted for during the fence layout?
- Yes  No - If the fence systems utilizes pile caps and if there is a downward slope on either side of the fence, is the slope taken into consideration so as to not expose the pile cap?
- Yes  No - Have site utilities been accounted for? Have all respective locate companies been contacted (First Call, Phone, Cable, Sewer)?
- Yes  No - Does the dimensional layout of the fence take into consideration panel block width vs. utility locations so they correspond and do not conflict?
- Yes  No - Are there any recommendations for changes to the site plans to accommodate the fence?

### B. Review of Reported Soil Conditions with On-Site Soils Engineer

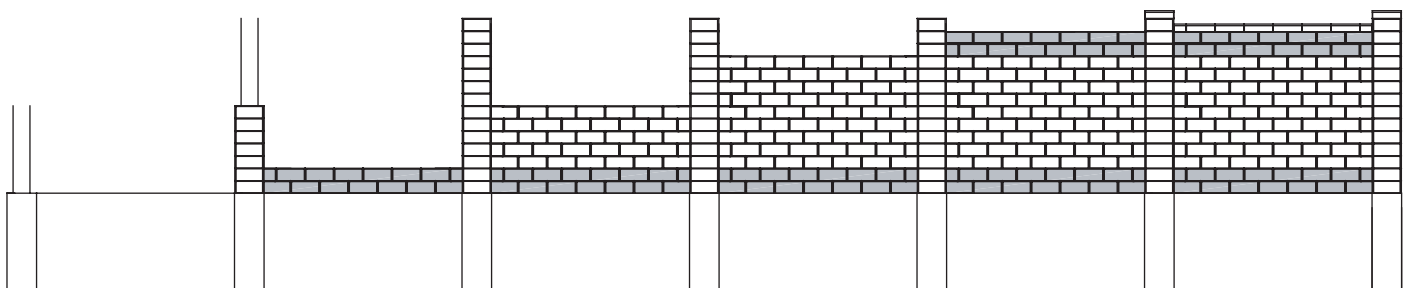
- Yes  No - Are on-site soils consistent with soil parameters used in the fence footing design?
- Yes  No - Does the site show indications of multiple types of soil, and has this been accounted for?
- Yes  No - Is there evidence of landfill areas on site?

### C. Review of Above Grade Water Management with Project Civil Engineer

- Yes  No - Has the surface runoff been accounted for in the site design?
- Yes  No - If storm drains become inoperable where will the water migrate to?
- Yes  No - During renovation of land will temporary drainage be an issue?
- Yes  No - Is the final grading planned to prevent erosion of the base materials under the pile caps (if applicable) and the panel section?

### D. Review of Design Loads and Surcharges

- Yes  No - Has the proper wind or seismic loads been accounted for?
- Yes  No - Is the site exposure consistent with the design requirements?
- Yes  No - During construction are there any temporary surcharges that should be considered?



## Construction Inspection:

### A. Layout and Pile Installation

#### Check Off



- \_\_\_\_\_ Verify that the fence layout in both height and length coincide with the current site plan.
- \_\_\_\_\_ Verify that potential surface water is diverted around or properly vented through the fence.
- \_\_\_\_\_ Mark pile locations for fence elevations and changes in fence direction.
- \_\_\_\_\_ Identify changes in fence height.
- \_\_\_\_\_ Determine and locate the proper pile depths and diameters.
- \_\_\_\_\_ Verify that site soils meet the design standards.
- \_\_\_\_\_ Verify that the correct type and color of block has been ordered and delivered to the job site.
- \_\_\_\_\_ Confirm that the proper size and quantity of steel reinforcement, including the steel stirrups located in the horizontal bond beams, have been delivered to the site.
- \_\_\_\_\_ Verify that the layout jigs have been built to the designed fence lengths and are at that job site.
- \_\_\_\_\_ Determine how the concrete will be delivered to the job site for the post footings and the cores of the post block.

### B. Post and Panel Installation

- \_\_\_\_\_ Identify cracked or damaged block prior to installation and placed aside.
- \_\_\_\_\_ If color variances are noticed in the product, notify the manufacturer to investigate. Do not place any suspect blocks.
- \_\_\_\_\_ Ensure proper shimming is performed to maintain tolerances with respect to the horizontal alignment of the block courses.
- \_\_\_\_\_ Ensure vertical alignment of the fence panel is within tolerances. Vertical alignment should be checked and the panel realigned prior to the installation of additional bond beams, or every four courses.
- \_\_\_\_\_ Ensure that the post blocks are properly centered on the pile / pile cap. If piling alignment is off, make necessary adjustments prior to pilaster construction and commencement with the fence construction.
- \_\_\_\_\_ Ensure that the mortar bed for the placement of the first pilaster block is no thicker than 1 in. (25 mm) thick.
- \_\_\_\_\_ Prior to the pouring of the concrete in the post blocks, ensure that the vertical rebar alignment is set to allow for a minimum 1 in. (25 mm) clear cover between the rebar and the inside of the post block.
- \_\_\_\_\_ Determine whether the bond beams will be pre-cast and delivered to the site or constructed by casting them on-site.
- \_\_\_\_\_ When placing horizontal steel in the bond beams, ensure single lengths are used. Do not splice or butt sections together.
- \_\_\_\_\_ Verify that the proper grout mix consisting of a fine aggregate mix is scheduled for bond beam construction and at the job site.
- \_\_\_\_\_ Ensure by visual inspection that proper consolidation is occurring in the bond beams during grout placement using vibrator.
- \_\_\_\_\_ If pre-casting bond beams, check the bond beam prior to placement for cracks or any other sign of damage that may have occurred during manufacturing, storage or shipping. Discard damaged or cracked bond beams.
- \_\_\_\_\_ Does the panel block overlap the post block a minimum of 1 in. (25 mm) on each end?
- \_\_\_\_\_ Confirm that compaction testing will or will not be required under the fence panels. If it is, who is responsible, at what locations along the fence and what coordination will be required?

### C. Finishing

- \_\_\_\_\_ Confirm if testing is required of the grout (panel / post blocks). How often? Who is doing the testing?
- \_\_\_\_\_ Confirm that the AB Fence Caps have been properly installed and adhered.
- \_\_\_\_\_ Determine what method will be used to verify construction materials, methods, and sequences of construction. (ie: written documentation of as built, full time inspector on-site, photographic documentation.)

# Design and Estimating Guide

Charts and design parameters are for estimating purposes only. Actual design parameters and design should come from a local registered engineer. Check with your local Allan Block manufacturer for exact specifications and availability.

The following example, illustrates the use of the AB Fence charts. This fence example is 10 ft. high (3.0 m), requires a panel spacing of approximately 15.3 ft. (4.7 m), and is situated in an 80 mph (129 km/h) wind zone UBC 16-1. Using these simple parameters and having a description of the soil will yield an accurate design. A definition of the design parameters is also included here. These charts should be used for estimating quantities for projects which match the site and soil descriptions provided. Consult the Allan Block Engineering Department for details.

Design Estimate Example:		
<b>Fence Length:</b> 610 ft (186 m)	<b>Soil Type:</b> Clay (a soil classified as inorganic, low to medium plasticity)	<b>Seismic Coefficient:</b> 0 (UBC 1997 Fig. 16-2)
<b>Fence Height:</b> 10 ft (3.0 m)	<b>Wind Speed - 50 year return period:</b> 80 mph (129 km/h) (UBC 1997 Fig. 16-1)	<b>Exposure Rating:</b> B (AB Fence Design Manual)

Table 1: Pile Depth and Maximum Post Spacing		
<b>Wind Speed:</b> 80 mph (129 km/h)		<b>Exposure:</b> B
<b>Soil Type:</b> Clay; Unconstrained Pile, 2.0 ft diameter (0.6 m)		
Fence Height*	Pile Depth	Post Spacing*
7 blocks 4.8 ft 1.5 m	4.0 ft 1.2 m	13 blocks 20.4 ft 6.2 m
9 blocks 6.1 ft 1.9 m	4.0 ft 1.2 m	11 blocks 17.5 ft 5.3 m
12 blocks 8.0 ft 2.4 m	5.0 ft 1.5 m	9.5 blocks 15.3 ft 4.7 m
15 blocks 9.9 ft 3.0 m	6.0 ft 1.8 m	9.5 blocks 15.3 ft 4.7 m

Table 3: AB Fence Panel Block Quantity (per each panel)									
AB Fence Panel Length*	Fence Panel Height w/cap*								
	7 courses 4.8 ft (1.5 m)	8 courses 5.4 ft (1.7 m)	9 courses 6.1 ft (1.9 m)	10 courses 6.7 ft (2.0 m)	11 courses 7.3 ft (2.2 m)	12 courses 8.0 ft (2.4 m)	13 courses 8.6 ft (2.6 m)	14 courses 9.3 ft (2.8 m)	15 courses 9.9 ft (3.0 m)
<b>6 blocks</b> 8.8 ft (2.7 m)	39	44	50	55	61	66	72	77	83
<b>7 blocks</b> 10.3 ft (3.1 m)	46	52	59	65	72	78	85	91	98
<b>8 blocks</b> 11.8 ft (3.6 m)	53	60	68	75	83	90	98	105	113
<b>9 blocks</b> 13.2 ft (4.0 m)	60	68	77	85	94	102	111	119	128
<b>10 blocks</b> 14.7 ft (4.5 m)	67	76	86	95	105	114	124	133	143
<b>11 blocks</b> 16.2 ft (4.9 m)	74	84	95	105	116	126	137	144	158
<b>12 blocks</b> 17.6 ft (5.4 m)	81	92	104	115	127	138	150	161	173
<b>13 blocks</b> 19.1 ft (5.8 m)	88	100	113	125	138	150	163	175	188
<b>AB Fence Half Panel Blocks</b>	6	8	8	10	10	12	12	14	14

Design Parameters Example:
<b>Fence Height:</b> 15 courses
<b>Post Height:</b> 16 courses
<b>Post Spacing:</b> 9.5 blocks
<b>Number of Panels:</b> 610 ft ÷ 15.3 ft/panel = 40    186 m ÷ 4.7 m/panel = 40
<b>Number of Posts:</b> 41
<b>Pile Diameter:</b> 2.0 ft (0.6 m)
<b>Pile Depth:</b> 6.0 ft (1.8 m)



\*All dimensions are approximate and will vary by manufacturer.

## Materials Estimate From Example:

### Aggregate:

#### Base Rock:

$$610 \text{ ft} \times 0.5 \text{ ft} \times 1 \text{ ft} = 305 \text{ ft}^3 \div 27 \text{ ft}^3/\text{yd}^3 = 11.3 \text{ yd}^3$$
$$186 \text{ m} \times 0.15 \text{ m} \times 0.30 \text{ m} = 8.4 \text{ m}^3$$

### Piles:

#### Concrete:

$$((0.5 \times 2.0 \text{ ft})^2 \times 3.14 \times 6.0 \text{ ft}) \div 27 \text{ ft}^3/\text{yd}^3 = 0.7 \text{ yd}^3$$
$$((0.5 \times 0.6 \text{ m})^2 \times 3.14 \times 1.8 \text{ m}) = 0.51 \text{ m}^3$$

$$0.7 \text{ yd}^3 \times 41 \text{ piles} = 28.6 \text{ yd}^3$$
$$0.51 \text{ m}^3 \times 41 \text{ piles} = 20.9 \text{ m}^3$$

#### Steel:

$$\#5 \text{ bar (15 M) by } 8 \text{ ft (2.4 m)} \times 4 \text{ pieces/pile} \times 41 \text{ piles}$$
$$= 1,312 \text{ linear ft (400 linear m)}$$

*Note: The length of 8 ft (2.4 m) takes into consideration a clear cover of 3 in. (75 mm) and a lap splice of 24 in. (610 mm).*

### Posts:

#### Post Block:

$$16 \text{ blocks per post} \times 41 \text{ posts} = 656 \text{ Post Block}$$

#### Grout:

$$(16 \text{ block} \times 0.32 \text{ ft}^3/\text{block} \times 41 \text{ posts}) \div 27 \text{ ft}^3/\text{yd}^3 = 7.8 \text{ yd}^3$$
$$(16 \text{ block} \times 0.00906 \text{ m}^3/\text{block} \times 41 \text{ posts}) = 6.0 \text{ m}^3$$

#### Steel:

$$\#5 \text{ bar (15 M) by } 10 \text{ ft (3.0 m)} \times 4 \text{ pieces/post} \times 41 \text{ posts}$$
$$= 1,640 \text{ linear ft (500 linear m)}$$

#### Sonotube:

$$41 \text{ pile} \times 1 \text{ ft/pile} = 41 \text{ linear ft}$$
$$41 \text{ pile} \times 0.30 \text{ m/pile} = 12.3 \text{ linear m}$$

### Panels:

#### Panel Block:

$$15 \text{ blocks high} \times 9.5 \text{ blocks wide} - 0.5 \text{ (1 Half Panel Block each course)}$$
$$= 135 \text{ Panel Block/panel}$$

$$135 \text{ Panel Block/panel} \times 40 \text{ panels} = 5,400 \text{ AB Panel Block}$$

$$15 \text{ Half Panel Block/panel} \times 40 \text{ panels} = 600 \text{ AB Half Panel Block}$$

#### Grout:

$$9.5 \text{ block} \times 2 \text{ courses} \times 0.128 \text{ ft}^3/\text{block} = 2.43 \text{ ft}^3/\text{bond beam}$$
$$9.5 \text{ block} \times 2 \text{ courses} \times 0.00363 \text{ m}^3/\text{block} = 0.069 \text{ m}^3/\text{bond beam}$$
$$(2.43 \text{ ft}^3 \times 3 \text{ bond beams/panel} \times 40 \text{ panels}) \div 27 \text{ ft}^3/\text{yd}^3 = 10.8 \text{ yd}^3$$
$$(0.069 \text{ m}^3 \times 3 \text{ bond beams/panel} \times 40 \text{ panels}) = 8.28 \text{ m}^3$$

#### Steel:

$$\#4 \text{ bar (10 M) by } 15 \text{ ft (4.6 m)} \times 3 \text{ pieces/panel} \times 40 \text{ panels}$$
$$= 1800 \text{ linear ft (548.6 linear m)}$$

*Note: The length of 15 ft (4.6 m) takes into consideration a clear cover of 1.5 in. (38 mm) at both ends of the panel.*

### 9 ga Wire Stirrups:

$$9.5 \text{ block} \times 1 \text{ stirrup/block} \times \text{steel wire at } 1.7 \text{ ft (0.5 m)}$$
$$= 15.9 \text{ linear ft/bond beam (4.9 linear m/bond beam)}$$

$$15.9 \text{ linear ft} \times 3 \text{ bond beams} \times 40 \text{ panels} = 1904 \text{ linear ft}$$
$$4.9 \text{ linear ft} \times 3 \text{ bond beams} \times 40 \text{ panels} = 581.4 \text{ linear m}$$

### Caps:

#### Cap Block:

$$40 \times 9.5 \text{ caps per panel} + 41 \times 1 \text{ cap per post} = 421 \text{ Cap Blocks}$$

#### Adhesive:

$$421 \text{ caps} \div 6 \text{ caps/tube} = 70 \text{ tubes}$$

*Note: Material estimates do not include overages and only represent the primary materials needed to construct the AB Fence system.*

## Construction Terminology:

### Fence Height:

Desired fence elevation.

### Post Spacing:

Distance between center lines of the fence piles.

### Panel Length:

Actual length of individual panel blocks placed end to end per panel

### Pile Diameter:

Diameter of fence pile per design.

### Pile Depth:

Depth of fence pile derived from design charts or calculations.

### Soil Type:

Soil classification and description per geotechnical report.

### Fine (Sand) Mix Concrete Grout:

Concrete grout using sand for the aggregate.

### Wind Speed:

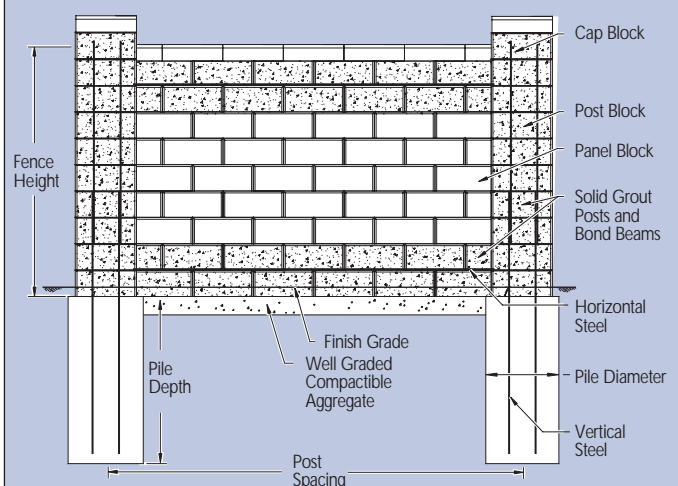
Wind speeds for design vary between geographical areas. For the design of the AB Fence, a 50 year return period for the wind speed is used. The UBC and other building codes have developed maps which indicate design wind speeds for the particular area of the project.

### Seismic Coefficient:

Similar to wind speeds, the building codes have developed maps which indicates design seismic coefficients based on active faults.

### Exposure Rating:

This parameter refers to the area and the amount of open space around the project. A description of the exposure coefficient are found in the AB Fence Design Manual.



Check out our  
AB Fence Estimating Tool  
at [allanblock.com](http://allanblock.com).





For more information, contact your local Allan Block Representative today!



[allanblock.com](http://allanblock.com)

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US Patent # 5,623,797 & 6,082,067 Canadian Patent # 2,182,321 Int'l and other patents pending F0204-0807