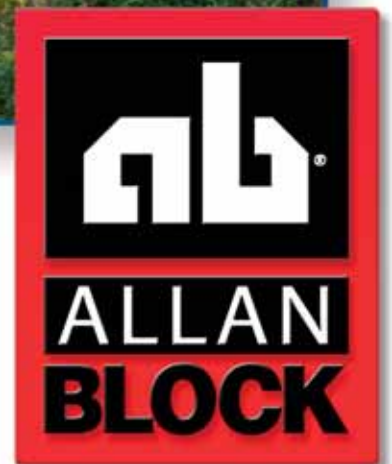


AB Fence™ Design Manual

by Allan Block®



*A Comprehensive Guide
for the Design of the
AB Fence System.*



allanblock.com



Concept

Experience is a valuable asset to have in virtually all aspects of design and construction. With experience comes the understanding of how concepts can become reality. But at what point do our preconceived beliefs on how things work begin to limit change and progress? Albert Einstein summarized this concept in a simple quote, "Imagination is Much More Important than Knowledge; Knowledge is Limited, Imagination Encircles the World". Allan Block Corporation is continuing our quest to develop more efficient and dynamic building materials from the most versatile, environmentally friendly and affordable building material known to mankind - *concrete*. In this manual we document how the AB Fence™ system performs when subjected to lateral loads, differential base support and expansive soil loading.

AB Fence™ is a mortarless concrete block fencing system. The patented, maintenance free interlocking blocks provide an attractive and effective solution to issues of sound and privacy with longevity and value.

It's what you have come to expect from Allan Block®. Building on the success and a 20+ year company history, Allan Block Fence is a truly beautiful solution for sound, privacy and security in a fence.



AB Fence™ Design Manual

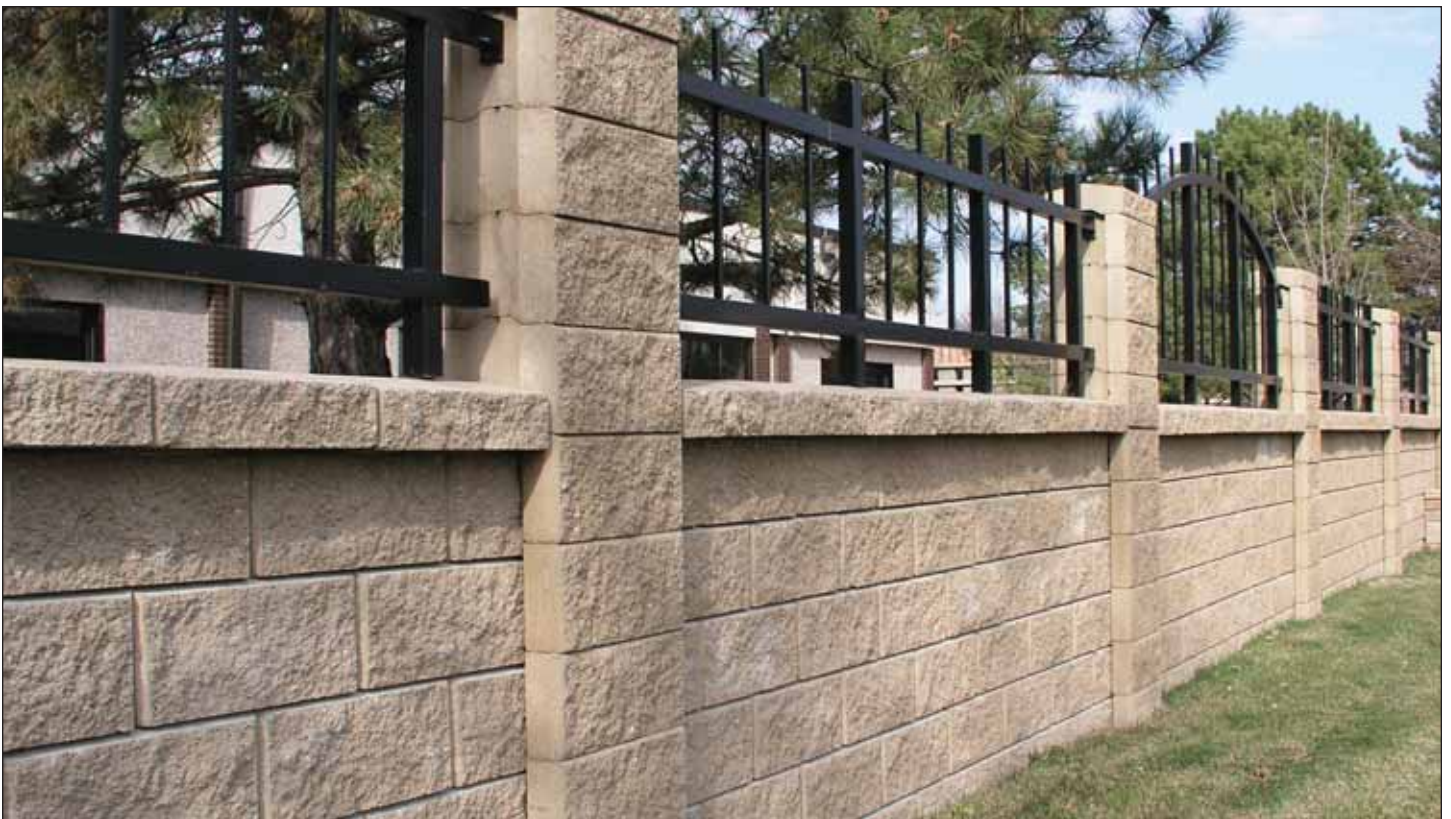
	<u>Page</u>
Introduction	1-2
Product Profile	3-4
Applications	5-6
Design Options	7-8
Installation	9-10
Construction Details	11-12
Engineering Methodologies	13-16
Specifications and Testing	17-20
Design Tables	21-24
Additional Resources	25-26

System

The true strength found in every Allan Block® product can be traced to the creative team of professionals that manufacture and deliver the product to you. Look to our network of manufacturers, engineers, designers and contractors to deliver a world class package for your next project.

The Allan Block Fence System is the logical choice for a wide range of fencing and sound barrier applications. It is an attractive addition to developments looking for added security and is ideally suited for sound barrier applications with a transmission loss two times greater than wood fences. AB Fence™ can easily beautify commercial containment applications and increase privacy for perimeters and entrances.

AB Fence™ can be used alone or combined with other fencing products to integrate gates and entryways. Combine the AB Fence™ with wrought iron for a beautiful look that would compliment any project or use different colors or the two textures to accentuate the fence. To create unique styles suited specifically for your project incorporate an ashlar pattern into the fence panels.



Product Profile



The AB Fence System combines the benefits of mortarless technology with the time proven performance of reinforced concrete. The three main structural components are the AB Fence Post block, the AB Fence Panel block and the AB Fence Cap. Together they provide the ability to design and create a fence that meets the configuration requirements of each individual project. Use the AB Fence alone or in conjunction with an Allan Block Retaining Wall to address beautification and privacy; screening and containment; soil retention and sound abatement.

AB® Fence Post Block



The AB Fence Post Block is the primary structural component of the system. Integrated into reinforced concrete piles, the AB Fence post forms the backbone of the AB Fence system.

AB® Fence Panel Block



The AB Fence Panel Block is stacked between the rigid post structures. The interlocking design of the panel block creates a strong, solid barrier and easily transfers wind and seismic loads to the post structures.

AB® Fence Cap



The AB Fence Cap is used to finish the top of the post and panels. The crowned configuration provides aesthetic appeal, and channels water away from the posts and panel.

AB® Fence Corner Block

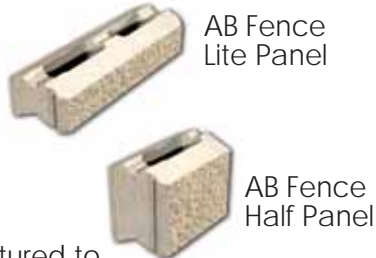


The AB Fence Corners are manufactured for 90° transitions.

AB® Fence Lite Panel and AB® Fence Half Panel Blocks

The AB Fence Lite Panel Blocks can be combined with the other panel blocks to form an ashlar patterned panel. (see pg. 10)

The AB Fence Half Panel Blocks are manufactured to eliminate the need for in-the field producing of half size panel block by cutting standard panel blocks. (not available in all locations)



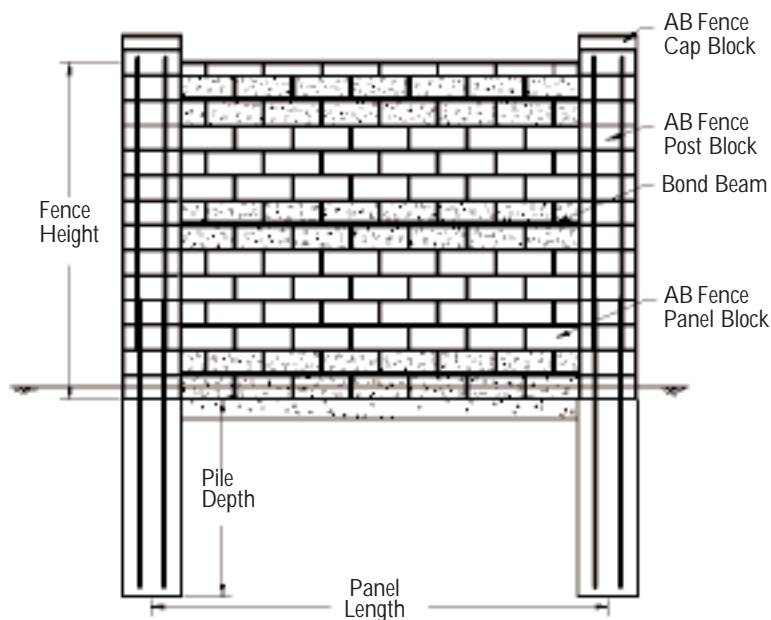
Structural Column Assembly

Structural column assemblies are constructed with reinforced concrete piles below grade and AB Fence Post block reinforced with concrete grout and steel above grade. The below grade pile acts to anchor the post structure and create the backbone of the AB Fence System. Increasing the depth and/or diameter of the pile component, or the column assembly develops more resistance to the forces being applied. The spacing between the AB Fence column assemblies can be adjusted to account for the actual site-specific loading to create an efficient design. These rigid column assemblies transfer wind or seismic loads from the AB Fence Panel sections to the ground creating a safe, stable, engineered structure.

Structural Panel Assembly

AB Fence panel assemblies are constructed as a semi rigid structure. Keyed into the AB Fence Post, these panels are able to move independently from the structural columns. The independence of the panels and column structures eliminates the necessity of constructing the panels below the local frost limits. The base course of AB Fence Panel Block is installed on a compacted gravel leveling pad.

Subsequent courses are dry stacked in place in a running bond pattern with strategically located rebar with grout filled cores called bond beams. These bond beam courses frame the top and bottom of the panel to create a unified structure and increase the rigidity of the assembly. Intermediate bond beams may be required as the fence height increases. See the full assembly diagram on page 11.



The AB Fence Panel Blocks interlock together through the patented ball and socket configuration. This configuration allows each unit to interact which creates additional flexural stability in the panel compared to flat, mortared joints on typical masonry structures. Panel assemblies combine the benefits of a rigid structure that transfer loads to the structural columns while remaining flexible enough to move with the expansion and contraction of the underlying soil.

Standard Product Specifications

Minimum compressive strength of 3000 psi (20.7 mpa).

Product tolerance in accordance with ASTM C1372.

Freeze/thaw durability in accordance with ASTM C1372 and C1262.





Sound Barriers

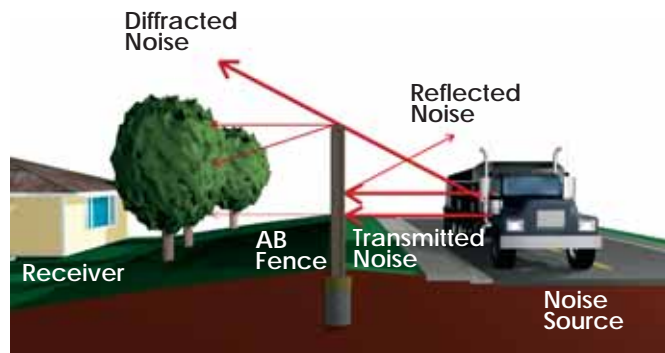
AB Fence provides the superior noise abatement, aesthetic style, durability and low maintenance of concrete masonry without the prohibitive costs associated with mortared masonry construction.

Sound barriers are solid obstructions built between the noise source and the receiver. An effective barrier will disperse sound along three paths; diffracted, reflected and transmitted. Sound **diffracted (bent)** over the top of the wall produces a "shadow zone" behind the barrier, which is a function of wall height and the distances between the source, the barrier, and the receiver. **Reflected noise** is directed away from the receiver. **Noise transmitted** through the wall is a characteristic of the barrier material,



determined by weight and stiffness and can be compared on the basis of transmission loss. The table shows that transmission loss of dense materials is most effective at stopping noise.

Material	Thickness Inches (mm)	Surface Area Weight lbs/ft ² (kg/m ²)	Transmission Loss, dB
Wood			
Pine	0.5 (12.7)	1.5 (7.3)	16
	2.0 (50.8)	6.2 (30.3)	23
Redwood	0.5 (12.7)	1.1 (5.4)	16
	2.0 (50.8)	4.3 (21.0)	23
Cedar	0.5 (12.7)	1.1 (5.4)	15
	2.0 (50.8)	4.3 (21.0)	22
Metal			
Aluminum	0.06 (1.5)	0.9 (4.4)	23
	0.25 (6.4)	3.6 (17.6)	27
Steel	0.03 (0.8)	1.3 (6.4)	15
	0.06 (1.5)	2.6 (12.7)	22
Concrete			
Light Weight	4.0 (101.6)	40 (195.3)	36
	6.0 (152.4)	60 (293.0)	39
Sand-Gravel	4.0 (101.6)	48 (234.4)	40
Masonry			
Concrete Block	3.6 (91.4)	22 (107.4)	32
	5.6 (142.2)	33 (161.1)	36
Clay Brick	3.6 (91.4)	36 (175.8)	40
	5.6 (142.2)	56 (273.4)	47
AB Fence™			
Concrete Block	5.6 (142.2)	36 (175.8)	32



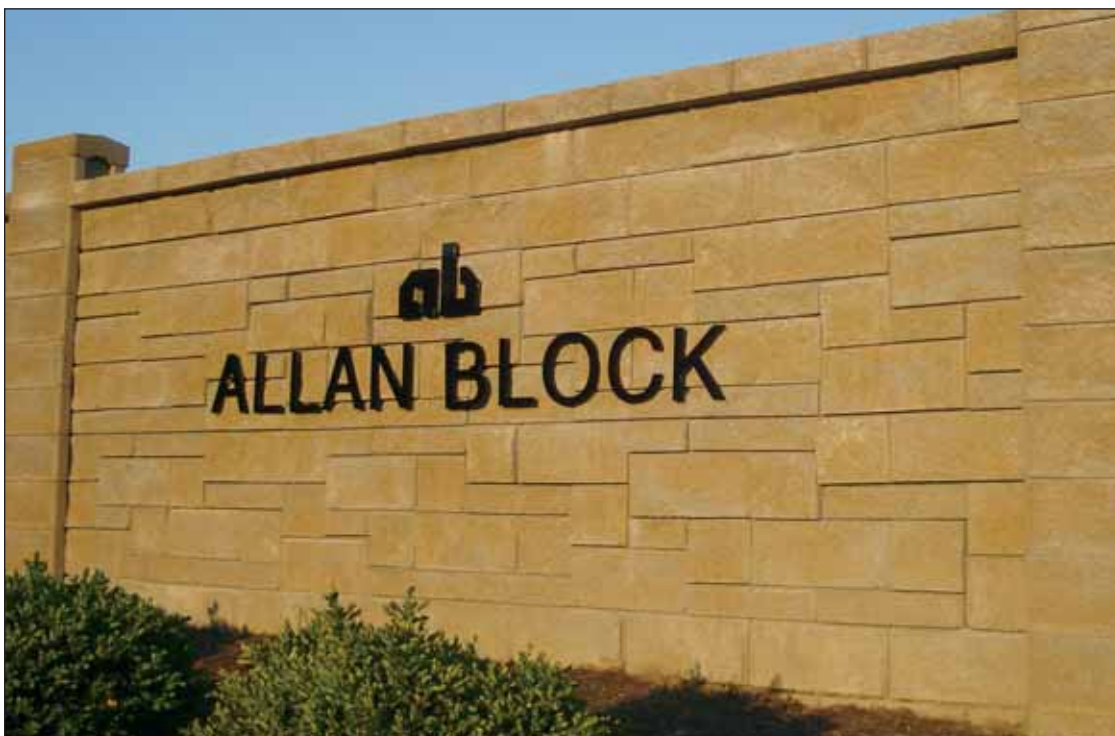
Screening and Containment

Communities are becoming more conscious of the relationship and proximity between commercial centers and surrounding neighborhoods. The AB Fence offers a cost effective and attractive means to separate residential areas from the noise and bustle of industrial and commercial areas. It can also be used to meet the screening and containment requirements in commercial development.



Beautification

The durability and aesthetics of the AB Fence make it an ideal solution for enhancing curb appeal. Use it alone or combine it with other fencing products to add elegance, beauty and increase privacy to perimeters and entrances. It allows you to create patterns with block sizes, textures or colors, develop flowing curves, and adjust for the grade changes of your site. The framed look created by the beveled edges of the AB Fence block, give the product a distinctive clean look.



Design Options

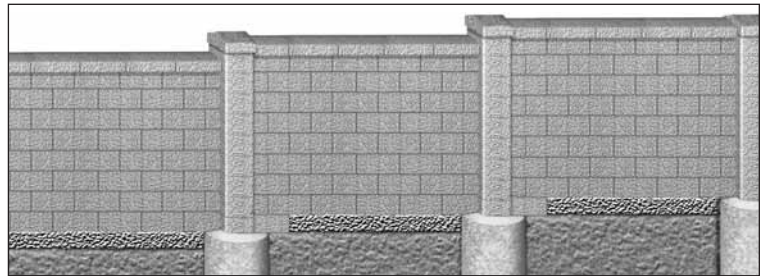


Design Options

The flexibility of the AB Fence post and panel system provides the design versatility to conform to all of your project requirements and is fully engineered to accommodate various wind exposures and seismic conditions for any fence height.

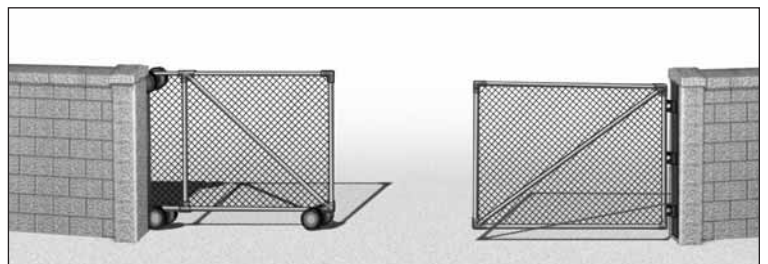
Step Downs

The floating panels of the AB Fence do not require continuous footings, making steps and elevation transitions easy, while dramatically reducing construction costs.



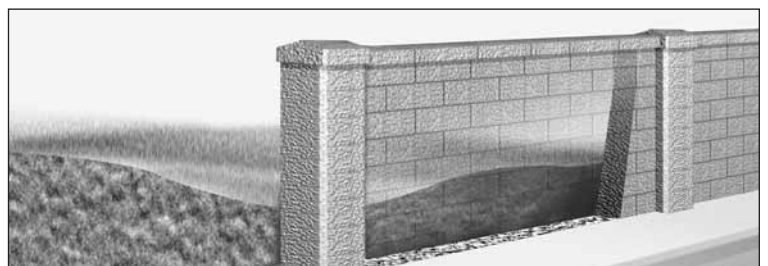
Gates

The concrete-filled post blocks provide a secure backing for nearly any gate type and configuration for commercial or residential applications.



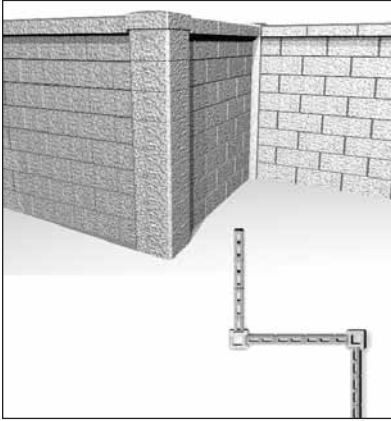
Retaining Walls

The AB Fence system can be designed to accommodate grade differences on either side of the fence. Retaining wall and fence projects can be completed with one system.



Corners

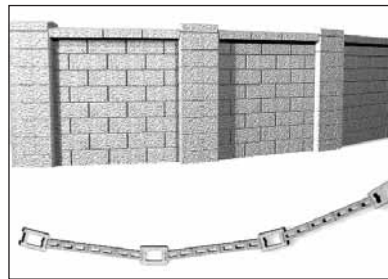
The AB Fence Corner Block makes construction of 90° corners easy. No special tools or cutting of blocks are required.



Curves

The post and panel connection offers the flexibility to create fluid curves and radiuses unmatched by other fencing systems.

Other dramatic transitions can be achieved by mitering the post blocks to the needed angle.



AB Fence 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)
Standard <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
Modified <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.



Design Options

Installation

Building with the Allan Block Fence

For the full installation details, see the Installation Guide for AB Fence. It will guide you through, from start to finish, a complete and detailed installation process so the project is completed efficiently and easily.



There are 3 main steps that need to be considered:

Layout

This step goes through staking out the pile location and excavating to the proper measurements. By following the instructions and staying within the tolerances allowed, the piles can be completed in a timely fashion.

Pile Construction

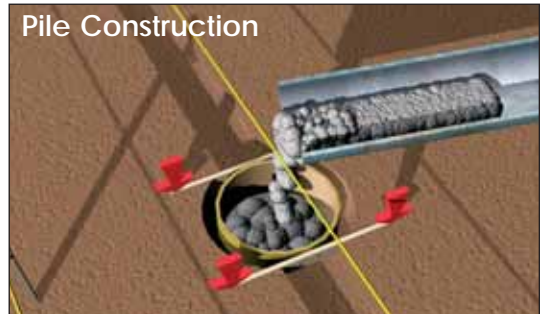
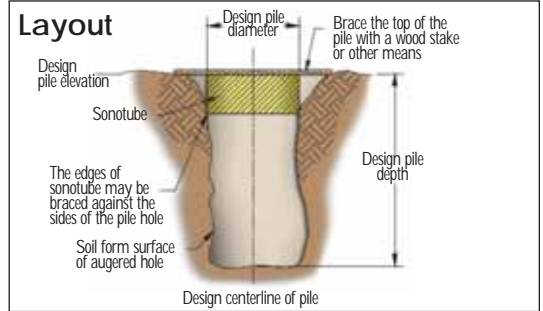
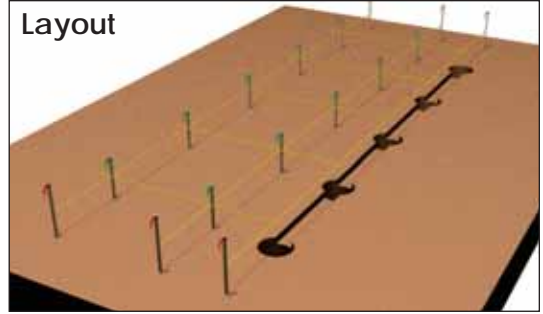
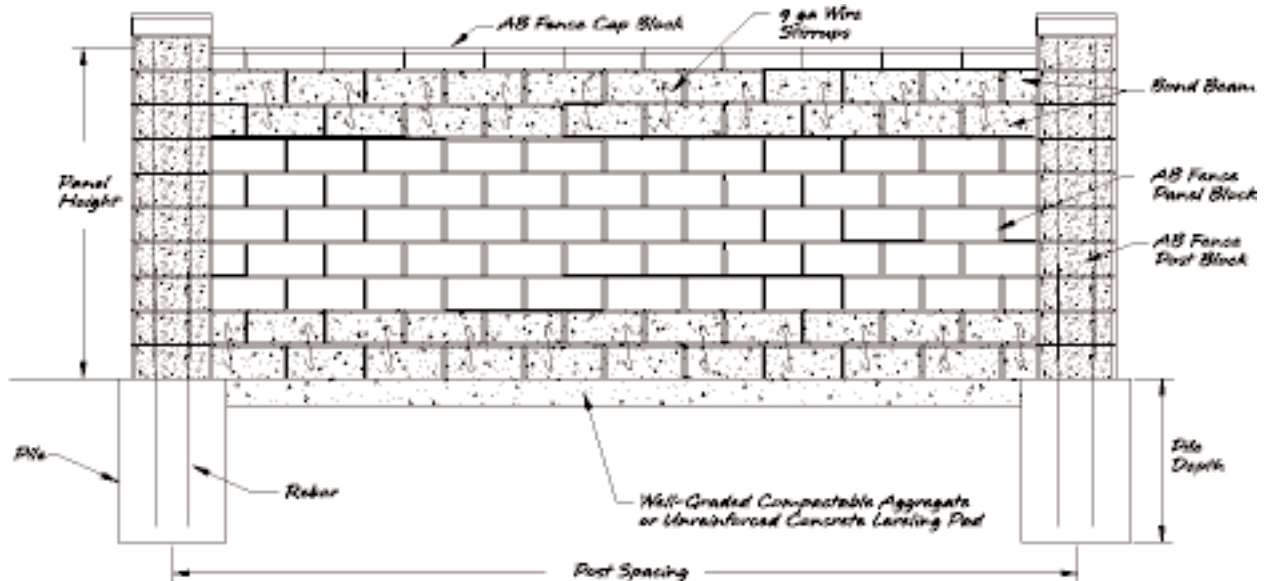
After excavating the piles, the next step is to create solid footings for the fence post to sit on. By filling with concrete that meets or exceeds the minimum strength requirements and reinforcing with rebar the first step to building the column structure is completed.

Post and Panel Construction

Once the piles are completed, the final step is stacking up the blocks for the posts and panels. With proper construction procedures, keeping the blocks level and adding in bond beams where required and filling the post blocks, the project should be completed in no time.

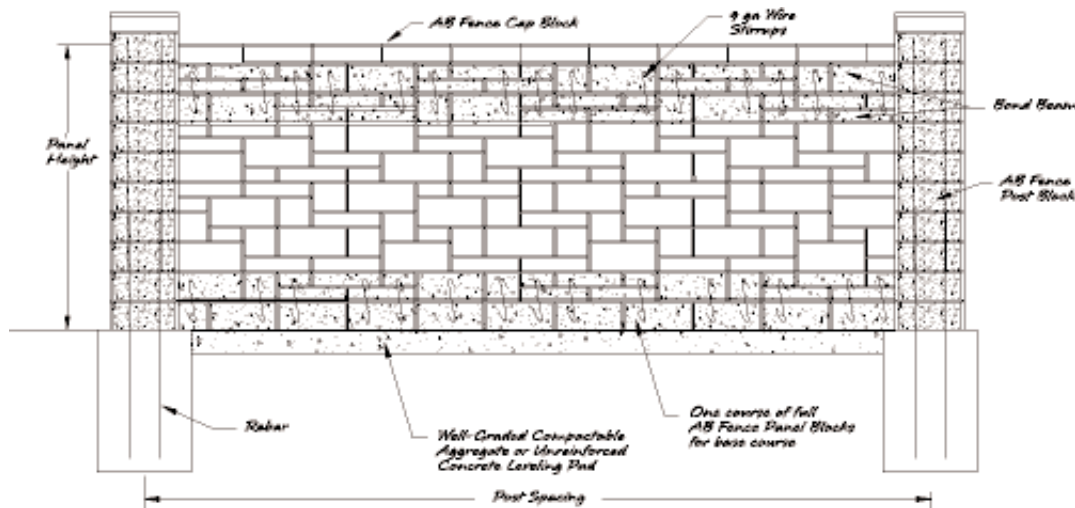
The AB Fence panels can be completed with the standard one block look, or combine the full size panel block with the smaller shapes to create an ashlar pattern within the panel.

Typical AB Fence Section



AB Ashlar Blend Pattern Fence - Patterned Bond Beam Construction

For information on standard bond beam construction, see the Installation Guide for Allan Block Fence.

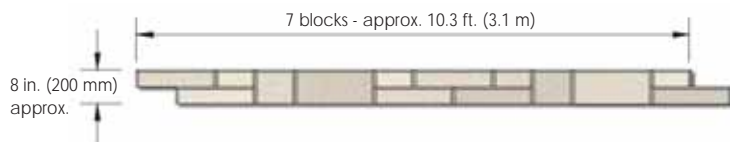


Patterned walls resemble hand-laid stone walls and add a whole new look to the AB Fence System. Plan on taking a little extra time to build a patterned fence.

Wall Patterns

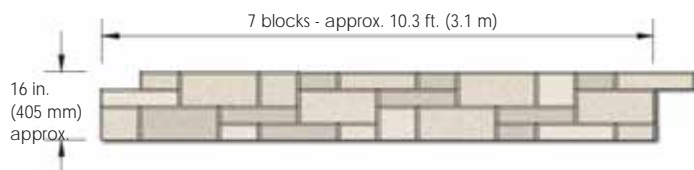
To assist in block estimating and to ease the construction process there are pre-set patterns available. Remember, a single course consists of a full size block, approx. 8 in. tall (200 mm). Combine the different pre-set patterns to build any height fence required. These pre-set patterns can be flipped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

Standard Single Course Pattern



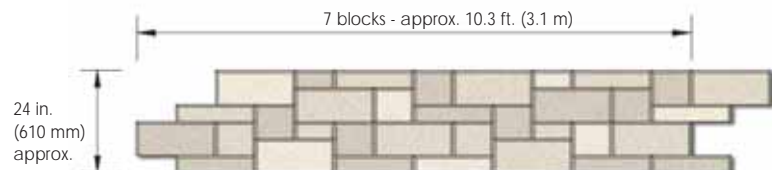
- AB Fence Blocks needed:**
- 2 Panel Blocks
 - 2 Half Panel Blocks
 - 6 Lite Panel Blocks
 - 4 Half Lite Panel Blocks*

Standard Two Course Pattern



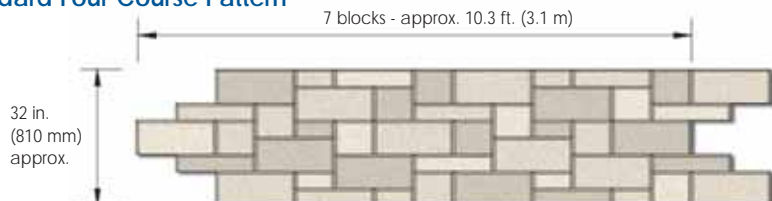
- AB Fence Blocks needed:**
- 6 Panel Blocks
 - 4 Half Panel Blocks
 - 8 Lite Panel Blocks
 - 8 Half Lite Panel Blocks*

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



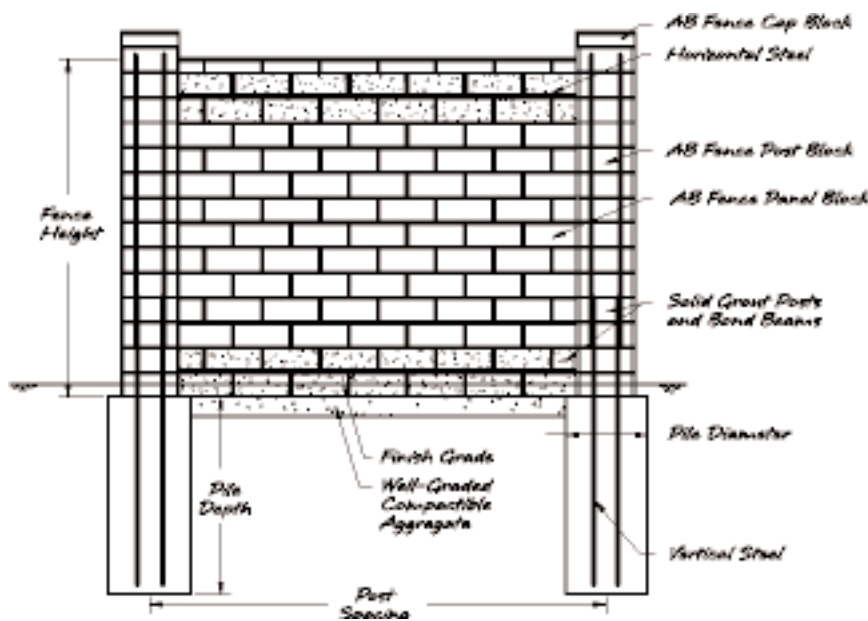
- AB Fence Blocks needed:**
- 15 Panel Blocks
 - 12 Half Panel Blocks
 - 10 Lite Panel Blocks
 - 8 Half Lite Panel Blocks*

* Check with your local manufacturer on availability. Use an AB Fence Lite Panel Block cut in half to create an AB Fence Half Lite Panel Block.

Construction Details

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

Reinforcing Steel and Grout Locations

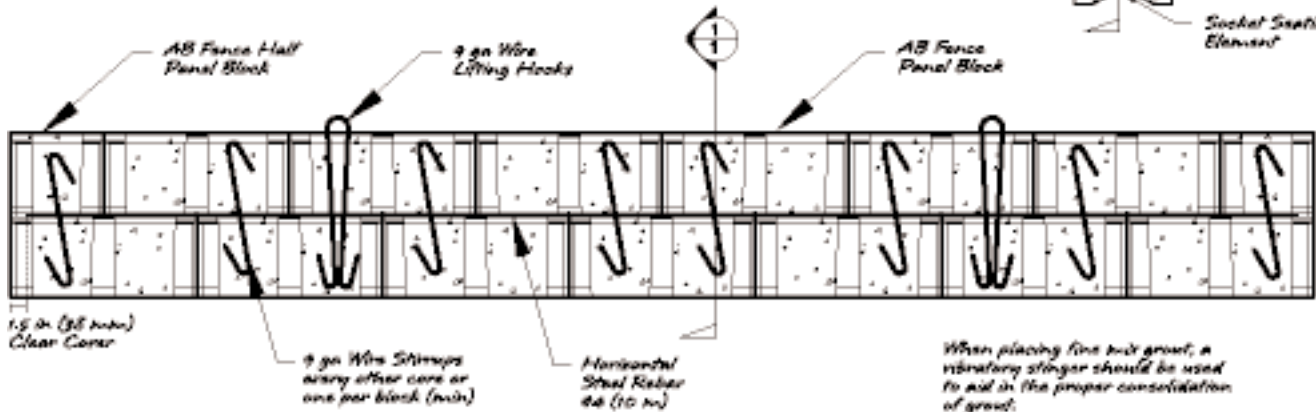
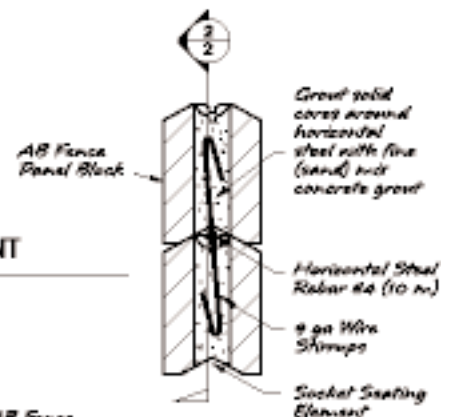


- Check for level after every course.
- Concrete grout may be placed in posts in 4 ft. (1.2 m) maximum lifts or 6 courses.
- If cold joint is required, place joint at center of block coursing.
- Bond beam courses placed per approved construction design.
- Only a fine mix concrete grout may be used in bond beams.

Precast Bond Beam

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

1 HORIZONTAL STEEL PLACEMENT
SCALE: Not To Scale

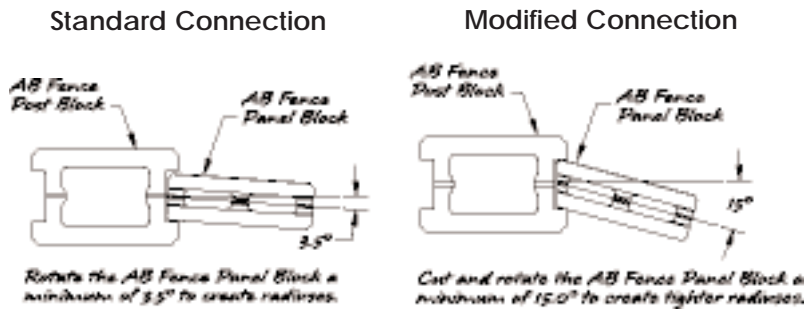


2 LONGITUDINAL CROSS SECTION
SCALE: Not To Scale

* Lifting hooks required only when precasting bond beam

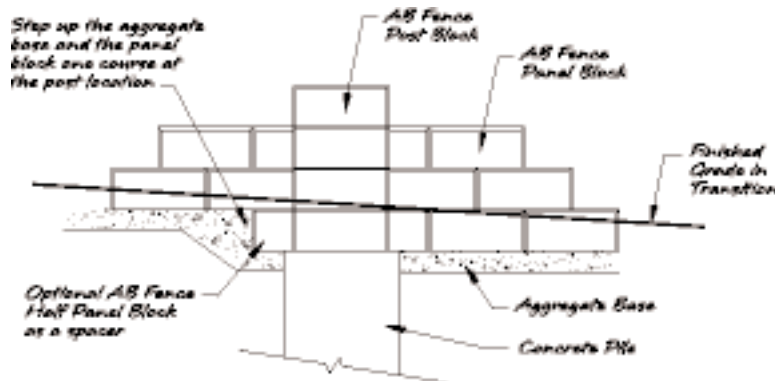
Curves

- Adjustable radius
- Smooth and flowing look



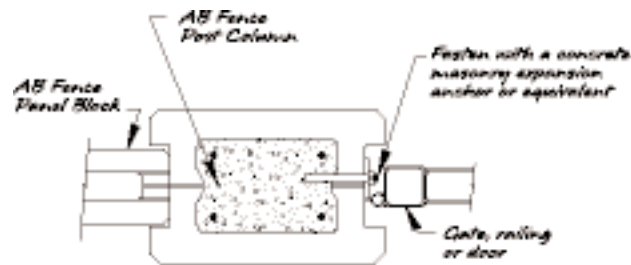
Step-Ups and Step Downs

- Follow grade transitions
- Step at post locations
- Step in block height increments



Gates, Railings or Doors

- Works with most systems
- Sturdy, AB Fence Post can support most applications weight



Finishing Options



Note: Castellated finish - recommended.



Engineering Methodology

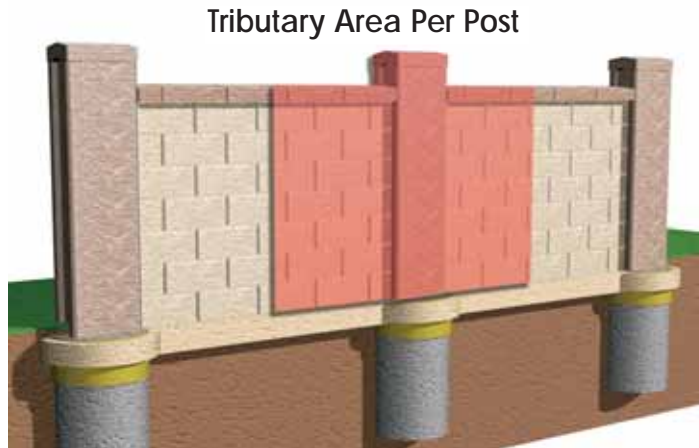
AB Fence is a unique system which combines the flexibility of a mortarless product with the strength and durability of concrete. Allan Block has developed the technology for the use of the AB Fence as a mortarless product. This section provides an explanation of the engineering principals, terminology and methodology used in the design of the AB Fence.

Terminology

Ab	=	Area of steel for one reinforcing bar in the Post
A _{bb}	=	Area of steel reinforcing bar in the Bond Beam
As	=	Total Area of steel in the Post
Aw	=	The thickness of the post wing
awpanel	=	Area of panel section only
b	=	Diameter of footing
b _{bb}	=	Bond Beam section length used for bond beam capacity calculations = 2 x H
bs	=	Post section length used for post capacity calculations = PI - (2 x Pnd)
Ce	=	Wind force coefficient based on exposure and height
d	=	Depth of footing
d _{bb}	=	Distance to Tension steel in the bond beam
ds	=	Distance to Tension steel in the post
fb	=	Allowable Compressive strength of masonry
fm	=	Compressive strength of concrete
fs	=	Allowable Tensile Stress of reinforcing steel = 0.4 x fy
fy	=	Yield Stress of reinforcing steel
H	=	Total Panel Height from footing to top of cap
j	=	j and k are coefficients used for internal moment and definitions of the neutral axis of the Post
j _{bb}	=	j _{bb} and k _{bb} are coefficients used for internal moment and definitions of the neutral axis of the Bond Beam
k	=	j and k are coefficients used for internal moment and definitions of the neutral axis of the Post
k _{bb}	=	j _{bb} and k _{bb} are coefficients used for internal moment and definitions of the neutral axis of the Bond Beam
M _{postd}	=	Applied Moment to Post = P x Ta x H / 2
M _{paneld}	=	Applied Moment to Bond Beam = P x Ta x PS / (8 x N _{bb})
M _{cbb}	=	Allowable Moment Capacity of Bond Beam based on the masonry compressive strength
M _{cp}	=	Allowable Moment Capacity of Post based on the masonry compressive strength
M _{tbb}	=	Allowable Moment Capacity of Bond Beam based on the Tensile Stress of the reinforcement
M _{tp}	=	Allowable Moment Capacity of Post based on the Tensile Stress of the reinforcement
n	=	Modular Ratio and is calculated using the Modulus of Elasticity of the composite materials
N _{bb}	=	Number of Bond Beams in a Panel
P	=	Design Wind Pressure = qs x Ce
Pd	=	Post Block Depth
Pnd	=	Post Block Notch Depth
Ps	=	Post Spacing from Center to Center of posts
qs	=	Unfactored wind pressure
S _{factored}	=	Allowable lateral soil-bearing pressure based on a depth of 1/3 the depth of embedment
S _{ssa}	=	Allowable shear stress for reinforced structures
S _{req}	=	Calculated shear stress at the base of the post
S _{wing}	=	Allowable shear stress on the post wing
S _{wreq}	=	Total shear stress on the post wing
Ta	=	Ps x H = Tributary Area of panel from center to center of posts

Wind Speeds

Wind is one of the significant forces of nature and must be considered in the design of the AB Fence System. For years meteorologist have accurately measured and recorded wind speeds. By analyzing this data the average wind speed for a given return period can be obtained for a region. The **return period** refers to the most probable average wind speed that will be equaled or exceeded once during a period of time compared to the life of the fence. The shorter the period of time the less the wind speeds. For example, a 10-year average velocity will be much less than a 50-year average velocity. Allan Block has set the return period for the AB Fence Design methodology to 50 years.



Wind Pressures

Since wind is air in motion the resulting wind pressures are related to its kinetic energy and can be determined by the following standard expression:

$$q = \frac{1}{2} \rho V^2 \quad \text{where, } q \text{ is pressure in lb/ft}^2 \text{ or N/m}^2 \text{ (pascal)}$$

ρ is an average air density - 0.0809 lb/ft³ or 1.29 kg/m³
and V is the average wind speed in ft/sec or m/sec

This is called the **stagnation pressure** (q) because it refers to the maximum positive increase over ambient pressure that can be exerted on the fence by any given wind speed. Stagnation pressure is the basic, nonfactored pressure to which all other pressures are referred to and are usually referenced in regional building codes.

Wind pressures exerted on the AB Fence depend not only on the speed of the wind, but on the interaction of exposure effects as well. Structures such as buildings, landscape features, street corridors and open areas such as fields, parks, parking lots and bodies of water all significantly affect the wind patterns and need to be considered. An **exposure category** that adequately reflects the characteristics of ground surface irregularities is determined for the site. Open terrain allows for the maximum exposure, while structures found in developed or urban areas have minimum exposure. Described below are the three exposure categories used in the designs of the AB Fence:

- Exposure B: Surface roughness consisting of urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of a single family dwelling or larger.
- Exposure C: Surface roughness consisting of open terrain with scattered obstructions having heights generally less than 30 ft. (9.1 m) extending ½-mile (805 m) or more from the site. This category includes flat open country, grasslands, and bodies of water under 1-mile (1,609 m) in width.
- Exposure D: Describes the most severe exposure with surface roughness consisting of flat, unobstructed areas and bodies of water over 1-mile (1,609 m) in width. Exposure D extends inland from the shoreline ¼-mile (402 m).



Engineering Methodology

Additionally, calculations have also included site topography and structural importance when factoring wind pressures on a structure. The table shown here provides the AB pressure coefficients. The coefficients are listed by the exposure category, but are based on general site topography, structure height and structural importance as well.

For the AB Fence designs, the wind pressure is based on the 50-year average wind speed and should be multiplied by the appropriate pressure coefficient. This factored pressure is then used in the design calculations, which is based on simple beam theory and basic engineering principles.

AB Pressure Coefficients (Ce)		
Exposure	H < 12 ft. (3.7m) Pressure Coefficient	H > 12 ft. (3.7m) Pressure Coefficient
B	0.68	0.85
C	0.9	1.2
D	1.2	1.5

Example

This example shows typical design calculations for the AB Fence. For definitions of variables, see Terminology on page 13.

Analyze an AB Fence with the following characteristics:

Fence Height: $H = 6 \text{ ft. (1.83m)} = 9 \text{ courses}$

Wind Speed: $V = 80 \text{ mph (35.8 m/s)}$

Soil Type: Clay $SD = 100 \text{ psf (4.8 kN/m}^2\text{)}$

Exposure Type: B

Pressure Coefficient (Ce): 0.68

Based on this information, we can perform the calculations for pile dimensions as follows:

Post Spacing: $Ps = 18.2 \text{ ft. (5.55 m)} = 11.5 \text{ panel block}$

Assume values for pile dimensions:

Where: $SD =$ Lateral bearing capacity of soil

$SD = 100 \text{ psf (4.8 kN/m}^2\text{)}$

Bond Beams: $N_{bb} = 2 - \#4 \text{ bars}$

Assumed Pile depth: $d = 4 \text{ ft. (1.2 m)}$

$S_{\text{factored}} = 2/3(SD) = 66.7 \text{ psf (3.2 kN/m}^2\text{)}$

Assumed Pile diameter: $b = 2 \text{ ft. (0.61 m)}$

Bars in post: 4 - #5 bars

Calculate the velocity pressure:

$qs = 1/2 \rho (v^2) = 0.00256(V^2) = 16.4 \text{ psf (785.2 N/m}^2\text{)}$

Calculate the tributary area:

$Ta = Ps(H) = 110.5 \text{ sq. ft. (10.3 m}^2\text{)}$

Total load applied from wind factor: $P = (qs)(Ce) = 11.15 \text{ psf (534 N/m}^2\text{)}$

Start by assuming a pile diameter and depth. Use the following equations to find actual pile size:

Where: $H_p =$ The distance from the ground surface to the point of load application.

$$\text{Pile Depth} = \left(\frac{A_p}{2} \right) \left[1 + \sqrt{1 + \frac{(4.36)(H_p/2)}{A_p}} \right] \quad \text{where: } A_p = \frac{(2.3)(P)(Ta)}{(S_{\text{factored}})(d)(b)} = 5.4 \text{ ft. (1.65 m)}$$

Continue the above calculation, changing your values for b and d, until the calculated pile depth is greater than the assumed pile depth. After iterative calculations a pile depth of 4.5 ft. (1.37m) and a pile width of 2.0 ft. (0.61m) will be sufficient for this application. Allan Block recommends a 2.0 ft. (0.61 m) minimum pile diameter be used.

Design Moments:

$$\text{Post: } M_{\text{postd}} = \frac{(P)(T_a)(H)}{2} = 3,742 \text{ lb-ft. (5,073.5 N-m)}$$

$$\text{Panel: } M_{\text{paneld}} = \frac{(P)(P_s^2)(H)}{8(N_{bb})} = 1,400 \text{ lb-ft. (1,898.1 N-m)}$$

Compressive Stress Moments Capacity:

$$\text{Post: } M_{\text{cp}} = \frac{(f_b)(b_s)(d_s^2)(j)(k)}{2} = 15,752 \text{ lb-ft. (21,365.8 N-m)}$$

$$\text{Panel: } M_{\text{cbb}} = \frac{(f_b)(b_{bb})(d_{bb}^2)(j_{bb})(k_{bb})}{2} = 1,974 \text{ lb-ft. (2,676.4 N-m)}$$

Tensile Stress Moments Capacity:

$$\text{Post: } M_{\text{tp}} = f_s \left(\frac{A_s}{2} \right) (j)(d_s) = 12,888 \text{ lb-ft. (17,473.8 N-m)}$$

$$\text{Panel: } M_{\text{tbb}} = (f_s)(A_{bb})(j_{bb})(d_{bb}) = 1,497 \text{ lb-ft. (2,027.7 N-m)}$$

Shear Stress:

Allowable shear stress in masonry is equal to the square root of the uniaxial compressive strength of the masonry $S_{SSa} = 7,929 \text{ psf (379 kN/m}^2\text{)}$.

The calculated shear stress at the base of the post and post wing:

Post:

$$S_{\text{req}} = \frac{P(T_a)}{b_s(d_s)} = 1,504 \text{ psf (72.0 kN/m}^2\text{)}$$

Post Wing:

$$S_{\text{wing}} = \frac{2,779 \text{ lb}}{3(h)} = 1,457 \text{ lb/ft (21.27 kN/m)}$$

Where: h = block height

2,779 lb/block was determined by independent testing.

The calculated shear is as follows:

Panel Area:

$$a_{\text{wpanel}} = H (P_s - 1.469 \text{ ft.})$$

$$S_{\text{wreg}} = \frac{0.5(a_{\text{wpanel}})(P)}{H} = 93 \text{ lb/ft (1,352 N/m)}$$

Make sure that all design values exceed the design criteria, by verifying the following:

$$M_{\text{postd}} < M_{\text{cp}}$$

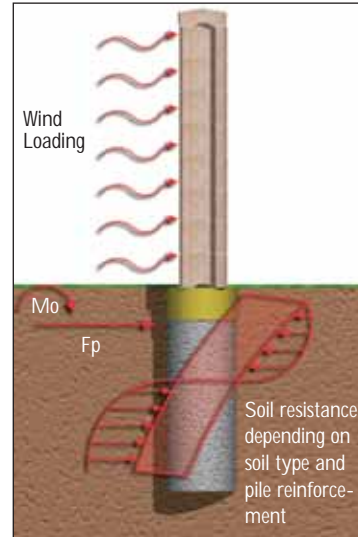
$$M_{\text{paneld}} < M_{\text{tbb}}$$

$$M_{\text{paneld}} < M_{\text{cbb}}$$

$$S_{\text{wreg}} < S_{\text{wing}}$$

$$M_{\text{postd}} < M_{\text{tp}}$$

$$S_{\text{req}} < S_{\text{SSa}}$$



Note: For complete engineering details please contact the Allan Block Engineering Department at 800-899-5309 or visit allanblock.com.

Specifications and Testing

SECTION 1

PART 1: GENERAL

1.1 Scope

Work includes furnishing and installing modular concrete block fencing system to the heights and lengths specified on the construction drawings and to the specifications listed herein.

1.2 Reference Standards

ASTM C1372 Standard Specifications for Segmental Retaining Wall Units.

1.3 Delivery Storage, and Handling

- A. Installer shall check the materials upon delivery to assure proper material has been received.
- B. Installer shall prevent excessive mud, concrete, and like materials from coming in contact with the materials.
- C. Materials shall be protected from damage once on site. Damaged materials including cracked and chipped block beyond allowances provided for in ASTM C1372 must not be used in the fence.

PART 2: MATERIALS

2.1 AB Fence Systems Units

- A. System units shall be AB Fence System units as produced by a licensed manufacturer.
- B. System units shall have a minimum 28 day compressive strength of 3000 psi (20.7 MPa) in accordance with ASTM C1372. The concrete units shall have adequate freeze-thaw protection with an average absorption rate of 7.5 lb/ft³ (120 kg/m³) for northern climates and 10 lb/ft³ (160 kg/m³) for southern climates.
- C. Exterior dimensions shall be uniform and consistent. Maximum dimensional deviations shall be 1/8 in. (3 mm), not including textured face.
- D. Exterior shall be textured or striated or a combination of both. Color as specified by the project owner.

2.2 Pile and Post Concrete

- A. Concrete used to construct the piles and fill the post block must have a minimum compressive strength of 3000 psi (20.7 MPa).

2.3 Concrete Grout

- A. Concrete grout used as unit core fill for bond beam panel blocks shall conform to ASTM C476 and have a minimum compressive strength of 3000 psi (20.7 MPa) with Fine Aggregate Grading Requirements defined by ASTM C404.

2.4 Steel Reinforcement

- A. All reinforcing bars shall be deformed billet steel conforming to ASTM A615 grade 60. Bars shall be branded by the manufacturer with bar size and grade of steel, and certified mill reports shall be submitted for record.

2.5 Construction Adhesive

- A. Exterior grade construction adhesive used to adhere the cap block to both the posts and panels shall be PL Premium as manufactured by OSI Sealants, Inc. (or equivalent).

2.6 Shimming Material

- A. Material used for permanent shimming must be non-degradable.

PART 3: SYSTEM CONSTRUCTION

3.1 Layout

- A. Excavate a 6 in. (150 mm) deep by 12 in. (300 mm) wide trench along the centerline of the AB Fence the entire length of the fence.
- B. To ensure accurate post spacing, installer shall follow all guidelines set forth in the AB Fence Installation Guide.
- C. The center of each pile hole must be located and drilled to a maximum horizontal tolerance of ±1 in. (25 mm). The depth and diameter must be at least that specified in design.
- D. The top of the pile holes shall be set to a maximum of 1 in. (25 mm) below the design elevation of the pile. A 12 in. (300 mm) tall piece of cylindrical tubing material having a diameter of 24 in. (600 mm) is recommended to form up the top of the hole for setting the pile cap elevation.

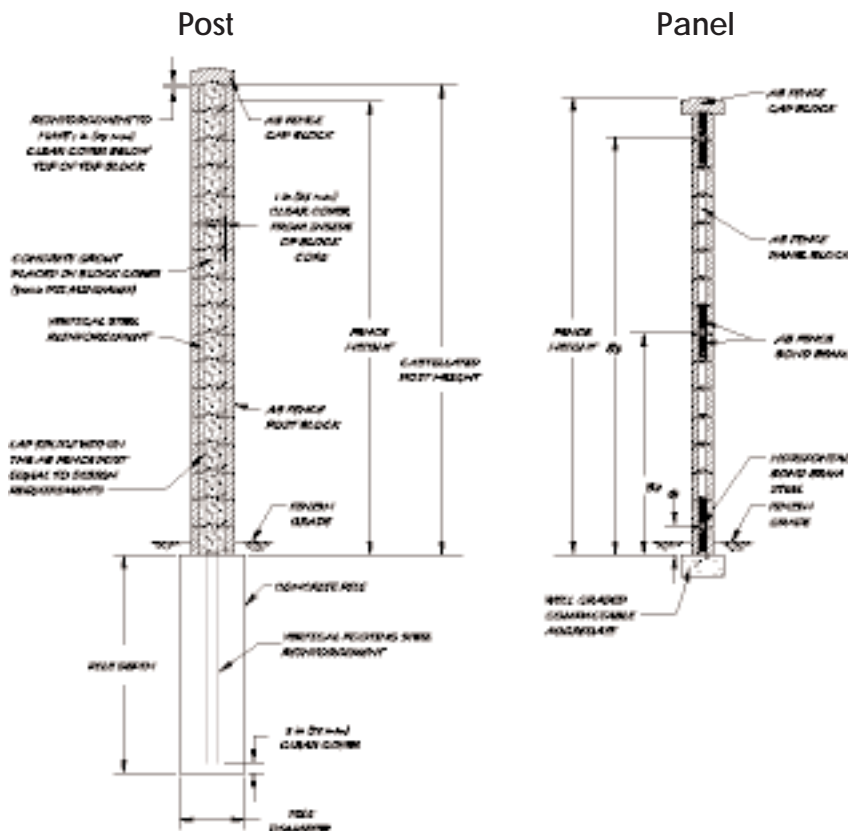
3.2 Pile Construction

- A. Pour concrete into the pile hole meeting the strength requirements for the pile concrete and finish to a 1 in. (25 mm) maximum elevation difference.
- B. Place vertical steel reinforcement into the wet pile concrete within 0.5 in. (13 mm) of the design horizontal location for the steel. The steel bars must extend into the pile to the depth specified in the design with a minimum clear cover at the bottom of the pile of 3 in. (75 mm). The steel bars must also extend out the top of the pile a minimum distance to achieve a lap splice equal to the design requirements.
- C. Allow the concrete to harden 4 hrs at or above 40° F (4.4° C) or until hard enough to resist more than a surface scratch when scraped with steel rebar before placing post block.

3.3 Post and Panel Construction

- A. Fill trench between each post to the design elevation of the bottom of the fence with a well graded compactible aggregate to 95% Standard Proctor.
- B. If necessary, set the first post block on a mortar bed with ASTM Type N mortar and a maximum thickness of 1 in. (25 mm) to accommodate for elevation differences. Post block must be placed level and plumb in all directions. Allow adequate curing time for the mortar before placing additional post block courses. Mortar strength must meet or exceed that of the design requirements of the post and pile.
- C. The panels must extend a minimum of 1 in. (25 mm) into the post block columns.
- D. Horizontal steel reinforcement must be installed in the specified bond beam locations. The horizontal steel must have a 1.5 in. (38 mm) clear cover at each end.
- E. The blocks should be installed level in all directions and in a straight line from post to post. Total deviation of 0.125 in. (3 mm) is allowable.
- F. The panel block must be stacked in a running bond or preset blended pattern.
- G. One panel block course above and below the horizontal steel in the bond beam locations must be filled with fine mix concrete grout meeting the strength requirements, and consolidation with a concrete vibrator. All panel block associated with a bond beam must cast in a single pour.
- H. Place 9 ga wire (min.) in every other block core while casting the bond beams. Starting in the first cores at each end and working towards the center.
- I. Minimum curing time for concrete grout is 4 hrs for the bottom bond beam and 2 hrs for all other locations.
- J. Maximum stacking lifts and filling for the post blocks is 4 ft. (1.2 m) or 6 courses. Vertical steel reinforcement shall maintain a 1 in. (25 mm) clear cover from all inside surfaces of the post block. Minimum lap splice requirements are 40 times the bar diameter or per design requirements.
- K. Completed post must be installed level and plumb in all directions and within a $\pm 1/2^\circ$ tolerance.
- L. 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.

Typical AB Fence Sections



Testing

Research and Testing of the AB Fence™ System

Use of a mortarless concrete blocks for retaining walls is an acceptable construction practice since the late 1980s; however, this acceptance is credited to research and testing. Now that mortarless construction is used in the AB Fence additional research is required to verify the systems capabilities. The AB Fence design methodology is a combination of timeless engineering principles and the following research topics:

- Self-weight resistance
- Bond beam capacity
- Full-scale panel testing
- Intermediate column testing

Self-Weight Resistance

The AB Fence System has many advantages since it is a concrete system. It provides superior durability and low maintenance, but also provides weight similar to a gravity retaining wall. The weight of the system when combined with its eccentricity creates a moment that needs to be overcome before any applied force can actually engage the flexural steel.

Resisting moments are calculated based on the weight of the system and have been verified through research and testing. The designing engineer can utilize the self-weight resistance to reduce the applied moments at the base of the post.

Bond Beam Capacity

The AB Fence uses the bond beams and dry-stacked units to transfer the wind load to the posts. The capacities of these bond beams are critical in the design calculations; therefore, bond beams were tested to compare the actual capacities to the ultimate moments based on the concrete and steel properties. Bond beams were laterally loaded and as the loads were applied the deflections were recorded. Then by using beam bending formulas the actual induced moments were calculated. These moments compared to the ultimate moments verified that the bond beam was acting as a composite structure and not as individual stacked parts.

Full-Scale Panel Testing

Panel testing was conducted to examine how the bond beams and the dry-stacked units work together to resist the applied wind pressure and distribute these forces to the posts. The AB Fence Panel block has a unique ball and socket configuration that creates a semi-rigid panel structure when interlocked together. In the panel test a force was applied using an articulating frame to provide a uniform pressure on one side of the panel. The other side was outfitted with load cells to record how much pressure was being transferred to the posts. Post testing was conducted to confirm the capacity of the composite post. In the post test a variable load was applied to determine a moment capacity and deflections were recorded to measure the plasticity of the post. The results of the tests focused on the following:

- The bond beams and the dry-stacked units work together to provide both flexural strength and flexibility.
- The dissipation of force within the dry-stacked units since all the force was not transferred to the posts.
- The additional strength the ball and socket interlock provides to the system.
- The composite post structure flexed and rebounded with repeatability and functioned as a monolithic concrete column.



Top bond beam deflection.

Intermediate Column Testing

An aesthetic issue of large deflections in the center of the panel was noticed during the Full-Scale Panel Testing of the longer panel lengths. As the loads increased on the panel, the center of the panel started to bulge out. This bulge would not completely rebound even though the bond beams would rebound to their initial conditions once the loads were removed. A center intermediate column solved the panel bulging.

The intermediate column is simple to construct since it consists of adding a single vertical rebar running through the cores of the dry stacked panel block. These vertical cores are then filled with fine mixed concrete grout. It is not required to have the intermediate column extend into the bond beams located above or below. During testing, when the intermediate column was added the bulge was eliminated after the loads were removed and the panel rebounded. It was also recorded that the load transfer to the posts was not affected by adding the intermediate column. Since the large deflections were only noticed on the longer panel spacing, it is Allan Blocks recommendation that the intermediate columns are only used on panels over 15 feet long (4.6 m).



Hydraulic ram and frame assembly for AB Fence Post flexural test.

Panel Frost Heave or Ground Swelling Testing

One advantage of the AB Fence System is the ability of the fence panel to handle movement and loads exerted from the underside. To test the system's capabilities, different structures were constructed to model a variety of field applications. The panel structures were constructed and then allowed to free span between the two pile caps once the bond beams had cured. Hydraulic jacks and steel plates were placed under the fence panel at three different locations, the two ends and at the center point. Individually, each jack was then used to exert loads from the underside and the wall deflections were measured using dial gauges at six different locations. The Frost Heave Testing illustrated that the two course bond beam with the vertical stirrups and single horizontal steel could handle extreme loads in localized areas under the panel assembly.



Assembled block wall with hydraulic jacks under the panel span for uplift test.

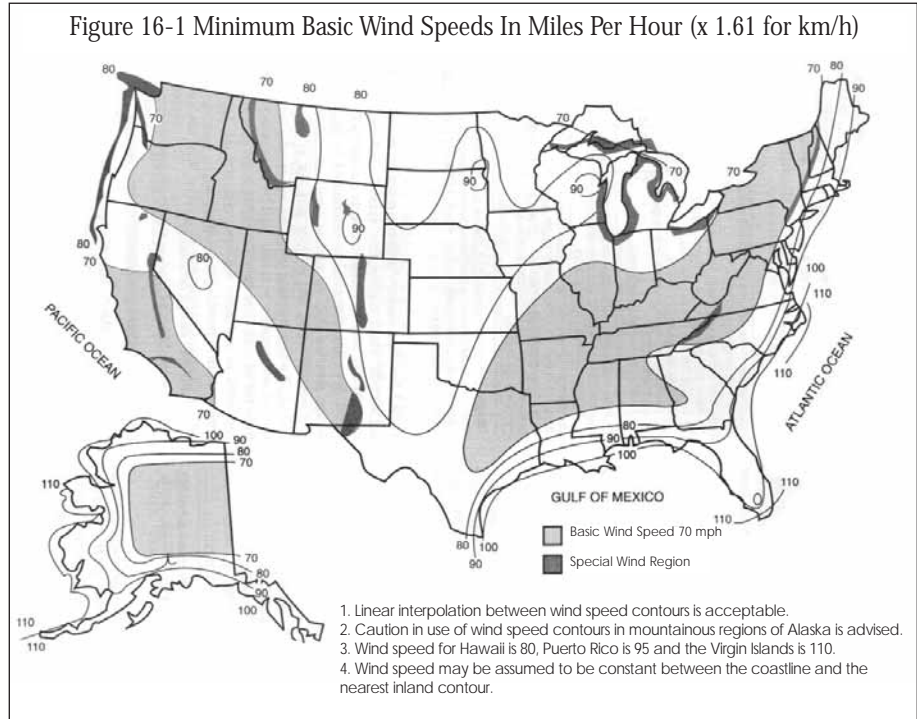
Testing



Design Tables

The following design tables provide specific structural estimates for different wind loads and soil types. These pre-engineered tables provide an accurate estimate for fence design in non hurricane prone areas. To use these tables follow these simple steps:

- 1) Verify site conditions for wind speed and soil conditions.
- 2) Identify the 50-year average wind speed where your project is located. The following figure is referenced from the Uniform Building Code. Appendix C of the National Building Code of Canada provides a 1/50 hourly wind pressure that can be used.



- 3) Select a type of exposure based on the following classification:
 - Exposure B: Surface roughness consisting of urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of a single family dwelling or larger.

- Exposure C: Surface roughness consisting of open terrain with scattered obstructions having heights generally less than 30 ft. (9.1 m) extending ½-mile (805 m) or more from the site. This category includes flat open country, grasslands, and bodies of water under 1-mile (1,609 m) in width.
- Exposure D: Describes the most severe exposure with surface roughness consisting of flat, unobstructed areas and bodies of water over 1-mile (1,609 m) in width. Exposure D extends inland from the shoreline ¼-mile (402 m).

4) Match values from steps 2 and 3 to the following table:

Wind Loads			
Exposures	70 MPH	80 MPH	90 MPH
B	B-70	B-80	B-90
C	C-70	C-80	C-90
D	D-70	D-80	D-90

5) Locate your particular load condition in the following design tables and find the pile depth, maximum post spacing, steel schedule and bond beam design.

DESIGN TABLES - Pile Depth based on a 2 ft (0.61 m) diameter.

Load Height (ft) (m)		Soil Types: Course to medium sands, clean sand and gravel				Soil Types: Uniform to well-graded sands, sandy silts				Soil Types: Uniform to well-graded silts, sandy and silty clays										
		Pile Depth* (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Beams (ft) (m)	Pile Depth* (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Beams (ft) (m)	Pile Depth* (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Beams (ft) (m)							
B-70	4	1.22	20.4	4#4	2#4	2#10M	4.0*	1.22	20.4	4#4	4#15M	2#4	2#10M	4.0*	1.22	20.4	4#4	4#15M	2#4	2#10M
	5	1.50	20.4	4#4	2#4	2#10M	4.0	1.22	20.4	4#4	4#15M	2#4	2#10M	4.0	1.22	20.4	4#4	4#15M	2#4	2#10M
	6	1.83	20.4	4#4	2#4	2#10M	4.0	1.22	20.4	4#4	4#15M	2#4	2#10M	4.0	1.22	20.4	4#4	4#15M	2#4	2#10M
	7	2.13	19.7	4#4	2#4	2#10M	4.0	1.22	19.7	4#4	4#15M	2#4	2#10M	4.0	1.22	19.7	4#4	4#15M	2#4	2#10M
	8	2.44	17.5	4#4	2#4	2#10M	4.0	1.22	17.5	4#4	4#15M	2#4	2#10M	4.5	1.37	17.5	4#4	4#15M	2#4	2#10M
	9	2.74	17.5	4#4	2#4	3#10M	4.5	1.37	17.5	4#4	4#15M	3#4	3#10M	5.0	1.52	17.5	4#4	4#15M	3#4	3#10M
	10	3.05	17.5	4#4	2#4	3#10M	5.0	1.52	17.5	4#4	4#15M	3#4	3#10M	5.5	1.68	17.5	4#4	4#15M	3#4	3#10M

C-70

4	1.22	4.0*	1.22	20.4	4#4	4#15M	2#4	2#10M	4.0*	1.22	20.4	4#4	4#15M	2#4	2#10M	4.0*	1.22	20.4	4#4	4#15M	2#4	2#10M
5	1.50	4.0	1.22	18.9	4#4	4#15M	2#4	2#10M	4.0	1.22	18.9	4#4	4#15M	2#4	2#10M	4.0	1.22	18.9	4#4	4#15M	2#4	2#10M
6	1.83	4.0	1.22	16.8	4#4	4#15M	2#4	2#10M	4.0	1.22	16.8	4#4	4#15M	2#4	2#10M	4.0	1.22	16.8	4#4	4#15M	2#4	2#10M
7	2.13	4.0	1.22	16.0	4#4	4#15M	2#4	2#10M	4.0	1.22	16.0	4#4	4#15M	2#4	2#10M	4.5	1.37	16.0	4#4	4#15M	2#4	2#10M
8	2.44	4.0	1.22	14.5	4#4	4#15M	2#4	2#10M	4.5	1.37	14.5	4#4	4#15M	2#4	2#10M	5.0	1.52	14.5	4#4	4#15M	2#4	2#10M
9	2.74	4.5	1.37	14.5	4#4	4#15M	3#4	3#10M	5.0	1.52	14.5	4#4	4#15M	3#4	3#10M	6.0	1.83	14.5	4#4	4#15M	3#4	3#10M
10	3.05	5.0	1.52	14.5	4#4	4#15M	3#4	3#10M	5.5	1.68	14.5	4#4	4#15M	3#4	3#10M	6.5	1.98	14.5	4#4	4#15M	3#4	3#10M

D-70

4	1.22	4.0*	1.22	18.2	4#4	4#15M	2#4	2#10M	4.0*	1.22	18.2	4#4	4#15M	2#4	2#10M	4.0*	1.22	18.2	4#4	4#15M	2#4	2#10M
5	1.50	4.0	1.22	16.8	4#4	4#15M	2#4	2#10M	4.0	1.22	16.8	4#4	4#15M	2#4	2#10M	4.0	1.22	16.8	4#4	4#15M	2#4	2#10M
6	1.83	4.0	1.22	15.2	4#4	4#15M	2#4	2#10M	4.0	1.22	15.2	4#4	4#15M	2#4	2#10M	4.5	1.37	15.2	4#4	4#15M	2#4	2#10M
7	2.13	4.0	1.22	14.5	4#4	4#15M	2#4	2#10M	4.5	1.37	14.5	4#4	4#15M	2#4	2#10M	5.0	1.52	14.5	4#4	4#15M	2#4	2#10M
8	2.44	4.5	1.37	13.1	4#4	4#15M	2#4	2#10M	5.0	1.52	13.1	4#4	4#15M	2#4	2#10M	5.5	1.68	13.1	4#4	4#15M	2#4	2#10M
9	2.74	5.0	1.52	13.1	4#4	4#15M	3#4	3#10M	5.5	1.68	13.1	4#4	4#15M	3#4	3#10M	6.5	1.98	13.1	4#4	4#15M	3#4	3#10M
10	3.05	5.5	1.68	13.1	4#4	4#15M	3#4	3#10M	6.0	1.83	13.1	4#4	4#15M	3#4	3#10M	7.0	2.13	13.1	4#4	4#15M	3#4	3#10M

The above chart is for estimating fence design only. Actual design should come from a qualified engineer. Refer to AB Fence Installation Guide for more detailed guidance on installation. Maximum post spacing is based on block lengths of 17.625 in. (447.68 mm) and 0.5 in (13 mm) tolerance. * Indicates that the minimum pile depth is per the local engineer's recommendations.

DESIGN TABLES - Pile Depth based on a 2 ft (0.61 m) diameter.

Load Height (ft) (m)		Soil Types: Course to medium sands, clean sand and gravel				Soil Types: Uniform to well-graded sands, sandy silts				Soil Types: Uniform to well-graded silts, sandy and silty clays					
		Pile Depth* (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Bond Beams (ft) (m)	Pile Depth* (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Bond Beams (ft) (m)	Pile Depth* (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Bond Beams (ft) (m)		
4	1.22	4.0*	20.4	6.22	4#4	4#15M	2#4	2#10M	4.0*	20.4	6.22	4#4	4#15M	2#4	2#10M
5	1.50	4.0	20.4	6.22	4#4	4#15M	2#4	2#10M	4.0	20.4	6.22	4#4	4#15M	2#4	2#10M
6	1.83	4.0	17.5	5.33	4#4	4#15M	2#4	2#10M	4.0	17.5	5.33	4#4	4#15M	2#4	2#10M
7	2.13	4.0	16.8	5.12	4#4	4#15M	2#4	2#10M	4.0	16.8	5.12	4#4	4#15M	2#4	2#10M
8	2.44	4.0	15.3	4.66	4#4	4#15M	2#4	2#10M	4.5	15.3	4.66	4#4	4#15M	2#4	2#10M
9	2.74	4.5	15.3	4.66	4#4	4#15M	3#4	3#10M	5.0	15.3	4.66	4#4	4#15M	3#4	3#10M
10	3.05	5.0	15.3	4.66	4#4	4#15M	3#4	3#10M	5.5	15.3	4.66	4#4	4#15M	3#4	3#10M

C-80

4	1.22	4.0	18.2	5.55	4#4	4#15M	2#4	2#10M	4.0	18.2	5.55	4#4	4#15M	2#4	2#10M
5	1.50	4.0	16.8	5.12	4#4	4#15M	2#4	2#10M	4.0	16.8	5.12	4#4	4#15M	2#4	2#10M
6	1.83	4.0	14.5	4.42	4#4	4#15M	2#4	2#10M	4.0	14.5	4.42	4#4	4#15M	2#4	2#10M
7	2.13	4.0	13.8	4.21	4#4	4#15M	2#4	2#10M	4.5	13.8	4.21	4#4	4#15M	2#4	2#10M
8	2.44	4.5	13.1	3.99	4#4	4#15M	2#4	2#10M	5.0	13.1	3.99	4#4	4#15M	2#4	2#10M
9	2.74	5.0	13.1	3.99	4#4	4#15M	3#4	3#10M	5.5	13.1	3.99	4#4	4#15M	3#4	3#10M
10	3.05	5.5	13.1	3.99	4#4	4#15M	3#4	3#10M	6.0	13.1	3.99	4#4	4#15M	3#4	3#10M

D-80

4	1.22	4.0	16.0	4.88	4#4	4#15M	2#4	2#10M	4.0	16.0	4.88	4#4	4#15M	2#4	2#10M
5	1.50	4.0	14.5	4.42	4#4	4#15M	2#4	2#10M	4.0	14.5	4.42	4#4	4#15M	2#4	2#10M
6	1.83	4.0	13.1	3.99	4#4	4#15M	2#4	2#10M	4.5	13.1	3.99	4#4	4#15M	2#4	2#10M
7	2.13	4.5	12.4	3.78	4#4	4#15M	2#4	2#10M	5.0	12.4	3.78	4#4	4#15M	2#4	2#10M
8	2.44	5.0	11.6	3.54	4#4	4#15M	2#4	2#10M	5.5	11.6	3.54	4#4	4#15M	2#4	2#10M
9	2.74	5.5	11.6	3.54	4#4	4#15M	3#4	3#10M	6.0	11.6	3.54	4#4	4#15M	3#4	3#10M
10	3.05	6.0	11.6	3.54	4#4	4#15M	3#4	3#10M	6.5	11.6	3.54	4#4	4#15M	3#4	3#10M

The above chart is for estimating fence design only. Actual design should come from a qualified engineer. Refer to AB Fence Installation Guide for more detailed guidance on installation. Maximum post spacing is based on block lengths of 17.625 in. (447.68 mm) and 0.5 in (13 mm) tolerance. * Indicates that the minimum pile depth is per the local engineer's recommendations.

DESIGN TABLES - Pile Depth based on a 2 ft (0.61 m) diameter.

Load Height (ft) (m)	Soil Types: Course to medium sands, clean sand and gravel				Soil Types: Uniform to well-graded sands, sandy silts				Soil Types: Uniform to well-graded silts, sandy and silty clays			
	Pile Depth (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Bond Beams (ft) (m)	Pile Depth (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Bond Beams (ft) (m)	Pile Depth (ft) (m)	Post Spacing (ft) (m)	Post/Pile (ft) (m)	Bond Beams (ft) (m)
4	1.22	19.0	5.79	4#4	4.0	1.22	19.0	4#4	4.0	1.22	19.0	4#4
5	1.50	4.0	1.22	4#4	4.0	1.22	17.5	4#4	4.0	1.22	17.5	4#4
6	1.83	4.0	1.22	4#4	4.0	1.22	15.2	4#4	4.0	1.22	15.2	4#4
7	2.13	4.0	1.22	4#4	4.0	1.22	14.5	4#4	4.0	1.22	14.5	4#4
8	2.44	4.5	1.37	4#4	4.0	1.22	13.8	4#4	4.0	1.22	13.8	4#4
9	2.74	5.0	1.52	4#4	4.0	1.22	13.8	4#4	4.0	1.22	13.8	4#4
10	3.05	5.0	1.52	4#4	4.0	1.22	13.8	4#4	4.0	1.22	13.8	4#4

C-90

4	1.22	4.0	1.22	4#4	4.0	1.22	16.0	4#4	4.0	1.22	16.0	4#4
5	1.50	4.0	1.22	4#4	4.0	1.22	14.5	4#4	4.0	1.22	14.5	4#4
6	1.83	4.0	1.22	4#4	4.0	1.22	13.1	4#4	4.0	1.22	13.1	4#4
7	2.13	4.5	1.37	4#4	4.0	1.22	12.4	4#4	4.0	1.22	12.4	4#4
8	2.44	5.0	1.52	4#4	4.0	1.22	10.9	4#4	4.0	1.22	10.9	4#4
9	2.74	5.5	1.68	4#5	4.0	1.22	10.9	4#5	4.0	1.22	10.9	4#5
10	3.05	5.5	1.68	4#5	4.0	1.22	10.9	4#5	4.0	1.22	10.9	4#5

D-90

4	1.22	4.0	1.22	4#4	4.0	1.22	13.8	4#4	4.0	1.22	13.8	4#4
5	1.50	4.0	1.22	4#4	4.0	1.22	13.1	4#4	4.0	1.22	13.1	4#4
6	1.83	4.5	1.37	4#4	4.0	1.22	11.6	4#4	4.0	1.22	11.6	4#4
7	2.13	4.5	1.37	4#4	4.0	1.22	10.9	4#4	4.0	1.22	10.9	4#4
8	2.44	5.0	1.52	4#4	4.0	1.22	10.1	4#4	4.0	1.22	10.1	4#4
9	2.74	6.0	1.83	4#5	4.0	1.22	10.1	4#5	4.0	1.22	10.1	4#5
10	3.05	6.0	1.83	4#5	4.0	1.22	10.1	4#5	4.0	1.22	10.1	4#5

The above chart is for estimating fence design only. Actual design should come from a qualified engineer. Refer to AB Fence Installation Guide for more detailed guidance on installation. Maximum post spacing is based on block lengths of 17.625 in. (447.88 mm) and 0.5 in (13 mm) tolerance.

Design Tables

AB Fence Estimating Tool

Visit our web site at allanblock.com to download this handy tool that will estimate block, rebar, base rock, concrete and grout quantities. This program is Microsoft Excel based and is easy to use.



allanblock.com





Additional Resources

Visit our web site at allanblock.com for the latest information on the AB Fence system. Check out our:

- Installation Guide and Tech Sheets
- Estimating Tool
- Product Testing Results
- Engineering Manual
- Design Details
- Project Photography
- and much more....





For more information on AB Fence visit our web site or call the Allan Block Engineering Department at 800-899-5309.



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