

Technical Sheet and Installation Guide
Hebel® Fence Panels
Autoclaved Aerated Concrete



German
Technology

 **hebel®**

xella®

The Xella logo consists of the word "Xella" in a white, sans-serif font, positioned on a dark blue square background.

About us

Xella Aircrete North America, the leading manufacturer of **Hebel® Autoclaved Aerated Concrete (AAC)** is an amazingly innovative building material that has been used in Europe for more than 80 years and in the US for more than 15 years. Products and systems have been developed for all types of the construction industry: Industrial, commercial, high-rise buildings, schools, hospital and more.

Hebel® AAC is a lightweight concrete that is formed into blocks and reinforced panels for a wide range of loadbearing and non-loadbearing construction applications. It is manufactured from sand, cement, recycled material, lime, gypsum, aluminium paste and water. It is moulded, cut and steam pressure cured in an autoclave before being packed, ready for transport.

Hebel® AAC delivers more benefits than the traditional materials such as strength, acoustics, fire and pest resistance and is installed faster, saving valuable construction time.

It has a unique combination of thermal mass and insulation providing a more comfortable living environment.

Why Hebel

One of the worlds leading manufacturer of Hebel autoclaved aerated concrete (AAC), Xella Aircrete North America is transforming the building industry with Hebel, its ultra-lightweight concrete.

Committed to providing the United States with environmentally responsible building products that conserve material and energy usage, Xella's Hebel Aerated Concrete is recognized as the largest producer in Europe by capacity based on management estimates based on different sources and member of the Green Building Council. In addition, it has a high UL rating for fire resistance.

Xella Aircrete North America is a division of Germany-based Xella International.

More than 6.000 employees for Xella's total 91 plants and offices throughout 30 countries worldwide, including North America, Europe and Asia.

Hebel Aerated Concrete provides contractors with strong, easy-to-install blocks and reinforced panels that are one-third the weight of traditional concrete and replace traditional multi-step construction processes. In addition, Hebel is energy efficient, fire resistant and long lasting, which, over time, will reduce energy, insurance and maintenance costs to building owners. A wide range of industries can benefit from Hebel's custom blocks and reinforced panels, including those in the commercial, educational, hospitality, industrial, institutional, governmental and residential markets.



Aerated Concrete Hebel® :

Unique properties in a single material.

Benefits



Thermal Insulation

Buildings constructed of HEBEL AAC provide substantial energy savings in both hot and cold climates. The unique closed cellular structure and the thermal mass contribute to a high R-value and air-tightness which reduce heating and cooling costs and improve indoor air quality. Buildings have seen savings on air conditioning up to 35% by using HEBEL AAC.



Structural Performance

Strength can resist wind pressures without reinforcement. Shear wall strength can resist lateral loads. High impact resistance.



Fire Resistant

HEBEL AAC has proven to remain fully intact and withstand the stress of fire for up to 4 hours without any impairment to its stability. Even under intense heat, HEBEL AAC remains tightly sealed against smoke and gas, emitting no toxic fumes.



Acoustic Insulation

The solid wall construction of a building made of Hebel AAC provides exceptional acoustic insulation. Its porous structure and high surface mass, coupled with its ability to dampen mechanical vibration energy, greatly reduces outside environmental.



Resistance to humidity

Your works are always protected against moisture. It allows the passage of water vapor, reducing condensation. It is an inert material.



Green Building

Hebel and green building attributes

- Recyclable, inert & non-toxic.
- Energy saving, manufacturing through occupancy.
- Excellent life-cycle cost.
- Durable, natural finish options.
- Supports LEED credits.

Add up USGBC LEED Credits with Hebel

Physical Properties

The physical properties of HEBEL Autoclaved Aerated Concrete are unique to any other building material. Properties such as thermal insulation and fire resistance can not be met by another product alone.

■ Speed of Construction

■ Thermal Insulation & Energy Savings

■ Superior Fire Resistance

■ Sustainable

■ Relatively high strength for a low density

■ Workability

■ Acoustic Performance

■ Precision

This product meets Standards and Evaluation issued by:



ACI
530-13
ACI
523.4-R09



ASTM
C 1693-11
ASTM
C 1660-09



Index

Introduction to Hebel® Fence Panels Autoclaved Aerated Concrete

Description	3
Advantages	3

1 Technical Sheet

1.1 General Features	5
----------------------------	---

2 Design Considerations

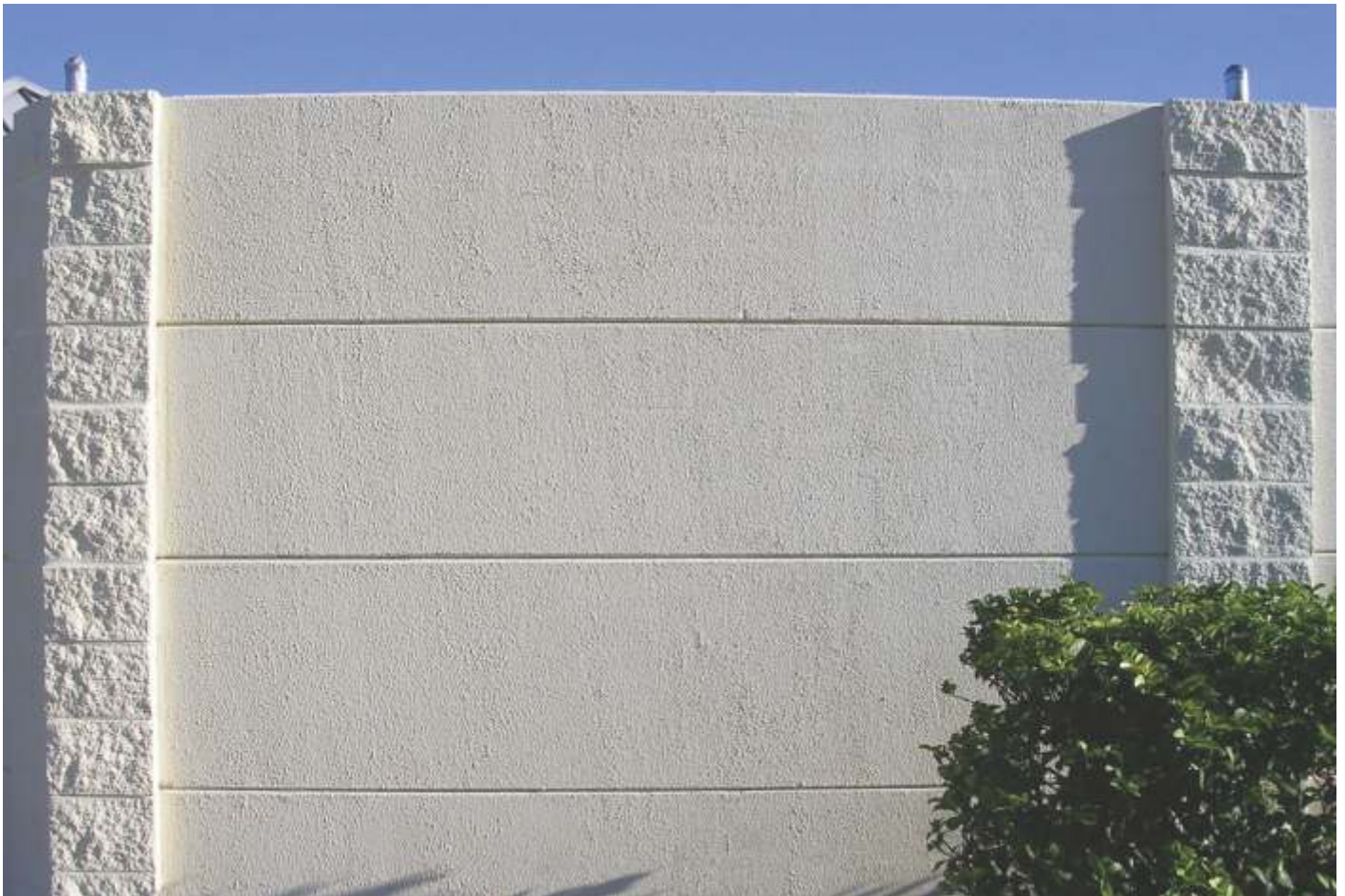
2.1 General Considerations	5
----------------------------------	---

3 Installation Guide

3.1 Previous Installation	7
3.2 Installation of Hebel® Fence	7

4 Posts for Hebel® Fence System

4.1 General Considerations	9
4.2 Post Caps	9



Hebel® Fence Panels Autoclaved Aerated Concrete

Uses and applications

Hebel fence can be used for fence construction on landscaping, providing privacy, protection and style. Decorative and creative ideas can be adapted to Hebel Fence such as ornamental moldings, openings, posts, etc.

Construction Advantages

- Fast and easy to install.
- Lightweight.
- Fire Resistant.
- Strength and security.
- Versatile and affordable.
- Acoustic barrier.
- Low maintenance (Durability).

Application:

- Commercial
- Residential
- Industrial

Certifications:

NOM, ONNCCE, ASTM, UL, IAPMO, ACI, USGBC, TDI.



This product is friendly to the environment, ecological, non-toxic and sustainable; And also grants LEED points.



Hebel® Fence Panels
Autoclaved Aerated Concrete

German
Technology 



1 Technical Sheet

1.1 General Features

Description

Hebel® Fence is lightweight, fire resistant*, water penetration resistant**, pest resistant, fast and easy to install, versatile and affordable. Hebel® Fence Panel is an AAC, steel reinforced board with grade 70 steel covered with an anticorrosive coat. Hebel® Fence can be cut easily and drilled with conventional tools.

*Under ASTM E119-95 UL

**ASTM E514

Uses

Hebel® Fence can be used in landscaping, providing privacy, protection and style. Decorative and creative ideas can be adapted to Hebel® Fence such as ornamental moldings, openings, posts, etc.

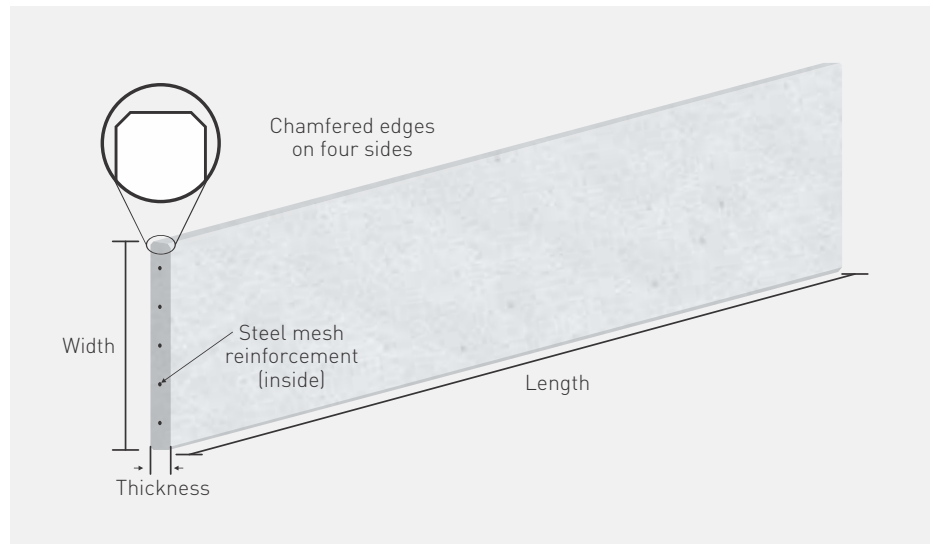


Fig. 1: Hebel® Fence Panel.

Dimensions

Length: 8, 10 ft

Width: 24 in

Nominal Thickness: 2 and 3 in

2 Design Considerations

- Hebel® Fence Panels shall be designed in order to comply with safety and serviceability requirements as specified by ACI 523-09.
- Wind speed can be up to 80 mph for a 2" thick Hebel® Fence Panel and up to 100 mph for a 3" thick Hebel® Fence Panel.
- Nominal heights for Hebel® Fence System should be 6 ft and maximum 8 ft.
- Hebel® Fence system requires posts with grooves to insert Hebel® Fence Panels. The minimum depth of groove should be 1 1/2".
- Post must be designed according to Local Building Code (see Post for Hebel® Fence System).
- Posts, postcaps and concrete bases are not supplied by Hebel®
- Backer rod and caulking must be applied between the post groove and the Hebel® Fence Panel.

Characteristic	Unit	AAC-4 Class
Minimum Compressive Strength (f'_{aac})	lb/in ²	580
Nominal Density (F'_{AAC})	lb/ft ³	31
Design Weight ⁽¹⁾	lb/ft ³	37
Module of Elasticity	lb/in ²	295,000
Drying Shrinkage	%	< 0.02
Thermal Expansion Coefficient	1/ ⁽¹⁾ K	8×10^{-6}

⁽¹⁾Values consider material's moisture content.

Table 1. Design Properties.

Design Weight					
Thickness ⁽¹⁾		Length	Design Weight ⁽²⁾		Area per Piece
in	in*		AAC-4		
		ft	lb/ft ²	lb/piece	ft ²
2	1.969	8	6.14	98.4	16
3	2.953	8	9.22	147.7	16
3	2.953	10	9.22	184.6	20

* Exact dimension. ⁽¹⁾ Nominal dimension. ⁽²⁾ Values consider material's moisture content.

Table 2. Hebel Fence Design Weight

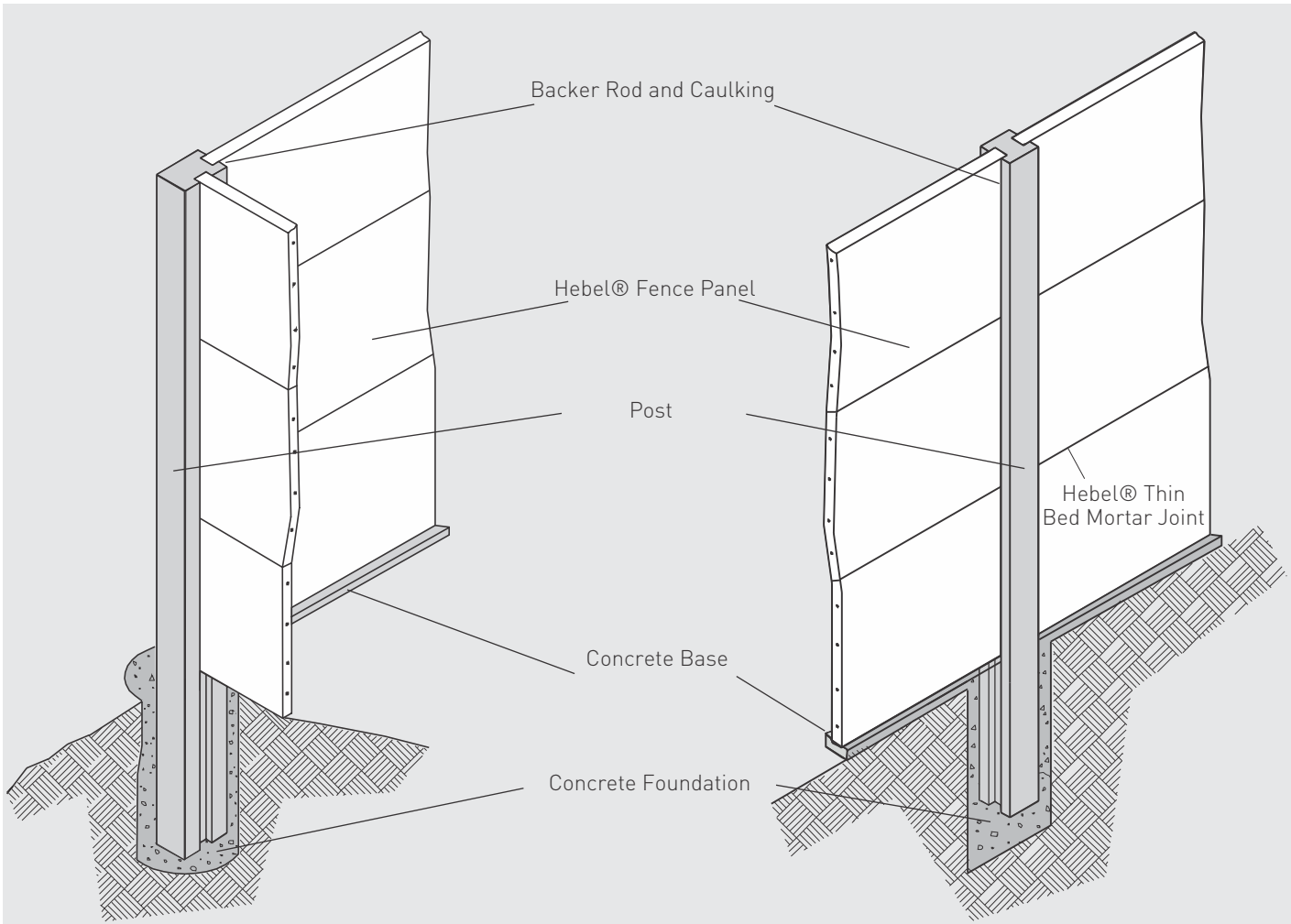


Fig. 2: Hebel® Fence System.

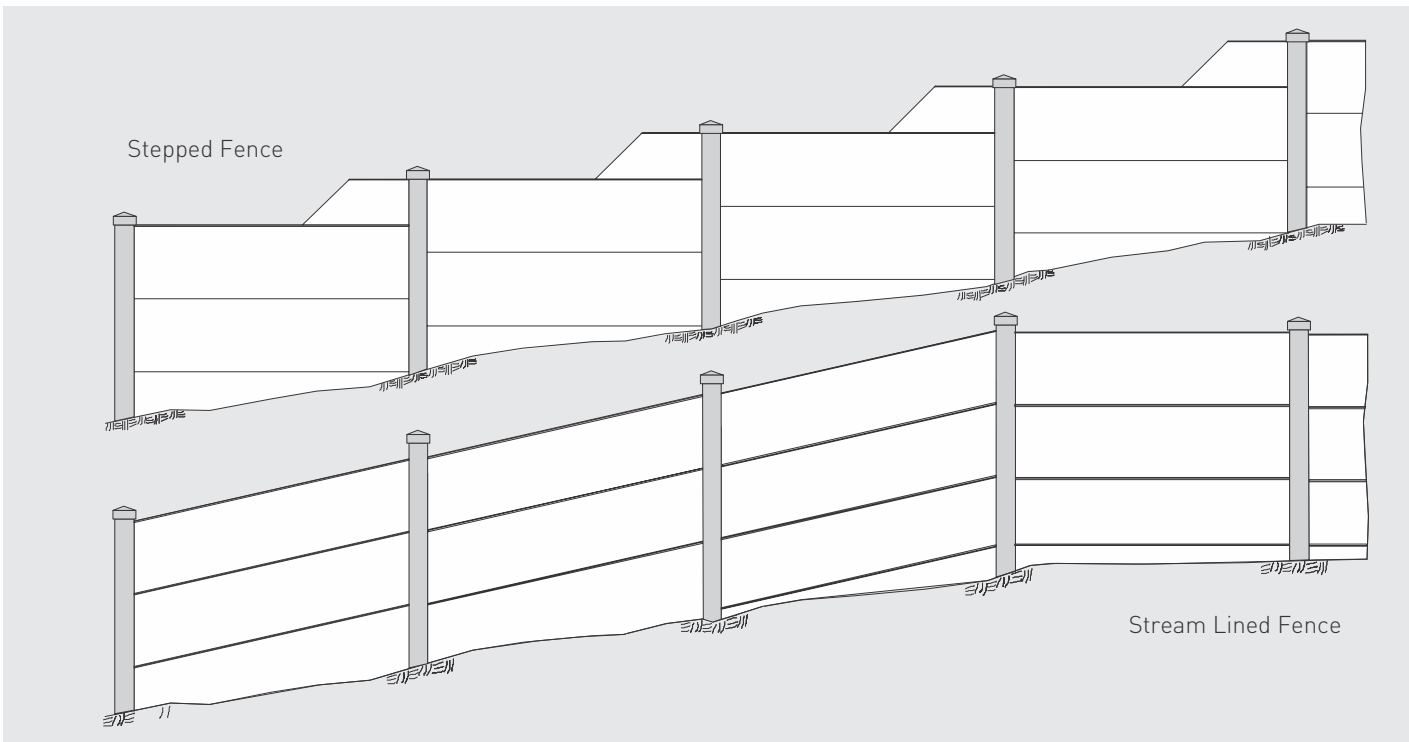


Fig. 3: Different Layouts Hebel® Fence Designs.



Fig. 4: Check Quantity of Hebel® Fence Panels and Post

3. Installation Guide

3.1 Previous Installation

Check fence layout and design. Decide, according to terrain slopes, if fence will be stepped following the contours of the land (see Fig.3).

Check if material quantity (Hebel® Fence Panels, posts and post caps) is correct (see Fig. 4).

Contact utility companies to insure that no underground utilities will be affected with fence construction.

Always follow on-site safety measures during construction.

3.2 Installation of Hebel® Fence

1. Making of Hebel® Fence

Check for property marks. When property marks are not visible, you may call a surveyor. Mark location of the fence according to property marks.

When fence is to be located on a hillside with steep slopes or very irregular terrain, surveying equipment might be needed.

2. Placing Posts

Identify level differences of terrain and determine the way that this will be compensated (stepped fence, etc.)

Posts must be plumbed (aligned vertically), and located exactly in-line.

Setting the Posts

Place posts into the ground and set them in concrete. Once post is in the hole concrete should be compacted using a tamping bar. Level and brace the post temporarily while concrete sets. Posts must have 1 1/2" height over fence to assure proper installation of postcaps.

Concrete Base - Optional

A concrete base may be installed before placing Fence panels. Drainage conditions should be assessed. Leave drainage paths if required.

3. Preparation of Hebel® Thin Bed Mortar

Hebel® Thin Bed Mortar is mixed in a plastic bucket, adding water (see instructions on the bag) using a stirrer in a power drill. Use brush to clean the joint surface before mortar application.

4. Ready to Install Hebel® Fence

a) While two people hold the panel on its sides, a third person helps, lifting it to slide it into post grooves.

b) When panel is inserted into posts, two people keep sliding the panel, holding it from its upper edge.

c) Once panel is in place, Hebel® Thin Bed mortar is applied on joint before installing second panel using a dull (large tip).

d) Wedge the panel temporarily with plastic or wood strips to adjust it into position (according to fence design).

e) Repeat procedure for subsequent rows of Hebel® Fence Panel. Care should be taken that panel joints are the same height throughout the fence.

f) Once all panels of one section have been placed, use dull (small tip) to place mortar on joints to make the appearance uniform.

g) Place bits of backer rod as wedges into joints between posts and panels and remove the plastic strips. Then apply mortar or stucco to cover wedges.

5. Cutting of Hebel® Fence Panels on Site

If needed, for cutting Hebel® Fence Panels on-site, follow the procedure shown below:

a) Prepare a flat surface for site cutting.

b) Check for dimensions of cuts to be performed. Along its length, panel can be cut in half (1 ft wide) at most.

c) Proceed with panel cutting.

d) Place anticorrosive paint at reinforcing bars tips.

6. Post Caps - Optional

Post caps are placed on top of posts (see posts for Hebel® Fence System).

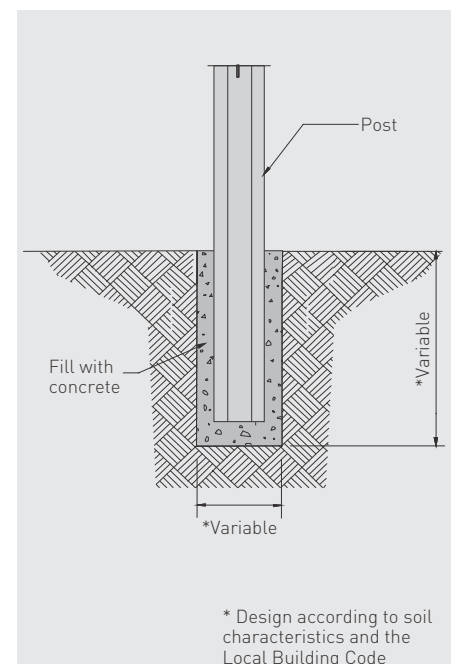


Fig. 5 Post Foundation Detail.



Cast in Place Base



Precast Base



Fig. 6 First Course of Fence Panels.

7. Gates, Ornaments and Other Fixtures

Gate installation must be made between gate posts. Gate posts have special preparations to attach gates. Fixtures like lamps, signs, etc. should be placed preferably over posts. For placing fixtures over Hebel® Fences, call Xella Aircrete North America, Inc., for technical support.

8. Surface Patching

Use Hebel® Repair Mortar to patch chips, breaks and other imperfections on the surface of the Hebel® Fence Panels.

Hebel® Repair Mortar is mixed in a plastic bucket, adding water (see instructions on the bag) using a stirrer in a power drill or by manual means (depending on quantity to be used). It is applied using a spatula.

9. Finishes

Although Hebel AAC., has a very low water penetration rate, as with any concrete material it is recommended to apply a finish coat as elastomeric paint or acrylic based render. Stucco and other types of renders are available through Hebel.

10. Installation Requirements

Tools:

- Plastic bucket
- Stirrer for power drill
- Shovel
- Mason's level
- Brush
- Tape measure (50-100 ft)
- Sanding float
- Plastic edger
- Hammer ax
- Scissors for unpacking
- Claw hammer
- Spatula
- Level line
- Plumb bob
- Chalk line
- String line



Fig. 7 Hebel® Fence Panel Installation.

Equipment:

- 12" auger
- Posthole digger
- 2 stepladders (2 or 3 steps)
- Heavy digger bar
- Tamper bar
- Circular saw with 8 1/4" metal or diamond blade for Hebel® Fence Panel 3" thick and 7 1/4" metal or diamond blade for Hebel® Fence Panel 2" thick 1/2" power drill
- 2 saw horses
- Dull w/small and large tip
- Safety gear (belts, goggles, dust mask, gloves)

Additional Materials Needed, Available Through Xella Aircrete North America, Inc

Hebel® Thin Bed and Repair Mortar



Fig. 8 Stepped Fence Layout.



Fig. 9 Gate in Hebel® Fence System.

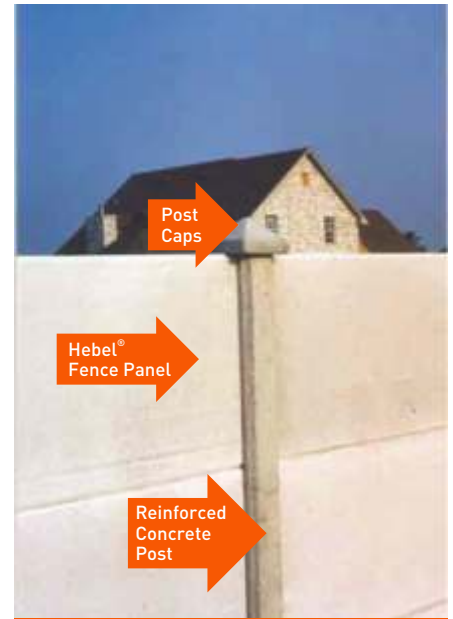


Fig. 11 Typical Post in Hebel® Fence Construction.

Additional Materials Needed, Not Available Through Xella Aircrete North America, Inc

- Posts
- Post caps
- Concrete Base
- Backer rod
- Chalk
- Anticorrosive paint
- Plain concrete (f2 or 3 ksi)
- 1/16" and 1/4" acrylic sheet

4 Posts for Hebel® Fence

4.1 General Considerations

Posts are used to provide support for Hebel® Fences and must be capable of withstanding wind loads applied upon them; while satisfying local, regional and national codes, such as Standard Building Code, Uniform Building Code, etc.



Fig. 10 Finished Hebel® Fence System.

Use design methods, in accordance with nationally recognized organizations (American Concrete Institute, ACI; American Society of Civil Engineers, ASCE; and others).

Concrete posts or steel posts can be used for Hebel® Fence System. Fig. 12 shows typical concrete post sections.

4.2 Post Caps

Used as a decorative element over posts (see Fig. 13).

The post cap should be fixed or glued, as determined by the post material.

Note: For more technical information about posts and bases, call Xella Aircrete North America, Inc.

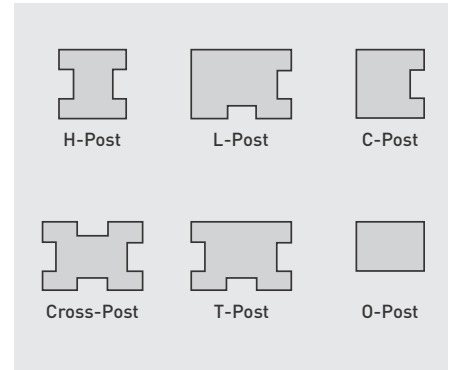


Fig. 12 Typical Concrete Post Sections.

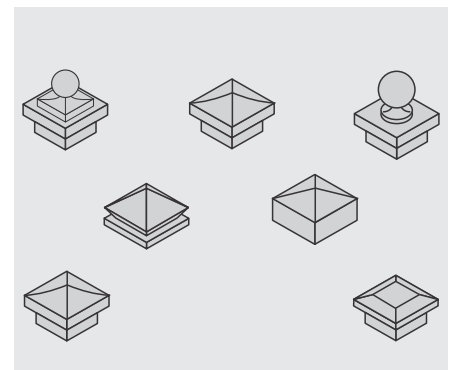


Fig. 13 Different Types of Post Caps.

"Please refer to our SDS for further information":

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

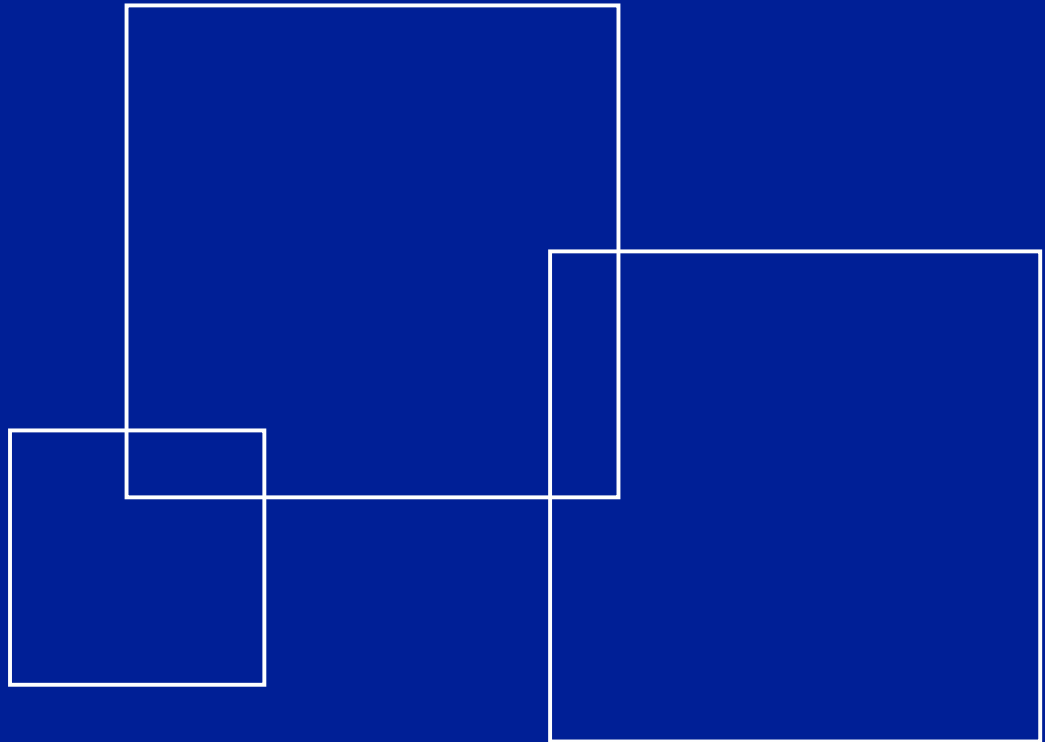
Xella Aircrete North America, Inc
833 Isom Rd.
San Antonio, TX 78216



Phone (210) 402-3223
Fax (210) 402-6390

1-877-41-HEBEL
hebel-usa@xella.com

www.hebel-usa.com



/Hebel Building Solutions

Hebel® is a registered trademark of the Xella Group.
November 2018.