

TEXAS DEPARTMENT OF INSURANCE

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PRODUCT EVALUATION

FR-40

Effective Date: April 1, 2012 (Revised May 1, 2012)

Reevaluation Date: **March 2016**

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**.*

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

APEX Block Interlocking System as manufactured by:

Lacuna, Inc.
P.O. Box 826
Winchester, Oregon 97495
Telephone: (541) 229-2739

will be acceptable in the designated catastrophe areas along the Texas Gulf Coast when constructed in accordance with this product evaluation.

PRODUCT DESCRIPTION

General: The APEX Block Interlocking System consists of individual blocks that form a permanent formwork system for reinforced concrete beams, lintels, walls, foundation walls and retaining walls. The system is comprised of the Apex Blocks, concrete and reinforcement.

Apex Blocks: APEX Blocks are manufactured from a mixture of recycled expanded polystyrene (EPS) aggregate, Type I or II Portland cement, a proprietary accelerant solution and water. The dry weight of a standard APEX block is between 52 and 55 pounds. A standard block is nominally 10 inches thick, 16 inches high and 48 inches long. Each standard block is one solid piece of material molded with 6 inch vertical and horizontal cores. When stacked in the final position, the blocks form vertical and horizontal cavities where reinforcement and concrete are placed. Refer to Figures 1 – 4 for block views and reinforcing details.

Concrete: Block cores must be filled at the jobsite with normal weight concrete having carbonate or siliceous aggregate with a $\frac{3}{8}$ inch maximum aggregate size and an 8 inch slump. The concrete must have a minimum compressive strength of 3,000 psi at 28 days. Concrete must comply with Chapter 19 of the International Building Code (IBC).

Reinforcement: The reinforcement must conform to ASTM A 615 Grade 60 deformed steel reinforcing bars and have a minimum yield strength of 60 ksi. The reinforcement must comply with Chapter 19 of the International Building Code (IBC).

Product Identification: Each package of blocks bears a label with APEX Block logo and trademark along with the name and logo of the inspection agency, Underwriters Laboratories, Inc.

INSTALLATION REQUIREMENTS

General: The APEX Block Interlocking System shall be fabricated, identified and erected in accordance with this report, the approved construction documents and the applicable building codes. In the event of a conflict between manufacturer's published installation instructions and this report, this report shall govern. Approved construction documents shall be available at all times on the jobsite during installation.

Structures built using the APEX Block Interlocking System shall be designed by a Texas licensed professional engineer. The APEX Block Interlocking System shall be designed in accordance with Chapter 19 of the IBC and ACI 318. Design drawings shall include complete instructions for the connection and installation of the APEX Block Interlocking System. The design drawings shall be sealed and dated by a Texas licensed engineer. The design drawings shall reference the appropriate edition of the wind load standard (ASCE 7) used based on the current building specifications adopted by the Texas Department of Insurance. The basic wind speed and the exposure category used for the design shall also be referenced.

To assist in the design and construction of the APEX Block Interlocking System, refer to the APEX Block Engineering Design Guide published by Lacuna, Inc.

Design loads: Design wind loads for the APEX Block Interlocking System shall be determined using the wind load requirements for the structure as specified in the building specifications adopted by the Texas Department of Insurance.

Foundation: The foundation is considered to be part of the structure and shall be considered part of the design of the structure. If the foundation is not designed by the engineer responsible for the design of the APEX Block Interlocking System, then the design plans shall include such. As a minimum, the design plans shall indicate how the APEX Block Interlocking System is to be anchored to the foundation. If the foundation is included as part of the design then the design plans shall include all details and specifications related to the design of the foundation to resist the specified wind loads and shall indicate how the structure is to be anchored to the foundation.

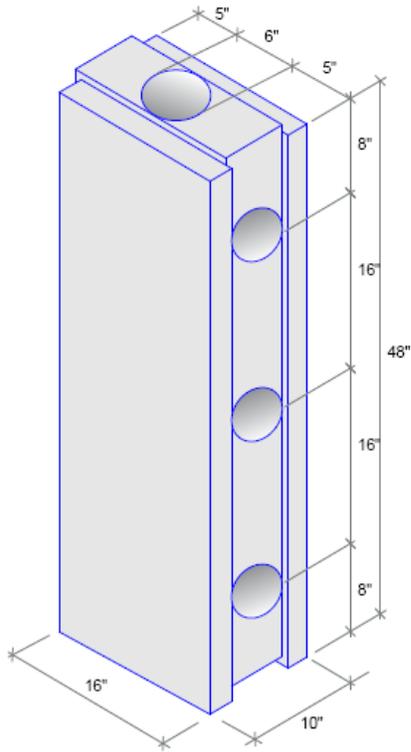
Roof Coverings: The design plans shall indicate the requirements for the roof coverings. The roof coverings shall comply with the building specifications adopted by the Texas Department of Insurance. For roof coverings other than asphalt shingles, the design plans shall specify the design pressure requirements for the roof covering. The roof covering shall be installed as required to resist wind pressure.

Exterior Wall Coverings: Exterior wall coverings shall be installed as required to resist wind pressure. Products shall comply with the building specifications adopted by the Texas Department of Insurance. The design plans shall specify the design pressure requirements for the exterior wall covering.

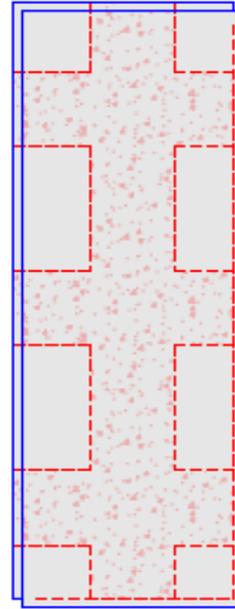
Windows, Doors, Garage Doors and Skylights: Products shall be installed as specified in evaluation reports to resist wind pressure. Products shall comply with the building specifications adopted by the Texas Department of Insurance. The design plans shall specify the design pressure requirements for these products. The design plans shall indicate if the products are required to be windborne debris resistant. Windborne debris resistant products shall be installed as specified in the evaluation reports to resist wind pressure and windborne debris.

Shutters: The design plans shall indicate if shutters are required. Products shall be installed as specified in the evaluation reports or the building specifications adopted by the Texas Department of Insurance as required to resist wind pressure and windborne debris. Products shall comply with the building specification adopted by the Texas Department of Insurance. The design plans shall specify the design pressures requirement for the shutters.

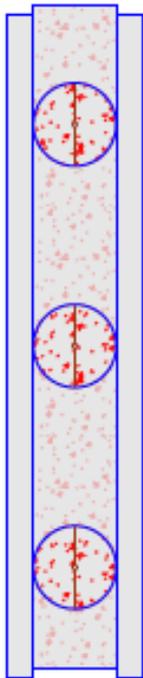
Note: A set of sealed plans, manufacturer's installation instructions, APEX Block Interlocking System, and this product evaluation report shall be available to the inspector at the job site at all times. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.



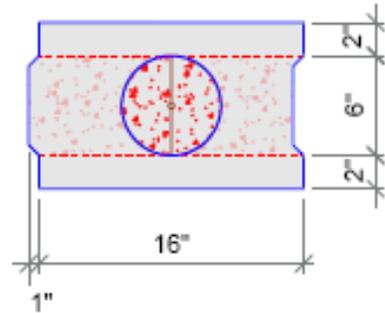
Isometric View



Elevation View



Side View



End View

Figure 1 – APEX Block Views

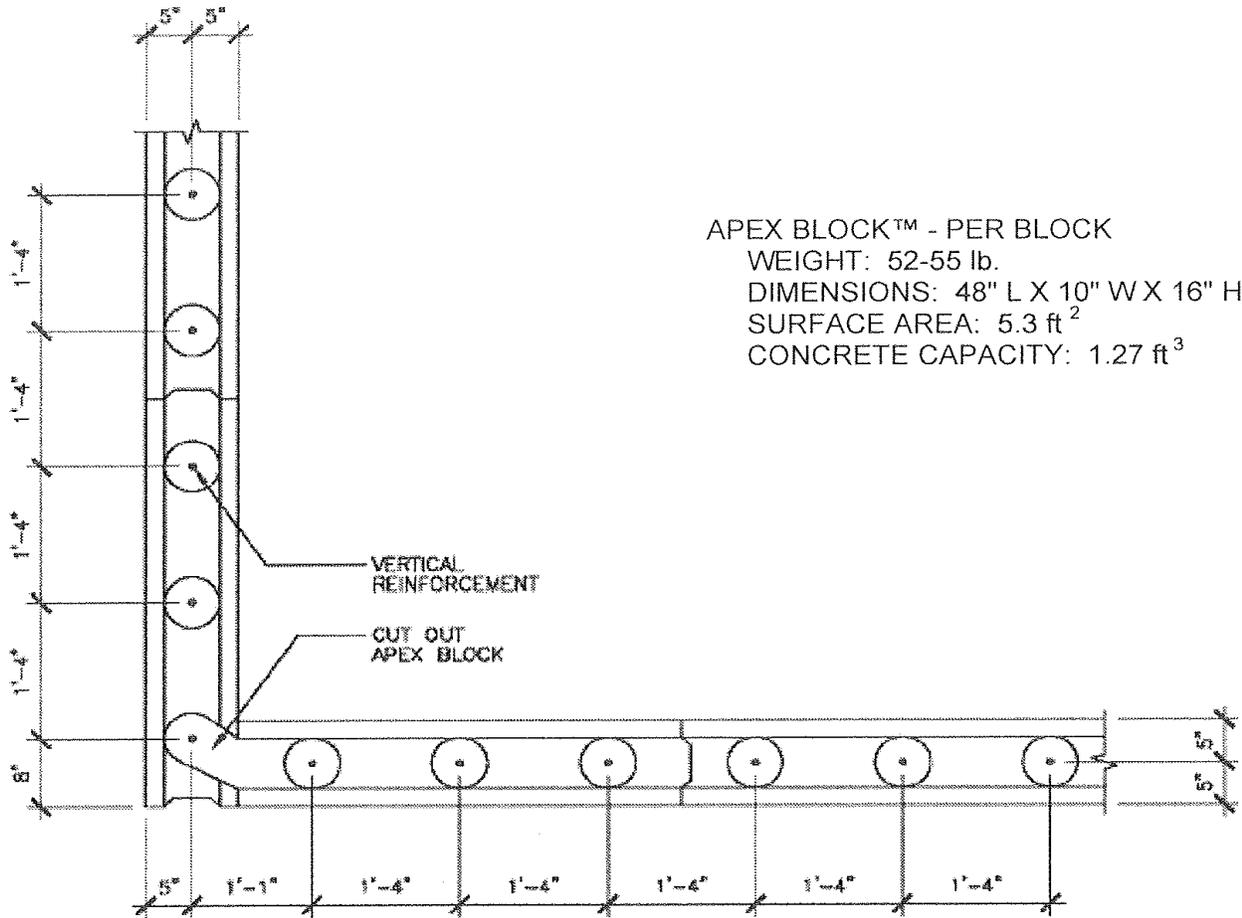


Figure 2 – Stacked Block Plan View

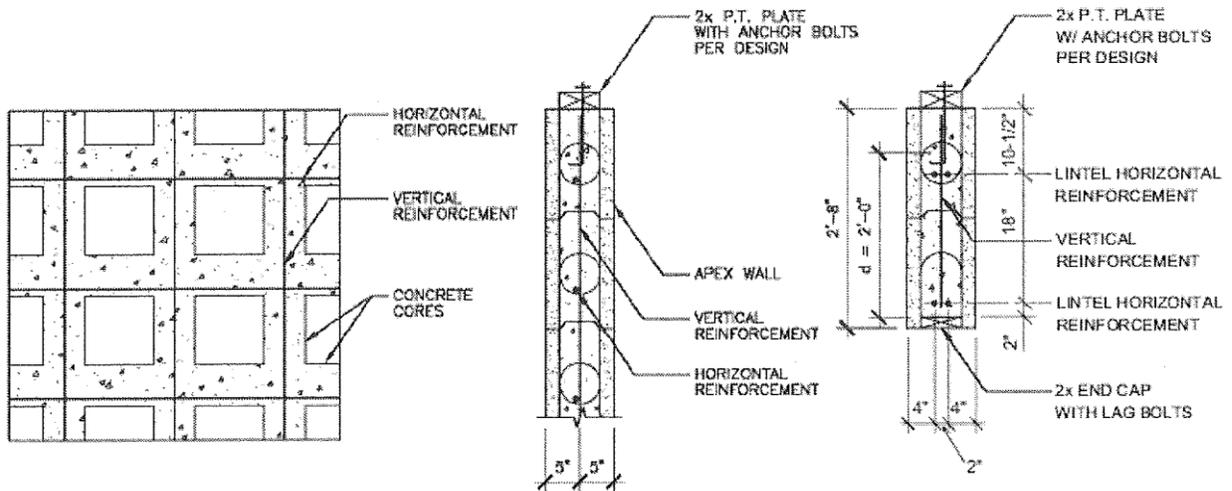


Figure 3 – Reinforcement Placement

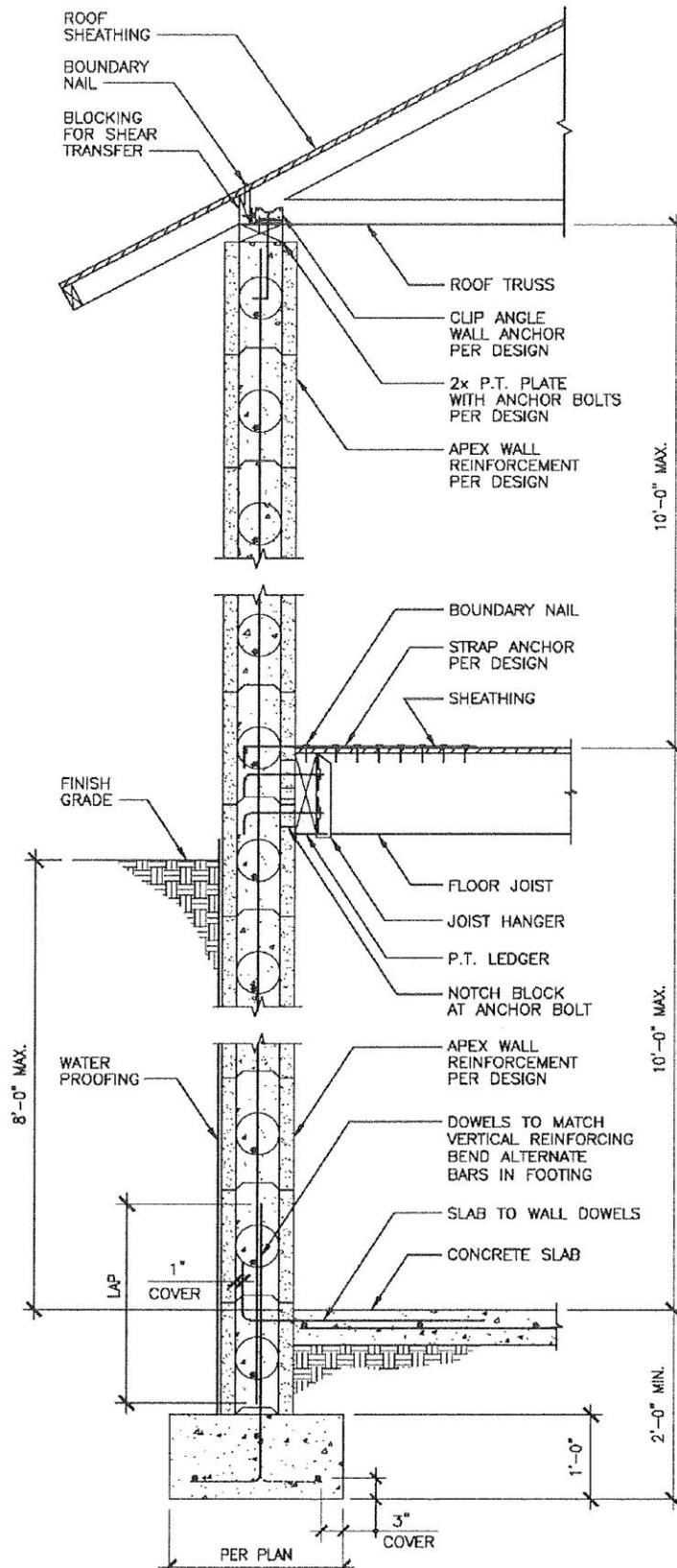


Figure 4 – Multi-floor Section Detail