LEGACY REPORT

NER-683

Reissued October 1, 2007

ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

Legacy report on the 2000 *International Building Code*®, the 2000 *International Residential Code*®, and the *2002 Accumulative Supplement to the International Codes*™, the 1998 *International One-and Two-Family Dwelling Code*®, the BOCA® *National Building Code*/1999, the 1999 *Standard Building Code*© and the 1997 *Uniform Building Code*™

DIVISION: 04—MASONRY
Section: 04220—Concrete Masonry Units

AZAR BLOCK INC.
1126 LESPERANCE ROAD
TECUMSEH, ONTARIO
CANADA N8N 1X2
(519) 735-2144
GMROSS@AZARGROUP.com
www.AZARBLOCK.com

1.0 SUBJECT

Azar Dry-Stack Block

2.0 PROPERTY FOR WHICH EVALUATION IS SOUGHT

Structural Performance

3.0 DESCRIPTION

3.1 GENERAL

Azar Dry-Stack Blocks are concrete masonry units complying with ASTM C 90. The blocks are used to construct loadbearing and nonloadbearing walls without the use of mortar. The bed and head joint surfaces of the blocks are manufactured so that adjacent blocks interlock. See Figure 1 of this report. Grout and reinforcement is placed to strengthen the axial load carrying capacity and out-of-plane bending resistance of the walls.

Out-of-plane interlock is produced by three mechanisms: 1. A key on the top of the web which fits into the recess on the bottom of the web of the block above, 2. Two levels of bearing surfaces along each face shell at the bed joint and, 3. The face shell interlocking of adjacent blocks along the head joint using shiplap geometry.

3.2 DESIGN

The structural design capacities of the Azar Dry-Stack Block concrete blocks shall be in accordance with the requirements of *Design and Construction Guide for Azar Dry-Stack Block Construction*, dated February 2001.

4.0 INSTALLATION

Footings for Azar Dry-Stack Block walls shall be designed for the applicable loading and soil conditions. The minimum requirements for a strip footing with dowels are shown in Figure 2(a). For grouted and reinforced walls, dowels shall be used to connect the wall to the footing. Longitudinal reinforcement in strip footings consists of two-No. 5 bars. Dowels are not required where the reaction to lateral soil pressure is provided by the basement floor, as shown in Figure 2(b).

Blocks shall be laid in running bond with the head joints aligned every second course. Exact overlapping by half of a block provides for the webs and cells to be aligned vertically. Half units are required at openings and ends of walls. Grout used in masonry blocks shall have a cylinder compressive strength of at least 2500 lbf/in.^{2} (17926 kPa) at 28 days. Placement of reinforcement shall be completely encapsulated in grout including 2 inch (51 mm) cover when the wall is in contact with soil. When surface bonding, fiberglass mesh shall be lapped 6 inches (152 mm). Surface bonding parging shall be applied at a minimum thickness of $^1/_8$ inch (3.2 mm).

The design and construction of Azar Dry-Stack Blocks shall be subject to the conditions stated in 7.0 of this report.

5.0 IDENTIFICATION

The packaging slip delivered with Azar Dry-Stack Blocks as described in this report, shall be identified by a label bearing the manufacturer's name, address, product name, compressive strength of the Azar Dry-Stack Blocks and this ICC-ES Legacy report number.

6.0 EVIDENCE SUBMITTED

6.1 Physical testing of individual Azar Dry-Stack Blocks and Walls, dated December, 1998, prepared by Mc-Master University.

6.2 Engineering analysis comparing ACI 530/ASCE 5/TMS 402 to Azar Dry-Stack Blocks, signed and sealed by R.G. Drysdale, P.E., dated July 7, 1999 and July 22, 1999.

6.3 Structural calculations, signed and sealed by R.G. Drysdale, P.E. dated July 7, 1999.

6.4 *Design and Construction Guide for Azar Dry-Stack Block Construction* prepared by JNE Consulting Ltd, dated February, 2001.

6.5 Intertek Testing Services, Report No. 244-6037-01, dated October 30, 1997, containing testing in accordance with ASTM C 140 and ASTM C 426.

7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for National Evaluation Service finds that Azar Dry-Stack Block as described in this report complies with or is a suitable alternative to that specified in the 2000 *International Building Code*®, the 2000 *International Residential Code*® and the *2002 Accumulative Supplement to the International Codes*™, the 1998 *International One-and Two-Family Dwelling Code*®, the BOCA® *National Building Code*/1999, the 1999 *Standard Building Code*© and the 1997 *Uniform Building Code*™ subject to the following conditions:

7.1 Installation of Azar Dry-Stack Block shall comply with this report, ACI 530/ASCE 5/TMS 402; *Building Code Requirements for Masonry Structures*, and *Design and Construction Guide for Azar Dry-Stack Block Construction*, dated February 2001. The provisions of ACI 530/ASCE 5/TMS 402 applicable to mortar shall not apply.

7.2 Foundation walls shall be waterproofed or damp-proofed in accordance with the applicable code. Joints and penetrations of the wall shall be made water tight in accordance with the applicable code.

7.3 Grout shall conform to ASTM C 476 with a minimum compressive strength of 2500 lbf/in.^{2} (17237 kPa).

7.4 Where Table 1 or Table 2 of this report are utilized, Azar Dry-Stack Blocks shall have a minimum compressive strength of 4000 lbf/in.^{2} (27579 kPa).

7.5 When the use of the blocks is outside the scope of Table 1 and Table 2 of this report, design calculations in accordance with ACI 530/ASCE 5/TMS 402 shall be submitted.

7.6 Design calculations and details for specific applications shall be furnished to the code official verifying compliance with this report, the applicable code, and shall include:

- The size, grade, type, and location of reinforcement, anchors and wall ties;
- Type and location of grout;
- Lateral wall support;
- Design loads;
- The minimum compressive strength of the Azar Dry-Stack Block;
- The required loadbearing capacity of the foundation.

The individual preparing such documents shall posses the necessary credentials regarding competency and qualifications as required by the applicable code and the professional registration laws of the state where the construction is undertaken.

7.7 Exterior walls shall be protected in accordance with the requirements of the applicable code.

7.8 Special inspections shall be provided in accordance with the requirements of the applicable code.

7.9 In jurisdictions using the 2000 *International Building Code*® and the 1997 *Uniform Building Code*™, load combinations shall be designed in accordance with IBC Section 1605.3.2 and UBC Section 1612.3.2.

7.10 This report is subject to periodic re-examination. For information on the current status of this report, contact the ICC-ES.

TABLE 1—FOUNDATION WALLS

No. of Courses	Wall Height in.	Maximum Soil Height without Reinforcement in.	Required Reinforcement (bar size @ spacing (in.)) Soil Depth (in.) 80	92	104	116
11.5	92	79	#6 @ 48	#5 @ 24	N.A.	N.A.
12.0	96	77	#5 @ 32	#5 @ 24	N.A.	N.A.
12.5	100	76	#5 @ 32	#6 @ 32	N.A.	N.A.
13.0	104	76	#5 @ 32	#7 @ 40	#8 @ 32	N.A.
13.5	108	75	#6 @ 48	#7 @ 40	#8 @ 24	N.A.
14.0	112	74	#6 @ 40	#8 @ 40	#8 @ 24	N.A.
14.5	116	73	#6 @ 40	#8 @ 40	#7 @ 16	#7 @ 8
15.0	120	73	#6 @ 40	#8 @ 40	#7 @ 16	#8 @ 8
15.5	124	72	#6 @ 40	#8 @ 40	#8 @ 16	#8 @ 8
16.0	128	72	#6 @ 40	#8 @ 40	#8 @ 16	#8 @ 8

SI: 1 in. = 25.4 mm, 1 lb/ft^3 = 16.02 kg/m^3, 1 lbf/in^2 = 6.895 kPa, 1 lbf/ft = 14.594 N/m

Notes to Table 1:

1. The maximum equivalent fluid pressure shall be 35 lb/ft^3.
2. Reinforcing steel F_y = 60 ksi (413.7 Pa).
3. The wall shall be fully grouted.
4. Azar Dry-Stack Blocks shall have a minimum compressive strength of 4000 lbf/in^2.
5. Axial load shall be less than 20,000 lbf/ft.
6. Table values assume full lateral support at the top and bottom of the foundation wall.
7. N.A. = Not Applicable.

TABLE 2—REQUIRED REINFORCEMENT FOR ABOVE-GRADE WALLS (bar size @ spacing (in.))

Wall Height (in.)	Wind Pressure (lbf/ft^2)	Applied Axial Load (lb/ft) 500	1000	2000	3000	4000	6000	8000
≤ 176	≤ 40	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
192	≤ 35	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	40	#6 @ 40	#5 @ 32	#5 @ 48	N.R.	N.R.	N.R.	N.R.
208	≤ 30	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	35	#6 @ 40	#5 @ 32	#5 @ 40	N.R.	N.R.	N.R.	N.R.
	40	#6 @ 32	#5 @ 24	#5 @ 32	#5 @ 40	#5 @ 48	N.R.	N.R.
224	≤ 25	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	30	#6 @ 40	#6 @ 48	#5 @ 48	N.R.	N.R.	N.R.	N.R.
	35	#6 @ 32	#6 @ 40	#5 @ 40	#5 @ 48	#5 @ 48	N.R.	N.R.
	40	#6 @ 24	#7 @ 40	#7 @ 48	#6 @ 48	#5 @ 48	#5 @ 48	N.R.
240	≤ 20	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	25	#6 @ 48	#5 @ 40	N.R.	N.R.	N.R.	N.R.	N.R.
	30	#6 @ 32	#6 @ 40	#5 @ 40	#5 @ 48	#5 @ 48	N.R.	N.R.
	35	#6 @ 24	#6 @ 32	#6 @ 40	#5 @ 40	#5 @ 48	#5 @ 48	N.R.
	40	#8 @ 32	#7 @ 32	#7 @ 40	#6 @ 32	#5 @ 32	#5 @ 48	#5 @ 48

SI: 1 in. = 25.4 mm, 1 lbf/in^2 = 6.895 kPa, 1 lb/ft^3 = 16.02 kg/m^3

Notes to Table 2:

1. Reinforcing steel F_y = 60 ksi (413.7 Pa).
2. The wall shall be fully grouted.
3. Azar Dry-Stack Blocks shall have a minimum compressive strength of 4000 lbf/in^2 .
4. Table values assume full lateral support at the top and bottom of the above-grade wall.
5. N.R. = Not Required

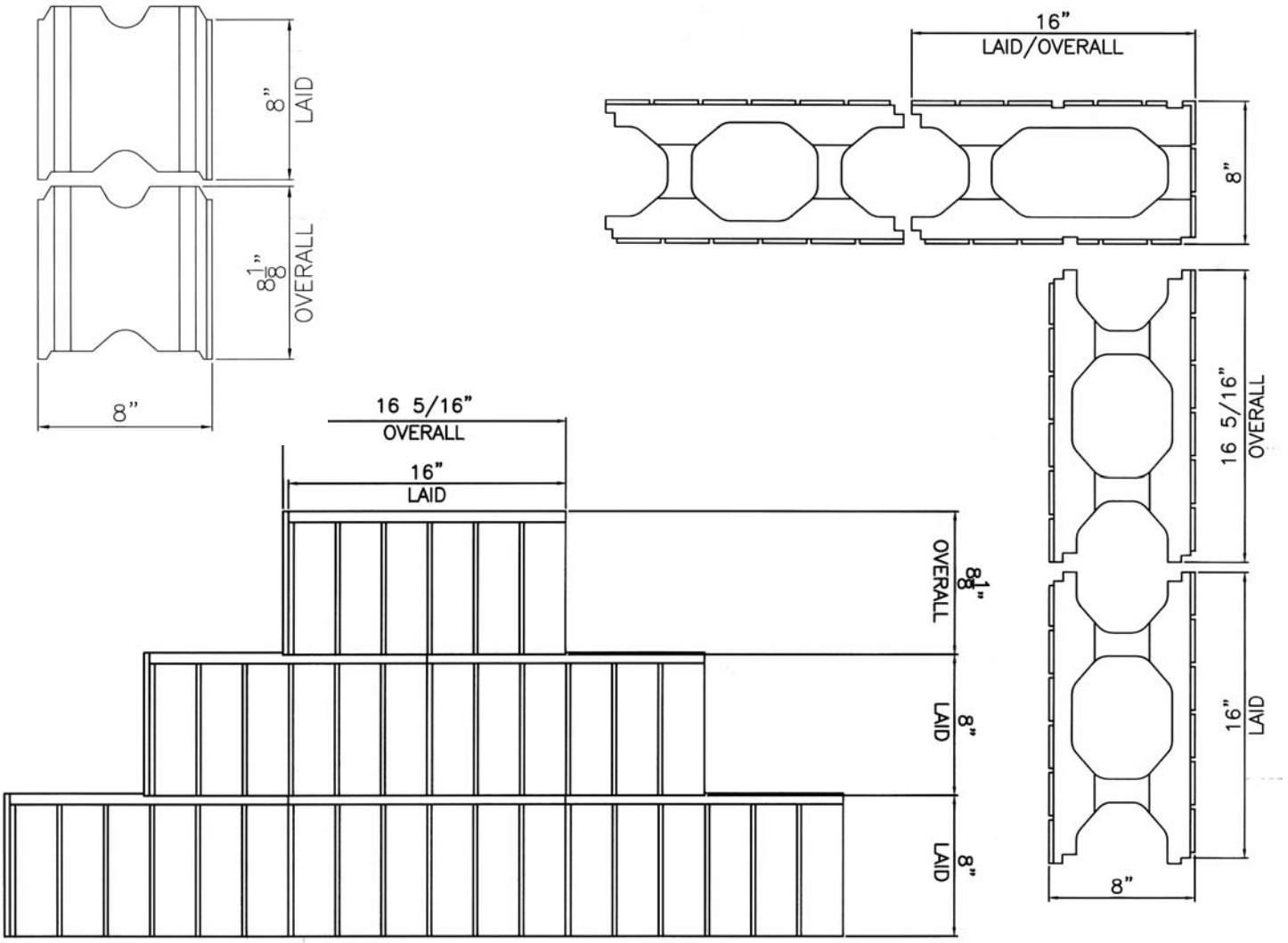
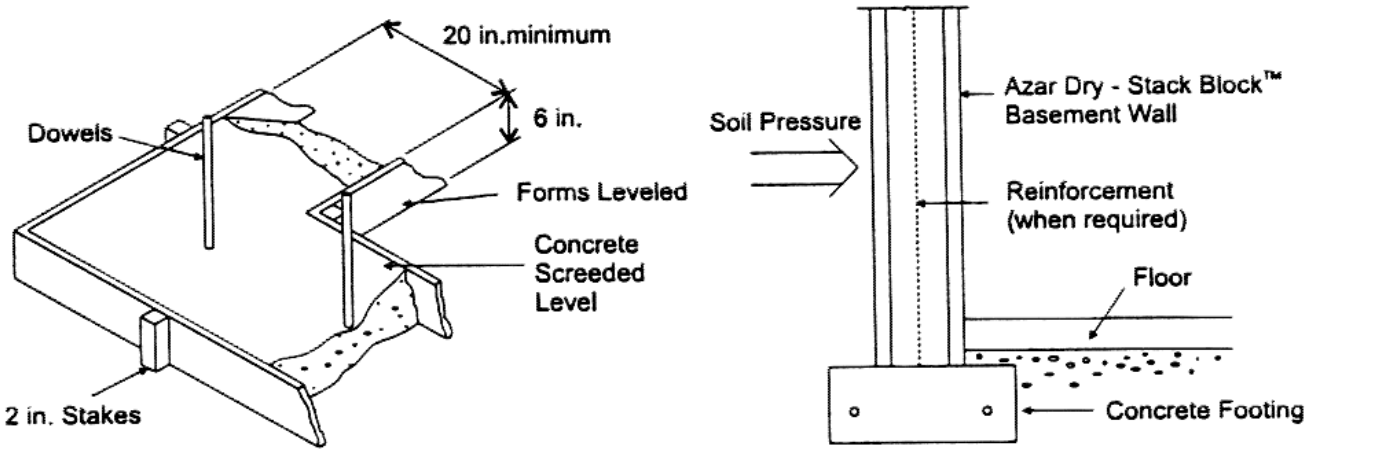


FIGURE 1*—AZAR DRY-STACK BLOCK



(a) Minimum Strip Footing with Dowels **(b) Basement Wall Laterally Supported By Basement Floor**

FIGURE 2*—AZAR DRY-STACK BLOCK TYPICAL FOOTING DETAILS

*THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED FOR USE AS CONSTRUCTION DOCUMENTS FOR THE PURPOSE OF DESIGN, FABRICATION OR ERECTION.