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BUILDING SYSTEMS



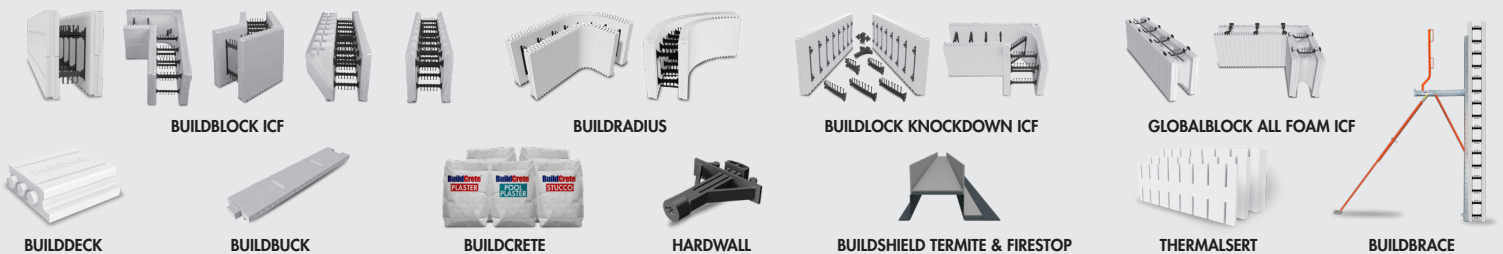
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BUILDBLOCK BUILDING SYSTEMS

BUILDBLOCK ICF SWIMMING POOL ENGINEERING

UPDATED MARCH 2021



BUILDBLOCK SWIMMING POOL ENGINEERING MANUAL

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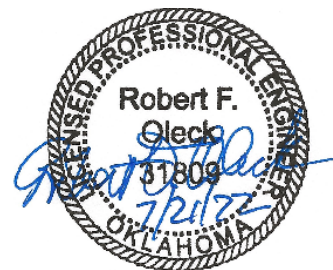
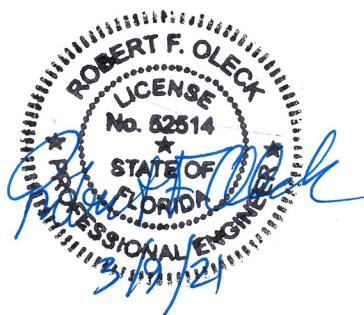
Re: Engineering Certification

Dear Sir:

We have reviewed the contents of this BuildBlock Engineering Manual and its referenced documents. Based on the Scope, Limitations and Disclaimers described therein, the information contained in this Engineering Manual meets the structural requirements of the 2021 International Building Code, 2021 International Residential Code and the 2020 Florida Building Code – 7th Edition with application for In-Ground and Above Ground reinforced concrete swimming pools.

Sincerely,

Robert F. Oleck, Ph.D.,PE
 FL PE # 52514



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1.0 INTRODUCTION

OVERVIEW

This engineering manual is intended to provide prescriptive requirements for the structural design of BuildBlock Building Systems ICF In-Ground and Above Ground reinforced concrete Swimming Pools for limited scope and applications.

A prescriptive specification is one that includes clauses for means and methods of construction and composition of the concrete mix rather than defining performance requirements. In this manual the requirements only apply to swimming pool and must comply with local building department requirements and the referenced building codes stated within this manual.

1.1 SCOPE & LIMITATIONS

These provisions apply to the construction of reinforced concrete in-ground and above ground swimming pools which are approximately rectangular in shape, and of wall thickness and wall heights shown in the tables herein. An engineered design shall be required for swimming pools when determining Equivalent Fluid Pressure values.

Intermixing of the present provisions with other construction materials in a single structure shall be in accordance with the applicable building code requirements for that material, the general limitations set forth in the following Tables, and relevant provisions of this document. An engineered design shall be required for applications that do not meet the limitations of these tables in this publication.

This manual is limited to the structural design and construction of swimming pools. All plumbing, electrical, and other requirements must comply with local building department requirements.

1.2 DEFINITION OF TERMS

Accepted Engineering Practice: An engineering approach that conforms with accepted principles, tests, technical standards, and sound judgment.

Anchor Bolt: A headed bolt, or threaded rod with nut embedded in the concrete, used to connect a structural member of different material to a concrete member.

Approved: Acceptable to the building official or other authority having jurisdiction.

Authority Having Jurisdiction: The organization, political subdivision, office, or individual charged with the responsibility of administering and enforcing the provisions of applicable building codes.

Backfill: The soil that is placed adjacent to completed portions of a structure (e.g., basement wall, stem wall, pool walls) with suitable compaction and allowance for settlement.

Basic Wind Speed: In accordance with ASCE 7 ref[3]

Construction Joint: The surface where two successive placements of concrete meet, across which it may be desirable to achieve bond and through which reinforcement may be continuous.

Dead Load: Forces resulting from the weight of walls, partitions, framing, floors, ceilings, roofs, and all other permanent construction entering into, and becoming part of, a building.

Deflection: Elastic movement of a loaded structural member or assembly (i.e., beam or wall).

Design Lateral Soil Load: The force per unit area produced by the soil on an adjacent structure such as a basement walls or swimming pools.

Flat Wall: A solid concrete wall of uniform thickness. Refers to BuildBlock and BuildLock ICF Forms.

Footing: A below-grade foundation component that transmits loads directly to the underlying soil or rock.

Form Tie: A mechanical connection in tension used to prevent concrete forms from spreading due to the fluid pressure of fresh concrete, and which remains permanently embedded in the concrete.

Foundation: The structural elements through which the dead load of a structure and the loads and forces imposed on it are transmitted to the footing, or directly to the soil or rock.

Foundation Wall: The structural element of a foundation that resists lateral soil loads, if any, and transmits the dead load of a structure and the loads and forces imposed on it to the footing, or directly to the soil or rock; includes basement, stem, and crawlspace walls.

Grade: The finished ground level adjoining the building at all exterior walls.

Grade Plane: A reference plane representing the average of the finished ground level adjoining the building at all exterior walls.

Interpolation: A mathematical process used to compute an intermediate value of a quantity between two given values assuming a linear relationship.

Lap Splice: A connection of reinforcing steel made by lapping the ends of bars.

Lateral Load: A horizontal force, created by soil, wind, or earthquake, acting on a structure or its components.

Lateral Support: A horizontal member or assembly providing stability to a wall in the direction perpendicular to the plane of the wall.

Live Load: Any gravity vertical load other than dead load, or environmental loads, such as from wind, snow, rain, earthquake, or flood. Includes furniture, people, and personal effects.

Load-Bearing Value of Soil: The allowable load per surface area of soil. It is usually expressed in pounds per square foot (psf) or kilonewtons per square meter (kN/m²).

Seismic Force: The force exerted on a structure or portion thereof resulting from seismic (earthquake) ground motions.

Slab-on-Ground (Grade): A concrete slab, which is continuously supported by, and rests on, the soil directly below.

Slump: A measure of consistency of freshly mixed concrete equal to the subsidence of the molded specimen measured immediately after the removal of the slump cone.

Span: The clear horizontal distance between supports.

Specified Compressive Strength of Concrete: The compressive strength of concrete, f'_c , used in design and evaluated in accordance with Chapter 5 of ACI 318.

Stay-in-Place Concrete Forms: A concrete forming system using stay-in-place forms of foam plastic insulation, a composite of cement and foam insulation, a composite of cement and wood chips, or other insulating material for constructing cast-in-place concrete walls.

Stirrup: Steel bars, wires, or welded wire reinforcement generally oriented perpendicular to longitudinal reinforcement, properly anchored, and extending across the depth of concrete beams, lintels, or similar members to resist shear and diagonal tension stresses in excess of those permitted to be carried by the concrete alone.

Surcharge: The vertical load applied at the ground surface or above the level of the bottom of a footing. A surcharge load is any load which is imposed upon the surface of the soil close enough to the excavation to cause a lateral pressure to act on the system in addition to the basic earth pressure. (i.e. Backfill equipment).

Unbalanced Backfill Height: The difference between the interior and exterior finish ground level. Where an interior concrete slab-on-ground is provided, the unbalanced backfill height is the difference in height between the exterior finish ground level and the top of the slab. For a stem wall, the difference in height between the exterior finish ground level and the underside of the slab-on-ground.

Vapor Retarder: A layer of material used to retard the transmission of water vapor through a building wall or floor.

Wind Force: The force or pressure exerted on a building structure and its components resulting from wind. Wind forces are typically expressed in pounds per square foot (psf) or kilonewtons per square meter (kN/m)

preparation. The information has been compiled using sources believed to be reliable. Neither BuildBlock Building Systems, LLC, nor its employees or representatives make any representation or warranty, either expressed or implied, whether arising by statute, operation of law, custom of trade or otherwise, with respect to the accuracy or completeness of information contained in this document or its fitness for any particular purpose, nor do they assume any liability for damages or injury resulting from the application of such information.

BuildBlock Building Systems, LLC, assumes no responsibility regarding the use of its products or any other third party products referred to in this document. It is the full responsibility of the user to comply with all applicable regulations and building code requirements concerning the use of these products and any other products outlined in this product manual. It is further the responsibility of the user to research and understand safe methods of use and handling of these products. To properly comply with the building codes in your area, contact your local distributor, dealer, or building code inspector.

1.3 DISCLAIMERS

This manual was designed to be used as a reference guide only. This manual is not intended to be used as a replacement or substitute for the actual training by an experienced and properly trained BuildBlock Building Systems ICF professionals. Before starting any project BuildBlock recommends that you receive proper training. BuildBlock also recommends that you consult with design professionals familiar with the type and scope of project to be built. Training is available by contacting BuildBlock Building Systems, LLC at buildblock.com or 866-222-2575.

BuildBlock Building Systems, LLC, believes the information contained herein to be accurate at the time of writing and

2.0 MATERIALS

2.1 CONCRETE

2.1.1 Walls formed with BuildBlock Building Systems forms shall have a minimum concrete thickness of 6 inches (159 mm) for swimming pools except in Seismic Design Categories (SDC) D through F where a wall thickness of 8 inches (159 mm) is required.

2.1.2 Ready-mixed concrete for BuildBlock Building Systems walls shall meet the requirements of ASTM C 94 [5]. Slump shall be determined in accordance with ASTM C 143. Maximum slump and aggregate size requirements shall be in accordance with BuildBlock Building Systems Installation recommendations and meet the concrete compressive strength requirements herein. A suitable concrete mix design and placement methodology shall be selected for each project to ensure that concrete is properly consolidated in BuildBlock walls. Mix designs with a slump greater than 6 inches (152 mm) are not permissible.

2.1.3 The minimum compressive strength of concrete ($f'c$) shall be 3,000 psi at 28 days as determined in accordance with ASTM C 31 [4].

2.2 REINFORCING STEEL

2.2.1 Reinforcing steel used in BuildBlock Building Systems walls shall meet the requirements of ASTM A 615 [6]. The minimum yield strength of the reinforcing steel shall be Grade 60 (420 MPa). Steel reinforcement shall have a minimum concrete cover in accordance with ACI 318.

2.2.2 Horizontal wall reinforcement shall not vary outside of the middle third of the walls for all wall thicknesses, except as noted below.

2.2.2(a) Exception: Horizontal wall reinforcement in foundation walls is permitted to be placed closer to the inside face of the wall (Tension Side), provided that it does not conflict with the minimum required cover.

2.2.3 Vertical wall reinforcement in above-grade BuildBlock walls shall be placed in the center of the wall. Vertical wall reinforcement in below-grade BuildBlock walls shall be placed in the center of the wall.

2.2.4 Steel reinforcement in amounts and sizes required by these provisions shall be installed in accordance with the following requirements:

Vertical Reinforcement. Vertical reinforcement in ICF walls are assumed to be placed at center of wall.

Horizontal Reinforcement. Horizontal reinforcement shall be continuous around corners. Bent bars meeting a minimum required lap splice with the horizontal reinforcement shall be permissible at corners.

Splicing of Reinforcement. The longest practicable continuous length of horizontal or vertical rebar shall be used. When a splice is required in continuous reinforcement, rebar shall overlap a minimum of 40db (bar diameters) with a separation between bars of not greater than 8db.

Bar Size (Diameter in Eighths)	Lap Splice Length (Inches)
#3	15
#4	20
#5	25
#6	30
#7	35
#8	40

2.3 FORM MATERIALS

Expanded Polystyrene (EPS) & Polypropylene Plastic Web Ties
The physical properties of the Expanded Polystyrene (EPS) should comply with ASTM C578, latest edition. The plastic ties shall have sufficient strength to resist at least 8 feet of wet concrete which can be calculated in accordance with ACI 347-04 or latest edition.

3.0 TYPES OF STRUCTURAL MEMBERS

3.1 POOL WALLS & FOUNDATIONS

The structural elements addressed in this document consist of walls, below and above grade. The wall elements are analyzed as structural members in combined compression and bending. ACI 318 chapters 10 and 11 are the primary references for flexural and shear requirements that apply to reinforced concrete beams.

Concrete walls constructed with ICF systems in accordance with this document shall comply with the shapes and minimum concrete cross-sectional dimensions required in ref. [11]. Under the current ACI 318 code (ACI 318-19), chapters 10 and 14 contain most of the requirements for reinforced concrete walls, whether below grade or above grade. In some cases, wall elements can be analyzed and designed as unreinforced, or structural plain concrete walls provided they meet the provisions of chapter 14 of ACI 318.

4.0 BUILDBLOCK ICF SWIMMING POOL ENGINEERING TABLES

6" ICF WALLS (SURCHARGE)

TABLE 1 (SURCHARGE)¹
MINIMUM VERTICAL WALL REINFORCING FOR IN-GROUND
6" ICF FLAT PANEL SWIMMING POOL WALLS²



MAX. WALL HEIGHT (FT.)	EQUIVALENT FLUID PRESSURE (PCF)		
	30 PCF	45 PCF	60 PCF
	Vertical Rebar at Center of ICF Wall		
3'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#4@24"
4'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#4@24"
5'-0"	#4@12"; #5@24"	#4@12"; #5@24"	#4@12"; #5@16"
6'-0"	#4@12"; #5@16"	#4@8"; #5@12"	#4@6"; #5@12"
7'-0"	#4@8"; #5@12"	#4@6"; #5@9"	#5@6"; #6@9"
8'-0"	#5@8"; #6@12"	#5@6"; #7@12"	#6@4"; #7@6"
9'-0"	#6@8"; #7@12"	#7@6"	Not recommended

TABLE 2 (SURCHARGE)¹
MINIMUM FOOTING SIZE & REINFORCEMENT FOR IN-GROUND
6" ICF SWIMMING POOL WALLS²

MAX. WALL HEIGHT (FT.)	30 PCF	45 PCF	60 PCF
	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)
3'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.
4'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.
5'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.	W=42"; T=8" / #5@16" Transv & 5-#5 Long.
6'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.	W=42"; T=8" / #5@16" Transv & 5-#5 Long.
7'-0"	W=36"; T=8" / #5@16" Transv & 4-#5 Long.	W=48"; T=8" / #5@16" Transv & 5-#5 Long.	W=54"; T=8" / #5@12" Transv & 5-#5 Long.
8'-0"	W=48"; T=8" / #5@12" Transv & 5-#5 Long.	W=54"; T=8" / #5@12" Transv & 6-#5 Long.	W=60"; T=8" / #5@12" Transv & 6-#5 Long.
9'-0"	W=54"; T=8" / #5@12" Transv & 6-#5 Long.	W=66"; T=8" / #5@12" Transv & 7-#5 Long.	W=72"; T=8" / #5@8" Transv & 7-#5 Long.

NOTES FOR SURCHARGE TABLES

- The vertical load applied at the ground surface or above the level of the bottom of a footing (Or) A surcharge load is any load which is imposed upon the surface of the soil close enough to the excavation to cause a lateral pressure to act on the system in addition to the basic earth pressure. Example: Backfill equipment.
- See notes regarding Equivalent Fluid Pressure and Construction Procedures on Detail Sheet PE2
- All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

		6" BUILDBLOCK IN-GROUND SWIMMING POOL VERTICAL WALL & FOOTING MINIMUM REINFORCEMENT (SURCHARGE)				
		DATE/REV	03-19-2021	SCALE	NTS	DETAIL SHEET
		NOTES				PE1
CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.						

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING

6" ICF WALL ENGINEERING TABLE NOTES FOR IN-GROUND POOLS

These Tables DO NOT apply where "Significant Expansive Soils" are prevalent.

All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.




EQUIVALENT FLUID PRESSURE FROM SOIL TYPE TABLE

SOIL TYPE	SAND	SILT	CLAY
Equivalent Fluid Pressure (pcf)	30	45	60

- Determine appropriate below grade wall reinforcement table:
 - Table 1 - In Ground Pool - 6" thick walls (Surcharge)
 - Table 3 - In Ground Pool - 6" thick walls (No Surcharge)
- Determine the equivalent fluid pressure category of soil (30, 45, or 60 pcf). Consult a professional Geotechnical Engineer for help in determining these values or use the table located on sheet PE1 or PE3 as an approximation that should be verified.
- Determine the Maximum Pool wall height. Use Detail PE4A for 4'-0" or less and PE4B for over 4'-0".
- Vertical reinforcing in ICF wall is to be placed at the center of the wall.
- Horizontal reinforcing in the pool wall shall be #4@16" alternately placed on each side of the vertical reinforcing.
- Select reinforcing for the footing in Table 2 on sheet PE1.
- For Partial In Ground Swimming Pools where at least 5'-0" of the pool walls are below grade, an above-grade wall may extend up to 4'-0" above grade using the same vertical wall reinforcing as the below grade wall system. (The vertical wall reinforcing should be at least #4@16" or #5@24" on center for Low or Moderate earthquake zones).

CONSTRUCTION PROCEDURE:

- Excavate to pool wall height plus foundation. In high water table areas excavate approximately 6" below pool foundation for 6" of granular fill below foundation and pool bottom, allowing water to travel to outside drain system.
- Shore sides of excavation where greater than 4'-0" below grade for safety. Where possibility of expansive soils, remove soil behind the top of the wall 2 feet deep and about 4 feet away from top of wall-when back filling place granular, drainable soils in this area behind wall.
- Determine which footing design to use from detail sheets PE4A or PE4B. Form and install reinforcing for pool wall footing.
- Pour concrete for pool wall footing.
- Erect BuildBlock ICF wall blocks, place reinforcing and brace per BuildBlock Installation Manual.
- Pour concrete in walls per BuildBlock Installation Manual.
- For Details PE4A and PE4B, install EPS foam under Pool Bottom slab (if applicable) and place reinforcing steel for pool bottom slab.
- For Detail PE4A and Detail PE4B, pour concrete for pool bottom slab.
- For Detail PE4A and PE4B Pool walls may be backfilled if pool bottom concrete is 14 days cured, but no heavy equipment may be placed near the pool walls until the pool wall is 21 day cured. See notes for "No Surcharge" tables when using No Surcharge tables.
- Caution: Pool backfill equipment can still move pool walls. Care must be taken not to over-compact soil during backfilling or pool wall will move causing damage to structure. Any damage to pool walls is assumed by general contractor.

		6" ICF ENGINEERING TABLE NOTES FOR IN-GROUND POOLS			
		DATE/REV	04-03-17	SCALE	NTS
OFFICE: 405-840-3386 TOLL FREE: 866-222-2575 FAX: 831-597-0792 BUILDBLOCK.COM		NOTES			
		CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.			

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING

6" ICF WALLS (NO SURCHARGE)

TABLE 3 (NO SURCHARGE)³
MINIMUM VERTICAL WALL REINFORCING FOR IN-GROUND 6" ICF SWIMMING POOL WALLS

MAX. WALL HEIGHT (FT.)	EQUIVALENT FLUID PRESSURE (PCF)		
	30 PCF	45 PCF	60 PCF
	Vertical Rebar at Center of ICF Wall		
3'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
4'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
5'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#4@16"; #5@24"
6'-0"	#3@12"; #4@16"	#3@12"; #4@18"	#4@9"; #5@12"
7'-0"	#4@12"; #5@18"	#4@12"; #5@16"	#5@9"; #6@12"
8'-0"	#4@8"; #5@12"	#5@8"; #6@16"	#5@6"; #6@12"
9'-0"	#5@6"; #6@9"	#5@4"; #6@8"	Not recommended

3 Conditions required to use the "No Surcharge" Tables:

TABLE 4 (NO SURCHARGE)³
MINIMUM FOOTING SIZE & REINFORCEMENT FOR IN-GROUND 6" ICF SWIMMING POOL WALLS



MAX. WALL HEIGHT (FT.)	30 PCF	45 PCF	60 PCF
	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)
3'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.
4'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.
5'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.
6'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@16" Transv & 4-#5 Long.
7'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=42"; T=8" / #5@24" Transv & 4-#5 Long.	W=48"; T=8" / #5@12" Transv & 5-#5 Long.
8'-0"	W=42"; T=8" / #5@16" Transv & 5-#5 Long.	W=48"; T=8" / #5@16" Transv & 5-#5 Long.	W=54"; T=8" / #5@12" Transv & 6-#5 Long.
9'-0"	W=48"; T=8" / #5@12" Transv & 5-#5 Long.	W=60"; T=8" / #5@12" Transv & 6-#5 Long.	W=66"; T=8" / #5@8" Transv & 7-#5 Long.

3 Conditions required to use the "No Surcharge" Tables:

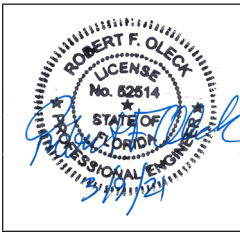
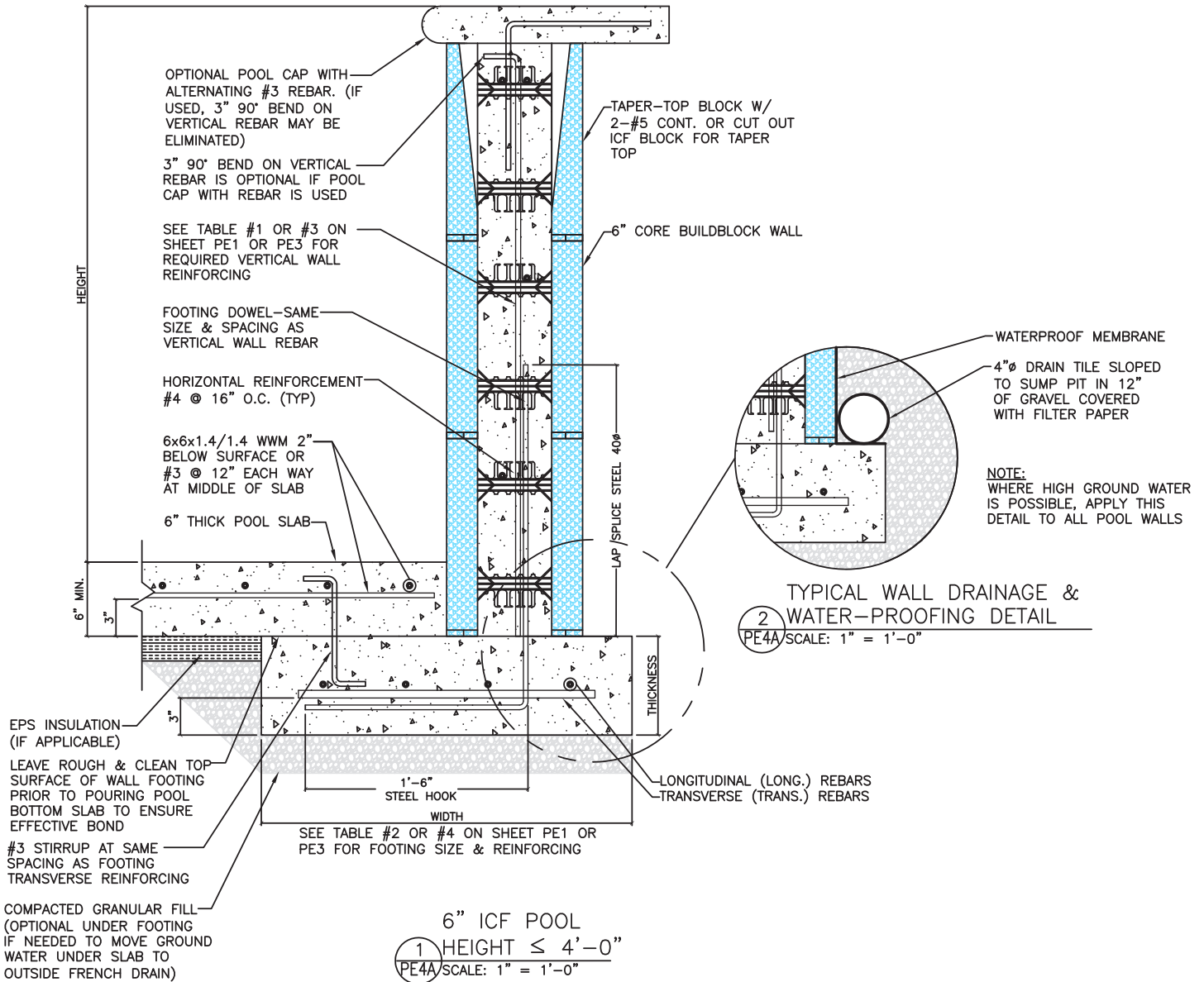
All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

NOTES FOR NO SURCHARGE TABLES

- No cars, trucks, concrete buggies, or heavy equipment can be within 8 feet of the pool walls until the concrete in the pool walls is fully cured (28 days) and water is at full level in the pool.
- Alternatively, brace the top of the pool wall from inside the pool, or across the pool (wall to wall) with a bracing system that can resist 200 pounds per linear foot at the top of the pool wall.

		6" BUILDBLOCK IN-GROUND SWIMMING POOL VERTICAL WALL & FOOTING MINIMUM REINFORCEMENT (NO SURCHARGE)			
		DATE/REV	04-03-17	SCALE	NTS
OFFICE: 405-840-3386 TOLL FREE: 866-222-2575 FAX: 831-597-0792 BUILDBLOCK.COM		NOTES	<p>CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.</p> <h1>PE3</h1>		

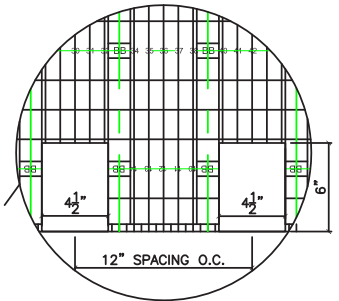
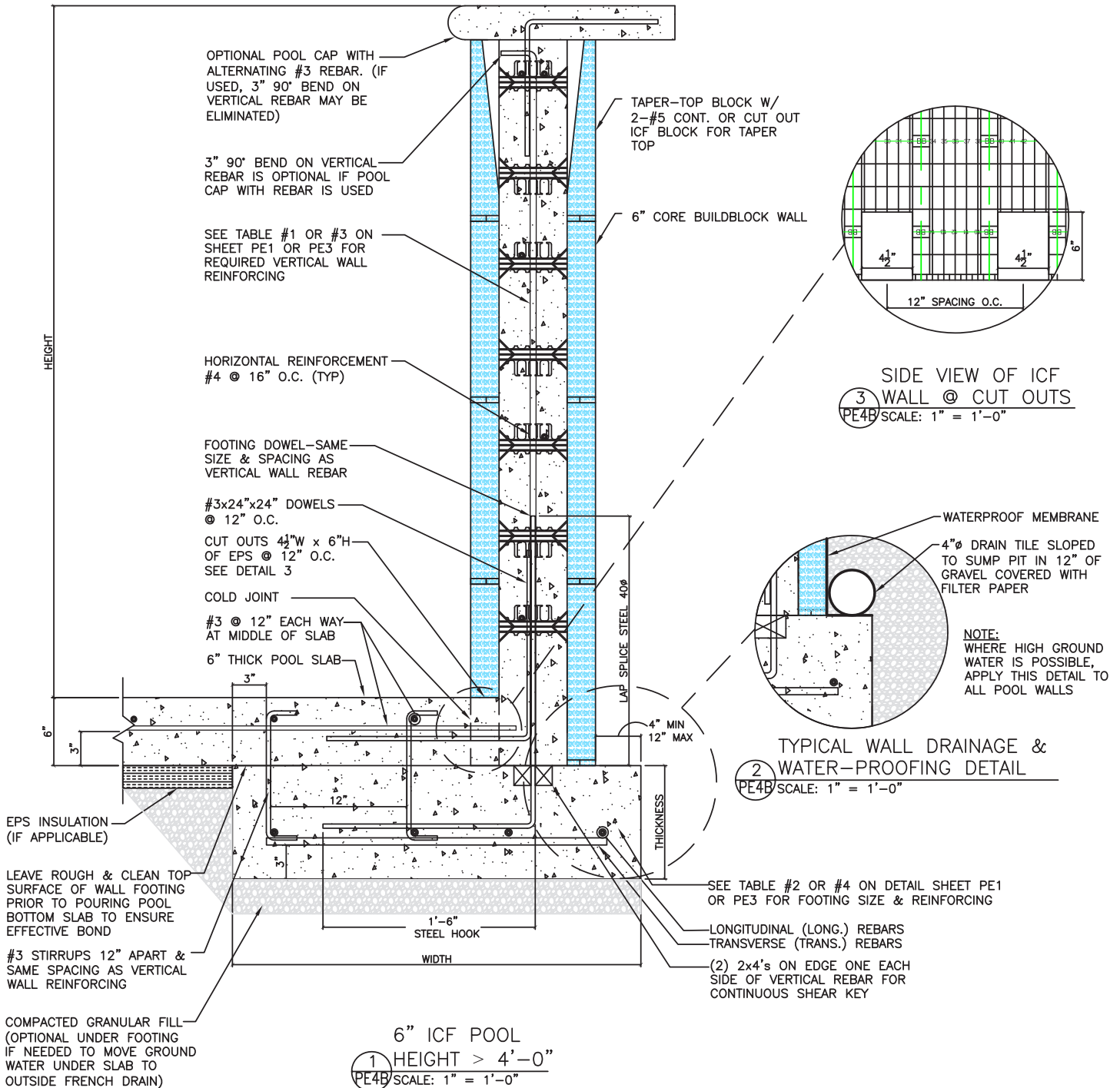
BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING



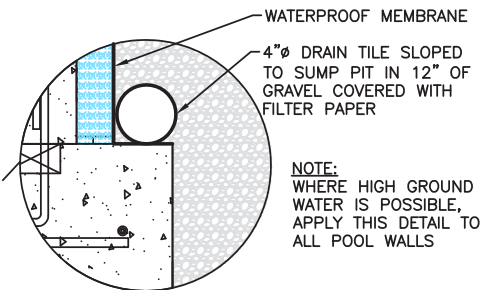
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6" BUILDBLOCK IN-GROUND SWIMMING POOL DETAIL 4 FEET OR LESS				
DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
NOTES				PE4A
CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.				

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING

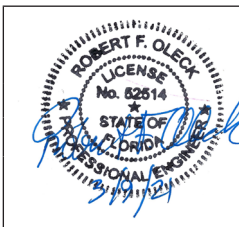


③ SIDE VIEW OF ICF WALL @ CUT OUTS
PE4B SCALE: 1" = 1'-0"



② TYPICAL WALL DRAINAGE & WATER-PROOFING DETAIL
PE4B SCALE: 1" = 1'-0"

NOTE:
WHERE HIGH GROUND WATER IS POSSIBLE, APPLY THIS DETAIL TO ALL POOL WALLS



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6" BUILDBLOCK IN-GROUND SWIMMING POOL DETAIL GREATER THAN 4 FEET

DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
NOTES				

CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PE4B

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING

8" ICF WALLS (SURCHARGE)

TABLE 5 (SURCHARGE)¹
MINIMUM VERTICAL WALL REINFORCING FOR IN-GROUND 8" ICF WALLS²

MAX. WALL HEIGHT (FT.)	EQUIVALENT FLUID PRESSURE (PCF)		
	30 PCF	45 PCF	60 PCF
	Vertical Rebar at Center of ICF Wall		
3'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
4'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
5'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#4@16"; #5@24"
6'-0"	#3@12"; #4@16"	#3@12"; #4@18"	#4@9"; #5@12"
7'-0"	#4@12"; #5@16"	#4@12"; #5@16"	#5@9"; #6@12"
8'-0"	#4@8"; #5@12"	#4@16; #5@12"	#5@6"; #6@12"
9'-0"	#5@9"; #6@16"	#5@6"; #6@9"	#6@6"; #7@9"



TABLE 6 (SURCHARGE)¹
MINIMUM FOOTING SIZE & REINFORCEMENT FOR IN-GROUND 8" ICF WALLS²

MAX. WALL HEIGHT (FT.)	30 PCF	45 PCF	60 PCF
	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)
3'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.
4'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.
5'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.	W=42"; T=8" / #5@16" Transv & 5-#5 Long.
6'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@24" Transv & 4-#5 Long.	W=42"; T=8" / #5@16" Transv & 5-#5 Long.
7'-0"	W=36"; T=8" / #5@16" Transv & 4-#5 Long.	W=48"; T=8" / #5@16" Transv & 5-#5 Long.	W=54"; T=8" / #5@12" Transv & 5-#5 Long.
8'-0"	W=48"; T=8" / #5@12" Transv & 5-#5 Long.	W=54"; T=8" / #5@12" Transv & 6-#5 Long.	W=60"; T=8" / #5@12" Transv & 6-#5 Long.
9'-0"	W=54"; T=8" / #5@12" Transv & 6-#5 Long.	W=66"; T=8" / #5@12" Transv & 7-#5 Long.	W=72"; T=8" / #5@8" Transv & 7-#5 Long.

All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

NOTES FOR SURCHARGE TABLES

- The vertical load applied at the ground surface or above the level of the bottom of a footing (Or) A surcharge load is any load which is imposed upon the surface of the soil close enough to the excavation to cause a lateral pressure to act on the system in addition to the basic earth pressure. Example: Backfill equipment.
- See notes regarding Equivalent Fluid Pressure and Construction Procedures on Detail Sheet PE5

		8" BUILDBLOCK IN-GROUND SWIMMING POOL VERTICAL WALL & FOOTING MINIMUM REINFORCEMENT (SURCHARGE)			
		DATE/REV	04-03-17	SCALE	NTS
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BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING

8" ICF WALL ENGINEERING TABLE NOTES FOR IN-GROUND POOLS

These Tables DO NOT apply where "Significant Expansive Soils" are prevalent.

All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.



EQUIVALENT FLUID PRESSURE FROM SOIL TYPE TABLE

SOIL TYPE	SAND	SILT	CLAY
Equivalent Fluid Pressure (pcf)	30	45	60

- Determine appropriate below grade wall reinforcement table:
 - Table 5 - In Ground Pool - 8" thick walls (Surcharge)
 - Table 7 - In Ground Pool - 8" thick walls (No Surcharge)
- Determine the equivalent fluid pressure category of soil (30, 45, or 60 pcf). Consult a professional Geotechnical Engineer for help in determining these values or use the table located on sheet PE5 or PE7 as an approximation that should be verified.
- Determine the Maximum Pool wall height. Use Detail PE8A for 4'-0" or less and PE8B for over 4'-0".
- Vertical reinforcing in ICF wall is to be placed at the center of the wall.
- Horizontal reinforcing in the pool wall shall be #4@16" alternately placed on each side of the vertical reinforcing.
- Select reinforcing for the footing in Table 6 on sheet PE5.
- For Partial In Ground Swimming Pools where at least 5'-0" of the pool walls are below grade, an above-grade wall may extend up to 4'-0" above grade using the same vertical wall reinforcing as the below grade wall system. (The vertical wall reinforcing should be at least #4@16" or #5@24" on center for Low or Moderate earthquake zones).

CONSTRUCTION PROCEDURE:

- Excavate to pool wall height plus foundation. In high water table areas excavate approximately 6" below pool foundation for 6" of granular fill below foundation and pool bottom, allowing water to travel to outside drain system.
- Shore sides of excavation where greater than 4'-0" below grade for safety. Where possibility of expansive soils, remove soil behind the top of the wall 2 feet deep and about 4 feet away from top of wall-when back filling place granular, drainable soils in this area behind wall.
- Determine which footing design to use from detail sheets PE8A or PE8B. Form and install reinforcing for pool wall footing.
- Pour concrete for pool wall footing.
- Erect BuildBlock ICF wall blocks, place reinforcing and brace per BuildBlock Installation Manual.
- Pour concrete in walls per BuildBlock Installation Manual.
- For Details PE8A and PE8B, install EPS foam under Pool Bottom slab (if applicable) and place reinforcing steel for pool bottom slab.
- For Detail PE8A and Detail PE8B, pour concrete for pool bottom slab.
- For Detail PE8A and PE8B Pool walls may be backfilled if pool bottom concrete is 14 days cured, but no heavy equipment may be placed near the pool walls until the pool wall is 21 day cured. See notes for "No Surcharge" tables when using No Surcharge tables.
- Caution: Pool backfill equipment can still move pool walls. Care must be taken not to over-compact soil during backfilling or pool wall will move causing damage to structure. Any damage to pool walls is assumed by general contractor.

		8" ICF ENGINEERING TABLE NOTES FOR IN-GROUND POOL				
		DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
		NOTES				<h1>PE6</h1>
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CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.						

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING

8" ICF WALLS (NO SURCHARGE)

TABLE 7 (NO SURCHARGE)³
MINIMUM VERTICAL WALL REINFORCING FOR IN-GROUND 8" ICF SWIMMING POOL WALLS

MAX. WALL HEIGHT (FT.)	EQUIVALENT FLUID PRESSURE (PCF)		
	30 PCF	45 PCF	60 PCF
	Vertical Rebar at Center of ICF Wall		
3'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
4'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
5'-0"	#3@16"; #4@24"	#3@16"; #4@24"	#3@16"; #4@24"
6'-0"	#3@12"; #4@24"	#4@16"; #5@24"	#4@12"; #5@18"
7'-0"	#3@9"; #4@16"	#4@12"; #5@16"	#4@8"; #5@12"
8'-0"	#4@12"; #5@16"	#5@9"; #6@16"	#5@6"; #6@12"
9'-0"	#4@8"; #5@12"	#5@6"; #6@9"	#6@6"; #7@9"

3 Conditions required to use the "No Surcharge" Tables

TABLE 8 (NO SURCHARGE)³
MINIMUM FOOTING SIZE & REINFORCEMENT FOR IN-GROUND 8" ICF SWIMMING POOL WALLS




MAX. WALL HEIGHT (FT.)	30 PCF	45 PCF	60 PCF
	FOOTING W&T (INCH) / REINFORCING (TRANSV & LONGIT.)	FOOTING W&T (INCH) / REINFORCING (TRANSV & LONGIT.)	FOOTING W&T (INCH) / REINFORCING (TRANSV & LONGIT.)
3'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.
4'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.
5'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.
6'-0"	W=24"; T=8" / #5@24" Transv & 3-#5 Long.	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=36"; T=8" / #5@16" Transv & 4-#5 Long.
7'-0"	W=30"; T=8" / #5@24" Transv & 4-#5 Long.	W=42"; T=8" / #5@24" Transv & 4-#5 Long.	W=48"; T=8" / #5@12" Transv & 5-#5 Long.
8'-0"	W=42"; T=8" / #5@16" Transv & 5-#5 Long.	W=48"; T=8" / #5@16" Transv & 5-#5 Long.	W=54"; T=8" / #5@12" Transv & 6-#5 Long.
9'-0"	W=48"; T=8" / #5@12" Transv & 5-#5 Long.	W=60"; T=8" / #5@12" Transv & 6-#5 Long.	W=66"; T=8" / #5@8" Transv & 7-#5 Long.

3 Conditions required to use the "No Surcharge" Tables:

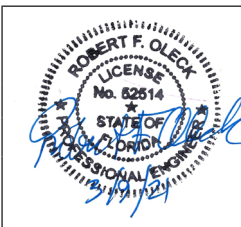
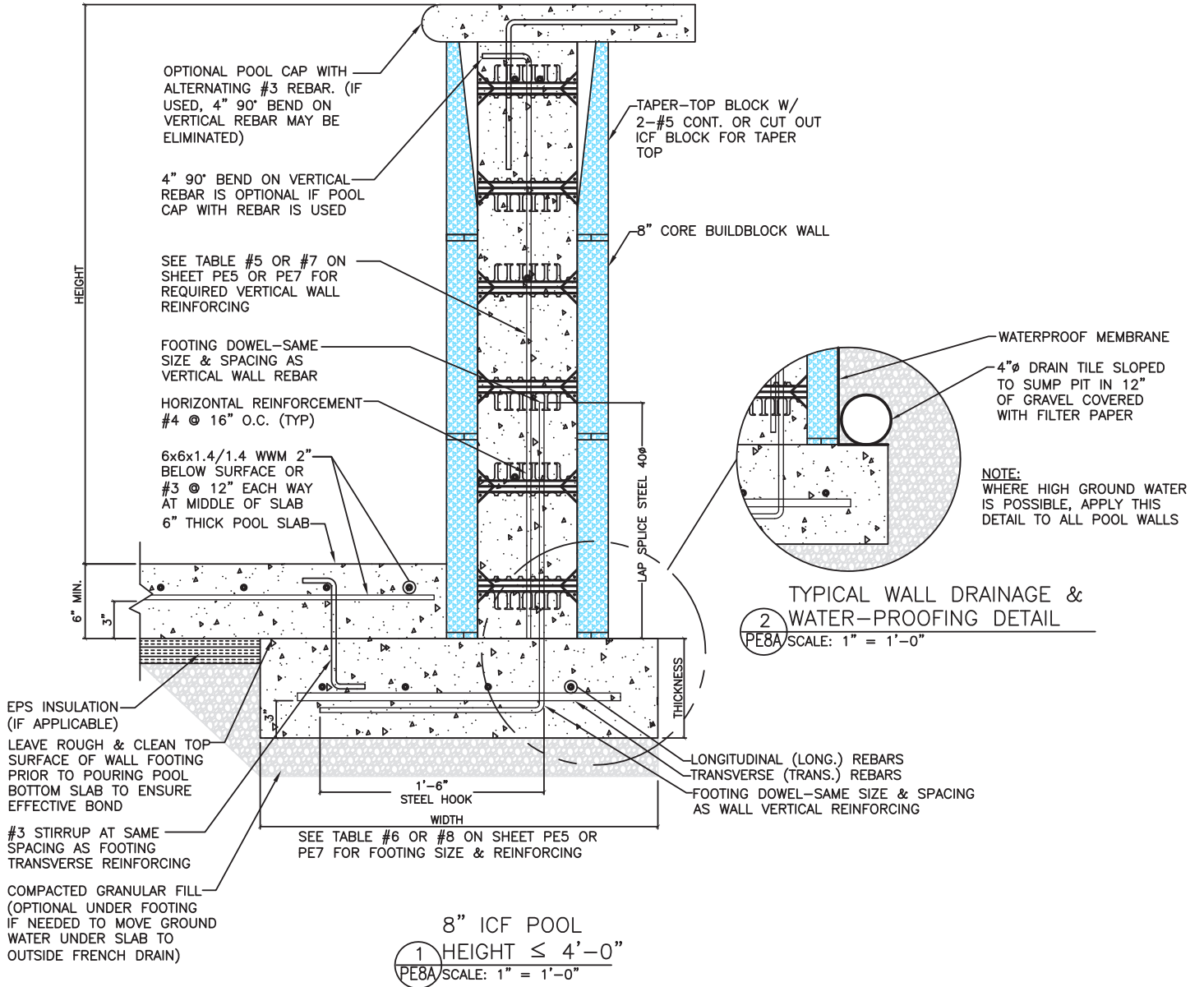
All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

NOTES FOR NO SURCHARGE TABLES

1. No cars, trucks, concrete buggies, or heavy equipment can be within 8 feet of the pool walls until the concrete in the pool walls is fully cured (28 days) and water is at full level in the pool.
2. Alternatively, brace the top of the pool wall from inside the pool, or across the pool (wall to wall) with a bracing system that can resist 200 pounds per linear foot at the top of the pool wall.
3. All footing designs are base upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

		8" BUILDBLOCK SWIMMING POOL VERTICAL WALL & FOOTING MINIMUM REINFORCEMENT (NO SURCHARGE)			
		DATE/REV	04-03-17	SCALE	NTS
OFFICE: 405-840-3386 TOLL FREE: 866-222-2575 FAX: 831-597-0792 BUILDBLOCK.COM		NOTES	<p>CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.</p> 		

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING



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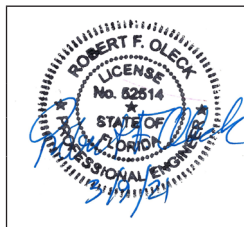
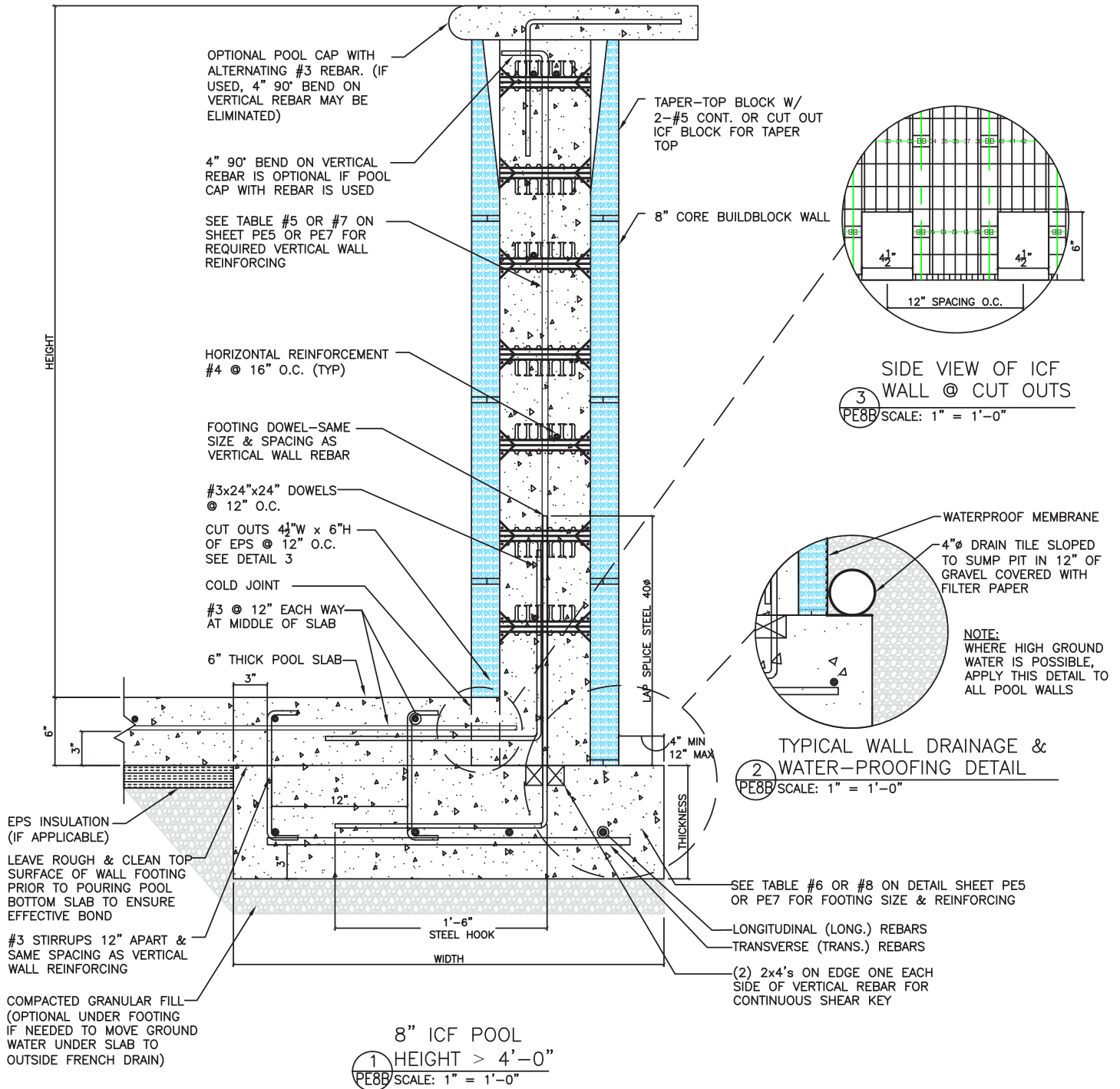
8" BUILDBLOCK IN-GROUND SWIMMING POOL DETAIL 4 FEET OR LESS

DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
NOTES				

CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PE8A

BUILDBLOCK IN-GROUND SWIMMING POOL ENGINEERING



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8" BUILDBLOCK IN-GROUND SWIMMING POOL DETAIL GREATER THAN 4 FEET

DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
NOTES				

CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PE8B

5.0 ABOVE GRADE BUILDBLOCK ICF SWIMMING POOL ENGINEERING TABLES

6" ICF WALLS

**TABLE 9 MINIMUM VERTICAL WALL REINFORCING FOR ABOVE GROUND
6" SWIMMING POOL WALLS¹**

MAX. WALL HEIGHT (FT.)	EARTHQUAKE ZONE		
	LOW <0.1G	MODERATE >0.1G <0.35G	HIGH >0.35G
	Vertical Rebar at Center of ICF Wall		
3'-0"	#4@16"; #5@24"	#4@16"; #5@24"	Not Recommended
4'-0"	#4@12"; #5@24"	#4@8"; #5@12"	Not Recommended
5'-0"	#4@8"; #5@16"	#4@6"; #5@12"	Not Recommended
6'-0"	#4@6"; #5@12"	5@6"; #6@9"	Not Recommended
7'-0"	#5@8"; #6@12"	Not Recommended	Not Recommended
8'-0"	Not Recommended	Not Recommended	Not Recommended
9'-0"	Not Recommended	Not Recommended	Not Recommended

¹ See notes regarding Seismic/Earthquake Values

**TABLE 10 MINIMUM FOOTING SIZE & REINFORCEMENT FOR ABOVE GROUND
6" ICF SWIMMING POOL WALLS**




MAX. WALL HEIGHT (FT.)	30 PCF	45 PCF	60 PCF
	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)
3'-0"	W=24"; T=10" / #5@24" Transv & 3-#5Long.	W=30"; T=10" / #5@24" Transv & 4-#5Long.	Not Recommended
4'-0"	W=30"; T=10" / #5@24" Transv & 4-#5Long.	W=36"; T=10" / #5@24" Transv & 4-#5Long.	Not Recommended
5'-0"	W=36"; T=10" / #5@24" Transv & 4-#5Long.	W=36"; T=10" / #4@12" Transv & 4-#5Long.	Not Recommended
6'-0"	W=36"; T=10" / #5@16" Transv & 4-#5Long.	W=42"; T=12" / #5@12" Transv & 5-#5Long.	Not Recommended
7'-0"	W=42"; T=10" / #5@12" Transv & 5-#5Long.	W=48"; T=12" / #5@12"; Transv & 5-#5Long.	Not Recommended
8'-0"	W=48"; T=12" / #5@12"; Transv & 5-#5Long.	W=54"; T=12" / #5@9" Transv & 6-#5Long.	Not Recommended
9'-0"	W=54"; T=12" / #5@8" Transv & 6-#5Long.	W=60"; T=12" / #5@6"; Transv & 7-#5Long.	Not Recommended

¹ See notes regarding Seismic/Earthquake Values

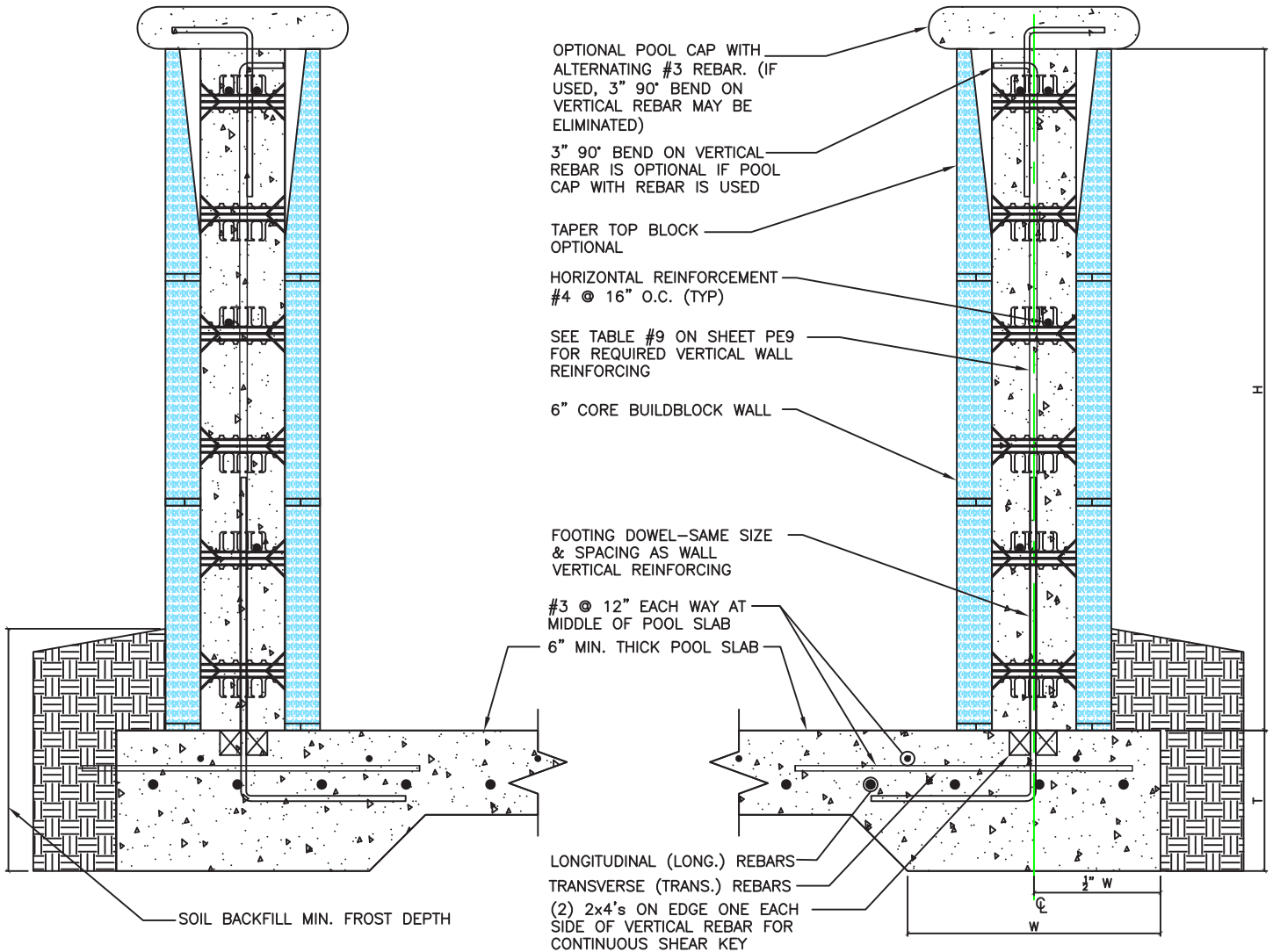
All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

NOTES FOR ABOVE GRADE SWIMMING POOL TABLES

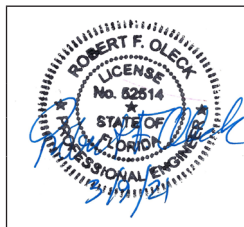
- Determine appropriate above grade wall reinforcement table:
 - Table 9 - Above Ground Pool-6" thick walls
- Determine the S_s seismic factor to determine whether this will be "Low", "Moderate" or "High" seismic values. Consult with a Professional Structural Engineer or Seismologist for help in determining these values
- Determine the Maximum Pool wall height. See Detail PE10 for Typical Above Ground Pool Layout and location of reinforcement
- Vertical reinforcing in ICF wall is assumed to be placed at the center of the wall
- Horizontal reinforcing in the pool wall is to be #4@16" at the center of the wall
- Select reinforcing for the footing from Table 10.
- Using the Seismic Maps from ASCE7-10, Chapter 22 locate the proposed pool site on the map and read the S_s value on the closest contour line (if near 2 lines, use the highest value). Figure 2201 S_s Risk-Adjusted Maximum Considered Earthquake (MCE_s) Ground Motion Parameter for the Conterminous United States for 0.2s Spectral Response Acceleration (5% of Critical Damping), Site Class B.
- For Partial In-Ground Swimming Pools where at least 5'-0" of the pool walls are below grade, an above-grade wall may extend up to 4'-0" above grade using the same vertical wall reinforcing as the below grade wall system. (The vertical wall reinforcing should be at least #4@16" or #5@24" on center for Low or Moderate Earthquake Zones)

		6" BUILDBLOCK ABOVE GROUND SWIMMING POOL VERTICAL WALL & FOOTING MINIMUM REINFORCEMENT			
		DATE/REV	04-03-17	SCALE	NTS
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		CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.			

BUILDBLOCK ABOVE GROUND SWIMMING POOL ENGINEERING



1 TYPICAL 6" ICF ABOVE GROUND POOL CROSS SECTION
 PE10 SCALE: 1" = 1'-0"



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TYPICAL 6" ICF ABOVE GROUND SWIMMING POOL WALL
 CROSS-SECTION DETAIL

DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
NOTES				

CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PE10

BUILDBLOCK ABOVE GROUND SWIMMING POOL ENGINEERING

8" ICF WALLS

TABLE 11 MINIMUM VERTICAL WALL REINFORCING FOR ABOVE GROUND 8" ICF FLAT PANEL SWIMMING POOL WALLS¹

MAX. WALL HEIGHT (FT.)	EARTHQUAKE ZONE		
	LOW <0.1G	MODERATE >0.1G <0.35G	HIGH >0.35G
	Vertical Rebar at Center of ICF Wall		
3'-0"	#4@16"; #5@24"	#4@16"; #5@24"	Not Recommended
4'-0"	#4@16"; #5@24"	#4@16"; #5@24"	Not Recommended
5'-0"	#4@16"; #5@24"	#4@12"; #5@16"	Not Recommended
6'-0"	#4@12"; #5@16"	#4@8"; #5@12"	Not Recommended
7'-0"	#4@8"; #5@12"	#4@6"; #5@12"	Not Recommended
8'-0"	#5@12"; #4@8"	#6@9"; #7@12"	Not Recommended
9'-0"	#5@8"; #6@12"	#6@6"; #7@8"	Not Recommended

*1 See notes regarding Seismic/Earthquake Value



TABLE 12 MINIMUM FOOTING SIZE & REINFORCEMENT FOR ABOVE GROUND 8" ICF SWIMMING POOL WALLS

MAX. WALL HEIGHT (FT.)	30 PCF	45 PCF	60 PCF
	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)	FOOTING WIDTH & THICKNESS (INCH) REINFORCING (TRANSV & LONGIT.)
3'-0"	W=24"; T=10" / #5@24" Transv & 3-#5Long.	W=30"; T=10" / #5@24" Transv & 4-#5Long.	Not Recommended
4'-0"	W=30"; T=10" / #5@24" Transv & 4-#5Long.	W=36"; T=10" / #5@24" Transv & 4-#5Long.	Not Recommended
5'-0"	W=36"; T=10" / #5@24" Transv & 4-#5Long.	W=36"; T=10" / #4@12" Transv & 4-#5Long.	Not Recommended
6'-0"	W=36"; T=10" / #5@16" Transv & 4-#5Long.	W=42"; T=12" / #5@12" Transv & 5-#5Long.	Not Recommended
7'-0"	W=42"; T=10" / #5@12" Transv & 5-#5Long.	W=48"; T=12" / #5@12"; Transv & 5-#5Long.	Not Recommended
8'-0"	W=48"; T=12" / #5@12"; Transv & 5-#5Long.	W=54"; T=12" / #5@9" Transv & 6-#5Long.	Not Recommended
9'-0"	W=54"; T=12" / #5@8" Transv & 6-#5Long.	W=60"; T=12" / #5@6"; Transv & 7-#5Long.	Not Recommended

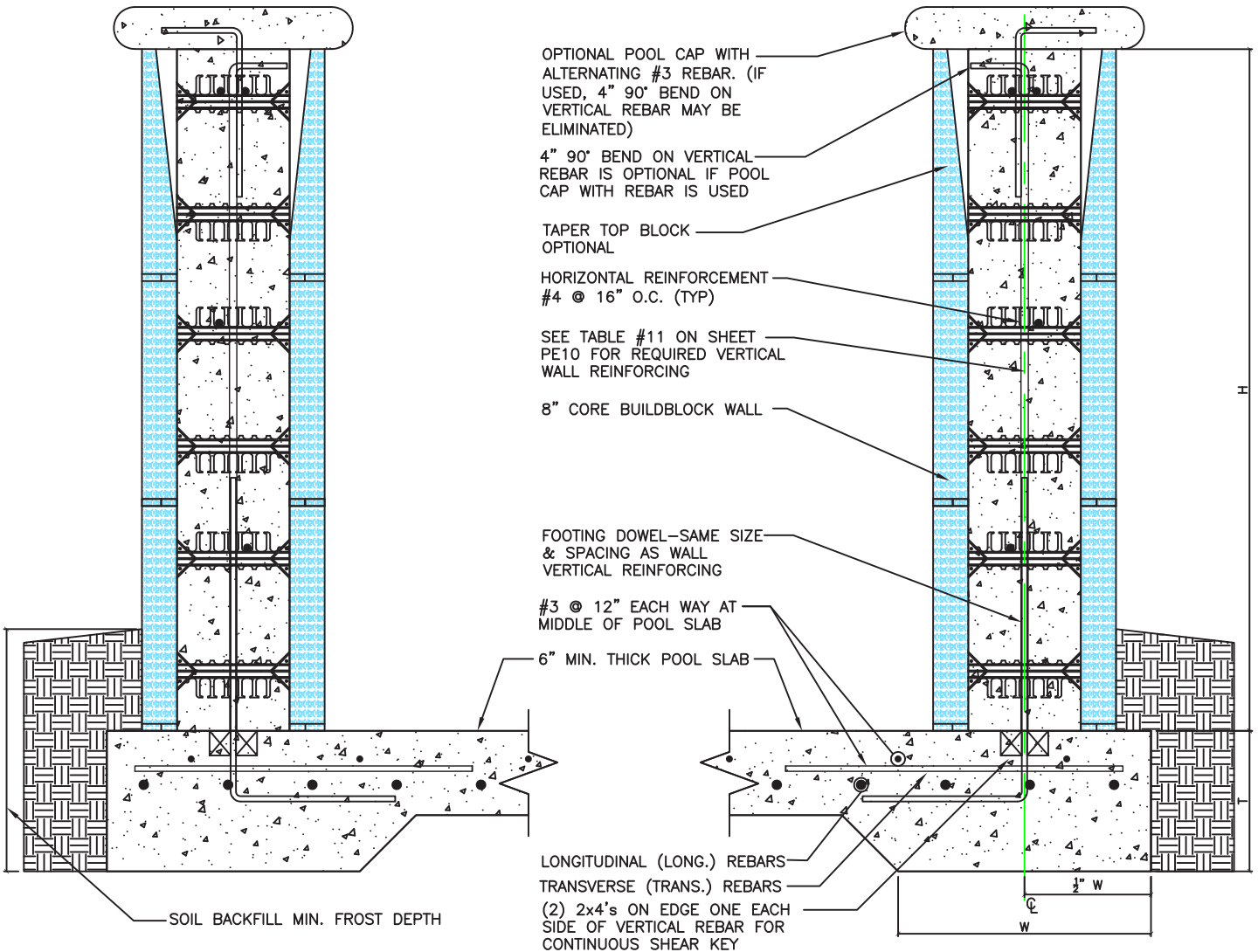
¹ See notes regarding Seismic/Earthquake Values
All footing designs are based upon a Minimum Soil Load Bearing Capacity of 2,000 psf.

NOTES FOR ABOVE GRADE SWIMMING POOL TABLES

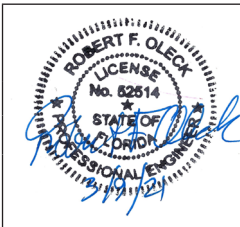
- Determine appropriate above grade wall reinforcement table:
 - Table 1 - In Ground Pool-8" thick walls
- Determine the S_s seismic factor to determine whether this will be "Low", "Moderate" or "High" seismic values. Consult with a Professional Structural Engineer or Seismologist for help in determining these values
- Determine the Maximum Pool wall height. See Detail PE12 for Above Ground Pool Layout and location of reinforcement
- Vertical reinforcing in ICF wall is assumed to be placed at the center of the wall
- Horizontal reinforcing in the pool wall is to be #4@16" at the center of the wall
- Select reinforcing for the footing from Table 12.
- Using the Seismic Maps from ASCE7-10, Chapter 22 locate the proposed pool site on the map and read the S_s value on the closest contour line (if near 2 lines, use the highest value). Figure 2201 S_s Risk-Adjusted Maximum Considered Earthquake (MCE_s) Ground Motion Parameter for the Continuum United States for 0.2s Spectral Response Acceleration (5% of Critical Damping), Site Class B.
- For Partial In-Ground Swimming Pools where at least 5'-0" of the pool walls are below grade, an above-grade wall may extend up to 4'-0" above grade using the same vertical wall reinforcing as the below grade wall system. (The vertical wall reinforcing should be at least #4@16" or #5@24" on center for Low or Moderate Earthquake Zones)

		8" BUILDBLOCK ABOVE GROUND SWIMMING POOL VERTICAL WALL & FOOTING MINIMUM REINFORCEMENT			
		DATE/REV	04-03-17	SCALE	NTS
OFFICE: 405-840-3386 TOLL FREE: 866-222-2575 FAX: 831-597-0792 BUILDBLOCK.COM		NOTES	PE11 CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.		

BUILDBLOCK ABOVE GROUND SWIMMING POOL ENGINEERING



TYPICAL 8" ICF ABOVE GROUND SWIMMING POOL WALL CROSS SECTION
 1
 PE12 SCALE: 1" = 1'-0"



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TYPICAL 8" ICF ABOVE GROUND SWIMMING POOL WALL CROSS-SECTION DETAIL

DATE/REV	04-03-17	SCALE	NTS	DETAIL SHEET
NOTES				

CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND NATIONAL CODES. ALL DRAWINGS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PE12

6.0 REFERENCES

BUILDBLOCK ENGINEERING MANUAL REFERENCES

- [1] ACI 350.3-06: Seismic Design of Liquid-Containing Concrete Structures and Commentary
- [2] Building Code Requirements for Structural Concrete (ACI 318), American Concrete Institute, Detroit, Michigan. 2019.
- [3] Minimum Design Loads for Buildings and Other Structures (ASCE 7-16), American Society of Civil Engineers, New York, New York. 2016.
- [4] ASTM C 31/C 31M-08b Standard Practice for Making and Curing Concrete Test Specimens in the Field, American Society for Testing and Materials (ASTM), West Conshohocken, Pennsylvania. 1997.
- [5] ASTM C 94-17 Standard Specification for Ready-Mixed Concrete, American Society for Testing and Materials (ASTM), West Conshohocken, Pennsylvania.
- [6] ASTM A 615 / A 615 M-15 Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement, American Society for Testing and Materials (ASTM), West Conshohocken, Pennsylvania.
- [7] ASTM A 706 / A 706 M-16 Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement, American Society for Testing and Materials (ASTM), West Conshohocken, Pennsylvania.
- [8] International Residential Code (IRC), International Code Council, Inc., Falls Church, Virginia. 2021.
- [9] International Building Code, International Code Council, Falls Church, Virginia, 2021.
- [10] 2020 Florida Building Code – 5th Edition
- [11] 2021 International Swimming Pool and Spa Code
- [12] International Building Code (IRC), International Code Council, Inc., Falls Church, Virginia. 2021.



North American Manufacturing Facilities

BuildBlock Building Systems has fourteen manufacturing facilities across North America and plans to add locations for the next several years. This means we have the manufacturing capacity to meet your ICF needs now and in the future. Shorter shipping distances mean lower freight costs for you and your customers.

BuildBlock continually develops new products and technologies solving problems and meeting needs in residential, commercial, industrial, and institutional construction. We innovate with the goal of creating cost-effective techniques and products for our customers.

BuildBlock partners have facilities around the world to meet your needs including the Philippines, Cyprus, and Egypt and continue to expand. Choosing BuildBlock isn't just about choosing the best ICF block on the market, it's about finding a partner with a strong commitment to our customers, our business partners, and our industry.

Mission

To harmoniously use the extraordinary gifts and talents of our distributors and dealers to fulfill the goals and dreams of millions of people who want to build better structures as reflected by our motto: "Build it once. Build it for life."

To manufacture one of the most affordable and highest quality Insulating Concrete Forms available in the world today.

To build greatness by providing the resources and services needed for building successful ICF businesses and sustainable ICF structures.

To build an enduring, profitable company while conducting business with Godly character, fairness and integrity.

Vision

We envision a world where BuildBlock ICF technology delivers energy-efficient, safe, healthy, comfortable and sustainable ICF homes and buildings to millions of people worldwide through the uncompromising integrity of BuildBlock's team of distributors, dealers and customers.

Values

INTEGRITY – We strive to balance the best interests of our distributors, dealers, customers, employees, and investors in an environment of Godly character and honesty.

EDUCATION – We seek to educate the public on the valuable benefits of ICF structures while recognizing that in order to expand the industry, we must educate installers, architects, and engineers in ICF best practices.

CUSTOMER SATISFACTION – We commit to building a team of employees that is inspired, empowered, and driven to meet the ever-changing needs of our distributors, dealers, and customers while we seek to distinguish ourselves in the marketplace by delivering exceptional customer satisfaction.

INNOVATION – We value and invest heavily in innovation while continually expanding our product line through the development of technologically advanced products.

QUALITY – We commit to producing the finest quality products. We stand by the belief that our brand embodies quality, consistency, user satisfaction, and service.

PROFITABILITY – We commit to the strong work ethic and financial prudence necessary to deliver financial results for our business partners and investors and to ensure a long-term profitable relationship.

EMPOWERMENT – We dedicate ourselves to empowering people to improve and enrich their lives and the world around them.

CONTACT BUILDBLOCK

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The day for building your walls will come, the day for extending your boundaries.

Micah 7:11

