The PE stamp signifies that the design tables have been prepared in accordance with Uniform ES ER-0279

Basic Requirements

- Footings designed according to ACI318-14, IRC-2015 or IBC-2015.

Approval Method

- Footings that support building loads: ACI 318-14 section 1.10; IRC-2015 or IBC-2015 section 104.11.
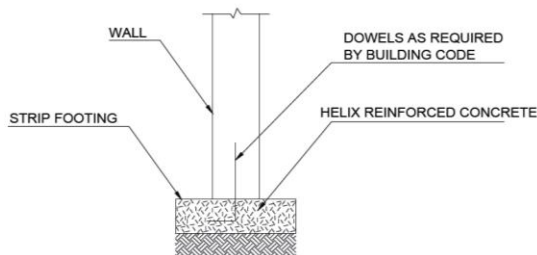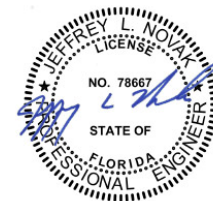
Design Basis and Class

- Class A (Shrinkage and temperature): When original reinforcement ratio is less than 0.002 Uniform-ES ER-0279 Section 4.2.
- Class B (Structural reinforcement): When original reinforcement ratio exceeds 0.002 Uniform-ES ER-0279 Section 4.3.

Helix Conversion

- For residential footings the International Residential Code (IRC-2015) section R403 describes the use of plain concrete footings provided that the concrete will be in compression. However, it is customary to provide reinforcement to minimize cracking and hold tight any cracks that occur due to drying shrinkage and/or differential temperature effects. This temperature and shrinkage reinforcement will resist tensile forces. According to ACI 318-14, the minimum steel ratio for temperature and shrinkage reinforcement is 0.0018. This is the ratio of area of steel reinforcement to the gross area of concrete. A dosage rate of **11 lb/yd3** of Helix 5-25 is calculated to have the same or larger direct tension capacity as the original rebar or mesh configurations with a reinforcement ratio of 0.0018.This is independent of the footing thickness, since the volume of Helix increases proportionally with increasing footing thickness.
- For all other footings, the following table contains dosage rates of Helix that will provide the same or larger moment capacity than the original rebar or mesh configurations using Uniform-ES ER-0279 and elastic design methods, Helix class B design.

Dosage of Helix 5-25 for Common Footing Thickness and Rebar Configurations

Rebar size & spacing (60 ksi)	Steel area (in^2/ft)	Footing thickness				
		8 inches	10 inches	12 inches	14 inches	16 inches
		Helix 5-25 Dosage (lb/yd^3)				
#4 @ 6"	0.40	32.5	30	27.5	25.0	23.0
#4 @ 8"	0.30	24.6	23	21	19.0	17.5
#4 @ 10"	0.24	20.5	18.6	17	15.5	14.5
#4 @ 12"	0.20	17	15.7	14.5	13.5	12.0
#5 @ 8"	0.47	DR	DR	31.5	28.6	26.5
#5 @ 10"	0.37	29.6	27.7	25.5	23.5	21.5
#5 @ 12"	0.31	25	23.5	21.5	19.5	17.8

Notes:
1. Table is based on concrete with a minimum specified compressive strength of 3,000 psi.
2. Table values are calculated using a concrete cover for the rebar of 3 inches from the bottom of the footing.
3. DR indicates design is required. Please contact your Helix Representative.

Instructions for Conversion

- If needed, calculate the rebar spacing by dividing the width or the length of the footing by the number of rebar provided.
- Select the dosage in the table above based on the original footing thickness and reinforcement detail.
- Review Uniform-ES ER-0279 to assure compliance with restrictions.
- To activate the performance guarantee submit your design to sales@helixsteel.com.
- Note the drawing with the Helix alternative "use the rebar as shown on the drawing or XX lb/yd3 Helix 5-25 designed in accordance with Uniform-ES ER-0279".
- Instruct the contractor to contact Helix for pricing, delivery and installation instructions at 734-322-2114 or sales@helixsteel.com.
- This table shows only a sampling of common configurations. Any footing configuration meeting the basic requirements above may be designed with Helix in accordance with Uniform-ES ER-0279 using Class B Design, Section 4.3 and using the methods described in section 4.6.

Example

- Strip footing 10" thick and 20" wide.
- Reinforcement is (2) #4 bars located 3-inches off the bottom (concrete cover).
- Concrete compressive strength 3000 psi.

Step 1 - Calculate the ratio of area of steel reinforcement to the gross area of concrete: (2 x 0.2)/ (20" x 10") = 0.0020 > 0.0018 therefore use the table.

Step 2 - Calculate the rebar spacing by dividing the width or the length of the footing by the number of rebar provided:
20" / 2 = 10" Spacing.

Step 3 - Find the column in the table for the footing thickness (yellow).

Step 4 - Read across the table for #4 @ 10" spacing or rebar area (blue).

Step 5 - Select the dosage rate at the intersection, 18.6 lb/yd3 (green).

Step 6 - Add note to drawing with the Helix alternative: "Use the rebar as shown on the drawing or 18.6 lb/yd3 Helix 5-25 designed in accordance with Uniform-ES ER-0279.

Step 7 - If required, a calculation can be provided for the result shown in the table. Contact your local Helix representative.

Dosage of Helix 5-25 for Common Footing Thickness and Rebar Configurations

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Build **STRONGER** structures with Less labor & Less time

HELIX ™
Micro-Rebar

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