

Helix Micro-Rebar Application Guide

Below Grade Walls

12 Years of Success

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Nestle
Audi
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Coca-Cola
3M
Alstom Energy
Ventower
Detroit Diesel
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Martin Marietta
Behr Automotive
Rio Tinto
and more...

Basic Requirements

- Walls complies with requirements of IRC
- 6", 8" and 10" thickness wall.
- Walls shall be braced against lateral translation!. The shorter distance between bracing shall be less than 24 times the wall thickness.
- Minimum one #4 bar around all openings.
- Doweling provided at all cold joints at spacing equal to or less than rebar spacing in table I but not less than #6@48"spacing.

Approval Method, Design Basis and Class

- UES ER-0279 Section 4.3
- Class B: Laterally Supported Walls

Instructions

- Select the dosage in the table below based on the original thickness and reinforcement detail.
- Review Uniform ES ER-0279 to assure compliance with restrictions
- To activate the performance guarantee* submit your design to www.helixsteel.com technical to register.
- Note the drawing with the Helix alternative "use the rebar as shown on the drawing or XX lb/yd Helix 5-25 designed in accordance with Uniform ES ER-0279"
- Instruct 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 configuration. Any wall 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 4.6

Dosage of Helix 5-25 for 8-inch Nominal Thickness Residential Flat Stay-in-Place or Removable Formwork Basement Walls (lb/yd³)^(1,2,3,4,5)

Maximum Height of Basement Wall (feet)	Maximum Unbalanced Backfill Height (feet)	Minimum Vertical Reinforcement-Bar Size and Spacing (in)					
		Soil Classes and Design Lateral Soil (psf per foot of depth)					
		GW, GP, SW, SP 30		GM, GC, SM, SM-SC and ML 45		SC, ML-CL and inorganic CL 60	
8	4	NR	5.0	NR	5.0	NR	5.0
	5	NR	5.0	NR	5.0	NR	5.0
	6	NR	5.0	NR	5.0	#6@37"	9 lbs/yd ³ Helix plus#4@36"
	7	NR	5.0	#6@36"	9 lbs/yd ³ Helix plus#4@36"	#6@35"	9 lbs/yd ³ Helix plus#4@36"
	8	#6@41"	9 lbs/yd ³ Helix plus#4@36"	#6@35"	9 lbs/yd ³ Helix plus#4@36"	#6@26"	9 lbs/yd ³ Helix plus#4@24"
9	4	NR	5.0	NR	5.0	NR	5.0
	5	NR	5.0	NR	5.0	NR	5.0
	6	NR	5.0	NR	5.0	#6@35"	9 lbs/yd ³ Helix plus#4@36"
	7	NR	5.0	#6@35"	9 lbs/yd ³ Helix plus#4@36"	#6@32"	9 lbs/yd ³ Helix plus#4@36"
	8	#6@36"	9 lbs/yd ³ Helix plus#4@36"	#6@32"	9 lbs/yd ³ Helix plus#4@36"	#6@23"	9 lbs/yd ³ Helix plus#4@20"
10	9	#6@35"	9 lbs/yd ³ Helix plus#4@36"	#6@25"	9 lbs/yd ³ Helix plus#4@24"	#6@18"	9 lbs/yd ³ Helix plus#4@12"
	4	NR	5.0	NR	5.0	NR	5.0
	5	NR	5.0	NR	5.0	NR	5.0
	6	NR	5.0	NR	5.0	#6@35"	9 lbs/yd ³ Helix plus#4@36"
	7	NR	5.0	#6@35"	9 lbs/yd ³ Helix plus#4@36"	#6@29"	9 lbs/yd ³ Helix plus#4@36"
	8	#6@35"	9 lbs/yd ³ Helix plus#4@36"	#6@29"	9 lbs/yd ³ Helix plus#4@36"	#6@21"	9 lbs/yd ³ Helix plus#4@18"
	9	#6@34"	9 lbs/yd ³ Helix plus#4@36"	#6@22"	9 lbs/yd ³ Helix plus#4@20"	#6@16"	9 lbs/yd ³ Helix plus#4@10"
10	#6@27"	9 lbs/yd ³ Helix plus#4@30"	#6@17"	9 lbs/yd ³ Helix plus#4@12"	#6@13"	9 lbs/yd ³ Helix plus#4@8"	

See page 2 for table notes/assumptions.

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

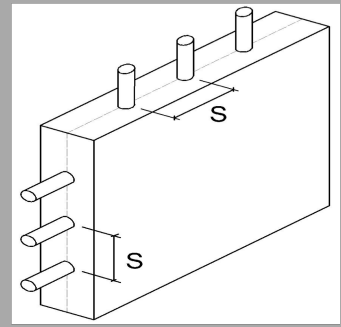
*See www.helixsteel.com/technical/specify-helix for further details

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HELIXTM
Micro-Rebar

Given

- Basement wall 8" thick, 9' tall and 20' long
- Backfill height is 8 feet
- Soil class SM 45psf/foot
- Vertical reinforcement is #6 bars at 32" at the center of the wall
- Horizontal reinforcement is #4 bars at 48" at the center of the wall



Calculation:

- Step 1 - calculate the bracing ratio which must be less than 24 for the least of height or length/thickness
 Height (108") / thickness (8") = 13.5 ; length (240") / thickness (8") = 30 The smaller is less than 24 therefore Class B is okay.
- Step 2 - find the column in the table for the soil class condition (yellow)
- Step 3- read across the table for the wall height and backfill height (blue)
- Step 4 - select the dosage rate at the intersection , 9.0 lb/yd³ Helix plus #4 bars at 36"(green)
- Step 5 - Add note to drawing with the Helix alternative: "Use the rebar as shown on the drawing or 9.0 lb/yd³ Helix 5-25 plus #4 bars at 36" designed in accordance with Uniform ES ER-0279,"
- Step 6- If required, a calculation can be provided for the result shown in the table. Contact your local Helix representative.

Maximum Height of Basement Wall	Maximum Unbalanced Backfill Height	Minimum Vertical Reinforcement-Bar Size and Spacing (in)					
		Soil Classes and Design Lateral Soil (psf per foot of depth)					
		GW, GP, SW, SP 30		GM, GC, SM, SM-SC and ML 45		SC, ML-CL and inorganic CL 60	
8	4	NR	5.0	NR	5.0	NR	5.0
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	9	#6@34"	5.0	#6@22"	9 lbs/yd ³ Helix plus#4@20"	#6@16"	9 lbs/yd ³ Helix plus#4@10"
10	#6@27"	5.0	#6@17"	9 lbs/yd ³ Helix plus#4@12"	#6@13"	9 lbs/yd ³ Helix plus#4@8"	

Notes:

1. The grey highlighted values are the Helix 5-25 dosage rates in lb/yd³ conforming to Helix Class B design. The Helix dose listed is an alternative for all required vertical rebar.
2. Table is based on IRC-2012 TABLE R404.1.2(4)-Minimum Vertical Wall Reinforcement for 8-inch thick Flat Stay-in-Place or Removable Formwork Basement Walls
3. Table is based on concrete with a minimum specified compressive strength of 3,000 psi and rebar minimum yield strength of 60,000 psi.
4. Nominal wall thickness. The actual as-built thickness of a flat wall shall not be more than 1/2-inch less or more than 1/4-inch more than the nominal dimension indicated.
5. Interpolation is not permitted.
6. One top horizontal rebar per IRC-2012 Table E404.1.2(1), should remain. All other horizontal rebar replaced with helix dose.