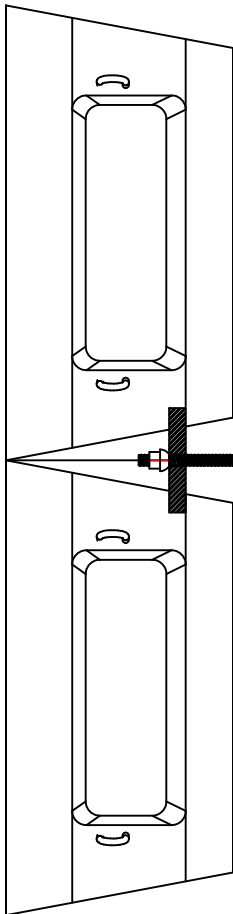
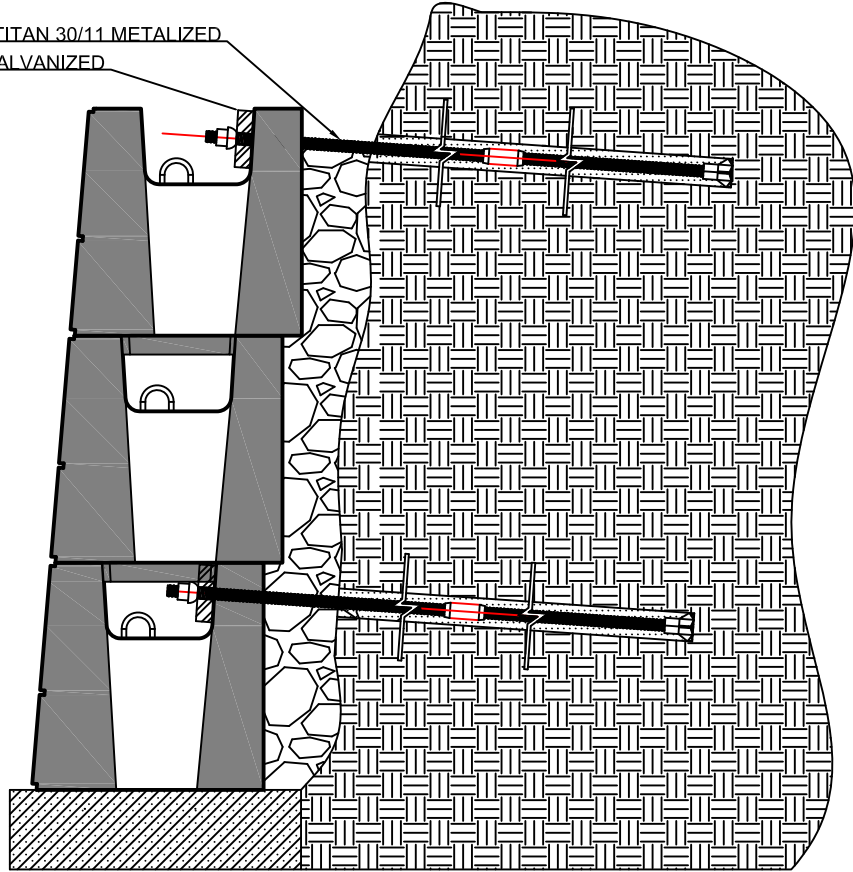


# MagnumStone

## >>> SOIL ANCHOR

TITAN 30/11 METALIZED  
BEARING PLATE 11" X 7.6" X 1.75" THK. GALVANIZED



DESIGN LOAD (KIPS)	fc(28 days) (psi)	BEARING PLATE SIZE (in)	BEARING PLATE THICKNESS (in)
29.7	4,000	10 X 5.5	1.5
25.0	4,000	9.5 X 5.25	1.5
20.0	4,000	9.25 X 4.75	1.5
15.0	4,000	9.0 X 4.25	1.25
10.0	4,000	8.75 X 3.5	1.25
5.0	4,000	8.0 X 3.0	1.0

**NOTE:**  
 - TITAN 30/16 ROD HAVE TO BE METALIZED  
 - BEARING PLATE GRADE 50 KSI, GALVANIZED AFTER FABRICATION.  
 - VERTICAL/HORIZONTAL NAILS SPACING BASED ON REQUIRED CAPACITY.

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		CORNERSTONE
SCALE:		DRAWN BY: TOM
DATE: DEC.04.09.		REVISED
TITAN 30/16 & MAGNUMSTONE WALL, OPTION #1		
SOIL NAIL C/W BEARING PLATE		DRAWING NUMBER SAMPLE #1

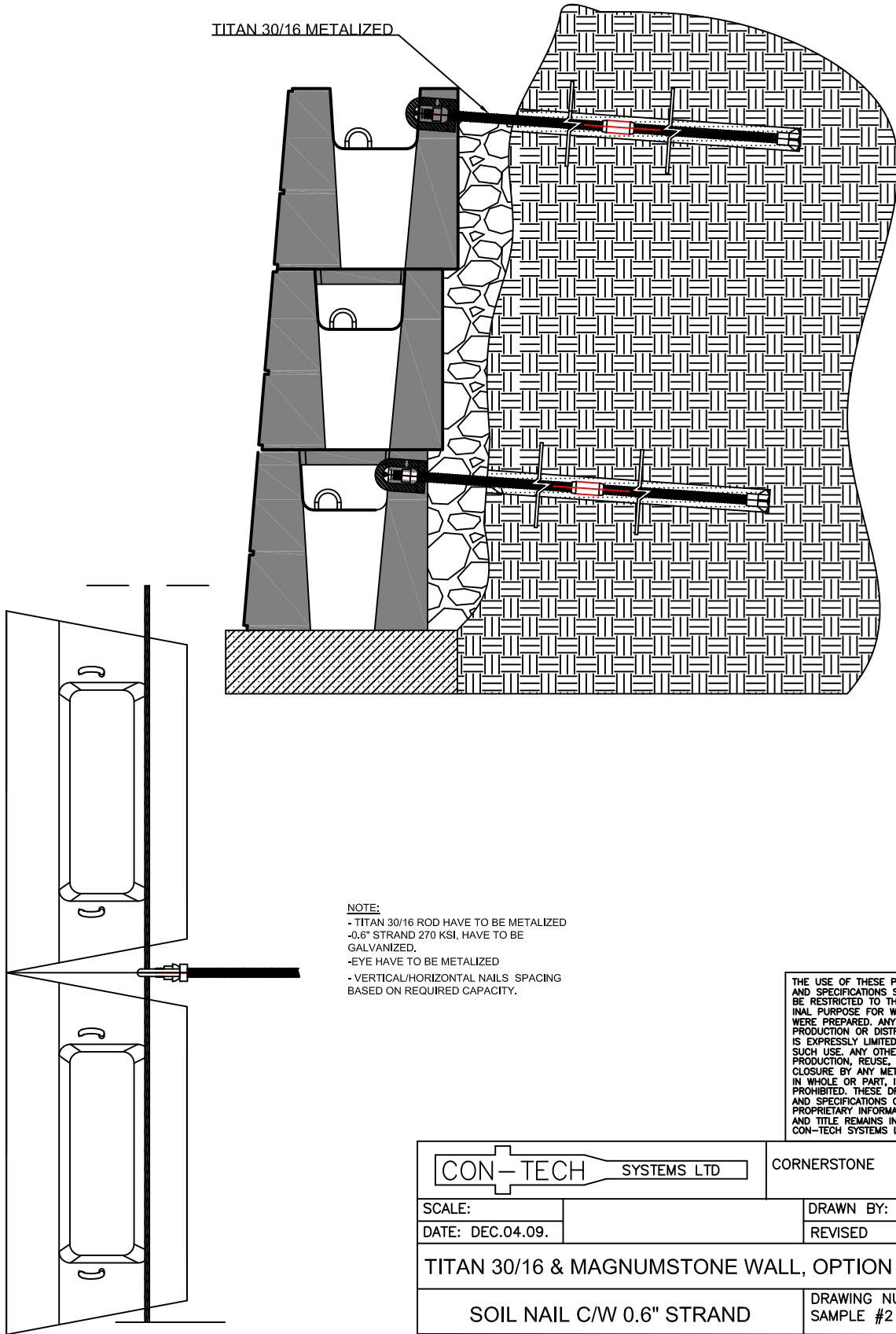


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WALL SOLUTIONS INC.

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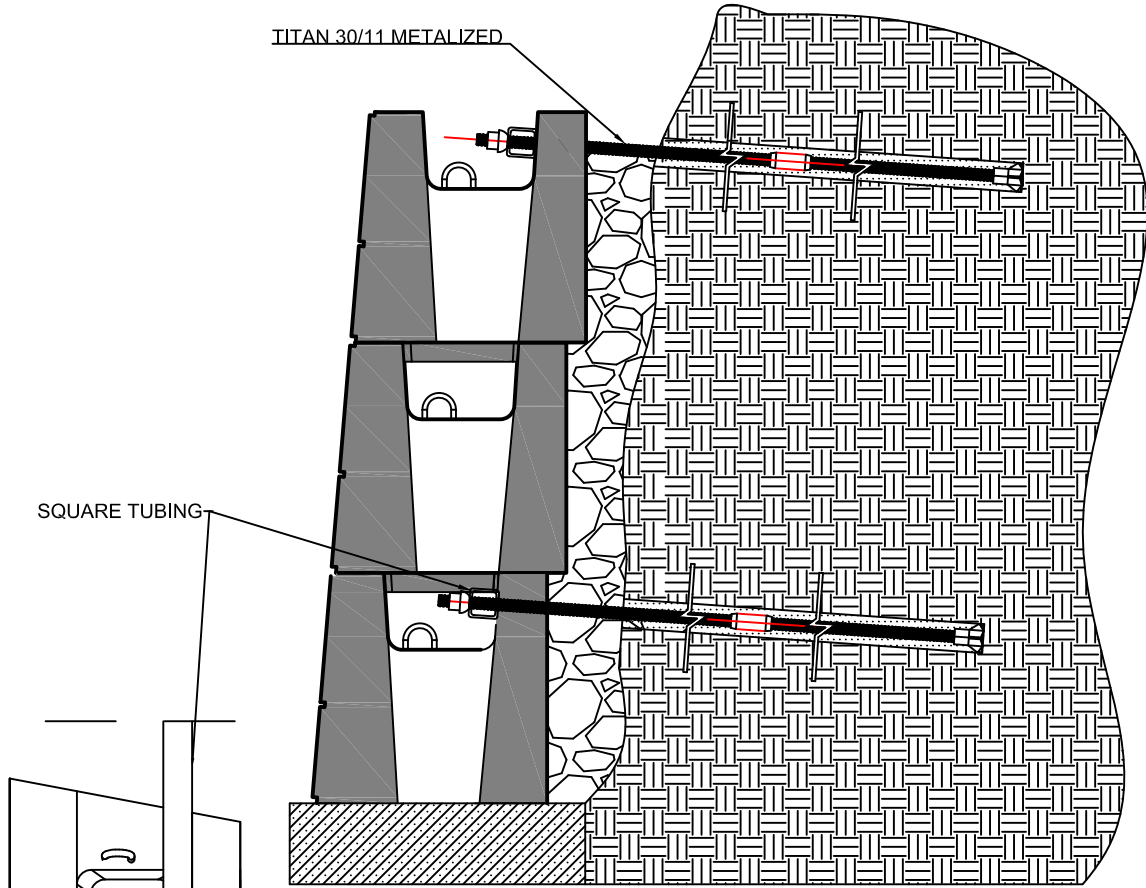
# MagnumStone

## >>> SOIL ANCHOR



# MagnumStone

## >>> SOIL ANCHOR



DESIGN LOAD (KIPS)	fc(28 days) (psi)	mIn_SECTION MODULUS(in <sup>2</sup> )*	STEEL SQUARE TUBING SIZE (in)	STEEL PIPE (In)
29.7	4,000	1.258	3 X 3 X 0.25	3.5" SCH 40
25.0	4,000	1.058	2.75 X 2.75 X 0.25	3.5" SCH 40
20.0	4,000	0.847	2.63 X 2.63 X 0.25	3" SCH 40
15.0	4,000	0.635	2.38 X 2.38 X 0.20	3" SCH 40
10.0	4,000	0.423	2.25 X 2.25 X 0.188	2.5" SCH 40
5.0	4,000	0.212	2.0 X 2.0 X 0.188	2.0" SCH 40

NOTE:  
 - TITAN 30/16 ROD HAVE TO BE METALIZED  
 - STRUCTURAL STEEL SHAPE, GALVANIZED,  
 - VERTICAL/HORIZONTAL NAILS SPACING BASED ON REQUIRED CAPACITY.

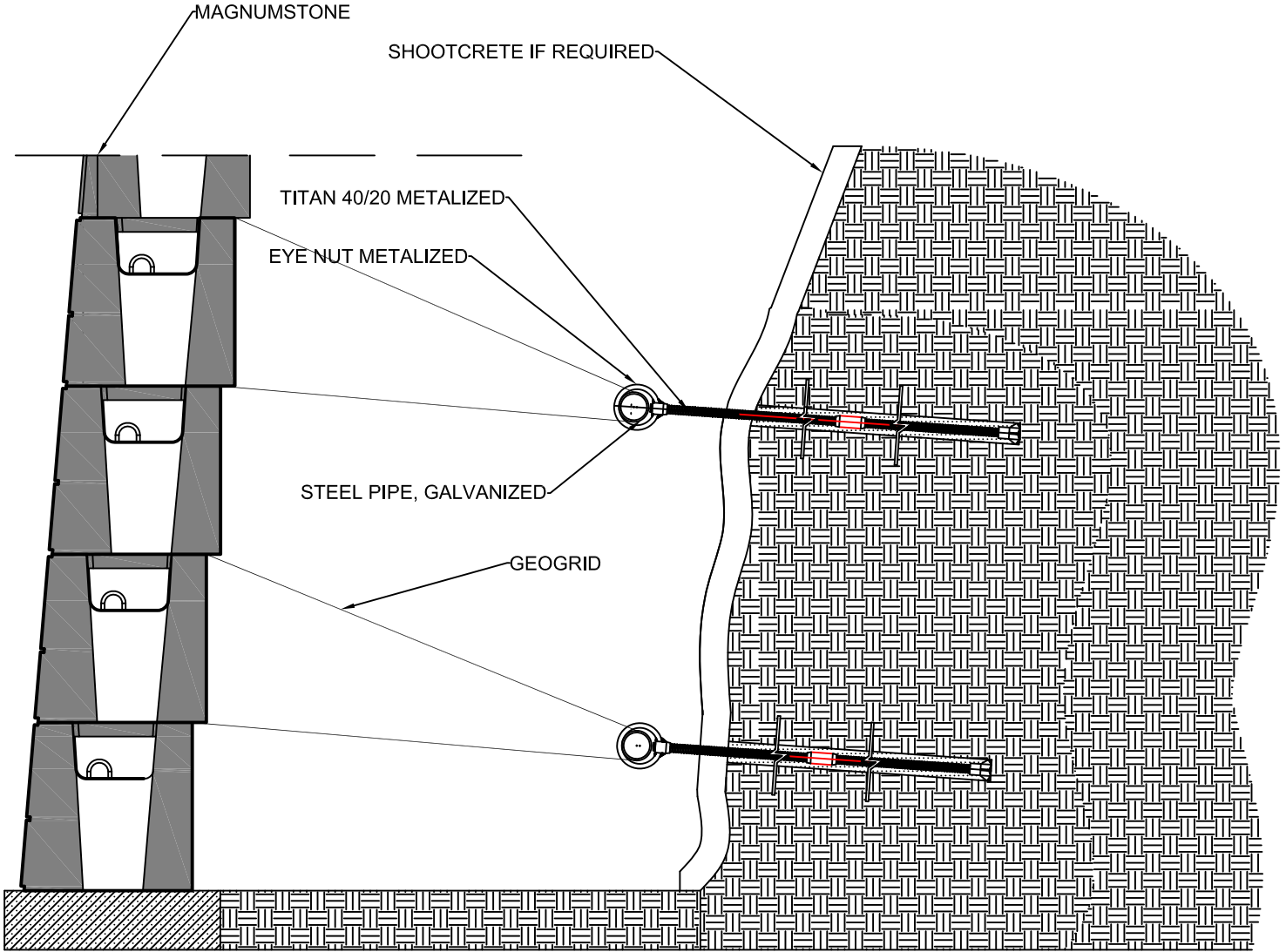
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TITAN 30/16 & MAGNUMSTONE WALL, OPTION #3		
SOIL NAIL C/W STRUCTURAL SHAPE		DRAWING NUMBER SAMPLE #3

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# MagnumStone

## >>> SOIL ANCHOR



**NOTE:**

- TITAN 40/20 ROD HAVE TO BE METALIZED
- STEEL PIPE, GALVANIZED.
- VERTICAL/HORIZONTAL NAILS SPACING BASED ON REQUIRED CAPACITY.

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SCALE:		DRAWN BY: TOM
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TITAN 40/20 & MAGNUMSTONE WALL, OPTION #4		
SOIL NAIL C/W GEOGRID		DRAWING NUMBER SAMPLE #4



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BAR SIZE	AREA (In <sup>2</sup> )	GUTS(kips)	YIELD(kips)	Max.TEST (kips)	Max.DESIGN LOAD (kips)	BAR LENGTH (ft)
TITAN 30/16	0.59	49.5	40.5	39.6	29.7	10

AVERAGE ULTIMATE BOND STRESS-ROCK/GROUT	psi	CARBIDE DRILL BIT SIZE (In)	FACTOR OF SAFETY	min. BOND LENGTH (ft)
GRANITE & BASALT	250 - 450	2	1.5	2.4
DOLOMOTIC LIMESTONE	200 - 300	2	1.5	2.9
SOFT LIMESTONE	150 - 200	2	1.5	4.0
SLATES & HARD SHALES	120 - 200	2	1.5	4.9
SOFT SHALES	30 - 120	2	1.5	19.7
SAND STONES	120 - 250	2	1.5	4.9
WEATHERED SANDSTONES	100 - 120	2	1.5	5.9
CHALK	30 - 155	2	1.5	19.7
WEATHERED MARL	25 - 35	2	1.5	29.5
CONCRETE	200 - 400	2	1.5	2.9

AVERAGE ULTIMATE BOND STRESS-COHESIVE SOILS/GROUT	psi	CLAY DRILL BIT SIZE (in)	FACTOR OF SAFETY	min. BOND LENGTH (ft)
SOFT SILTY CLAY	5 - 10	3.75	1.5	45.2
SILTY CLAY	5 - 10	3.75	1.5	45.2
STIFF CLAY, MED. TO HIGH PLASTICITY	5 - 15	3.75	1.5	45.2
VERY STIFF CLAY, MED. TO HIGH PLASTICITY	10 - 25	3.75	1.5	22.6
STIFF CLAY, MED. PLASTICITY	15 - 35	3.75	1.5	15.1
VERY STIFF CLAY, MED. PLASTICITY	20 - 50	3.75	1.5	11.3
VERY STIFF SANDY SILT, MED. PLASTICITY	40 - 55	3.75	1.5	5.6

AVERAGE ULTIMATE BOND STRESS-COHESIONLESS SOILS /GROUT	psi	DRILL BIT SIZE (in)	FACTOR OF SAFETY	min. BOND LENGTH (ft)
FINE-MED. SAND, MED. DENSE - DENSE	12 - 55	3.5	1.5	18.5
MED.-COARSE SAND (W/GRAVEL), MED.-DENSE	16 - 95	3.5	1.5	13.9
MED.-COARSE SAND ( W/GRAVEL), DENSE-VERY DENSE	35 - 140	3.5	1.5	6.4
SILTY SAND	25 - 60	3.5	1.5	8.9
DENSE GLACIAL TILL	43 - 75	3.5	1.5	5.2
SANDY GRAVEL, MED. DENSE - DENSE	31 - 200	3.5	1.5	7.2
SANDY GRAVEL, DENSE - VERY DENSE	40 - 200	3.5	1.5	5.6

**NOTE:**  
 BOND LENGTH CALCULATED WITH MAX. DESIGN LOAD OF 29.7 kips PER ROD.  
 IF CORNERSTONE REQUIRE LOWER DESIGN LOAD, DIFFERENT IN LOAD (%) WILL APPLY ON THE BOND LENGTH TOO.

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DATE: DEC.04.09.		REVISED
<b>BOND LENGTH FOR TITAN 30/16 APPLICATION</b>		
<b>SOIL NAIL C/W BEARING PLATE</b>		<b>DRAWING NUMBER BOND - #1</b>

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# MagnumStone

## >>>SOIL ANCHOR

BAR SIZE	AREA (in <sup>2</sup> )	GUTS(kips)	YIELD(kips)	Max.TEST (kips)	Max.DESIGN LOAD (kips)	BAR LENGTH (ft)
TITAN 40/20	1.13	121.2	96.7	95.6	72.7	10

AVERAGE ULTIMATE BOND STRESS-ROCK/GROUT	psi	CARBIDE DRILL BIT SIZE (in)	FACTOR OF SAFETY	min. BOND LENGTH (ft)
GRANITE & BASALT	250 - 450	3.5	1.5	3.3
DOLOMOTIC LIMESTONE	200 - 300	3.5	1.5	4.1
SOFT LIMESTONE	150 - 200	3.5	1.5	5.5
SLATES & HARD SHALES	120 - 200	3.5	1.5	6.9
SOFT SHALES	30 - 120	3.5	1.5	27.5
SAND STONES	120 - 250	3.5	1.5	6.9
WEATHERED SANDSTONES	100 - 120	3.5	1.5	8.3
CHALK	30 - 155	3.5	1.5	27.5
WEATHERED MARL	25 - 35	3.5	1.5	33.0
CONCRETE	200 - 400	3.5	1.5	4.1

AVERAGE ULTIMATE BOND STRESS-COHESIVE SOILS/GROUT	psi	CLAY DRILL BIT SIZE (in)	FACTOR OF SAFETY	min. BOND LENGTH (ft)
SOFT SILTY CLAY	5 - 10	5.90	1.5	70.0
SILTY CLAY	5 - 10	5.90	1.5	70.0
STIFF CLAY, MED. TO HIGH PLASTICITY	5 - 15	5.90	1.5	70.0
VERY STIFF CLAY, MED. TO HIGH PLASTICITY	10 - 25	5.90	1.5	35.0
STIFF CLAY, MED. PLASTICITY	15 - 35	5.90	1.5	23.3
VERY STIFF CLAY, MED. PLASTICITY	20 - 50	5.90	1.5	17.5
VERY STIFF SANDY SILT, MED. PLASTICITY	40 - 55	5.90	1.5	8.8

AVERAGE ULTIMATE BOND STRESS-COHESIONLESS SOILS /GROUT	psi	DRILL BIT SIZE (in)	FACTOR OF SAFETY	min. BOND LENGTH (ft)
FINE-MED. SAND, MED. DENSE - DENSE	12 - 55	4.5	1.5	35.5
MED.-COARSE SAND (W/GRAVEL), MED.-DENSE	16 - 95	4.5	1.5	26.6
MED.-COARSE SAND ( W/GRAVEL), DENSE-VERY DENSE	35 - 140	4.5	1.5	12.2
SILTY SAND	25 - 60	4.5	1.5	17.0
DENSE GLACIAL TILL	43 - 75	4.5	1.5	9.9
SANDY GRAVEL, MED. DENSE - DENSE	31 - 200	4.5	1.5	13.7
SANDY GRAVEL, DENSE - VERY DENSE	40 - 200	4.5	1.5	10.7

**NOTE:**  
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DATE: DEC.04.09.		REVISED
<b>BOND LENGTH FOR TITAN 40/20 APPLICATION</b>		
<b>SOIL NAIL C/W BEARING PLATE</b>		<b>DRAWING NUMBER BOND - #2</b>

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