

# MaxiForce™ 3" x 6" Rectangular Fixed Steel Bollard Installation Schedule Per Florida Building Code (FBC) Section 1618.5.3

## Engineered Anchorage System for MaxiForce™ 3" x 6" Rectangular Fixed Steel Bollards per Florida Building Code (FBC) Section 1618.5.3

Bollard Array	Bollard Ultimate Load / Max. Capacity	Design Load (lbs.)	Concrete Pier Diameter (in.)	Concrete Pier Height (in.)	Concrete Pier Reinforcing	Bollard Sleeve / Embedment at Concrete Pier	Concrete Grade Beam Depth (In.)	Concrete Grade Beam Width (In.)	Concrete Grade Beam Reinforcing	
									Longitudinal	Stirrups
<i>Individual Footing Option</i>						<i>Continuous Footing Option</i>				
3 (5.0)	11,110	2,500	12	46	4 - #4 vert.	18" Embedment	28	12	4 - #4 cont.	#3 at 14" o.c.
3 (5.0)	11,110	2,500	16	42	4 - #4 vert.	18" Embedment	26	16	4 - #4 cont.	#3 at 11" o.c.
3 (5.0)	11,110	2,500	18	40	4 - #4 vert.	18" Embedment	24	18	4 - #4 cont.	#3 at 10" o.c.
2 (1.0)	11,110	3,750	12	52	4 - #4 vert.	18" Embedment	28	12	4 - #4 cont.	#3 at 14" o.c.
2 (1.0)	11,110	3,750	16	48	4 - #4 vert.	18" Embedment	26	16	4 - #4 cont.	#3 at 11" o.c.
2 (1.0)	11,110	3,750	18	46	4 - #4 vert.	18" Embedment	26	18	4 - #4 cont.	#3 at 10" o.c.
1 (6.0)	11,110	7,500	12	66	4 - #4 vert.	18" Embedment	30	12	4 - #4 cont.	#3 at 14" o.c.
1 (6.0)	11,110	7,500	16	60	4 - #4 vert.	18" Embedment	28	16	4 - #4 cont.	#3 at 11" o.c.
1 (6.0)	11,110	7,500	18	57	4 - #4 vert.	18" Embedment	26	18	4 - #4 cont.	#3 at 10" o.c.

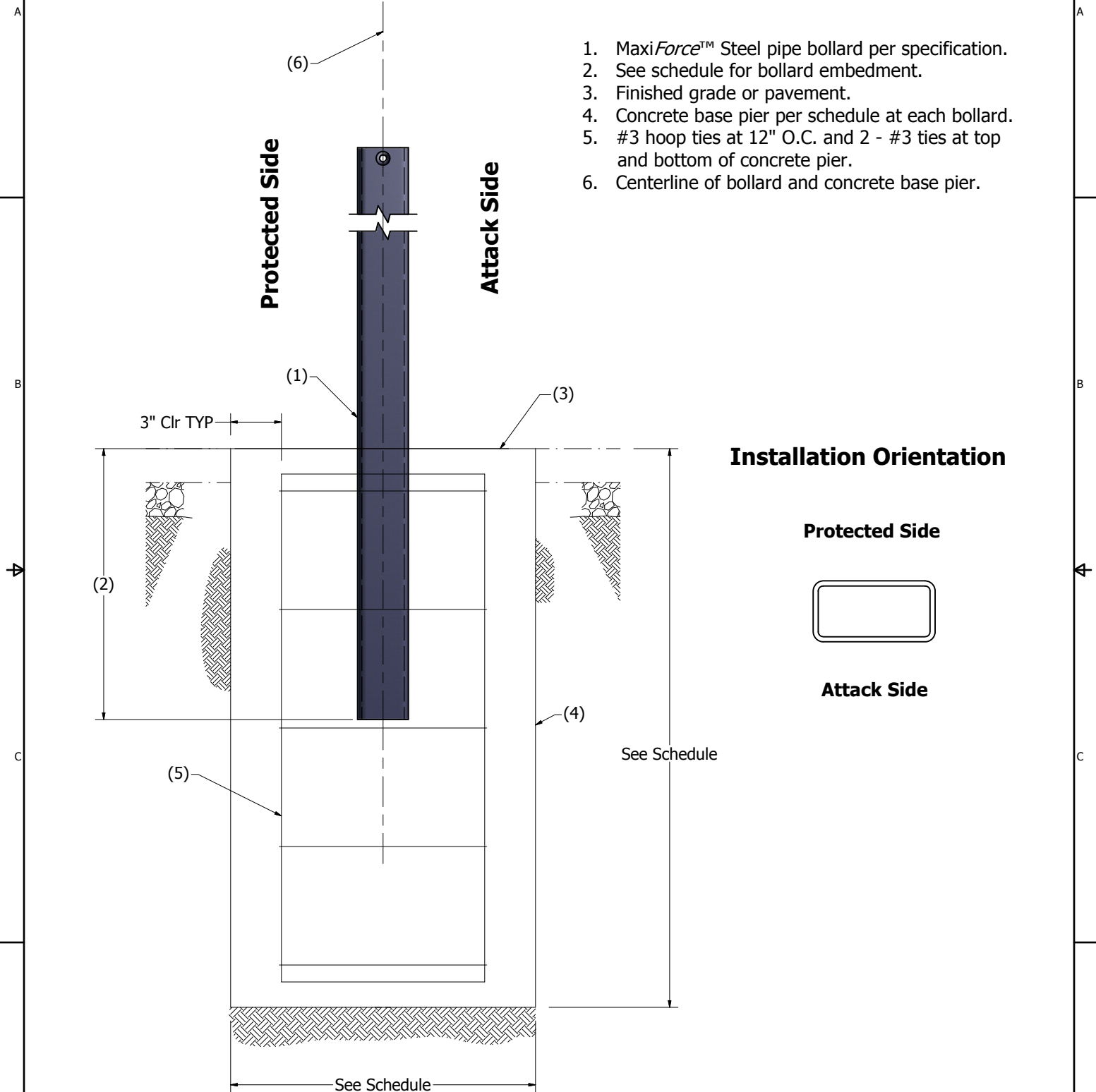
### Design and Construction Notes:

- 1.0 Two (2) bollard array required to meet FBC section 1618.5.3. Minimum of 2 bollards shall engage the vehicle in a vehicle barrier design. Maximum bollard spacing at 3'-0" o.c.
- 2.0 Allowable Foundation Pressure = 2,000 psf. Allowable Lateral Bearing = 150/psf. Assumed in-place soil: Sand, Silty Sand, Clayey Sand, Silty Gravel, or Clayey Gravel. For higher soil allowable design values, site soil investigation by a Registered Geotechnical Engineer is required.
- 3.0 See supplemental concrete pier / beam details for additional information.
- 4.0 Material Specifications: Concrete = 3,000 psi (28-day min.); Reinforcing ASTM A615 (60 ksi for all bars #5 and larger/ 40 ksi for all bars #4 and smaller).
- 5.0 Three (3) bollard array required to meet FBC section 1618.5.3. Minimum of 3 bollards shall engage the vehicle in a vehicle barrier design. Maximum bollard spacing at 2'-0" o.c.
- 6.0 For continuous footing option, maximum single bollard spacing at 4'-0" o.c.

Drawing Rev. 1	Created 11/1/2010
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	<b>MaxiForce™ Traffic Control Bollards</b>		
	7560 Main Street Sykesville, MD 21784 410-552-9888 (phone) - 410-552-9939 (fax) www.maxiforcebollards.com - sales@maxiforcebollards.com		
Model	<b>MFS Inst Sched (FBC 1618)</b>		
Size	File Name	MFS Inst Sched (FBC)	
C	Scale	NA	DO NOT SCALE DRAWING Sheet 1 Of 1

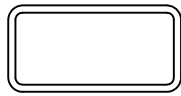
# Engineered Anchorage System for the MaxiForce™ 3" x 6" Rectangular Fixed Steel Bollard Circular Concrete Pier Footing




1. MaxiForce™ Steel pipe bollard per specification.
2. See schedule for bollard embedment.
3. Finished grade or pavement.
4. Concrete base pier per schedule at each bollard.
5. #3 hoop ties at 12" O.C. and 2 - #3 ties at top and bottom of concrete pier.
6. Centerline of bollard and concrete base pier.

## Installation Orientation

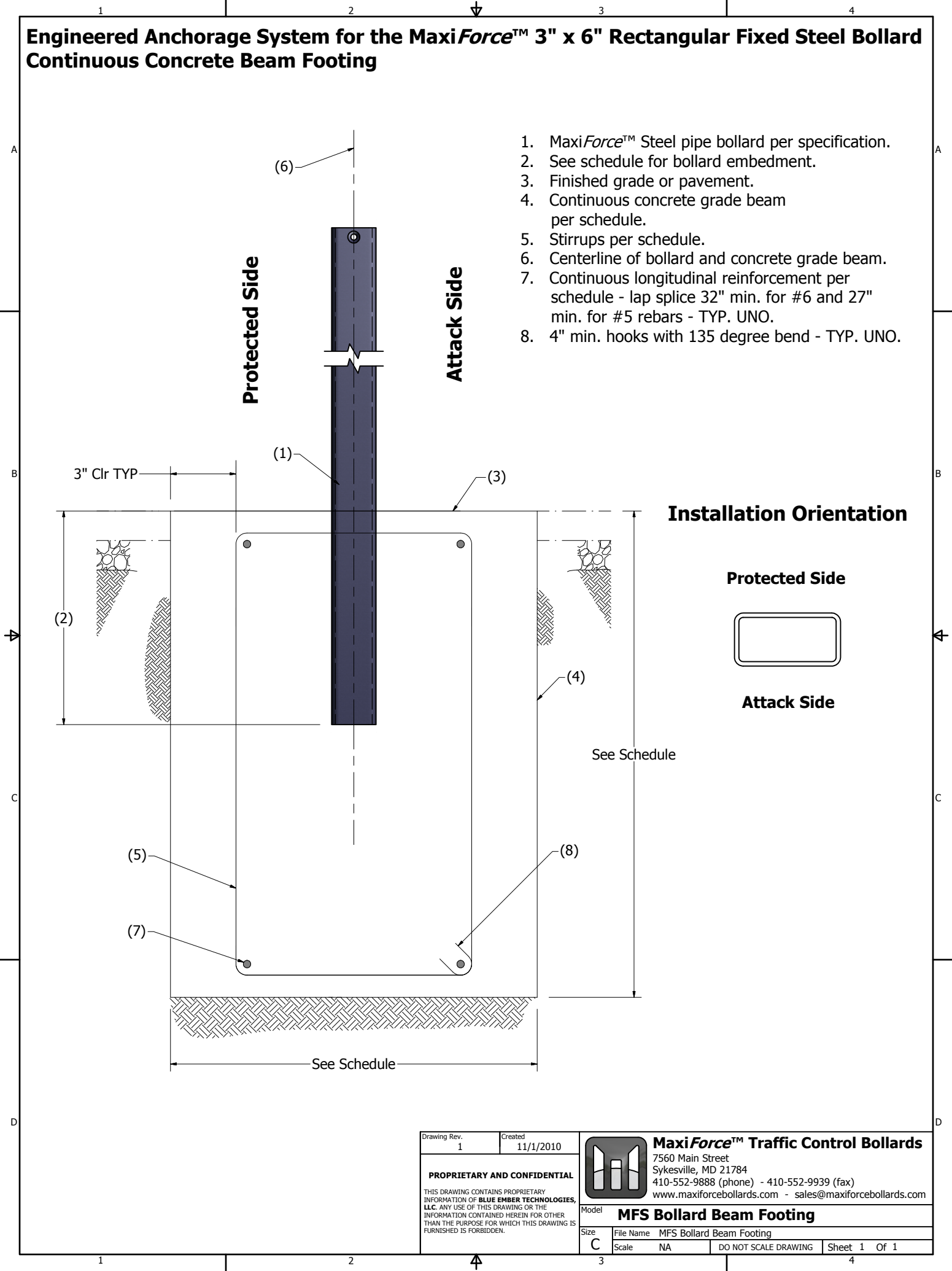
**Protected Side**



**Attack Side**

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Model <b>MFS Bollard Pier Footing</b>		
Size C	File Name MFS Bollard Pier Footing	Scale NA
DO NOT SCALE DRAWING		Sheet 1 Of 1

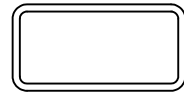
# Engineered Anchorage System for the MaxiForce™ 3" x 6" Rectangular Fixed Steel Bollard Continuous Concrete Beam Footing




1. MaxiForce™ Steel pipe bollard per specification.
2. See schedule for bollard embedment.
3. Finished grade or pavement.
4. Continuous concrete grade beam per schedule.
5. Stirrups per schedule.
6. Centerline of bollard and concrete grade beam.
7. Continuous longitudinal reinforcement per schedule - lap splice 32" min. for #6 and 27" min. for #5 rebars - TYP. UNO.
8. 4" min. hooks with 135 degree bend - TYP. UNO.

## Installation Orientation

Protected Side



Attack Side

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Model <b>MFS Bollard Beam Footing</b>		
Size C	File Name MFS Bollard Beam Footing	
Scale NA	DO NOT SCALE DRAWING	Sheet 1 Of 1