



BOLLARD WAREHOUSE™

P.O. BOX 298

BATAVIA, IL 60510

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GENERAL WARNINGS AND CAUTIONARY STATEMENTS **COLLAPSIBLE BOLLARDS**

In order to safely and effectively use any Bollard Warehouse product, please read and understand the General Warnings and Cautionary Statements contained below. If you have any questions about any of these General Warnings and Cautionary Statements, or about any aspect of Bollard Warehouse products or literature, please contact Bollard Warehouse at 877-727-7347, or email at sales@bollardwarehouse.com.



Bollard selection and placement based on vehicle weight, speed and other site specific factors to be determined by owner.



Failure to utilize Bollard Warehouse authorized parts, or modifications to the Bollard Warehouse products, or failure to follow the recommended installation procedures, will result in your warranty being null and void.



Read and fully understand the installation instructions before attempting to install any Bollard Warehouse bollard product.



Substitution of components may impair the proper function of Bollard Warehouse bollards products. If you need replacement parts, please contact Bollard Warehouse at the number and email above.



Always ensure that the lock pin is locked into place in the upright position with all collapsible bollards.



WARNING: Failure to return collapsible bollard to upright, locked position immediately after use poses a significant hazard.



Replacement lock pins are available for purchase at Bollard Warehouse. For purchase of replacement lock pins or other components, please contact Bollard Warehouse at the number or email above.



CAUTION: Lock pin must always be secured with padlock when bollard is in upright position.



For maximum effectiveness of Bollard Warehouse bollard products, be sure to properly maintain bollards by replacing any damaged, corroded or missing components, and reapply paint as required to maximize visibility. Failure to properly maintain product can negatively impact the bollards performance over time.

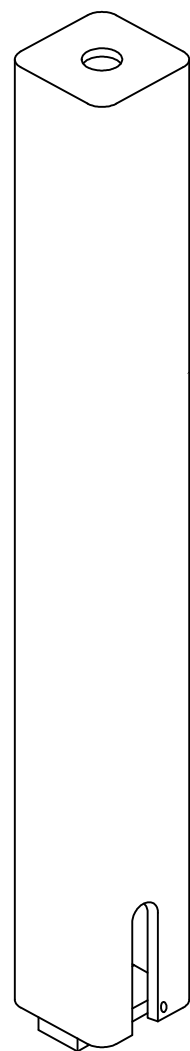


To ensure visibility of bollards, be sure to apply all decals that are provided with the product, and in the manner recommended by Bollard Warehouse.

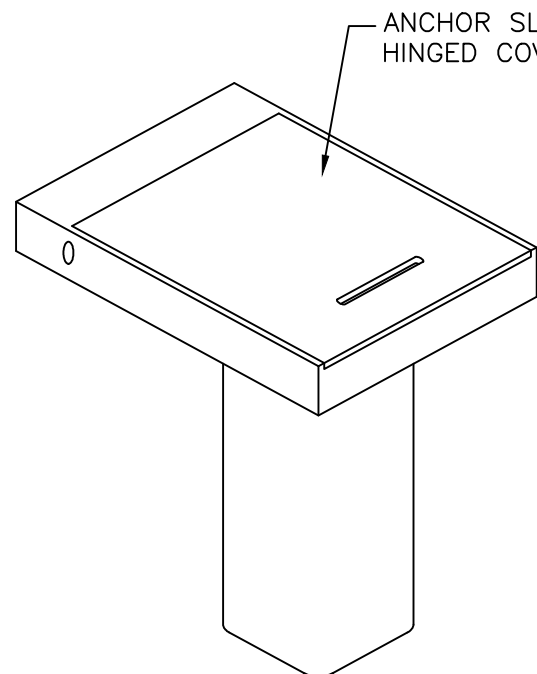
If in doubt **CALL** Bollard Warehouse 877-727-7347

SQUARE POST HELIX LOCK BOLLARD SERIES

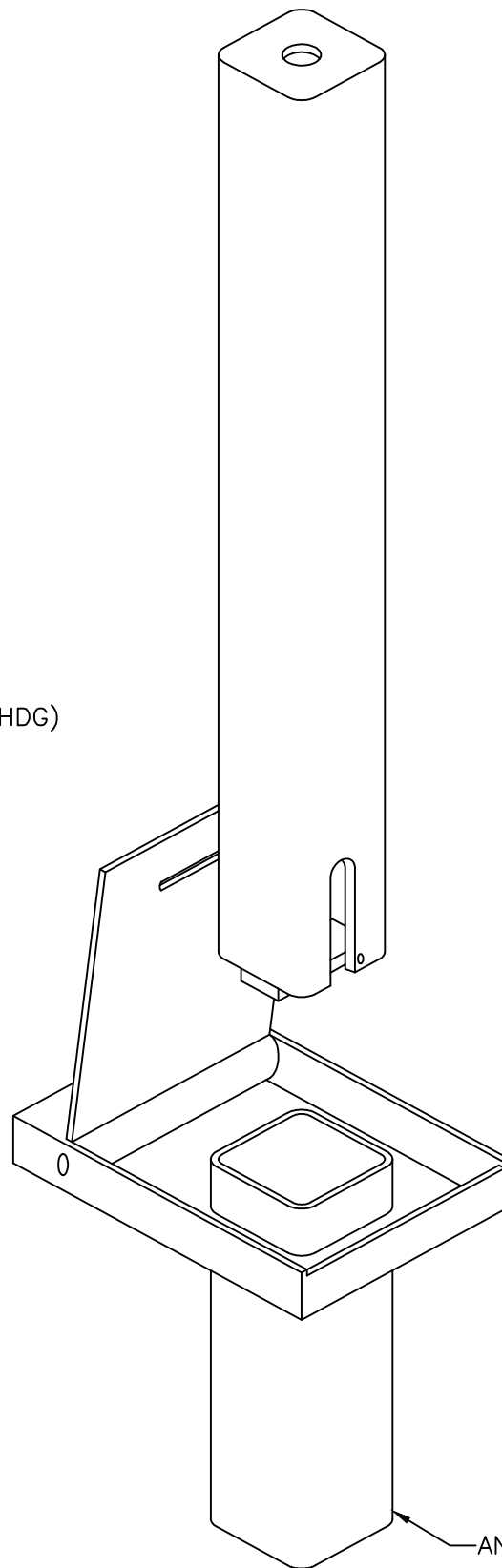
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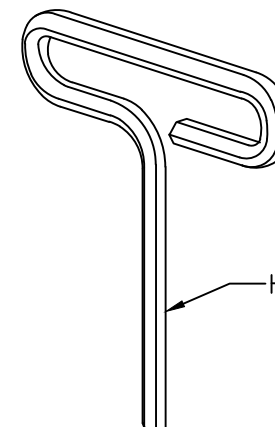
BOLLARD POST POWDER COATED



ANCHOR SLEEVE
HINGED COVER (HDG)

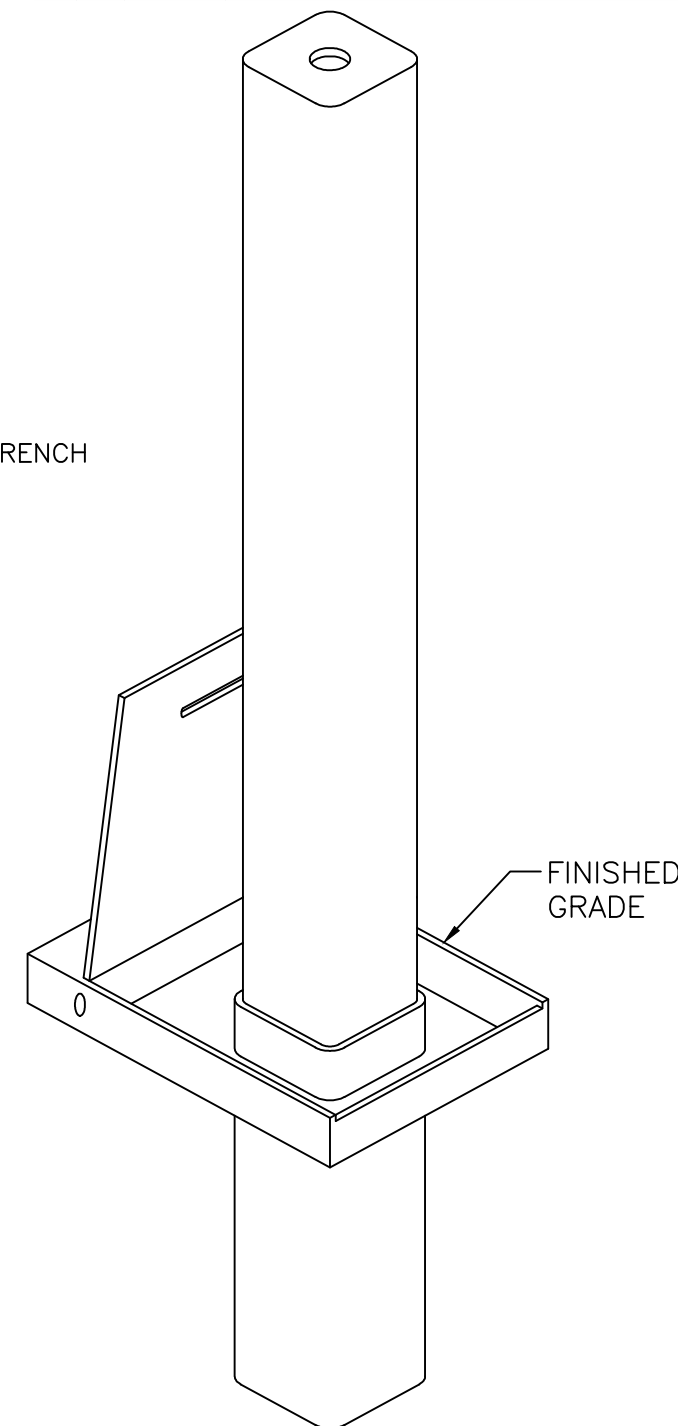


ANCHOR SLEEVE (HDG)



HEX T-HANDLE WRENCH

ATTACH REFLECTIVE WARNING LABELS PROVIDED TO THE FRONT & BACK OF BOLLARD AFTER INSTALLATION



FINISHED GRADE

BOLLARD INSTALLED POSITION

BOLLARD REMOVED POSITION

[US PATENT 8,297,873]

7			
6			
5			
4			
3			
2			
1	--	--	--
ITEM	PART NUMBER	QTY.	DESCRIPTION

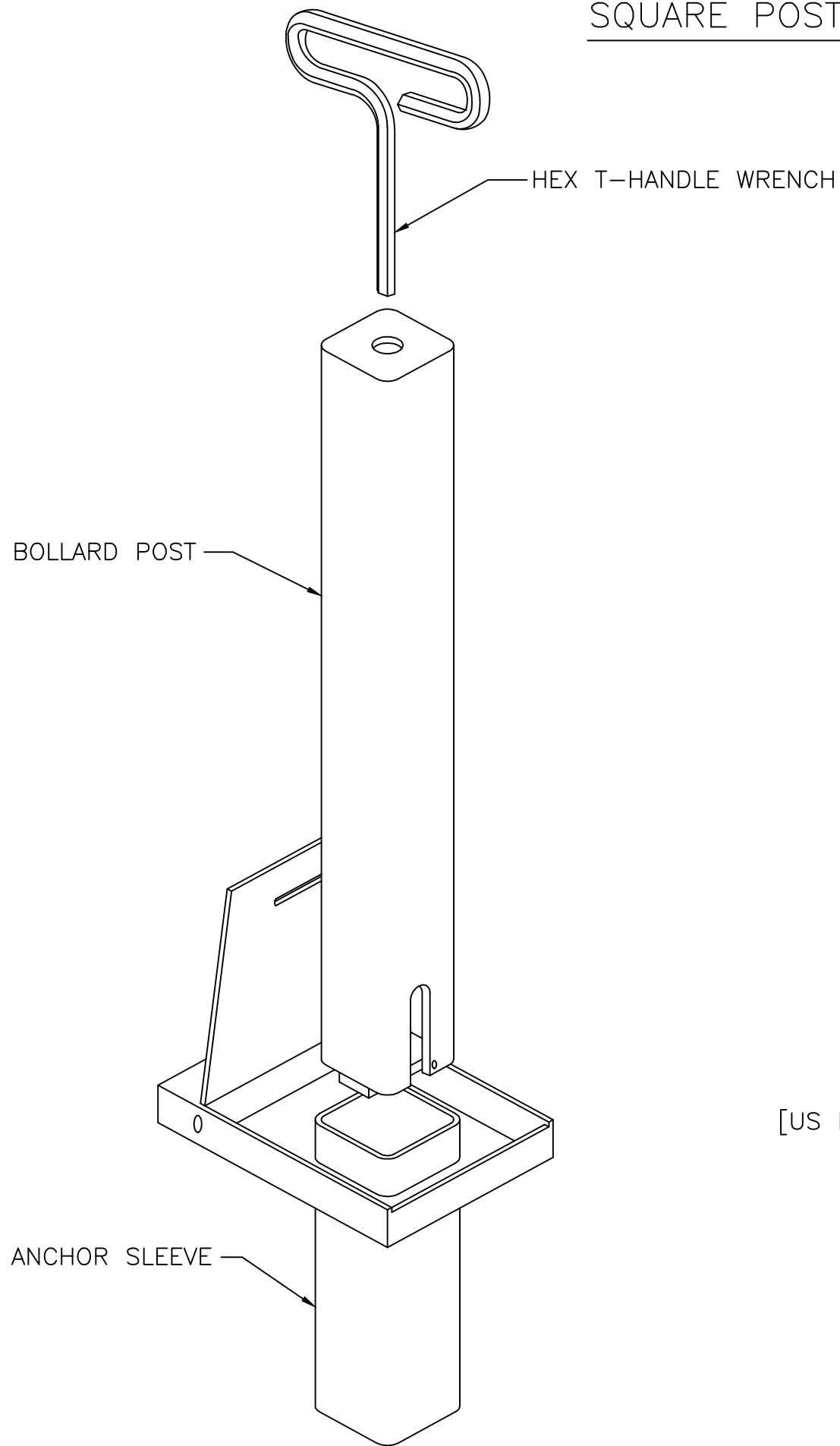
BILL OF MATERIAL

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Bollard Warehouse www.bollardwarehouse.com P.O. Box 298, Batavia, IL. 60510 Bus: 888-290-6420 Fax: 888-290-6422		NAME: HELIXLOCK BOLLARD INSTALL USED ON: --- 1. DO NOT SCALE FROM DRAWING 2. UNITS ARE IN INCHES U.N. 3. DIMENSIONING BASED ON ASME Y14.5M-1994	0.X = ± 0.1 0.XX = ± 0.06 ANGULAR = ± 1° FRACTION = ± 1/16	ACTION: BY DESIGN: --- DRAWING: DBE CHECKED: ---	DRAWING NUMBER: --- SCALE: --- DATE: 01/16/12 COPYRIGHT: ---	SIZE: --- SHT: 1 of 1
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SQUARE POST HELIX LOCK BOLLARD SERIES

REV	BY	DATE	DESCRIPTION
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[US PATENT 8,297,873]

7			
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ITEM	PART NUMBER	QTY.	DESCRIPTION	BILL OF MATERIAL
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PLASTIC BOLLARD ANCHORAGE SYSTEM

DESIGN AND CONSTRUCTION SPECIFICATIONS, NOTES AND DESIGN SCHEDULE

1. THE DESIGN LOAD IS A STATIC LOAD LOCATED AT 27 INCHES ABOVE GRADE THAT SHOULD CAUSE FAILURE OF THE BOLLARD.
2. THE MAXIMUM EARTH PRESSURE VALUE IS SHOWN AT DESIGN STATIC LOAD AND THE OWNER SHOULD VERIFY THAT THE EARTH IS ADEQUATE.
3. OTHER ANCHORAGE SYSTEMS MAY CAUSE PREMATURE FAILURE OF THE BOLLARD BY ROTATION OF THE ANCHORAGE.
4. THE WATER/CEMENT RATIO SHOULD BE ABOUT 0.50 TO CREATE GOOD QUALITY STIFF CONCRETE WHEN MIXED WITH THE PROPER AMOUNT OF SAND AND AGGREGATE. THIS SHOULD PROVIDE A STIFF CONCRETE. TOO MUCH WATER WILL WEAKEN THE CONCRETE TO LESS THAN SPECIFIED AND COULD INFILTRATE THE FRENCH DRAIN AND CAUSE THE DRAIN TO NOT FUNCTION.
5. AUGER THE 8 INCH DIAMETER HOLE TO THE REQUIRED DEPTH. IF CAVE IN AT THE TOP INSTALL A SHORT LENGTH OF SONOTUBE. IF NEEDED SAW CUT THE TOP PAVING PRIOR TO AUGERING.
6. DROP THE THREE INCHES OF ROCK TO THE BOTTOM OF THE HOLE TO FORM THE FRENCH DRAIN.
7. INSTALL THE ANCHOR SLEEVE AND FOUNDATION DRAIN ASSEMBLY PLUMB AND SECURED IN PLACE WITH A GRADE LEVEL 2x4 AND WIRES. SEE SHEET ONE FOR DETAILS.
7. CAREFULLY POUR THE CONCRETE IN THE AUGERED HOLE AROUND THE ANCHOR SLEEVE AND FOUNDATION PVC/DRAIN PIPE (NOT INSIDE THE PIPES). DO NOT ALLOW EARTH TO ENTER THE CONCRETE. PLUNGE A ROD INTO THE CONCRETE IN THE HOLE TO REMOVE VOIDS WITH A #4 REBAR.
8. PIER HEIGHT AND HOLE DEPTH SHOULD BE SET TO ALLOW THE BOTTOM OF THE PIER TO BE BELOW THE LOCAL REQUIRED FOUNDATION FROST DEPTH. THIS DEPTH IS SET BY LOCAL AREA BUILDING OFFICIALS.
9. BOLLARD WAREHOUSE WILL PROVIDE THE HDG (HOT DIP GALVANIZED) STEEL ANCHOR SLEEVE WHEN PURCHASED. THE OWNER SHALL PROVIDE ALL OTHER MATERIALS AND THE INSTALLATION.

DESIGN SCHEDULE

$$Q \text{ MAX (HORIZONTAL EARTH PRESSURE)} = \frac{23,328 \times P}{D \times C \times C} = \text{xxxx PSF}$$

BOLLARD MODEL	DESIGN LOAD P	BOLLARD Fb PSI	EARTH Q MAX	PIER HEIGHT C	PIER HOLE DIA. D	PVC DRN LENGTH	PIER CONCRETE	FRENCH DRAIN
4536PL	800 #	3500 PSI	4050 PSF	24 INCH	8 INCH	15 INCH	0.44 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	2572 PSF	30 INCH	8 INCH	21 INCH	0.56 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	1800 PSF	36 INCH	8 INCH	27 INCH	0.68 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	1323 PSF	42 INCH	8 INCH	33 INCH	0.80 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	1013 PSF	48 INCH	8 INCH	39 INCH	0.92 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	800 PSF	54 INCH	8 INCH	45 INCH	1.04 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	648 PSF	60 INCH	8 INCH	51 INCH	1.16 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	536 PSF	66 INCH	8 INCH	57 INCH	1.28 Cu Ft	0.09 Cu Ft
4536PL	800 #	3500 PSI	450 PSF	72 INCH	8 INCH	63 INCH	1.40 Cu Ft	0.09 Cu Ft

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PIER ELEVATION SECTION

VEHICLE DESIGN STATIC LOAD "P"
AT 27 INCHES ABOVE GRADE (NTS)

FRESH POURED CONCRETE PIER SHALL BE PROTECTED FROM FREEZING FOR 14 DAYS AND WILL REACH DESIGN STRENGTH AFTER 28 DAYS

INSTALL CONCRETE AND ANCHOR POST PLUMB WITH LID AND CONCRETE SMOOTH AT GRADE. LEAVE TAPE OR PLASTIC AROUND LID AREA AND CUT AS NEEDED AFTER CONCRETE SETS.

INSTALL TOP OF CONCRETE AND ANCHOR POST AT GRADE

1/4 LIFTING SLOT LOCATION IN LID

EARTH PRESSURE Q MAX PSF

USE NOTED PIER "D" DIAMETER SONOTUBE IF NEEDED TO AVOID CAVE IN AT TOP

SQUARE POST ANCHOR SLEEVE BY WITH LID AT NOTED SIZE PROVIDED BY TRAFFICGUARD

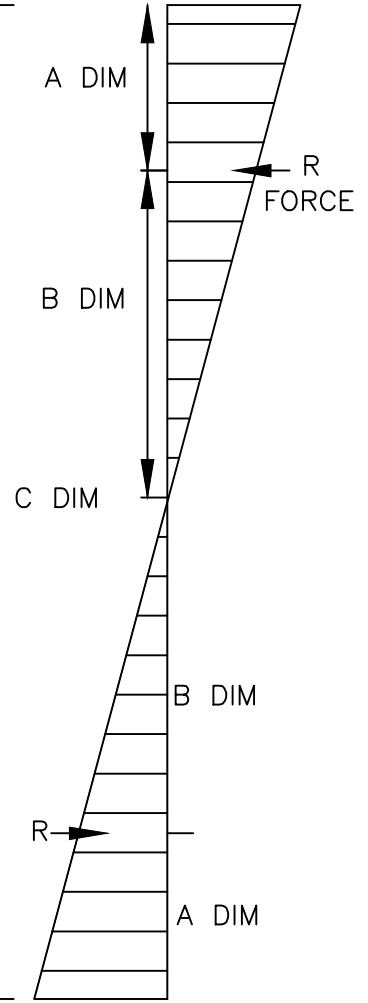
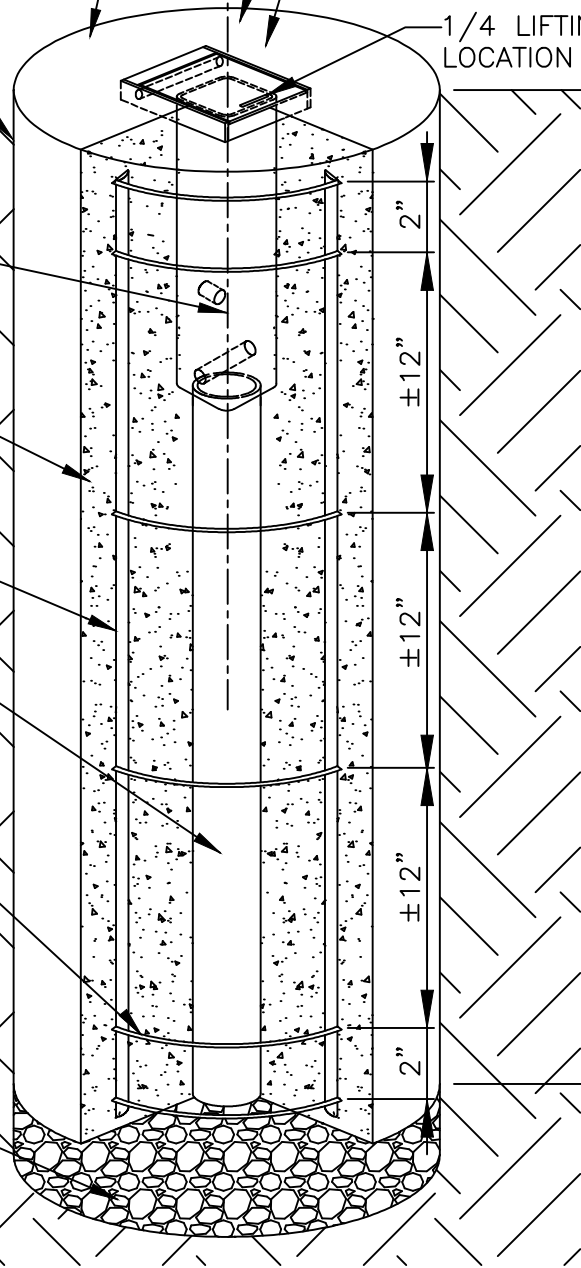
4,000 PSI CONCRETE PIER AT NOTED DIAMETER & HEIGHT

#4 VERTICAL REBAR AT NOTED QUANTITY, SIZE & LENGTH

PVC DRAIN PIPE AT LENGTH FROM ROCK TO BOLLARD AT DIAMETER TO MATCH BOLLARD

#3 REBAR HOOP TIES AT THE NOTED PIER DIAMETER MINUS 4" WITH 12" TIE LAP INSTALLED AT 2" CLEAR FROM TOP & BOTTOM OF PIER AS SHOWN

3 INCHES MIN. THICK ROCK FRENCH DRAIN PIER BASE.



LOAD STRESS DIAGRAM

HOOP REBAR #3	PROVIDED BY OWNER		
VERTICAL REBAR #4	PROVIDED BY OWNER	CONCRETE AND ROCK	PROVIDED BY OWNER
SONOTUBE FORM TUBE	PROVIDED BY OWNER	DRAIN PVC PIPE	PROVIDED BY OWNER
DESCRIPTION	REMARKS	DESCRIPTION	REMARKS

NOTE REFER TO RPAS-2 FOR THE ANCHORAGE SYSTEM DIMENSIONS, DESIGN LOADS, REBAR SIZE, QUANTITIES, AND OTHER DESIGN DATA.

LID SQUARE POST BOLLARD LRPAS ANCHORAGE SYSTEM ASSEMBLY		THIRD ANGLE PROJECTION	Toll Free		Bollard Warehouse	
Do not scale from drawing			P.O. Box 298, Batavia, IL 60510		Bus: 1.888.290.6420 Fax: 1.888.290.6422	
3	-	-	-	Action	by	
2	-	-	-	Design	wkz	Dwg. Scale: nts
1	-	-	-	Drawn	wkz	Copywrite: 2010
Rev.	Date	by	Description	Checked	wkz	Dwg. Size: Letter
						Drawing Date: 12.10.10
						Sheet: 1 of 2

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