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NEW YORK, NY 10003

DISTRIBUTION ENGINEERING
DISTRIBUTION EQUIPMENT

SPECIFICATION EO-1124
REVISION 3
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November 11, 2013

VAULT ENCLOSURES
CHAIN-LINK TYPE FENCE AND ACCESSORIES

FILE: CONSTRUCTION STANDARDS MANUAL NO. 3

TARGET AUDIENCE	**REGIONAL CONSTRUCTION**
NESC REFERENCE	**SECTION 11**

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PURPOSE

This specification outlines the requirements for vault enclosures made of chain link type fence.

1.0 APPLICATION

This specification applies to all Divisions.

2.0 REQUIREMENT - REFERENCE SPECIFICATIONS

ASTM A53 Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.

ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

ASTM A153 Standard Specification For Zinc Coated (Hot Dip) on Iron and Steel Hardware.

ASTM A392 Standard Specification For Zinc Coated Steel Chain-Link Fence Fabric.

ASTM F567 Standard Practice For Installation of Chain-Link Fence.

ASTM F626 Standard Specification For Fence Fittings.

4.0 MATERIAL

4.1 Material For Chain Link Wall Enclosures

4.1.1 Posts - All posts shall be standard weight, schedule 40, gavalanized steel pipe in accordance with ASTM A53 unless otherwise noted on the design drawing.

POSTS		LINE POSTS			TERMINAL POSTS		
Fence Height	Max. Post Spacing	Nom. Dia.	O.D.	Weight Per Ft.	Nom. Dia.	O.D.	Weight Per. Ft.
Under 6'-0" H	6'-0"	1 1/2"	1.90"	2.72	2"	2.375"	3.65
Between 6' to 8'	8'-0"	2"	2.375"	3.65	2 1/2"	2.875"	5.79
Between 8' to 10'	10'-0"	2 1/2"	2.875"	5.79	3"	3.50"	7.58
Between 10' to 12'	10'-0"	2 1/2"	2.875"	5.79	3 1/2"	4.00"	9.11

4.1.2 Fabric - Chain link fence fabric shall be galvanized steel, Class II coated number 6 gauge wire, woven in a 2" mesh in accordance with ASTM A392. The top edge of the fabric shall be barbed. The bottom edge shall be barbed or knuckled.

4.1.3 Top, Middle, Bottom And Brace Rails

a. Top, middle, bottom, and brace rails shall be galvanized steel, standard weight pipe, 1 1/4" diameter, weighing 2.27 pounds per foot in accordance with ASTM A53.

b. Brace rails shall be provided on all fences having a height of six (6) feet. Middle rails shall be provided on all fences having a height of ten (10) feet.

4.1.4 Truss Rods And Tension Bars

a. Truss rods shall be gavalanized steel 5/16" diameter rods, furnished in accordance with ASTM F626.

b. Tension bars furnished shall be galvanized steel, 3/4" x 3/16" bars, furnished in accordance with ASTM F626.

4.1.5 Extension arms and barbed wire - When specified on the design drawing, galvanized steel extension arms located 45 degrees from vertical, with 3 strands of 12 gauge galvanized wire (stretched horizontally), with 14 gauge galvanized barbwire (4 points per barb located 3" on center) shall be provided.

4.1.6 Accessories - All accessory items and fittings i.e. posts, post caps, clips, ties, bands, loop caps, collars, bolts, shall be galvanized steel in accordance with ASTM F626.

4.2 **Top Enclosures** - Top enclosures shall be fabricated from panels of chain link fence fabric and suitable galvanized structural support members. The fence fabric shall be galvanized Class II coated, No. 6 gauge steel wire woven in a 2" mesh in accordance with ASTM A392. If welding is required a suitable coating shall be applied after welding to inhibit corrosion. The roof load shall be computed in accordance with local building codes and members designed accordingly. Unsupported spans shall not exceed 5' in any direction.

4.3 Gates

4.3.1 Gate posts - All gate posts shall be standard weight schedule 40 galvanized steel pipe in accordance with ASTM A53 unless otherwise noted on the design drawing.

SWING GATE OPENING				
SINGLE GATE	DOUBLE GATE	NOM. DIA.	OUTSIDE DIAMETER	WEIGHT PER FOOT
Under 6'-0"	Under 12'-0"	2 1/2"	2.875"	5.79 LB
Between 6' to 13'	Between 12' to 26'	3 1/2"	4.000"	9.11 LB

4.3.2 Gate Frames

a. Gate Frames shall be constructed from 1 1/2" diameter standard weight schedule 40 galvanized steel pipe in accordance with ASTM A53 with welded connections to form a rigid frame.

b. Fabric of the same gauge and finish as fence shall fill gate frame. The fabric shall be fastened to the frame on all sides with fasteners and tension bars.

c. Gate leafs over 6' - 0" wide shall have a vertical center upright of same size pipe as gate frame.

d. On all gates over 6' - 0" high, there shall be a horizontal center rail the same pipe size as the gate frame.

e. Gates requiring transoms:

Gate Opening Width	Transom Rail Nom. Dia.	Top Rail Nom. Dia.	Weight Per Foot
Under 10'-0"	1 1/4"	1 1/4"	2.27 LB
Between 10' to 14'	2 1/2"	2 1/2"	5.79 LB

4.3.3 Gate hardware - All gate hardware furnished under this specification shall be galvanized in accordance with appropriate sections of ASTM A153 and the following hardware and accessories shall be furnished for each gate:

a. Hinges: Shall be pressed steel or malleable iron to suit gate size. Hinges shall be non-lift-off type, offset to permit 180 degrees gate opening. Each leaf 8' - 0" high and over shall be provided with 1 1/2 pair of hinges.

b. Latches: Shall be forked type or plunger-bar type to permit operation from either side of gate. Provide padlock eye as integral part of latch.

c. Padlock eye: All gates shall be equipped to use a standard Company padlock.

d. Double Gates: Gate stops for all double gates, shall be a mushroom type or a flush plate with angles, set in concrete to engage the center drop rod or plunger bar. A locking device with padlock eyes as integral part of the latch that will enable both gates to be locked with one padlock shall be provided.

5.0 CONSTRUCTION

Terminal (Gate, Corner, End) and Line posts shall be set in concrete. Concrete mix shall be Class II concrete in accordance with Purchase and Test specification EO-1008 "Plain and Reinforced Concrete".

RECOMMENDED MINIMUM DEPTH AND DIAMETER OF POST HOLES

HEIGHT OF FENCE	DEPTH OF HOLE TERMINAL	LINE	DIAMETER HOLE AT TOP TERMINAL	LINE
Under 10'	3'-6"	3'-0"	12"	10"
Between 10' to 12'	4"-0"	3'-6"	12"	10"

6.0 INSTALLATION

6.1 Post holes

a. Following completion of final grading, drill holes for post footings in firm, undisturbed, or compacted soil.

b. Place concrete around posts as shown on the Contract Drawings in a continuous pour and tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operations.

c. Trowel finish tops of footings and slope down to direct water away from posts. Extend concrete footings for gate posts to the underside of the bottom hinge. Set keepers, stops, sleeves, and other accessories into concrete as required.

6.2 Brace-assemblies

Install braces to assure that posts are plumb when diagonal rod is under proper tension.

6.3 Fabric

a. Clip or tie wires fastening mesh to posts shall be 12" apart and shall be 9 gauge. Ties to top and bottom rails shall be 2'- 0" apart and shall be 9 gauge.

b. Leave approximately 2" between finish grade and bottom selvage unless otherwise noted on the design drawing. Fabric shall be taut and tied to posts, rails and tension/stretcher bars. Install fabric on security side of the fence and anchor to framework so that fabric

remains in tension after pulling force used in installation is released.

6.4 Tension/Stretcher Bars

Thread through fabric and secure to posts with metal bands spaced not over 15" on center.

6.5 Barbed Wire

Install three parallel wires on each extension arm angled into the property for fences on Property Lines. Angle outward for other fence locations. Pull wire taut. Install four-point barbs on each strand located 3" on center.

6.6 Gates and Hardware

Install gates plumb, level and secure for full opening without interference. Install groundset items as recommended by manufacturer. Adjust hardware for smooth operation and lubricate.

6.7 Tie Wires And Clips

Use U-shaped clips of wire, securely fastened around pipe to which attached, clasping pipe and fabric firmly. Bend ends of wire to minimize hazard to persons or clothing.

6.8 Fasteners

Install nuts for tension band and hardware bolts on side of fence opposite fabric side.

7.0 WORKMANSHIP

Install fence in accordance with ASTM F567.

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REVISIONS 3:	**FILE:**
Clarify Wording To be revised 11/2018.	Construction Standards Manual 3, Section 42 Vaults