NELLO CORPORATION

Tower and Foundation Drawings

Sales Order:	16226
Drawing Number	
Tower:	156604
Foundation:	156605
Order Description:	NTP 59" x 190'
Site Name:	Hide-A-Way Hills
Location:	Hocking County, OH

Prepared For:

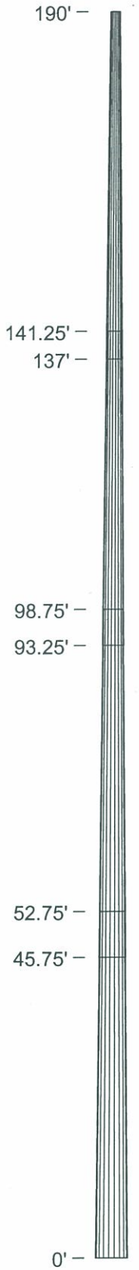
Customer:	Berkley Group, LLC
Contact:	Joann Fischer
Date:	September 29, 2011

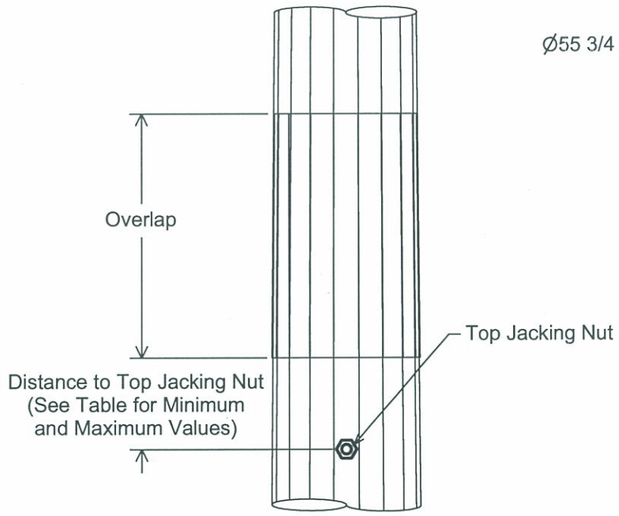
211 W. Washington, Suite 2000 – South Bend, IN 46601 – Office:(800) 806-3556 – Fax: (574) 288-5860 – www.nelloinc.com

Table of Contents

Pole Section Data

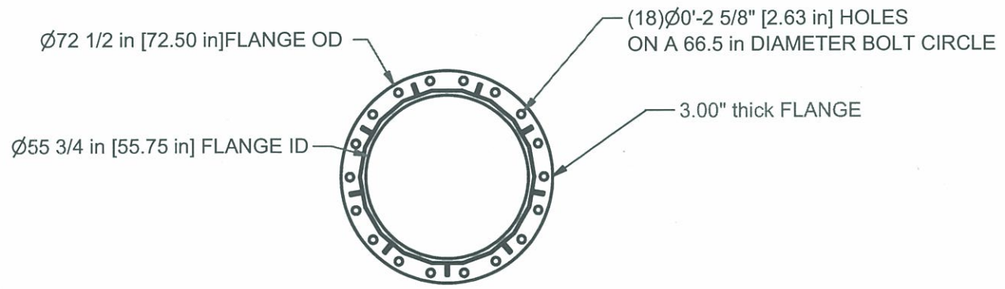
Section	Bottom Height (ft)	Top Height (ft)	Length (ft)	Number of Sides	Bottom OD (in)	Top OD (in)	Wall Thickness (in)	Material	Approximate Weight (lb)	Design Overlap (in)	Minimum Overlap (in)	Maximum Overlap (in)	Design Distance to Top Jacking Nut (in)	Maximum Distance to Top Jacking Nut (in)	Minimum Distance to Top Jacking Nut (in)
1	137	190	53	18	30.2569	18.0000	0.3125	A572-65	4650	51	44 3/16	56 1/8	15	21 13/16	9 7/8
2	93.25	141.25	48	18	39.5622	28.4616	0.3750	A572-65	7110	66	58 1/16	72 5/8	15	22 15/16	8 3/8
3	45.75	98.75	53	18	49.6096	37.3527	0.3750	A572-65	10080	84	73 3/16	92 3/8	15	25 13/16	6 5/8
4	0	52.75	52.75	18	59.2524	47.0533	0.3750	A572-65	13870						





A jacking nut is placed near the top of each section which will have another section placed on top. The distance from this nut to the bottom of the next section must not exceed the value given in the column labeled "Maximum Distance to Top Jacking Nut."

Pole Splice Detail



BASE FLANGE DETAIL

Tower Reactions

No Ice
Shear: 35.9 kips
Moment: 5301.3 ft-kips
Weight: 54.4 kips

With Ice
Shear: 4.4 kips
Moment: 685.7 ft-kips
Weight: 90.3 kips

STATE OF OHIO
DANIEL J. IANELLO
E-65201
REGISTERED PROFESSIONAL ENGINEER
SEP 27 2011

TITLE:
Berkley Group, LLC
NTP 59" X 190'
Hide-A-Way Hills
Hocking Co., OH

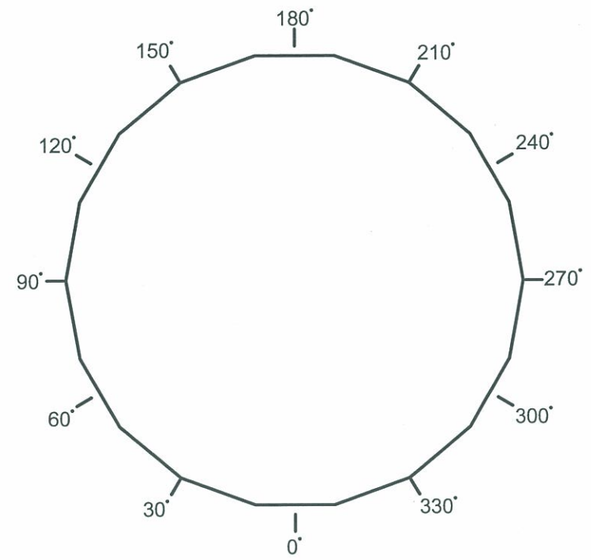
NELLO CORPORATION
211 W. Washington St., Suite 2000
South Bend, IN 46601-1705
Bus: (574)288-3632
Fax: (574)288-5860

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 9/26/2011
DWG NO: 156604
DWG. PROG: v2.05
SHEET: 1 OF 4

Portholes

Elevation (ft)	Qty	Size (in)	Azimuth (deg)
187	3	8 x 16	60, 180, 300
177	3	8 x 16	60, 180, 300
167	3	8 x 16	60, 180, 300
10	1	10 x 30	0
10	1	10 x 30	180
6	1	10 x 30	90
6	1	10 x 30	270
2.5	1	10 x 30	0



Step Bolts on This Side of Pole

Note:
The azimuths referenced here are only to illustrate where the pole features are in relation to each other. The azimuths are not to indicate which cardinal direction the anchor bolts or the pole should be positioned.

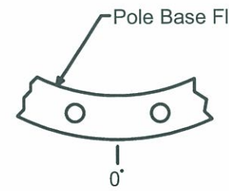
Pole Reference Azimuths

Antenna Loading

Height	Qty.	Description
190'	1	6' Lightning Rod
190'	12	800-10766
190'	1	Low Profile Platform
190'	3	Alcatel-Lucent RRH AWS
190'	3	Alcatel-Lucent RRH 700 MHz
190'	1	Raycap DC6-48-60-18-8F
190'	3	TT08-19DB111
190'	3	TT19-08BP111
180'	12	800-10766
180'	1	Low Profile Platform
180'	3	Alcatel-Lucent RRH AWS
180'	3	Alcatel-Lucent RRH 700 MHz
180'	1	Raycap DC6-48-60-18-8F
180'	3	TT08-19DB111
180'	3	TT19-08BP111
170'	12	800-10766
170'	1	Low Profile Platform
170'	3	Alcatel-Lucent RRH AWS
170'	3	Alcatel-Lucent RRH 700 MHz
170'	1	Raycap DC6-48-60-18-8F
170'	3	TT08-19DB111
170'	3	TT19-08BP111

Feedline Loading

Height	Qty.	Description
0' - 190'	12	LDF7-50A (1-5/8 FOAM)
0' - 190'	1	LDF2-50A (3/8 FOAM)
0' - 190'	1	LDF5-50A (7/8 FOAM)
0' - 180'	12	LDF7-50A (1-5/8 FOAM)
0' - 180'	1	LDF2-50A (3/8 FOAM)
0' - 180'	1	LDF5-50A (7/8 FOAM)
0' - 170'	12	LDF7-50A (1-5/8 FOAM)
0' - 170'	1	LDF2-50A (3/8 FOAM)
0' - 170'	1	LDF5-50A (7/8 FOAM)



Anchor Bolt Holes Are on Either Side of the 0 Degree Azimuth

Anchor Bolt Azimuth

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DWG. PROG: v2.05
SHEET: 2 OF 4

TITLE:
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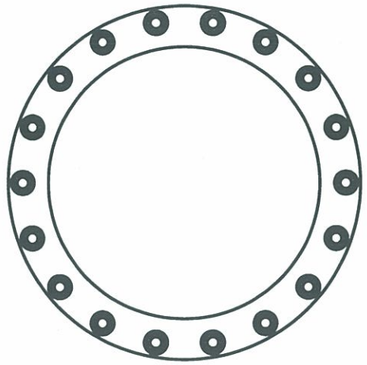
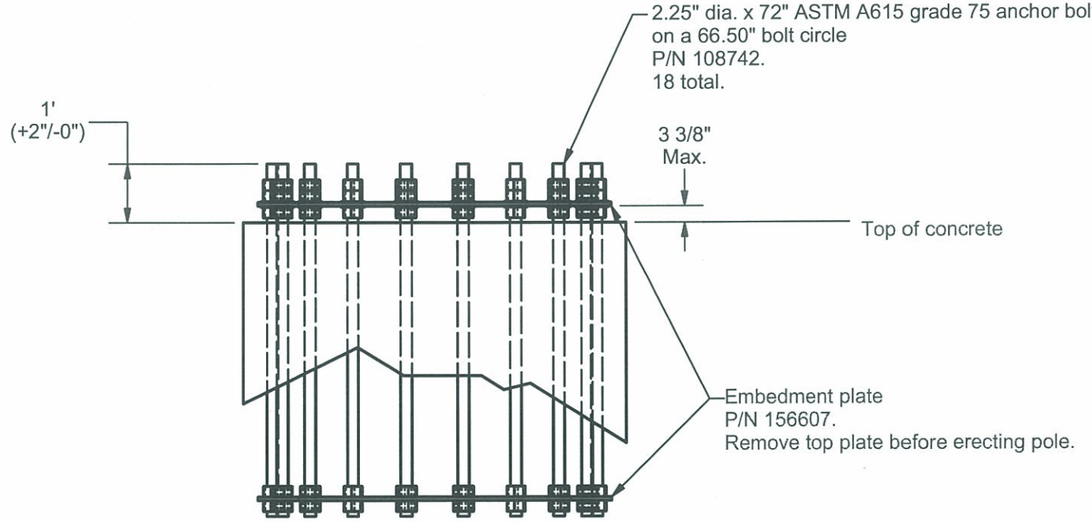


PLAN VIEW



ANCHOR BOLT DETAIL

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Tower Notes:

1. Tower is designed per TIA-222-G, "Structural Standard for Antenna Supporting Structures and Antennas," for the following loading conditions:
   90 mph 3-second gust basic wind speed with no ice
   30 mph 3-second gust basic wind speed with 3/4 inch basic ice thickness
   Structure Class: II
   Exposure Category: C
   Topographic Category: 1
2. Tower design loading is assumed to be based on site-specific data and must be verified by others prior to installation.
3. Tower design includes the antennas, dishes, and/or lines listed in the appurtenance loading tables on sheet 2.
4. Antenna mounting pipes may need to be field cut to match the lengths listed in the appurtenance loading tables on sheet 2.
5. Tower member design does not include stresses due to erection since erection equipment and procedures are unknown. Tower installation shall be performed by competent and qualified erectors in accordance with TIA-222-G and OSHA standards and all applicable building codes.
6. Field connections shall be bolted. No field welds shall be allowed unless otherwise noted.
7. Structural bolts shall conform to ASTM A325, except for 1/2 inch diameter and smaller bolts, which shall conform to ASTM A449 or SAE J429 Grade 5.
8. Structural steel and connection bolts shall be galvanized after fabrication in accordance with TIA-222-G.
9. All high strength bolts shall be tightened to a "snug tight" condition as defined in the November 13, 1985, AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
10. Tower shall be marked and lighted in conformance with local building codes, FAA regulations, and TIA-222-G.
11. Tower shall be grounded in conformance with local building codes and TIA-222-G.
12. Allowable tolerance on as-built tower steel height is plus 1% or minus 1/2%.
13. Maintenance and inspection shall be performed over the life of the structure in accordance with TIA-222-G.
14. Material specifications:
    NTP 18-Sided Pole - ASTM A572 Grade 65
    Pole Flange - ASTM A572 Grade 50
    Pole Porthole Rim - ASTM A572 Grade 65
15. A jacking nut is placed near the top of each section which will have another section placed on top. The distance from this top jacking nut to the bottom of the next section must not exceed the value given in the column labeled "Maximum Distance to Top Jacking Nut." Jacking may be required to achieve the proper overlap.
16. The horizontal distance between the vertical centerlines at any two elevations shall not exceed 0.25 percent of the vertical distance between the two elevations. Measure early in the morning before the sunward side of the pole expands.
17. Sections must be erected with the 0 degree azimuth lined up to ensure proper fit.
18. Remove anchor bolt template before erecting pole. Non-shrink grout may be placed under base flange after leveling pole. Drain holes must be provided if grouting.
19. Concrete contractor shall be responsible for properly aligning anchor bolts and materials before and after placing concrete, regardless of whether an anchor bolt template is provided.

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DWG. PROG: v2.05
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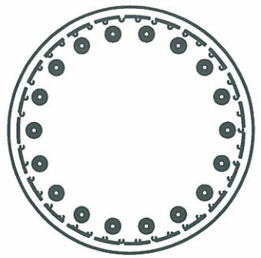
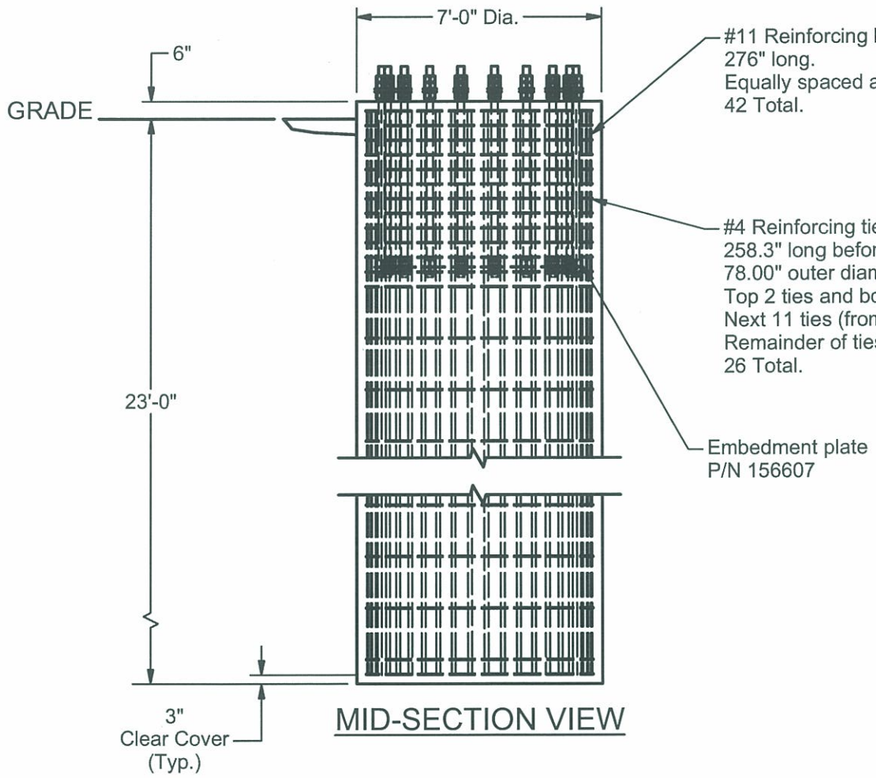
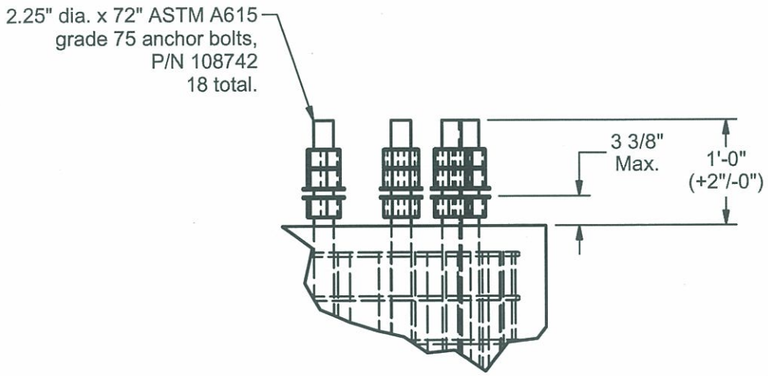


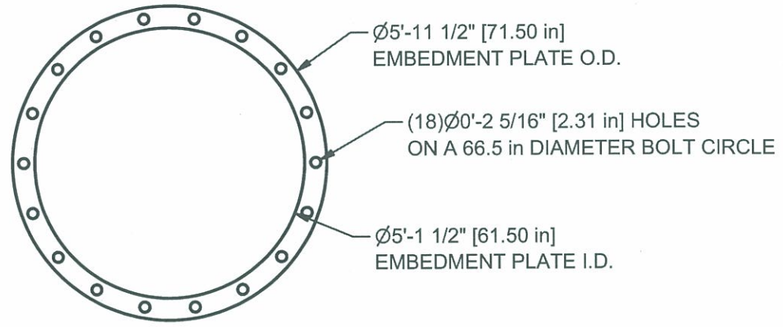
PLAN VIEW



MID-SECTION VIEW



ANCHOR BOLT DETAIL



EMBEDMENT PLATE DETAIL

DRILLED PIER FOUNDATION
(CONCRETE VOLUME: 33.5 CU. YD. TOTAL)

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REV	BY	DATE	DESCRIPTION

ORIG. DATE: 9/29/2011 | DWG NO: 156605

DWG. PROG: v.2.1 | SHEET: 1 OF 3

TITLE:
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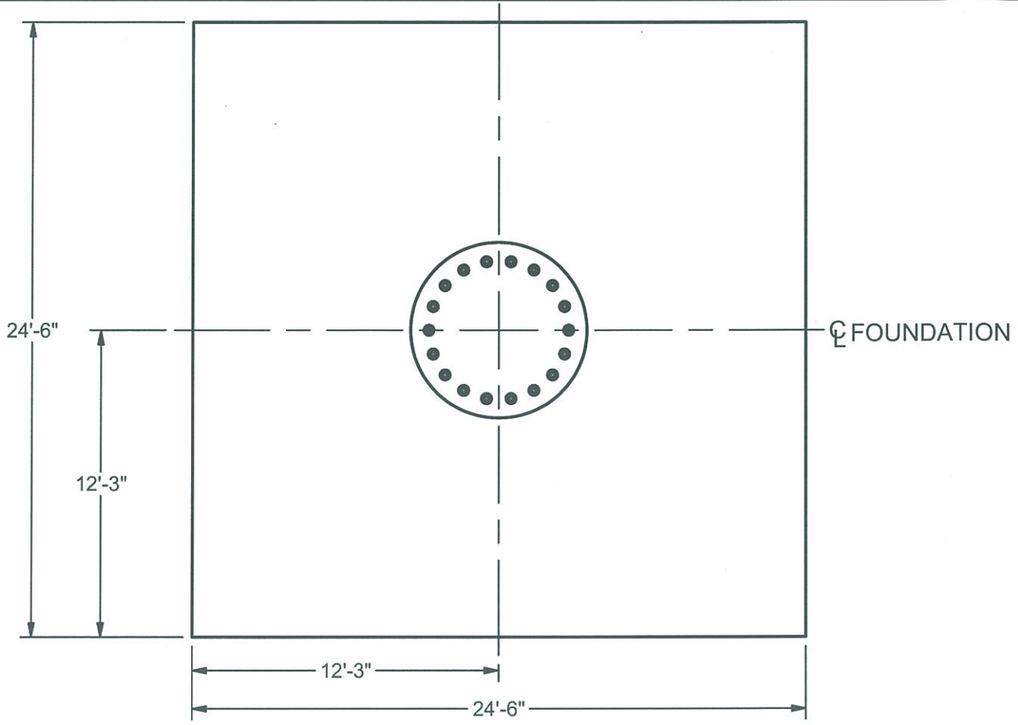
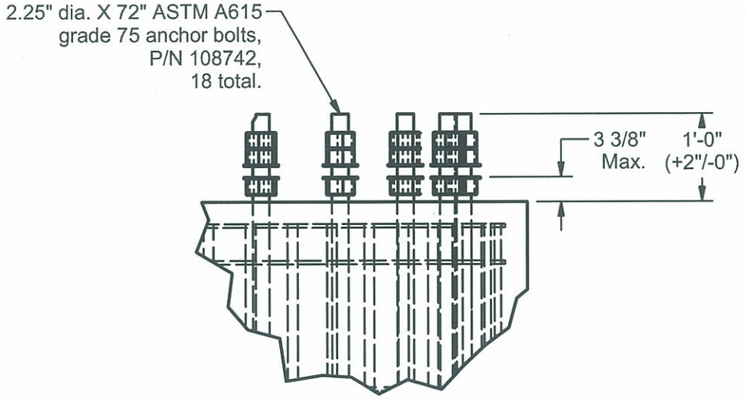
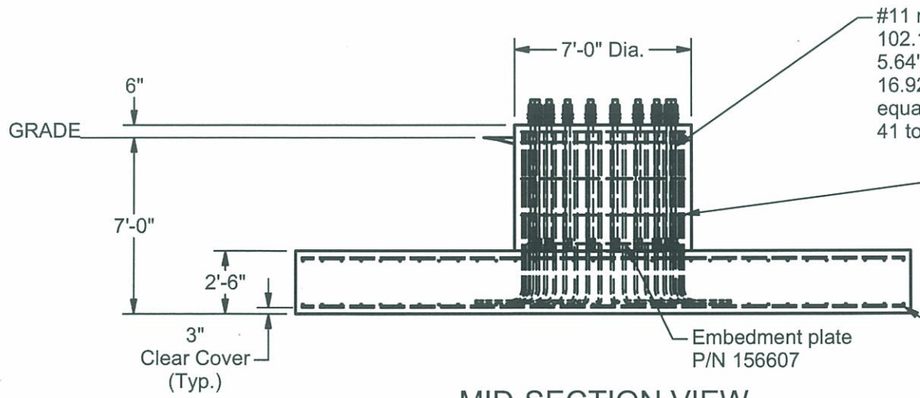


PLAN VIEW
(REINFORCEMENT NOT SHOWN FOR CLARITY)



ANCHOR BOLT DETAIL



#11 reinforcing bars,
102.14" long before being bent with
5.64" bend radius and
16.92" long 90 degree standard hook.
equally spaced around inside of ties.
41 total.

#4 reinforcing ties,
265.47" long before being bent into
78.00" outer diameter circle with 22.00" overlap.
top 2 spaced at 5.00" with the remainder
spaced equally to the top of pad.
5 total.

#8 reinforcing bars,
288.00" long each,
equally spaced,
32 per direction per layer,
128 total.

MID-SECTION VIEW

PIER AND PAD FOUNDATION
(CONCRETE VOLUME: 62.7 CU. YD.)

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Foundation Notes

1. This foundation has been designed for the following reactions.

Drilled Pier Design:		Pier and Pad Design:	
Shear:	35.9 kips	Shear:	35.9 kips
Moment:	5301.3 ft-kips	Moment:	5301.3 ft-kips
Weight:	54.4 kips	Weight:	54.4 kips

2. Foundation is designed per soil report dated 08/08/2011, by ECS Midwest, LLC, project number 16:8597.

3. A field inspection shall be performed in order to verify that the actual site soil parameters meet or exceed the assumed soil parameters and that the depth of standard foundations are adequate based on the frost penetration and groundwater depth. Local frost depth must be no deeper than the bottom of the base foundation.

4. Reinforcement shall be deformed and conform to the requirements of ASTM A615 Grade 60 unless otherwise noted. Splices in reinforcement shall not be allowed unless otherwise noted.

5. Welding is prohibited on reinforcing steel and anchorage.

6. Structural backfill must be compacted in 12" loose lifts to a 97% of maximum dry density at optimum moisture content in accordance with ASTM D698. Backfill must be clean and free of organic and frozen soils and foreign materials. Fill should be compacted at water content within 2 percent of optimum.

7. Foundation designs assume level ground at tower site.

8. Loose material shall be removed from bottom of excavation prior to concrete placement.

9. Concrete cover from exposed surface of concrete to surface of reinforcement shall not be less than 3".

10. Concrete and reinforcement installation must conform to ACI 318, "Building Code Requirements for Structual Concrete."

11. Concrete shall develop a minimum compressive strength of 4000 psi in 28 days.

12. Concrete shall be placed as soon as practical after excavating to avoid disturbance of bearing and side wall surfaces.

13. Concrete contractor shall be responsible for properly aligning anchor bolts and materials before and after placing concrete, regardless of whether an anchor bolt template is provided.

14. Positive drainage shall be maintained during construction and throughout the life of the facility to minimize the potential for surface water infiltration.

15. A permanent casing may not be used.

16. Water was encountered at 22 feet during drilling of the test borings.

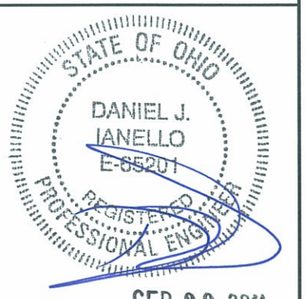
17. Difficult drilling will be encountered, and rock coring equipment may be required.

18. The sub-grade, if practical, should be proof-rolled with vibratory compaction prior to casting foundation or placing structural fill.

19. If unsuitable soils are encountered, overexcavation of unsuitable soils for compacted backfill placement below footings should extend laterally beyond all edges of the footings at least 12 inches per foot of overexcavation depth below footing base elevation.

20. It shall be the contractor's responsibility to locate and prevent damage to any existing underground utilities, foundations or other buried objects that might be damaged or interfered with during construction of the foundation.

21. A temporary steel casing and/or drilling slurry will be required for installation of the drilled pier foundation.



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