Williams COUNTY

Development Services - Building Division
PO Box 2047 | 220 2nd Ave. E. | Williston, ND 58802-2047 | 701.577.4567

Permit

Permit NO. **BLDC-0025-16**
Permit Type: **Building (Commercial)**
Work Classification: **New**
Permit Status: **Issued**

Issue Date: 10/18/2016
Expiration: 04/17/2017

Location Address	Parcel Number
10415 77TH STREET NW, TIOGA, ND 58852	**15158950003050**

Contacts

Enel — **Owner** One Tech Drive 220 Suite, Andover, MA 01810 (775)870-2033 bill.moskaluk@enel.com	David Garcia — **Contractor** (678)296-2530 david.garcia@amecfw.com
Sioux Falls Tower — **Contractor** 2224 E 39th St N, Sioux Falls, SD 57104 (605)331-6972 erodenborn@siouxfallstower.com	

Description:

Valuation: $ 671,207.00
Total Sq Feet: 0.00

Inspection Requests:
701-577-4576

Fees	Amount
Building Permit Fee	$2,688.00
Building Plan Review Fee	$672.00
Total:	**$3,360.00**

Payments	Amt Paid
Total Fees	**$3,360.00**
Cash	$2,688.00
Check # ####	$672.00
Amount Due:	**$0.00**

Available Inspections:	
Inspection Type	
Concrete Slab	
Drain Tile	
Final Building	
Final Fire	
Final Highway	
Final Planning/Zoning	
Footing	
Foundation Wall	
Framing	
Insulation	
Sheet Rock	

This permit is issued on the express condition that the Plans and Specifications shall conform in all respects to the statements certified to in the application for such permit and that all work shall be done in accordance with the ordinances of Williams County, North Dakota pertaining to the construction & remodeling.

Federal law may require this construction project to conform with the Americans with Disabilities Act Accessibility Guidelines for Building and Facilities.

Building Permit Fees Nonrefundable.
This permit was reviewed and approved by the Building Official according to local jurisdiction ordinances, zoning ordinances and building codes. The owner is hereby notified that private covenants and encumbrances may exist on said property. It is the responsibility of the owner to follow these covenants and encumbrances. The property owner is responsible for having all existing utility lines located on said property before ground breaking begins. The County cannot be held responsible for property location. If property lines have to be located, it will be necessary to hire a licensed land surveyor at owner's expense. Unless construction is started within six months, this Permit is void. It must then be renewed or replaced at office of building inspector.

Approval is not to be construed as an assumption of any legal responsibility for the design or construction of the dwelling or building component.

Additional Information

Township: LINDAHL
Contractor License Number: 31993

Williams COUNTY

Development Services - Building Division
PO Box 2047 | 220 2nd Ave. E. | Williston, ND
58802-2047 | 701.577.4567

Permit

Permit NO. **BLDC-0025-16**
Permit Type: **Building (Commercial)**
Work Classification: **New**
Permit Status: **Issued**

Issue Date: 10/18/2016

Expiration: 04/17/2017

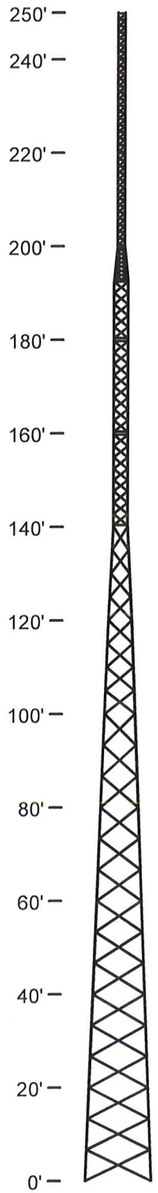
Issued By: Carolyn Wright

October 18, 2016
Date

Emailed to David Gard CW
Contractor/Owner

10.18.2016
Date

BLDC-0025-16



Self-Supporting Tower Section Data

Section Number	Bottom Elevation (ft)	Top Elevation (ft)	Model	Bottom Face Width (ft)	Top Face Width (ft)	Number of Panels	Leg Size (in)	Diagonal Size (in)	Girt Size (in)	Mid-Horizontal Size (in)	Redundant Horizontal Size (in)	Redundant Diagonal Size (in)
13	240	250	NFZ	1.5	1.5	7	SR 1.5	SR 5/8	SR 5/8	SR 5/8		
12	220	240	NFZ	1.5	1.5	14	SR 1.5	SR 5/8	SR 5/8	SR 5/8		
11	200	220	NFZ	1.5	1.5	14	SR 1.75	SR 5/8	SR 5/8	SR 5/8		
10	180	200	NFX	3.0	1.5	9	SR 1.75	SR 5/8	SR 3/4	SR 3/4		
9	160	180	NFX	3.0	3.0	8	SR 1.75	SR 5/8	SR 3/4			
8	140	160	NFX	3.0	3.0	8	SR 2.25	SR 5/8	SR 3/4			
7	120	140	NSX	5.0	3.0	4	P4x.237	L1 3/4x1 3/4x1/8				
6	100	120	NSX	6.5	5.0	4	P4x.237	L1 3/4x1 3/4x1/8				
5	80	100	NSX	8.0	6.5	3	P4x.237	L1 3/4x1 3/4x1/8				
4	60	80	NSX	9.5	8.0	3	P5x.258	L1 3/4x1 3/4x1/8				
3	40	60	NSX	11.0	9.5	3	P5x.258	L2x2x1/8				
2	20	40	NSX	12.5	11.0	3	P5x.258	L2 1/2x2 1/2x3/16				
1	0	20	NSX	14.0	12.5	3	P5x.258	L2 1/2x2 1/2x3/16				

To be constructed according to manufacturer's specs.

Tower Reactions

No Ice
Shear: 16.8 kips
Moment: 1811.7 ft-kips
Weight: 17.8 kips

With Ice
Shear: 9.4 kips
Moment: 1216.5 ft-kips
Weight: 40.8 kips

Leg Reactions
Compression: 155.4 kips
Uplift: -138.3 kips
Shear: 11.0 kips

Subject to Field Inspector Approval

Approved as Noted
Williams County
Building Division

State Electrical & Plumbing Permit / Inspection Required

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA

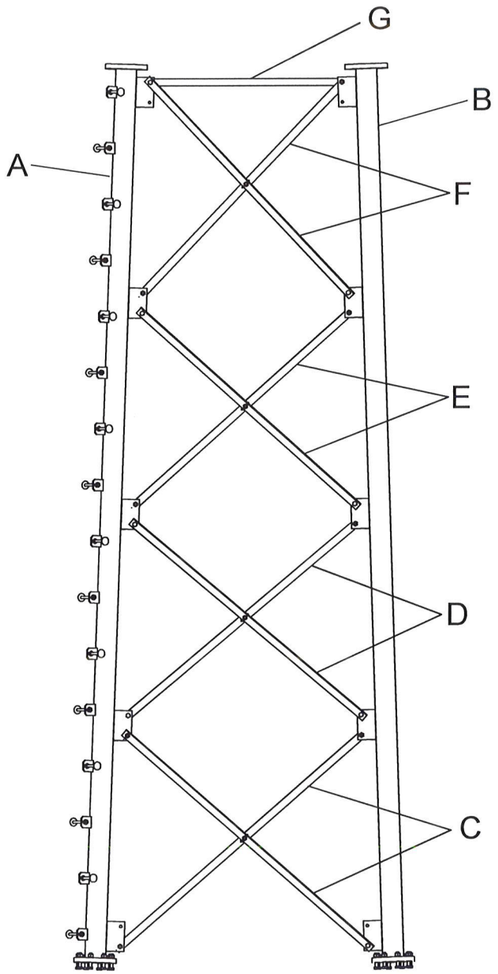
AUG 24 2016

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/17/2016
DWG NO: 324693
DWG. PROG: v2.05
SHEET: 1 OF 6

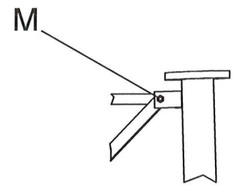
TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860



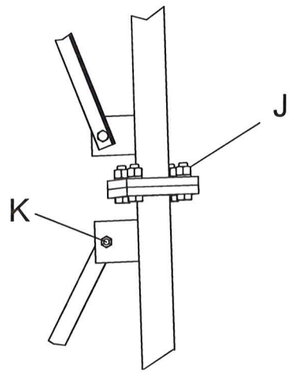
NSX-SR Section Detail

1. A part number is stamped on the bottom footpad of each leg.
2. A part number is stamped and /or labeled on the bottom end of each angle.
3. Be sure to place diagonal bracing angles in correct positions, angles in the top panel may be longer than they are in the middle panel.
4. The bolt head must bear against the angle bracing.



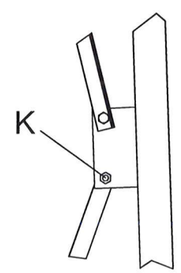
One plain nut and one lockwasher per bolt.

NSX-SR Top Connection Detail



One plain nut and one lockwasher per bolt.

NSX-SR Leg Connection Detail

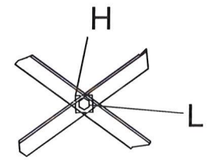


One plain nut and one lockwasher per bolt.

NSX-SR Bracing Connection Detail

NSX Section Legend:

A. Climbing Leg
B. Non-Climbing Leg
C. Diag., Panel 1
D. Diag., Panel 2
E. Diag., Panel 3
F. Diag., Panel 4
G. Top Girt
H. Spacer
J. Leg Bolts
K. Diagonal Bolts
L. Stitch Bolts
M. Top Girt Bolts



One plain nut and one lockwasher per bolt.

NSX Spacer Detail

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA

AUG 24 2016

TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/17/2016
DWG NO: 324693
DWG. PROG: v2.05
SHEET: 2 OF 6

Self-Supporting Tower - NFZ Section Data

Section Number	Section PN
13	164835
12	163823
11	160853

Self Supporting Tower - NFX Section Data

10	160852
9	162880
8	160850

NFZ Section Hardware

Item	Elevation	Leg Bolts	Section Weight (lbs)
13	240	(12) 1" x 3-3/4"	340
12	220	(12) 1" x 3-3/4"	650
11	200	(12) 1" x 3-3/4"	720

NFX Section Hardware

10	180	(12) 1" x 3-3/4"	990
9	160	(12) 1" x 3-3/4"	870
8	140	(24) 3/4" x 3-3/4"	1540

NSX Section Part Numbers

Item	Elevation	Climbing Leg (A)	Non-Climbing Leg (B)	Diagonal - Panel 1 (C)	Diagonal - Panel 2 (D)	Diagonal - Panel 3 (E)	Diagonal - Panel 4 (F)	Top Girt (G)	Spacer (H)
7	120' - 140'	141631		170765	170766	170767	170768		132233
6	100' - 120'	141292		167055	167056	167057	167058		132233
5	80' - 100'	141259		166994	166995	166996			132233
4	60' - 80'	141264		167316	167317	167318			132233
3	40' - 60'	141264		167808	167809	167810			132233
2	20' - 40'	141264		166861	166862	166863			132233
1	0' - 20'	237824		166864	166865	166866			132233

NSX Section Hardware

Item	Elevation	Leg Bolts (J)	Diagonal Bolts (K)	Stitch Bolts (L)	Top Girt Bolts (M)	Section Weight (Lbs.)
7	120' - 140'	(24) 3/4" x 3-1/2"	(48) 5/8" x 2-1/2"	(12) 5/8" x 2-1/2"		1280
6	100' - 120'	(24) 3/4" x 3-1/2"	(48) 5/8" x 2-1/2"	(12) 5/8" x 2-1/2"		1320
5	80' - 100'	(24) 3/4" x 3-1/2"	(36) 5/8" x 2-1/2"	(9) 5/8" x 2-1/2"		1290
4	60' - 80'	(24) 3/4" x 3-1/2"	(36) 5/8" x 2-1/2"	(9) 5/8" x 2-1/2"		1550
3	40' - 60'	(24) 3/4" x 3-1/2"	(36) 5/8" x 2-1/2"	(9) 5/8" x 2-1/2"		1630
2	20' - 40'	(24) 3/4" x 3-1/2"	(36) 5/8" x 2-1/2"	(9) 5/8" x 2-1/2"		2030
1	0' - 20'	0	(36) 5/8" x 2-1/2"	(9) 5/8" x 2-1/2"		2080

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA

AUG 24 2016

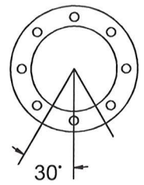
REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/17/2016 | DWG NO: 324693

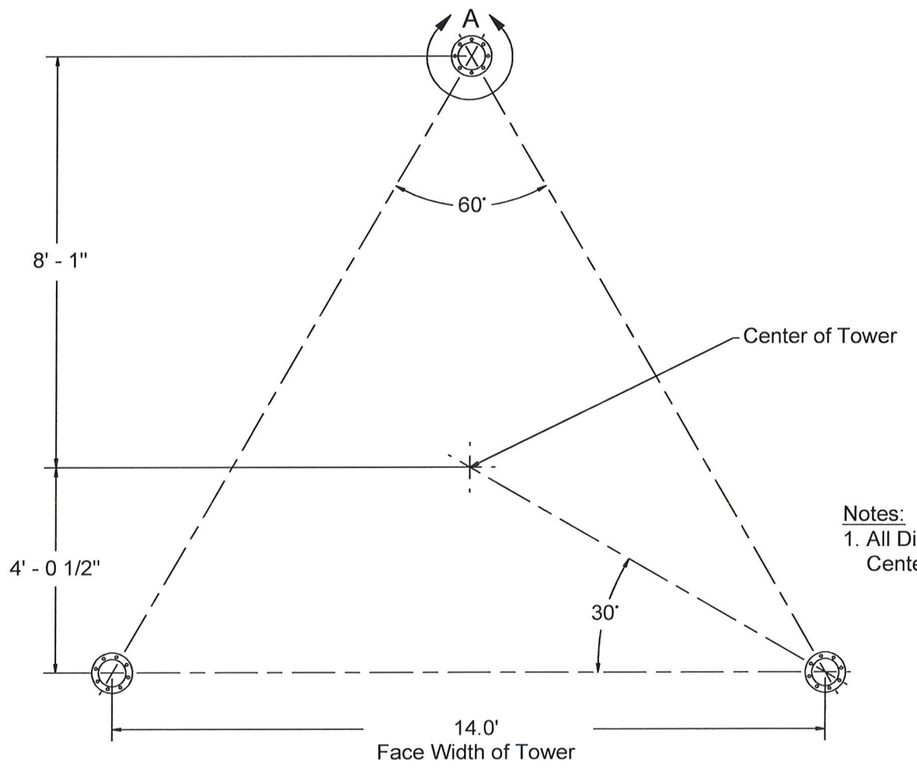
DWG. PROG: v2.05 | SHEET: 3 OF 6

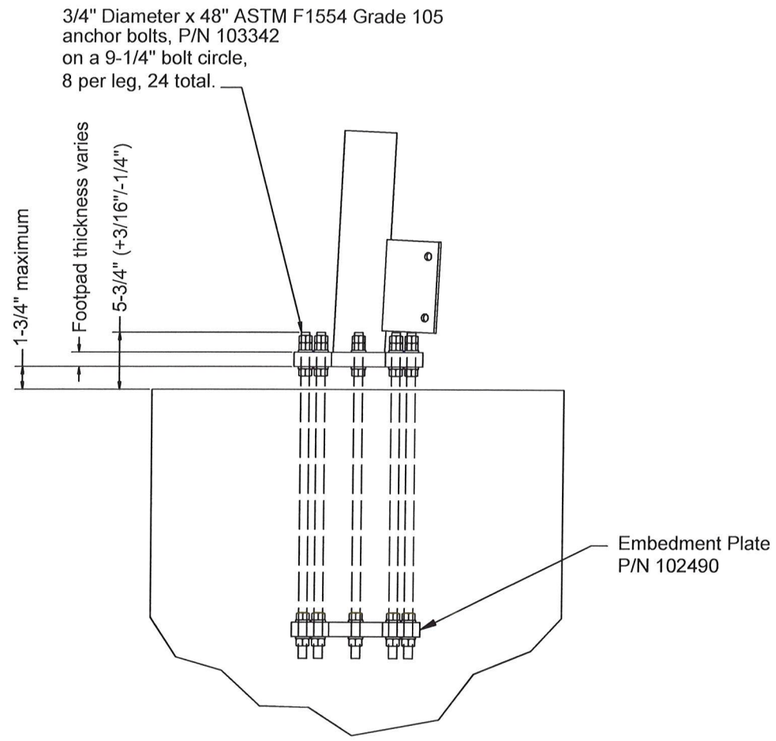
TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860



DETAIL A
Bolt hole must be aligned with
center of tower.





Notes:
1. All Dimensions are from
Center of Bolt Circles.

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA
AUG 24 2016

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/17/2016
DWG NO: 324693
DWG. PROG: v2.05
SHEET: 4 OF 6

TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860

Antenna Loading

Height	Qty.	Description
250'	1	4' Lightning Rod
250'	1	Beacon LED (21in Dia.)
250'	1	Precipitation Sensor
250'	1	Temperature Sensor
250'	1	Goal Post-12' w/ 2 Devices
99'	1	20' Boom
92'	1	20' Boom
33'	1	Temperature Sensor
250'	1	Beacon LED (21in Dia.)
250'	2	10' Boom
181'	1	15' Boom

Feedline Loading

Height	Qty.	Description
0' - 250'	10	LDF2-50 (3/8 FOAM)
0' - 99'	2	LDF2-50 (3/8 FOAM)
0' - 92'	2	LDF2-50 (3/8 FOAM)
0' - 250'	1	1" Conduit
0' - 33'	2	LDF2-50 (3/8 FOAM)
0' - 181'	2	LDF2-50 (3/8 FOAM)

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/17/2016

DWG NO: 324693

DWG. PROG: v2.05

SHEET: 5 OF 6

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA

AUG 24 2016

TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860

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 (Equivalent to 116 mph 3-second gust ultimate design wind speed)
   60 mph 3-second gust basic wind speed with 1/2 inch basic ice thickness
   Structure Class: II
   Exposure Category: C
   Topographic Category: 1
2. A tower field inspection shall be performed in order to verify that design exposure and topographic parameters are consistent with the existing tower site conditions.
3. Tower design includes the antennas, dishes, and/or lines listed in the appurtenance loading tables on sheet 5.
4. 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.
5. Field connections shall be bolted. No field welds shall be allowed unless otherwise noted.
6. 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.
7. Structural steel and connection bolts shall be galvanized after fabrication in accordance with TIA-222-G.
8. All high strength bolts shall be tightened to a "snug tight" condition as defined in the RCSC "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
9. Tower shall be marked and lighted in conformance with local building codes, FAA regulations, and TIA-222-G.
10. Tower shall be grounded in conformance with local building codes and TIA-222-G.
11. Allowable tolerance on as-built tower steel height is plus 1% or minus 1/2%.
12. Maintenance and inspection shall be performed over the life of the structure in accordance with TIA-222-G.
13. Material specifications:
    Self Supporting Pipe Legs - ASTM A500 Grade 50
    Self Supporting Solid Legs 1-1/2" - ASTM A572 Grade 50
    Self Supporting Solid Legs 1-3/4" and larger - ASTM A572 Grade 58
    Angle Bracing - ASTM A529 Grade 50
    Leg Footpads - ASTM A572 Grade 50
    Leg Side Plates - ASTM A36 (Min)
14. Remove anchor bolt template before erecting tower.
15. 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.

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA

AUG 24 2016

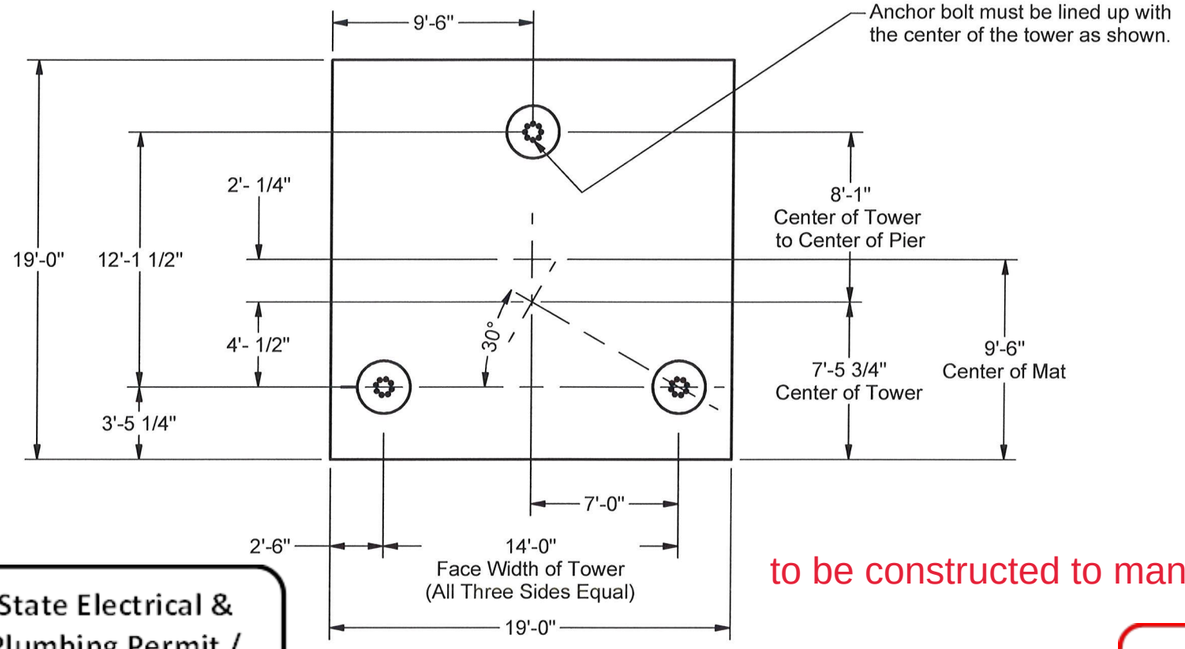
REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/17/2016
DWG NO: 324693
DWG. PROG: v2.05
SHEET: 6 OF 6

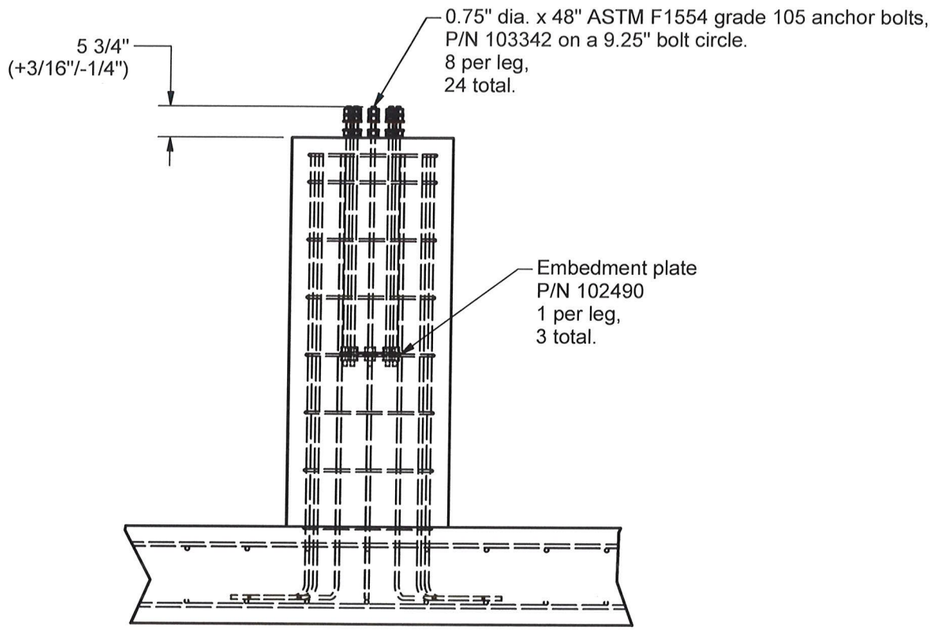
TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860

BLDC-0025-16



PLAN VIEW
(Reinforcement not shown for clarity)



PIER DETAIL

to be constructed to manufactuer's specs.

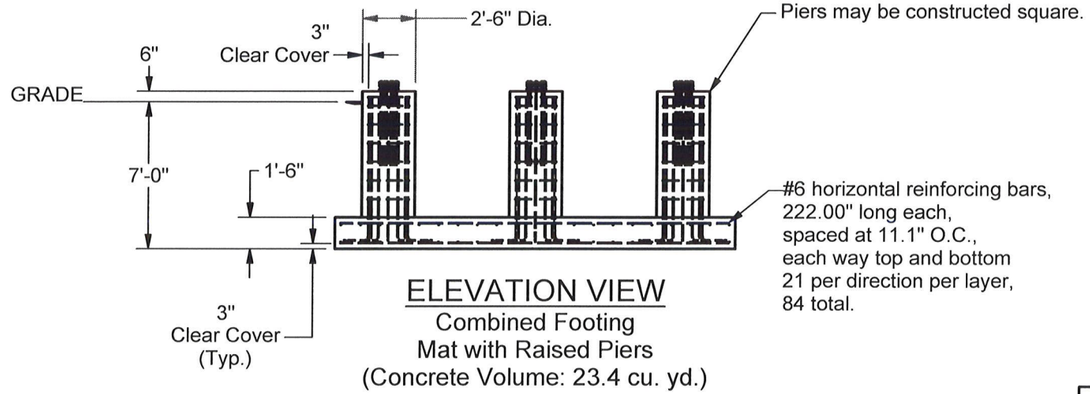
State Electrical & Plumbing Permit / Inspection Required

Subject to Field Inspector Approval

Approved as Noted
Williams County
Building Division

CAUTION:
1. Ensure that all anchor bolt nuts are tightened.
2. Ensure that all three face width dimensions (pier center to pier center) are measured and verified before pouring concrete.

Concrete Compressive Strength, f'c = 4000 psi



ELEVATION VIEW
Combined Footing
Mat with Raised Piers
(Concrete Volume: 23.4 cu. yd.)

#6 vertical reinforcing bars,
93.00" long before being bent with
(2.25" bend radius)
11.25" long 90 degree standard hook
spaced at 5.8" O.C. around inside of ties.
12 per pier,
36 total.

#4 circular reinforcing ties,
92.00" long before being bent into
24.00" outer diameter circle with 18.00" overlap,
top 2 spaced at 5.00" with the remainder
spaced at 10.7" O.C.to the top of pad.
8 per pier,
24 total.

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA
AUG 24 2016

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/19/2016 | DWG NO: 324694
DWG. PROG: v2.05 | SHEET: 1 OF 2

TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

NELLO CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860

Foundation Notes:

1. This foundation has been designed for the following tower reactions:
   - Leg Compression: 155.4 Kips
   - Leg Uplift: 138.3 Kips
   - Tower Shear: 16.8 Kips
   - Tower Moment: 1812 Ft-Kips
   - Tower Weight: 17.8 Kips
2. Foundation design is based on the Geotechnical Report dated 02/03/2016, by RRC Power & Energy, LLC; Project No. GE1507013 (Boring PPT-1).
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 or the top of the anchor.
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 indicated.
5. Welding is prohibited on reinforcing steel and anchorage.
6. Structural backfill placed below pad must be compacted in 8" loose lifts to 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.
7. Backfill above foundation should be compacted to 95% of maximum dry density at water content within 2 percent of optimum. Backfill must be clean and free of organic and frozen soils and foreign materials.
8. Finished grade shall be leveled over the entire foundation footprint. Backfill is recommended to slope to native grade using a 2:1 (H:V) slope.
9. Loose material shall be removed from bottom of excavation prior to concrete placement.
10. Concrete cover from exposed surface of concrete to surface of reinforcement shall not be less than 3".
11. Concrete and reinforcement installation must conform to ACI 318, “Building Code Requirements for Structural Concrete.”
12. Concrete shall develop a minimum compressive strength of 4000 psi at 28 days.
13. Concrete shall be placed as soon as practical after excavating to avoid disturbance of bearing and side wall surfaces
14. Concrete contractor shall be responsible for properly aligning anchor bolts before and after placing concrete, regardless of whether an anchor bolt template is provided.
15. Positive drainage shall be maintained during construction and throughout the life of the facility to minimize the potential for surface water infiltration.
16. 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.
17. 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.
18. It is permissible to utilize a cold joint during construction of a pier and pad type foundation. The cold joint must be located at the interface of the piers with the pad, and contractor shall use a bonding agent suitable for cold joints.
19. It is permissible for the top of the vertical reinforcement cage alignment to fluctuate slightly, allowing for a minimum clear cover of 2” to a maximum clear cover of 4” over the top of any individual vertical bar.
20. Earthwork operations and foundation installation methods shall be in accordance with the geotechnical report and all applicable American Concrete Institute (ACI) Standards.
21. Groundwater was not encountered during the geotechnical investigation.
22. This mat design assumes an ultimate bearing capacity of 5400 psf (allowable bearing capacity of 1800 psf) based on the geotechnical report. The bearing surface shall be inspected prior to concrete placement.
23. Proper curing methods shall be used directly following concrete placement as established by the contractor. The footing concrete shall develop a minimum compressive strength of 2500 psi prior to backfill and compaction operations.
24. Concrete mix design is the responsibility of the ready-mixed concrete producer and/or the contractor. The concrete mix shall meet or exceed the specified compressive strength f'c, satisfy the durability criteria of ACI 318 Chapter 4, and provide proper workability and consistency for placement based on expected site conditions.
25. During placement of reinforcing bars in footings, the bars may be supported on precast concrete blocks (e.g. CMUs).

DANIEL J. IANELLO
REGISTERED
PROFESSIONAL
PE-4844
ENGINEER
NORTH DAKOTA

AUG 24 2016

REV	BY	DATE	DESCRIPTION

ORIG. DATE: 8/19/2016 | DWG NO: 324694

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

TITLE:
Sioux Falls Tower
NSX 14' X 250'
Lindahl Wind PPT 1
Williams Co., ND

N E L L O CORPORATION
1201 S. Sheridan St.
South Bend, IN 46619
Bus: (574)288-3632
Fax: (574)288-5860