#2020-00133
Nicor – Special Use Permit & Zoning Variation
Project Review for Planning and Zoning Commission

Meeting Date: August 19, 2020

Request: A Special Use Permit for a radio transmission tower and a variation from Article 2-400 to allow for a 300-foot tower with a setback that is less than 110% of the height of the tower, 330 feet, from the west property line.

Location: 300 W. Terra Cotta Avenue

Acreage: 28 acres

Existing Zoning: M – Manufacturing & W – Watershed

Surrounding Properties: North: R-1 PUD – Single-Family Residential Planned Unit Development
South: R-3B – Multi-Family Residential
East: O – Office
West: W – Watershed & McHenry County R-1 – Single-Family Residential

Staff Contact: Katie Cowlin (815.356.3798)

Background:

- Existing Use: Nicor's property currently has an existing 300-foot radio transmission tower that is used for Nicor's business operations.
- Nicor is seeking to replace the existing guyed tower with a self-support tower. Per the application, the existing guyed tower was installed in 1985.
- UDO Requirements: A special use permit is required for radio transmission towers. Radio transmission towers must meet the same special criteria as wireless communication facilities, including a height limitation of 200 feet and the towers are required to be setback 110% of the height of the tower from all property lines.

Development Analysis:

General:

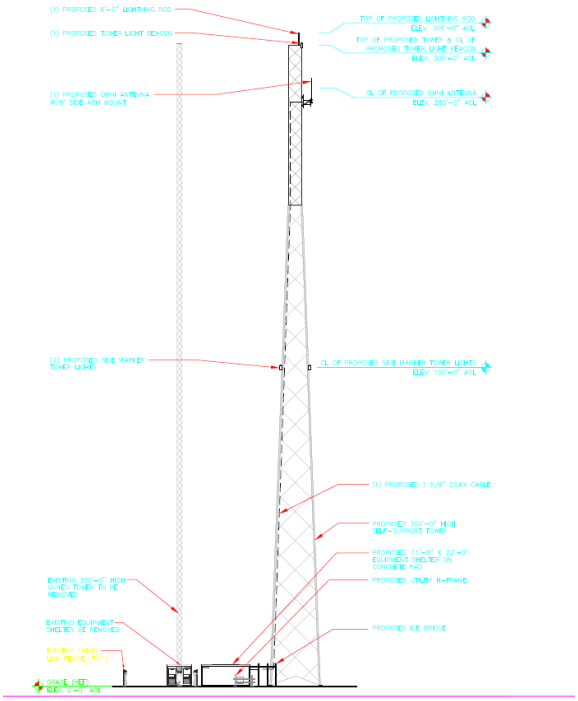
- Request: The petitioner is requesting a special use permit for a radio transmission tower and a zoning variation from Article 2-400 to allow a 300-foot tower and for it to be setback less than 110% of the height of the tower, 330 feet, from the west property line.

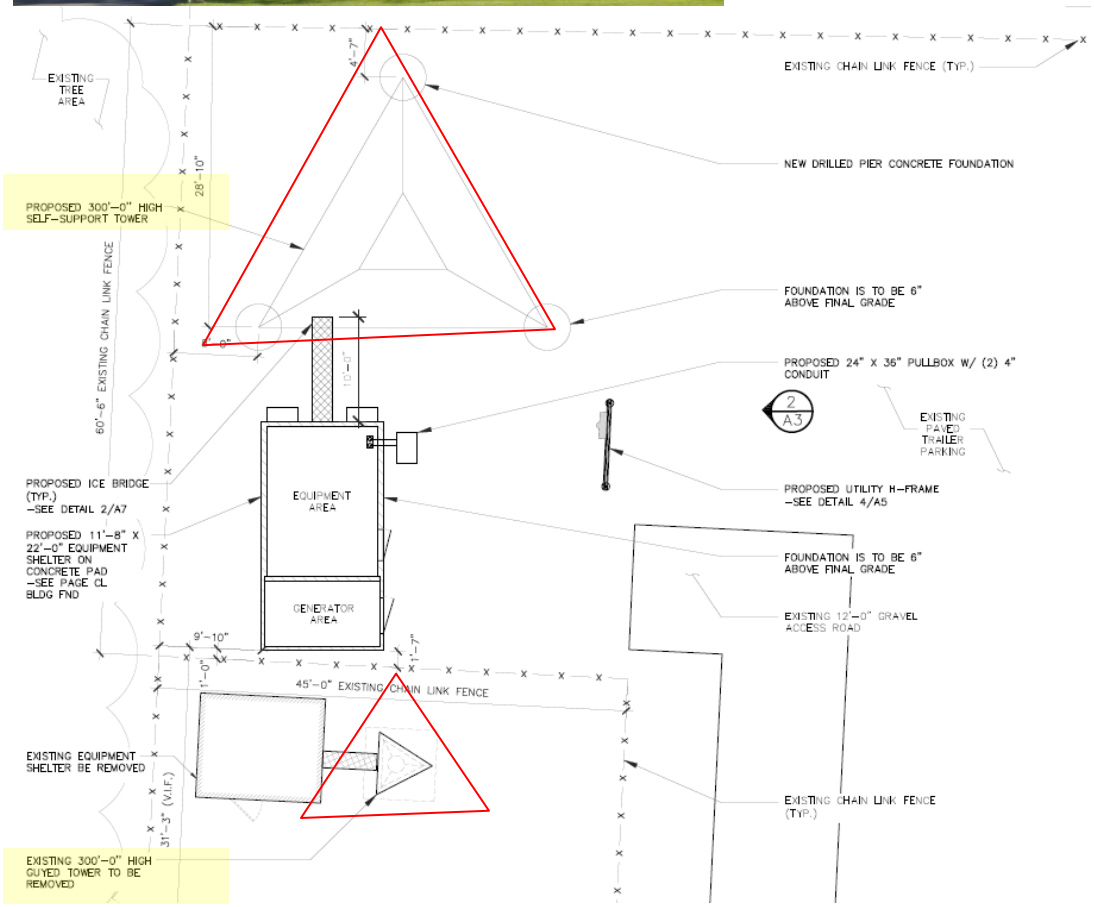
- The closest that the tower would be to the property lines would be approximately 137 feet.
- Land Use: The land use map shows the area as Industry. This land use designation is appropriate for this use.
- Zoning: The site is zoned M – Manufacturing and W – Watershed.

Proposed Development Description:

- The height of the tower is 300 feet, the same as the existing tower.
- The proposed tower design is a self-support tower with a galvanized steel finish.
- Nicor's property is fenced with a six-foot fence with a barbwire crown for security. The tower and equipment would be located within the fenced area.
- The proposed tower is just north of the existing tower. The existing tower will be removed after the new tower is constructed.

Existing tower pictured below and proposed tower plans illustrated:





2030 Comprehensive Land Use Plan Review:

The Comprehensive Plan designates the subject property as Industry, which allows for existing and future manufacturing uses.

This project meets the following goal:

Land Use - Industry

Goal: Support manufacturing uses within the community which contribute to the regional and local economy and Crystal Lake's live, work, play philosophy.

This can be accomplished with the following supporting action:

Supporting Action: Expand and attract manufacturing users which provide jobs, services, and products strengthening the City's economy.

Findings of Fact:

SPECIAL USE PERMIT

Special Uses require a separate review because of their potential to impact surrounding properties and the orderly development of the City. Section 2-400 of the Unified Development Ordinance establishes standard for all Special Uses in Crystal Lake. The criteria are as follows:

1. That the proposed use is necessary or desirable, at the location involved, to provide a service or facility which will further the public convenience and contribute to the general welfare of the neighborhood or community.

   ☐ *Meets* ☐ *Does not meet*

2. That the proposed use will not be detrimental to the value of other properties or improvements in the vicinity.

   ☐ *Meets* ☐ *Does not meet*

3. That the proposed use will comply with the regulations of the zoning district in which it is located and this Ordinance generally, including, but not limited to, all applicable yard and bulk regulations, parking and loading regulations, sign control regulations, watershed, wetlands, and flood plain regulations, Building and Fire Codes and all other applicable City Ordinances.

   ☐ *Meets* ☐ *Does not meet*

4. That the proposed use will not negatively impact the existing off-site traffic circulation; will adequately address on-site traffic circulation; will provide adequate on-site parking facilities; and, if required, will contribute financially, in proportion to its impact, to upgrading roadway and parking systems.

   ☐ *Meets* ☐ *Does not meet*

5. That the proposed use will not negatively impact existing public utilities and municipal service delivery systems and, if required, will contribute financially, in proportion to its impact, to the upgrading of public utility systems and municipal service delivery systems.

   ☐ *Meets* ☐ *Does not meet*

6. That the proposed use will not impact negatively on the environment by creating air, noise, or water pollution; ground contamination; or unsightly views.

   ☐ *Meets* ☐ *Does not meet*

7. That the proposed use will maintain, where possible, existing mature vegetation; provide adequate screening to residential properties; provide landscaping in forms of ground covers, trees and shrubs; and provide architecture, which is aesthetically appealing, compatible or complementary to surrounding properties and acceptable by community standards, as further detailed in Article 4, Development and Design Standards.

   ☐ *Meets* ☐ *Does not meet*

8. That the proposed use will meet standards and requirements established by jurisdictions other than the City such as Federal, State or County statutes requiring licensing procedures or health/safety inspections, and submit written evidence thereof.

   ☐ *Meets* ☐ *Does not meet*

9. That the proposed use shall conform to any stipulations or conditions approved as part of a Special Use Permit issued for such use.

   ☐ *Meets* ☐ *Does not meet*

10. That the proposed use shall conform to the standards established for specific special uses as provided in this section.

    ☐ *Meets* ☐ *Does not meet*

Radio transmission towers, wireless communication facilities. All radio transmission towers and wireless communication facilities must comply with the following standards:

1. Towers shall be designed to meet the wind loading requirements specified in the American National Standards Institute TIA-222-F Report, as amended.

   ☐ *Meets* ☐ *Does not meet*

   Meets standard per verification letter from Mr. Brinker, Structural Engineer, Rohn.

2. The owner/applicant shall provide documentation to the City demonstrating that the structural integrity of the towers and antenna will continue to comply with state and federal standards, local building codes, and the applicable standards for towers published by the American National Standards Institute (ANSI), as amended. If, upon inspection, it is determined a tower fails to comply with such standards and constitutes a danger to persons or property, the owner shall be notified that he/she has 30 days to bring the tower

into compliance. Failure to bring the tower into compliance within 30 days shall constitute grounds for the removal of the tower at the owner's expense.

☐ *Meets* ☐ *Does not meet*

Meets standard per verification letter from Mr. Brinker, Structural Engineer, Rohn.

3. Freestanding wireless communication or radio transmission towers shall not exceed 200 feet in height as measured from the tower base to the highest point of the tower and any attached receiving or transmitting device.

☐ *Meets* ☐ *Does not meet*

A variation is requested to allow a tower that is 300 feet in height.

4. Franchises and licenses: The operator shall provide documentation to the City to demonstrate that all franchises and licenses required by law for the construction and/or operation of a tower or antenna have been obtained.

☐ *Meets* ☐ *Does not meet*

Nicor has a valid FCC license and will transfer it to the new tower.

5. Towers shall either maintain a galvanized steel finish or, subject to any applicable standards of the FAA, be painted a neutral color (i.e., light grey) to reduce visual obtrusiveness or painted in a sky-tone above the top of surrounding trees and in an earth-tone below the treetop level.

☐ *Meets* ☐ *Does not meet*

Meets standard, the proposed tower is a galvanized steel finish.

6. At a tower site, the design of buildings and related structures shall, to the maximum extent practicable, use materials, colors and architectural styles, that blend into the natural setting and surrounding buildings.

☐ *Meets* ☐ *Does not meet*

Meets standard, the proposed utility shelter is neutral in color.

7. Storage: No outside storage shall be allowed on any facility site.

☐ *Meets* ☐ *Does not meet*

No outside storage is proposed.

8. Lighting: Towers shall not be artificially lighted, unless required by the FAA or other applicable authority.

☐ *Meets* ☐ *Does not meet*

Lighting at the top and midpoint of the tower are proposed per FAA regulations.

9. A single sign measuring no more than two square feet in size shall be located on or near the tower, and shall identify the tower owner, the street address of the tower, the owner's identification code for the tower, and a twenty-four-hour emergency contact telephone number.

   ☐ *Meets* ☐ *Does not meet*

   The petitioner's application does not provide signage details, as there is a possibility that they may not plan to include signage.

10. No commercial advertising shall be allowed on the tower or its related facilities.

    ☐ *Meets* ☐ *Does not meet*

    No signage is proposed.

11. Single lot: Towers, guy anchors, equipment buildings, and any other appurtenances related to the tower shall be considered as being located on one zoning lot.

    ☐ *Meets* ☐ *Does not meet*

    The petitioner submitted a site plan demonstrating that all equipment will be located on a single zoning lot.

12. Setbacks: Wireless communications facilities shall comply with the following setback standards. Self supporting and monopole towers shall be setback from all property lines by a distance of 110% of the height of the tower.

    ☐ *Meets* ☐ *Does not meet*

    The petitioner is requesting a zoning variation for this criteria.

13. Equipment buildings associated with a wireless communication facility shall meet the minimum setback requirements for the zoning district where located.

    ☐ *Meets* ☐ *Does not meet*

    Meets standard, all equipment is greater than the 15-foot minimum interior yard setback and the 20-foot rear yard setback requirements.

14. Separation: If an applicant proposes a new wireless communications tower or radio transmission tower within 1,200 feet of an existing tower, the applicant shall submit a statement indicating the reasons why the existing tower(s) was inadequate or unavailable. The Zoning Administrator shall allow the owner of such existing tower an opportunity to comment prior to making a decision.

    ☐ *Meets* ☐ *Does not meet*

    There are no existing structures within the 1200-foot radius.

15. Collocation: New wireless communication or radio transmission towers shall provide evidence that the tower is structurally designed to support at least three additional users, and provide a written statement that the owner of the tower is willing to permit other

user(s) to attach communication facilities, on a commercially reasonable basis, which do not interfere with the primary purpose of the tower. The site plan shall indicate a location for at least one equipment building in addition to that proposed for use by the applicant. A tower which is modified or reconstructed to accommodate the collocation of an additional antenna shall be of the same tower type as the existing tower, unless a monopole is determined more appropriate at the specific location. If an existing tower is increased in height or reconstructed to accommodate the collocation of additional antenna it shall meet the height restrictions outlined within this section of the Ordinance.

☐ *Meets* ☐ *Does not meet*

Nicor typically does not allow for collocation, but the tower has the ability to accommodate equipment.

16. Landscaping: Unless existing vegetation provides a buffer strip, all property lines along roadways or visible to existing abutting or nearby buildings (within 1/4 mile radius), for all facilities shall be landscaped as follows:
    a. With six-foot to eight-foot evergreen shrubs planted in an alternate pattern, five feet on center and within 15 feet of the site boundary; or
    b. With at least one row of deciduous trees, not less than 2 1/2 inch to three inches caliper measured three feet above grade, and spaced not more than 30 feet apart and within 25 feet of the site boundary; or
    c. With at least one row of evergreen trees at least four to five feet in height when planted, and spaced not more than 15 feet apart within 40 feet of the site boundary.
    d. In lieu of the foregoing, the Planning and Zoning Commission may determine that the existing vegetation must be supplemented to meet an equivalent means of achieving the desired goal of minimizing the visual impact.

☐ *Meets* ☐ *Does not meet*

The site plan illustrates that the equipment would be screened with existing vegetation along the eastern and western property lines. The equipment is screened from view from the right-of-way by an existing building.

17. Security fencing: Towers, guy anchor supports, and ground-based equipment buildings shall be enclosed by security fencing not less than eight feet in height and equipped with an appropriate anti-climbing device.

☐ *Meets* ☐ *Does not meet*

Meets standard, the proposed security fencing is 6 feet in height with a one foot barb wire crown.

18. Radiation reporting: It shall be demonstrated that the proposed tower, antenna, and supporting equipment complies with FCC nonionizing radiation requirements for individual and combined facilities.

☐ *Meets* ☐ *Does not meet*

Nicor has a valid FCC license and will transfer it to the new tower.

19. Interference: No wireless communications tower, antenna, or supporting equipment shall interfere with equipment operated by the City of Crystal Lake.

    ☐ *Meets* ☐ *Does not meet*

    Meets standard, the petitioner submitted documentation that the FCC requirements have been met.

Recommended Conditions:

If a motion to recommend approval of the petitioner's request is made, it should be with the following conditions:

1. Approved plans, reflecting staff and advisory board recommendations, as approved by the City Council:
   A. Application (Morris, received 07/27/2020)
   B. Findings of Fact Letter (Morris, received 07/27/2020)
   C. Plan Set (Rohn, received 07/27/2020, dated 11/18/2019)
   D. Plat of Survey (received 07/30/15, dated 01/03/1961)
   E. Affidavit (Morris, received 08/12/2020)

2. The design of buildings and related structures shall, to the maximum extent practicable, use materials, colors and architectural styles, which blend into the natural setting and surrounding buildings.

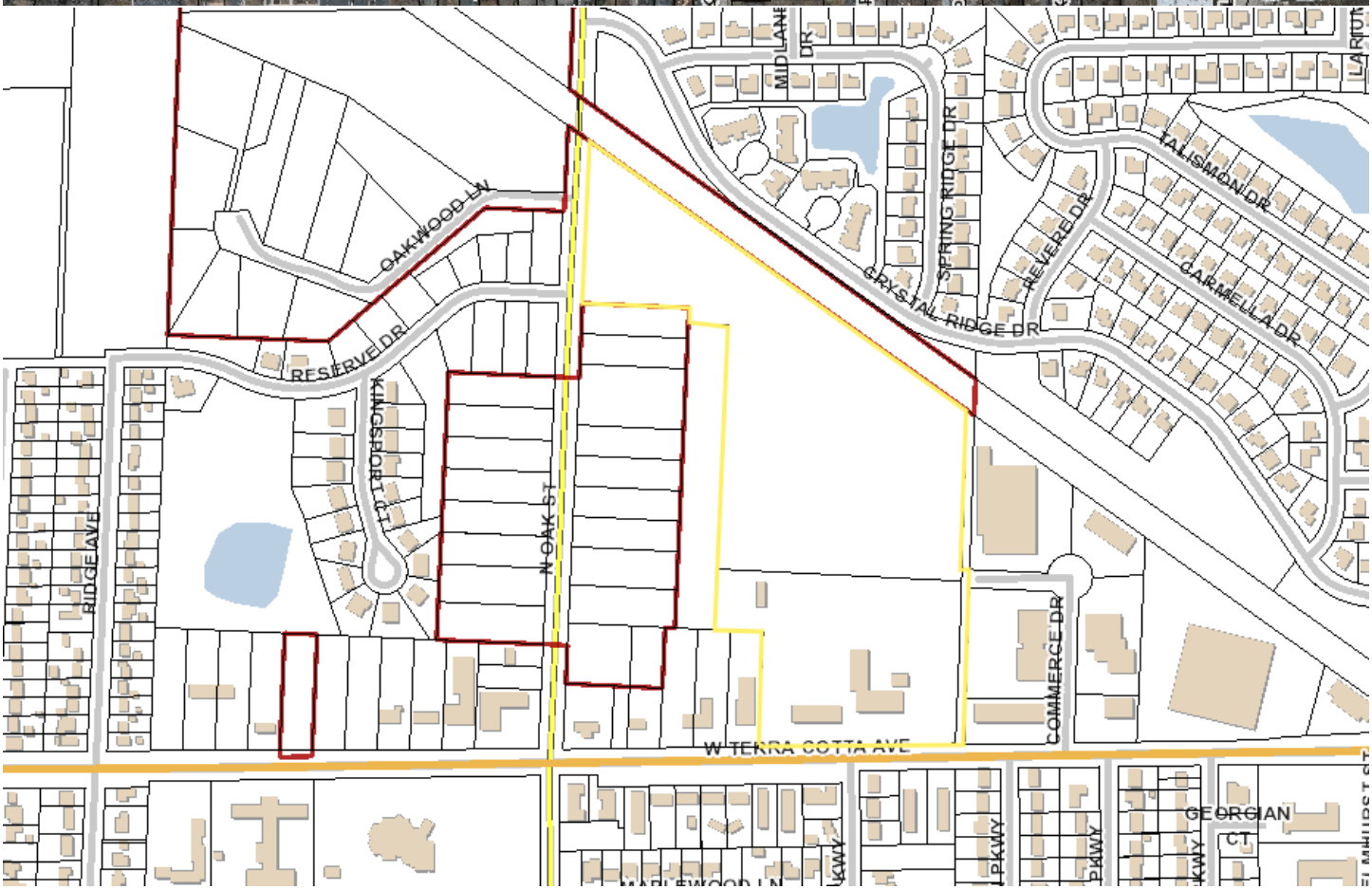
3. A single sign measuring no more than two square feet in size can be located on or near the tower, and shall identify the tower owner, the street address of the tower, the owner's identification code for the tower, and a twenty-four-hour emergency contact telephone number.

4. No commercial advertising shall be allowed on the tower or its related facilities.

5. The existing tower that is being decommissioned must be removed within 60 days of the new tower becoming operational.

6. The petitioner shall address all of the review comments and requirements of the Community Development and Public Works Departments.

PIQ MAP – NICOR – 300 W. TERRA COTTA AVE – SUP & VARIATION REQUEST



IN THE MATTER OF THE APPLICATION OF

NORTHERN ILLINOIS GAS dba NICOR GAS

HAL R. MORRIS, attorney for Northern Illinois Gas dba Nicor Gas, under penalty of perjury, states: as follows:

A. That a copy of the legal notice, concerning the hearing date for the above mentioned Petitioner, was sent to each of the persons named below by regular mail notifying them of the hearing before the Planning and Zoning Commission on August 19, 2020, at 7:00 p.m., at the Crystal Lake City Hall, 100 West Woodstock Street in Crystal Lake, Illinois. Said notice was mailed to each of the below mentioned persons by regular mail on July 30, 2020.

B. That the posting requirements of the Zoning Ordinance have been complied with by placing the customary public notice sign on the subject property on July 31, 2020.

c. That publication of notice was made in the NW Herald, on July 31. 2020. (A coy of the notice is attached.)

Hal R. Morris

Hal R. Morris
Attorney for Northern Illinois Gas dba Nicor Gas

APPLICATION

City of Crystal Lake
Development Application

Office Use Only
File # _____

Project Title: Nicor Gas Replacement of Wireless/Radio Communications Facility

Action Requested

__ **Annexation**
__ **Comprehensive Plan Amendment**
__ **Conceptual PUD Review**
__ **Final PUD**
__ **Final PUD Amendment**
__ **Final Plat of Subdivision**
__ **Preliminary PUD**
__ **Preliminary Plat of Subdivision**
__ **Rezoning**
_X_ **Special Use Permit**
__ **Variation**
__ **Other**

Petitioner Information

Name: Northern Illinois Gas dba Nicor Gas
Address: 300 W. Terra Cotta Avenue
Crystal Lake, IL 60014
c/o Saul Ewing Arnstein & Lehr (312) 876-7100
Phone:
Fax:
E-mail: hal.morris@saul.com
james.durkin@saul.com

Owner Information (if different)

Name:
Address:
Phone:
Fax:
E-mail:

Property Information

Project Description: Nicor Gas seeks approval of a special use to construct a self-supporting wireless/radio communications tower to replace the current tower and guy wires at the same location. The project is consistent with engineering, FCC, and FAA requirements. As such, the proposed tower meets all required engineering standards and will not interfere with public safety or other communications as it will operate on a separate licensed frequency. The tower will require a variance from the setback from the property line. Further, we have attached responses to Ordinance 2-400(B) and engineering for the tower and shelter.

Project Address/Location: 300 W. Terra Cotta Avenue, Crystal Lake, IL

PIN Number(s): 14-32-151-026

Development Team

Please include address, phone, fax and e-mail

Developer: General Contractor: Installation Services Inc., 427 Borden, Sycamore, IL; 815.991.9560; jvogel@installationservices.com

Architect: SAC Wireless LLC, 540 W. Madison, Chicago, IL; 312.971.7884; greg.phassos@sacw.com

Attorney: Saul Ewing Arnstein & Lehr, 161 North Clark, Chicago, IL 312.876.7100; hal. morris@saul.com and James.Durkin@saul.com

Engineer: SAC Wireless LLC, 540 W. Madison, Chicago, IL, 312.971.7884; greg.phassos@sacw.com
Tower Engineer: Rohn, 1 Fairholm Avenue, Peoria, IL, 309.566.300, David Brinker

Landscape Architect: _____

Planner: _____

Surveyor: _____

Other: Shelter - Modular Connections LLC, 1090 Industrial Blvd., Bessemer, AL, 205.980.4565

Signatures

WIlliam Mayer, Corporate Counsel *William Mayer* 7/24/2020

PETITIONER: Print and Sign name (*if different from owner*) **Date**

As owner of the property in question, I hereby authorize the seeking of the above requested action.

_____

OWNER: Print and Sign name **Date**

NOTE: If the property is held in trust, the trust officer must sign this petition as owner. In addition, the trust officer must provide a letter that names all beneficiaries of the trust.

OWNERSHIP DOCUMENT

McHENRY COUNTY
ILLINOIS

Property Information

Parcel Number 14-32-151-026	**Site Address** 300 W TERRA COTTA AVE CRYSTAL LAKE, IL 60014	**Owner Name & Address** NORTHERN IL GAS CO,
Tax Year 2019 (Payable 2020)		
Sale Status None		
Property Class 0060 - Improved Commercial	**Tax Code** 14001 -	**Tax Status** Taxable
Net Taxable Value 459,494	**Tax Rate** 10.148740	**Total Tax** $46,632.86 Pay Taxes Tax Bill
Township NUNDA TWP	**Acres** 0.0000	**Mailing Address** NICOR GAS SOUTHERN CO SVCS, 241 RALPH MCGILL BLVD NE BIN 10081 ATLANTA, GA, 303083374

Legal Description
DOC DR572P211, DR566P61 DR513P554 &556 PT SW1/4 NW1/4 & LT 1 THRU LT 6 HALES OAK STREET ACRES

Response to 2-400(B) Standards

SAUL EWING ARNSTEIN & LEHR LLP

MEMORANDUM

To:	City of Crystal Lake, Illinois
From:	Hal R, Morris Counsel for Nicor Gas
Date:	July 24, 2020
Subject:	Response to 2-400(B) Standards in Support of Northern Illinois Gas dba Nicor Gas's request for Special Use

We are providing this memorandum in support of Northern Illinois Gas dba Nicor Gas's request for approval of a Special Use to locate a replacement wireless communication tower, at 300 West Terra Cotta Avenue, Crystal Lake, Illinois. By way of background, Nicor Gas is an Illinois based natural gas utility. Nicor Gar is the largest natural gas distributor in Illinois, serving over 2.2 million residential, public sector, and business customers in more than 650 communities throughout the northern portion of Illinois. As more fully described in its Development Application for Special Use and supporting materials, Nicor Gas seeks approval to construct a self-supporting wireless communication tower to replace the current tower and guy wires at the same location and a setback variance. Overall, the proposed special use will support the safe, modern, efficient, and vital distribution of natural gas to residential, public sector, and business customers in Crystal Lake, Illinois and surrounding areas.

In support of its request for a Special Use, Nicor Gar states and asks the City of Crystal Lake, Illinois to find, consistent with Crystal Lake Ordinance, Sec. 2-400(B):

1. The proposed use is necessary or desirable, at the location involved, to provide a service or facility which will further the public convenience and contribute to the general welfare of the neighborhood or community. Nicor Gas provides a needed public service as a gas utility and the communication facility that is the subject of this Special Use allows for the safe and efficient distribution of natural gas. As such, the Special use immeasurably contributes to the general welfare of the community and the larger area of McHenry County and beyond.

2. The proposed use will not be detrimental to the value of other properties or improvements in the vicinity as it is a replacement for an existing communications tower, which was installed in and has been in continuous operation since 1985. Moreover, the proposed use will have a lesser impact on surrounding properties as it is a self-standing tower and will not utilize guy wires.

3. The proposed use will comply with the regulations of the zoning district in which it is located and this Ordinance generally, including, but not limited to, all

applicable yard (other than set back) and bulk regulations, parking and loading regulations, sign control regulations, watershed, wetlands, and floodplain regulations, Building and Fire Codes and all other applicable City Ordinances.

4. The proposed use will not negatively impact the existing off-site traffic circulation; will adequately address on-site traffic circulation; will provide adequate on-site parking facilities; and, if required, will contribute financially, in proportion to its impact, to upgrading roadway and parking systems. The proposed use will have no impact on traffic as it is a replacement for the current tower that has been use for 35 years. . Further, over time, the proposed use and its ability to communicate with individual residential, public sector, and business gas meters will reduce traffic off-site that would otherwise be required for meter reading.

5. The proposed use will not negatively impact existing public utilities and municipal service delivery systems. To the contrary, the proposed use will positively impact the manner by which Nicor Gas, a public gas utility, delivers natural gas to residential, public sector, and business customers.

6. The proposed use will not impact negatively on the environment by creating air, noise, or water pollution; ground contamination; or unsightly views. The proposed use is replacing a communications tower with guy wires and will positively improve views. The proposed use does not contribute to air, noise, or water pollution or ground contamination.

7. The proposed use will maintain, where possible, existing mature vegetation; provide adequate screening to residential properties; provide landscaping in forms of ground covers, trees and shrubs; and provide architecture, which is aesthetically appealing, compatible or complementary to surrounding properties and acceptable by community standards, as further detailed in Article 4, Development and Design Standards.

8. That the proposed use will meet standards and requirements established by jurisdictions other than the City such as federal, state or county statutes requiring licensing procedures or health/safety inspections, and submit written evidence thereof. The proposed Special Use is consistent with and meets all required engineering requirements and those of the FAA and FCC. The proposed use will not impact public safety or governmental radio transmission as it operates on a dedicated, licensed frequency.

9. That the proposed use shall conform to any stipulations or conditions approved as part of a special use permit issued for such use.

10. The proposed use shall conform to the standards established for wireless communication towers as provided in Section 2-400(C)(48).

Tower Plans/ Engineering

1 Fairholm Avenue
Peoria, IL 61603 USA
Phone 309-566-3000
FAX 309-566-3079

September 3, 2019

Southern Company Services
Attn: Rich Burley
P. O. Box 830749
Birmingham, AL. 35283

Reference: 300' SSVMW Self Support Tower
Crystal Lake, McHenry County, IL.

File Number: 231203

Copies	Drawing Number	Description
1	231203-01-D1	Design Drawing Sealed for the State of Illinois
1	231203-01-F1	Foundation
1	231203-01-F2	Foundation

Email Address: rmburley@southernco.com

Phone: 404 506 3808

Sincerely,

Ray Adams

crp

1 Fairholm Avenue
Peoria, IL 61603 USA
Phone: (309)-566-3000
Fax: (309)-566-3079

DATE: SEPTEMBER 03, 2019

PURCHASER: SOUTHERN COMPANY SERVICES

PROJECT: 300 FT SSVMW SELF SUPPORT TOWER
CRYSTAL LAKE, ILLINOIS

FILE NUMBER: 231203

DRAWINGS: 231203-01-D1 , 231203-01-F1, 231203-01-F2

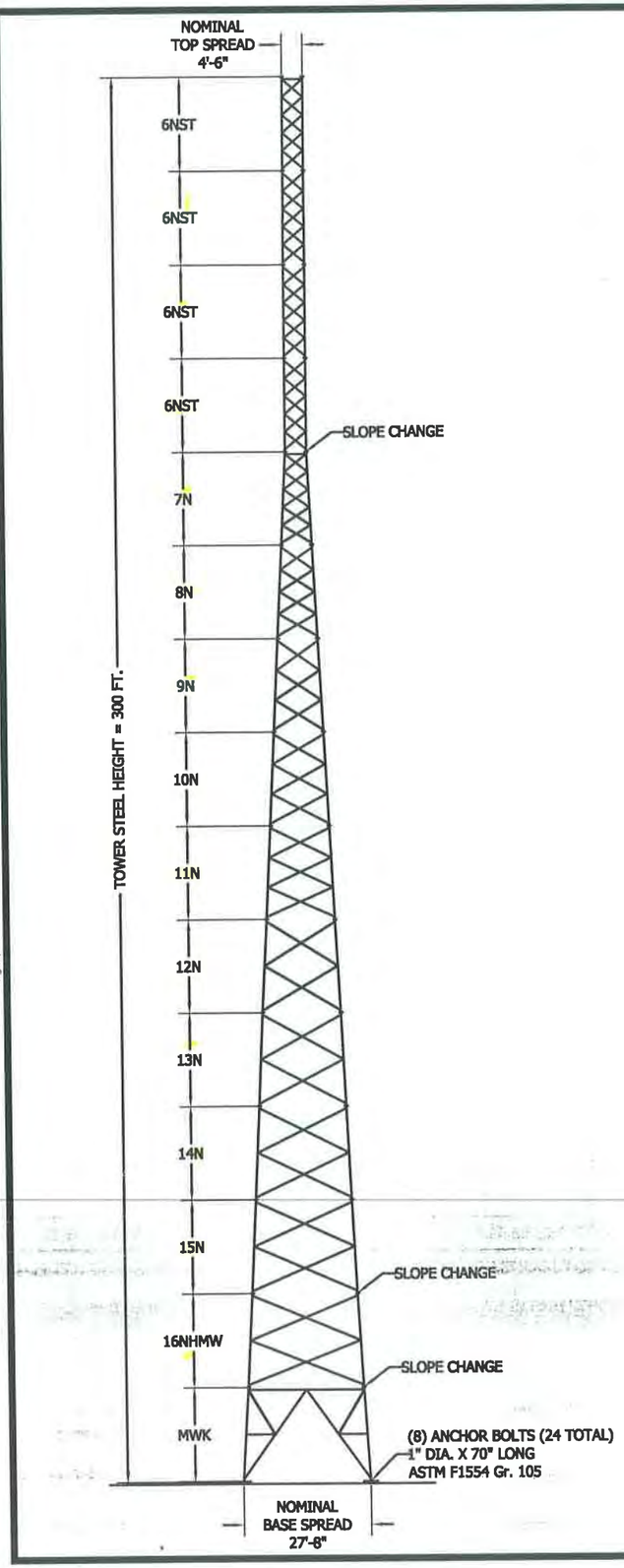
I CERTIFY THAT THE REFERENCED DRAWINGS WERE PREPARED UNDER MY SUPERVISION IN ACCORDANCE WITH THE DESIGN AND LOADING CRITERIA SPECIFIED BY THE PURCHASER AND THAT I AM A REGISTERED STRUCTURAL ENGINEER UNDER THE LAWS OF THE STATE OF ILLINOIS.

CERTIFIED BY: _____

DATE: 9-3-19

DAVID G. BRINKER
PEORIA
081-004308
LICENSED
STRUCTURAL
ENGINEER
STATE OF ILLINOIS

EXP 11-30-20



Aug 07, 2019 @ 03:07 PM

TOWER DESIGN LOADING		
DESIGN WIND LOAD PER ANSI/TIA-222-G: BASIC WIND SPEED (NO ICE) = 90 MPH BASIC WIND SPEED (ICE) = 40 MPH DESIGN ICE THICKNESS = 0.75 IN. STRUCTURE CLASS = II EXPOSURE CATEGORY = C TOPOGRAPHIC CATEGORY = 1 EARTHQUAKE SPECTRAL RESPONSE ACCELERATION: Ss = 0.128, S1 = 0.058 THIS TOWER IS DESIGNED TO SUPPORT THE FOLLOWING LOADS:		
ELEVATION (FT)	**ANTENNA TYPE**	**LINE SIZE (NOM)**
300	BEACON & LR	(1) 3/4" CONDUIT
280	(1) DB589-Y ANT. , LEG-MT'D	(1) 1 5/8"
250	(2) SC488-SF4SNF ANT'S , LEG MT'D	(2) 1 5/8"
220	(3) FASB ANT'S + (3) RRU ON (3) SECTOR FRAMES	(1) 1 5/8" HYBRID
200	(1) 6 FT. STANDARD DISH W / RADOME, (AZ. 0 DEG.), 6 GHZ	(1) EW63
150	(1) 6 FT. STANDARD DISH W / RADOME, (AZ. 180 DEG.), 6 GHZ	(1) EW63

N O T E : ALL ANTENNA MOUNTS PROVIDED BY OTHERS.

SECTION MAIN MEMBER SCHEDULE			
SECTION	**LEG**	**DIAGONAL**	**HORIZONTALS**
6NST	PIPE 2.375x0.154	L1 1/2x1 1/2x1/8 (5)	L1 1/2x1 1/2x3/16 (1)
6NST	PIPE 2.375x0.154	L1 1/2x1 1/2x1/8 (5)	N/A
6NST	PIPE 2.875x0.203	L1 1/2x1 1/2x1/8 (5)	N/A
6NST	PIPE 3.500x0.300	L1 3/4x1 3/4x3/16 (5)	N/A
7N	PIPE 3.500x0.300	L1 3/4x1 3/4x3/16 (5)	L1 3/4x1 3/4x3/16 (1)
8N	PIPE 4x0.318	L1 3/4x1 3/4x3/16 (4)	N/A
9N	PIPE 4.500x0.337	L2x2x3/16 (3)	N/A
10N	PIPE 5.563x0.375	L2 1/2x2 1/2x3/16 (3)	N/A
11N	PIPE 5.563x0.375	L2 1/2x2 1/2x3/16 (3)	N/A
12N	PIPE 6.625x0.432	L3x3x3/16 (2)	N/A
13N	PIPE 6.625x0.432	L3x3x1/4 (2)	N/A
14N	PIPE 6.625x0.432	L3 1/2x3 1/2x1/4 (2)	N/A
15N	PIPE 6.625x0.432	L4x4x1/4 (2)	N/A
16NHMW	PIPE 8.625x0.500	L4x4x1/4 (2)	N/A
MWK	PIPE 8.625x0.500	PIPE 2.875x0.203 (1)	PIPE 2.875x0.203 (1)

NOTE: SECTION NUMBERS ARE FOR REFERENCE ONLY. FOR NOMINAL FACE WIDTH DIMENSIONS, REFER TO THE STRESS ANALYSIS.
THE NUMBERS SHOWN IN PARENTHESES INDICATE THE NUMBER OF BAYS FROM TOP TO BOTTOM.

MAXIMUM FACTORED REACTIONS			
COMPRESSION	=	313.9	KIPS
TENSION	=	258.2	KIPS
TOTAL SHEAR	=	50.3	KIPS
O.T.M.	=	7,118.5	FT-KIPS

GENERAL NOTES

1. ROHN PRODUCTS, LLC TOWER DESIGNS CONFORM TO ANSI/TIA-222-G UNLESS OTHERWISE SPECIFIED UNDER TOWER DESIGN LOADING.
2. THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA-222-G AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. ANTENNAS AND LINES LISTED IN TOWER DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
4. STEP BOLTS WITH A SAFETY CLIMB SYSTEM ARE PROVIDED AS A CLIMBING FACILITY FOR THE INSTALLATION OF THE STRUCTURE.
5. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
6. WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-G, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
7. THE MINIMUM YIELD STRENGTH OF STRUCTURAL STEEL MEMBERS SHALL BE 50 KSI, EXCEPT AS NOTED BELOW:
   ANGLE BRACES L1 1/2X1 1/2X1/8 THRU L3X3X3/16 SHALL BE 36 KSI.
   STRUCTURAL PLATES SHALL BE 36 KSI.
8. FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
9. STRUCTURAL BOLTS SHALL CONFORM TO GRADE A325 PER ASTM F3125, EXCEPT WHERE NOTED.
10. PAL NUTS ARE PROVIDED FOR ALL TOWER BOLTS.
11. STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ANSI/TIA-222-G.
12. ALL HIGH STRENGTH BOLTS ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS". NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
13. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
14. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
15. DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA-222-G.
16. DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
17. DESIGN ASSUMES ALL ANTENNAS ARE MOUNTED SYMMETRICALLY TO MINIMIZE TORQUE, IF APPLICABLE.
18. FOUNDATIONS SHALL BE DESIGNED TO SUPPORT THE REACTIONS SHOWN FOR THE CONDITIONS EXISTING AT THE SITE.

FILE NO.
231203

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP

ROHN PRODUCTS LLC
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PEORIA, IL 61601-5999
TOLL FREE 800-727-ROHN

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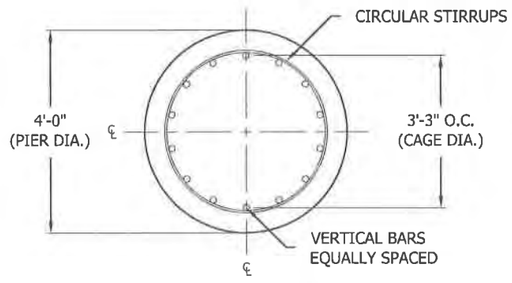
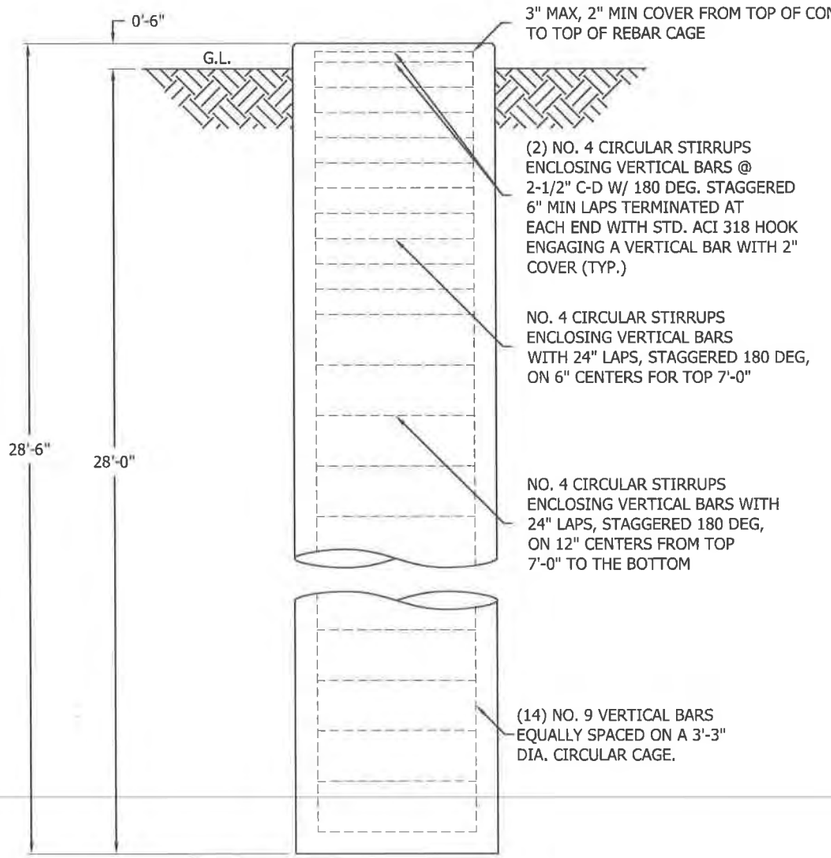
SOUTHERN COMPANY SERVICES
DESIGN PROFILE
300 FT SSVMW TOWER
CRYSTAL LAKE- IL

DWN:	CHK'D:	DATE:
OH	HA	Aug/07/19
ENG'R: HA	SHEET #: 1 OF 1	
PRJ. ENG'R: OH	PRJ. MANG'R:	
DRAWING NO: 231203-01-D1	REV: 0	



NOTE:
CAGE DIA. FROM CENTERLINE OF VERTICAL BARS.

PLAN VIEW
N.T.S.



ELEVATION VIEW
N.T.S.

FACTORED REACTIONS/LEG

DOWNLOAD =	313.9	KIPS
UPLIFT =	258.2	KIPS
SHEAR =	31.3	KIPS

VOLUME OF CONCRETE

(1) FOUNDATION	13.3	CU. YDS
(3) FOUNDATIONS	39.9	CU. YDS

GENERAL NOTES:

1. FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.
   A) DEPTH NEGLECTED FOR SKIN FRICTION = TOP 5.0 FT
   B) AVERAGE ULTIMATE SKIN SHEAR FOR UPLIFT: 5.0 FT TO 6.0 FT DEPTH = 800 PSF; 6.0 FT TO 11.0 FT DEPTH = 1000 PSF; 11.0 FT TO 23.5 FT DEPTH = 1600 PSF; 23.5 FT TO 28.0 FT DEPTH = 2500 PSF.
   C) AVERAGE ULTIMATE SKIN SHEAR FOR DOWNLOAD: 5.0 FT TO 6.0 FT DEPTH = 800 PSF; 6.0 FT TO 11.0 FT DEPTH = 1000 PSF; 11.0 FT TO 23.5 FT DEPTH = 1600 PSF; 23.5 FT TO 28.0 FT DEPTH = 2500 PSF.
   D) ULTIMATE NET END BEARING AT 28.0 FT = 18.00 KSF.
   E) GROUNDWATER TABLE AT 22.0 FT BELOW GROUND.
2. WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
3. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
4. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI (31.0 MPA) IN 28 DAYS.
5. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 1/3 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. MAXIMUM SIZE MAY BE INCREASED TO 2/3 CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS OR VOIDS.
6. 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.
7. REINFORCING CAGES SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE. WHEN TEMPORARY CASING IS UTILIZED, BRACING SHALL BE ADEQUATE TO RESIST FORCES OCCURRING FROM FLOWING CONCRETE DURING CASING EXTRACTION.
8. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
9. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES (76 MM) UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH (76 MM) MINIMUM COVER ON REINFORCEMENT.
10. SPACERS SHALL BE ATTACHED INTERMITTENTLY THROUGHOUT THE ENTIRE LENGTH OF VERTICAL REINFORCING CAGES TO INSURE CONCENTRIC PLACEMENT OF CAGES IN EXCAVATIONS.
11. FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. **G18.162B** DATED **2/11/2019** BY **RUBINO ENGINEERING, INC.**.
12. FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.
13. FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.
14. FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
15. FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
16. FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
17. FOR FOUNDATION INSTALLATION TOLERANCES SEE STRUCTURE ASSEMBLY DRAWING.
18. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
19. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
20. FREE FALL CONCRETE MAY BE USED PROVIDED FALL IS VERTICAL DOWN WITHOUT HITTING SIDES OF EXCAVATION, FORMWORK, REINFORCING BARS, FORM TIES, CAGE BRACING OR OTHER OBSTRUCTIONS. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH WATER.
21. CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, MUST BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH (6 MM). FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.
22. TOP OF FOUNDATION OUTSIDE LIMITS OF ANCHOR BOLTS SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH. AREA INSIDE LIMITS OF ANCHOR BOLTS SHALL BE LEVEL WITH A SCRATCHED FINISH.
23. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" (19MM X 19MM) MINIMUM.
24. FOUNDATION DESIGN ASSUMES CASING, IF USED, WILL NOT BE LEFT IN PLACE. EQUIPMENT, PROCEDURES, AND PROPORTIONS OF CONCRETE MATERIALS SHALL INSURE CONCRETE WILL NOT BE ADVERSELY DISTURBED UPON CASING REMOVAL.
25. DRILLING FLUID, IF USED, SHALL BE FULLY DISPLACED BY CONCRETE AND SHALL NOT BE DETRIMENTAL TO CONCRETE OR SURROUNDING SOIL. CONTAMINATED CONCRETE SHALL BE REMOVED FROM TOP OF FOUNDATION AND REPLACED WITH FRESH CONCRETE.

NOTE: SEE STRUCTURE ASSEMBLY DRAWING FOR FOUNDATION LAYOUT AND ANCHORAGE EMBEDMENT DRAWING NUMBER.

FILE NO.
231203

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP

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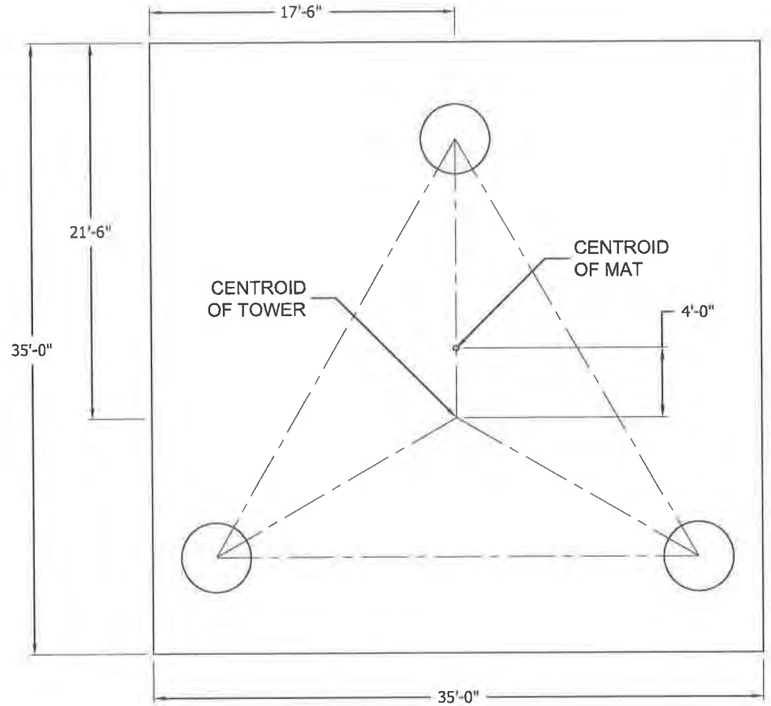
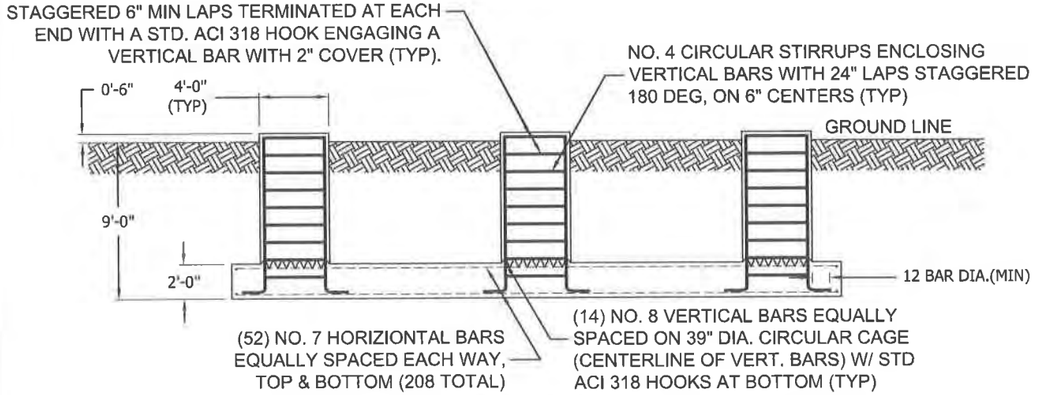
SOUTHERN COMPANY SERVICES
DRILLED PIER
FOUNDATION DETAILS
CRYSTAL LAKE, IL

DWN: SWG	CHK'D: HA	DATE: 8/8/2019
ENG'R: HA	SHEET #: 1 OF 1	
PRJ. ENG'R: SWG	PRJ. MANG'R:	
DRAWING NO: 231203-01-F1		REV: 0



PLAN VIEW



ELEVATION VIEW

FACTORED REACTIONS

Maximum O.T.M =	7,118.5 FT-K
Total Tower Wt =	42.4 KIPS
Total Shear =	50.3 KIPS
Max. Shear/Leg =	31.3 KIPS
Max. Ten./Leg =	258.2 KIPS
Max. Comp./Leg =	313.9 KIPS

CONCRETE VOLUME

ROUND PIER	10.5 CU.YDS
PAD	90.7 CU.YDS
TOTAL	101.2 CU.YDS

GENERAL NOTES

1. FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.

A) ULTIMATE SOIL BEARING PRESSURE AT 9 FT DEPTH = 9,500 PSF.
B) GROUND WATER TABLE IS AT OR BELOW FOUNDATION DEPTH.
C) MAXIMUM FROST PENETRATION DEPTH LESS THAN FOUNDATION DEPTH.

2. WORK SHALL BE IN ACCORDANCE WITH THE PROJECT CONSTRUCTION DOCUMENTS, LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.

3. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.

4. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI IN 28 DAYS.

5. MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 3/4 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING SHALL BE UTILIZED TO PREVENT HONEYCOMBS OR VOIDS.

6. 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.

7. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.

8. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH MINIMUM COVER ON REINFORCEMENT.

9. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES NOR BE LESS THAN 2 INCHES.

10. FOUNDATION DESIGN ASSUMES STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D1557. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 110 POUNDS PER CUBIC FOOT.

11. FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. **G18.162B** DATED **2/11/2019** BY **RUBINO ENGINEERING, INC.**

12. FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.

13. FOUNDATION DESIGN ASSUMES INSTALLATION ON A PROPERLY DRAINED LEVEL SITE.

14. FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.

15. FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.

16. ALL CONSTRUCTION AND SAFETY EQUIPMENT AND TEMPORARY SUPPORTS REQUIRED FOR CONSTRUCTION SHALL BE DETERMINED, FURNISHED AND INSTALL BY THE CONTRACTOR BASED ON THE MEANS AND METHODS CHOSEN BY THE CONTRACTOR. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED BY COMPETENT, QUALIFIED AND TRAINED PERSONNEL.

17. FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.

18. FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.

19. FOR FOUNDATION AND ANCHOR TOLERANCES SEE ANCHOR ROD LAYOUT DRAWING.

20. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.

21. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.

22. CONCRETE PREFERABLY SHALL BE PLACED AGAINST UNDISTURBED SOIL. WHEN FORMS ARE NECESSARY, THEY SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.

23. CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH. FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.

24. TOP OF FOUNDATION SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH.

25. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" MINIMUM.

NOTE: SEE STRUCTURE ASSEMBLY DRAWING FOR FOUNDATION LAYOUT AND ANCHORAGE EMBEDMENT DRAWING NUMBER.

FILE NO.
231203

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP

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PO BOX 5999
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TOLL FREE 800-727-ROHN

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SOUTHERN COMPANY SERVICES
MAT W/RAISED PIERS
FOUNDATION DESIGN
CRYSTAL LAKE- IL

DWN:	CHK'D:	DATE:
SWG	HA	8/30/2019

ENG'R:	SHEET #:
HA	1 OF 1

PRJ. ENG'R:	PRJ. MANG'R:
SWG	

DRAWING NO:	REV:
231203-01-F2	0

PROJECT INFORMATION

SITE ADDRESS:	300 TERRA COTTA AVENUE CRYSTAL LAKE, IL 60014	
COUNTY:	MCHENRY	
SITE NAME:	CRYSTAL LAKE	
LATITUDE:	42° 15' 00.09" N	(42.250025°)
LONGITUDE:	−88° 19' 59.28" W	(−88.333133°)

SCOPE OF WORK

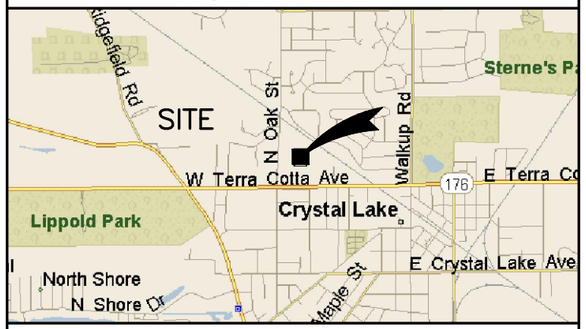
THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE.

THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

−INSTALL NEW 11'−8" X 22'−0" EQUIPMENT SHELTER ON CONCRETE PAD
−INSTALL NEW GENERATOR IN NEW EQUIPMENT SHELTER
−INSTALL NEW DRILLED PIER CONCRETE FOUNDATION
−INSTALL NEW 300'−0" HIGH SELF−SUPPORT TOWER
−INSTALL NEW ICE BRIDGE
−INSTALL NEW UTILITY H−FRAME
−INSTALL NEW 24" X 36" PULLBOX W/ (2) 4" CONDUIT
−INSTALL (1) NEW TOWER LIGHT BEACON
−INSTALL (1) NEW OMNI ANTENNA @ 280' W/6' SIDEARM MOUNT
−INSTALL (1) NEW 1 5/8" COAX CABLE
−INSTALL (2) NEW SIDE MARKER TOWER LIGHTS @ 150'
−INSTALL NEW 6'−0" LIGHTNING ROD

−REMOVE EXISTING EQUIPMENT SHELTER
−REMOVE EXISTING GUYED TOWER AND EXISTING GUY WIRES

VICINITY MAP



LOCATION MAP

SITE NAME: CRYSTAL LAKE - SELF SUPPORT TOWER

300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

GENERAL CONTRACTOR NOTES

DO NOT SCALE DRAWINGS IF NOT FULL−SIZE (11X17)

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS: AMERICAN CONCRETE INSTITUTED (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, 13TH EDITION, TELECOMMUNICATIONS INDUSTRY ASSOCIATION TIA 222−G, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES: TIA 607 AND COUNTY STANDARDS WHERE MORE STRINGENT.

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM.

RECOGNIZING THE NEED FOR IMPROVEMENTS TO OCCUR, ALL TELECOMMUNICATION IMPROVEMENTS SHALL BE PERFORMED IN A NON−DESTRUCTIVE MANNER.

ALL OBSOLETE CABLES AND ELECTRICAL SHALL BE COMPLETELY REMOVED, APPROPRIATE REPAIRS SHALL BE MADE TO MAKE THE CONDITIONS SAFE AS APPROVED BY THE VILLAGE.

ALL IMPROVEMENTS SHALL BE COMPLETEED IN A WORKMANLIKE AND CAREFUL MANNER AND WITHOUT INTERFERENCE OR DAMAGE TO ANY OTHER EQUIPMENT, STRUCTURES, OR OPERATIONS ON THE PREMISES.

PROJECT TEAM

ARCHITECT:

SAC WIRELESS, LLC
GREG PHASSOS
PRINCIPAL ARCHITECT

GREG PHASSOS
A&E PROJECT MANAGER
TELEPHONE: (312) 971-7884
EMAIL: GREG.PHASSOS@SACW.COM

SAC AE DESIGN GROUP, INC.
540 W. MADISON ST., 9TH FLOOR
CHICAGO, ILLINOIS 60661
WWW.SACW.COM

INSTALLATION SERVICES INC.
CONTRACTOR/PROJECT MANAGER:

INSTALLATION SERVICES INC.
427 BORDEN AVENUE
SYCAMORE, IL 60178
CONTACT: JIM VOGEL
TELEPHONE: (815) 991 9560
FACSIMILE: (815) 815 991 9468
MOBILE: 815 378 6118
EMAIL: jvogel@installationservices.com

ISI CLIENT:
NICOR
1844 FERRY ROAD
NAPERVILLE, IL 60563

DRAWING INDEX:

DISCLAIMER

THESE DRAWINGS REPRESENT AN EXISTING TELECOMMUNICATIONS COMPOUND AND WERE PRODUCED WITHOUT THE BENEFIT OF A LAND SURVEY. ALL PROPERTY LINES, EASEMENTS, AND SETBACKS SHALL BE VERIFIED PRIOR TO START OF CONSTRUCTION. SAC WIRELESS DOES NOT GUARANTEE THE ACCURACY OF SAID PROPERTY LINES, EASEMENTS AND SETBACKS.

811 Know what's below. Call before you dig.

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TOLL FREE: 1-800-892-0123 OR
www.illinois1call.com

ILLINOIS STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

CLIENT:

427 BORDEN AVE
SYCAMORE IL 60178
PH: (815) 991 9560 FAX: 815 991 9468
MOBILE: 815 378 6118

Nicor Gas
1844 FERRY ROAD
NAPERVILLE IL 60563

A&E:

A Nokia company
540 W. MADISON ST.
CHICAGO, IL 60661
WWW.SACW.COM
312.895.4977

STATE OF ILLINOIS
GREGORY PHASSOS
#001-016382
LICENSED ARCHITECT
10/28/19

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

SUBMITTALS

#	DATE	DESCRIPTION	BY
A	09/16/19	FOR CONSTRUCTION	BN
B	10/24/19	FOR CONSTRUCTION	NL
C	10/28/19	FOR CONSTRUCTION	BM
0	11/18/19	FOR CONSTRUCTION	BM

SITE NAME
CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T1

METALS

PART 1 – GENERAL

SECTION INCLUDES:

1. STRUCTURAL STEEL FRAMING MEMBERS, BASE PLATES, PLATES, BARS, THREADED STRUCTURAL FASTENERS, ANTENNA SUPPORT ASSEMBLIES, GRATING, STEEL PLATFORMS AND PEDESTAL SUPPORTS, AND GROUTING UNDER BASE PLATES.

QUALITY ASSURANCE

1. FABRICATE STRUCTURAL STEEL MEMBERS IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
2. PERFORM DESIGN UNDER DIRECT SUPERVISION OF A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE.

PART 2 – PRODUCTS

1. MATERIALS:

A. STRUCTURAL STEEL MEMBERS:	ASTM A572, GRADE 50
B. STRUCTURAL TUBING:	ASTM A500, GRADE B
C. PIPE:	ASTM A53, TYPE E OR S, GRADE B
D. BOLTS, NUTS, AND WASHERS:	ASTM A325
E. ANCHOR BOLTS:	ASTM A307
F. WELDING MATERIALS:	AWS D1.1, TYPE REQUIRED FOR MATERIALS BEING WELDED
G. GROUT:	NON-SHRINK TYPE, PREMIXED COMPOUND CONSISTING OF NONMETALLIC AGGREGATE, CEMENT, WATER REDUCING AND PLASTICIER ADDITIVES, CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 7000 psi AT 28 DAYS.
H. SHOP AND TOUCH-UP PRIMER:	SSPC 15, TYPE 1, RED OXIDE
I. TOUCH-UP PRIMER FOR GALV. SURFACES:	ZINC RICH TYPE
2. FABRICATION:	CONTINUOUSLY SEAL JOINTED MEMBERS BY CONTINUOUS WELDS. GRIND EXPOSED WELDS SMOOTH.

3. FINISH:

A. PREPARE STRUCTURAL COMPONENT SURFACES IN ACCORDANCE WITH SSPC SP-1 TO SP-10 PROCEDURES.
B. STRUCTURAL STEEL MEMBERS SHALL BE HOT DIPPED GALVANIZED.

PART 3 – EXECUTION

EXAMINATION AND PREPARATION:

1. VERIFY THAT THE FIELD CONDITIONS ARE ACCEPTABLE TO PERFORM THE WORK.

ERECTION:

1. ALLOW FOR ERECTION LOADS. PROVIDE TEMPORARY BRACING TO MAINTAIN FRAMING IN ALIGNMENT UNTIL COMPLETION OF ERECTION AND INSTALLATION OF PERMANENT BRIDGING AND BRACING.
2. NO UNAUTHORIZED WELDING SHALL BE PERFORMED ON CROWN CASTLE USA, INC TOWERS. ALL OTHER WELDING SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY AWS 01.1 STRUCTURAL STEEL WELDING CODE-STEEL WELD ELECTRODES SHALL BE E70XX.
3. DO NOT FIELD CUT OR ALTER STRUCTURAL MEMBERS WITHOUT APPROVAL OF THE ARCHITECT/ENGINEER.
4. AFTER ERECTION, TOUCH-UP WELDS, ABRASIONS, AND SURFACES NOT SHOP PRIMED OR GALVANIZED WITH ZINC RICH PAINT (ALL EXISTING AND NEW AREAS).

FIELD QUALITY CONTROL:

1. FIELD INSPECTION OF MEMBERS, CONNECTIONS, WELDS AND BOLT / NUT TORQUE .

GENERAL ELECTRICAL NOTES:

1. N/A
2. CONTRACTOR SHALL PERFORM ALL VERIFICATION TESTS AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
3. ALL MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, NFPA, AND 'UL' LISTED.
4. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED PER THE NEC, AND ALL APPLICABLE LOCAL CODES.
5. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE A MINIMUM INTERRUPTING RATING OF 42,000 AIC.
6. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT REFER TO VENDOR PRINTS
7. PATCH, REPAIR, AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.

GENERAL ELECTRICAL NOTES (CONTINUED):

8. PROVIDE MCHENRY COUNTY WITH ONE SET OF COMPLETE ELECTRICAL 'AS-BUILT' DRAWINGS AT THE COMPLETION OF THE JOB SHOWING ACTUAL ROUTINGS AND WIRING CONNECTIONS.
9. ALL SINGLE-PHASE SELF CONTAINED METER CONNECTION DEVICES MUST INCLUDE HORN TYPE BY-PASS PROVISION SO THAT SERVICES WILL NOT BE INTERRUPTED WHEN A METER IS REMOVED FROM THE SOCKET.
10. ALL EQUIPMENT PUNCH OUTS AND CONDUITS (USED AND SPARE) TO BE RODENT PROOFED WITH CAPS, STEEL MESH, AND/OR FOAM FILL BY CONTRACTOR AS NEEDED.
11. NO SPOILS TO BE LEFT ON SITE WITHOUT THE WRITTEN CONSENT OF THE LANDOWNER.
12. CONTRACTOR TO PROVIDE 2 PHENOLIC LABELS AT METER ONE TO IDENTIFY DISCONNECT AND THE OTHER TO GIVE THE SITE ADDRESS.
13. ALL CONTRACTOR FURNISHED MATERIALS AND EQUIPMENT SPECIFIED ON THE PROJECT SHALL BE NEW AND UNUSED, OF CURRENT MANUFACTURE AND OF THE HIGHEST GRADE.
14. ALL EQUIPMENT, MATERIAL AND THE INSTALLATION METHODS SPECIFIED ON THE PROJECT DRAWINGS SHALL BE DESIGNED AND FABRICATED IN COMPLIANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS, AND APPROPRIATE INDUSTRIAL CONSENSUS STANDARDS AND CODES INCLUDING ANSI, IEEE, NEMA, NFPA AND UL, ALL AS REVISED AS OF THE DATE OF THIS WORK PACKAGE.
15. ALL ELECTRICAL ITEMS BOTH CONTRACTOR AND OWNER FURNISHED SHALL BE CHECKED FOR AGREEMENT WITH THE PROJECT DRAWINGS AND SPECIFICATIONS AND SHALL BE VISUALLY INSPECTED TO ENSURE THAT EQUIPMENT IS UNDAMAGED AND IS IN PROPER ALIGNMENT, INSTALLED PER MANUFACTURER'S INSTRUCTIONS, ELECTRICAL CONNECTIONS ARE TIGHT AND PROPERLY INSULATED WHERE REQUIRED, FUSES ARE OF THE PROPER TYPE AND SIZE, AND ELECTRICAL ENCLOSURES ARE OF THE PROPER NEMA TYPE.
16. NOTIFY OWNER IN WRITING OF ALL DISCREPANCIES BETWEEN DRAWINGS / SPECIFICATIONS AND FIELD INSTALLATIONS, OR IF THE VISUAL INSPECTIONS SHOW DAMAGE OR IMPROPER INSTALLATION.
17. THE EQUIPMENT AND MATERIALS SHALL BE FURNISHED AND INSTALLED TO OPERATE SAFELY AND CONTINUOUSLY WITH NO PROTECTION FROM THE WEATHER.
18. ELECTRICAL WORK REPRESENTED ON THE PROJECT DRAWINGS IS SHOWN DIAGRAMMATICALLY. EXACT LOCATIONS AND ELEVATIONS OF ELECTRICAL EQUIPMENT SHALL BE DETERMINED IN THE FIELD AND VERIFIED WITH THE OWNER'S REPRESENTATIVE.
19. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF TEMPORARY, IF REQUIRED, AND PERMANENT POWER WITH THE LOCAL UTILITY COMPANY. THE TEMPORARY POWER AND ALL HOOKUP COSTS ARE TO BE PAID BY THE CONTRACTOR.
20. PROVIDE MOLDED CASE, BOLT ON, THERMAL MAGNETIC TRIP, SINGLE TWO OR THREE POLE CIRCUIT BREAKERS. MULTIPLE POLE CIRCUIT BREAKERS SHALL BE SINGLE HANDLE COMMON TRIP. SHORT CIRCUIT INTERRUPTING RATING SHALL BE AS REQUIRED FOR AVAILABLE FAULT CURRENTS. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE A SHORT CIRCUIT INTERRUPTING RATING EQUAL TO OR GREATER THAN THAT SHOWN ON THE PROJECT DRAWINGS.
21. CONTRACTOR SHALL PERFORM ALL EXCAVATION, TRENCHING, BACKFILLING, AND REMOVAL OF DEBRIS IN CONNECTION WITH THE ELECTRICAL WORK IN ACCORDANCE WITH THE PROJECT DRAWINGS. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF UNDERGROUND UTILITIES AND GROUND WITH THE FOUNDATION INSTALLATION. HAND DIGGING WILL BE REQUIRED IN THE COMPOUND ONLY.
22. CONTRACTOR SHALL PROVIDE ALL NECESSARY SUPPORTS FOR EQUIPMENT INSTALLED AS PART OF THIS PROJECT. SUPPORTS SHALL CONSIST OF GALVANIZED STEEL FRAMES, PLATES, BRACKETS, RACKS AND OTHER SHAPES OF ADEQUATE SIZE AND FASTENED WITH BOLTS, SCREWS OR BY WELDING TO PROVIDE RIGID SUPPORT.
23. CONTRACTOR SHALL CALL THE APPROPRIATE UTILITIES PROTECTION SERVICE BEFORE ANY UNDERGROUND WORK IS PERFORMED, SUCH AS TRENCHING, EXCAVATING, AND DRIVING GROUNDING RODS.
24. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENTLY ENGRAVED LAMINATED PHENOLIC NAMEPLATES. (MINIMUM LETTER HEIGHT SHALL BE 1/2")

GENERAL RACEWAY NOTES:

1. CONDUIT AND CONDUIT FITTINGS SHALL MEET ANSI AND NEC STANDARDS FOR MATERIAL AND WORKMANSHIP AND SHALL BE UL LISTED.
   A. RIGID STEEL CONDUIT SHALL CONFORM TO ANSI C801 AND REQUIREMENTS OF NEC, PARAGRAPH 346 AND BE STANDARD WEIGHT, MILD RIGID STEEL, HOT DIP GALVANIZED WITH INSIDE AND OUTSIDE FINISHED WITH A PROTECTIVE ZINC COATING. COUPLING ELBOWS AND BENDS SHALL MEET THESE SAME REQUIREMENTS. FITTINGS SHALL BE OF THE GALVANIZED IRON OR STEEL THREADED TYPE.
   B. PVC CONDUIT SHALL CONFORM TO UL STANDARD 651-89 AND THE REQUIREMENTS OF NEC, PARAGRAPH 347. CONDUIT SHALL BE HEAVY WALL TYPE, SCHEDULE 40 OR 80, AND SUNLIGHT RESISTANT. FITTINGS SHALL BE OF THE UNTHREADED SOLVENT CEMENT TYPE.
   C. EMT CONDUIT (FOR USE BEHIND WALLS OR ABOVE SUSPENDED CEILINGS ONLY). ELECTRIC METALLIC TUBING SHALL CONFORM TO ANSI C803 AND THE REQUIREMENTS OF NEC, PARAGRAPH 348 AND BE PROTECTED ON EXTERIOR WITH A ZINC COATING AND ON INTERIOR SURFACES WITH EITHER A ZINC COATING OR LACQUER ENAMEL. FITTINGS SHALL BE ZINC COATED STEEL.
2. MINIMUM CONDUIT SIZE SHALL BE 3/4", SIZES NOT SHOWN ON DRAWINGS SHALL BE PER NEC.
3. ALL SPARE CONDUITS SHALL HAVE A METALLIC PULL WIRE.
4. CONDUIT SUPPORTS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND IN ACCORDANCE WITH THE NEC.
5. UNDERGROUND CONDUITS.
   A. INSTALL A WARNING TAPE TWELVE INCHES ABOVE EACH CONDUIT OR SET OF CONDUITS.
   B. IDENTIFY EACH CONDUIT AT BOTH ENDS. INSTALL MINIMUM OF 3'-0" BELOW THE FINISHED GRADE, OR DEEPER IF NOTED ON PLAN DRAWINGS.
   C. SLOPE A MINIMUM OF 4" PER 100'-0" TO DRAIN AWAY FROM BUILDINGS AND EQUIPMENT.
   D. USE MANUFACTURED ELECTRICAL ELBOWS AND FITTINGS FOR BELOW GRADE BENDS.
   E. MAKE JOINTS AND FITTINGS WATERTIGHT ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
   F. INSTALL A COUPLING BEFORE EACH WALL PENETRATION.
   G. RESTORE SURFACE FEATURES DISTURBED BY EXCAVATION (AND TRENCHING) IN ALL AREAS.

GENERAL CONDUCTOR NOTES:

1. ALL POWER, CONTROL AND COMMUNICATION WIRING SHALL MEET NEMA-WC, ASTM, UL, AND NEC STANDARDS FOR MATERIAL AND WORKMANSHIP UNLESS OTHERWISE SPECIFIED.
   A. SERVICE ENTRANCE CONDUCTORS SHALL BE COPPER, 600 VOLT, SUNLIGHT RESISTANT, SUITABLE FOR WET LOCATIONS, TYPE USE-2. THE GROUNDED NEUTRAL CONDUCTOR SHALL BE IDENTIFIED WITH A WHITE MARKING AT EACH TERMINATION.
   B. CONDUCTORS FOR FEEDER AND BRANCH CIRCUITS SHALL BE COPPER 600 VOLT, TYPE THHN / THWN WITH A MINIMUM SIZE OF #12 AWG.
2. ALL CONDUCTOR ACCESSORIES INCLUDING CONNECTORS, TERMINATIONS, INSULATING MATERIALS, SUPPORT GRIPS, MARKER AND CABLE TIES SHALL BE FURNISHED AND INSTALLED SUPPLIER'S INSTALLATION INSTRUCTIONS SHALL BE OBTAINED FOR CABLE ACCESSORIES. THESE INSTRUCTIONS SHALL BE IN THE POSSESSION OF THE CRAFTSMAN WHILE INSTALLING THE ACCESSORIES AND SHALL BE AVAILABLE TO THE COMPANY FOR REFERENCE.
3. WHERE POSSIBLE, NO. 6 AWG AND SMALLER WIRE SHALL BE COLORED CODED BY THE COLOR OF THE INSULATION COVERING. COLOR CODING OF WIRE LARGER THAN NO. 6 AWG MAY BE BY MEANS OF SELF-ADHESIVE WRAP AROUND TYPE MARKERS, PER NEC.
4. TERMINAL CONNECTOR FOR CONDUCTORS 8 AWG AND LARGER SHALL BE PRESSURE OR BOLTED CLAMP TYPE BURNDY QUIKLUG, VARILUG OR ACCEPTABLE EQUAL: OR COMPRESSION TYPE, BURNDY TYPE YAV OR YA (LONG BARREL), PANDUIT TYPE LCA OR LCC, OR ACCEPTABLE EQUAL. ACCEPTABLE CONNECTORS INCLUDED WITH COMPANY-FURNISHED EQUIPMENT MAY BE USED.
5. TERMINATION PROVISIONS OF EQUIPMENT FOR CIRCUITS RATED 100 AMPERES OR LESS OR MARKED FOR NOS. 14 THROUGH 1 CONDUCTORS, SHALL BE USED ONLY FOR CONDUCTORS RATED 66°C (140°F). CONDUCTORS WITH HIGHER TEMPERATURE RATINGS SHALL BE PERMITTED, PROVIDED THE AMPACITY OR THE CONDUCTOR SIZE USED.
6. TERMINATION PROVISIONS OF EQUIPMENT FOR CIRCUITS RATED OVER 100 AMPERES, OR MARKED FOR CONDUCTORS LARGER THAN NO.1 SHALL BE USED ONLY FOR CONDUCTORS RATED 75°C (167°F) CONDUCTORS WITH HIGHER TEMPERATURE RATINGS SHALL BE PERMITTED, PROVIDED THE AMPACITY OF EACH CONDUCTOR IS DETERMINED BASED UPON THE 75°C (167°F) AMPACITY OF THE CONDUCTOR SIZE USED.

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STATE OF ILLINOIS
GREGORY PHASSOS
#001-016392
LICENSED ARCHITECT
11/19

"I, HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

SUBMITTALS

#	DATE	DESCRIPTION	BY
A	09/16/19	FOR CONSTRUCTION	BN
B	10/24/19	FOR CONSTRUCTION	NL
C	10/28/19	FOR CONSTRUCTION	BM
0	11/18/19	FOR CONSTRUCTION	BM

SITE NAME
CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP1

GENERAL CONDUCTOR NOTES (CONTINUED):

7. ALL 600 VOLT OR LESS WIRING, WHERE COMPRESSION TYPE CONNECTORS ARE USED, SHALL BE INSULATED WITH AT LEAST ONE TURN OF 'SCOTCHFILL' ELECTRICAL INSULATING PUTTY AND THEN COVERED WITH TWO HALF TURNS OF TAPE SIMILAR TO 3M COMPANY'S '33 PLUS (33+) PLASTIC TAPE OR 88 OUTDOOR TAPE.

8. TERMINAL CONNECTORS FOR CONDUCTORS SMALLER THAN 8 AWG SHALL BE COMPRESSION TYPE CONNECTORS SIZED FOR THE CONDUCTOR AND THE TERMINAL. THE CONNECTORS SHALL BE CONSTRUCTED OF FINE GRADE HIGH CONDUCTIVITY COPPER IN ACCORDANCE WITH QQ-C-516 AND SHALL BE TIN-PLATED IN ACCORDANCE WITH MIL-T-10727. THE INTERIOR SURFACE OF THE CONNECTOR WIRE BARREL SHALL BE SERRATED AND THE EXTERIOR SURFACE OF THE CONNECTOR WIRE BARREL SHALE BE PROVIDED WITH CRIMP GUIDES.

GENERAL GROUNDING NOTES:

1. ALL WORK SHALL COMPLY WITH THE LATEST GROUNDING SPECIFICATIONS AND REQUIREMENTS.

2. ALL METALLIC COMPONENTS ON THE SITE MUST BE GROUNDED TO THE GROUND RING. THIS INCLUDES STEEL CONDUITS USED TO DELIVER THE TELCO AND POWER UTILITY LINES TO THE SITE OR USED TO PROVIDE ACCESS BY UTILITIES OR CONTRACTORS TO THE VARIOUS CABINETS.

3. ALL GROUND LEADS ABOVE GRADE SHALL BE INSTALLED IN 3/4" SCHEDULE 40 PVC.

4. WHEN EARTH RESISTANCE TEST INDICATES THAT THE SOIL IS ABOVE MINIMUM ALLOWABLE RESISTANCE, THAN THE CONTRACTOR SHALL ESTIMATE THE TYPE, NUMBER AND ARRANGEMENT OF EARTH ELECTRODES. CONTRACTOR SHALL ALSO CONSIDER COMPANY'S SITE SPECIFIC APPROACHES FOR IMPROVING EARTH RESISTANCE AT THE SITE BY METHODS INDICATED BELOW:

   RAW LAND
   A. USE MULTIPLE RODS
   B. LENGTHEN THE EARTH ELECTRODE
   C. TREAT THE SOIL
   D. USE CHEMICAL RODS

5. THE CONTRACTOR MUST VERIFY THAT NEW GROUNDING SYSTEM RESISTANCE IS EQUAL TO OR LESS THAN FIVE (5) OHMS PER REQUIRED SPECIFICATIONS.

6. RUN ALL GROUND WIRES IN AN ORGANIZED MANNER, AVOID CROSSING OF WIRES WHEREVER POSSIBLE. DO NOT RUN WIRES OVER CONCRETE SLAB.

7. INSTALL ALL GROUND WIRES IN A DOWNWARD SLOPE FOR MAXIMUM LIGHTNING PROTECTION.

8. MAINTAIN ALL MINIMUM BENDING RADII OF THE GROUNDING WIRES.

9. DO NOT REMOVE MORE INSULATION FROM THE GROUND WIRES THAN NECESSARY WHEN CADWELDING OR CRIMPING IF EXCESS INSULATION IS REMOVED.

10. DOWN LEAD FOR ANTENNA SECTORS MUST BE CONNECTED DIRECTLY TO THE GROUND RING.

11. ALL BASE TRANSCEIVER SITE EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH THE INTERNATIONAL ELECTRICAL CODE (NEC), AND THE LATEST EDITION OF LIGHTNING PROTECTION CODE NFPA 780

12. THE ELECTRICAL SERVICE TO THE SITE SHALL BE GROUNDED AT THE SERVICE DISCONNECTING MEANS REQUIRED IN ARTICLE 250 OF THE NATIONAL ELECTRIC CODE, IN ACCORDANCE WITH ANY LOCAL CODE.

13. ALL UNDERGROUND (BELOW GRADE) GROUNDING CONNECTIONS SHALL BE MADE BY THE CADWELD PROCESS (MECHANICAL LUG ATTACHMENTS BELOW GRADE ARE NOT ACCEPTABLE). CONNECTIONS SHALL INCLUDE ALL CABLE SPLICES (TEES, X'S, ETC.) ALL CABLE CONNECTIONS TO GROUND RODS, GROUND ROD SPLICES, AND LIGHTING PROTECTION SYSTEM AS INDICATED. ALL MATERIALS USED (MOLDS, WELDING METALS, TOOLS, ETC.) SHALL BE BY CADWELD AND INSTALLED PER MANUFACTURERS RECOMMENDATION AND PROCEDURES.

14. ALL GROUNDING AND BONDING CONDUCTORS THAT ARE CONNECTED ABOVE GRADE INTERIOR TO A BUILDING SHALL BE CONNECTED USING TWO HOLE CRIMP TYPE (COMPRESSION) CONNECTORS FOR #2 AND #6 AWG INSULATED COPPER CONDUCTOR.

15. ALL GROUNDING CONNECTIONS, INTERIOR AND EXTERIOR, MADE THROUGHOUT THIS DOCUMENT SHALL BE MADE USING AN ANTI-OXIDATION COMPOUND, THE ANTI-OXIDATION COMPOUND SHALL BE 'THOMAS AND BETTS' KOPR-SHIELD (TIM OF JET LUBE, INC.) THERE IS NO EQUIVALENT FOR THIS PRODUCT: NO OTHER COMPOUND WILL BE ACCEPTED. COAT ALL WIRES BEFORE LUGGING. COAT ALL SURFACES BEFORE CONNECTING.

GENERAL GROUNDING NOTES (CONTINUED):

16. ALL CONNECTIONS SHALL BE MADE TO BARE METAL. ALL PAINTED SURFACES SHALL BE FIELD INSPECTED AND MODIFIED TO ENSURE PROPER CONTACT PRIOR TO CADWELD, GALVANIZING SHALL BE REMOVED BY GRINDING SURFACE TO BARE METAL 'SLAG' FROM CADWELD MUST BE REMOVED AND WELD SHALL BE SPRAYED WITH COLD GALVANIZE AFTER COMPLETION.

17. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED. CLIPS OF THE FOLLOWING MATERIALS AND TYPES MAY BE USED TO SUPPORT GROUNDING CONDUCTORS.

   - PLASTIC CLIPS
   - STAINLESS STEEL CLIPS WHICH DO NOT COMPLETELY SURROUND THE GROUNDING CONDUCTOR.
   - FERROUS METAL CLIPS WHICH DO NOT COMPLETELY SURROUND THE GROUNDING CONDUCTOR.

18. ALL BELOW GRADE GROUNDING CONDUCTORS SHALL BE BARE SOLID COPPER WIRE. ABOVE-GRADE GROUNDING CONDUCTORS MAY BE EITHER OR AS INDICATED ON THE DRAWINGS:

   - BARE TINNED SOLID COPPER WIRE
   - THWN-INSULATED, CONTINUOUS GREEN COLOR, SOLID COPPER WIRE
   - THWN-INSULATED, CONTINUOUS GREEN COLOR STRANDED COPPER WIRE

   A. THE UNDERGROUND GROUND RING SHALL HAVE A #2 AWG BARE TINNED SOLID COPPER WIRE.

   B. #2 THWN SHALL BE STRANDED COPPER WITH GREEN THWN INSULATION SUITABLE FOR WET INSTALLATION (OR SOME ABOVE GROUND APPLICATIONS, I.E. INDOOR GROUNDING RING)

   C. #2 BARE TINNED COPPER SHALL BE SOLID. ALL BURIED WIRE SHALL MEET THIS CRITERIA INCLUDING CABLE TRAY GROUNDING WIRES AND WIRES INDICATED ON THE DRAWINGS.

   (THE MINIMUM BEND RADIUS IS 8" FOR #6 AWG AND SMALLER, AND 12 INCHES FOR WIRE LARGER THAN #6 AWG)

19. ALL HARDWARE, BOLTS, NUTS, WASHERS, AND LOCK WASHERS SHALL BE 18-8 STAINLESS STEEL. EVERY CONNECTION SHALL BE (BOLT-FLATWASHER-BUSS-LUG-FLATWASHER-LOCKWASHER-NUT), IN THAT EXACT ORDER WITH NUT FACING OUTWARD, BACK TO BACK LUGGING SHALL BE (BOLT-FLATWASHER-LUG-FLATWASHER-LUG-BUSS-LUG-FLATWASHER-LOCK WASHER-NUT), IN THAT EXACT ORDER IS ACCEPTED WHERE NECESSARY TO CONNECT MANY LUGS TO A BUSS BAR. STACKING OF LUGS, BUS-LUG-LUG, IS NOT ACCEPTABLE.

20. THE COMPRESSION GROUND LUG FOR #2 AWG BARE SOLID GROUNDING CONDUCTORS SHALL BE BURNDY TYPE YA3C-2TC.

21. THE ANTENNA CABLES SHALL BE GROUNDED AT THE TOP AND BOTTOM OF THE VERTICAL RUN. THE ANTENNA CABLE SHIELD SHALL BE BONDED TO A COPPER GROUND BUS AT THE LOWEST POINT OF THE VERTICAL RUN. THE ANTENNA CABLE SHIELD SHALL BE GROUNDED JUST BEFORE ENTERING THE BTS. GROUNDING KITS ON COAX CABLE SHALL HAVE A MINIMUM BEND OF 6" AND SHALL BE KEPT AS CLOSE TO VERTICAL AS POSSIBLE. FLAT WASHER SUPPLIED WITH GROUND KITS MUST BE REPLACED WITH SMALLER STAINLESS STEEL FLAT WASHERS, WASHERS MUST REMAIN FLAT AGAINST GROUND BAR, ALL FASTENERS MUST BE STAINLESS STEEL AND KOPR-SHIELD MUST BE USED ON BOTH SIDES OF THE GROUND BAR.

GENERAL NOTES:

HEALTH AND SAFETY:

CONTRACTOR SHALL PROVIDE ALL SAFETY EQUIPMENT AND FALL PROTECTION TO INSURE THE SAFETY OF ON SITE PERSONNEL DURING CONSTRUCTION.

ACCESS TO THE TANK INTERIOR WATER COMPARTMENT SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE WATER DEPARTMENT SUPERVISOR. PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER CONTAMINATION.

THE PAINT SYSTEM SHALL BE CHECKED FOR HAZARDOUS METALS. WHERE HAZARDOUS METALS ARE FOUND IN THE PAINT SYSTEM, THE ENVIRONMENT AND WORKERS MUST BE PROTECTED FROM CONTAMINATION.

GENERAL WELDING:

ALL WELDING SHALL BE IN ACCORDANCE WITH A WW A D 100 SEC. 8, WELDING AND SEC.11, INSPECTION AND TESTING.

ALL WELDS TO THE TANK SURFACE SHALL BE MADE WITH E7018 LOW HYDROGEN ROD AND SHALL BE SMOOTH AND FREE OF BURRS AND UNDERCUTS. UNACCEPTABLE WELDS SHALL BE REPAIRED AS REQUIRED TO MEET A WW A D 100 REQUIREMENTS.

NO WELDING SHALL BE DONE WHEN THE AMBIENT TEMPERATURE IS BELOW 32 DEGREE FAHRENHEIT UNLESS THE REQUIREMENTS OF A WWA DLOO, SEC 10.2.1 ARE FOLLOWED.

WELDING TO THE TANK OR ACCESS TUBE OPPOSITE THE WATER LEVEL IS NOT PERMITTED. THE WATER LEVEL SHALL BE DRAWN DOWN TO A LEVEL TWO FEET BELOW THE POINT OF WELDING.

WELDING MAY CAUSE BLISTERING OF THE INTERIOR PAINT OPPOSITE THE WELD. DAMAGED PAINT SURFACES SHOULD BE TOUCHED UP WHEN THE TANK IS TAKEN OUT OF SERVICE FOR ITS ANNUAL INSPECTION. EXTERIOR PAINT DAMAGE SHALL BE REPAIRED AFTER COMPLETION OF THE ANTENNA INSTALLATION, AND SHALL BE COMPATIBLE WITH THE EXISTING PAINT SYSTEM.

GALVANIZED COMPONENTS SHALL NOT BE WELDED DIRECTLY TO THE TANK SURFACE. OTHER GALVANIZED SURFACES SHALL BE GROUND FREE OF GALVANIZING BEFORE WELDING. TUBULAR COLUMNS ARE HERMETICALLY SEALED AND MUST NOT BE BREACHED (PUNCTURED) UNDER ANY CIRCUMSTANCES.

STUD WELDING:

STUD WELDS ARE A VIABLE ALTERNATE FOR WELDING, BUT ARE EXCLUDED BY THE CODE SINCE WATER UNDER THE PAD PLATE CAN TRIGGER CORROSION AND STREAKING OF THE TANK SHELL. HOWEVER, IF ACCEPTED BY THE TANK OWNER, STUDS CAN BE USED IN LIEU OF WELDING. STUDS MUST BE INSTALLED AND TESTED TO THE STUD MANUFACTURER'S SPECIFICATION.

GENERAL NOTES CONTINUED:

ALL STEEL ANTENNA INSTALLATION COMPONENTS MUST BE PAINTED TO MATCH THE EXISTING PAINT SYSTEMS ON THE EXTERIOR.

NO COMPONENTS CAN REMAIN GALVANIZED OR STAINLESS STEEL. THE SPECIFIED PAINT SYSTEMS WILL NOT HAVE GOOD ADHESION ON GALVANIZED OR STAINLESS STEEL SURFACES.

CONTACT TNEMEC TO OBTAIN A SUITABLE SURFACE PREPARATION SYSTEM FOR GALVANIZED AND STAINLESS STEEL SURFACES. THE SYSTEM MUST MAKE PREVIOUSLY GALVANIZED AND STAINLESS STEEL SURFACES COMPATIBLE WITH THE SPECIFIED PAINT SYSTEMS THAT WILL BE APPLIED.

IF APPLICABLE, PAINT ALL NEW STEEL IN A SHOP SETTING, PRIOR TO DELIVERY TO THE SITE.

WELDING ON ONE SIDE OF A STEEL SHEET MAY RESULT IN BURNED PAINT ON THE OPPOSITE SIDE. IF THIS OCCURS, THE BURNED PAINT ON THE OPPOSITE SIDE WILL NEED TO BE PAINT REPAIRED.

FOLLOW ALL PAINT MANUFACTURERS' RECOMMENDATIONS WHEN USING THEIR PRODUCTS.

ALL PENETRATIONS TO BE SEALED WITH RUBBER BOOT ASSEMBLIES. IF A BOOT DOES NOT APPLY, THE PENETRATIONS ARE TO BE SEALED TO DEPTH OF 2"WITH WEATHER RESISTANT SILICONE. SPRAY FOAM AND BUTYL ARE NOT AN ACCEPTABLE ALTERNATE.

ANY NEW UNIVERSAL SNAP IN ADAPTERS ARE TO BE ATTACHED WITH RUBBER STRIPS.

PAINT NOTES:

SURFACE PREPARATION (EXTERIOR & DRY INTERIOR):
ABRASIVE BLAST CLEAN ALL NEW STEEL COMPONENTS TO AN SSPC-SP6 "COMMERCIAL BLAST CLEANING" CONDITION PRIOR TO APPLICATION OF PRIMER COAT.
AFTER WELDING OR CUTTING, CLEAN ALL DAMAGED SURFACES IN ACCORDANCE WITH SSPC-SP3 "POWER TOOL CLEANING" CONDITION PRIOR TO APPLICATION OF PRIME COAT.

COATING (EXTERIOR):
THE EXTERIOR PAINT REPAIR SYSTEM WILL BE ONE PRIME COAT OF TNEMEC SERIES 20 OR SERIES 66, ONE INTERMEDIATE COAT OF TNEMEC SERIES 20 OR SERIES 66, AND ONE TOPCOAT OF TNEMEC SERIES 1074. PAINT THE EXTERIOR TO MATCH THE EXISTING TOPCOAT COLOR.
THE THREE-COAT SYSTEM WILL BE APPLIED AT 3.0 – 4.0 MILS PER COAT, TO A THICKNESS OF 9.0 – 12.0 MILS.

COATING (DRY INTERIOR):
THE DRY INTERIOR PAINT REPAIR SYSTEM WILL BE TWO COATS OF TNEMEC SERIES 20 OR SERIES 66. PAINT THE DRY INTERIOR TO MATCH THE EXISTING TOPCOAT COLOR.
THE TWO-COAT SYSTEM WILL BE APPLIED AT 3.0 – 4.0 MILS PER COAT, TO A THICKNESS OF 6.0 – 8.0 MILS.

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Nicor Gas

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NAPERVILLE IL 60563

A&E:

A Nokia company

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CHICAGO, IL 60661
WWW.SACW.COM
312.895.4977

STATE OF ILLINOIS
GREGORY PHASSOS
#001-016392
LICENSED ARCHITECT
EXPIRATION DATE: 11/30/19

"I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED UNDER MY DIRECT SUPERVISION AND I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

SUBMITTALS

#	DATE	DESCRIPTION	BY
A	09/16/19	FOR CONSTRUCTION	BN
B	10/24/19	FOR CONSTRUCTION	NL
C	10/28/19	FOR CONSTRUCTION	BM
0	11/18/19	FOR CONSTRUCTION	BM

SITE NAME
CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

SEC. 10: ERECTION (COLD WEATHER WELDING SEC 10.2.1)

SEC. 10.1 GENERAL:

THE CONSTRUCTOR SHALL FURNISH ALL LABOR, LIABILITY AND COMPENSATION INSURANCE, TOOLS, FALSE WORK, SCAFFOLDING, AND OTHER EQUIPMENT NECESSARY TO ERECT THE TANK IN COMPLIANCE WITH THE CONTRACT REQUIREMENTS.

SEC. 10.2 WELDS:

ALL WELDS IN THE TANK AND STRUCTURAL ATTACHMENTS SHALL BE MADE IN A MANNER TO ENSURE COMPLETE FUSION WITH THE BASE METAL, WITHIN THE LIMITS SPECIFIED FOR EACH JOINT, AND IN STRICT ACCORDANCE WITH THE QUALIFIED WELDING PROCEDURE SPECIFICATIONS.

10.2.1 WEATHER AND TEMPERATURE CONDITIONS. WELDING SHALL–NOT BE PERFORMED WHEN THE SURFACES OF THE PARTS TO BE WELDED ARE WET FROM RAIN, SNOW, OR ICE; WHEN RAIN OR SNOW IS FALLING ON SUCH SURFACES; OR DURING PERIODS OF HIGH WINDS, UNLESS THE WELDER OR WELDING OPERATOR AND THE WORK ARE PROPERLY PROTECTED.

WELDING SHALL NOT BE PERFORMED WHEN THE BASE METAL TEMPERATURE IS LOWER THAN 32 DEG. F(0 DEG. C) UNLESS THE BASE METAL WITHIN A DISTANCE OF FOUR TIMES THE PLATE THICKNESS (3–IN. [76–MINIMUM) OF THE PLACE WHERE WELDING IS TO BE STARTED IS PREHEATED TO AT LEAST 100 DEG. F(37.8 DEG. C) AND THIS TEMPERATURE IS MAINTAINED FOR THE DISTANCE AHEAD OF THE ARC SET FORTH ABOVE AS WELDING PROGRESSES.

IT IS RECOMMENDED THAT NO WELDING BE DONE WHEN THE BASE METAL TEMPERATURE FALLS BELOW 0 DEG. F (–18 DEG. C). IF WELDING IS TO BE PERFORMED WHEN THE BASE METAL TEMPERATURE IS LOWER THAN 0 DEG. F (–18 DEG. C), THE FOLLOWING SPECIAL REQUIREMENTS ARE TO BE MET:

1. LOW–HYDROGEN ELECTRODES OR LOW–HYDROGEN WELDING SHALL BE USED.
2. THE BASE METAL ALONG THE LENGTH OF THE WELD JOINT IN THE DIRECTION OF WELDING SHALL BE PREHEATED TO 200 DEG. F (93 DEG. C) AND MAINTAINED AS WELDING PROGRESSES FOR A DISTANCE OF AT LEAST 36 IN. (914 MM) FROM THE POINT OF WELDING OR THE ENTIRE WELD JOINT LENGTH, WHICHEVER IS IN ADDITION, THE AREA EXTENDING ON BOTH SIDES OF THE WELD JOINT A DISTANCE OF FOUR TIMES THE PLATE THICKNESS, BUT NOT LESS THAN 3 IN.(76 MM) OR MORE THAN 6 IN.(152 MM), SHALL BE PREHEATED TO AND MAINTAINED AT 200 DEG. F (93 DEG. C) DURING WELDING.

10.2.2 PEENING. PEENING OF WELD LAYERS MAY BE USED TO PREVENT UNDUE DISTORTION. SURFACE LAYERS SHALL NOT BE PEENED.

10.2.2.1 PEENING SHALL BE PERFORMED WITH LIGHT BLOWS FROM A POWER HAMMER WITH A BLUNT–NOSED TOOL.

10.2.3 CONTOUR THE SURFACE BEADS SHALL MERGE SMOOTHLY INTO EACH OTHER IN ALL WELDS.

10.2.3.1 UNDERCUTTING OF BASE METAL IN THE PLATE ADJOINING THE WELD SHALL BE REPAIRED, EXCEPT AS PERMITTED IN SEC. 11.4.2.1 , SEC. 11.4.2.2, SEC. 11.4.2.3, AND SEC. 11.4.2.4.

10.2.3.2 ALL CRATERS SHALL BE FILLED TO THE FULL CROSS OF THE WELD.

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NAPERVILLE IL 60563

A&E:

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STATE OF ILLINOIS
GREGORY PHASSOS
#001-016392
LICENSED ARCHITECT
11/18/19

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

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SITE NAME

CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE

NOTES AND SPECIFICATIONS

SHEET NUMBER

SP3

PROPOSED 300'-0" HIGH SELF-SUPPORT TOWER

PROPOSED 11'-8" X 22'-0" EQUIPMENT SHELTER ON CONCRETE PAD

EXISTING EQUIPMENT SHELTER BE REMOVED

EXISTING GUYED TOWER TO BE REMOVED

EXISTING CONCRETE AREA

1 / A2

4 / A3

EXISTING GRASS AREA

EXISTING FARM FIELD

EXISTING TREE LINE (TYP.)

EXISTING CHAIN LINK FENCE (TYP.)

EXISTING GRASS AREA

EXISTING GRASS AREA

EXISTING GRASS AREA

EXISTING TREE AREA

EXISTING GRASS AREA

EXISTING BUILDING

EXISTING PARKING LOT

EXISTING PARKING LOT

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING BUILDING

EXISTING ACCESS DRIVE

EXISTING GRASS AREA

W. TERRA COTTA AVE.

N

SITE PLAN

SCALE: 1" = 80'-0"

1

SAC File: M:\ ISI Installation Services\2018\Crystal Lake\CDs\Crystal Lake CD Rev0 191118.dwg 11/19/19 11:39

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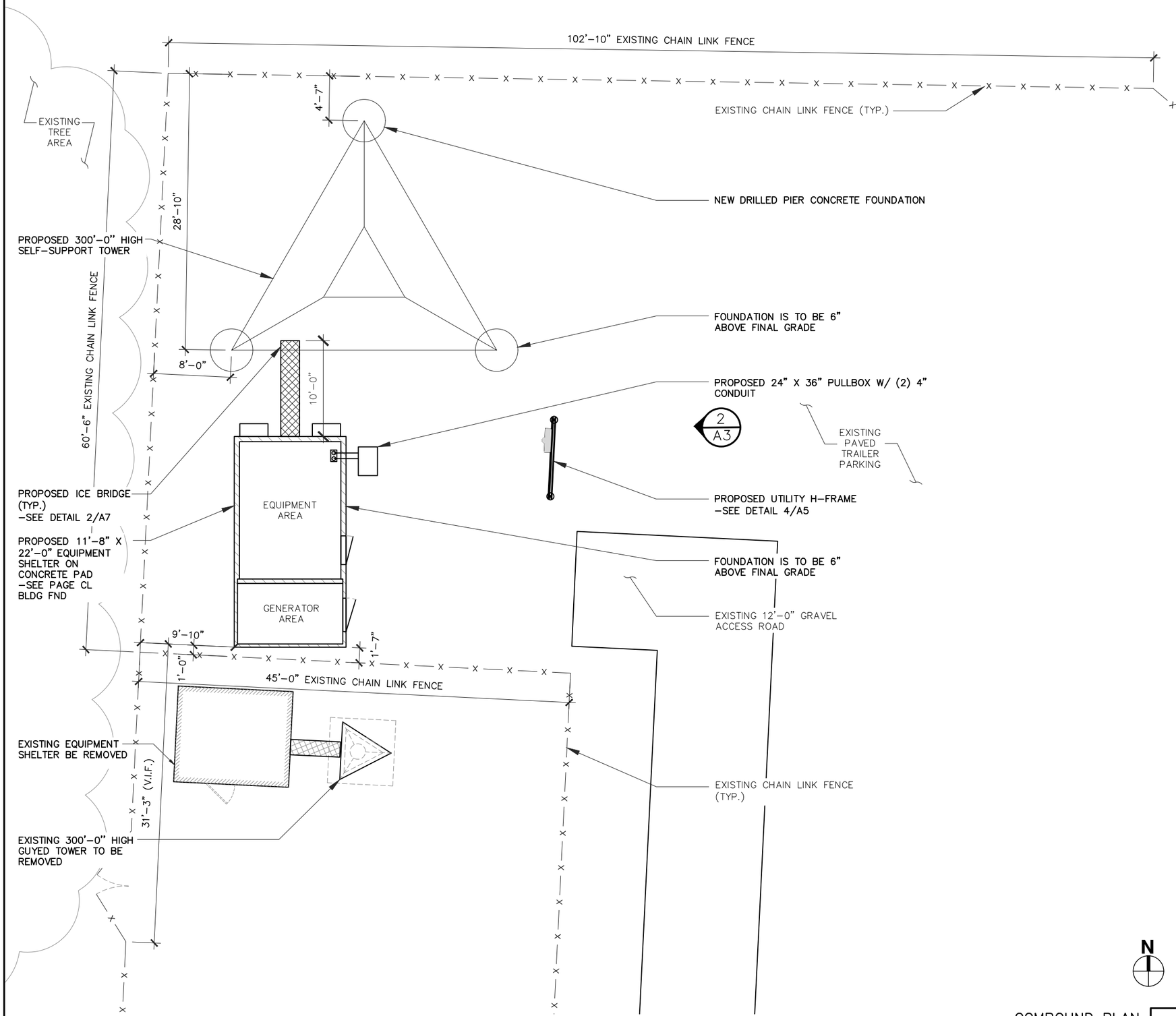
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE

SITE PLAN

SHEET NUMBER

A1



COMPOUND PLAN
SCALE: 3/32" = 1'-0"

1

NOTES

GENERAL NOTES:

1. ELEVATIONS ARE ABOVE MEAN SEA LEVEL.
2. DO NOT SCALE DIMENSIONS FROM THIS DRAWING.
3. ALL EXISTING RECORDED EASEMENTS ARE INDICATED ON THIS DRAWING TO THE BEST OF THE ARCHITECT'S KNOWLEDGE PER VISUAL INSPECTION, SURVEY DRAWINGS, AND INFORMATION RECEIVED FROM (ISI) INSTALLATION SERVICES INC.

LEGEND

EXISTING		NEW
—SAS—	SANITARY SEWER	—SAS—
—STS—	STORM SEWER	—STS—
—W—	WATER MAIN	—W—
RIM INV	SANITARY MANHOLE ELEVATIONS	RIM INV
RIM INV	STORM STRUCTURE ELEVATIONS	RIM INV
	PROPERTY LINE & R.O.W.	
	SURFACE DRAINAGE	
○	LIGHT STANDARD	●
○—○	STREET LIGHT	●—
672.75 x	SPOT ELEVATION	672.75
672	CONTOUR	672
672	CONTOUR TO BE REGRADED	
—G— G—	GAS MAIN	—G— G—
◎	MANHOLE	◉
◯	CATCH BASIN	●
	FIRE HYDRANT	
— — — —	EASEMENT LINE	— — — —
—x—x—x—x—	FENCE	—x—x—x—x—
---UE/UT---	BURIED UTILITY LINE	---UE/UT---
⌀	UTILITY POLE	⌀
— OHE —	OVERHEAD UTILITY LINE	— OHE —
	BUILDING	

CLIENT:

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STATE OF ILLINOIS
GREGORY PHASSOS
#001-016392
LICENSED ARCHITECT
09/19

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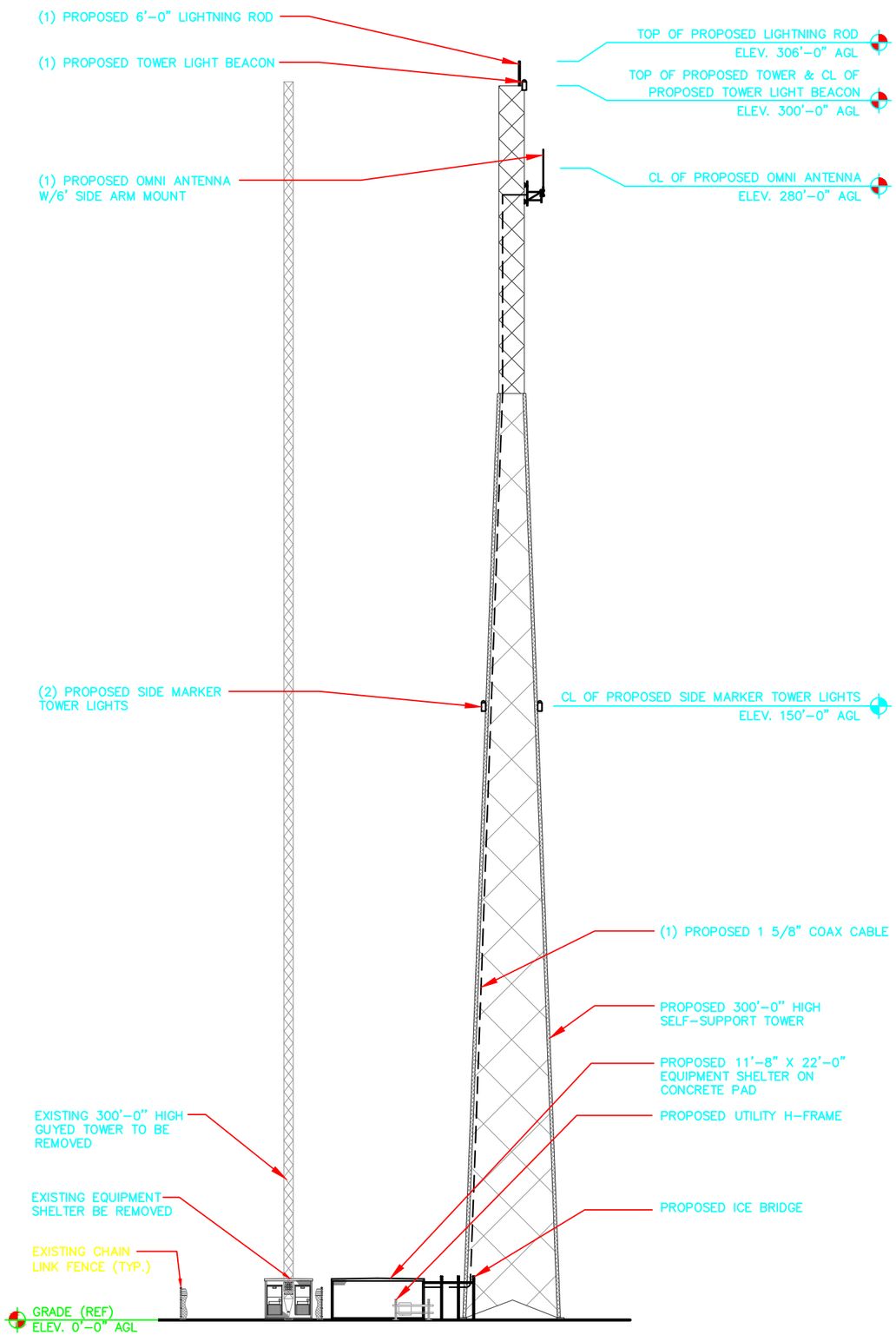
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
COMPOUND PLAN & LEGEND

SHEET NUMBER
A2



PROPOSED ELEVATION

SCALE: 1/32" = 1'-0"

1

SAC File: M:_ISI_Installation Services\2018\Crystal Lake\CDs\Crystal Lake _CD_Rev0_191118.dwg 11/19/19 11:39

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STATE OF ILLINOIS
GREGORY PHASSOS
#001.016[illegible]
LICENSED ARCHITECT
EXPIRATION DATE: 11/30/2020
"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

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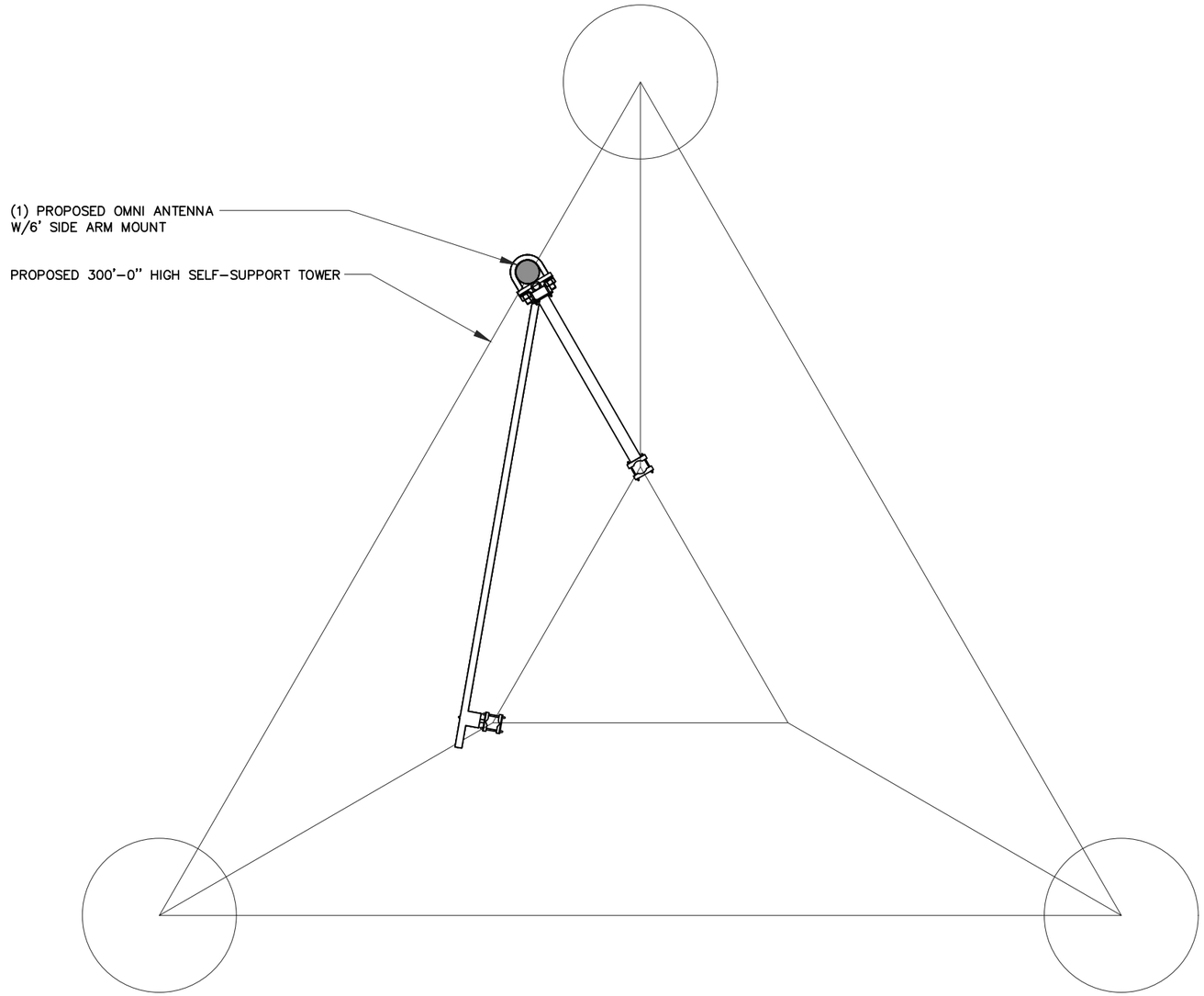
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE

EXISTING & PROPOSED TOWER ELEVATIONS

SHEET NUMBER

A3



PROPOSED ANTENNA PLAN @ ELEVATION 280'-0"

SCALE: 1/4" = 1'-0"

1

SAC File: M:_ISI_Installation Services\2018\Crystal Lake\CDs\Crystal Lake _CD_Rev0_191118.dwg 11/19/19 11:39

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CRYSTAL LAKE, IL 60014

SHEET TITLE

ANTENNA PLAN

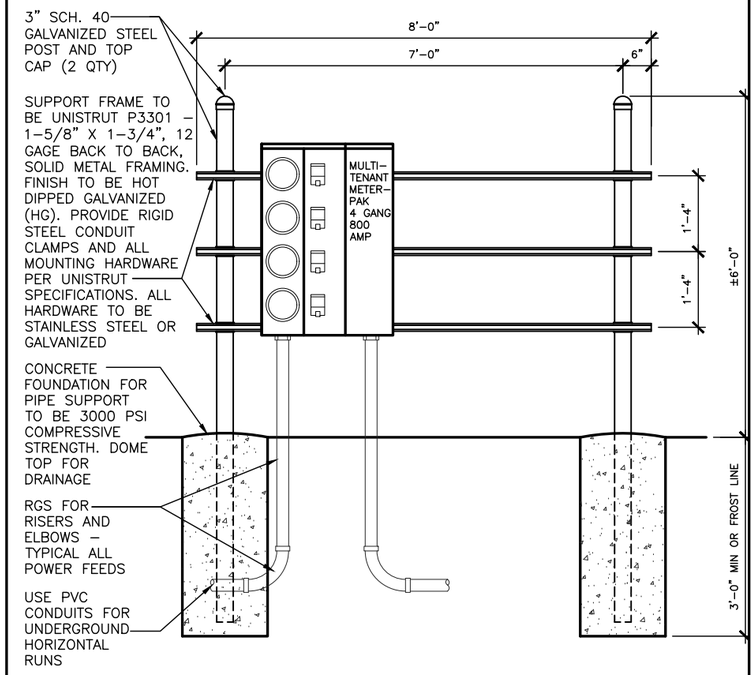
SHEET NUMBER

A4

NO DETAIL

NO SCALE

6

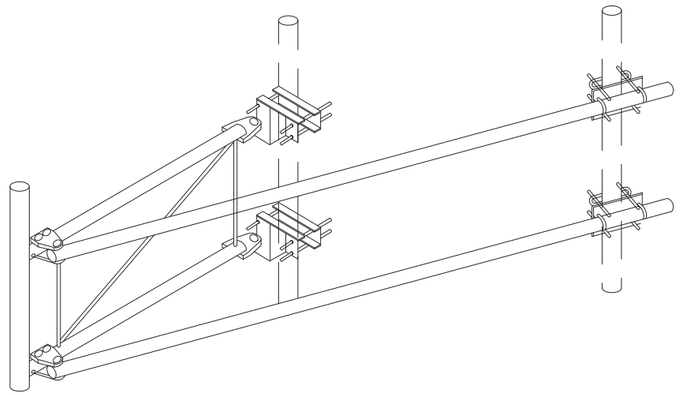


UTILITY H–FRAME DETAIL

NO SCALE

4

SIDE ARM MOUNT



MOUNTING ARM DETAIL

NO SCALE

2

NO DETAIL

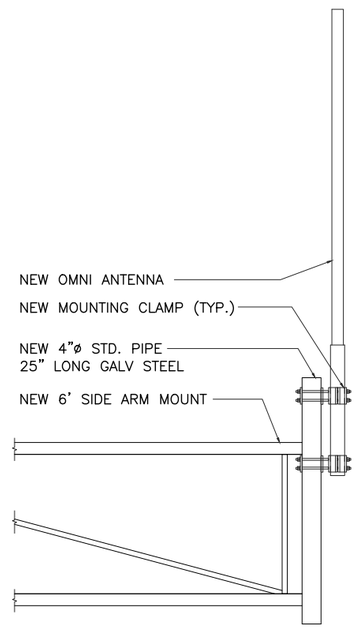
NO SCALE

5

NO DETAIL

NO SCALE

3



ANTENNA MOUNTING DETAIL

NO SCALE

1

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STATE OF ILLINOIS
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11/18/19

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SITE NAME

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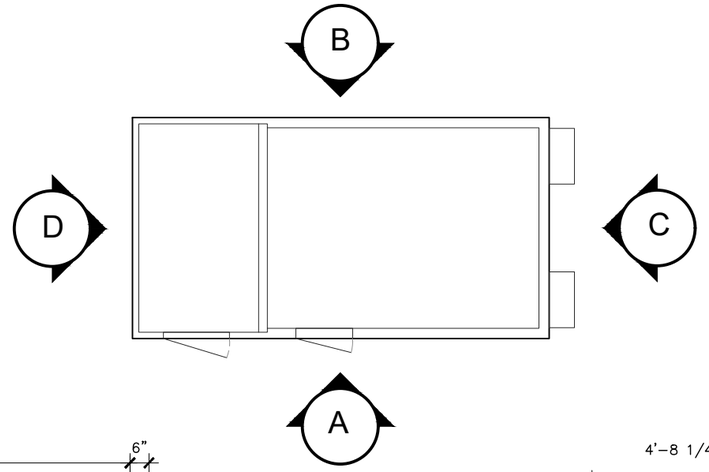
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

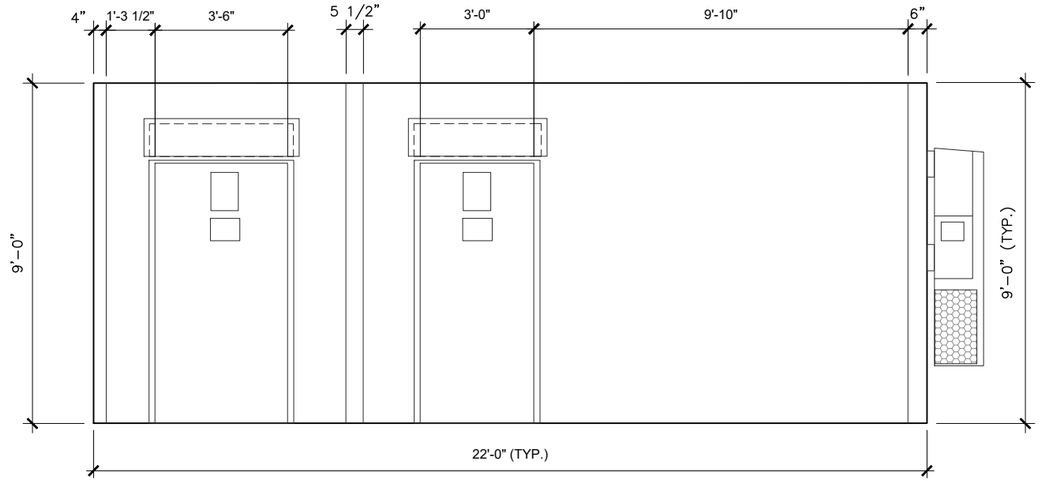
SHEET TITLE

EQUIPMENT DETAILS

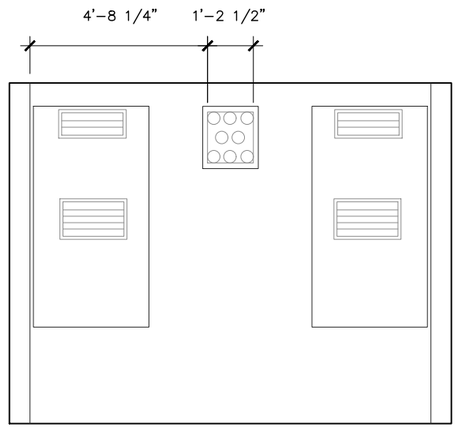
SHEET NUMBER

A5



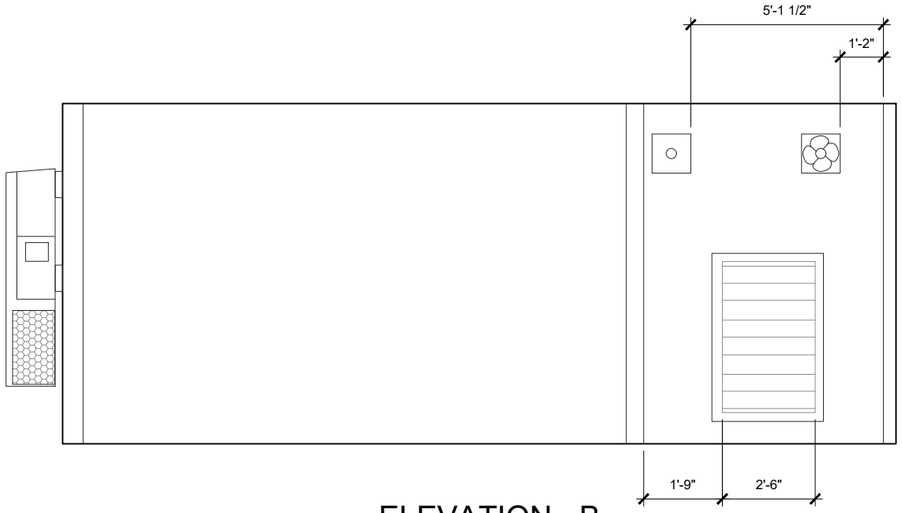


ELEVATION - A

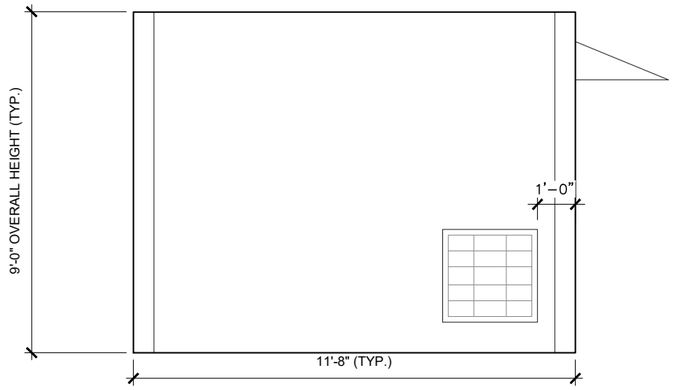


ELEVATION -C

MODULAR CONNECTIONS, LLC
11'-8" X 22'-"0 SHELTER



ELEVATION - B



ELEVATION - D

SHELTER ELEVATIONS

SCALE: 1/4" = 1'-0"

1

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STATE OF ILLINOIS
GREGORY PHASSOS
#001-016382
REVISED ARCH
09/19

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

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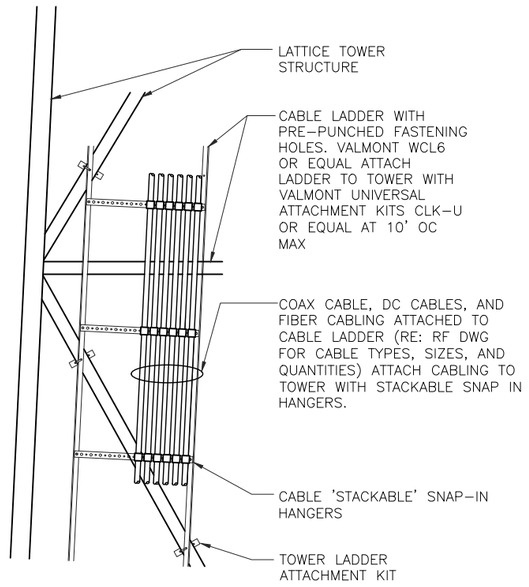
CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
SHELTER DETAILS

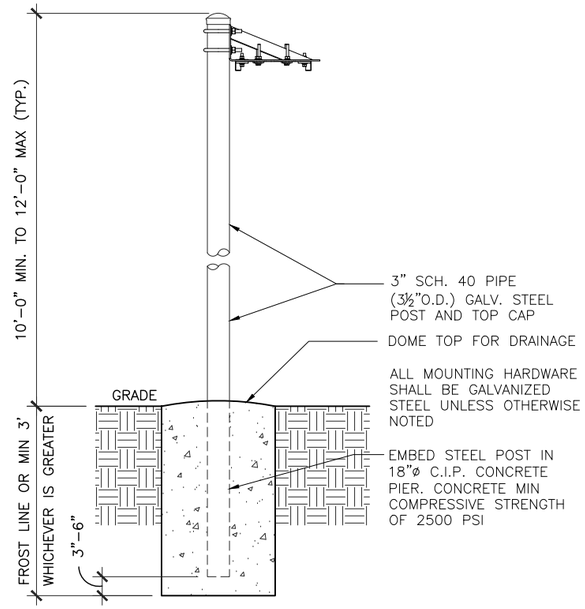
SHEET NUMBER
A6



CABLE LADDER DETAIL

NO SCALE

4



ICE BRIDGE DETAIL

NO SCALE

2

DETAIL NOT USED

NO SCALE

3

DETAIL NOT USED

NO SCALE

1

CLIENT:

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SELF SUPPORT TOWER
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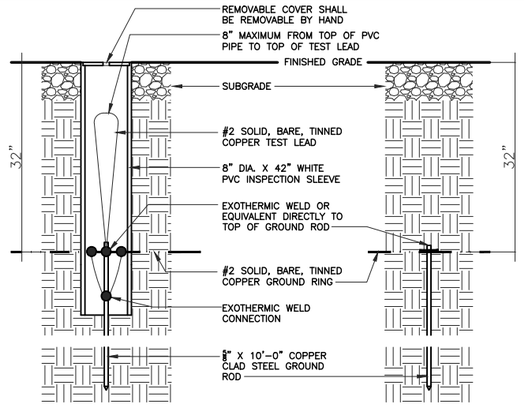
CRYSTAL LAKE, IL 60014

SHEET TITLE

DETAILS

SHEET NUMBER

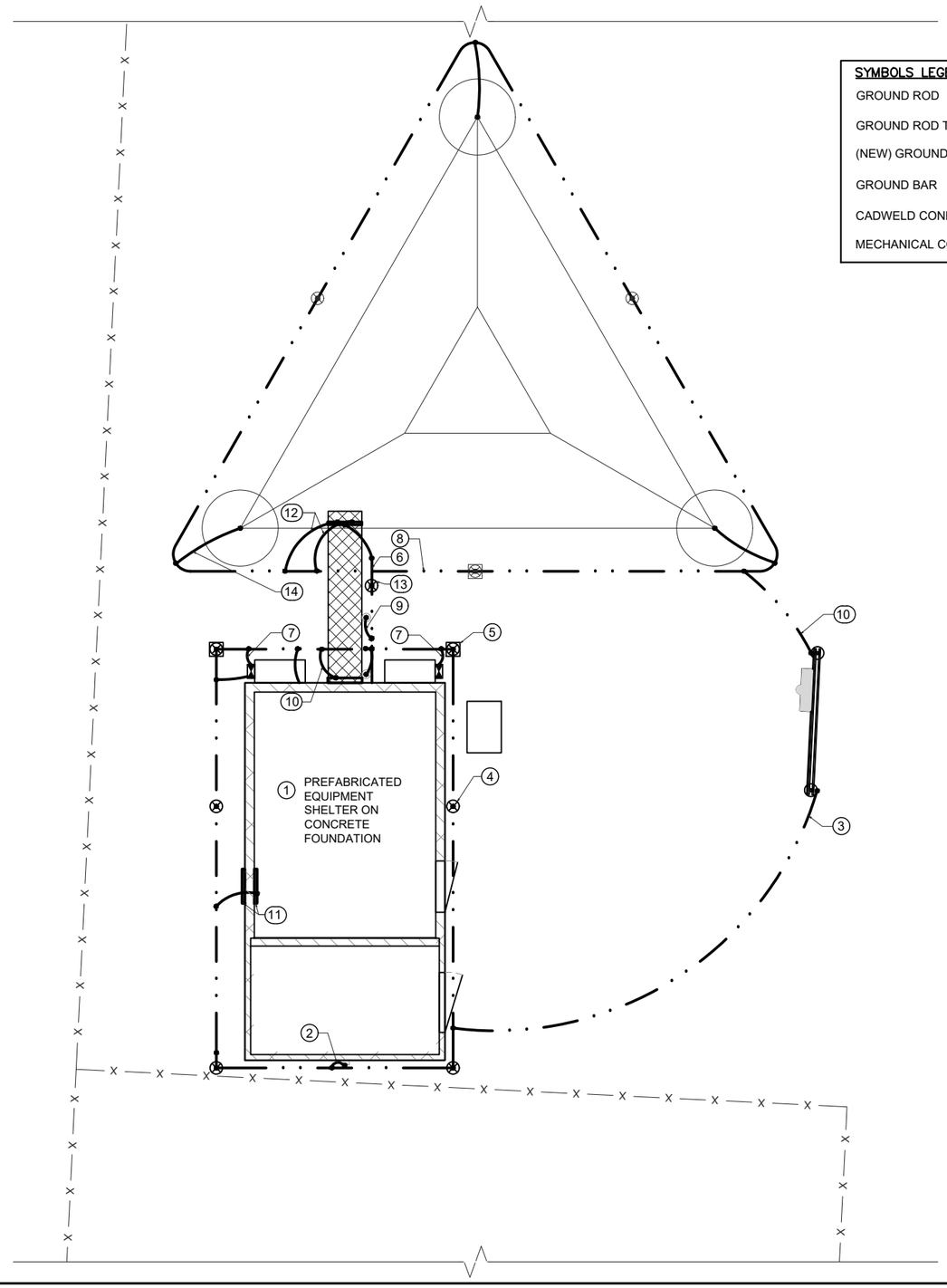
A7



GROUND WELL, ROD, AND TEST WELL DETAIL | SCALE N.T.S. | 2

GROUNDING SYMBOL LEGEND:

1. INTERIOR GROUND SYSTEM BY EQUIPMENT SHELTER MANUFACTURER. GROUND CONNECTIONS INSIDE SHELTER ARE BY OTHERS.
2. 200 AMP MAIN SERVICE DISCONNECT BY EQUIPMENT SHELTER MANUFACTURER. GROUND ENCLOSURE TO GROUND RING. PROVIDE SERVICE GROUND PER NEC
3. #2 AWG SOLID BARE TINNED COPPER GROUND RING/WIRE BURIED MIN. 2'-6" BELOW GRADE OR AT FROST LINE WHICHEVER IS GREATER.
4. 5/8" DIAMETER X 10'-0" COPPER GROUND ROD INSTALLED EVERY 10'-0" AND CADWELDED TO GROUND RING. RE:DTL#2/E4
5. 5/8" DIAMETER X 10'-0" COPPER GROUND ROD WITH TEST WELL LOCATED AT ALL 4 CORNERS OF GROUND RING. RE:DTL#2/G1
6. TIE NEW SHELTER GROUND RING INTO TOWER GROUND RING IN TWO PLACES WITH #2 AWG SOLID BARE TINNED COPPER GROUND CONDUCTORS
7. #2 AWG SOLID BARE TINNED COPPER GROUND WIRE FROM AIR CONDITIONING UNITS TO GROUND RING. CONNECT TO A/C FRAME WITH (2) HOLE LUG.
8. #2 AWG SOLID BARE TINNED COPPER TOWER GROUND RING
9. #2 AWG THHN WIRE CADWELDED TO EACH ICE BRIDGE POST WITH MECH CONNECTION TO GRIP STRUT, JUMPER EACH SECTION WITH SAME. #2 AWG SOLID BARE TINNED COPPER GROUND CONDUCTOR FROM BOTTOM OF EACH SUPPORT POST TO THE BURIED RING RE:DTL#3/E6 (SIMILAR)
10. SHELTER EXTERIOR GROUND BAR WITH (2) TWO #2 AWG SOLID BARE TINNED COPPER GROUND WIRES CADWELDED TO EXTERIOR GROUND RING.
11. SHELTER INTERIOR MASTER GROUND BAR AND DOWNLEAD COILED INSIDE SHELTER IS THE ONLY INTERIOR GROUND BAR TO BE BONDED TO THE EXTERNAL GROUND RING.
12. GROUND BAR AT BASE OF TOWER WITH TWO (2) #2 AWG SOLID BARE TINNED COPPER GROUND DOWNLEAD WIRES ATTACHED TO TOWER GROUND RING AND ONE DOWNLEAD FROM GROUND BAR ABOVE ATTACHED TO GROUND BAR AT BASE OF TOWER.
13. ONE GROUND TEST WELL AND GROUND RODS SPACED AT MAX 10'-0" OC ALONG PATH OF GROUND RING
14. GROUND (3) TOWER LEGS WITH #2 SOLID BARE TINNED COPPER TO THE TOWER GROUND RING



COMPOUND PLAN | SCALE: 1/8" = 1'-0" | 1

SYMBOLS LEGEND:

- GROUND ROD
- GROUND ROD TEST WELL
- (NEW) GROUND WIRE
- GROUND BAR
- CADWELD CONNECTION
- MECHANICAL CONNECTION

CLIENT:

427 BORDEN AVE
SYCAMORE IL 60178
PH: (815) 991 9560 FAX: 815 991 9468
MOBILE: 815 378 6118

Nicor Gas
1844 FERRY ROAD
NAPERVILLE IL 60563

A&E:

A Nokia company
540 W. MADISON ST.
CHICAGO, IL 60661
WWW.SACW.COM
312.895.4977

STATE OF ILLINOIS
GREGORY PHASSOS
#001-016392
LICENSED ARCHITECT
11/18/19

"I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION AND AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF THE STATE OF ILLINOIS"

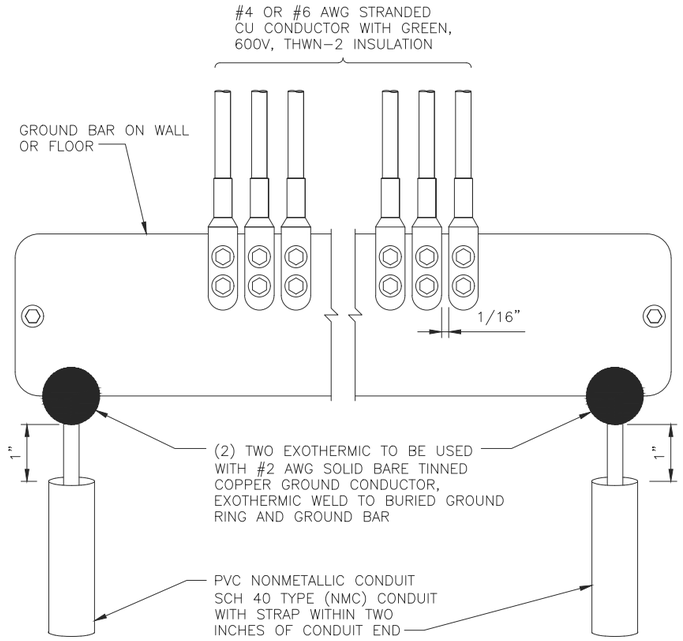
SUBMITTALS

#	DATE	DESCRIPTION	BY
A	09/16/19	FOR CONSTRUCTION	BN
B	10/24/19	FOR CONSTRUCTION	NL
C	10/28/19	FOR CONSTRUCTION	BM
0	11/18/19	FOR CONSTRUCTION	BM

SITE NAME
CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
GROUNDING PLAN & LEGEND

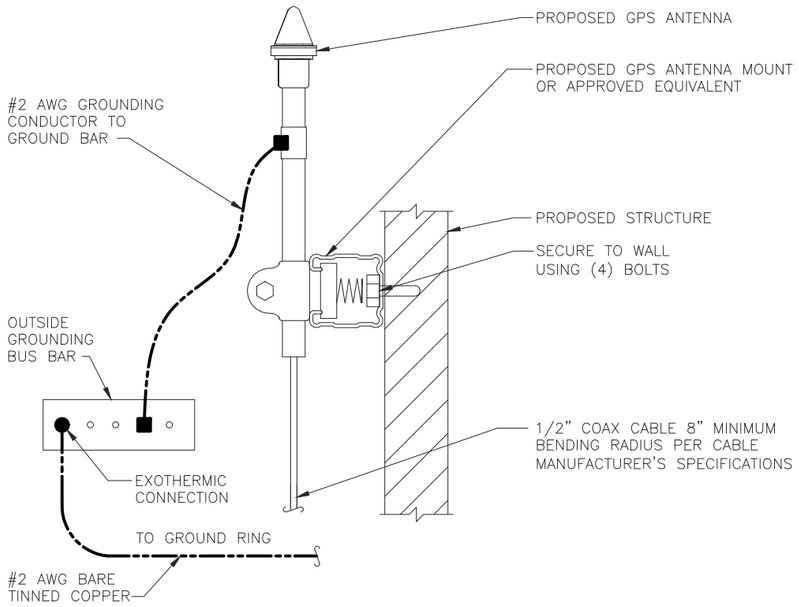
SHEET NUMBER
G1



GROUND BAR DETAIL

NTS

3

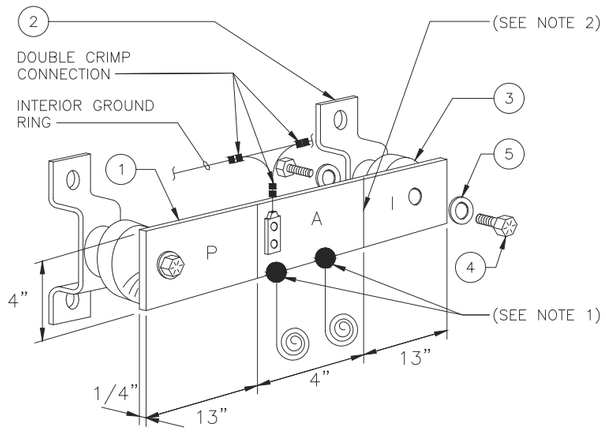


GPS ANTENNA GROUNDING

NTS

3

NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C.			
NO	REQUIRED	PART NUMBER	DESCRIPTION
1	1	1/4"x4"x30"	SOLID GROUND BAR
2	2	A-6056	WALL MOUNTING BRACKET
3	2	3061-4	INSULATORS
4	4	3012-1	5/8"-11x1" H.H.C.S.
5	4	3015-8	5/8" LOCKWASHER



MASTER GROUND BAR DETAIL

NTS

2

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PROTECTORS

(EC) CELL REFERENCE GROUND BAR (IF COLLOCATED)
(EC) GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
(EC) TELCO GROUND BAR (#2 AWG)
(EC) COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (3/0)
(EC) FIBER GROUND BAR (#2 AWG)
(EC) POWER ROOM REFERENCE GROUND BAR (#2 AWG)
(AT&T) RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS

(EC) INTERIOR GROUND RING (#2 AWG)
(EC) EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
(EC) METALLIC COLD WATER PIPE (IF AVAILABLE) (1/0 AWG)
(EC) BUILDING STEEL (IF AVAILABLE) (1/0 AWG)

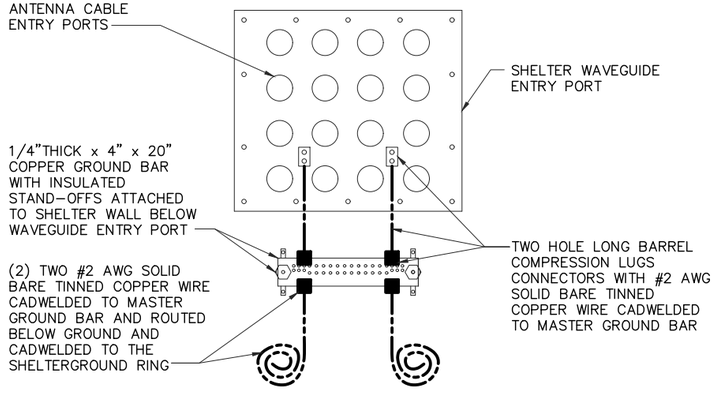
SECTION "I" – ISOLATED GROUND ZONE

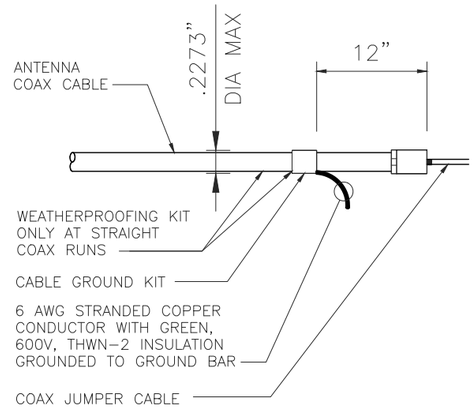
(AT&T) ALL ISOLATED GROUND REFERENCE
(AT&T) GROUND WINDOW BAR

DETAIL NOTES:

1. EXOTHERMICALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.

2. THE INSTALLER SHALL USE PERMANENT MARKER TO DRAW THE LIKE BETWEEN SECTION AND LABEL EACH SECTION ("P", "A", "I" WITH 1" HIGH LETTERS





COAX GROUND KIT DETAIL

SCALE: N.T.S.

1

CLIENT:

427 BORDEN AVE
SYCAMORE IL 60178
PH: (815) 991 9560 FAX: 815 991 9468
MOBILE: 815 378 6118

Nicor Gas
1844 FERRY ROAD
NAPERVILLE IL 60563

A&E:

A Nokia company
540 W. MADISON ST.
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STATE OF ILLINOIS
GREGORY PHASSOS
#001-016382
LICENSED AR
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SUBMITTALS

#	DATE	DESCRIPTION	BY
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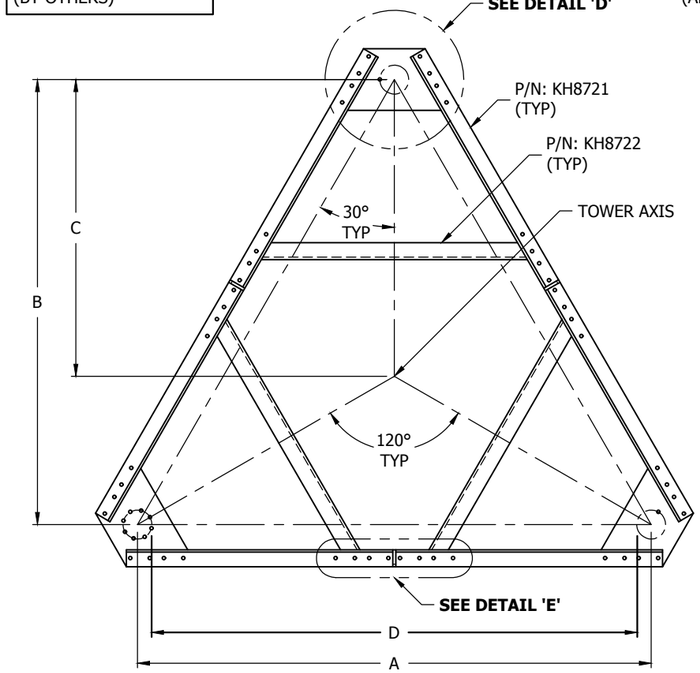
B	10/24/19	FOR CONSTRUCTION	NL
C	10/28/19	FOR CONSTRUCTION	BM
0	11/18/19	FOR CONSTRUCTION	BM

SITE NAME
CRYSTAL LAKE
SELF SUPPORT TOWER
300 TERRA COTTA AVENUE
CRYSTAL LAKE, IL 60014

SHEET TITLE
GROUNDING DETAILS

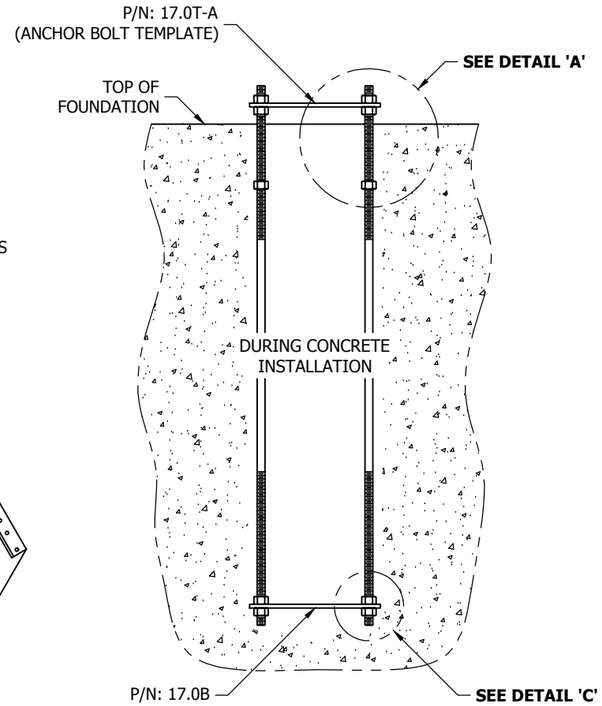
SHEET NUMBER
G2

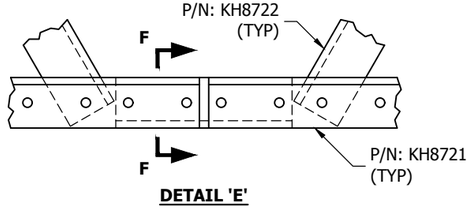
LEVELING BLOCKS TO BE LOCATED AS REQUIRED (BY OTHERS)



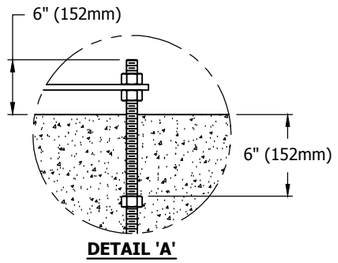
PLAN VIEW
N.T.S.

A	B	C	D
27'-8 1/8" (8.436M)	23'-11 5/8" (7.306M)	15'-11 3/4" (4.870M)	26'-6 5/8" (8.093M)

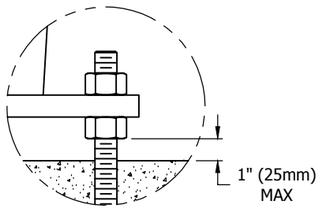




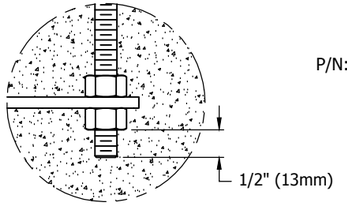
DETAIL 'E'



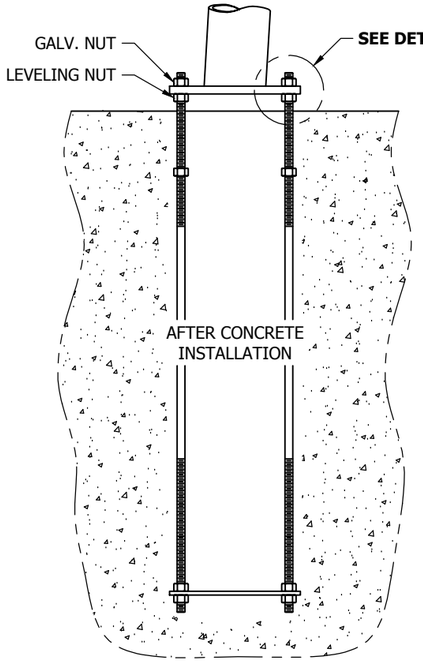
DETAIL 'A'

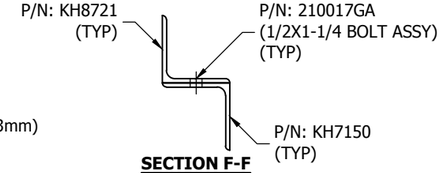


DETAIL 'B'

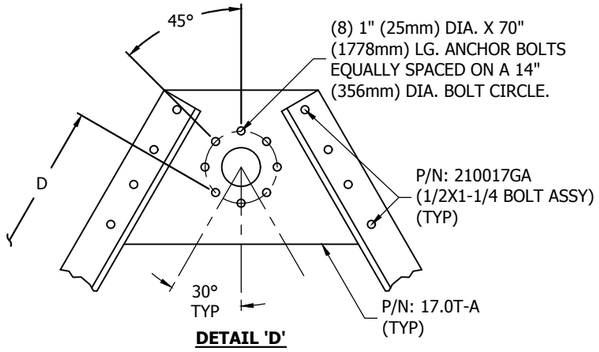


DETAIL 'C'





SECTION F-F



DETAIL 'D'

ANCHOR BOLT INSTALLATION TOLERANCES

1. FACE SPREAD DIMENSION CENTER-TO-CENTER OF ANCHOR BOLT CIRCLES - PLUS OR MINUS 1/16" (2mm) OR 1/16"(2mm) PER 20 FT. (6m) OF FACE SPREAD.
2. MAXIMUM DIFFERENCE BETWEEN ANY TWO FOUNDATION ELEVATIONS - 1/2" (13mm).
3. CONCRETE DIMENSIONS - PLUS OR MINUS 1" (25mm).
4. DEPTH OF FOUNDATION - PLUS 3" (76mm) OR MINUS 0".
5. DRILLED FOUNDATIONS OUT OF PLUMB - 1.0 DEGREE.
6. REINFORCING STEEL PLACEMENT - PER A.C.I. 301.
7. PROJECTION OF EMBEDMENTS - PLUS OR MINUS 1/8" (3mm).
8. VERTICAL EMBEDMENTS OUT OF PLUMB -1/2 DEGREE.
9. MAXIMUM DISTANCE FROM CENTERLINE OF ANCHOR BOLTS TO CENTERLINE OF FOUNDATION - 1/24 OF PIER DIAMETER UP TO A MAXIMUM OF 2" (50mm).
10. ANCHOR BOLT SPACING - 1/16" (2mm).
11. ANCHOR BOLT CIRCLE ORIENTATION - 1/4 DEGREE.
12. ANCHOR BOLT CIRCLE DIAMETER - PLUS OR MINUS 1/16" (2mm).

!!! WARNING !!!

- ENSURE DIMENSIONS A-D ARE CORRECT ON ALL FACES PRIOR TO PLACING CONCRETE AND THAT THE NUMBER AND SIZE OF ANCHOR BOLTS MATCHES THE STRUCTURE DRAWING.
- AFTER ANCHOR BOLTS ARE INSTALLED AND CONCRETE HAS TAKEN ITS INITIAL SET, ANCHOR BOLTS MUST NOT BE MOVED, BENT OR REALIGNED IN ANY MANNER.

ANCHOR BOLT TIGHTENING NOTES

1. NUTS, THREADS AND ALL NUT CONTACT SURFACES MUST BE CLEANED AND LUBRICATED AFTER CONCRETE INSTALLATION AND IMMEDIATELY BEFORE INSTALLATION OF LEVELING AND TOP NUTS. NUTS MUST BE FREE TO MOVE THROUGHOUT THE ENTIRE LENGTH OF THE ANCHOR BOLT THREAD PROJECTION.
2. AFTER LEVELING THE LEVELING NUTS AND SETTING THE BASE PLATE, TOP NUTS MUST BE INSTALLED IN AN INCREMENTAL STAR TIGHTENING SEQUENCE TO A SNUG TIGHT CONDITION FOLLOWED BY TIGHTENING THE LEVELING NUTS IN A SIMILAR PATTERN TO A SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED BY THE TIGHTNESS OBTAINED WITH THE EFFORT OF ONE PERSON WITH A 12 INCH NOMINAL LENGTH WRENCH.
3. AFTER ALL TOP AND LEVELING NUTS ARE TIGHTENED TO A SNUG TIGHT CONDITION, TOP NUTS SHALL BE FURTHER TIGHTENED IN AN INCREMENTAL STAR PATTERN WITH THE LEVELING NUTS SECURED TO RESULT IN A 1/3 TOP NUT ROTATION FOR ANCHOR BOLTS 1-1/2 INCHES OR LESS IN DIAMETER, OR A 1/6 TOP NUT ROTATION FOR ANCHOR BOLTS GREATER THAN 1-1/2 INCHES IN DIAMETER.

NOTES

1. ALL ANCHOR BOLTS MUST MEET OR EXCEED REQUIREMENTS OF A.S.T.M. F1554-S2, S5 GRADE 105.
2. ANCHOR BOLTS ARE GALVANIZED FULL LENGTH UNLESS OTHERWISE SPECIFIED.
3. SPECIAL CARE MUST BE TAKEN WHEN LIFTING ANCHOR BOLT CLUSTER TO PREVENT ANCHOR BOLT TEMPLATE DISTORTION.
4. ANCHOR BOLT ASSEMBLY MUST BE ADEQUATELY SUPPORTED AND RESTRAINED TO PREVENT MOVEMENT OF THE CLUSTER DURING CONCRETE INSTALLATION.
5. IT IS THE RESPONSIBILITY OF THE FOUNDATION CONTRACTOR TO VERIFY THAT THE CORRECT ANCHOR BOLT TEMPLATE AND FOUNDATION SHOWN ON RESPECTIVE SITE DRAWINGS ARE BEING USED.
6. IT IS THE RESPONSIBILITY OF THE FOUNDATION DESIGN ENGINEER TO INSURE THAT THE ANCHORAGES PROVIDED ARE COMPATIBLE WITH THE PROPOSED FOUNDATION DESIGNS AND THAT THE CAPACITIES OF THE ANCHORAGES ARE NOT LIMITED BY THE STRENGTH OF THE FOUNDATIONS.

!! WARNING !!

PRIOR TO PLACING CONCRETE:

- **CHECK THAT THE TEMPLATE ANCHOR BOLT CIRCLE MATCHES THE ANCHOR BOLT CIRCLE SHOWN ON THE STRUCTURAL DRAWING.**
- **CALL ROHN (309)-566-3000 FOR ANY DISCREPANCY.**

FILE NO.

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP
1	UPDATED TO NEW STANDARDS DATE: 08/13/19	CEJ	JDM	DWG

ROHN® PRODUCTS LLC
PO BOX 5999
PEORIA, IL 61601-5999
TOLL FREE 800-727-ROHN

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ANCHOR BOLT LAYOUT
1" [25MM] BOLTS (24H2768FST)

DWN:	CHK'D:	DATE:
CEJ	KTL	08/30/16

ENG'R:	SHEET #:
DWG	

PRJ. ENG'R:	PRJ. MANG'R:
DWG	

DRAWING NO:	REV:
24H2768FST	1

TSTower - v 5.8.4 Tower Analysis Program
(c) 1997-2019 TowerSoft www.TSTower.com

Licensed to: ROHN Products LLC
Peoria, IL

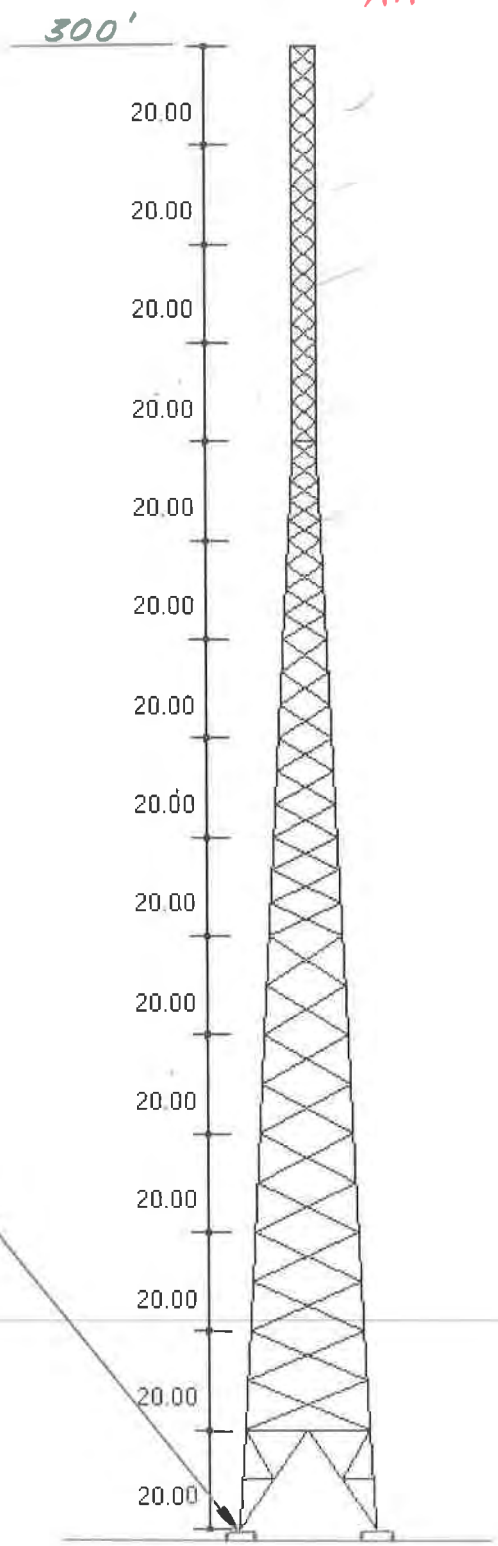
File: W:\Jobs\2019\231203\231203.out
Contract:
Project: 300 FT SSVMW TOWER
Date and Time: 8/7/2019 2:42:22 PM

Revision: 0
Site: CRYSTAL LAKE- IL
Engineer: OH

DESIGN SPECIFICATION

Design Standard: ANSI/TIA-222-G-2005 Add.2
Basic Wind Speed (No Ice) = 90.0 (mph)
Basic Wind Speed (With Ice) = 40.0 (mph)
Design Ice Thickness = 0.75 (in)
Structure Class = II
Exposure Category = C
Topographic Category = 1

Sct.	Length (ft)	Top W. (in)	Bot Width (in)
1	20.00	302.17	332.17
2	20.00	274.33	302.17
3	20.00	250.32	274.33
4	20.00	226.18	250.32
5	20.00	203.90	226.18
6	20.00	178.19	203.90
7	20.00	152.99	178.19
8	20.00	129.02	152.99
9	20.00	104.17	129.02
10	20.00	79.21	104.17
11	20.00	55.20	79.21
12	20.00	55.20	55.20
13	20.00	54.72	55.20
14	20.00	54.25	54.72
15	20.00	54.25	54.25



(8) 1"DIA. x 70"LG. ASTM F1554 GRADE 105 ANCHOR BOLTS PER TOWER LEG - (24) TOTAL

MAXIMUM BASE REACTIONS

Download (Kips)	313.9
Uplift (Kips)	258.2
Shear (Kips)	31.3

O.T.M. 7118.5 FT. KIPS

Section A: PROJECT DATA

Project Title:	300 FT SSVMW TOWER
Customer Name:	SOUTHERN COMPANY SERVICES
Site:	CRYSTAL LAKE- IL
Contract No.:	
Revision:	0
Engineer:	OH
Date:	Aug 7 2019
Time:	02:40:49 PM
Design Standard:	ANSI/TIA-222-G-2005 Addendum 2

GENERAL DESIGN CONDITIONS

Start wind direction:	0.00 (Deg)
End wind direction:	330.00 (Deg)
Increment wind direction:	30.00 (Deg)
Elevation above ground:	0.00(ft)
Gust Response Factor Gh:	0.85
Structure class:	II
Exposure category:	C
Topographic category:	1
Material Density:	490.1(lbs/ft^3)
Young's Modulus:	29000.0(ksi)
Poisson Ratio:	0.30
Weight Multiplier:	1.10

Minimum Bracing Resistance as per 4.4.1

WIND ONLY CONDITIONS:

Basic Wind Speed (No Ice):	90.00(mph)
Directionality Factor Kd:	0.85
Importance Factor I:	1.00
Wind Load Factor:	1.60
Dead Load Factor:	1.20
Dead Load Factor for Uplift:	0.90

WIND AND ICE CONDITIONS:

Basic Wind Speed (With Ice):	40.00(mph)
Directionality Factor Kd:	0.85
Wind Load Importance Factor Iw:	1.00
Ice Thickness Importance Factor Ii:	1.00
Ice Thickness:	0.75(in)
Ice Density:	56.19(lbs/ft^3)
Wind Load Factor:	1.00
Dead Load Factor:	1.20
Ice Load Factor:	1.00

WIND ONLY SERVICEABILITY CONDITIONS:

Serviceability Wind Speed:	60.00(mph)
Directionality Factor Kd:	0.85
Importance Factor I:	1.00
Wind Load Factor:	1.00
Dead Load Factor:	1.00

PATTERN LOADING (IF APPLICABLE) CONDITIONS:

Basic Wind Speed (No Ice):	90.00(mph)
Directionality Factor Kd:	0.85
Importance Factor I:	1.00
Wind Load Factor:	1.60
Dead Load Factor:	1.20
Dead Load Factor for Uplift:	0.90

EARTHQUAKE CONDITIONS:

Site class definition:	D
Spectral response acceleration Ss:	0.128
Spectral response acceleration S1:	0.058
Accelaration-based site coefficient Fa:	1.600
Velocity-based site coefficient Fv:	2.400
Design spectral response acceleration Sds:	0.137
Design spectral response acceleration Sd1:	0.093
Seismic analysis method:	1
Fundamental frequency of structure f1:	0.802
Total seismic shear Vs (Kips) :	1.04

Analysis performed using: TowerSoft Finite Element Analysis Program

File: W:\Jobs\2019\231203\231203.out
Contract:
Project: 300 FT SSVMW TOWER
Date and Time: 8/7/2019 2:42:22 PM

Revision: 0
Site: CRYSTAL LAKE- IL
Engineer: OH

Section B: STRUCTURE GEOMETRY

TOWER GEOMETRY

Cross-Section	Height (ft)	Tot Height (ft)	# of Section	Bot Width (in)	Top Width (in)
Triangular	300.00	300.00	15	332.17	54.25

SECTION GEOMETRY

Sec #	Sec. Name	Elevation Bottom (ft)	Elevation Top (ft)	Widths Bottom (in)	Widths Top (in)	Masses Legs (lbs)	Masses Brcg. (lbs)	Masses Sec.Brc (lbs)	Masses Int.Brc (lbs)	Masses Sect. (lbs)	Masses Database (lbs)	Brcg. Clear. (in)
15	R-6NST	280.00	300.00	54	54	243	270	0	0	513	553	0.787
14	R-6NST	260.00	280.00	55	54	243	244	0	0	487	553	0.787
13	R-6N11	240.00	260.00	55	55	382	245	0	0	627	714	0.787
12	R-6N329	220.00	240.00	55	55	678	424	0	0	1103	851	0.787
11	R-7N896	200.00	220.00	79	55	679	512	0	0	1191	1144	0.787
10	R-8N128	180.00	200.00	104	79	828	509	0	0	1337	1336	0.787
9	R-9N188	160.00	180.00	129	104	992	565	0	0	1557	1775	0.787
8	R-10N136	140.00	160.00	153	129	1374	820	0	0	2194	2500	0.787
7	R-11N19	120.00	140.00	178	153	1375	930	0	0	2305	2626	0.787
6	R-12N52	100.00	120.00	204	178	1892	921	0	0	2813	3205	0.787
5	R-13N19	80.00	100.00	226	204	1892	1327	0	0	3219	3664	0.787
4	R-14N12	60.00	80.00	250	226	1892	1688	0	0	3580	4081	0.787
3	R-15N1	40.00	60.00	274	250	1892	2096	0	0	3988	4546	0.787
2	R-16NH24MW	20.00	40.00	302	274	2872	2269	0	0	5141	5873	0.787
1	R-MWK12	0.00	20.00	332	302	2873	1410	448	497	5228	6420	0.787
Total Mass:						20107	14231	448	497	35283	39841	

PANEL GEOMETRY

Sec#	Pnl#	Type	SecBrcg	Mid. Horiz Continuous	Horiz	Height (ft)	Bottom Width (in)	Top Width (in)	Plan Bracing	Hip Bracing	Gusset Plate Area (ft^2)	Gusset Plate Weight (lbs)
15	5	X	(None)		Yes	4.0	54.3	54.3	(None)	(None)	0.300	0.00
15	4	X	(None)		None	4.0	54.3	54.3	(None)	(None)	0.604	0.00
15	3	X	(None)		None	4.0	54.3	54.3	(None)	(None)	0.604	0.00
15	2	X	(None)		None	4.0	54.3	54.3	(None)	(None)	0.604	0.00
15	1	X	(None)		None	4.0	54.3	54.3	(None)	(None)	0.604	0.00
14	5	X	(None)		None	4.0	54.3	54.3	(None)	(None)	0.604	0.00
14	4	X	(None)		None	4.0	54.4	54.3	(None)	(None)	0.604	0.00
14	3	X	(None)		None	4.0	54.5	54.4	(None)	(None)	0.604	0.00
14	2	X	(None)		None	4.0	54.6	54.5	(None)	(None)	0.604	0.00
14	1	X	(None)		None	4.0	54.7	54.6	(None)	(None)	0.604	0.00
13	5	X	(None)		None	4.0	54.8	54.7	(None)	(None)	0.604	0.00
13	4	X	(None)		None	4.0	54.9	54.8	(None)	(None)	0.604	0.00
13	3	X	(None)		None	4.0	55.0	54.9	(None)	(None)	0.604	0.00
13	2	X	(None)		None	4.0	55.1	55.0	(None)	(None)	0.604	0.00
13	1	X	(None)		None	4.0	55.2	55.1	(None)	(None)	0.604	0.00
12	5	X	(None)		None	4.0	55.2	55.2	(None)	(None)	0.604	0.00
12	4	X	(None)		None	4.0	55.2	55.2	(None)	(None)	0.604	0.00
12	3	X	(None)		None	4.0	55.2	55.2	(None)	(None)	0.604	0.00
12	2	X	(None)		None	4.0	55.2	55.2	(None)	(None)	0.604	0.00
12	1	X	(None)		None	4.0	55.2	55.2	(None)	(None)	0.604	0.00
11	5	X	(None)		Yes	4.0	60.0	55.2	(None)	(None)	0.300	0.00
11	4	X	(None)		None	4.0	64.8	60.0	(None)	(None)	0.604	0.00
11	3	X	(None)		None	4.0	69.6	64.8	(None)	(None)	0.604	0.00
11	2	X	(None)		None	4.0	74.4	69.6	(None)	(None)	0.604	0.00
11	1	X	(None)		None	4.0	79.2	74.4	(None)	(None)	0.604	0.00
10	4	X	(None)		None	5.0	85.5	79.2	(None)	(None)	0.755	0.00
10	3	X	(None)		None	5.0	91.7	85.5	(None)	(None)	0.755	0.00
10	2	X	(None)		None	5.0	97.9	91.7	(None)	(None)	0.755	0.00

10	1	X	(None)	None	5.0	104.2	97.9	(None)	(None)	0.755	0.00
9	3	X	(None)	None	6.7	112.5	104.2	(None)	(None)	1.006	0.00
9	2	X	(None)	None	6.7	120.7	112.5	(None)	(None)	1.006	0.00
9	1	X	(None)	None	6.7	129.0	120.7	(None)	(None)	1.006	0.00
8	3	X	(None)	None	6.7	137.0	129.0	(None)	(None)	1.006	0.00
8	2	X	(None)	None	6.7	145.0	137.0	(None)	(None)	1.006	0.00
8	1	X	(None)	None	6.7	153.0	145.0	(None)	(None)	1.006	0.00
7	3	X	(None)	None	6.7	161.4	153.0	(None)	(None)	1.006	0.00
7	2	X	(None)	None	6.7	169.8	161.4	(None)	(None)	1.006	0.00
7	1	X	(None)	None	6.7	178.2	169.8	(None)	(None)	1.006	0.00
6	2	X	(None)	None	10.0	191.0	178.2	(None)	(None)	1.509	0.00
6	1	X	(None)	None	10.0	203.9	191.0	(None)	(None)	1.509	0.00
5	2	X	(None)	None	10.0	215.0	203.9	(None)	(None)	1.509	0.00
5	1	X	(None)	None	10.0	226.2	215.0	(None)	(None)	1.509	0.00
4	2	X	(None)	None	10.0	238.2	226.2	(None)	(None)	1.509	0.00
4	1	X	(None)	None	10.0	250.3	238.2	(None)	(None)	1.509	0.00
3	2	X	(None)	None	10.0	262.3	250.3	(None)	(None)	1.509	0.00
3	1	X	(None)	None	10.0	274.3	262.3	(None)	(None)	1.509	0.00
2	2	X	(None)	None	10.0	288.2	274.3	(None)	(None)	1.509	0.00
2	1	X	(None)	None	10.0	302.2	288.2	(None)	(None)	1.509	0.00
1	1	K	2-Subdiv.	Yes	20.0	332.2	302.2	2-Subdiv.	2-Subdiv.	3.018	0.00

MEMBER PROPERTIES

Sec/ Member Pnl	Type	Description	Steel Grade	Conn. Type	Bolt #-Size	Bolt Grade	End Dist.	Edge Dist.	Gusset Thick.	Gusset Grade	Bolt Space	Dble Mem. Stitch Bolt
					(in)		(in)	(in)	(in)		(in)	(in)
(ft)												
15/5	Leg	PIPE 2.375x0.154	A572 gr.50Tension		4-0.625	A325X						
15/5	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
15/5	Horiz	L1 1/2x1 1/2x3/16	A36	Bolted	1-0.500	A325X	0.750	0.750	0.188	A36	1.500	
15/4	Leg	PIPE 2.375x0.154	A572 gr.50Tension		4-0.625	A325X						
15/4	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
15/3	Leg	PIPE 2.375x0.154	A572 gr.50Tension		4-0.625	A325X						
15/3	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
15/2	Leg	PIPE 2.375x0.154	A572 gr.50Tension		4-0.625	A325X						
15/2	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
15/1	Leg	PIPE 2.375x0.154	A572 gr.50Tension		4-0.625	A325X						
15/1	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
14/5	Leg	PIPE 2.375x0.154	A500 gr.CSTension		4-0.625	A325X						
14/5	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
14/4	Leg	PIPE 2.375x0.154	A500 gr.CSTension		4-0.625	A325X						
14/4	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
14/3	Leg	PIPE 2.375x0.154	A500 gr.CSTension		4-0.625	A325X						
14/3	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
14/2	Leg	PIPE 2.375x0.154	A500 gr.CSTension		4-0.625	A325X						
14/2	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
14/1	Leg	PIPE 2.375x0.154	A500 gr.CSTension		4-0.625	A325X						
14/1	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
13/5	Leg	PIPE 2.875x0.203	A500 gr.CSTension		4-0.750	A325X						
13/5	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
13/4	Leg	PIPE 2.875x0.203	A500 gr.CSTension		4-0.750	A325X						
13/4	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
13/3	Leg	PIPE 2.875x0.203	A500 gr.CSTension		4-0.750	A325X						
13/3	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
13/2	Leg	PIPE 2.875x0.203	A500 gr.CSTension		4-0.750	A325X						
13/2	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
13/1	Leg	PIPE 2.875x0.203	A500 gr.CSTension		4-0.750	A325X						
13/1	Diag	L1 1/2x1 1/2x1/8	A36	Bolted	1-0.500	A325N	0.750	0.690	0.188	A36	1.500	
12/5	Leg	PIPE 3.500x0.300	A500 gr.CSTension		4-0.875	A325X						

12/5	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
12/4	Leg	PIPE 3.500x0.300	A500 gr.CSTension		4-0.875	A325X					
12/4	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
12/3	Leg	PIPE 3.500x0.300	A500 gr.CSTension		4-0.875	A325X					
12/3	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
12/2	Leg	PIPE 3.500x0.300	A500 gr.CSTension		4-0.875	A325X					
12/2	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
12/1	Leg	PIPE 3.500x0.300	A500 gr.CSTension		4-0.875	A325X					
12/1	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
11/5	Leg	PIPE 3.500x0.300	A572 gr.50Tension		4-0.875	A325X					
11/5	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
11/5	Horiz	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325X	0.750	0.875	0.188	A36	1.500
11/4	Leg	PIPE 3.500x0.300	A572 gr.50Tension		4-0.875	A325X					
11/4	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
11/3	Leg	PIPE 3.500x0.300	A572 gr.50Tension		4-0.875	A325X					
11/3	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
11/2	Leg	PIPE 3.500x0.300	A572 gr.50Tension		4-0.875	A325X					
11/2	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
11/1	Leg	PIPE 3.500x0.300	A572 gr.50Tension		4-0.875	A325X					
11/1	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
10/4	Leg	PIPE 4x0.318	A500 gr.CSTension		4-0.875	A325X					
10/4	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
10/3	Leg	PIPE 4x0.318	A500 gr.CSTension		4-0.875	A325X					
10/3	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
10/2	Leg	PIPE 4x0.318	A500 gr.CSTension		4-0.875	A325X					
10/2	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
10/1	Leg	PIPE 4x0.318	A500 gr.CSTension		4-0.875	A325X					
10/1	Diag	L1 3/4x1 3/4x3/16	A36	Bolted	1-0.500	A325N	0.750	0.875	0.188	A36	1.500
9/3	Leg	PIPE 4.500x0.337	A500 gr.CSTension		4-1.000	A325X					
9/3	Diag	L2x2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.000	0.188	A36	1.500
9/2	Leg	PIPE 4.500x0.337	A500 gr.CSTension		4-1.000	A325X					
9/2	Diag	L2x2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.000	0.188	A36	1.500
9/1	Leg	PIPE 4.500x0.337	A500 gr.CSTension		4-1.000	A325X					
9/1	Diag	L2x2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.000	0.188	A36	1.500
8/3	Leg	PIPE 5.563x0.375	A500 gr.CSTension		4-1.000	A325X					
8/3	Diag	L2 1/2x2 1/2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.438	0.188	A36	1.500
8/2	Leg	PIPE 5.563x0.375	A500 gr.CSTension		4-1.000	A325X					
8/2	Diag	L2 1/2x2 1/2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.438	0.188	A36	1.500
8/1	Leg	PIPE 5.563x0.375	A500 gr.CSTension		4-1.000	A325X					
8/1	Diag	L2 1/2x2 1/2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.438	0.188	A36	1.500
7/3	Leg	PIPE 5.563x0.375	A500 gr.CSTension		6-1.000	A325X					
7/3	Diag	L2 1/2x2 1/2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.250	0.188	A36	1.500
7/2	Leg	PIPE 5.563x0.375	A500 gr.CSTension		6-1.000	A325X					
7/2	Diag	L2 1/2x2 1/2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.250	0.188	A36	1.500
7/1	Leg	PIPE 5.563x0.375	A500 gr.CSTension		6-1.000	A325X					
7/1	Diag	L2 1/2x2 1/2x3/16	A36	Bolted	1-0.500	A325N	0.750	1.250	0.188	A36	1.500
6/2	Leg	PIPE 6.625x0.432	A500 gr.CSTension		6-1.000	A325X					
6/2	Diag	L3x3x3/16	A36	Bolted	1-0.625	A325N	0.938	1.813	0.250	A36	1.875
6/1	Leg	PIPE 6.625x0.432	A500 gr.CSTension		6-1.000	A325X					
6/1	Diag	L3x3x3/16	A36	Bolted	1-0.625	A325N	0.938	1.813	0.250	A36	1.875
5/2	Leg	PIPE 6.625x0.432	A500 gr.CSTension		6-1.000	A325X					
5/2	Diag	L3x3x1/4	A529 gr.50Bolted		1-0.625	A325X	0.938	1.750	0.250	A36	1.875
5/1	Leg	PIPE 6.625x0.432	A500 gr.CSTension		6-1.000	A325X					
5/1	Diag	L3x3x1/4	A529 gr.50Bolted		1-0.625	A325X	0.938	1.750	0.250	A36	1.875
4/2	Leg	PIPE 6.625x0.432	A500 gr.CSTension		6-1.000	A325X					

4/2	Diag	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	0.938	2.125	0.250	A36	1.875
4/1	Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.000	A325X					
4/1	Diag	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	0.938	2.125	0.250	A36	1.875
3/2	Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.000	A325X					
3/2	Diag	L4x4x1/4	A529 gr.50Bolted	1-0.750	A325X	1.125	2.500	0.375	A36	2.250
3/1	Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.000	A325X					
3/1	Diag	L4x4x1/4	A529 gr.50Bolted	1-0.750	A325X	1.125	2.500	0.375	A36	2.250
2/2	Leg	PIPE 8.625x0.500	A500 gr.CSTension	8-1.000	A325X					
2/2	Diag	L4x4x1/4	A529 gr.50Bolted	1-0.750	A325X	1.125	2.500	0.375	A36	2.250
2/1	Leg	PIPE 8.625x0.500	A500 gr.CSTension	8-1.000	A325X					
2/1	Diag	L4x4x1/4	A529 gr.50Bolted	1-0.750	A325X	1.125	2.500	0.375	A36	2.250
1/1	Leg	PIPE 8.625x0.500	A500 gr.CSTension	8-1.000	A325X					
1/1	Diag	PIPE 2.875x0.203	A500 gr.CSBolted	3-0.750	A325X	1.125	1.437	0.375	A36	2.250
1/1	Horiz	PIPE 2.875x0.203	A500 gr.CSBolted	2-0.750	A325X	1.125	1.437	0.375	A36	1.875
1/1	SecD1	PIPE 2.375x0.154	A500 gr.CSBolted	1-0.625	A325X	0.938	0.938	0.250	A36	1.875
1/1	SecH1	PIPE 1.900x0.145	A500 gr.CSBolted	1-0.625	A325X	0.938	0.938	0.250	A36	1.875
1/1	HipD1	PIPE 2.875x0.203	A500 gr.CSBolted	1-0.625	A325X	0.938	0.938	0.250	A36	1.875
1/1	HipH1	PIPE 1.900x0.145	A500 gr.CSBolted	1-0.625	A325X	0.938	0.938	0.250	A36	1.875
1/1	PlanH1	PIPE 2.375x0.154	A500 gr.CSBolted	1-0.625	A325X	0.938	0.938	0.250	A36	1.875

REVISE DWG

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Contract:
Project: 300 FT SSVMW TOWER
Date and Time: 8/7/2019 2:42:22 PM

Revision: 0
Site: CRYSTAL LAKE- IL
Engineer: OH

Section C: ANTENNA DATA

Structure Azimuth from North: 0

ANTENNAS

Ant No.	Elev. (ft)	Antenna (#) Type	Ant. Azim.	Mount. Radius (ft)	Mount Type	Mount Azim.	Tx Line (#) Type	Mounting Pipe Size (in)	Mounting Pipe Length (ft) Full	Mounting Pipe Length (ft) Shielded	Ka
1	200.00	(1) SD6ft TIA Radome with radome	0	4.50		0					1.00
		Vert. Offset 0.00 (ft)									
2	150.00	(1) SD6ft TIA Radome with radome	180	7.50		240					1.00
		Vert. Offset 0.00 (ft)									

ANTENNA AND MOUNT WIND AREAS AND WEIGHTS

Ant No.	Antenna/Mount	Frontal Bare Area (ft)^2	Lateral Bare Area (ft)^2	Frontal Iced Area (ft)^2	Lateral Iced Area (ft)^2	Weight Bare (lbs)	Weight Iced (lbs)	Frequency GHz	Allowable Gh Signal Loss dB	Mount Ka
1	SD6ft TIA Radome with radome	24.41	3.78	24.41	3.78	140.00	727.79	6.00	10	0.85
2	SD6ft TIA Radome with radome	24.41	3.78	24.41	3.78	140.00	712.25	6.00	10	0.85

Section D: TRANSMISSION LINE DATA

Transmission Lines Position

No.	Bot El (ft)	Top El (ft)	Desc.	Radius (ft)	Az.	Orient.	No.	No. of Rows	Vert.	Antenna	User Ka
1	0.00	300.00	3/8 CABLE	12.50	0.00	0.00	1	1	No		
2	0.00	300.00	RC0.75-Cnd	15.08	60.00	2.00	1	1	No		
3	0.00	280.00	TX Ladder	8.46	60.00	30.00	1	1	No		
4	250.00	280.00	LDF7P-50A	1.53	60.00	30.00	1	1	No		
5	220.00	250.00	LDF7P-50A	1.53	60.00	30.00	3	1	No		
6	0.00	220.00	LDF7P-50A	8.46	60.00	30.00	4	1	No		
7	150.00	200.00	EW63	4.14	60.00	25.00	1	1	No		
8	0.00	150.00	EW63	9.75	60.00	25.00	2	1	No		

Transmission Lines Details

No.	Desc.	Width (in)	Depth (in)	Unit Mass (lb/ft)	Line Spacing (in)	Row Spacing (in)
1	3/8 CABLE	0.38	0.38	1.00	2.750	2.750
2	RC0.75-Cnd	1.05	1.05	1.09	2.750	2.750
3	TX Ladder	4.70	1.50	4.00	2.750	2.750
4	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
5	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
6	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
7	EW63	1.16	2.01	0.51	2.250	2.750
8	EW63	1.16	2.01	0.51	2.250	2.750

Section E: LADDER DATA

Ladder Position

No.	Bot El (ft)	Top El (ft)	Width (in)	Height (in)	Az.	Radius (ft)	Orient.	Part Of Face	Part Of Face for Ice
1	0.00	300.00	14.00	15.00	0.00	12.50	0.00	No	No

Ladder Details

No.	Rung Desc.	Rail Desc.
1	SR 0 5/8	Bar 1 1/2x1/4

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Contract:
Project: 300 FT SSVMW TOWER
Date and Time: 8/7/2019 2:42:22 PM

Revision: 0
Site: CRYSTAL LAKE- IL
Engineer: OH

Section F: POINT LOAD DATA

Structure Azimuth from North:0.00

POINT LOADS

No.	Description	Elev. (ft)	Radius (ft)	Azim. (Deg)	Orient. (Deg)	Vertical Offset (ft)	Tx Line	Comments
1	BEACON & LR	300.00	2.60	0.0	0.0	0.00		
2	(1) DB589-Y, LEG-MT.	280.00	2.75	0.0	0.0	0.00		
3	(1) SC488-SF4SNF, LEG MT.	250.00	2.75	0.0	0.0	0.00		
4	(1) SC488-SF4SNF, LEG-MT.	250.00	2.75	120.0	120.0	0.00		
5	CARRIER LOAD	220.00	1.00	0.0	0.0	0.00		

POINT LOADS WIND AREAS AND WEIGHTS

No.	Description	Frontal Bare Area (ft^2)	Lateral Bare Area (ft^2)	Frontal Iced Area (ft^2)	Lateral Iced Area (ft^2)	Weight Bare (Kips)	Weight Iced (Kips)	Gh
1	BEACON & LR	5.00	5.00	10.00	10.00	0.25	0.50	0.85
2	(1) DB589-Y, LEG-MT.	1.60	1.60	4.90	4.90	0.05	0.10	0.85
3	(1) SC488-SF4SNF, LEG MT.	4.00	4.00	9.60	9.60	0.05	0.15	0.85
4	(1) SC488-SF4SNF, LEG-MT.	4.00	4.00	9.60	9.60	0.05	0.15	0.85
5	CARRIER LOAD	72.00	72.00	137.00	137.00	2.50	7.00	0.85

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Revision: 0
Site: CRYSTAL LAKE- IL
Engineer: OH

Section H: STRUCTURE DISPLACEMENT DATA

Load Combination Max Envelope

Wind Direction Maximum displacements

Node	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert.Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist (Deg)
153	300.0	57.5	59.4	-0.3	2.26	2.33	0.22
150	296.0	55.6	57.4	-0.3	2.26	2.33	0.21
147	292.0	53.7	55.5	-0.3	2.26	2.33	0.21
144	288.0	51.8	53.5	-0.3	2.25	2.32	0.21
141	284.0	49.9	51.6	-0.3	2.25	2.32	0.21
138	280.0	48.1	49.6	-0.3	2.23	2.30	0.20
135	276.0	46.2	47.7	-0.3	2.22	2.29	0.20
132	272.0	44.3	45.8	-0.3	2.18	2.25	0.19
129	268.0	42.5	43.9	-0.3	2.16	2.23	0.19
126	264.0	40.7	42.0	-0.3	2.10	2.17	0.18
123	260.0	38.9	40.2	-0.3	2.07	2.14	0.18
120	256.0	37.2	38.4	-0.3	2.02	2.09	0.17
117	252.0	35.5	36.7	-0.3	1.99	2.06	0.17
114	248.0	33.8	34.9	-0.3	1.92	1.99	0.16
111	244.0	32.2	33.3	-0.3	1.87	1.94	0.16
108	240.0	30.6	-31.6	-0.3	1.78	1.84	0.14
105	236.0	29.2	-30.1	-0.3	1.76	1.82	0.16
102	232.0	27.7	-28.6	-0.3	1.68	1.74	0.13
99	228.0	26.3	-27.1	-0.3	1.64	1.70	0.15
96	224.0	24.9	-25.7	-0.3	1.55	1.60	0.13
93	220.0	23.6	-24.4	-0.3	1.49	1.54	0.14
90	216.0	22.4	-23.1	-0.3	1.38	1.43	0.12
87	212.0	21.2	-21.9	-0.3	1.34	1.39	0.12
84	208.0	20.1	-20.7	-0.3	1.25	1.29	0.10
81	204.0	19.0	-19.6	-0.2	1.19	1.24	0.11
78	200.0	18.0	-18.6	-0.2	1.12	-1.16	0.09
75	195.0	16.9	-17.4	-0.2	1.06	-1.10	0.08
72	190.0	15.8	-16.2	-0.2	0.99	-1.02	0.07
69	185.0	14.7	-15.2	-0.2	0.94	-0.97	0.07
66	180.0	13.7	-14.1	-0.2	0.87	-0.90	0.06
63	173.3	12.5	-12.9	-0.2	0.80	-0.83	0.05
60	166.7	11.4	-11.7	-0.2	0.75	-0.77	0.05
57	160.0	10.4	-10.6	-0.2	0.68	-0.71	0.04
54	153.3	9.4	-9.7	-0.2	0.66	-0.67	0.04
51	146.7	8.5	-8.7	-0.2	0.60	-0.62	0.04
48	140.0	7.6	-7.8	-0.2	0.57	-0.59	0.03
45	133.3	6.8	-7.0	-0.2	0.52	-0.54	0.03
42	126.7	6.1	-6.3	-0.2	0.49	-0.51	0.02
39	120.0	5.4	-5.6	-0.1	0.44	-0.45	0.02
36	110.0	4.5	-4.6	-0.1	0.40	-0.41	0.02
33	100.0	3.7	-3.8	-0.1	0.36	-0.37	0.01
30	90.0	2.9	-3.0	-0.1	0.31	-0.32	0.01
27	80.0	2.3	-2.3	-0.1	0.28	-0.28	0.01
24	70.0	1.7	-1.7	-0.1	0.22	-0.23	0.01
21	60.0	1.2	-1.2	-0.1	0.19	-0.20	0.01
18	50.0	0.8	-0.8	-0.1	0.13	-0.14	0.01
15	40.0	0.5	-0.5	0.0	0.12	-0.12	0.01
12	30.0	0.3	0.3	0.0	0.08	-0.08	0.01
8	20.0	0.1	0.1	0.0	0.03	0.03	0.00
3	0.0	0.0	0.0	0.0	0.00	0.00	0.00

Load Combination Wind Only - Serviceability

Wind Direction Maximum displacements

Node	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert.Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist (Deg)

153	300.0	16.2	16.6	-0.1	0.64	0.65	0.06
150	296.0	15.7	16.0	-0.1	0.64	0.65	0.06
147	292.0	15.1	15.5	-0.1	0.64	0.65	0.06
144	288.0	14.6	14.9	-0.1	0.64	0.65	0.06
141	284.0	14.1	14.4	-0.1	0.64	0.65	0.06
138	280.0	13.5	13.9	-0.1	0.63	0.64	0.06
135	276.0	13.0	13.3	-0.1	0.63	0.64	0.06
132	272.0	12.5	12.8	-0.1	0.62	0.63	0.05
129	268.0	12.0	12.3	-0.1	0.61	0.62	0.05
126	264.0	11.5	11.7	-0.1	0.59	0.61	0.05
123	260.0	11.0	11.2	-0.1	0.58	0.60	0.05
120	256.0	10.5	10.7	-0.1	0.57	0.58	0.05
117	252.0	10.0	10.2	-0.1	0.56	0.57	0.05
114	248.0	9.5	9.8	-0.1	0.54	0.55	0.04
111	244.0	9.1	9.3	-0.1	0.53	0.54	0.05
108	240.0	8.6	-8.8	-0.1	0.50	0.51	0.04
105	236.0	8.2	-8.4	-0.1	0.50	0.51	0.04
102	232.0	7.8	-8.0	-0.1	0.47	0.48	0.04
99	228.0	7.4	-7.6	-0.1	0.46	0.47	0.04
96	224.0	7.0	-7.2	-0.1	0.44	0.45	0.04
93	220.0	6.6	-6.8	-0.1	0.42	0.43	0.04
90	216.0	6.3	-6.5	-0.1	0.39	0.40	0.03
87	212.0	6.0	-6.1	-0.1	0.38	0.39	0.03
84	208.0	5.6	-5.8	-0.1	0.35	0.36	0.03
81	204.0	5.4	-5.5	-0.1	0.34	0.35	0.03
78	200.0	5.1	-5.2	-0.1	0.31	-0.32	0.03
75	195.0	4.7	-4.9	-0.1	0.30	-0.31	0.02
72	190.0	4.4	-4.5	-0.1	0.28	-0.29	0.02
69	185.0	4.1	-4.2	-0.1	0.26	-0.27	0.02
66	180.0	3.9	-4.0	-0.1	0.24	-0.25	0.02
63	173.3	3.5	-3.6	-0.1	0.23	-0.23	0.01
60	166.7	3.2	-3.3	-0.1	0.21	-0.22	0.01
57	160.0	2.9	-3.0	-0.1	0.19	-0.20	0.01
54	153.3	2.6	-2.7	-0.1	0.18	-0.19	0.01
51	146.7	2.4	-2.4	-0.1	0.17	-0.17	0.01
48	140.0	2.2	-2.2	-0.1	0.16	-0.16	0.01
45	133.3	1.9	-2.0	-0.1	0.15	-0.15	0.01
42	126.7	1.7	-1.8	0.0	0.14	-0.14	0.01
39	120.0	1.5	-1.6	0.0	0.12	-0.13	0.01
36	110.0	1.3	-1.3	0.0	0.11	-0.11	0.01
33	100.0	1.0	-1.1	0.0	0.10	-0.10	0.00
30	90.0	0.8	-0.8	0.0	0.09	-0.09	0.00
27	80.0	0.6	-0.7	0.0	0.08	-0.08	0.00
24	70.0	0.5	-0.5	0.0	0.06	-0.06	0.00
21	60.0	0.3	-0.4	0.0	0.06	-0.06	0.00
18	50.0	0.2	-0.2	0.0	0.04	-0.04	0.00
15	40.0	0.2	-0.2	0.0	0.03	-0.03	0.00
12	30.0	0.1	0.1	0.0	0.02	-0.02	0.00
8	20.0	0.0	0.0	0.0	0.01	0.01	0.00
3	0.0	0.0	0.0	0.0	0.00	0.00	0.00

Section J: ANTENNA DISPLACEMENT DATA

Load Combination Max Envelope

Wind Direction Maximum displacements

Ant.	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert.Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist Tot (Deg)
1	200.00	18.0	-18.6	-0.2	1.12	-1.16	0.09
2	150.00	8.9	-9.2	-0.2	0.63	-0.65	0.03

Load Combination Wind Only - Serviceability

Wind Direction Maximum displacements

Ant.	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert.Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist Tot (Deg)	Allow. (Deg)
1	200.00	5.1	-5.2	-0.1	0.31	-0.32	0.03	1.48
2	150.00	2.5	-2.6	-0.1	0.18	-0.18	0.01	1.48

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Engineer: OH

Section L: STRENGTH ASSESSMENT SORTED DATA

Load Combination Max Envelope
Wind Direction Maximum

Sec	Pnl	Elev. (ft)	MType	Desc.	Len (ft)	kl/r	Gov. comp. cap. (Kips)	Gov. tens. cap. (Kips)	Max Compr. (Kips)	Max Tens. (Kips)	Asses. Ratio
15	5	296.00	Leg	PIPE 2.375x0.154	4.00	54.9	39.0	48.7	0.7	0.2	0.02
15	4	292.00	Leg	PIPE 2.375x0.154	4.00	61.9	36.8	48.7	1.1	0.6	0.03
15	3	288.00	Leg	PIPE 2.375x0.154	4.00	61.9	36.8	48.7	2.0	1.4	0.06
15	2	284.00	Leg	PIPE 2.375x0.154	4.00	61.9	36.8	48.7	3.2	2.5	0.09
15	1	280.00	Leg	PIPE 2.375x0.154	4.00	51.7	40.0	48.7	4.9	4.0	0.12
14	5	276.00	Leg	PIPE 2.375x0.154	4.00	54.9	39.0	48.6	6.8	5.7	0.18
14	4	272.00	Leg	PIPE 2.375x0.154	4.00	61.9	36.7	48.6	9.5	7.9	0.26
14	3	268.00	Leg	PIPE 2.375x0.154	4.00	61.9	36.7	48.6	12.3	10.4	0.34
14	2	264.00	Leg	PIPE 2.375x0.154	4.00	61.9	36.7	48.6	15.8	13.5	0.43
14	1	260.00	Leg	PIPE 2.375x0.154	4.00	51.7	40.0	48.6	19.5	16.7	0.49
13	5	256.00	Leg	PIPE 2.875x0.203	4.00	45.6	65.7	76.5	23.8	20.5	0.36
13	4	252.00	Leg	PIPE 2.875x0.203	4.00	51.4	63.1	76.5	28.4	24.5	0.45
13	3	248.00	Leg	PIPE 2.875x0.203	4.00	51.4	63.1	76.5	33.6	29.1	0.53
13	2	244.00	Leg	PIPE 2.875x0.203	4.00	51.4	63.1	76.5	39.3	34.2	0.62
13	1	240.00	Leg	PIPE 2.875x0.203	4.00	43.0	66.9	76.5	45.7	39.9	0.68
12	5	236.00	Leg	PIPE 3.500x0.300	4.00	37.9	122.3	135.9	52.4	45.8	0.43
12	4	232.00	Leg	PIPE 3.500x0.300	4.00	42.3	119.2	135.9	59.9	52.4	0.50
12	3	228.00	Leg	PIPE 3.500x0.300	4.00	42.3	119.2	135.9	67.6	59.3	0.57
12	2	224.00	Leg	PIPE 3.500x0.300	4.00	42.3	119.2	135.9	76.1	66.8	0.64
12	1	220.00	Leg	PIPE 3.500x0.300	4.00	35.7	123.8	135.9	84.9	74.7	0.69
11	5	216.00	Leg	PIPE 3.500x0.300	4.01	37.9	122.4	136.0	92.1	80.2	0.75
11	4	212.00	Leg	PIPE 3.500x0.300	4.01	42.3	119.3	136.0	96.8	84.3	0.81
11	3	208.00	Leg	PIPE 3.500x0.300	4.01	42.3	119.3	136.0	100.4	87.6	0.84
11	2	204.00	Leg	PIPE 3.500x0.300	4.01	42.3	119.3	136.0	104.7	91.4	0.88
11	1	200.00	Leg	PIPE 3.500x0.300	4.01	35.7	123.9	136.0	108.2	94.6	0.87
10	4	195.00	Leg	PIPE 4x0.318	5.01	42.2	145.4	165.6	112.7	98.5	0.78
10	3	190.00	Leg	PIPE 4x0.318	5.01	46.0	141.9	165.6	117.5	102.5	0.83
10	2	185.00	Leg	PIPE 4x0.318	5.01	46.0	141.9	165.6	122.4	106.6	0.86
10	1	180.00	Leg	PIPE 4x0.318	5.01	40.3	147.0	165.6	127.0	110.5	0.86
9	3	173.33	Leg	PIPE 4.500x0.337	6.68	50.9	164.2	198.4	132.5	115.2	0.81
9	2	166.67	Leg	PIPE 4.500x0.337	6.68	54.3	160.0	198.4	138.6	120.3	0.87
9	1	160.00	Leg	PIPE 4.500x0.337	6.68	49.2	166.3	198.4	144.9	125.6	0.87
8	3	153.33	Leg	PIPE 5.563x0.375	6.68	40.9	243.3	220.2	151.2	130.8	0.62
8	2	146.67	Leg	PIPE 5.563x0.375	6.68	43.9	238.8	220.2	157.9	136.3	0.66
8	1	140.00	Leg	PIPE 5.563x0.375	6.68	39.6	245.2	220.2	164.9	142.0	0.67
7	3	133.33	Leg	PIPE 5.563x0.375	6.68	40.9	243.3	275.0	171.5	147.6	0.70
7	2	126.67	Leg	PIPE 5.563x0.375	6.68	43.9	238.8	275.0	178.3	153.2	0.75
7	1	120.00	Leg	PIPE 5.563x0.375	6.68	39.6	245.2	275.0	184.7	158.6	0.75
6	2	110.00	Leg	PIPE 6.625x0.432	10.02	52.7	308.9	330.3	193.0	165.5	0.62
6	1	100.00	Leg	PIPE 6.625x0.432	10.02	51.6	311.5	330.3	202.8	173.5	0.65
5	2	90.00	Leg	PIPE 6.625x0.432	10.01	52.7	308.9	330.3	214.0	182.5	0.69
5	1	80.00	Leg	PIPE 6.625x0.432	10.01	51.6	311.5	330.3	225.1	191.6	0.72
4	2	70.00	Leg	PIPE 6.625x0.432	10.02	52.7	308.9	330.3	237.0	201.1	0.77
4	1	60.00	Leg	PIPE 6.625x0.432	10.02	51.6	311.5	330.3	247.9	209.7	0.80
3	2	50.00	Leg	PIPE 6.625x0.432	10.02	52.7	308.9	330.3	259.3	218.7	0.84
3	1	40.00	Leg	PIPE 6.625x0.432	10.02	51.6	311.5	330.3	270.6	227.4	0.87
2	2	30.00	Leg	PIPE 8.625x0.500	10.02	40.1	510.5	440.4	281.3	235.5	0.55
2	1	20.00	Leg	PIPE 8.625x0.500	10.02	39.2	513.2	440.4	291.8	243.0	0.57
1	1	0.00	Leg	PIPE 8.625x0.500	20.05	40.1	510.5	440.4	298.0	245.8	0.58
15	5	296.00	Diag	L1 1/2x1 1/2x1/8	6.04	110.4	6.1	3.4	0.2	0.2	0.07
15	4	292.00	Diag	L1 1/2x1 1/2x1/8	6.04	110.4	6.1	3.4	0.4	0.4	0.11
15	3	288.00	Diag	L1 1/2x1 1/2x1/8	6.04	110.4	6.1	3.4	0.5	0.5	0.15
15	2	284.00	Diag	L1 1/2x1 1/2x1/8	6.04	110.4	6.1	3.4	0.7	0.6	0.18
15	1	280.00	Diag	L1 1/2x1 1/2x1/8	6.04	110.4	6.1	3.4	0.8	0.8	0.22

14	5	276.00	Diag	L1 1/2x1 1/2x1/8	6.04	110.5	6.1	3.4	1.0	0.9	0.27
14	4	272.00	Diag	L1 1/2x1 1/2x1/8	6.05	110.6	6.1	3.4	1.1	1.1	0.33
14	3	268.00	Diag	L1 1/2x1 1/2x1/8	6.05	110.7	6.1	3.4	1.3	1.2	0.36
14	2	264.00	Diag	L1 1/2x1 1/2x1/8	6.06	110.8	6.1	3.4	1.4	1.5	0.42
14	1	260.00	Diag	L1 1/2x1 1/2x1/8	6.06	110.9	6.1	3.4	1.7	1.6	0.46
13	5	256.00	Diag	L1 1/2x1 1/2x1/8	6.07	110.2	6.1	3.4	1.8	1.8	0.52
13	4	252.00	Diag	L1 1/2x1 1/2x1/8	6.07	110.3	6.1	3.4	2.0	1.9	0.55
13	3	248.00	Diag	L1 1/2x1 1/2x1/8	6.08	110.4	6.1	3.4	2.2	2.1	0.63
13	2	244.00	Diag	L1 1/2x1 1/2x1/8	6.09	110.5	6.1	3.4	2.5	2.3	0.68
13	1	240.00	Diag	L1 1/2x1 1/2x1/8	6.09	110.6	6.1	3.4	2.6	2.6	0.75
12	5	236.00	Diag	L1 3/4x1 3/4x3/16	6.10	99.9	7.9	6.2	2.8	2.7	0.44
12	4	232.00	Diag	L1 3/4x1 3/4x3/16	6.10	99.9	7.9	6.2	3.0	3.0	0.48
12	3	228.00	Diag	L1 3/4x1 3/4x3/16	6.10	99.9	7.9	6.2	3.2	3.1	0.50
12	2	224.00	Diag	L1 3/4x1 3/4x3/16	6.10	99.9	7.9	6.2	3.4	3.4	0.54
12	1	220.00	Diag	L1 3/4x1 3/4x3/16	6.10	99.9	7.9	6.2	3.6	3.5	0.57
11	5	216.00	Diag	L1 3/4x1 3/4x3/16	6.25	105.1	7.9	6.2	2.4	2.3	0.36
11	4	212.00	Diag	L1 3/4x1 3/4x3/16	6.56	109.5	7.9	6.2	2.1	2.3	0.37
11	3	208.00	Diag	L1 3/4x1 3/4x3/16	6.88	114.0	7.9	6.2	2.3	2.2	0.35
11	2	204.00	Diag	L1 3/4x1 3/4x3/16	7.21	118.6	7.9	6.2	2.1	2.3	0.36
11	1	200.00	Diag	L1 3/4x1 3/4x3/16	7.55	124.3	7.9	6.2	2.3	2.1	0.34
10	4	195.00	Diag	L1 3/4x1 3/4x3/16	8.49	140.7	7.1	6.2	2.8	2.7	0.44
10	3	190.00	Diag	L1 3/4x1 3/4x3/16	8.92	148.5	6.4	6.2	2.8	2.7	0.44
10	2	185.00	Diag	L1 3/4x1 3/4x3/16	9.35	156.4	5.7	6.2	2.8	2.7	0.48
10	1	180.00	Diag	L1 3/4x1 3/4x3/16	9.79	164.4	5.2	6.2	2.8	2.7	0.55
9	3	173.33	Diag	L2x2x3/16	11.22	165.2	5.9	6.2	3.1	3.1	0.53
9	2	166.67	Diag	L2x2x3/16	11.79	174.1	5.3	6.2	3.2	3.1	0.61
9	1	160.00	Diag	L2x2x3/16	12.36	183.1	4.8	6.2	3.2	3.2	0.68
8	3	153.33	Diag	L2 1/2x2 1/2x3/16	12.94	151.1	7.9	6.2	3.5	3.4	0.56
8	2	146.67	Diag	L2 1/2x2 1/2x3/16	13.51	158.4	7.9	6.2	3.8	3.8	0.61
8	1	140.00	Diag	L2 1/2x2 1/2x3/16	14.09	165.6	7.4	6.2	4.2	4.2	0.68
7	3	133.33	Diag	L2 1/2x2 1/2x3/16	14.70	173.4	6.8	6.2	4.1	4.1	0.66
7	2	126.67	Diag	L2 1/2x2 1/2x3/16	15.33	181.2	6.2	6.2	4.2	4.3	0.69
7	1	120.00	Diag	L2 1/2x2 1/2x3/16	15.96	189.0	5.7	6.2	4.4	4.4	0.78
6	2	110.00	Diag	L3x3x3/16	18.35	181.1	7.5	7.9	4.9	4.9	0.66
6	1	100.00	Diag	L3x3x3/16	19.26	190.5	6.8	7.9	5.1	5.1	0.76
5	2	90.00	Diag	L3x3x1/4	20.12	198.6	8.2	10.4	6.1	6.2	0.74
5	1	80.00	Diag	L3x3x1/4	20.93	207.0	7.6	10.4	6.5	6.3	0.85
4	2	70.00	Diag	L3 1/2x3 1/2x1/4	21.78	184.6	11.2	10.4	6.1	6.1	0.59
4	1	60.00	Diag	L3 1/2x3 1/2x1/4	22.68	192.5	10.3	10.4	6.4	6.4	0.63
3	2	50.00	Diag	L4x4x1/4	23.59	172.5	14.7	14.1	6.7	6.7	0.48
3	1	40.00	Diag	L4x4x1/4	24.50	179.4	13.6	14.1	7.1	7.0	0.52
2	2	30.00	Diag	L4x4x1/4	25.49	186.1	12.7	14.1	6.4	6.1	0.51
2	1	20.00	Diag	L4x4x1/4	26.56	39.2	21.9	14.1	6.5	6.5	0.46
1	1	0.00	Diag	PIPE 2.875x0.203	24.33	142.8	18.8	65.6	10.4	10.4	0.55
15	5	296.00	Horiz	L1 1/2x1 1/2x3/16	4.52	168.3	4.2	5.6	0.1	0.1	0.02
11	5	216.00	Horiz	L1 3/4x1 3/4x3/16	4.60	143.0	6.8	6.2	1.6	1.5	0.25
1	1	0.00	Horiz	PIPE 2.875x0.203	12.59	152.0	16.6	43.7	6.4	5.8	0.38
1	1	0.00	SecH1	PIPE 1.900x0.145	6.30	121.3	12.3	10.4	5.1	5.1	0.49
1	1	0.00	SecD1	PIPE 2.375x0.154	11.50	175.4	7.9	10.4	5.2	5.2	0.66
1	1	0.00	HipH1	PIPE 1.900x0.145	6.30	121.3	12.3	10.4	0.2	0.2	0.01
1	1	0.00	HipD1	PIPE 2.875x0.203	15.08	191.0	10.5	10.4	0.1	0.1	0.01
1	1	0.00	PlanH1	PIPE 2.375x0.154	12.59	192.0	6.6	10.4	0.0	0.0	0.01

Section N: LEG REACTION DATA

Load Combination Max Envelope
Wind Direction Maximum

Force-Y Download (Kips)	Force-Y Uplift (Kips)	Shear-X (Kips)	Shear-Z (Kips)	Max Shear (Kips)
313.88	258.23			31.31

Load Combination Earthquake
Wind Direction Maximum

Support	Force-Y Download (Kips)	Force-Y Uplift (Kips)	Shear-X (Kips)	Shear-Z (Kips)	Max Shear (Kips)
	25.75	0.00			1.83

File: W:\Jobs\2019\231203\231203.out
Contract:
Project: 300 FT SSVMW TOWER
Date and Time: 8/7/2019 2:42:22 PM

Revision: 0
Site: CRYSTAL LAKE- IL
Engineer: OH

Section O: TOWER FOUNDATION DATA

Load Combination: Max Envelope
Wind Direction: Maximum

Axial Load (Kips)	Shear Load-X (Kips)	Shear Load-Z (Kips)	Total Shear (Kips)	Moment-X (Kipsft)	Moment-Y (Kipsft)	Moment-Z (Kipsft)	Total Moment (Kipsft)
38.16	25.22	43.55	50.33	6158.05	-7.24	-3570.94	7118.50
38.16	25.22	43.55	50.33	6158.05	-7.24	-3570.94	7118.50

Load Combination: Earthquake
Wind Direction: Maximum

Axial Load (Kips)	Shear Load-X (Kips)	Shear Load-Z (Kips)	Total Shear (Kips)	Moment-X (Kipsft)	Moment-Y (Kipsft)	Moment-Z (Kipsft)	Total Moment (Kipsft)
50.86	-1.06	0.00	1.06	0.27	0.00	210.92	210.92
50.86	0.00	-1.06	1.06	-204.30	0.00	6.35	204.40

File no : 231203 Customer: SOUTHERN COMPANY SERVIC Date 08/08/19
By: SWG Description: 300 FT SSVMW TOWER Page 1
Chk: AA 8/8/19 CRYSTAL LAKE, IL Ver. 11/16/01

FACTORED REACTIONS / LEG

COMPRESSION = 313.88 k (8) - 1 " dia A.B. per leg
UPLIFT = 258.23 k f'_c= 4,500 psi
SHEAR = 31.31 k f_y= 60,000 psi

SOIL PARAMETERS

A) Depth neglected for skin friction = Top 5.0 ft
B) Average ultimate skin shear for uplift:
5.0 ft to 6.0 ft depth = 800 psf, and 6.0 ft to 11.0 ft depth = 1000 psf, and 11.0 ft to 23.5 ft depth = 1600 psf, and 23.5 ft to 28.0 ft depth = 2500 psf.
C) Average ultimate skin shear for download:
5.0 ft to 6.0 ft depth = 800 psf, and 6.0 ft to 11.0 ft depth = 1000 psf, and 11.0 ft to 23.5 ft depth = 1600 psf, and 23.5 ft to 28.0 ft depth = 2500 psf.
D) Ultimate net end bearing at 28.0 ft = 18.00 ksf.
E) Groundwater table at 22.0 ft below ground.

USE 4'- 0" DIAMETER AND 28'- 0" DEEP DRILLED PIER WITH 0'- 6" CAP

Perimeter = 12.57 ft Area = 12.57 ft^2

Total Download = 313.88 + [1.2 x 0.15 - 0.75 x 0.120] x 28 x 12.57 =
= 346.1 k

Tension Capacity = 12.57 x (22.5 x 0.15 + 6.0 x 0.09) x 0.90 +
12.57 x (0.800 x 1.0 + 1.000 x 5.0 + 1.600 x 12.5 + 2.500 x 4.5) x 0.75 =
44.3 + 349.3 = 393.6 k
393.6 >= 258.23 OK

Comp. Capacity = 12.57 x 18.00 x 0.75 +
12.57 x (0.800 x 1.0 + 1.000 x 5.0 + 1.600 x 12.5 + 2.500 x 4.5) x 0.75 =
169.7 + 349.3 = 519.0 k
519.0 >= 346.1 OK

LATERAL - SEE ATTACHED CALCULATIONS USING WIGGINS METHOD

Max M = 336.03 ft-k Max V = 37.77 k

REINFORCEMENT - SEE ATTACHED SHAFT PROGRAM

USE 14 - # 9 BARS VERTICAL WITH
4 TIES AT 6" IN TOP 7.0 FT AND AT
12 " IN REST OF PIER
{39.0 in Cage Diameter}

CONCRETE VOLUME = 12.57 x 28.5 / 27 = 13.3 cu yds / pier

```
                    ********************
                    ** WIGGINS METHOD **
          ***********************************************
          **  DETERMINE MAXIMUM LATERAL SOIL PRESSURE  **
          **    AND MAXIMUM MOMENT IN THE SHAFT FOR    **
          **         A DRILLED PIER FOUNDATION         **
          ********** Thu Aug  8 13:35:54 2019 **********
          Ver. 2.3 NT

FILE NO.-  231203
   ENGR.- SWG
  DESCR.- SOUTHERN COMPANY SERVICES 300
```

FORMULAS USED

$$S1 = \frac{6*P*(1+N)}{D*L*(1-N)*(1-N)} \qquad L = (MA/P)+R+E$$

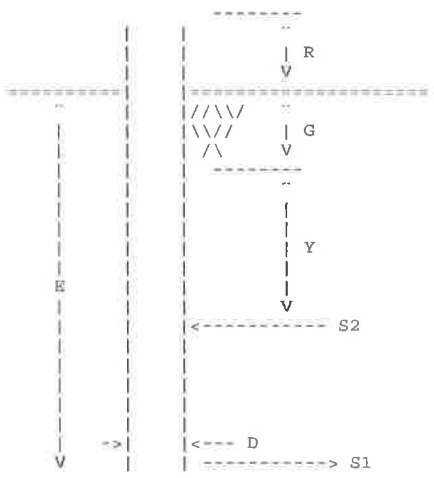
$$S2 = \frac{(N+3)*(N+3)*S1}{8*(N+1)*(N+2)} \qquad NL = (MA/P)+R+G$$

$$K = \frac{1-(N*N)}{2*(2+N)} \qquad N = NL / L$$

$$Y = \frac{L*(1-K)-NL}{2} \qquad SP1 = S1 / E$$

$$M = P*(NL+5/8*Y) \qquad SP2 = S2 / (Y+G)$$

V = S1*D*K*L / 2. or
P whichever is greater



Diameter of Pier = D =	4.00 ft	Equivalent Length of Pier = L =	28.50 ft
Projection Above Grade = R =	.50 ft	Length for NO Soil Resistance = NL =	5.50 ft
Embedment Depth = E =	28.00 ft	Applied Moment at Top of Pier = MA =	.00 ft-k
Depth of Soil Ignored = G =	5.00 ft	Shear at Top of Pier = P =	31.31 kips

MAXIMUM LATERAL SOIL PRESSURES				MAXIMUM VALUES IN SHAFT	
K = .2195	S1 = 3.019 ksf	SP1 = 108 psf/ft		M = 336.03 ft-k	
Y = 8.37 ft	S2 = 1.470 ksf	SP2 = 110 psf/ft		V = 37.77 kips	

•&l8DNAME: SWG FILE NO. 231203 PAGE NO. 1

SHAFT REINFORCING PROGRAM VER. 91.7

DESIGNED BY: SWG
ENG. FILE NO.: 231203
DATE: 08/08/19

CUSTOMER: SOUTHERN COMPANY SERVICES
DESCRIPTION: 300 FT SSVMW TOWERCRYSTAL LAKE, IL

INPUT DATA

C =	313.88 Kips	Vc =	37.77 Kips	Mc =	336.03 Ft-K
T =	258.23 Kips	Vt =	37.77 Kips	Mt =	336.03 Ft-K
Fy =	60.00 Ksi	Fyt =	60.00 Ksi	L.F. =	1.00
H =	48.00 In.	Ds =	39.00 In.	F'c =	4.50 Ksi
U =	1.00	Irs =	1		

*** SHAFT CROSS SECTION IS ROUND ***

SUMMARY OF ANALYSIS

Minimum area of steel req'd. = 11.73 sq.in. (Rhomin = 0.0065)

Maximum steel area limit = 144.76 sq.in. (Rhomax = 0.0800)

CIRCULAR TIE DATA

Vu <.85*Vc/2, shear reinforcement is not required.

Use maximum tie spacing specified in A.C.I. 318
Section 7.10.5 for compression reinforcement.

DEVELOPMENT LENGTH MODIFIERS FOR TENSION AND COMPRESSION BAR DEVELOPMENT

DLMT = MODIFIER FOR TENSION DEVELOPMENT = 1.000

DLMC = MODIFIER FOR COMPRESSION DEVELOPMENT = .313

REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS (12 in. min.)

DLMT = MODIFIER FOR TENSION DEVELOPMENT = 1.000

DLMC = MODIFIER FOR COMPRESSION DEVELOPMENT = .339

REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS (12 in. min.)

Customer: SOUTHERN COMPANY SERVICES
Project: 300 FT SSVMW TOWER
Site: CRYSTAL LAKE- IL
Engr. File: 231203
Build Code: ANSI/TIA-222-G-2005

ROHN Products

Mat Foundation

ver.2.2.14

Design Parameters

	Load Case					
Description	**1**	**2**	**3**	**4**	**5**	**Service**
Total Moment, ft-kips	7,117.79	7,118.50	1,531.75	210.92	209.33	2,006.25
Total Shear, kips	50.32	50.33	10.50	1.06	1.06	14.36
Total Tower Wt, kips	50.88	38.16	117.45	50.86	38.14	42.38
Max. Uplift, kips	254.02	258.23	23.06	.00	.00	62.50
Shear, kips	26.51	26.79	3.38	25.64	25.64	6.92
Max Download, kips	313.88	309.67	103.04	25.75	21.45	97.82
Shear	31.31	31.03	9.07	1.83	1.55	9.57
Soil L.F.	1.20	0.90	1.20	1.20	0.90	1.00
Concrete L.F.	1.20	0.90	1.20	1.20	0.90	1.00

Foundation	
Ht. AGL, ft	0.50
Depth, ft.	9.00
Tower	
Face Width, ft	27.68
Offset, in	48.00
Soil	N/A
Blow Count	N/A
Inplace Unit Wt, pcf	110.00
Submerged Unit Wt, pcf	60.00
Friction Angle, ϕ, deg.	30.00
Cohesion, ksf	N/A
Uplift Angle, deg.	30.00
Water Depth, ft	None
Ult Bearing Capacity, ksf	9.50

Mat	
Thickness, ft	2.00
Width, ft	35.00
EA, in	15.00
Batter, in/ft	0.00

Anchor Bolts	
Diameter, in	1.0000
No.	8
Length, in	70.00
Bolt Circle, in	14.00
Projection, in	6.00
Concrete	
28 Day Strength, ksi	4.50
Dry Unit Wt, pcf	150.00
Wet Unit Wt, pcf	88.00

Pier	
Height, ft	7.50
Diameter, ft	4.00
No. Piers	3
Shape	Round

Pocket	
Diameter, in	N/A
Thickness, ft	N/A

Rebar Fy	
Vertical, ksi	60.00
Circular, ksi	60.00
Horizontal, ksi	60.00

Results

ϕM_N – Parallel Axis	20,180.24	ft-kips
ϕM_N – Diagonal Axis	21,273.17	ft-kips
Moment – Interaction Ratio	0.387	
ϕV_N – Lateral Load	322.84	kips
Lateral Load – Interaction Ratio	0.156	

Final Mat Dimension : 35.00 x 35.00 x 2.00 ft. thick w/ (3) 4.00 ft. Dia. Piers

Final Pocket Dimension : Pockets not required

Total Volume of Concrete : 101.2 yd^3

Designed By: SWG
Date: 03 Sep,19 @ 11:05 AM

Checked By: HA
Date: 9/3/19

Customer: SOUTHERN COMPANY SERVICES
Project: 300 FT SSVMW TOWER
Site: CRYSTAL LAKE- IL
Engr. File: 231203
Build Code: ANSI/TIA-222-G-2005

ROHN Products

Mat Foundation

ver.2.2.14

OTM Capacity

Controlling Load Case: 2 [Wind w/Min. Dead Load]
Foundation Width = 35.00 ft
M_U = 7,802.8 ft-kips

	ϕM_N, ft-kips	x, ft	N	σ_{ur}
Parallel	20,180.2	5.260	0.150	9.50
Diagonal	21,273.2	13.568	0.274	9.50

ϕM_N= 20,180.24 ft-kips IRatio = 0.387
ϕV_N = 322.84 kips IRatio = 0.156

Mat Design

γ_e = 118.89 pcf

Exterior Slab	x, ft	N	σ_R, ksf	P_s kips	P_{su} kips	Moment, ft-kips/ft		Shear, kips/ft	
						DownLoad Side	Uplift Side	Download Side	Uplift Side
Parallel	25.650	0.733	1.86	81.79	0.00	3.83	15.65	2.18	6.71
Diagonal	31.299	0.632	1.86	81.79	0.00	27.17	69.86	6.14	14.08

Interior Slab	Moment, ft-kips/ft		Shear, kips/ft		
	DownLoad Side	Uplift Side	Download Side	Uplift Side	Soil Pressure Termination
	48.94	7.31	6.04	1.81	5.53

Punching Shear	Download			Uplift			Description
	Interior	Edge	Corner	Interior	Edge	Corner	
b_o, ft	20.51	17.58	14.30	17.85	16.25	13.63	2-Way Shear
Vsu, psi	82.21	103.80	137.68	73.17	86.75	113.40	
ϕVc, psi	228.08	228.08	228.08	228.08	228.08	228.08	
IR	0.36	0.46	0.60	0.32	0.38	0.50	
M_{ut}, ft-kips	140.9			120.6			Moment transfer to slab
B_e, ft	8.7			8.3			
M_u, ft-kips/ft	16.3			14.6			
Edge Distances: a = 5.52 ft. b = 3.66 ft. c = 5.51 ft.							

Summary	Max. Value	Utilization
Slab Moment, ft-kips/ft	69.86	0.802
Slab Shear, kips/ft	14.08	0.542
Punching Shear, psi	137.68	0.604
Soil Bearing Required, σ_{UR}, ksf	2.48	0.262

Mat Reinforcement	
Min. Steel Area (Strength)	.701 in^2/ft.
Min. Steel Area (Temperature)	.259 in^2/ft.
Steel Strain Actual	0.017
Minimum Steel Strain Required	0.005

52 - #7 Horizontal bars equally spaced @8.12 in., each way, top and bottom, total of 208, A_s = 0.893 in^2/ft

Designed By: SWG
Date: 03 Sep,19 @ 11:05 AM

Checked By: HA
Date: 9/3/19

Customer:	SOUTHERN COMPANY SERVICES
Project:	300 FT SSVMW TOWER
Site:	CRYSTAL LAKE- IL
Engr. File:	231203
Build Code:	ANSI/TIA-222-G-2005

ROHN Products

Mat Foundation

ver.2.2.14

Pier Design

Controlling Load Case: 2 [Wind w/Min. Dead Load]

C = 309.67 kips	Vc = 31.03 kips	Mc = 232.73 ft-kips
T = 258.23 kips	Vt = 26.79 kips	Mt = 200.93 ft-kips
Fy = 60.00 ksi	Fyt = 60.00 ksi	L.F. = 1.00
H = 48.00 in.	Ds = 39.00 in.	F'c = 4.50 ksi
U = 1.00	Irs = Round	

*** **NOTE**: Pier cross section is Round ***

SUMMARY OF ANALYSIS

Minimum area of steel required	= 9.565 in^2	(Rhomin = 0.0053)
Area of steel provided.	= 10.996 in^2	(Rhoactual= 0.0061)
Maximum steel area limit	= 144.765 in^2	(Rhomax = 0.0800)

(14) #8 Vertical Bars equally spaced w/ #4 Circular Ties @ 6" on center.

CIRCULAR TIE DATA

Vu < 0.85*Vc/2, shear reinforcement is not required

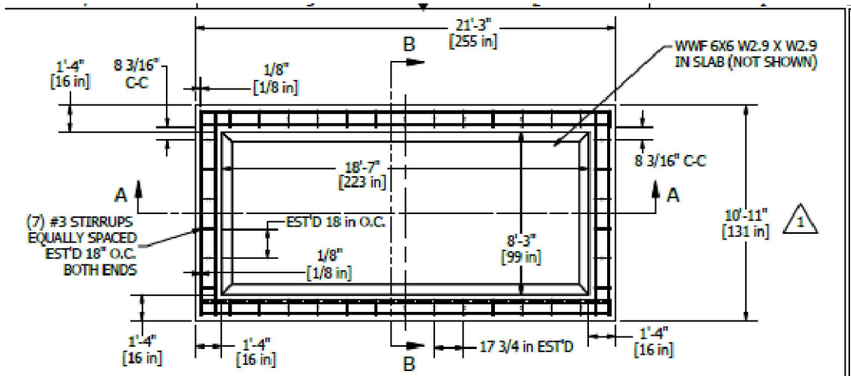
Use maximum tie spacing specified in ACI 318,
Section 7.10.5 for compression reinforcement.

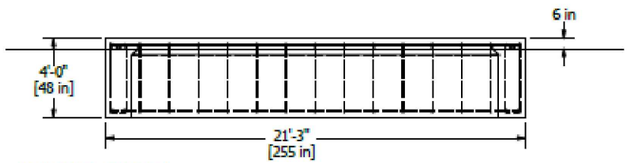
DEVELOPMENT LENGTH MODIFIERS FOR BAR DEVELOPMENT

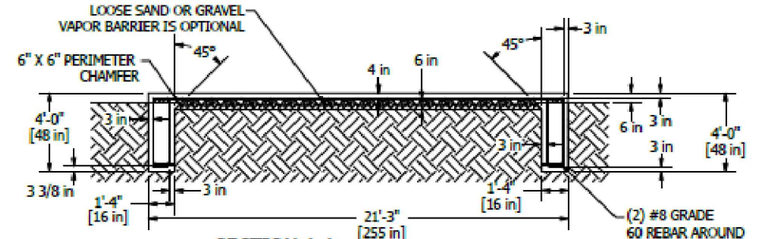
Modifier for tension development = 1.000
Modifier for compression development = 0.149
REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS, (12 in. min.)

Designed By:	SWG	Checked By:	HA
Date:	03 Sep,19 @ 11:05 AM	Date:	9/3/19

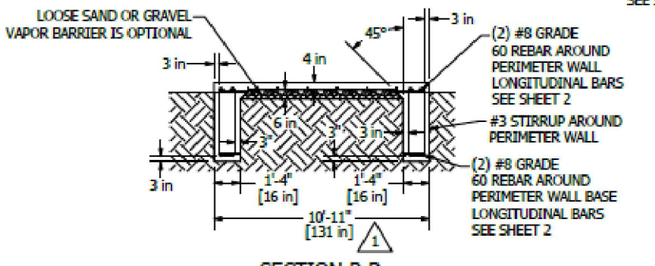
Shelter Plans/ Engineering







SECTION A-A



SECTION B-B

EXPIRES 11-30-2020

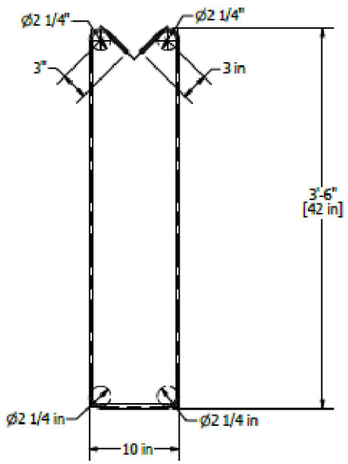
10-30-2019

APPROXIMATE CONCRETE VOLUME = 15 CU.YDS. SEE SHEET 3 FOR FOUNDATION NOTES

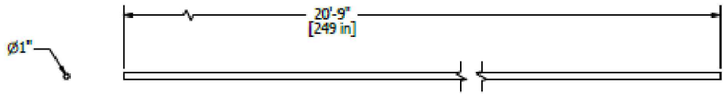
ILLINOIS COA NUMBER: 184.006366-0003

NICOR
300 TERRA COTTA AVE.
CRYSTAL LAKE, IL 60014

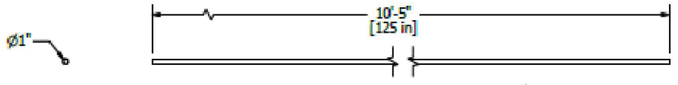
Owner: NICOR	Prepared For: INSTALLATION SERVICES, INC.	Drawn By: JRE 10/30/2019	Engineering by: ERE, LLC Granger, IN USA 1-574-277-0670
		Approved By: JRE 10/30/2019	BUILDING FOUNDATION 11'-8" X 22'-0" SHELTER NICOR CRYSTAL LAKE, IL
PROPRIETARY This drawing is the proprietary property of ERE, LLC and may not be used, adapted, reproduced, copied, or disclosed without the prior written consent of ERE, LLC.		Scale: N.T.S.	REV: * DRAWING NO: CLBDG FND DIVISION: 2 PAGE: 1 OF 3



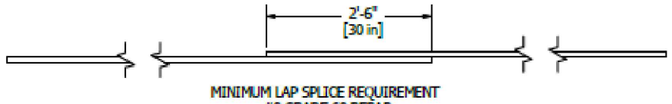
(42) #3 GRADE 60 TIES



(8) #8 GRADE 60
LONGITUDINAL REBAR



(8) #8 GRADE 60 1
TRANSVERSE REBAR



MINIMUM LAP SPLICE REQUIREMENT
#8 GRADE 60 REBAR

REBAR SUMMARY	
QTY	DESCRIPTION
8	LONGITUDINAL BARS
42	TIES
8	TRANSVERSE BARS

ILLINOIS COA NUMBER: 184.006366-0003

NICOR
300 TERRA COTTA AVE.
CRYSTAL LAKE, IL 60014

Owner: NICOR	Prepared For: INSTALLATION SERVICES, INC.	Drawn By: JRE 10/30/2019	Engineering by: ERE, LLC Granger, IN USA 1-574-277-0670
		Approved By: JRE 10/30/2019	BUILDING FOUNDATION 11'-8" X 22'-0" SHELTER NICOR CRYSTAL LAKE, IL
PROPRIETARY This drawing is the proprietary property of ERE, LLC and may not be used, adapted, reproduced, copied, or disclosed without the prior written consent of ERE, LLC.		Scale: N.T.S.	REV: * DRAWING NO: CLBDG FND DIVISION: 2 PAGE: 2 OF 3

NOTES:

1. FOUNDATION SURFACE SHALL BE LEVEL TO WITHIN ± 1/8" PER 10 LINEAL FEET IN ANY DIRECTION.
2. FOUNDATION SHALL BE SQUARE TO WITHIN ± 1/4".
3. BASE FOUNDATION WALL FOOTING SHALL BE PLACED ON UNDISTURBED SOIL.
4. THE ALLOWABLE SOIL BEARING CAPACITY SHALL NOT BE LESS THAN 2500 PSF
5. CONCRETE COMPRESSIVE STRENGTH SHALL NOT BE LESS THAN 3,000 PSI AT 28 DAYS.
6. CONCRETE MIX DESIGN, BATCHING AND CONSTRUCTION PRACTICE SHALL CONFORM TO THE LATEST REVISIONS OF ACI 318, ACI 305R AND ACI 306R.
7. DETAILING FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL COMPLY WITH LATEST REVISION OF ACI 315, AND ACI 318.
8. ALL DISTURBED SOIL AT THE BASE SHALL BE COMPACTED BEFORE PLACEMENT OF CONCRETE. ALL DISTURBED PERIMETER SOIL SHALL BE COMPACTED AFTER PLACEMENT OF CONCRETE.
9. ALL BACKFILL SOIL SHALL BE PLACED IN LOOSE LIFTS OF NO MORE THAN 12" THICK. FILL MATERIAL SHALL BE CLEAN AND FREE OF ORGANIC AND FROZEN MATERIALS OR ANY OTHER DELETERIOUS MATERIALS. COMPACT FILL TO 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D698.
10. ALL CONCRETE SHALL BE PLACED IN AN EXCAVATION FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS.
11. PROVIDE PROPER DRAWING AWAY FROM FOUNDATION AT GRADE.
12. SLAB REINFORCEMENT TO BE LOCATED IN UPPER THIRD OF SLAB.
13. TIE DOWN PLATES MUST BE ENTIRELY ABOVE GRADE.
14. REFER TO MODULAR CONNECTIONS BUILDING "DRAWING STRUCTURAL DWG STD CONC IBC 2015 140 MPH IL SEAL" FOR ALL BUILDING PLACEMENT REQUIREMENTS.
15. FOUNDATION PER RUBINO ENGINEERING INC. GEOTECHNICAL REPORT DATED 2-11-19 (NUMBER G18.162b)
    THE FOUNDATION WAS DESIGNED UTILIZING THE FOLLOWING SOIL PARAMETERS:
    ALLOWABLE BEARING CAPACITY: 2,500 psf
    ANGLE OF INTERNAL FRICTION: 28 deg.
    COHESION = 0 psf
    DRY UNIT WEIGHT OF SOIL: 100 pcf
    NO WATER
16. THE MAXIMUM FLOOR LIVE LOAD SHALL NOT EXCEED 150 psf. BUILDING FLOOR AREA = 257 sq.ft.
17. BUILDING DEAD LOAD = 70 kips INCLUDING EQUIPMENT
18. SEE MODULAR CONNECTIONS, LLC STANDARD PRE-CAST CONCRETE IBC 2015/ASCE 7-10/ACI 318-14 EQUIPMENT SHELTER ANALYSIS, REVISION 1 DATED JULY 27, 2016 FOR BUILDING ENGINEERING REQUIREMENTS.

BUILDING SHALL BE PLACED IN ACCORDANCE WITH MODULAR CONNECTIONS REQUIREMENTS.
REFERENCE STANDARD CONCRETE EQUIPMENT SHELTER FOUNDATION NOTES AND INFORMATION

EXPIRES 11-30-2020

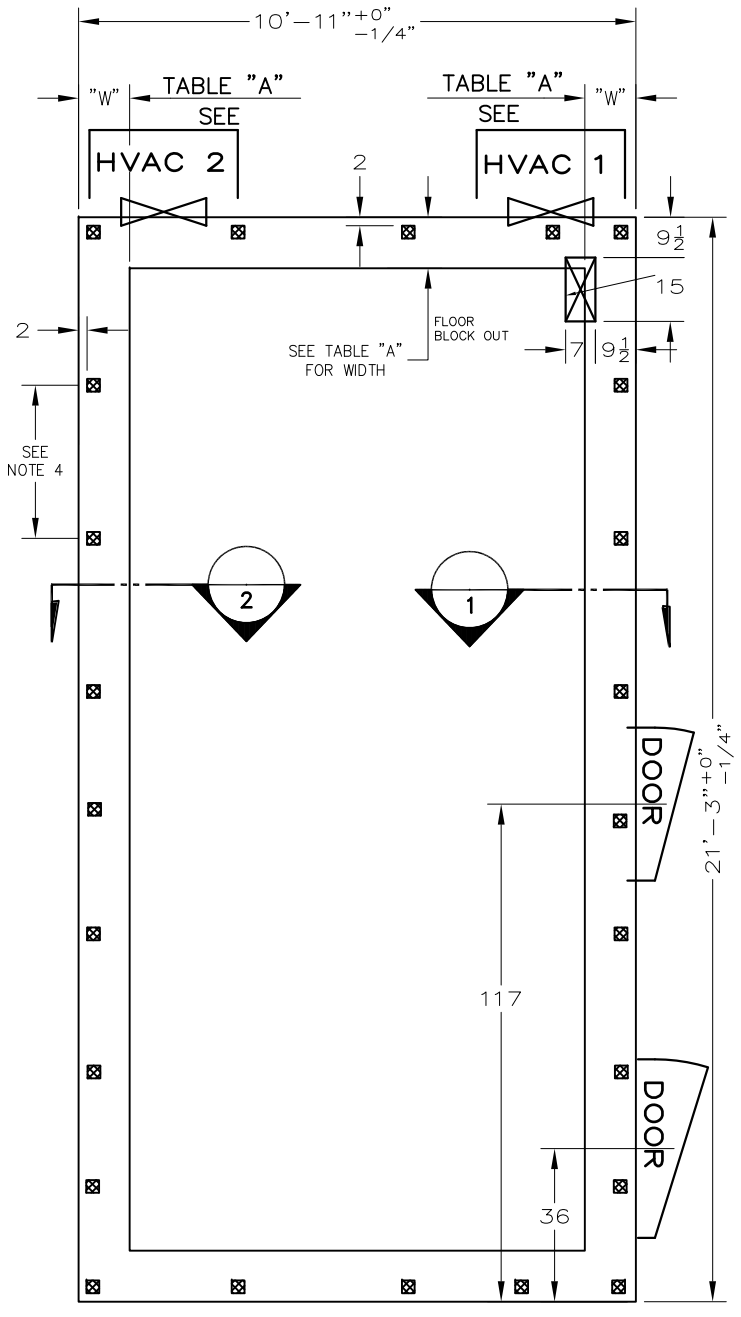
10-30-2019

ILLINOIS COA NUMBER: 184.006366-0003

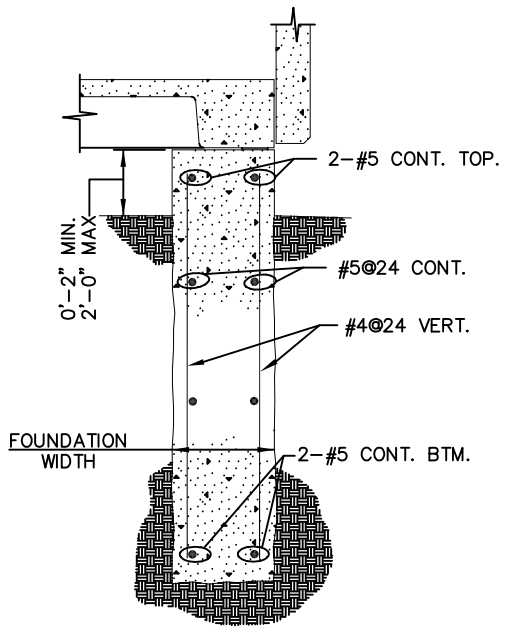
NICOR
300 TERRA COTTA AVE.
CRYSTAL LAKE, IL 60014

REVISION HISTORY			
REV	DESCRIPTION	DATE	SHEET
1	REVISED WIDTH	10/30/2019	1 AND 2
2	REMOVED DUPLICATE NOTE WAS 15	10/31/2019	3

Owner: NICOR	Prepared For: INSTALLATION SERVICES, INC.	Drawn By: JRE 10/30/2019	Engineering by: ERE, LLC Granger, IN USA 1-574-277-0670
		Approved By: JRE 10/30/2019	BUILDING FOUNDATION 11'-8" X 22'-0" SHELTER NICOR CRYSTAL LAKE, IL
PROPRIETARY This drawing is the proprietary property of ERE, LLC and may not be used, adapted, reproduced, copied, or disclosed without the prior written consent of ERE, LLC.		Scale: N.T.S.	REV: * DRAWING NO: CLBDG FND DIVISION: 2 PAGE: 3 OF 3

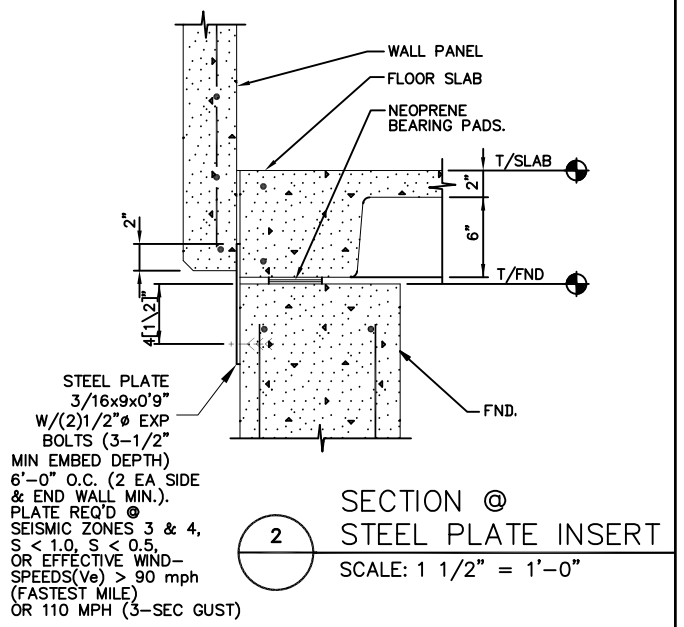


PERIMETER BEAM



NOTES:
1. BOTTOM OF FOUNDATION MUST BE BELOW FROST LINE AND BEAR ON UNDISTURBED SOIL.
2. FORM SURFACE EXPOSED TO VIEW ONLY.

1 SECTION
SCALE: NA



2 SECTION @ STEEL PLATE INSERT
SCALE: 1 1/2" = 1'-0"

NOTES:
1. PERIMETER BEAM DEPTH SHALL BE BELOW FROST LEVEL (1'-6" MIN. DEPTH BELOW GRADE).
2. TOP OF FOUNDATION WALL ELEVATION TOLERANCE 1/4" IN 10'-0" & 1/2" MAX OVERALL
3. PROVIDE 12 MIL VAPOR BARRIER WITH TAPED & 6" LAPPED JOINTS BETWEEN SUBGRADE & SHELTER SLAB ON GRADE.
4. SHIM W/ 3x3 NEOPRENE BEARING PADS TO ATTAIN SAME ELEVATION WITHIN 1/16"(±) LOCATE @ 3'-0" O.C. (MAX.) FOR MAX. FLOOR LIVE LOAD ≤ 200 PSF. LOCATE @ 2'-6" O.C. (MAX.) FOR MAX. FLOOR LIVE LOAD ≤ 300 PSF.

TABLE A	
MAXIMUM FLOOR LIVE LOAD	MINIMUM FOUNDATION WIDTH "W"
≤ 140 PSF	12"
≤ 200 PSF	14"
≤ 300 PSF	16"

NOTES:
1. FOUNDATION WIDTH IS BASED ON 2500 PSF ALLOWABLE BEARING PRESSURE.

FOUNDATION GENERAL NOTES

1. WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.

2. CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.

3. PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS.

4. MAXIMUM SIZE OF CONCRETE AGGREGATE SHALL NOT EXCEED 1 INCH; SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED; OR ONE-THIRD CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING.

5. REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED.

6. WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.

7. MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED.

8. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES NOR BE LESS THAN 2 INCHES.

9. ALL HORIZONTAL BARS IN WALLS & BEAM EDGES SHALL BE BENT AT CORNERS IN SUCH A WAY THAT CONTINUITY IS PROVIDED THROUGH THE JOINT. SEPARATE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL REINFORCING MAY BE SUBSTITUTED FOR THE BENT PORTION OF THE CONTINUOUS BARS.

10. FOUNDATION DESIGN ASSUMES STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D698. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 100 POUNDS PER CUBIC FOOT.

11. FOUNDATION INSTALLATIONS SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.

12. FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.

13. LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT.

14. CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF FOUNDATION.

15. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL. WHEN FORMS ARE NECESSARY, THEY SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.

16. FOUNDATION DESIGN ASSUMES CONTINUOUS CONCRETE PLACEMENT WITHOUT CONSTRUCTION JOINTS.

REV NO.	DESCRIPTION	DATE	DWN BY
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MODULAR CONNECTIONS, LLC
1090 Industrial Blvd
Bessemer, Al 35022
Phone: 205-980-4565
Fax: 877-675-5851

DRAWN BY	DATE	JOB NO.
CLP	8-29-19	MCP1112MI

TITLE: BUILDING FOUNDATION PLAN AND DETAILS
12' X 22' BUILDING FOR SOUTHERN COMPANY

SCALE	PROJ MGR
NA	CLP

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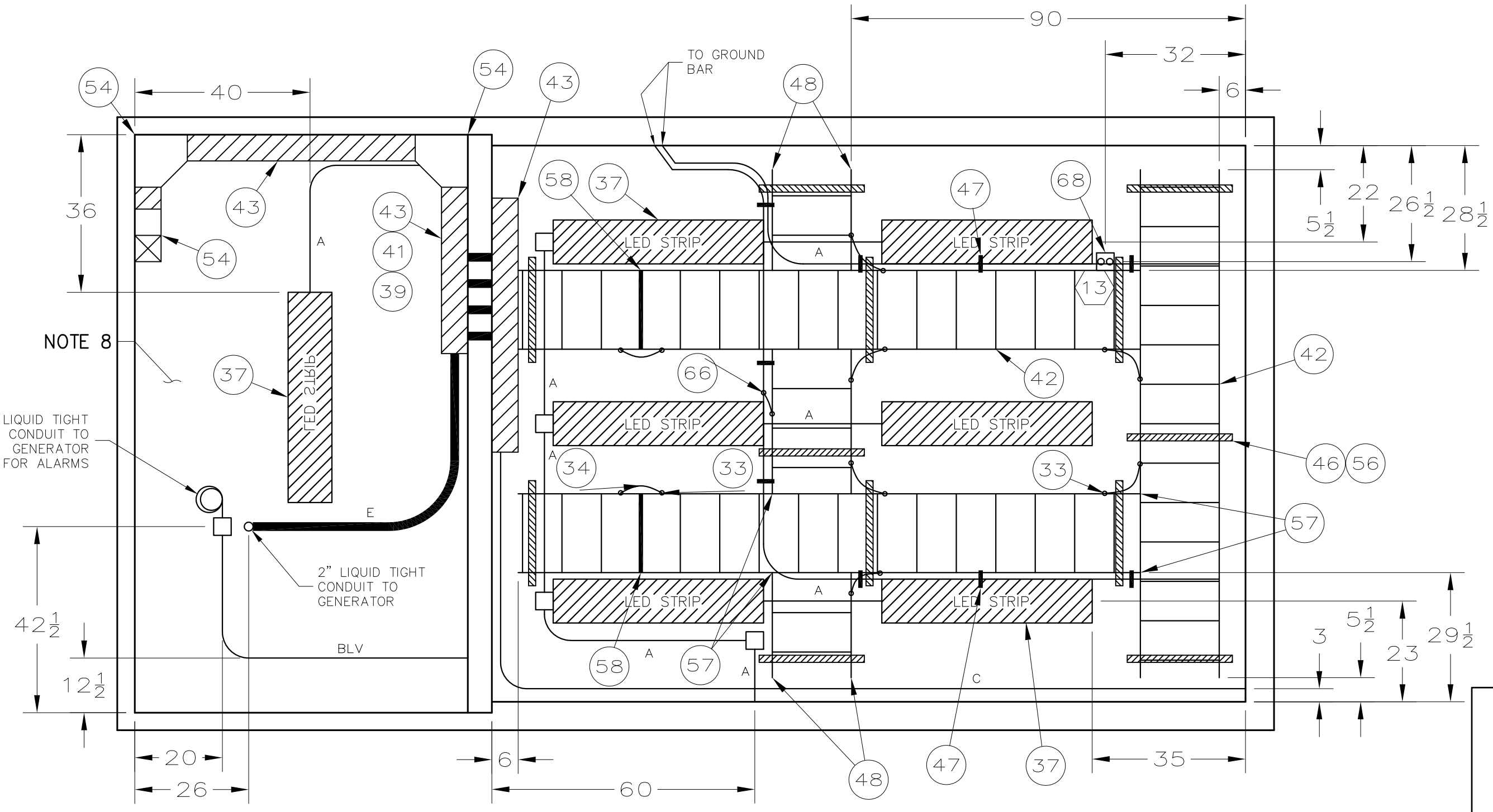
DRAWING NO.
D19141MIFND R0

MODULAR CONNECTIONS, LLC
PH# 205-980-4565 FX# 877-675-5851

Modular Connections, LLC
1090 Industrial Boulevard
Bessemer, Alabama 35022

CUSTOMER:	**SOUTHERN COMPANY SERVICES**				
MODEL:	**ESC12229**				
PART #:	**MCP1112MI**				
STATE:	**ILLINOIS**				
1 PHASE ELECTRIC LOAD CALCULATIONS					
	AMP	**PHASE**	**POSITION**		
LOAD CENTER	**200A**	**1**	**40**		
QUANTITY	**17**	**DUPLEX RECEPTACLE @ 180W LOAD EACH**			
QUANTITY	**4**	**48" LED LIGHT FIXTURES @ 36W**			
QUANTITY	**2**	**HVAC UNITS**	**23,600**	**BTU'S**	
WORST CASE LOAD REQ EACH			**30**	**AMPS**	
TOTAL WATTS REQUIRED PER LOAD SCHEDULE					
	AMPS	**X VOLTS**	**SUBTL WATTS**	**X UNITS**	**TOTAL WATTS**
HVAC UNIT	30	240	7,200.0	2	14,400.0
EXTERIOR LIGHTS	**AMPS**	**X VOLTS**	**FACTOR**	**X UNITS**	
	0.5	120	1	1	60.0
BLOCK HEATER	**AMPS**	**X VOLTS**	**SUBTL WATTS**	**X UNITS**	
	6	120	720.0	1	720.0
INTERIOR LIGHTS	**LIGHTS**	**X WATTS**	**FACTOR**		
	6	36	1		216.0
EXHAUST SYSTEM	**AMP**		**X VOLTS**	**X UNITS**	
	1.3		120	1	156.0
20A DUPLEX RECEPTACLES	**RECEPT**	**X WATTS**			
	17	180			3,060.0
CEILING RECEPT	**QTY**	**X AMPS**	**X VOLTS**		
	1	8	120		960.0
CONTINUOUS RECTIFIER DROPS	**QTY**	**X AMPS**	**X VOLTS**		
	1		240		-
SMOKE DETECTORS	**AMP**	**QTY**	**X VOLTS**		
	0.25		120		-
POWER FAIL RELAYS	**AMP**		**X VOLTS**	**X UNITS**	
	0.25		240		-
EXTERIOR FLOOD LIGHT	**AMPS**	**X VOLTS**	**FACTOR**	**X UNITS**	
	0.6	120	1.25	1	90.0
GENERATOR ROOM HEATER	**AMPS**	**X VOLTS**		**X UNITS**	
	9.5	240		1	2,280.0
SURGE ARRESTOR	**AMPS**	**X VOLTS**		**X UNITS**	
		240			-
GEN BATTERY CHARGER	**AMPS**	**X VOLTS**			
	4	120			480.0
EMERGENCY LIGHT	**AMPS**	**X VOLTS**		**X UNITS**	
	0.25	120			-
TOTAL WATTS REQUIRED					22,422.0
		WATTS	**/ 240V**		**TOTAL AMPS**
TOTAL AMPS REQUIRED		22,422.0	240		93.4



CEILING
REFLECTED VIEW
MOUNT CABLE RACK 96" A.F.F. TO BOTTOM OF RACK

CONDUIT KEY	
(R) A = 1/" (LV)	(R) G = 3" (LV)
(R) B = 3/4" (LV)	(R) H = 4" (LV)
(R) C = 1" (LV)	
(R) D = 1-1/4" (LV)	
(R) E = " (LV)	
(R) F = -1/" (LV)	

NOTES:
1)'LV' DESIGNATES LOW VOLTAGE CONDUIT.
)'R' DESIGNATES RIGID CONDUIT.

STANDARD CONDUIT FITTINGS ARE DIECAST SET-SCREW TYPE EMT FITTINGS UNLESS SPECIFIED OTHERWISE ON DRAWING

SITES: CRYSTAL LAKE REPORTING CTR, IL – MC4559
GLENWOOD REPORTING CTR, IL – MC4560

REV NO.	DESCRIPTION	DATE	DWN BY
–	–	–	–

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Email: info@ModularConnections.com

DRAWN BY	DATE	JOB NO.
RAP	8-29-19	MCP1112MI – MC4559 MCP1112MI – MC4560

TITLE	SCALE	PROJ MGR
SOUTHERN COMPANY SERVICES 12' X 22' CEILING	NA	CLP

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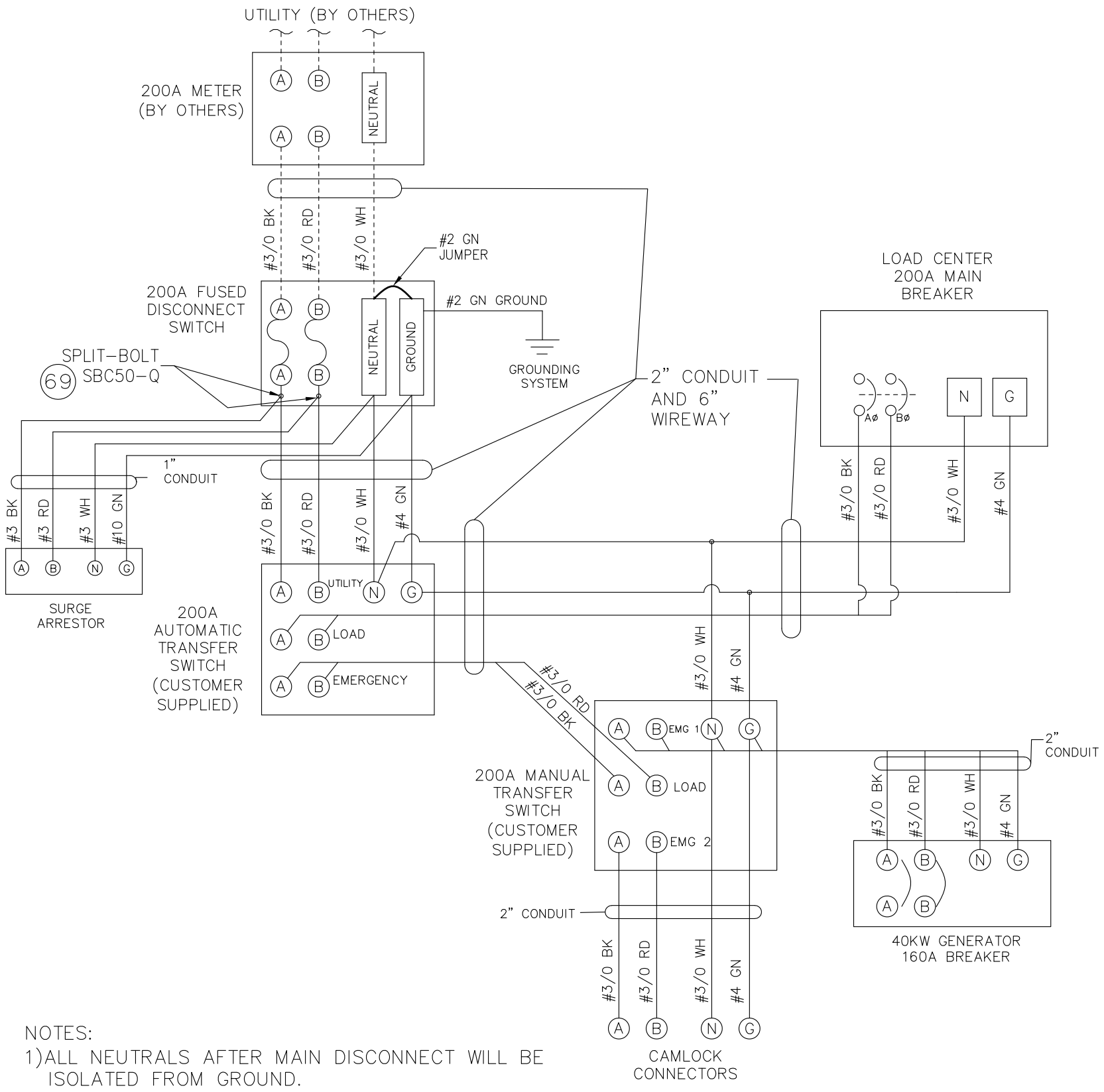
D19141MI R0	04



NOTES:
1)ALL NEUTRALS AFTER MAIN DISCONNECT WILL BE ISOLATED FROM GROUND.
2)ALL WIRE IS THHN TYPE INSULATION.
3)DOTTED LINES INDICATE WIRED BY OTHERS.

POWER WIRING DIAGRAM

AC PANEL

MAIN: 200A MB VOLTAGE: 120/240VAC PHASE: 1 WIRE: 4

LOCATION	BRKR	WIRE	NO	NO	WIRE	BRKR	LOCATION
HVAC UNIT 1	30A	#10	1	2	#12	20A	EXTERIOR GFI RECEPTACLE
" " "	"	"	3	4	#12	20A	EXTERIOR FLOOD LIGHT
HVAC UNIT 2	30A	#10	5	6	#12	20A	INTERIOR LIGHTS
" " "	"	"	7	8	#12	20A	EXTERIOR LIGHT
RECEPTACLE GROUP 9	20A	#12	9	10	#12	20A	GEN. ROOM EXHAUST FAN
RECEPTACLE GROUP 11	20A	#12	11	12	#12	20A	RECEPTACLE GROUP 12
CEILING RECEPT GRP 13	20A	#12	13	14	#12	20A	GEN. ROOM INT LIGHT
SPARE	20A	–	15	16	#12	20A	FAN FORCED HEATER
SPARE	20A	–	17	18	"	"	"
–	–	–	19	20	–	–	–
–	–	–	21	22	–	–	–
–	–	–	23	24	–	–	–
–	–	–	25	26	–	–	–
–	–	–	27	28	–	–	–
–	–	–	29	30	–	–	–
–	–	–	31	32	–	–	–
–	–	–	33	34	–	–	–
–	–	–	35	36	–	–	–
–	–	–	37	38	–	–	–
–	–	–	39	40	–	–	–

N/C C DOOR CONTACT – EQUIPMENT RM
N/C C DOOR CONTACT – GENERATOR RM
N/C C HIGH TEMPERATURE – HVAC CONTROLLER
N/C C LOW TEMPERATURE – HVAC CONTROLLER
N/C C POWER FAIL – IN ATS
N/C C SURGE ARRESTER
N/C C SECOND STAGE COOLING – HVAC CONTROLLER
N/C C GENERATOR RUN – IN ATS
N/C C GENERATOR COMMON
N/C C GENERATOR SYSTEM NOT READY
N/C C GENERATOR FAIL TO START

ALARM WIRING DETAIL – NOTE 5 ALL ALARM WIRE WILL BE #22 AWG COPPER SOLID WIRE

SITES: CRYSTAL LAKE REPORTING CTR, IL – MC4559
GLENWOOD REPORTING CTR, IL – MC4560

REV NO.	DESCRIPTION	DATE	DWN BY
–	–	–	–

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DRAWN BY: RAP DATE: 8-29-19
JOB NO.: MCP1112MI – MC4559, MCP1112MI – MC4560
TITLE: SOUTHERN COMPANY SERVICES ELECTRICAL DETAILS
SCALE: NA
PROJ MGR: CLP

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DRAWING NO.: D19141MI R0
SHEET: 05

EQUIPMENT LIST

IT.#	QTY	MANUF. P/N	DESCRIPTION
1	1	QO140M200	LOAD CENTER, 200A MB 120/240VAC 1PH 40 POSITION SQ.D
2	1	2001	PHOTOCELL, 15A 120V PLASTIC TORK (STD)
3	2	580074	DOOR GROUND STRAP, #2 WELDING CABLE 18" LONG (STD)
4	4	LCD1-14B-E	CRIMP CONNECTOR, (2)HOLE COPPER FOR #2 WELDING CABLE PANDUIT
5	1	DG224NRK	SWITCH, FUSIBLE SAFETY 200A 240V 3R CUTLER-HAMMER
6	1	4200RA689429 LPEKFH-071C-LC 6PN	PANIC BAR, RIM TYPE EXIT DEVICE NON HANDED FOR 3'-2" & 4'-0" DOOR W/HANDLE & CYLINDER PDQ (STD)
7	1	KG40	40KW GENERATOR KOHLER **(CUSTOMER SUPPLIED/MC INSTALLED)**
8	1		ROOF MEMBRANE TPO (NOT SHOWN)
9	1		GENERATOR TRANSITION DUCT
10	1	ES8195	GENERATOR EXHAUST PLATE WITH 3" THREADED COUPLING
11	1	CECO VERSADOOR	DOOR, 3' X 7' LHR PANIC PREP GALVANIZED AND PAINTED INSULATED STEEL 18GA
12	2		DOOR AWNING 56W X 24D FRP
13	1	4200R689429 LPEKFH-071C-LC 6PN	PANIC BAR, RIM TYPE EXIT DEVICE NON HANDED FOR 3'-0" DOOR W/HANDLE & CYLINDER PDQ (STD)
14	2		CARD READER DOOR ENTRY SYSTEM PREP
15	3	CS1221I	SWITCH, 20A 120-277V TOGGLE SPST IVORY HUBBELL
16	1	P-10GWR	RECEPTACLE, 20A 120V EXTERIOR GFCI WEATHERPROOF WHEN IN USE MILBANK (STD)
17	2	1087TG	DOOR CONTACT, SPDT MAGNETIC GE (STD)
18	1	64302	WALL POCKET, DEFLECTO
19	1	ATC 300	AUTOMATIC TRANSFER SWITCH, 200A 1PH 120/240VAC EATON **(CUSTOMER SUPPLIED/MC INSTALLED)**
20	8	CR5352I	RECEPTACLE, 20A 120V QUADRUPLEX IVORY HUBBELL (STD)
21	1		TELCO BACKBOARD, 48" X 96" WHITE HDPE
22	2	W24A2-A05XP4XXJ	HVAC UNIT, 2 TON 1PH 30A WITH 5KW HEAT BARD GRAY
23	1	MC4002B	HVAC CONTROLLER, WITH HI-LO TEMP, POWER FAIL AND HVAC FAIL ALARMS BARD
24	1	WW#2E816	THERMOSTAT, LINE VOLTAGE 120V DAYTON
25	1	31TR45	HEATER, FAN FORCED 2.25 KW 15A 240V W/INTEGRAL TSTAT GRAINGER (STD)
26	1	1XC27	TIMER, 1 HOUR SPST WITHOUT HOLD FEATURE INTERMATIC #FD60M WW GRAINGER
27	1	CLS #7100-BC-DSHO-689 ANGLE #999011	DOOR CLOSER, HVY DUTY W/THUMB TURN HOLD OPEN ARM ALUM AMERICAN EAGLE AND REINFORCEMENT ANGLE NARROW FRAME BRACKET PDQ **FOR EXTERIOR DOORS**
28	1	3C309	INTAKE LOUVER, 30" X 30" GRAVITY WITH FILTERED HOOD DAYTON
29	1	LBD-4E	EXHAUST LOUVER, 30"W X 48"H FIXED UNITED ENERTECH
30	1	E-WFT03A-N40Z	LIGHT, EXTERIOR 33W LED WALL PACK 4000K 3200 LUMENS NO PHOTOCELL 120VAC DARK BRONZE E-CONOLIGHT (STD)
31	3		5/8" THICK WHITE PAINTED FIRE RATED & MOISTURE RESISTANT SHEETROCK
32	26	PPIS-S12	STRAP, GROUND CONDUCTOR SUPPORT 2" NYLON FOR HALO WIRE PANDUIT (STD)
33	36	LCD2-14B-Q	CRIMP CONNECTOR, (2)HOLE FOR #2 WIRE PANDUIT
34	150FT	580005G	WIRE, #2 STRANDED GREEN INSULATED
35	1	C-66-TP	WIREWAY, 6" X 6" TEE TYPE 1 PAINTED GRAY C&I
36	1	AX12-2	FAN, 12" EXHAUST WITH SHUTTER 1640-1390 CFM CANARM (FOR GEN AND STORM ROOMS)
37	7	GUS4-36NW/D10	LIGHT, 4' LED 36W 120/277 SURFACE MNT WRAP 4000K RAB (STD)
38	1	CECO VERSADOOR	DOOR, 3670 LHR 18 GA POLY-U CORE UH PANIC PREP CLSR REINFORCED PRIME PAINTED
39	5	C-66-ECP	WIREWAY, 6" ENDCAP TYPE 1 W/O KNOCKOUT PAINTED GRAY C&I
40	2	ES5957	SECURITY BAR, 1/4" X 2-1/2" FLAT BAR X 38-1/2" OAL HDG
41	9	C-66-UCP	WIREWAY, 6"X6" COUPLING PAINTED GRAY C&I
42	6 PCS	10018	CABLE RACK, 18" TUBE 1-1/2"H X 9'-8-1/2"LONG GRAY PAINTED STEEL CSF
43	3	C-10-66HCWP	WIREWAY, 6" X 6" X 10' LG HINGE TYPE 1 PAINTED GRAY C&I
44	1	ZM11200	COOPER CROUSE-HINDS 1PH 120/240VAC SURGE SUPPRESSOR **(CUSTOMER SUPPLIED/MC INSTALLED)**
45	1	531US26D	DOOR STOP, WITH HOOK BURNS (STD)
46	14		UNISTRUT, 1-5/8 X 1-5/8 X 24" LONG SLOTTED ZINC PLATED
47	9	ACB1SZY	CABLE RACK, GROUND CABLE SUPPORT 2-1/4"H X 3"W LONG CSF (STD)
48	8	RFCH701	CABLE RACK, END CAP 1.5" PVC (PAIR) CSF (STD)
49	2	WC12	CABLE RACK, WALL CLIP 1-1/2" (PAIR) CSF (STD)
50	1	7205A	MANUAL TRANSFER SWITCH, 200A 120/240VAC DPDT WITH 200A AUX CONTACTS RONK METER-RITE
51	1	8PB-M	POLYPHASER BULKHEAD, (8) PORT
52	1	MG42051-K	GROUND PLATE, 1/4" X 4" X 20" 110 ALLOY COPPER W/INSULATORS AND BRKT SITE PRO
53	1		1" PVC PORT WITH THREADED PLUG ON EXTERIOR FOR GPS ENTRY
54	3	C-66-90LP	WIREWAY, 6" X 6" 90 DEGREE ELBOW TYPE 1 PAINTED GRAY C&I
55	1	H600A1014	HUMIDISTAT, DRY CONTACT HONEYWELL
56	12	SHB1	CABLE RACK, HNGR BRKT 1.5" SLTTD FOR 5/8" ROD YZP (PAIR) CSF (STD)
57	6	CC12	CABLE RACK, CORNER CLAMP 1.5" CSF (PAIR) (STD)
58	2	SC12	CABLE RACK, BUTT SPLICE KIT YZP (PAIR) CSF (STD)
59	1	ES98G	HOOD, 22" FIBERGLASS GRAY (STD)
60	1	ES18795	SCREEN, 22" HOOD ALUM FRAME WITH COMBO SCREEN (STD)
61	4		UNISTRUT, 1-5/8 X 1-5/8 X 16" LONG SLOTTED ZINC PLATED FOR GENERATOR MUFFLER SUPPORT
62	1	ES18527	GEN EXHAUST NIPPLE, 3" X 14"LG GALV. CUT 45 DEG W/EXPANDED METAL MESH
63	1	C-4-62RTP	WIREWAY, 6" X 6" X 2'LG HINGED NEMA 3R GALVANIZED AND PAINTED GRAY C&I
64	4	CAM #CL40FRB COVER #CL40WTC-S-062	CAMLOCK CONNECTOR, 400A 600V BLACK, RED, WHITE, AND GREEN MARINCO
65	2	FRN-R-200	FUSE, CARTRIDGE 200A 250VAC TIME DELAY BUSSMAN
66	15	CTAPF1/0-12-L	COMPRESSION FITTING, #2 X #2 WIRE PANDUIT
67	1		FLOOR BLOCKOUT, 7" X 15"
68	1		RECEPTACLE, 20A 120V DUPLEX L5-20R IVORY HUBBELL
69	2	SBC250-Q	SPLIT BOLT CONNECTOR, RANGE #1 TO 250KCMIL MINIMUM TAP #8 PANDUIT
70	2	1871A65	DOOR PULL, 12-1/8" LG X 1/2" DIA ALUMINUM, MCMASTER (STD)

PACKING LIST

A	1	LU300	LIGHT, EXTERIOR 23W CFL DUAL FLOOD WITH MOTION DETECTOR AND PHOTOCELL RAB (SEE NOTE 9)
B	14	ES4941	LATERAL TIE DOWN PLATES (STD)
C	28	820053	STUD ANCHOR, 1/2" X 4-1/2" ZP FOR TIE DOWN PLATE

NOTES:

1)MAIN DISCONNECT GROUND WIRE MUST BE ATTACHED TO GROUNDING SYSTEM BEFORE APPLYING POWER.

2)ALL WIRE AMPACITIES BASED ON NEC TABLE 310–15(B)(16). ALL WIRE IS RATED AT 90°C W/75°C RATED LUGS. CONDUIT FILL BASED ON ANNEX C NEC(TABLE C1).

3)ALL SERVICE ENTRANCE EQUIPMENT SHALL BE LISTED FOR IT'S USE.

4)GENERATOR RUN: FROM ATS TERMINAL GEN POWER N/C CONTACT TO BARD CONTROLLER AT GEN RUN TERMINAL N/C CONTACT G1 & G FROM BARD CONTROLLER N/C GENERATOR ROOM TRANSFER OR RUN TO TERMINAL BLOCK 20 IN GENERATOR TRANSFER SWITCH.

5)COIL UP 6FT OF ALARM WIRE AND NUMBER EACH ALARM WIRE. PUT ALARM LEGEND WITH WIRES FOR CUSTOMER CONNECTION.

6)ANY CHEMICALS TO BE STORED IN THIS BUILDING SHALL NOT EXCEED AMOUNTS LISTED IN TABLES 307.1(1) AND 307.1(2) OF THE IBC.

7)GENERATOR EXHAUST PIPING SUPPORTS NEED TO HAVE LOCKING TYPE NUTS ON ALL ALTHREAD CONNECTIONS.

8)GENERATOR ROOM WALLS TO BE TEXTURE PAINTED WHITE.

9)1/2" NIPPLE WITH COUPLING AND PLUG ON EXTERIOR FOR CUSTOMER INSTALLED FLOOD LIGHT AND PHOTOCELL. COIL UP #12 HOT, #12 NEUTRAL AND GROUND FOR CUSTOMER CONNECTION.

10)EMERGENCY VALVES CONTROLLING THE FUEL TO THE GENERATOR ARE REQUIRED TO BE EQUIPPED WITH: A) AUTOMATIC SHUTOFF THROUGH THERMAL ACTUATION. WHERE FUSIBLE ELEMENTS ARE USED, THEY SHALL HAVE A MELTING POINT OF 250 DEGREES FAHRENHEIT. B) MANUAL SHUT OFF FROM A REMOTE LOCATION. C) MANUAL SHUT OFF AT THE INSTALLED LOCATION.

11)IF BATTERIES WITH AN ELECTROLYTE CAPACITY OF MORE THAN 50 GALLONS ARE TO BE INSTALLED WITHIN THIS BUILDING, ONE OF THE FOLLOWING ALTERNATIVES MUST ALSO BE INSTALLED: 1.) AN EXHAUST FAN WITH A HYDROGEN LIMIT SWITCH SO THAT TO LIMIT THE HYDROGEN TO 1% OF THE TOTAL VOLUME OF THE ROOM; OR 2.) CONTINUOUS VENTILATION SHALL BE PROVIDED AT A RATE NOT LESS THAN 1 CUBIC FOOT PER MINUTE PER SQUARE FOOT OF FLOOR AREA OF ROOM.

⬡ – INDICATES RECEPTACLE GROUPING.

FINISH COLOR SCHEDULE
EXT. WALLS: EXPOSED AGGREGATE – GREYSTONE GRAY
EXT. TRIM: MINDFUL GRAY COARSE
EXT. DOORS: MINDFUL GRAY
INT. WALL & CEILING: STANDARD FINISH IN EQUIPMENT ROOM
INT. DOOR(S): SAME AS EXTERIOR COLOR
FLOOR: VINYL TILE IN EQUIPMENT ROOM
FLOOR: TROWEL FINISHED REXTHANE PAINTED GRAY WITH ANTI–SKID IN GENERATOR ROOM.
INT. WALL & CEILING: TEXTURE PAINTED WHITE CONCRETE IN GENERATOR ROOM.

SITES: CRYSTAL LAKE REPORTING CTR, IL – MC4559
GLENWOOD REPORTING CTR, IL – MC4560

REV NO.	DESCRIPTION	DATE	DWN BY
–	–	–	–

MODULAR CONNECTIONS, LLC
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Bessemer, Al 35022
Phone: 05–980–4565
Fax: 877–675–5851
Email: info@ModularConnections.com

DRAWN BY	DATE	JOB NO.
RAP	8–29–19	MCP1112MI – MC4559 MCP1112MI – MC4560

TITLE: SOUTHERN COMPANY SERVICES
EQUIPMENT LIST FOR 12' X 22' X 9'IH SHELTER

SCALE	PROJ MGR
NA	CLP

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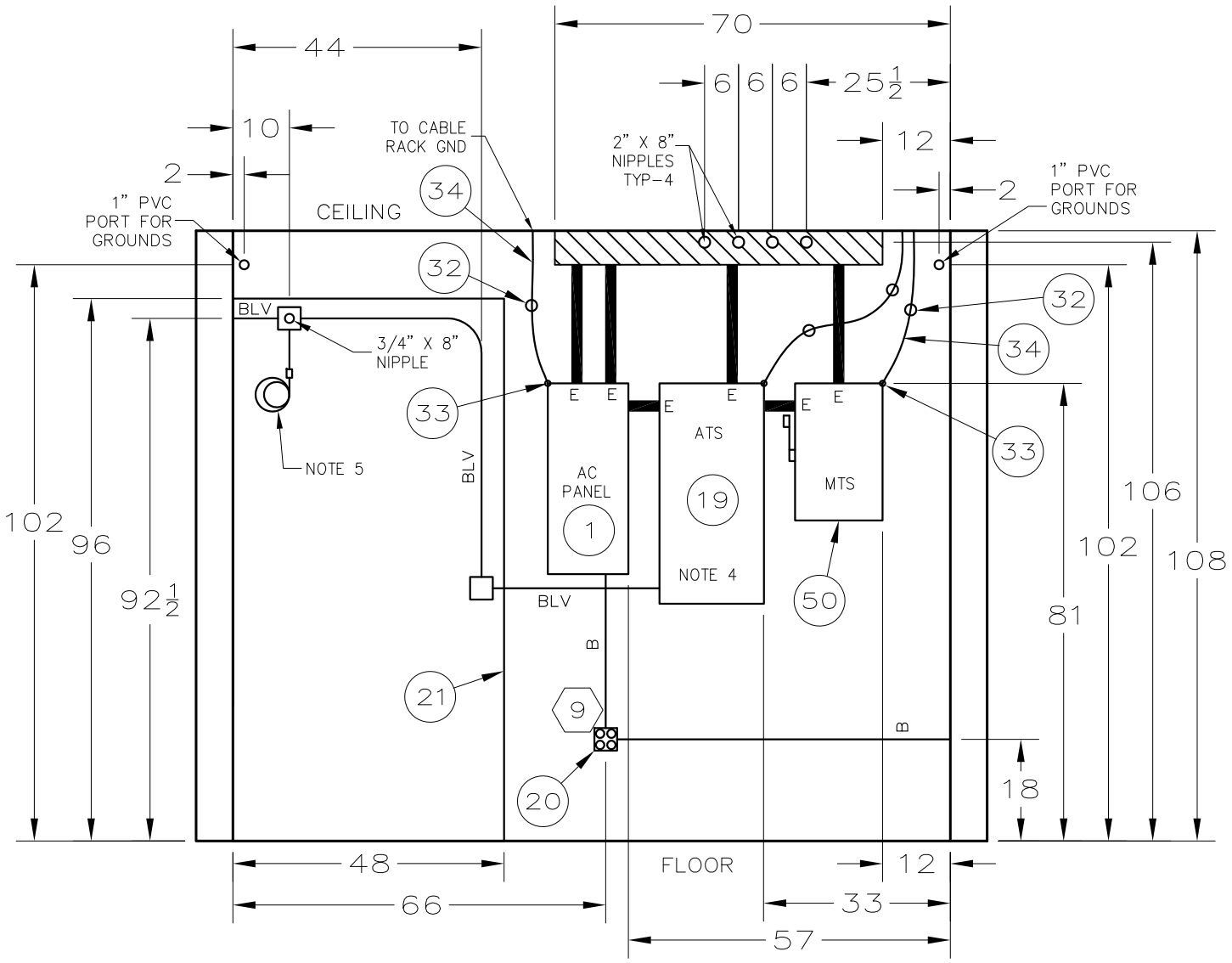
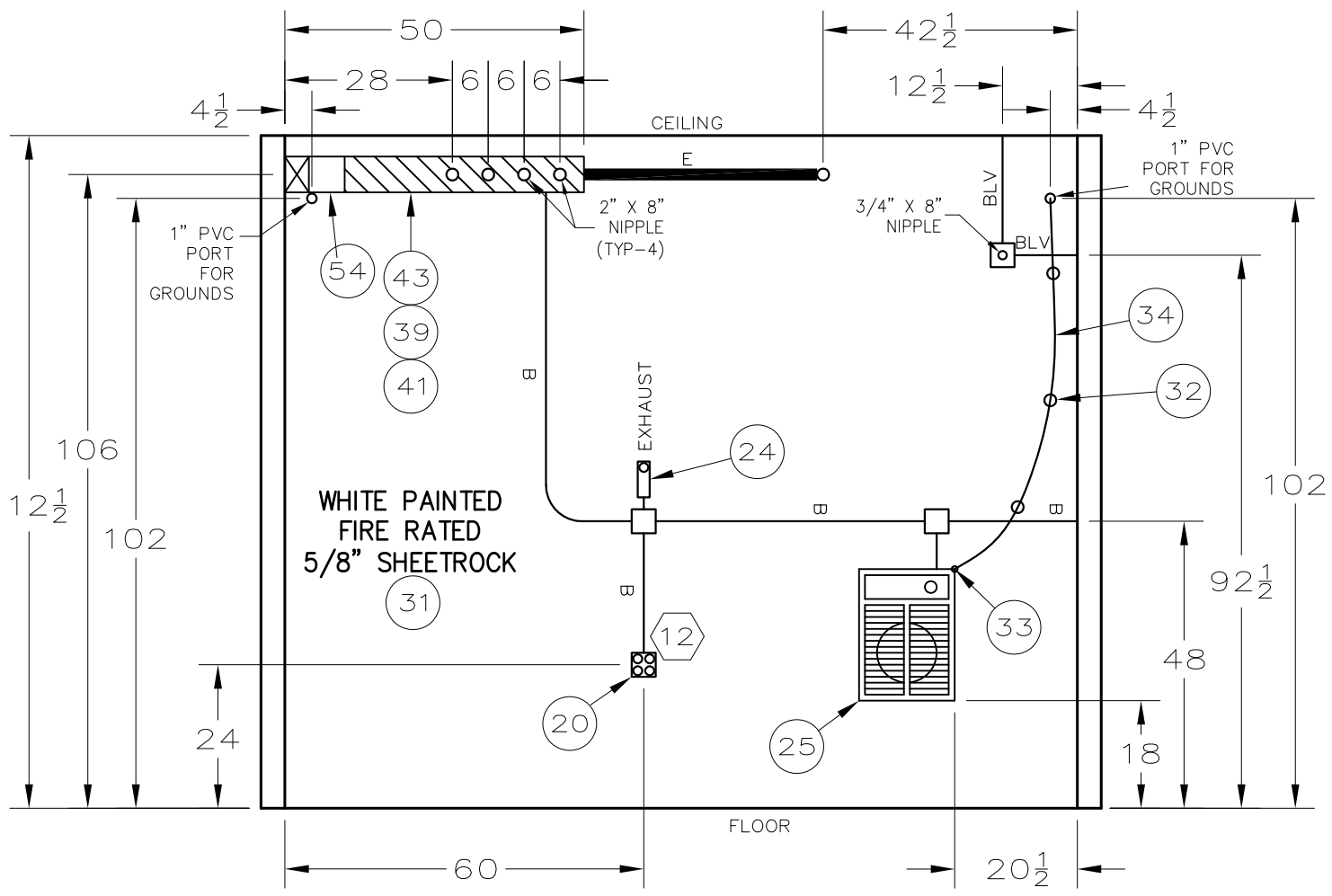
DRAWING NO.	SHEET
D19141MI R0	01



PARTITION WALL—VIEW A (FIRE RATED SHEET ROCK WITH 3/4" HDPE PLYWOOD THIS SIDE)



PARTITION WALL—VIEW B (FIRE RATED SHEETROCK PAINTED WHITE THIS SIDE)

CONDUIT KEY	
(R) A = 1/" (LV)	(R) G = 3" (LV)
(R) B = 3/4" (LV)	(R) H = 4" (LV)
(R) C = 1" (LV)	
(R) D = 1-1/4" (LV)	
(R) E = " (LV)	
(R) F = -1/" (LV)	

NOTES:
1)'LV' DESIGNATES LOW VOLTAGE CONDUIT.
)'R' DESIGNATES RIGID CONDUIT.

STANDARD CONDUIT FITTINGS ARE DIECAST SET-SCREW TYPE EMT FITTINGS UNLESS SPECIFIED OTHERWISE ON DRAWING

SITES: CRYSTAL LAKE REPORTING CTR, IL – MC4559
GLENWOOD REPORTING CTR, IL – MC4560

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DRAWN BY	DATE	JOB NO.
RAP	8-29-19	MCP1112MI – MC4559 MCP1112MI – MC4560

TITLE: SOUTHERN COMPANY SERVICES
12' X 22' X 9'IH INTERIOR PARTITION VIEWS

SCALE	PROJ MGR
NA	CLP

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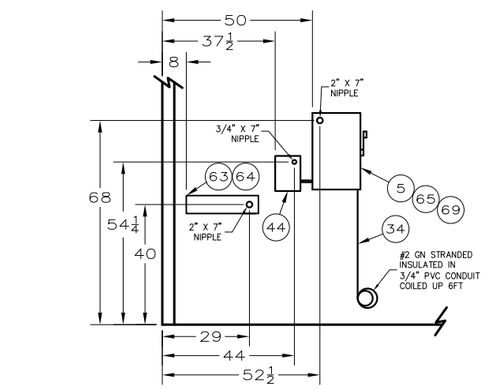
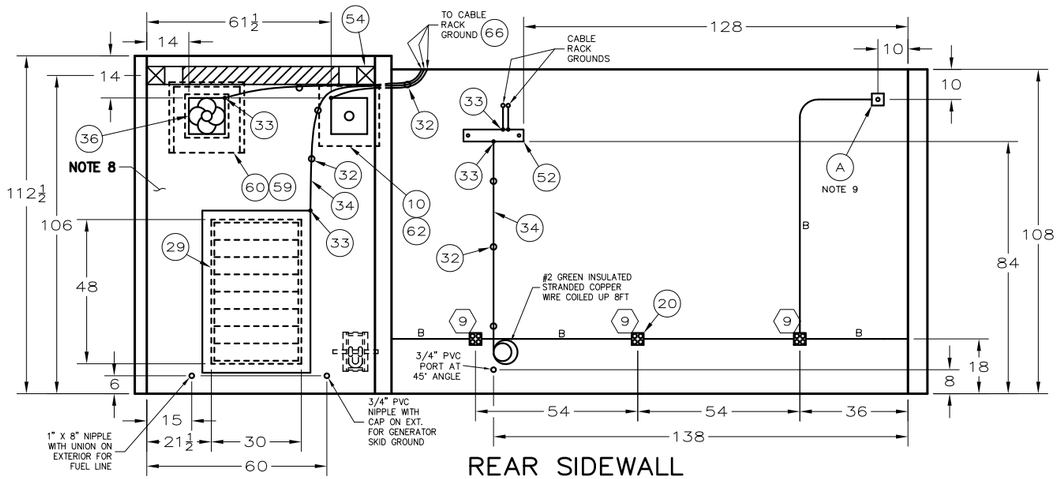
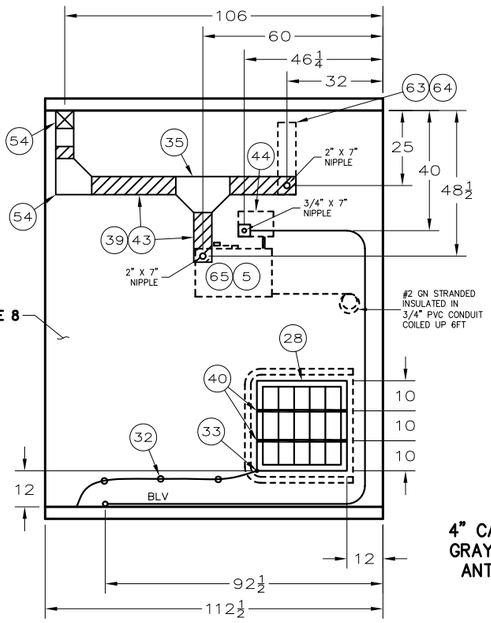
DRAWING NO.	SHEET
D19141MI R0	03



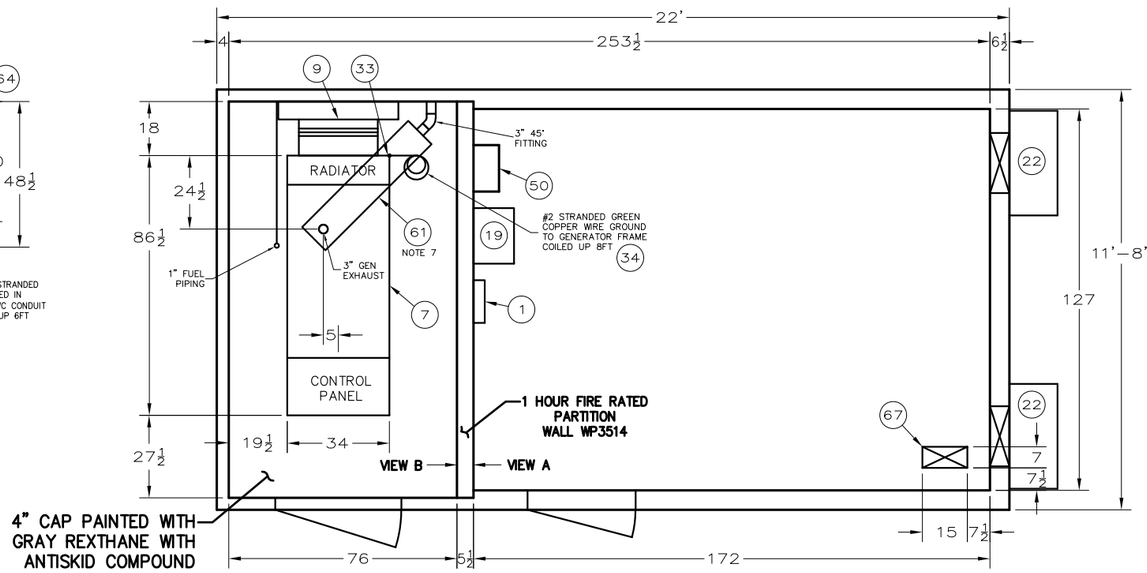
LEFT ENDWALL – EXTERIOR VIEW



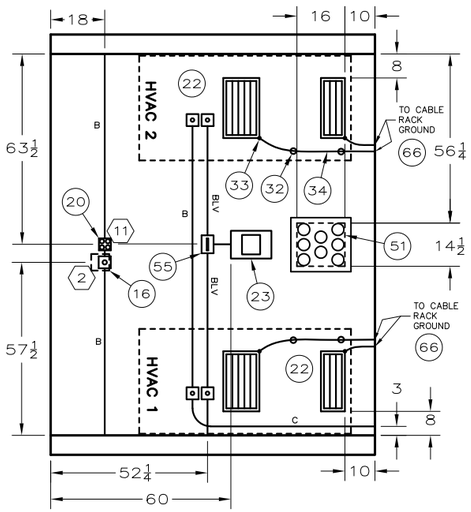
REAR SIDEWALL



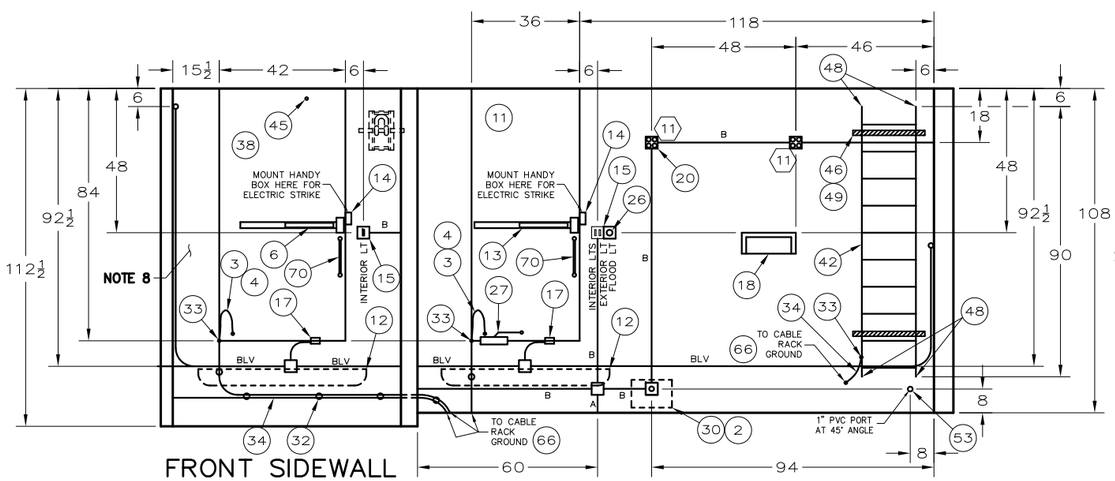
LEFT ENDWALL



FLOOR – 200PSF LOAD



RIGHT ENDWALL



FRONT SIDEWALL

CONDUIT KEY	
(R) A = 1/" (LV)	(R) G = 3" (LV)
(R) B = 3/4" (LV)	(R) H = 4" (LV)
(R) C = 1" (LV)	
(R) D = 1–1/4" (LV)	
(R) E = " (LV)	
(R) F = –1/" (LV)	

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TITLE: SOUTHERN COMPANY SERVICES
12' X 22' X 9'IH SHELTER

SCALE	PROJ MGR
NA	CLP

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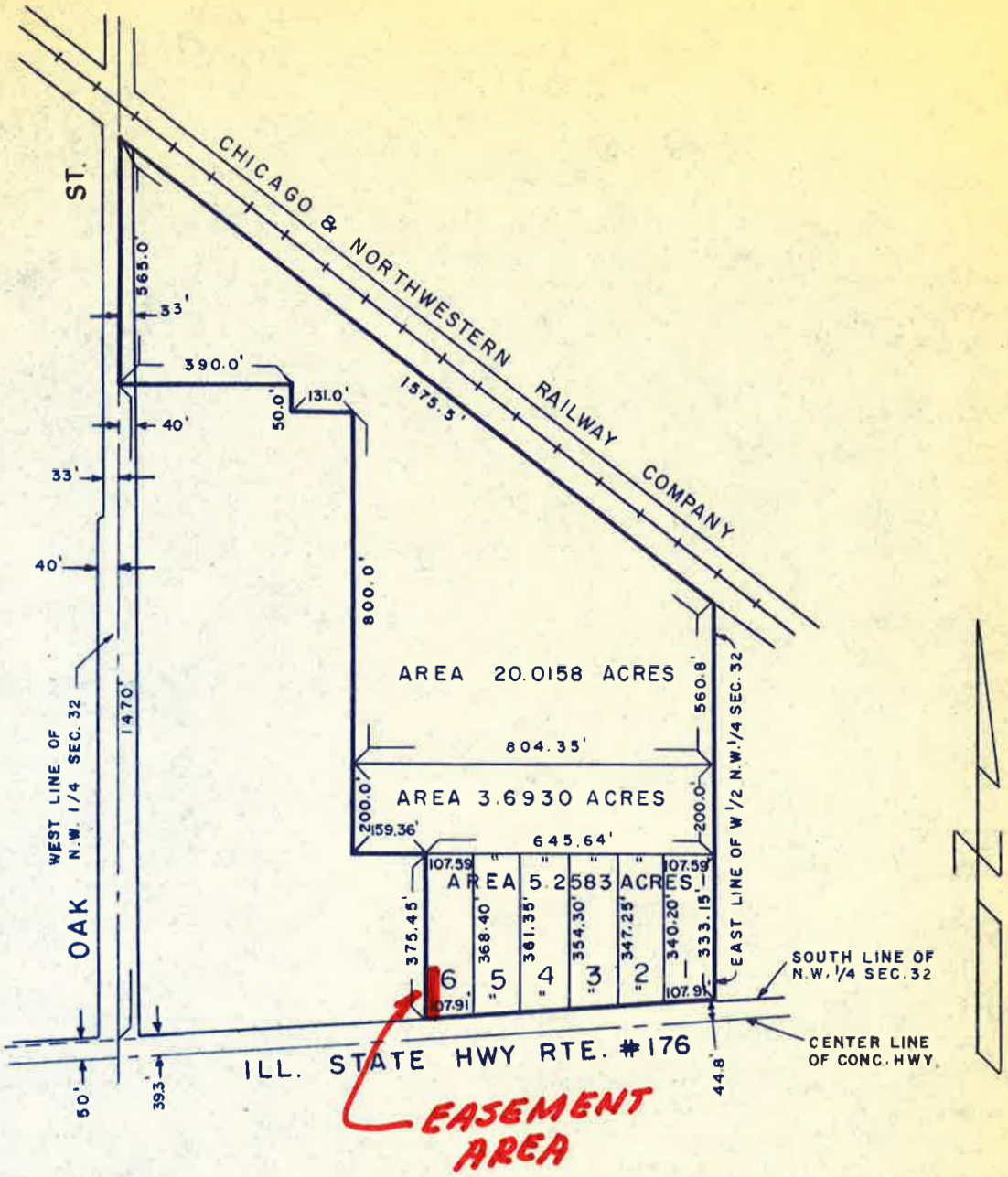
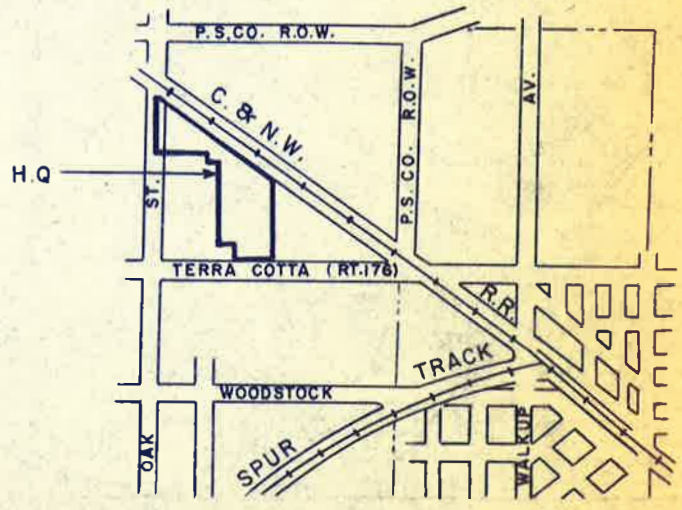
SURVEY





LOCATION PLAT

DRAWN FROM PLAT OF SURVEY
BY FRANK H. NELSON
DATED SEPTEMBER 22, 1959

TOTAL AREA	28.967	ACRES
AREA IN ROAD	18,282	SQ. FT.
NET AREA	1,243,521	SQ. FT.
TOTAL AREA	1,261,803	SQ. FT.

DATE	DR.	SCALE	CH.
1-3-61		1" = 400'	WRB

NO.	REVISION	DATE

W½ N.W.¼ SEC. 32 T. 44 N. R. 8E 3 P.M.

(IN) (OUT)	NUNDA	Mc HENRY
MUNICIPALITY	TOWNSHIP	COUNTY

NORTHERN ILLINOIS GAS COMPANY

N.W. DIVISION HEADQUARTERS
CRYSTAL LAKE

APPR. [signature]

PP 1304