

DRAWING INDEX		REV	DATE
T1	TITLE SHEET	0	04/13/18
-	SURVEY (BY OTHERS)	-	-
C1	SITE PLAN	0	04/13/18
C2	DETAILED SITE PLAN	0	04/13/18
C3	GRADING PLAN	0	04/13/18
C3.1	GRADING PLAN	0	04/13/18
C3.2	GRADING PLAN	0	04/13/18
C3.3	GRADING PLAN	0	04/13/18
C4	TOWER ELEVATION	0	04/13/18
C5	DETAILS	0	04/13/18
C6	DETAILS	0	04/13/18
C7	DETAILS	0	04/13/18
E1	ELECTRICAL PLAN	0	04/13/18
E2	GROUNDING PLAN	0	04/13/18
E3	DETAILS	0	04/13/18
E4	GROUNDING & FOUNDATION DETAILS	0	04/13/18
E5	RISER DIAGRAM & DETAILS	0	04/13/18
E6	DETAILS	0	04/13/18
L1	LANDSCAPE PLAN	0	04/13/18
L2	LANDSCAPE DETAILS	0	04/13/18
SP1	SPECIFICATIONS	0	04/13/18
SP2	SPECIFICATIONS	0	04/13/18
SP3	SPECIFICATIONS	0	04/13/18
		0	04/13/18
		0	04/13/18

PROPOSED TOWER DATA (NAD 83)	
TOWER	300' GUYED TOWER
LATITUDE:	30° 39' 01.56" NORTH
LONGITUDE:	85° 23' 58.29" WEST
GROUND ELEVATION (EXISTING):	247.3' AMSL

ZONING INFORMATION	
PERMITTING JURISDICTION: ZONING CLASS: PARCEL ID: E911 ADDRESS:	JACKSON COUNTY AG2 24-3N-12-0000-0200-0000 2449 REEDY CREEK ROAD ALFORD, FL 32420

PROJECT DESCRIPTION	
1. INSTALLATION OF NEW 60' x 60' WIRELESS TELECOMMUNICATIONS COMPOUND WITH CHAIN LINK FENCE WITHIN A NEW 100' x 100' LEASE AREA 2. INSTALLATION OF NEW 300' GUYED TOWER WITH CABLE LADDER 3. INSTALLATION OF OVERHEAD UTILITIES 4. INSTALLATION OF MULTI-TENANT SERVICE STAND 5. INSTALLATION OF NEW CONCRETE EQUIPMENT PAD WITH CANOPY 6. INSTALLATION OF NEW WAVEGUIDE BRIDGE	

PROJECT CONTACTS	
LESSEE SOUTHERN COMMUNICATIONS SERVICES, INC 4601 SOUTHLAKE PARKWAY, SUITE 150 HOOVER, AL 35244 CONTACT: ED MURRAY OFFICE: (205) 257-4987 MOBILE: (205) 807-5800 EMAIL: X2ELMUR@SOUTHERNCO.COM	

TOWER OWNER	
MUNICIPAL COMMUNICATIONS, LLC 3495 PIEDMONT ROAD NE ELEVEN PIEDMONT CENTER, SUITE 411 ATLANTA, GA 30305 CONTACT: JOHN THROCKMORTON OFFICE: (404) 995-1890 MOBILE: (404) 502-7883	

DRAWINGS BY	
AW SOLUTIONS 300 CROWN OAK CENTRE DRIVE LONGWOOD, FL 32750 PHONE: (407) 260-0231 CONTACT: JOSH GILLIARD EMAIL: JOSH.GILLIARD@AWSOLUTIONSINC.COM PHONE: (407) 260-0231 EXT. 129	



TOWER & MAKE READY

**SITE NAME: ROUND LAKE
SITE NUMBER: F8147**

**ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420**

APPLICABLE BUILDING CODES AND STANDARDS

CONTRACTOR'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.

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222, REVISION CURRENTLY ENFORCED STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")
ANSI T1.311, TO TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENTS SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

DRIVING DIRECTIONS

FROM ATLANTA, TAKE I-75 S./I-85 S. KEEP RIGHT AT THE FORK TO CONTINUE ON I-85 S, FOLLOW SIGNS FOR DOMESTIC AIRPORT/MONTGOMERY. KEEP LEFT TO STAY ON I-85 S. TAKE EXIT 21 FOR I-185 S. TOWARD COLUMBUS. CONTINUE ON I-85 S. TAKE EXIT 10 TO MERGE ONTO GA-22 W./US-80 W. TOWARD PHOENIX CITY ALABAMA. CONTINUE TO FOLLOW US-80 W. (ENTERING ALABAMA) USE THE LEFT LANE TO TAKE THE U.S. 80 W./U.S. 280 E./U.S. 431 S. EXIT. TURN LEFT ONTO US-280 E./US-431 S./US-80 W. CONTINUE TO FOLLOW US-280 E./US-431 S. USE THE RIGHT LANE TO TAKE THE US-431 S. RAMP TO EUFAULA/DOTHAN. TURN RIGHT ONTO US-431 S./MARTIN LUTHER KING JR. PKWY N. CONTINUE TO FOLLOW US-431 S. CONTINUE STRAIGHT ONTO US-431 S./US-80 W. EUFAULA AVE. CONTINUE TO FOLLOW US-431 S. CONTINUE STRAIGHT ONTO REEVES ST. TURN LEFT ONTO US-231 BUS S./US-431 BUS S. CONTINUE ONTO US-231 S./S. QATES ST. CONTINUE TO FOLLOW US-231 S. (ENTERING FLORIDA) TURN RIGHT ONTO REEDY CREEK RD. ACCESS DRIVEWAY WILL BE ON THE LEFT.

GENERAL NOTES

- ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE & ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS PERFORMED.
- ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
- ALL DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE OWNER IMMEDIATELY IF DISCREPANCIES ARE DISCOVERED.
- ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.

DESIGN REQUIREMENT NOTES

- DESIGN REQUIREMENTS FOR ANTENNA SUPPORTING STRUCTURES, ANTENNAS, EQUIPMENT CABINETS, AND PPC CABINETS PER 2017 FLORIDA BUILDING CODE, 2011 NATIONAL ELECTRIC CODE, AND THE ANSI/TIA-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

UTILITY COMPANIES

POWER

WEST FLORIDA ELECTRIC
CONTACT: RICK HODGE
OFFICE: (850) 547-9325
MOBILE: (850) 849-1966
EMAIL: RHODGE@WESTFLORIDA.COOP

TELCO

CENTURY LINK
OFFICE: 1-877-218-3644



AW Solutions
incorporated
300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA# 26983

APPROVALS

CARRIER: _____
LANDLORD: _____
LEASING: _____
CONSTRUCTION: _____

DRAWN BY: JG CHECKED BY: JD
0 04/13/18 ISSUED FOR CONSTRUCTION
D 03/19/18 ISSUED FOR REVIEW
C 01/23/18 ISSUED FOR REVIEW
B 10/02/17 ISSUED FOR REVIEW
A 09/28/17 ISSUED FOR REVIEW

REV DATE DESCRIPTION
EMMANUEL POULIN
FL. P.E. #54073 APR 13 2018
IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT, UNLESS EXPLICITLY AGREED TO BY AW SOLUTIONS, INC. AW SOLUTIONS, INC. DISCLAIMS ALL LIABILITY ASSOCIATED WITH THE REUSE, ALTERATION OR MODIFICATION OF THE CONTENTS HEREIN.

SITE #: F8147
SITE NAME: ROUND LAKE
ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

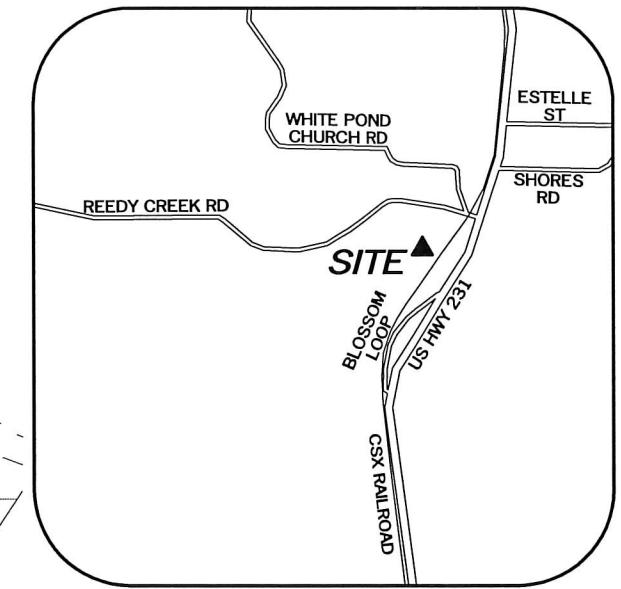
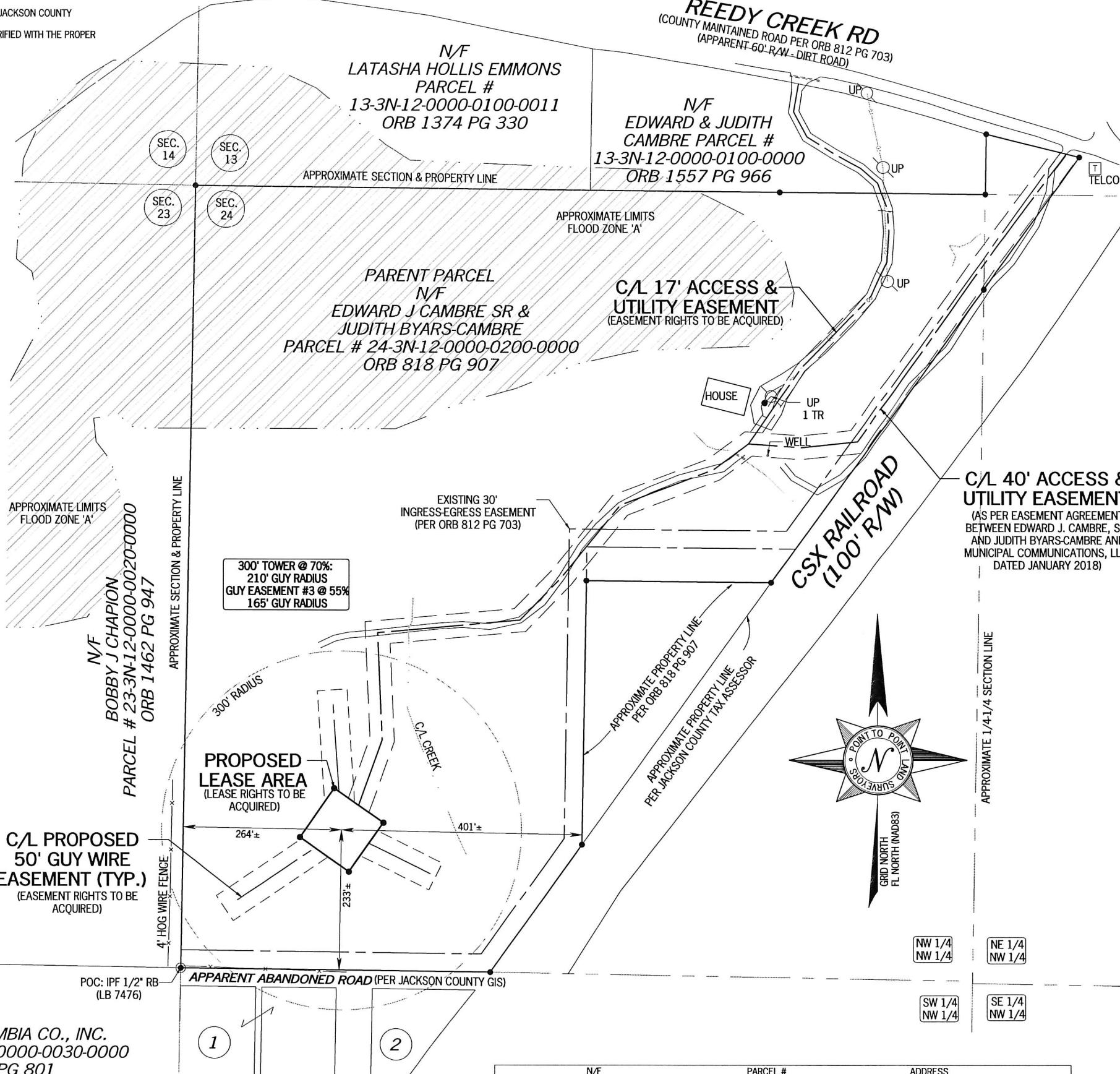
SITE TYPE: TOWER & MAKE READY
SHEET TITLE:

TITLE SHEET
SHEET NUMBER:

T1

SUBJECT PROPERTY

OWNER: EDWARD J & JUDITH CAMBRE (PER TAX ASSESSOR)
SITE ADDRESS: 2441 REEDY CREED ROAD, ALFORD FL 32420
PARCEL ID: 24-3N-12-0000-0200-0000
AREA: 28 ACRES (PER TAX ASSESSOR)
ZONED: NO ZONING IN UNINCORPORATED JACKSON COUNTY
ALL ZONING INFORMATION SHOULD BE VERIFIED WITH THE PROPER
ZONING OFFICIALS
REFERENCE: DEED BOOK 818 PAGE 906



VICINITY MAP

NOT TO SCALE

GENERAL NOTES

- THIS SPECIFIC PURPOSE SURVEY IS FOR THE LEASED PREMISES AND EASEMENTS ONLY. THIS SPECIFIC PURPOSE SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF SOUTHERNLINING AND EXCLUSIVELY FOR THE TRANSFERRAL OF THE PROPOSED LEASED PREMISES AND THE RIGHTS OF EASEMENT SHOWN HEREON AND SHALL NOT BE USED AS AN EXHIBIT OR EVIDENCE IN THE FEE SIMPLE TRANSFERRAL OF THE PARENT PARCEL NOR ANY PORTION OR PORTIONS THEREOF. BOUNDARY INFORMATION SHOWN HEREON HAS BEEN COMPILED FROM TAX MAPS AND DEED DESCRIPTIONS ONLY. NO BOUNDARY SURVEY OF THE PARENT PARCEL WAS PERFORMED.

THIS DRAWING DOES NOT REPRESENT A BOUNDARY SURVEY.

THIS SPECIFIC PURPOSE SURVEY WAS PREPARED WITHOUT BENEFIT OF A TITLE REPORT WHICH MAY REVEAL ADDITIONAL CONVEYANCES, EASEMENTS, OR RIGHTS-OF-WAY NOT SHOWN HEREON.

THE FIELD DATA UPON WHICH THIS SPECIFIC PURPOSE SURVEY IS BASED HAS A CLOSURE PRECISION OF ONE FOOT IN 20,000+ FEET AND AN ANGULAR ERROR OF 5.0" PER ANGLE POINT, AND WAS ADJUSTED USING LEAST SQUARES.

EQUIPMENT USED FOR ANGULAR & LINEAR MEASUREMENTS: LEICA TPS 1200 ROBOTIC & GEOMAX ZENITH 35. [DATE OF LAST FIELD VISIT: 2-27-18]

THE 1' CONTOURS AND SPOT ELEVATIONS SHOWN ON THIS SPECIFIC PURPOSE SURVEY ARE ADJUSTED TO NAVD 88 DATUM (COMPUTED USING GEOID 12B) AND HAVE A

BEARINGS SHOWN ON THIS SPECIFIC PURPOSE SURVEY ARE BASED ON GRID NORTH APPROXIMATE.

DEPARTMENT OF STATE, BUREAU OF POLITICAL AFFAIRS

A PORTION OF THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD AREA AS PER
F.I.R.M. COMMUNITY PANEL NO. 12063C0395D DATED DECEMBER 17, 2010 (ZONE

NO WETLAND AREAS HAVE BEEN INVESTIGATED BY THIS SPECIFIC PURPOSE SURVEY.

ALL ZONING INFORMATION SHOULD BE VERIFIED WITH THE PROPER ZONING OFFICIALS.

ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM ABOVE GROUND FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEES THAT ANY UNDERGROUND UTILITIES SHOWN COMPRIZE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT ANY UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PRACTICALLY LOCATED ANY UNDERGROUND UTILITIES.

ADDITIONS OR DELETIONS TO THIS SURVEY MAP BY OTHER THAN THE SIGNING PARTY IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY

ORIGINAL SURVEY IS KEPT ON FILE IN THE SURVEYOR'S OFFICE



G. DARRELL TAYLOR, FLORIDA REGISTERED LAND SURVEYOR #LS6904
1010 PENNSYLVANIA AVENUE
MCDONOUGH, GA 30253
PHONE #: (678) 565-4440

SURVEY NOT VALID WITHOUT SHEETS 24

DRAWN BY: GSH	SHEET:
CHECKED BY: JKL	
APPROVED: C. INER	
DATE: MARCH 21, 2017	
P2P JOB #: G170045	OF 4



SPECIFIC PURPOSE SURVEY PREPARED FOR

 Southern
Inc.

**SOUTHERN COMMUNICATIONS SERVICES, INC.
D/B/A SOUTHERN LINC
4601 SOUTHLAKE PARKWAY BIN SP-0800
HOOVER, AL 35244**

"ROUND LAKE"

SITE NO.: F8147

SECTIONS 13 & 24
SHIP 3 NORTH, RANGE 12 WEST,
JACKSON COUNTY, FLORIDA

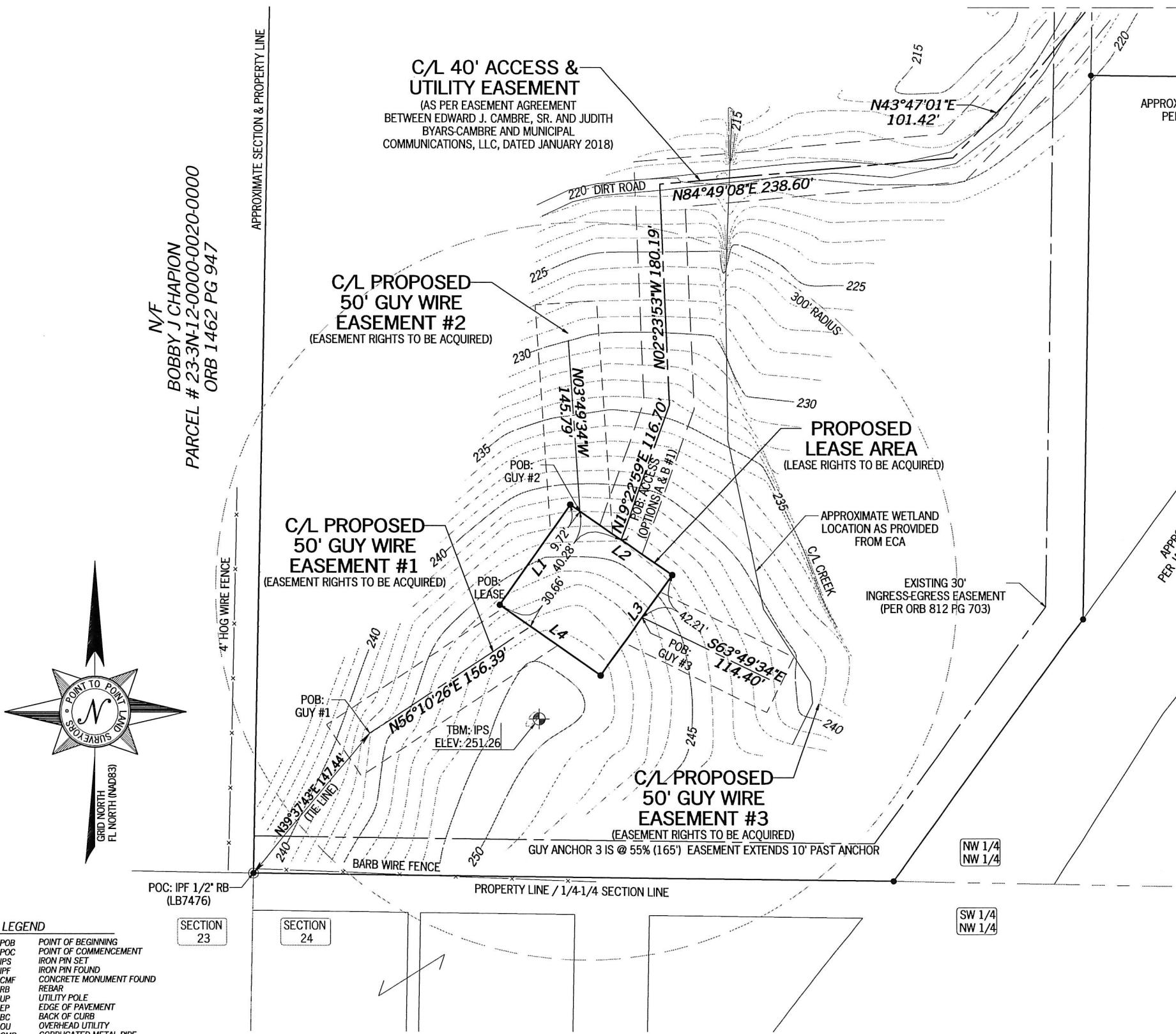
1

SITE INFORMATION

PROPOSED LEASE AREA = 10,000 SQUARE FEET (0.2296 ACRES)

LATITUDE = 30°39'01.56" (NAD 83)
LONGITUDE = -85°23'58.29" (NAD 83)
AT CENTER PROPOSED LEASE AREA

ELEVATION AT CENTER OF PROPOSED LEASE AREA = 247.3' A.M.S.L.



MATCH LINE SHEET 3

APPROXIMATE PROPERTY LINE
PER ORB 818 PG 907

CSX RAILROAD
(100' R/W)

LINE TABLE

LINE	BEARING	DISTANCE
L1	N35°01'44"E	100.00'
L2	S54°58'16"E	100.00'
L3	S35°01'44"W	100.00'
L4	N54°58'16"W	100.00'
L5	N53°23'13"E	71.79'
L6	S85°54'50"E	87.75'
L7	N84°03'11"E	94.26'
L8	N34°30'56"E	154.82'
L9	N43°59'03"E	168.94'
L10	N24°06'10"E	62.42'
L11	N03°51'38"E	51.50'
L12	N03°56'28"W	37.83'
L13	N19°09'35"W	45.77'
L14	N49°49'28"W	38.32'
L15	N60°56'49"W	51.72'
L16	N57°50'33"W	52.04'
L17	N27°44'10"W	47.48'
L18	N09°49'49"E	47.60'

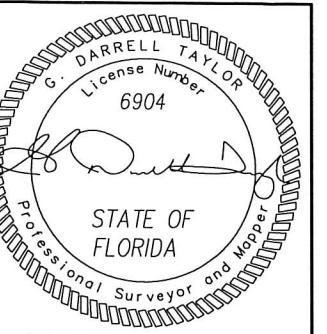
PROPOSED LEASE AREA

ALL THAT TRACT OR PARCEL OF LAND, LYING AND BEING IN THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 12 WEST, JACKSON COUNTY, FLORIDA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TO FIND THE POINT OF BEGINNING, COMMENCE AT A 1/2-INCH REBAR WITH A CAP BEARING THE CERTIFICATION LB7476 FOUND AT THE SOUTHWEST CORNER OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 24, THENCE RUN ALONG A TIE LINE, NORTH 39°37'43"EAST, 147.44 FEET TO A POINT; THENCE, NORTH 56°10'26"EAST, 156.39 FEET TO A POINT; THENCE, NORTH 54°58'16" WEST, 30.66 FEET TO A POINT AND THE TRUE POINT OF BEGINNING; THENCE RUNNING, NORTH 35°01'44"EAST, 100.00 FEET TO A POINT; THENCE, SOUTH 54°58'16"EAST, 100.00 FEET TO A POINT; THENCE, SOUTH 35°01'44" WEST, 100.00 FEET TO A POINT; THENCE, NORTH 54°58'16" WEST, 100.00 FEET TO A POINT AND THE TRUE POINT OF BEGINNING.

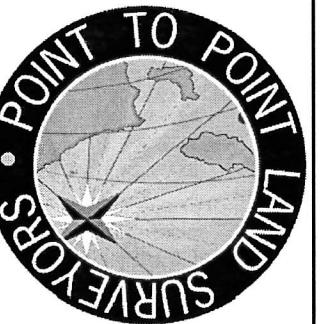
SAID TRACT CONTAINS 0.2296 ACRES (10,000 SQUARE FEET), MORE OR LESS.

SURVEY NOT VALID WITHOUT SHEETS 1, 3 & 4



NO.	DATE	REVISION
4	06/07/2017	OPTION B ACCESS - NRW
5	08/21/2017	REDUCE GUY EASE #3 - CLC
6	02/09/2018	EASEMENT AGREEMENT - NRW
7	03/14/2018	17' ACCESS - GSH

SPECIFIC PURPOSE SURVEY PREPARED BY:



1010 Pennsylvania Avenue
McDonough, GA 30253
(p) 678.565.4440 (f) 678.565.4497
(w) pointtopointsurvey.com

SPECIFIC PURPOSE SURVEY PREPARED FOR:

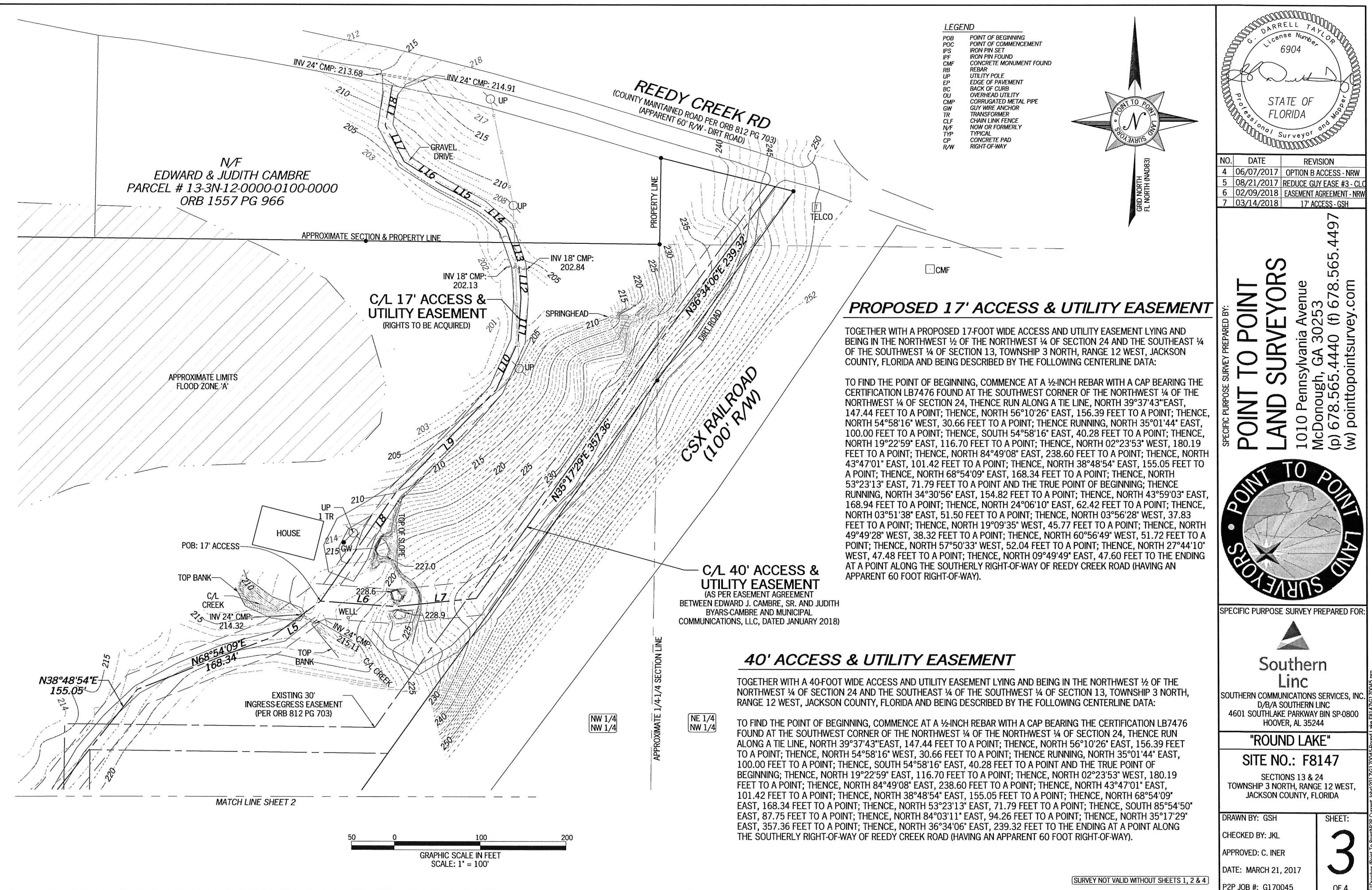
Southern Linc
SOUTHERN COMMUNICATIONS SERVICES, INC.
D/B/A SOUTHERN LINC
4601 SOUTHLAKE PARKWAY BIN SP-0800
HOOVER, AL 35244

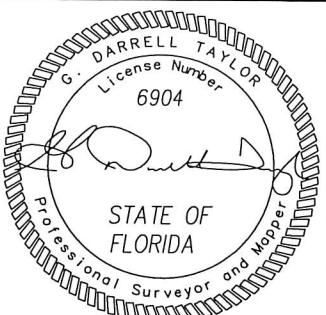
"ROUND LAKE"

SITE NO.: F8147

SECTIONS 13 & 24
TOWNSHIP 3 NORTH, RANGE 12 WEST,
JACKSON COUNTY, FLORIDA

DRAWN BY: GSH
CHECKED BY: JKJ
APPROVED: C. INER
DATE: MARCH 21, 2017
P2P JOB #: G170045
OF 4





PROPOSED GUY WIRE EASEMENT #1

TOGETHER WITH A PROPOSED 50-FOOT WIDE GUY WIRE EASEMENT LYING AND BEING IN THE NORTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 12 WEST, JACKSON COUNTY, FLORIDA AND BEING DESCRIBED BY THE FOLLOWING CENTERLINE DATA:

TO FIND THE POINT OF BEGINNING, COMMENCE AT A ½-INCH REBAR WITH A CAP BEARING THE CERTIFICATION LB7476 FOUND AT THE SOUTHWEST CORNER OF THE NORTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 24, THENCE RUN ALONG A TIE LINE, NORTH 39°37'43"EAST, 147.44 FEET TO A POINT AND THE TRUE POINT OF BEGINNING; THENCE RUNNING, NORTH 56°10'26" EAST, 156.39 FEET TO THE ENDING AT A POINT.

PROPOSED GUY WIRE EASEMENT #2

TOGETHER WITH A PROPOSED 50-FOOT WIDE GUY WIRE EASEMENT LYING AND BEING IN THE NORTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 12 WEST, JACKSON COUNTY, FLORIDA AND BEING DESCRIBED BY THE FOLLOWING CENTERLINE DATA:

TO FIND THE POINT OF BEGINNING, COMMENCE AT A ½-INCH REBAR WITH A CAP BEARING THE CERTIFICATION LB7476 FOUND AT THE SOUTHWEST CORNER OF THE NORTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 24, THENCE RUN ALONG A TIE LINE, NORTH 39°37'43"EAST, 147.44 FEET TO A POINT; THENCE, NORTH 56°10'26" EAST, 156.39 FEET TO A POINT; THENCE, NORTH 54°58'16" WEST, 30.66 FEET TO A POINT; THENCE RUNNING, NORTH 35°01'44" EAST, 100.00 FEET TO A POINT; THENCE, SOUTH 54°58'16" EAST, 9.72 FEET TO A POINT AND THE TRUE POINT OF BEGINNING; THENCE RUNNING, NORTH 03°49'34" WEST, 145.79 FEET TO THE ENDING AT A POINT.

PROPOSED GUY WIRE EASEMENT #3

TOGETHER WITH A PROPOSED 50-FOOT WIDE GUY WIRE EASEMENT LYING AND BEING IN THE NORTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 12 WEST, JACKSON COUNTY, FLORIDA AND BEING DESCRIBED BY THE FOLLOWING CENTERLINE DATA:

TO FIND THE POINT OF BEGINNING, COMMENCE AT A ½-INCH REBAR WITH A CAP BEARING THE CERTIFICATION LB7476 FOUND AT THE SOUTHWEST CORNER OF THE NORTHWEST ¼ OF THE NORTHWEST ¼ OF SECTION 24, THENCE RUN ALONG A TIE LINE, NORTH 39°37'43"EAST, 147.44 FEET TO A POINT; THENCE, NORTH 56°10'26" EAST, 156.39 FEET TO A POINT; THENCE, NORTH 54°58'16" WEST, 30.66 FEET TO A POINT; THENCE RUNNING, NORTH 35°01'44" EAST, 100.00 FEET TO A POINT; THENCE, SOUTH 35°01'44" WEST, 42.21 FEET TO A POINT AND THE TRUE POINT OF BEGINNING; THENCE RUNNING, SOUTH 63°49'34" EAST, 114.40 FEET TO THE ENDING AT A POINT.

NO.	DATE	REVISION
4	06/07/2017	OPTION B ACCESS - NRW
5	08/21/2017	REDUCE GUY EASE #3 - CLO
6	02/09/2018	EASEMENT AGREEMENT - NRW
7	03/14/2018	17' ACCESS - GSH

POINT TO POINT LAND SURVEYORS

SPECIFIC PURPOSE SURVEY PREPARED BY:
1010 Pennsylvania Avenue
McDonough, GA 30253
(p) 678.565.4440 (f) 678.565.4497
(w) pointtopointsurvey.com



SPECIFIC PURPOSE SURVEY PREPARED FOR:



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D/B/A SOUTHERN LINC
4601 SOUTHLAKE PARKWAY BIN SP-0800
HOOVER, AL 35244

"ROUND LAKE"

SITE NO.: F8147

SECTIONS 13 & 24
TOWNSHIP 3 NORTH, RANGE 12 WEST,
JACKSON COUNTY, FLORIDA

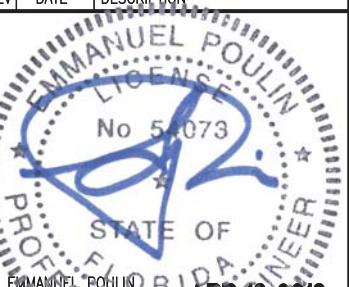
DRAWN BY: GSH
CHECKED BY: JKL
APPROVED: C. INER
DATE: MARCH 21, 2017
P2P JOB #: G170045

4
OF 4

APPROVALS

CARRIER: _____
LANDLORD: _____
LEASING: _____
CONSTRUCTION: _____

DRAWN BY:	JG	CHECKED BY:	JD
O	04/13/18	ISSUED FOR CONSTRUCTION	
D	03/19/18	ISSUED FOR REVIEW	
C	01/23/18	ISSUED FOR REVIEW	
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REV	DATE	DESCRIPTION	

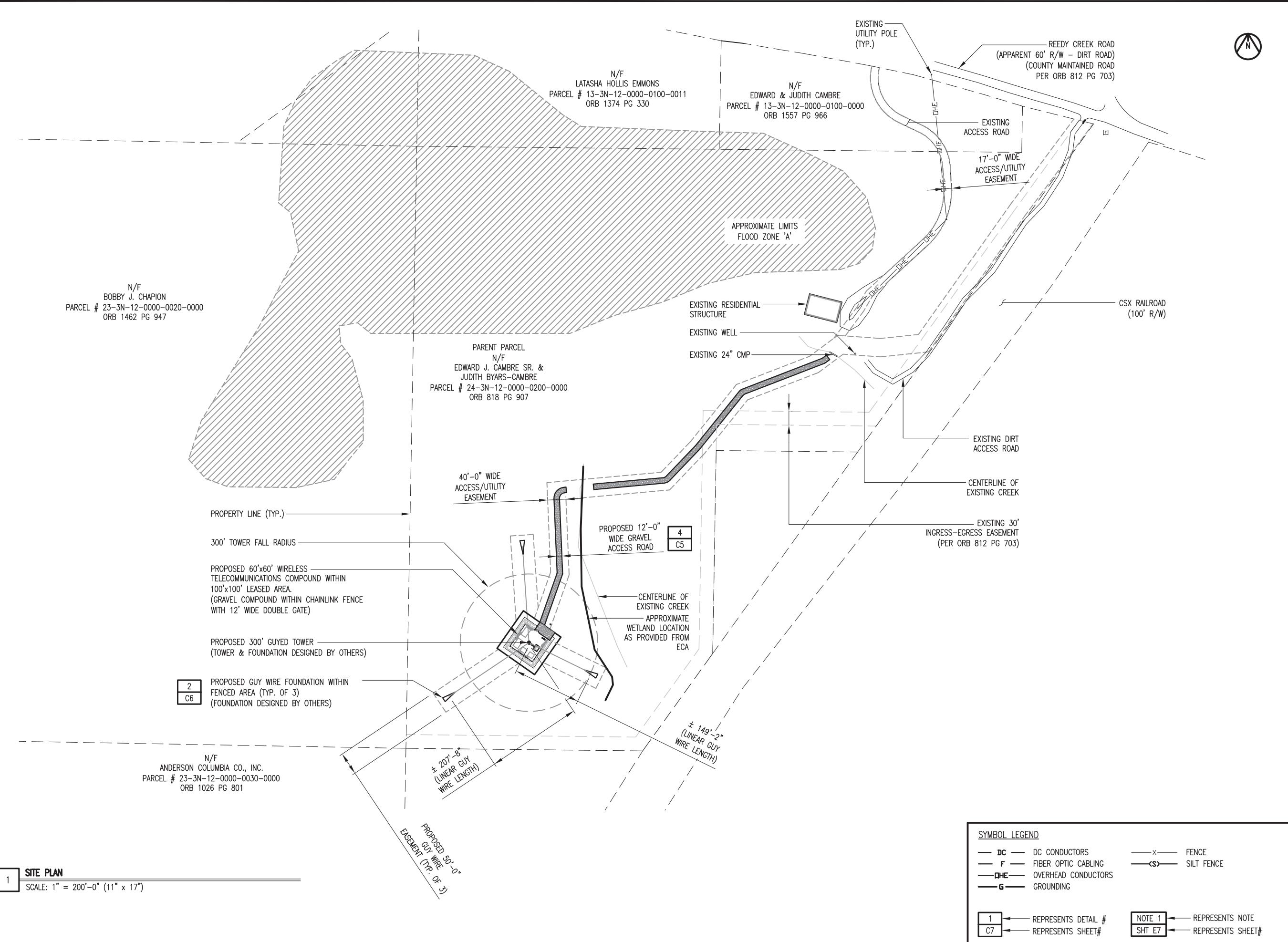


EMMANUEL POULIN
FL. P.E. #54073
IT IS A VIOLATION OF LAW FOR MAN TO SIGN UNLESS THEY ARE ACTING
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THIS DOCUMENT, UNLESS SPECIFICALLY AGREED TO BY AW SOLUTIONS, INC.
WRITING. AW SOLUTIONS, INC. DISCLAIMS ALL LIABILITY ASSOCIATED WITH
THE REUSE, ALTERATION OR MODIFICATION OF THE CONTENTS HEREIN.

SITE #: F8147
SITE NAME: ROUND LAKE
ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420
SITE TYPE: TOWER & MAKE READY

SHEET TITLE: SITE PLAN

SHEET NUMBER: C1



APPROVALS

CARRIER: _____

LANDLORD: _____

LEASING: _____

CONSTRUCTION: _____

DRAWN BY: JG CHECKED BY: JD

O	04/13/18	ISSUED FOR CONSTRUCTION
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C	01/23/18	ISSUED FOR REVIEW
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A	09/28/17	ISSUED FOR REVIEW

REV DATE DESCRIPTION



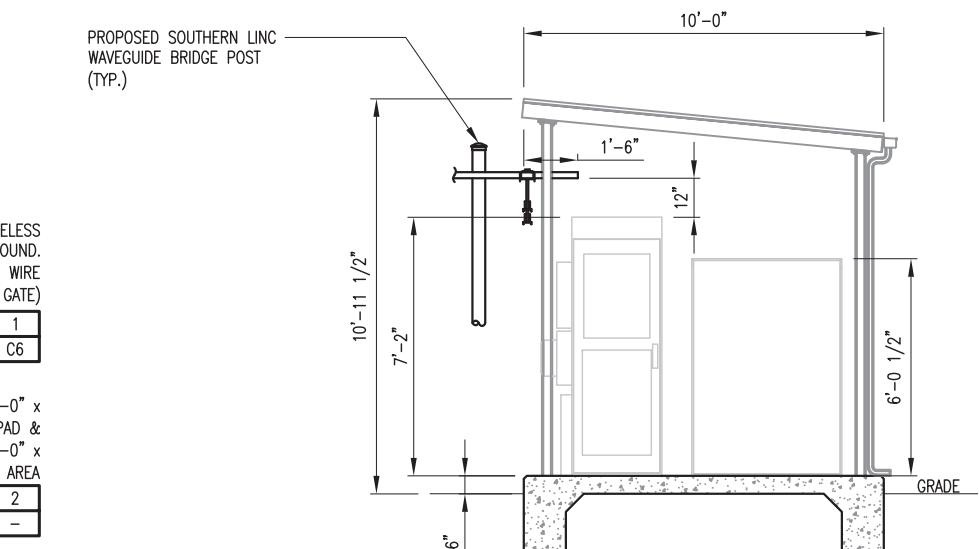
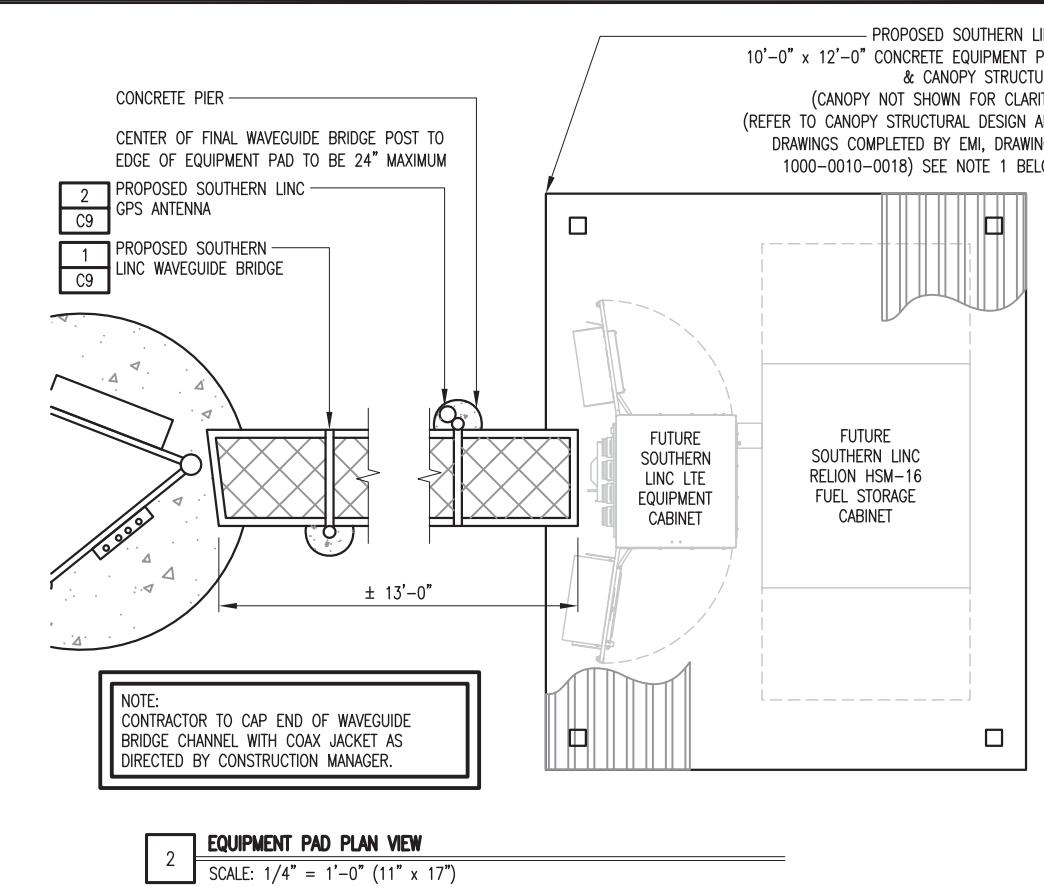
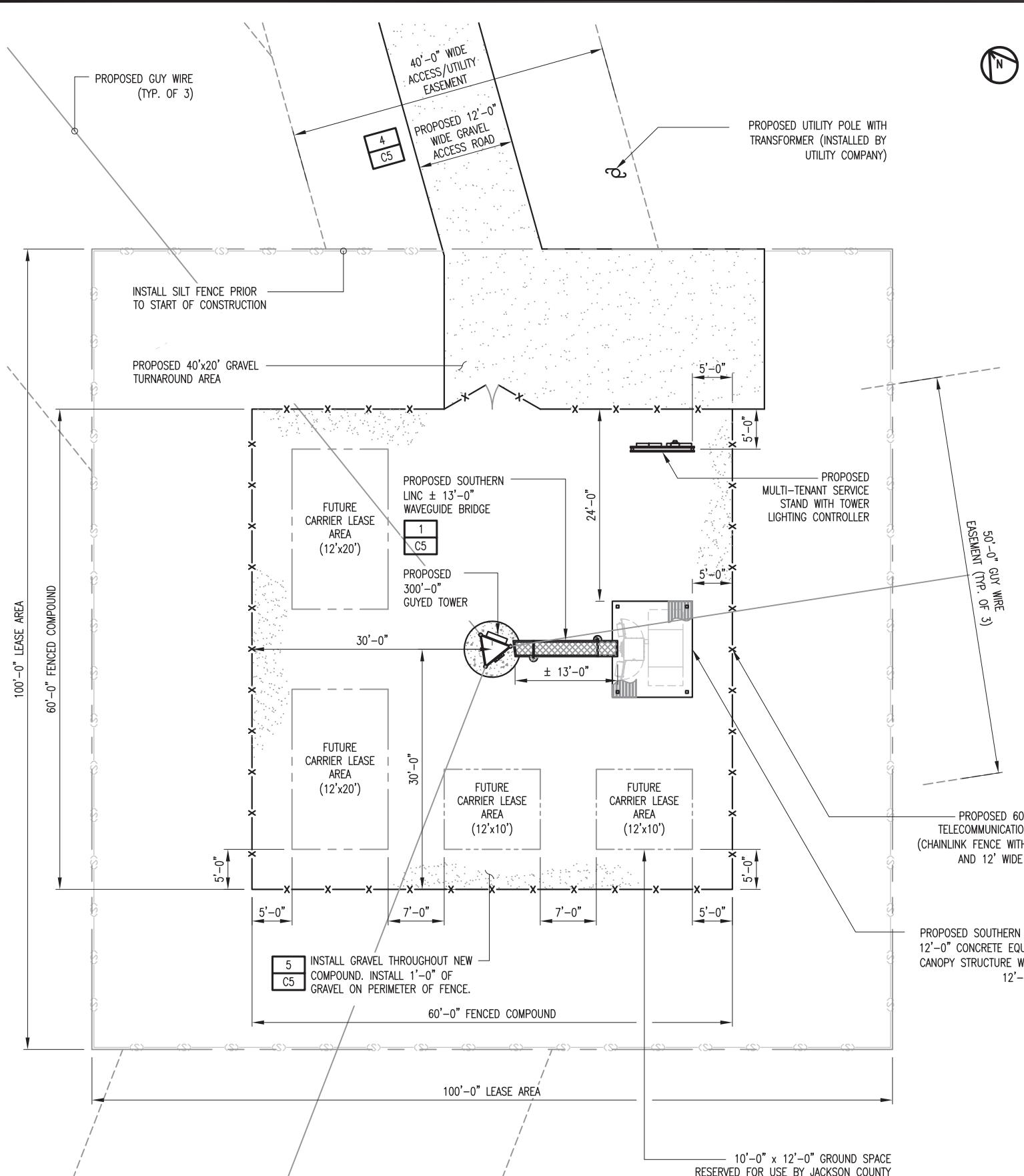
SITE #: F8147

SITE NAME: ROUND LAKE
ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY

SHEET TITLE: DETAILED SITE PLAN

SHEET NUMBER: C2



SYMBOL LEGEND	
DC	DC CONDUCTORS
F	FIBER OPTIC CABLEING
DHE	OVERHEAD CONDUCTORS
G	GROUNDING
X	FENCE
(S)	SILT FENCE

1	REPRESENTS DETAIL #
C7	REPRESENTS SHEET#
NOTE 1	REPRESENTS NOTE
SHT E7	REPRESENTS SHEET#

APPROVALS

CARRIER: _____
LANDLORD: _____
LEASING: _____
CONSTRUCTION: _____

DRAWN BY: JG CHECKED BY: JD

O	04/13/18	ISSUED FOR CONSTRUCTION
D	03/19/18	ISSUED FOR REVIEW
C	01/23/18	ISSUED FOR REVIEW
B	10/02/17	ISSUED FOR REVIEW
A	09/28/17	ISSUED FOR REVIEW

REV DATE DESCRIPTION



EMMANUEL POULIN
FL PID #54073
APR 13 2018

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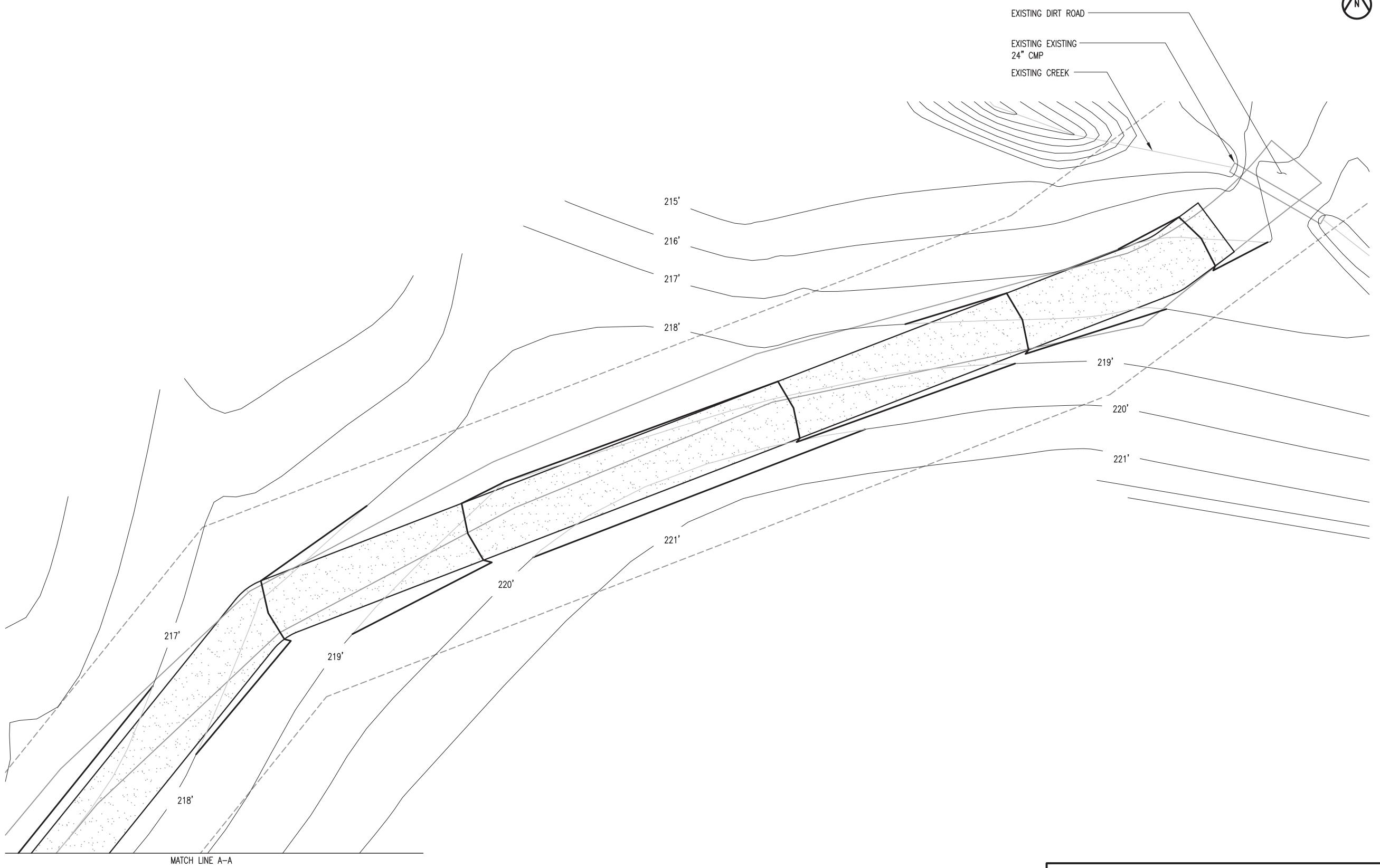
SITE #: F8147
SITE NAME: ROUND LAKE
ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420
SITE TYPE: TOWER & MAKE READY

SHEET TITLE:

GRADING PLAN

SHEET NUMBER:

C3



GRADING PLAN
1 SCALE: 1" = 20'-0" (11"x17")

SYMBOL LEGEND

- PROPOSED GRADE
- X — FENCE
- Existing Grade — SILT FENCE
- Relocated Grade —

1
C7

REPRESENTS DETAIL #
REPRESENTS SHEET #

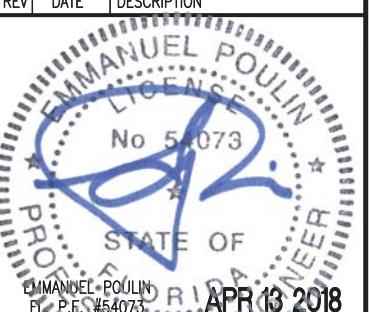
NOTE 1
SHT E7

REPRESENTS NOTE
REPRESENTS SHEET #

APPROVALS

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LANDLORD: _____
LEASING: _____
CONSTRUCTION: _____

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REV	DATE	DESCRIPTION	

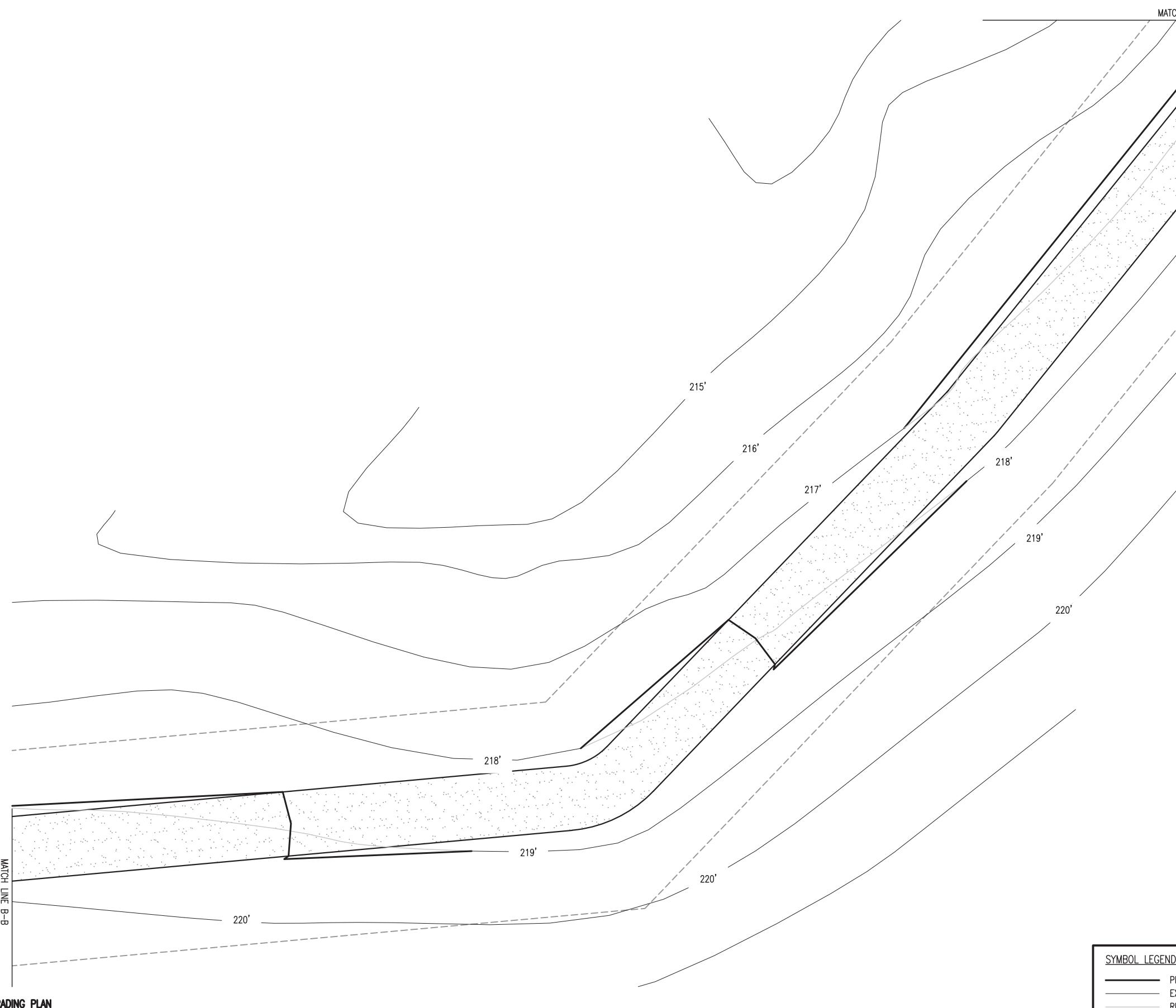


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ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420
SITE TYPE: TOWER & MAKE READY

SHEET TITLE: GRADING PLAN

SHEET NUMBER: C3.1



SYMBOL LEGEND

- PROPOSED GRADE
- X — FENCE
- Existing Grade — SILT FENCE
- Relocated Grade —

1 ————— REPRESENTS DETAIL #
C7 ————— REPRESENTS SHEET #

NOTE 1 ————— REPRESENTS NOTE
SHT E7 ————— REPRESENTS SHEET #

C3.1



APPROVALS

CARRIER: _____
LANDLORD: _____
LEASING: _____
CONSTRUCTION: _____

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SITE NAME: ROUND LAKE

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ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY

SHEET TITLE:

GRADING PLAN

SHEET NUMBER:

C3.2

EXISTING DIRT ROAD

216'

217'

218'

30'-0"

30'-0"

219'

220'

MATCH LINE
B-B

219'

220'

221'

222'

223'

224'

225'

226'

227'

CENTERLINE OF
EXISTING CREEK

MATCH LINE C-C

SYMBOL LEGEND

- PROPOSED GRADE
- X — FENCE
- Existing Grade
- Silt Fence
- Relocated Grade

- X — FENCE
- Silt Fence

1 — Represents Detail #
C7 — Represents Sheet #

NOTE 1 — Represents Note
SHT E7 — Represents Sheet #

GRADING PLAN

SCALE: 1" = 20'-0" (11"x17")

1

APPROVALS

CARRIER: _____

LANDLORD: _____

LEASING: _____

CONSTRUCTION: _____

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EMMANUEL POULIN
FL. P.E. #54073

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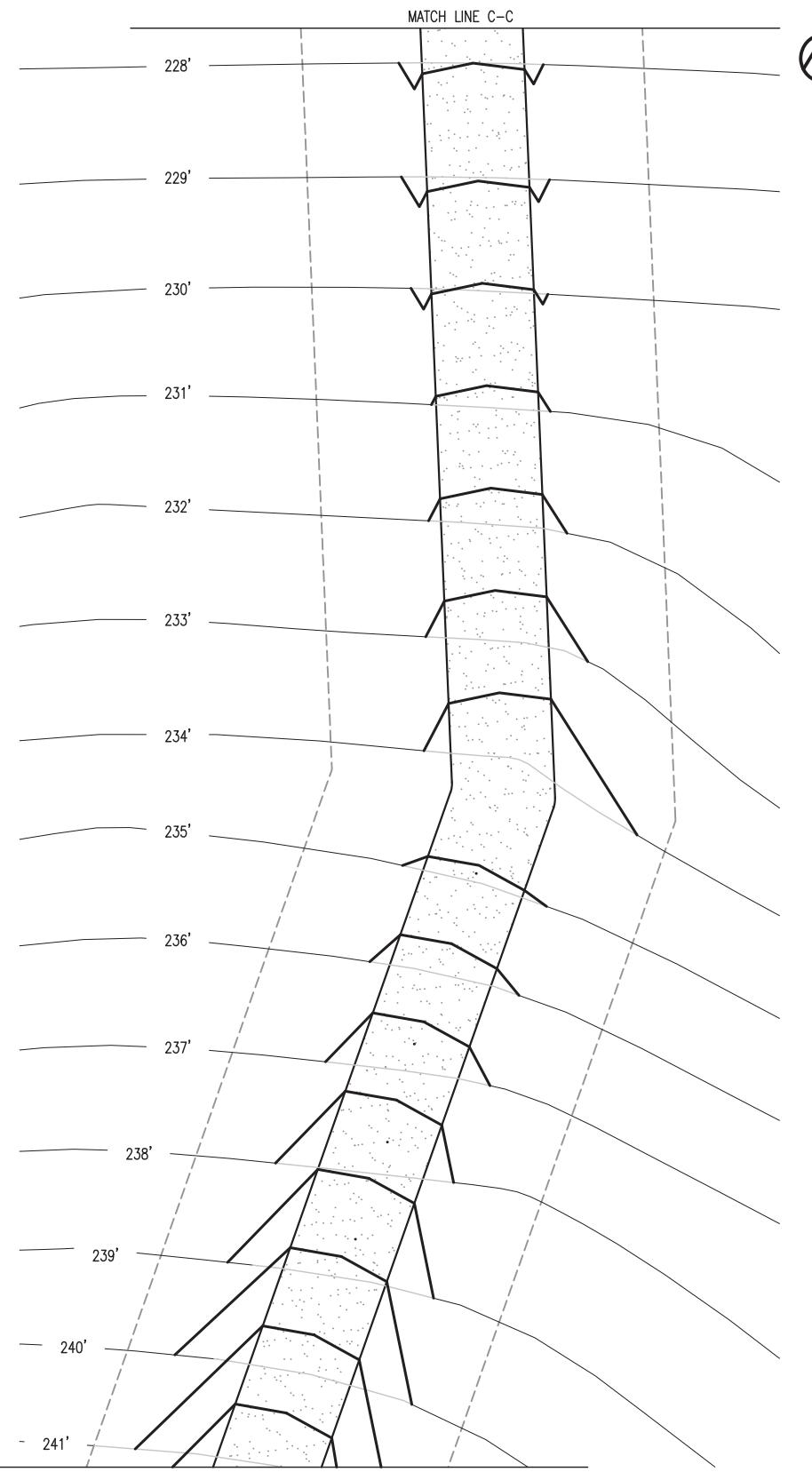
SITE TYPE: TOWER & MAKE READY

SHEET TITLE:

GRADING PLAN

SHEET NUMBER:

C3.3



SYMBOL LEGEND

- PROPOSED GRADE
- EXISTING GRADE
- RELOCATED GRADE

- X — FENCE
- S — SILT FENCE

1 — REPRESENTS DETAIL #
C7 — REPRESENTS SHEET #

NOTE 1 — REPRESENTS NOTE
SHT E7 — REPRESENTS SHEET #

GRADING PLAN

SCALE: 1" = 20'-0" (11"x17")

1

APPROVALS

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LEASING: _____

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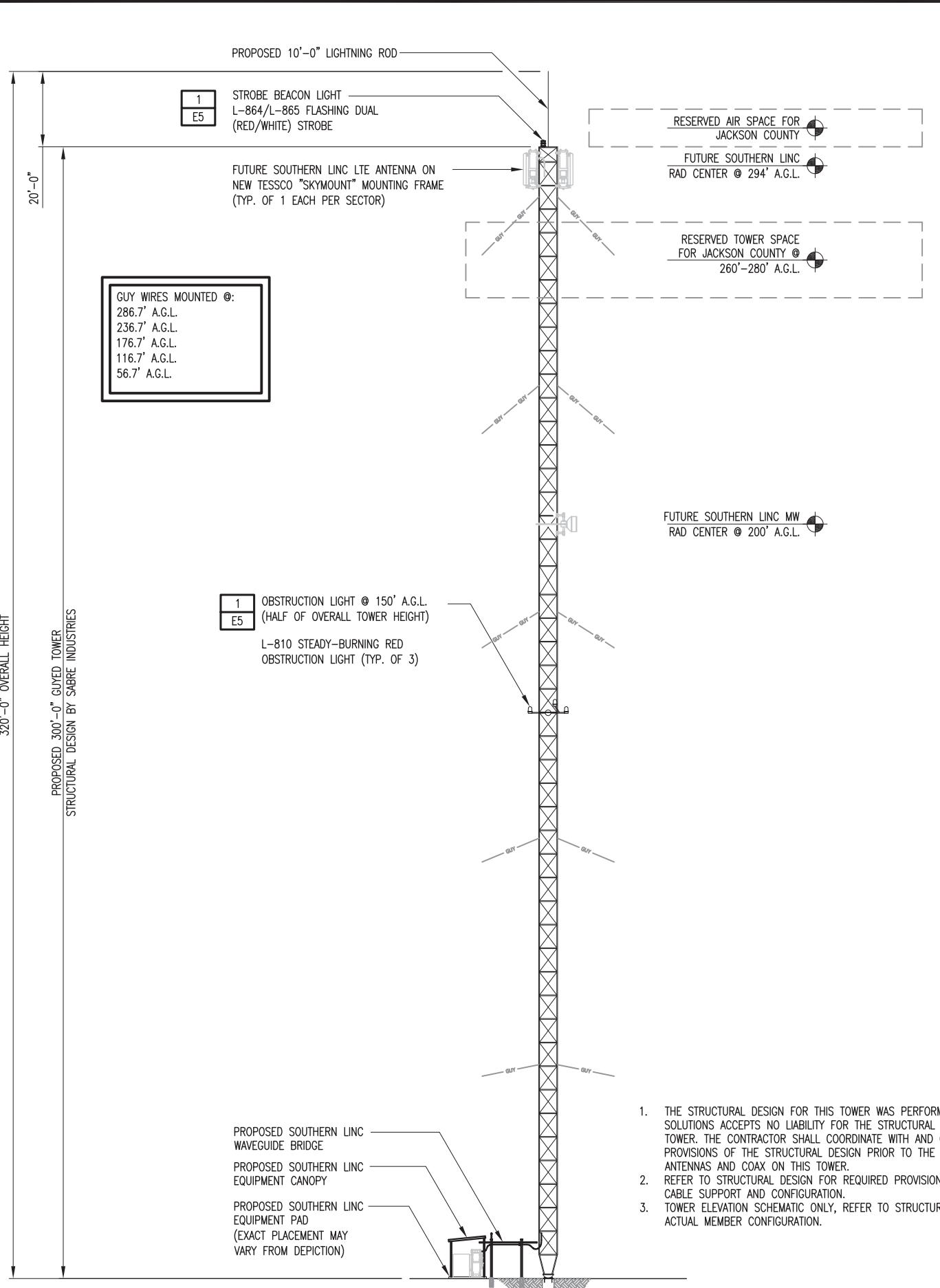
SITE TYPE: TOWER & MAKE READY

SHEET TITLE:

TOWER ELEVATION

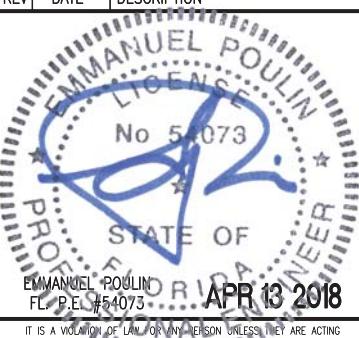
SHEET NUMBER:

C4



1. THE STRUCTURAL DESIGN FOR THIS TOWER WAS PERFORMED BY OTHERS, AW SOLUTIONS ACCEPTS NO LIABILITY FOR THE STRUCTURAL CAPACITY OF THIS TOWER. THE CONTRACTOR SHALL COORDINATE WITH AND COMPLY WITH THE PROVISIONS OF THE STRUCTURAL DESIGN PRIOR TO THE INSTALLATION OF ANTENNAS AND COAX ON THIS TOWER.
2. REFER TO STRUCTURAL DESIGN FOR REQUIRED PROVISIONS FOR COAXIAL CABLE SUPPORT AND CONFIGURATION.
3. TOWER ELEVATION SCHEMATIC ONLY, REFER TO STRUCTURAL DESIGN FOR ACTUAL MEMBER CONFIGURATION.

APPROVALS			
CARRIER:	_____		
LANDLORD:	_____		
LEASING:	_____		
CONSTRUCTION:	_____		
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REV	DATE	DESCRIPTION	

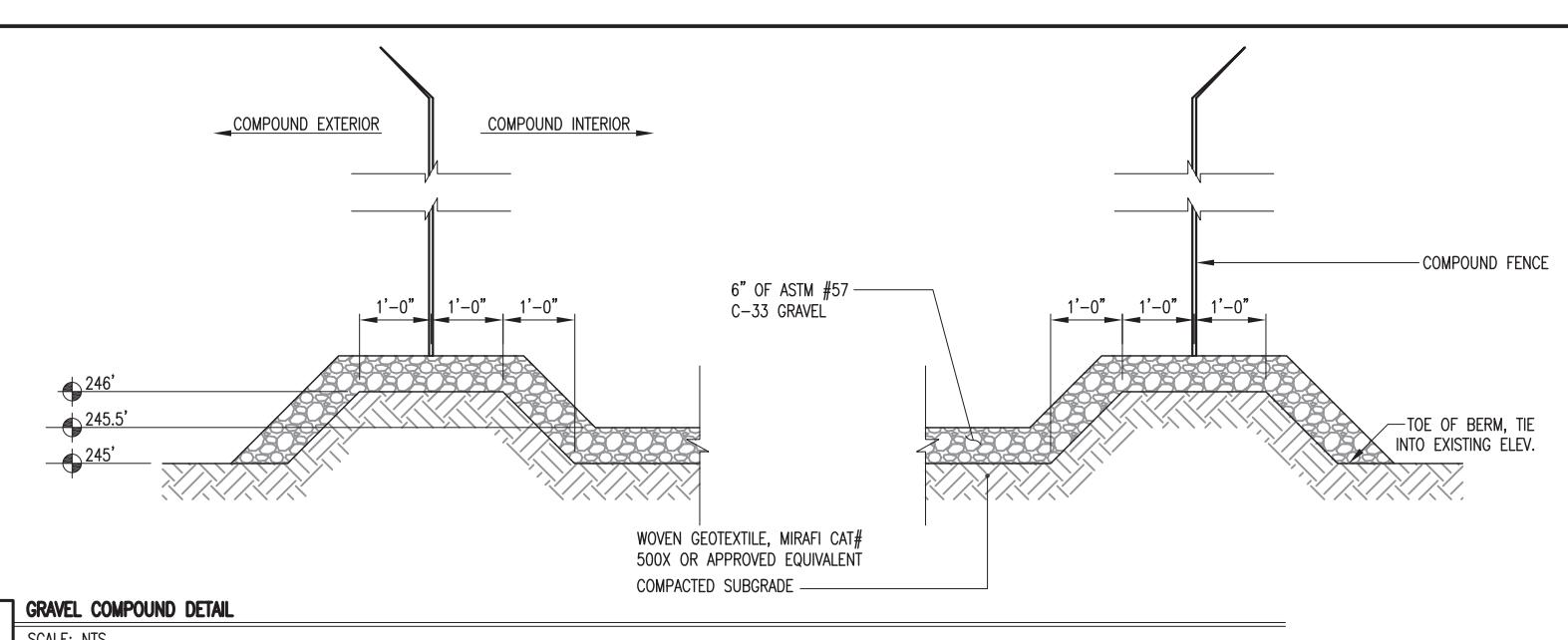
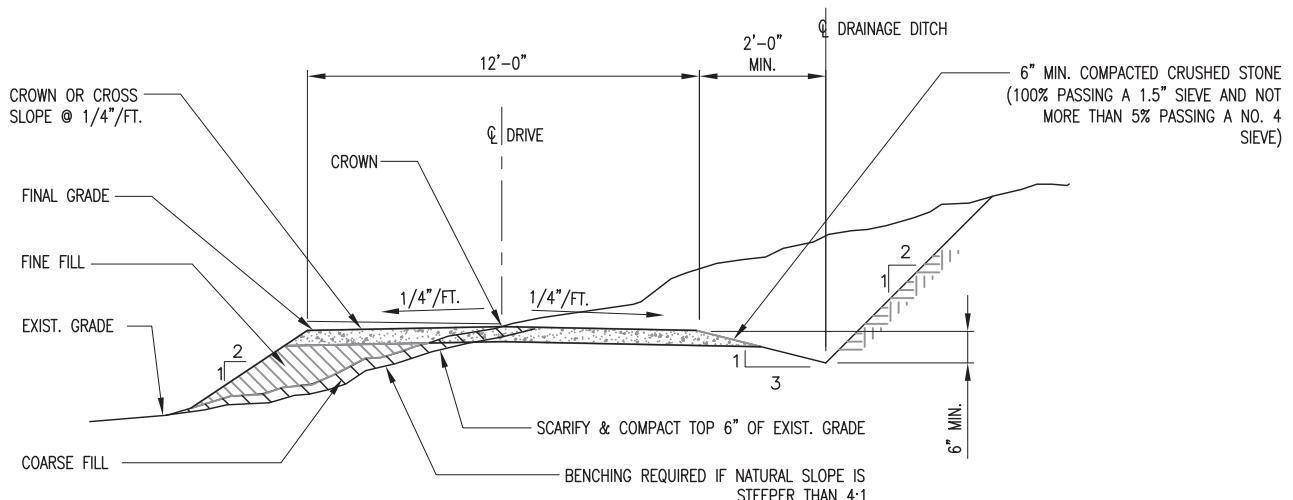
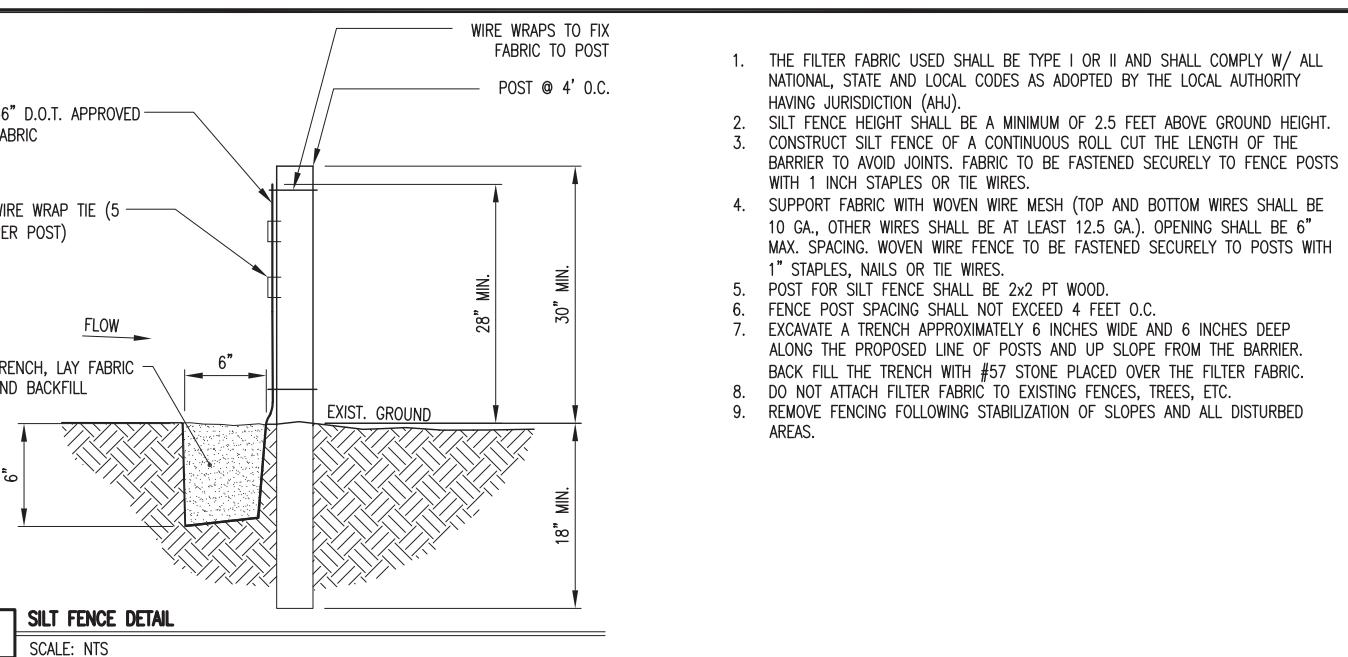
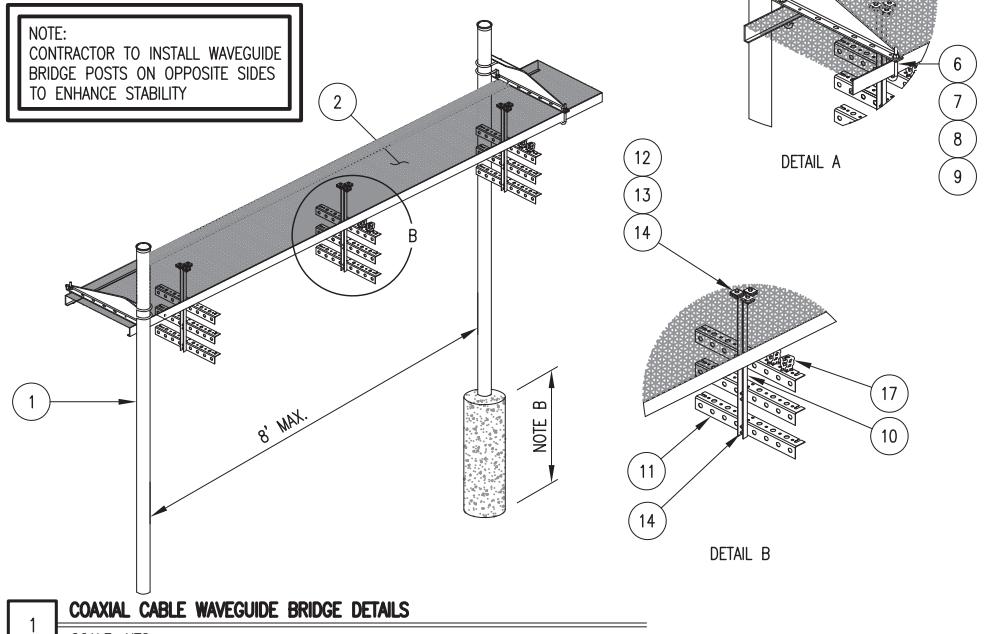


SITE #: F8147
SITE NAME: ROUND LAKE
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SITE TYPE: TOWER & MAKE READY
SHEET TITLE:
SHEET NUMBER:

DETAILS

C5

ITEM	DESCRIPTION	QTY.
1	DIRECT BURIAL PIPE COLUMN, 17'-0"	2
2	SAFETY GRATING 24" X 10' X 12 GAUGE	1
3	24" WAVEGUIDE BRIDGE SUPPORT BRACKET	2
4	HARDWARE KIT ITEM # 5-18	1
5	1/2" X 3-5/8" X 6" GALV U-BOLT KIT	4
6	1/2" J-BOLT	4
7	1/2" GALV FLAT WASHER	4
8	1/2" GALV LOCK WASHER	4
9	1/2" GALV HEX NUT	4
10	VERTICAL TRAPEZE SECTION	3
11	HORIZONTAL TRAPEZE SECTION	9
12	SQUARE WASHER, 1 1/2" X 1 1/2" W / 7/16" HOLE	18
13	3/8" X 2" GALV BOLT KIT	9
14	3/8" GALV FLAT WASHER	9
15	3/8" X 1" GALV BOLT KIT	18
16	PIPE CAP 3-1/2"	2
17	1-5/8" SNAP-IN HANGERS	AS REQUIRED



APPROVALS

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APR 13 2018

EMMANUEL POULIN
P.E. #54073
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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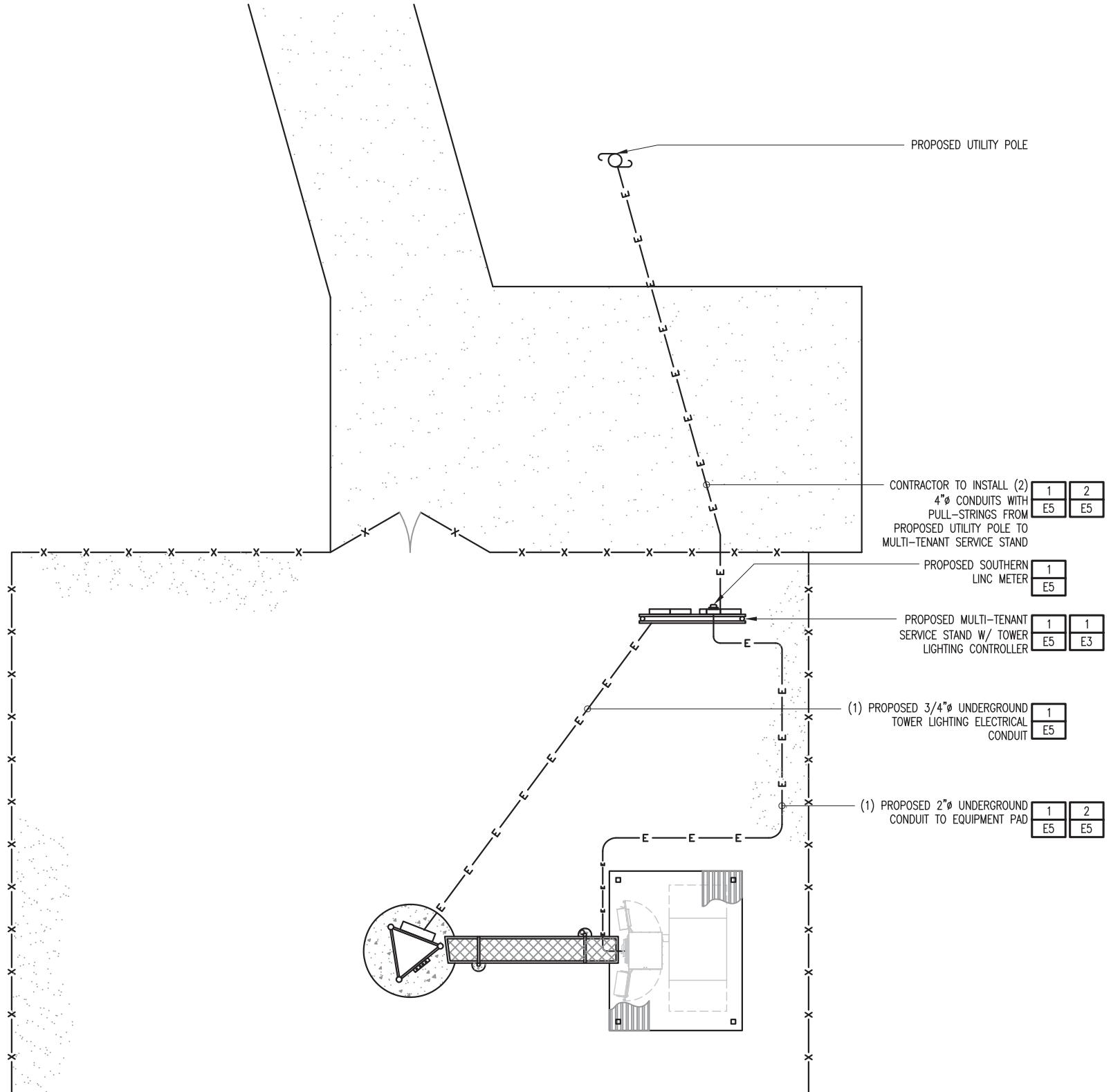
SITE NAME: ROUND LAKE

ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY

SHEET TITLE: ELECTRICAL PLAN

SHEET NUMBER: E1



SYMBOL LEGEND

- E — POWER CONDUIT
- F — FIBER CONDUIT
- OHE — OVERHEAD CONDUCTORS
- G — GROUNDING

- X — FENCE
- S — SILT FENCE

1 — REPRESENTS DETAIL #
C7 — REPRESENTS SHEET #

NOTE 1 — REPRESENTS NOTE
SHT E7 — REPRESENTS SHEET #

APPROVALS

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LANDLORD: _____

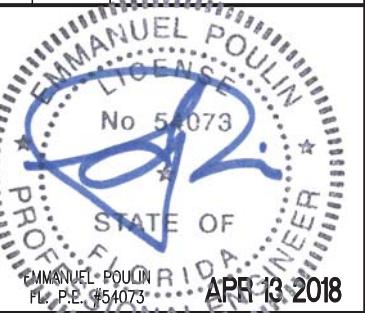
LEASING: _____

CONSTRUCTION: _____

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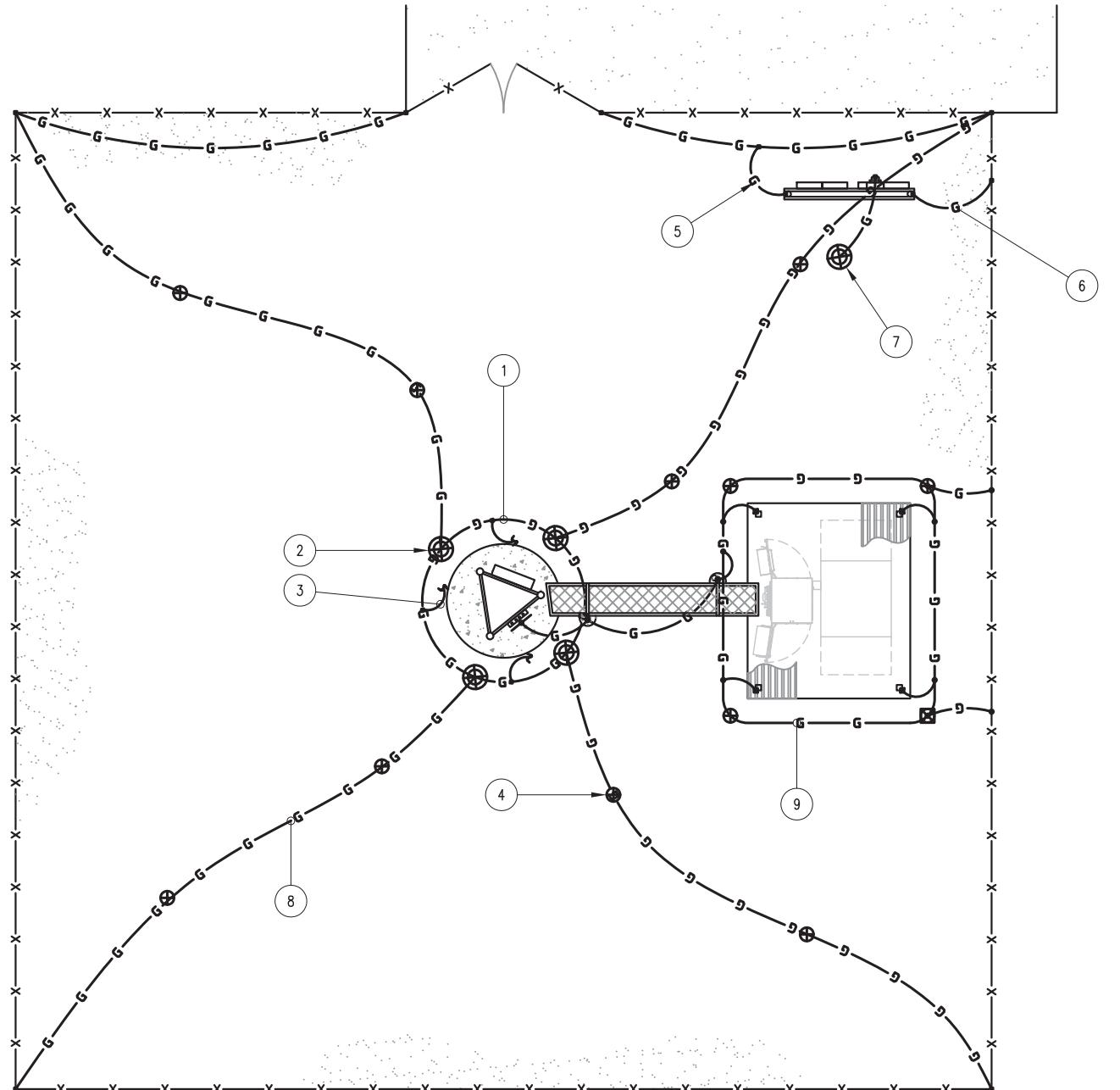
REV DATE DESCRIPTION



1 GROUNDING PLAN

SCALE: NTS

- A. ALL GROUNDING CABLE IN CONCRETE OR THROUGH WALL SHALL BE IN 3/4" PVC CONDUIT. NO METALLIC CONDUIT SHALL BE USED FOR GROUNDING CONDUCTOR SLEEVES.
- B. GROUND ALL EXPOSED METALLIC OBJECTS ON PROPOSED UTILITY RACK USING A TWO-HOLE NEMA DRILLED CONNECTOR SUCH AS THOMAS AND BETTS 32207 OR APPROVED EQUAL.
- C. THE SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR WHEN THE GROUND RING IS INSTALLED SO THAT THE REPRESENTATIVE CAN INSPECT GROUND RING BEFORE IT IS BURIED.
- D. ALL EXTERIOR GROUNDING CONDUCTORS INCLUDING GROUND RING SHALL BE 2/0 STRANDED COPPER. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE AND AVOID SHARP BENDS. THE RADIUS OF ANY BEND SHALL NOT BE LESS THAN 8" AND THE INCLUSIVE ANGLE OF ANY BEND SHALL NOT EXCEED 90°. GROUNDING CONDUCTORS SHALL BE ROUTED DOWNWARD TOWARD THE BURIED GROUND RING.
- E. ALL BELOW GROUND EXTERNAL CONNECTIONS SHALL BE EXOTHERMICALLY WELDED. ALL EXOTHERMIC WELDS TO BURIED GROUND RING SHALL BE THE PARALLEL-TYPE EXCEPT FOR THE GROUND RODS WHICH ARE TEE-TYPE EXOTHERMIC WELDS. REPAIR ALL GALVANIZED SURFACES THAT HAVE BEEN DAMAGED BY EXOTHERMIC WELDING. USE GALVANIZED SPRAY SUCH AS HOLUB LECTROSOL #15-501.
- F. WHERE MECHANICAL CONNECTORS (TWO-HOLE OR CLAMP) ARE USED, APPLY A LIBERAL PROTECTIVE COATING OF A CONDUCTIVE ANTI-OXIDE COMPOUND ON ALL CONNECTORS (NO-OX-ID "A"). PROVIDE LOCK WASHERS ON ALL MECHANICAL CONNECTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT. THOROUGHLY REMOVE ALL PAINT AND CLEAN ALL DIRT FROM SURFACES REQUIRING GROUND CONNECTORS. REPAINT TO MATCH EXISTING AFTER CONNECTION IS MADE TO MAINTAIN CORROSION RESISTANCE. ALL GROUND CONNECTIONS SHALL BE APPROVED FOR THE TYPES OF METALS BEING ATTACHED TO.
- G. THE SUBCONTRACTOR SHALL COORDINATE AS REQUIRED TO HAVE A UTILITY COMPANY REPRESENTATIVE AT THE SITE TO DISCONNECT THE UTILITY NEUTRAL FROM GROUNDING SYSTEM DURING FINAL INSPECTION SO THAT REQUIRED TESTING ON THE GROUND SYSTEM CAN BE PERFORMED. THE SUBCONTRACTOR SHALL PROVIDE NOTICE TO THE CONTRACTOR (TWO) DAYS PRIOR TO FINAL TESTING. IF THE SUBCONTRACTOR FAILS TO MAKE UTILITY COMPANY REPRESENTATIVE AVAILABLE DURING THE FINAL TESTING, THE SUBCONTRACTOR SHALL PAY THE COST FOR AN INDEPENDENT GROUNDING CONSULTANT TO PERFORM THE GROUND RESISTANCE TEST. GROUNDING CONSULTANT SHALL BE SELECTED BY THE CONTRACTOR. IF THE UTILITY COMPANY REPRESENTATIVE FAILS TO APPEAR DUE TO NO FAULT OF THE SUBCONTRACTOR, NO PENALTY SHALL APPLY.
- H. A RESISTANCE TO GROUND OF (5) OHMS OR LESS IS REQUIRED FOR ALL SITES. THE SUBCONTRACTOR SHOULD RETAIN HIS OWN TESTER AT HIS OWN EXPENSE. IN ADDITION, A THIRD PARTY SHOULD BE HIRED TO OBTAIN MEGGAR AND SWEEP RESULTS ON ALL SITES INCLUSIVE OF WHAT RESULTS THE SUBCONTRACTOR SUBMITS TO ENSURE PROPER QUALITY CONTROL ON ALL SITES. SCHEDULE FINAL MEGGAR TESTING PROCEDURES. IF THE FINAL GROUNDING RESISTANCE MEASUREMENT EXCEEDS 5 (FIVE) OHMS, THE SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR.
- I. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
- J. THE GROUND WIRES SHALL BE STRAIGHT FOR MINIMUM INDUCTANCE AND VOLTAGE DROP SINCE CABLE BENDS INCREASE INDUCTANCE. THE MINIMUM REQUIRED BENDING RADIUS IS 8 INCHES WHEN BENDS ARE UNAVOIDABLE. ALL METAL WORK WITHIN 10 FEET OF THE GROUND RING SHALL BE DIRECTLY BONDED TO THIS GROUND SYSTEM WITHOUT USING SERIES OR DAISY CHAIN CONNECTION ARRANGEMENTS.
- K. PAINT, ENAMEL, LACQUER AND OTHER ELECTRICALLY NON-CONDUCTIVE COATINGS SHALL BE REMOVED FROM THREADS AND SURFACE AREAS WHERE CONNECTIONS ARE MADE TO ENSURE GOOD ELECTRICAL CONTINUITY.
- L. CONNECTIONS BETWEEN DISSIMILAR METALS SHALL NOT BE MADE UNLESS THE CONDUCTORS ARE SEPARATED BY A SUITABLE MATERIAL THAT IS A PART OF THE ATTACHMENT DEVICE. ONLY ATTACHMENT DEVICES LISTED AND APPROVED FOR USE WITH THE SPECIFIC DISSIMILAR METALS MAY BE USED FOR THIS PURPOSE.
- M. ALL BELOW GRADE GROUND SYSTEM CONDUCTORS SHALL BE A MINIMUM DEPTH OF 30".
- N. NO-OX-ID "A" TO BE ADDED UNDER ALL GROUND LUG CONNECTIONS.



1. PROVIDE A #2 AWG SOLID BARE TINNED COPPER GROUND RING AROUND THE TOWER FOUNDATION. ALL EXTERIOR GROUNDING CONDUCTORS SHALL BE BURIED A MINIMUM OF 30" BELOW GRADE (OR 6" BELOW FROST LINE, WHICHEVER IS GREATER). THE GROUND RING SHALL BE INSTALLED 2'-0" AWAY FROM CONCRETE (MINIMUM UNLESS SHOWN OTHERWISE ON DRAWINGS). ALL BONDS TO THE BURIED GROUND RING SHALL BE WITH EXOTHERMIC WELDS.
2. PROVIDE INSPECTION SLEEVE WHERE SHOWN FOR ALL PRIMARY CONNECTIONS TO BURIED GROUND RING. SEE GROUND ROD INSPECTION SLEEVE DETAIL, FOR TYPICAL GROUND RING INSPECTION SLEEVE. NOTE: INSPECTION SLEEVE CAN BE USED AS A TEST WELL FOR GROUND WATER LEVEL INSPECTION AND GROUND RESISTANCE TESTING.
3. EXOTHERMICALLY WELD FOUR NO. 2 AWG BARE TINNED COPPER WIRES LOCATED AT 90 DEGREE POINTS AROUND THE BASE PLATE OR WELD TABS OF A GUYED TOWER. DO NOT EXOTHERMICALLY WELD DIRECTLY TO THE GUYED TOWER. THE OTHER END OF EACH NO. 2 AWG WIRE SHALL BE EXOTHERMICALLY WELDED TO A GROUND ROD OF THE BGR.
4. INSTALL 5/8"x10'-0" LONG COPPERCLAD STEEL GROUNDING RODS. SPACING BETWEEN RODS NOT TO EXCEED 16'-0" (NON-LINEAR). TYPICAL FOR ALL GROUND RODS SHOWN, UNLESS NOTED OTHERWISE. GROUND ROD MAY BE INSTALLED WITH A MAXIMUM VARIATION OF 30" FROM VERTICAL IF ROCK IS ENCOUNTERED. SUBCONTRACTOR SHALL BE PREPARED TO CORE DRILL TO INSTALL GROUND RODS AND BACKFILL WITH GROUND ENHANCEMENT MATERIAL.
5. ALL NEW METALLIC ENCLOSURES TO BE BONDED TO GROUND WITH #2 AWG SOLID BARE TINNED COPPER WIRE.
6. BOND ALL EXTERIOR METALLIC CONDUITS, PIPES AND CYLINDRICAL OBJECTS WITH A PENN-UNION GT SERIES CLAMP, BLACKBURN GUV SERIES CLAMP OR A BURNDY GAR 3900BU SERIES CLAMP ONLY. NO SUBSTITUTES ARE ACCEPTABLE.
7. NEW SERVICE ENTRANCE GROUND ROD WITH #2/0 AWG GROUNDING ELECTRODE CONDUCTOR.
8. EXOTHERMICALLY WELD #2 AWG SOLID BARE TINNED COPPER GROUND CONDUCTOR BETWEEN TOWER GROUND RING AND EACH CORNER FENCE POST AND GATE POST.
9. PROVIDE A #2 AWG SOLID BARE TINNED COPPER GROUND CONDUCTOR AROUND THE EQUIPMENT PAD FOUNDATION. ALL EXTERIOR GROUNDING CONDUCTORS SHALL BE BURIED A MINIMUM OF 30" BELOW GRADE (OR 6" BELOW FROST LINE, WHICHEVER IS GREATER). THE GROUND RING SHALL BE INSTALLED 2'-0" AWAY FROM CONCRETE (MINIMUM UNLESS SHOWN OTHERWISE ON DRAWINGS). ALL BONDS TO THE BURIED GROUND RING SHALL BE WITH EXOTHERMIC WELDS.

SYMBOL LEGEND

- E— POWER CONDUIT
- T— TELCO CONDUIT
- OHE— OVERHEAD CONDUCTORS
- G— GROUNDING
- X— FENCE
- S— SILT FENCE

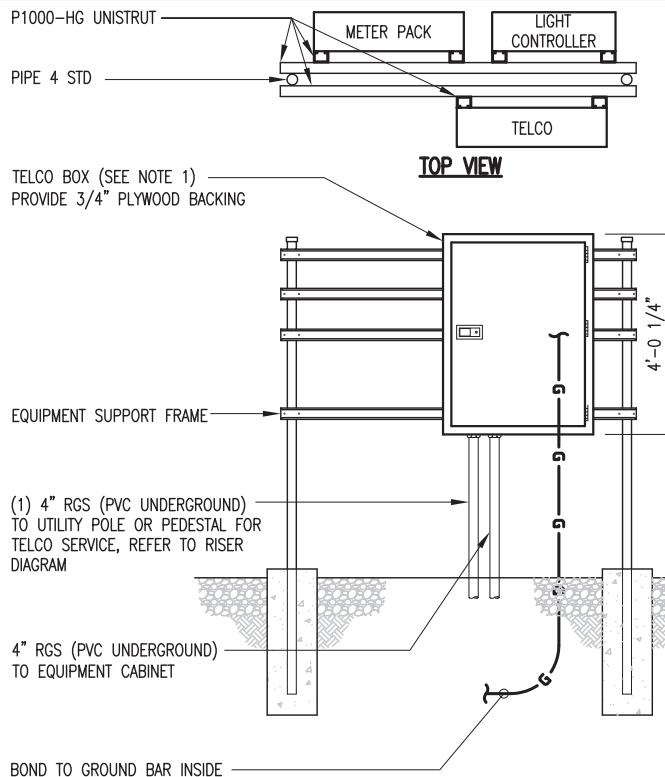
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| 1 | REPRESENTS DETAIL # |
| C7 | REPRESENTS SHEET# |

- | | |
|--------|-------------------|
| NOTE 1 | REPRESENTS NOTE |
| SHT E7 | REPRESENTS SHEET# |

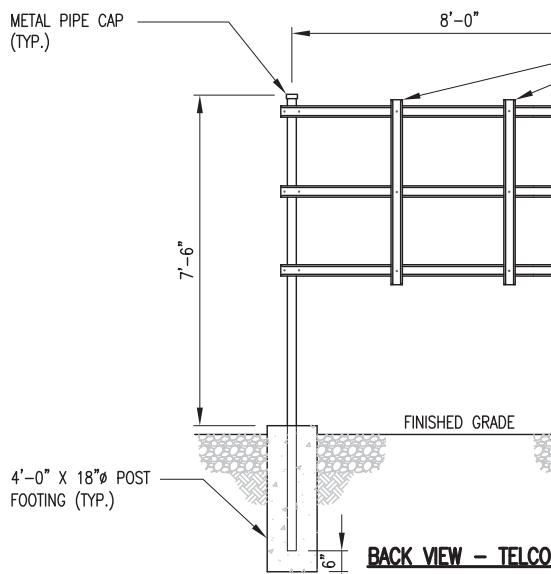
GROUNDING PLAN

SHEET NUMBER:

E2



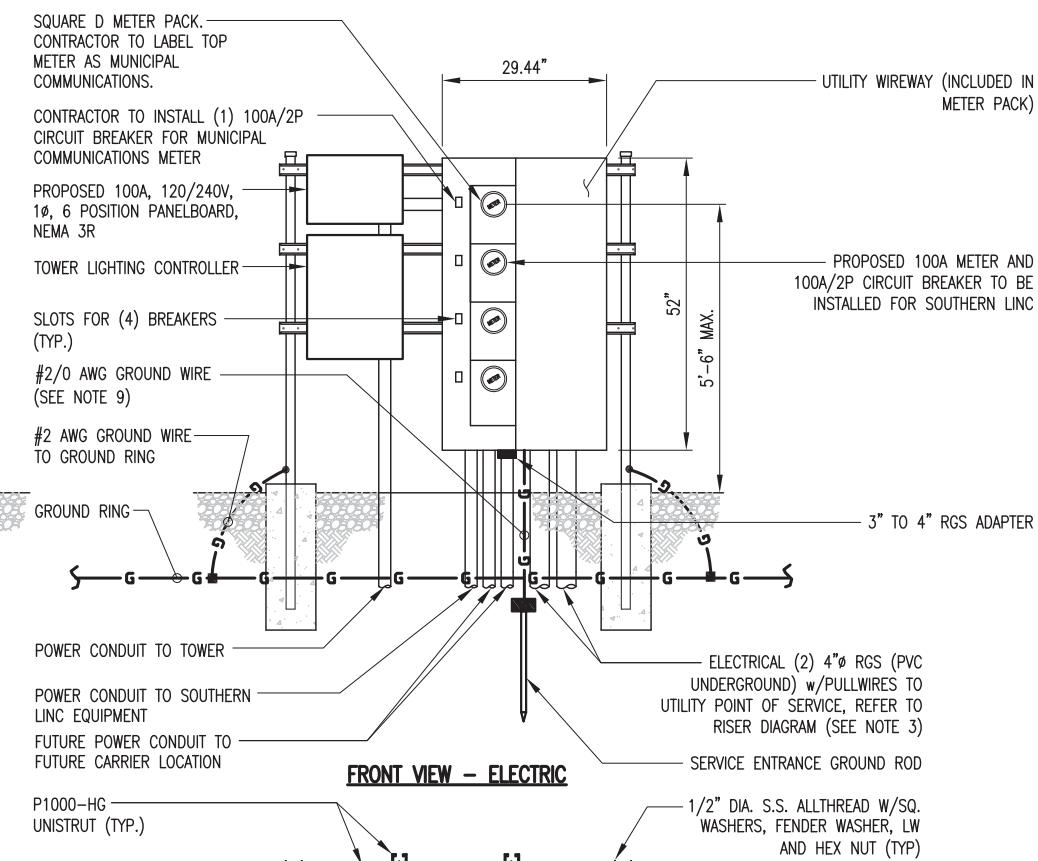
BACK VIEW - TELCO



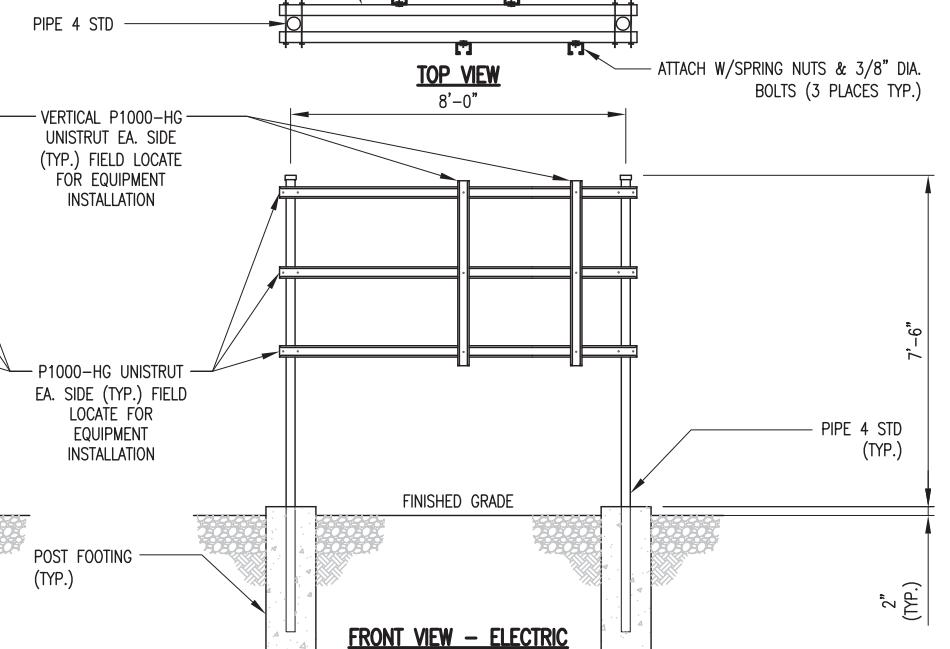
EQUIPMENT SUPPORT FRAME DETAILS

1 SCALE: NTS

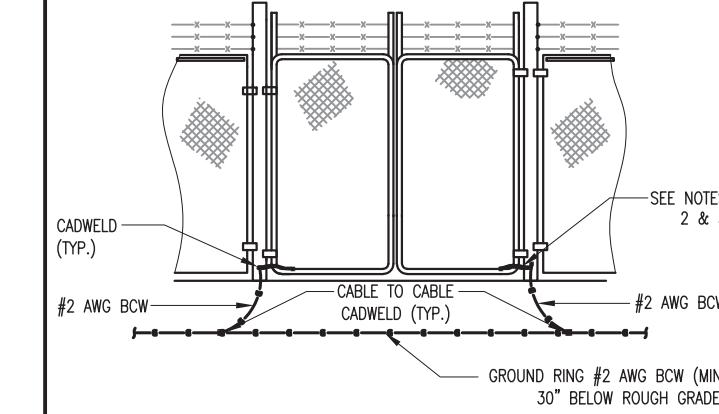
1. PROVIDE 1"x6" GROUND BAR IN TELCO BOX SUITABLE FOR CONNECTING TO #6 AWG STRANDED WIRE. PROVIDE 3'-0" SECTION OF #6 WIRE FOR USE BY TELEPHONE COMPANY.
2. PROVIDE 3'x4"x6" TELCO DISTRIBUTION PANEL (MINIMUM 50 PAIR TERMINAL) MOUNTED TO VERTICAL UNISTRUT ON EQUIPMENT SUPPORT FRAME OPPOSITE OF UTILITY METERS.
3. COORDINATE METER ENCLOSURE AND FUSED/BREAKER DISCONNECT SWITCH ACCEPTABILITY WITH LOCAL UTILITY COMPANY PRIOR TO ORDERING AND INSTALLATION.
4. METER ENCLOSURE SHALL BE SQUARE D OR APPROVED EQUIVALENT, AND SHALL INCLUDE ACCESSORIES AND MOUNTING BRACKETS SUITABLE FOR OUTDOOR INSTALLATION. ENCLOSURE SHALL BE MOUNTED TO THE VERTICAL UNISTRUT ATTACHED TO THE EQUIPMENT SUPPORT FRAME.
5. DETAIL DEPICTS SQUARE D PRODUCTS, AS DESCRIBED ABOVE. ACTUAL DIMENSIONS MAY VARY DEPENDING ON INSTALLED EQUIPMENT.
6. CONNECT NEUTRAL TERMINAL IN DISCONNECTING DEVICE TO SERVICE ENTRANCE GROUND ROD.
7. REFER TO ELECTRICAL SITE PLAN AND POWER & TELEPHONE DIAGRAM FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
8. ALL WORK SHALL CONFORM TO NATIONAL ELECTRICAL CODE (NEC) AND THE LOCAL BUILDING CODES. ALL COMPONENTS SHALL BE U.L. APPROVED.
9. THE SERVICE ENTRANCE GROUND WIRE MUST GO DIRECTLY TO THE SERVICE ENTRANCE GROUND ROD WITHOUT CONNECTING TO ANYTHING ELSE.
10. THESE CONDUITS WERE SHOWN FOR DESIGN CONCEPT ONLY. COORDINATE EXACT QUANTITY AND SIZE CONDUIT WITH THE ELECTRIC POWER UTILITY.
11. UTILITY METER ENCLOSURE INSTALLATION TO BE COORDINATED WITH THE LOCAL ELECTRICAL PROVIDER.



FRONT VIEW - ELECTRIC



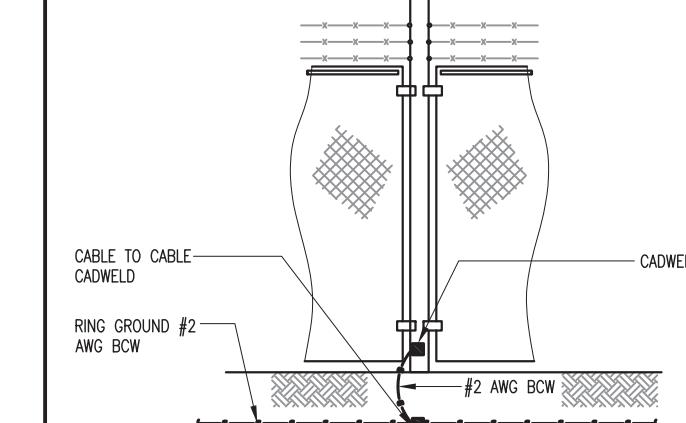
FRONT VIEW - ELECTRIC



2 VERTICAL POST CONNECTED

2 SCALE: NTS

1. THE #2 AWG BCW, FROM THE GROUND RING SHALL BE CADWELDED TO THE POST ABOVE GRADE.
2. GATE JUMPER SHALL BE #4/0 AWG WELDING CABLE OR FLEXIBLE COPPER BRAID BURNDY TYPE B WITH SLEEVES ON EACH END DESIGNED FOR EXOTHERMIC WELDING.
3. GATE JUMPER SHALL BE INSTALLED SO THAT IT WILL NOT BE SUBJECT TO DAMAGING STRAIN WHEN GATE IS FULLY OPEN IN EITHER DIRECTION.



3 VERTICAL POST CONNECTED TO RING

3 SCALE: NTS

1. VERTICAL POSTS SHALL BE BONDED TO THE RING AT EACH CORNER AND AT EACH GATE POST. AS A MINIMUM ONE VERTICAL POST SHALL BE BONDED TO THE GROUND RING IN EVERY 100 FOOT STRAIGHT RUN OF FENCE.



300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA# 26983

APPROVALS

CARRIER: _____

LANDLORD: _____

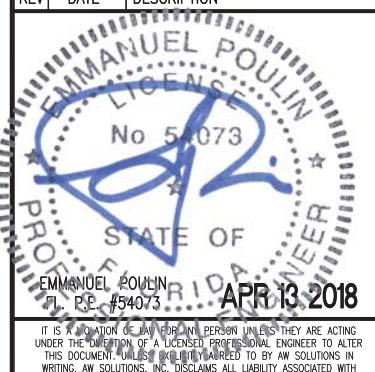
LEASING: _____

CONSTRUCTION: _____

DRAWN BY: JG CHECKED BY: JD

O	04/13/18	ISSUED FOR CONSTRUCTION
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REV DATE DESCRIPTION



SITE #: F8147

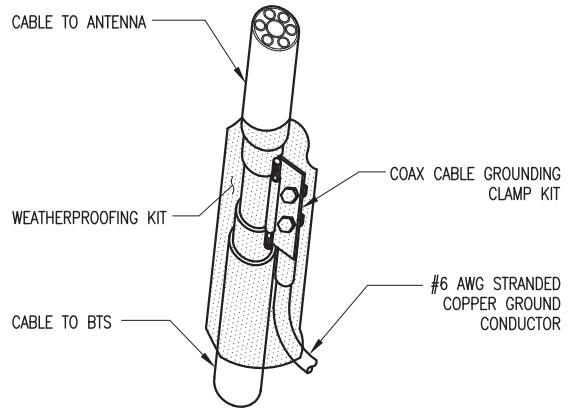
SITE NAME: ROUND LAKE
ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY

SHEET TITLE: DETAILS

SHEET NUMBER: E3

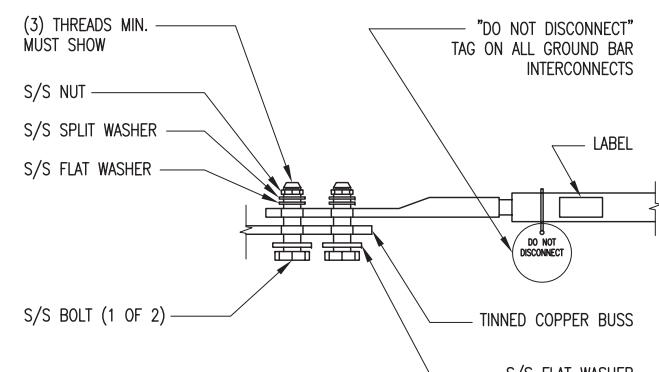
NOT USED
-
SCALE: NTS



1 COAXIAL CABLE GROUND KIT

SCALE: NTS

- DO NOT INSTALL CABLE GROUND KIT AT A BEND IN CABLE.
- ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
- 2-1/2" Ø MAX FOR TX/RX ANTENNA CABLES.
- 1-1/4" Ø MAX FOR GPS ANTENNA CABLES.



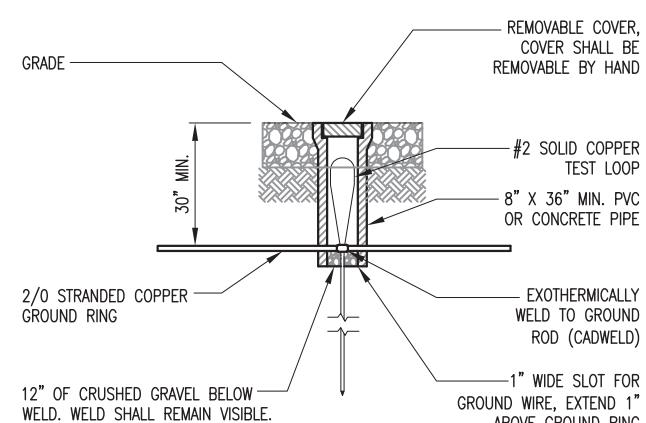
2 GROUND ROD

SCALE: NTS

4 LUG DETAIL

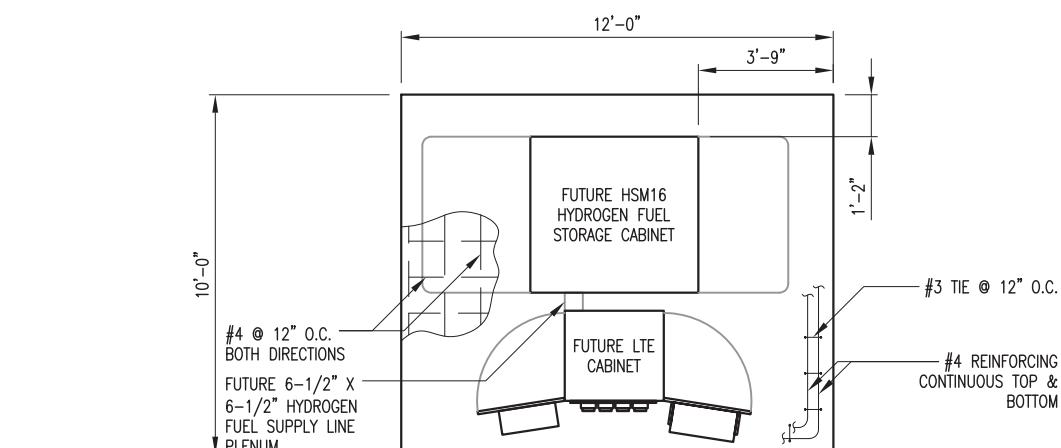
SCALE: NTS

- ALL HARDWARE SHALL BE 18-8 STAINLESS STEEL. COAT ALL SURFACES WITH ANTI-OXIDATION COMPOUND BEFORE MATING.
- ALL EXPOSED, EASILY ACCESSIBLE GROUND BARS SHALL BE TAGGED "DO NOT DISCONNECT."
- COAT ALL BARRELS WITH ANTI-OXIDATION COMPOUND BEFORE CRIMPING.



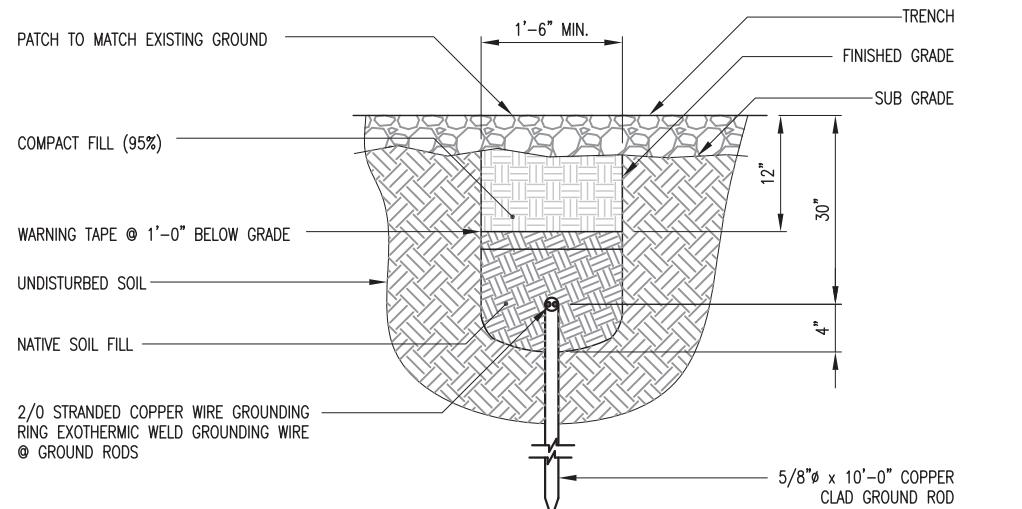
5 GROUND INSPECTION TEST WELL

SCALE: NTS



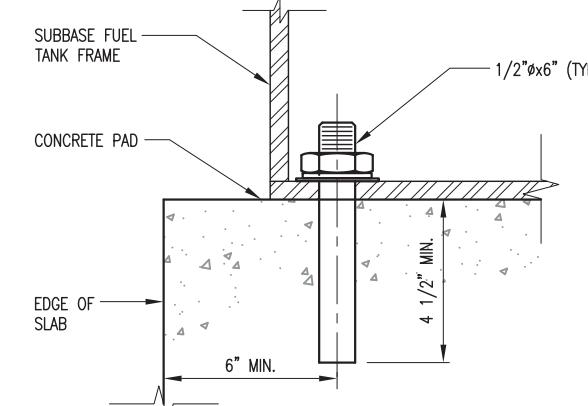
8 EQUIPMENT FOUNDATION DETAIL

SCALE: 3/16" = 1'-0" (11" x 17")



2 GROUND ROD

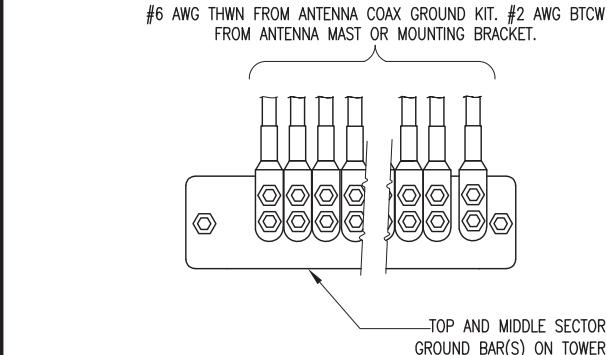
SCALE: NTS



6 EQUIPMENT ANCHOR DETAIL

SCALE: NTS

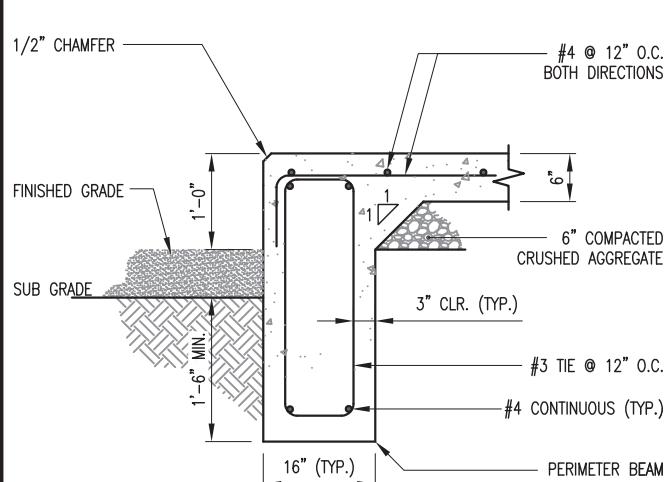
- CONTRACTOR WILL PROVIDE 1/2"Ø ANCHORS W/ HILTI HIT HY 200 EPOXY (QTY. 2 ON EACH SIDE OF EQUIPMENT FRAME). EPOXY AND ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
- VERIFY LOCATION OF PRE-DRILLED BOLT HOLES ALONG EQUIPMENT FRAME BASE PER MANUFACTURER'S SPECIFICATIONS.



3 GROUND WIRE INSTALLATION TO COAX GROUND BAR

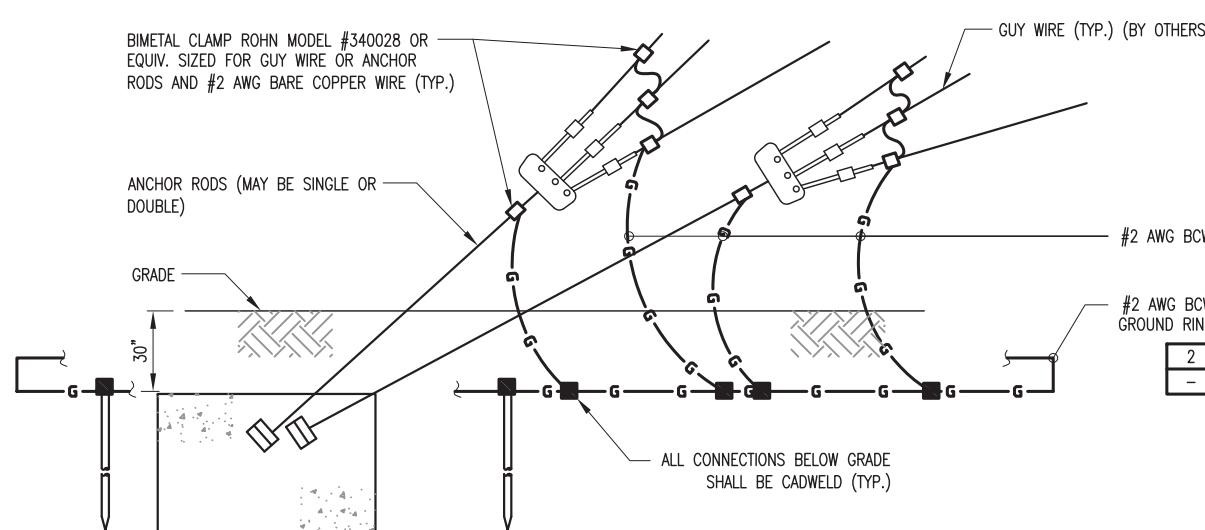
SCALE: NTS

- SUBCONTRACTOR TO UTILIZE NO-OX ON ALL LUG CONNECTIONS.
- SIMILAR INSTALLATION FOR TOP AND MIDDLE (IF APPLICABLE) TOWER GROUND BARS AND FOR COAX ENTRY PORT GROUND BARS.
- BACK-BOLTING HAS BEEN CARRIER APPROVED.



7 CONTINUOUS PERIMETER FOOTING (EQUIPMENT)

SCALE: 1/2" = 1'-0" (11" x 17")



9 ANCHOR RODS & GUY WIRE GROUNDING

SCALE: NTS



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SITE #: F8147

SITE NAME: ROUND LAKE

ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY

SHEET TITLE: GROUNDING & FOUNDATION DETAILS

SHEET NUMBER:

E4

KEY NOTE LEGEND

1. OVERHEAD CONDUCTORS INSTALLED BY UTILITY COMPANY
2. PROPOSED UTILITY POLE WITH TRANSFORMER BY UTILITY COMPANY
3. (2) SETS OF: (3) 350 KCML + (1) #2/0 G IN 4" CONDUIT.
4. PROPOSED SQUARE D EZ METER PACK, 120/240V, 1Ø, 3W, WITH 600A MAIN FUSIBLE SWITCH (100,000 A.I.C.) AND CAPACITY FOR FOUR TENANTS.
5. PROPOSED 100A KWH METER
6. 120/240V, 100A, 2P CIRCUIT BREAKER
7. (3) #1 & (1) #8 GROUND IN 2"Ø UNDERGROUND CONDUIT
8. PROPOSED 100A, 120/240V, 1Ø, 6 POSITION PANELBOARD, NEMA 3R.
9. (2) #12 + (1) #12 G IN 3/4" CONDUIT.

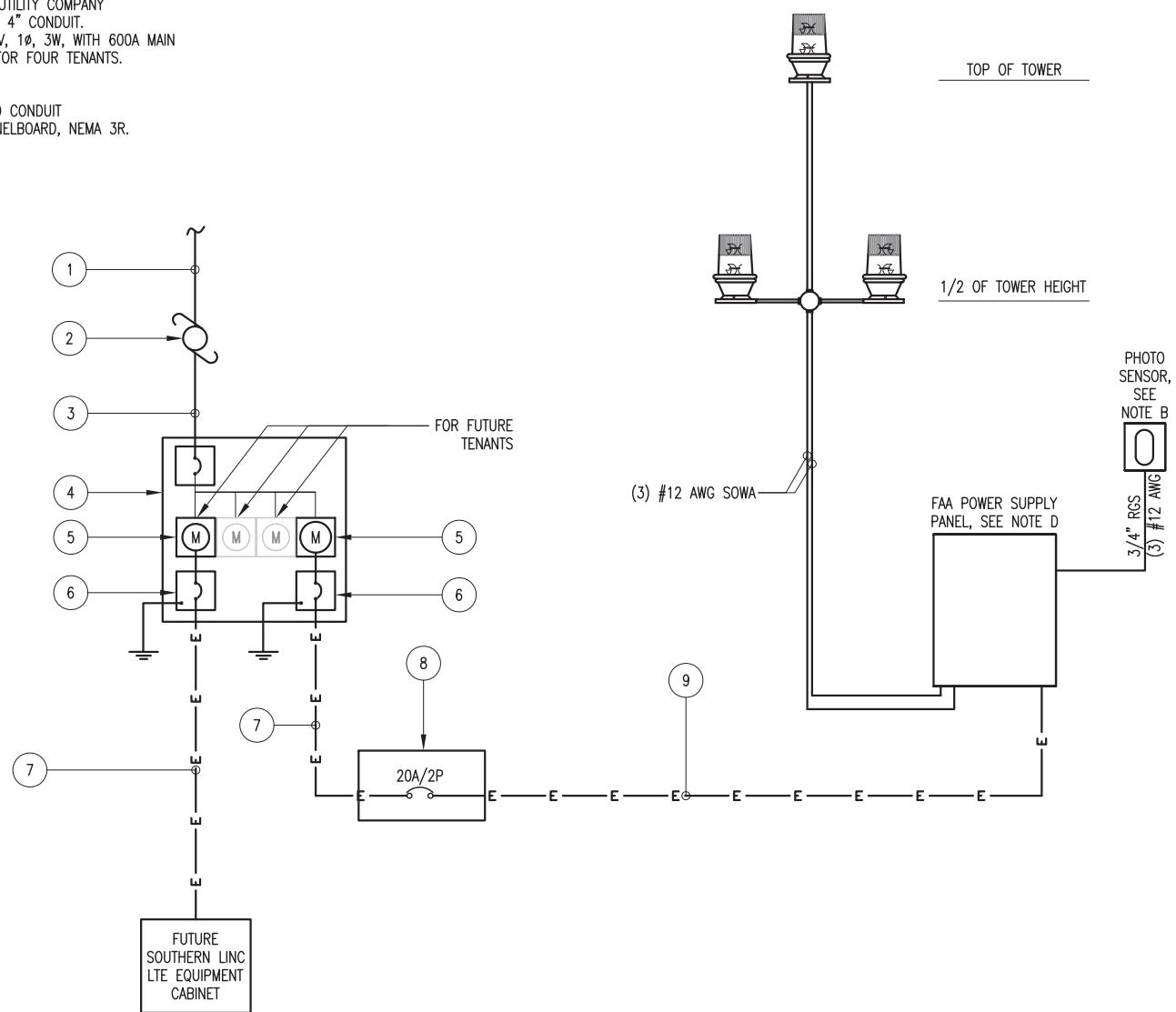


TABLE	
TOWER HEIGHT	300'
No. OF OBSTRUCTION STROBE BEACONS	1
TYPE/MODEL	FLASHGUARD 3000FAA TYPE L-864/L-865
LOCATION ON TOWER	(1) AT TOP OF TOWER
No. OF OBSTRUCTION LIGHTS (STEADY-BURN)	3
TYPE/MODEL	TYPE L-810
LOCATION ON TOWER	(3) AT MIDPOINT OF TOWER
VOLTAGE	120V, 1Ø, 60Hz.
FAA POWER SUPPLY PNL & PART NO.	227-3000
PHOTO SENSOR & PART NO.	77-3259 PCA
MANUFACTURER PART NO. OF BASE KIT	H & P IG13100V1

FAA LIGHTING NOTES:

- THE FLASHING STROBE LIGHTS, MARKER LIGHTS, FAA LIGHTING CONTROL PANEL AND MOUNTING DETAIL, ALL REQUIRED WIRING (INCLUDING CONDUITS AND WIRES AS SHOWN ON THE DRAWINGS) & PHOTOCELL UNIT SHALL BE SUPPLIED BY THE TOWER SUPPLIER AS DESCRIBED ON THE THIRD-PARTY BILL OF MATERIALS.
- THE STROBE LIGHTS, MARKER LIGHTS, PHOTOCELL UNIT AND FAA LIGHTING CONTROL PANEL AND ALL NECESSARY ACCESSORIES FOR MOUNTING AND WIRING SHALL BE INSTALLED AS SHOWN ON DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER INSTALLATION STANDARDS BY TOWER INSTALLER.
- THE FAA LIGHTING CONTROL PANEL SHALL BE INSTALLED AT THE BASE OF THE TOWER IN ACCORDANCE WITH THE TOWER SUPPLIER DESIGN.
- ALL WIRING FROM THE FAA LIGHTING CONTROL PANEL TO THE STROBE LIGHTS, MARKER LIGHTS AND PHOTOCELL UNITS SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER INSTALLATION STANDARDS BY TOWER INSTALLER.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING BETWEEN THE PANELBOARD AND FAA LIGHTING CONTROL PANEL AS SHOWN ON THE DRAWINGS IN ACCORDANCE WITH MANUFACTURER INSTALLATION STANDARDS.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FAA, FCC REGULATIONS, NEC AND CODES ADOPTED BY THE AUTHORITY HAVING JURISDICTION.



AW Solutions
Incorporated
300 CROWN OAK CENTRE DRIVE
LONGWOOD, FL 32750
TEL: 407.260.0231
FAX: 407.260.0749
FL COA# 26983

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LANDLORD: _____

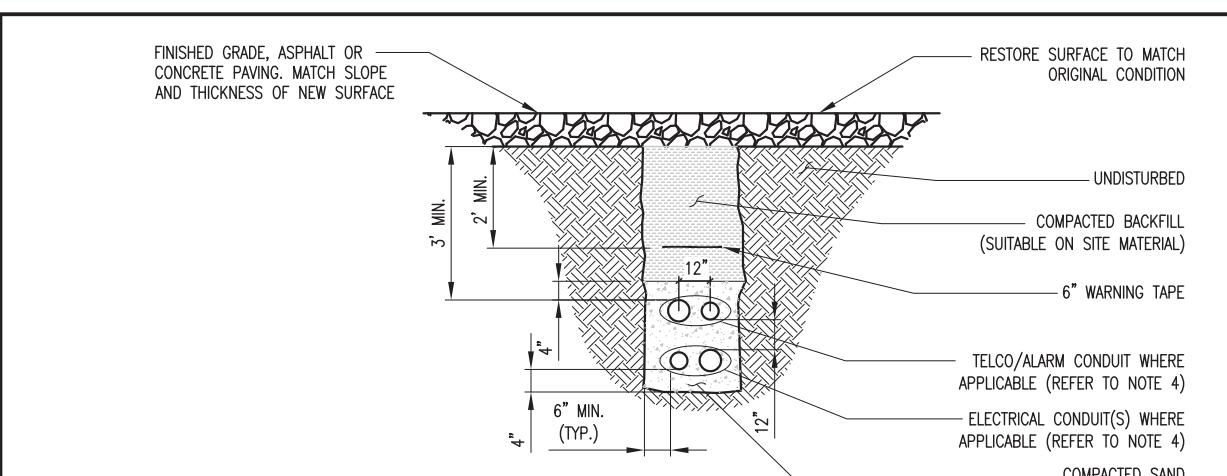
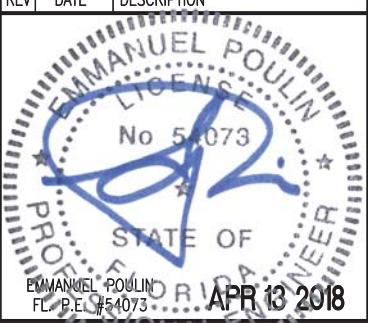
LEASING: _____

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2 UNDERGROUND CONDUIT(S)

SCALE: NTS

1. PROVIDE SCHEDULE 40 PVC CONDUIT BELOW GRADE EXCEPT AS NOTED BELOW.
2. PROVIDE RGS OR SCHEDULE 80 PVC CONDUIT AND ELBOWS AT STUB UP LOCATIONS (i.e. SERVICE POLE, BTS EQUIPMENT, ETC.).
3. INSTALL UTILITY PULLBOXES PER NEC.
4. SEPARATION DIMENSION TO BE VERIFIED WITH LOCAL UTILITY CO. REQUIREMENTS.
5. CONDUIT/TUBING CONTAINING FIBER OPTIC CABLEING TO BE FILLED WITH GEL TO PREVENT WATER PENETRATION, COMMONLY REFERRED TO AS "ICKY PICK."

SHEET NUMBER:

E5

RISER DIAGRAM & DETAILS

APPROVALS

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LANDLORD: _____
LEASING: _____
CONSTRUCTION: _____

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REV	DATE	DESCRIPTION	



APR 13 2018

EMMANUEL POULIN
P.E. #54073
STATE OF FLORIDA
PROFESSIONAL ENGINEER

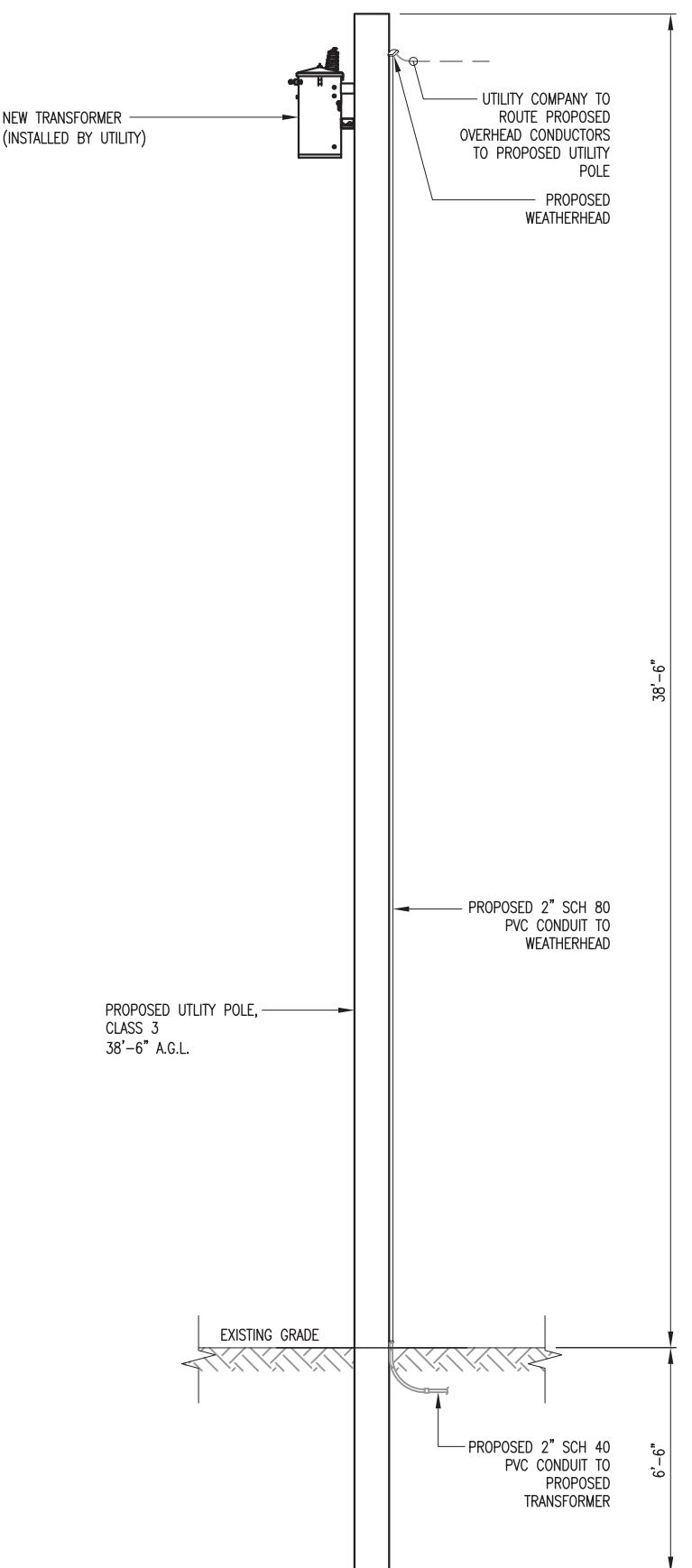
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SITE #: F8147
SITE NAME: ROUND LAKE
ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY
SHEET TITLE:

DETAILS

SHEET NUMBER:
E6



APPROVALS

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LANDLORD: _____

LEASING: _____

CONSTRUCTION: _____

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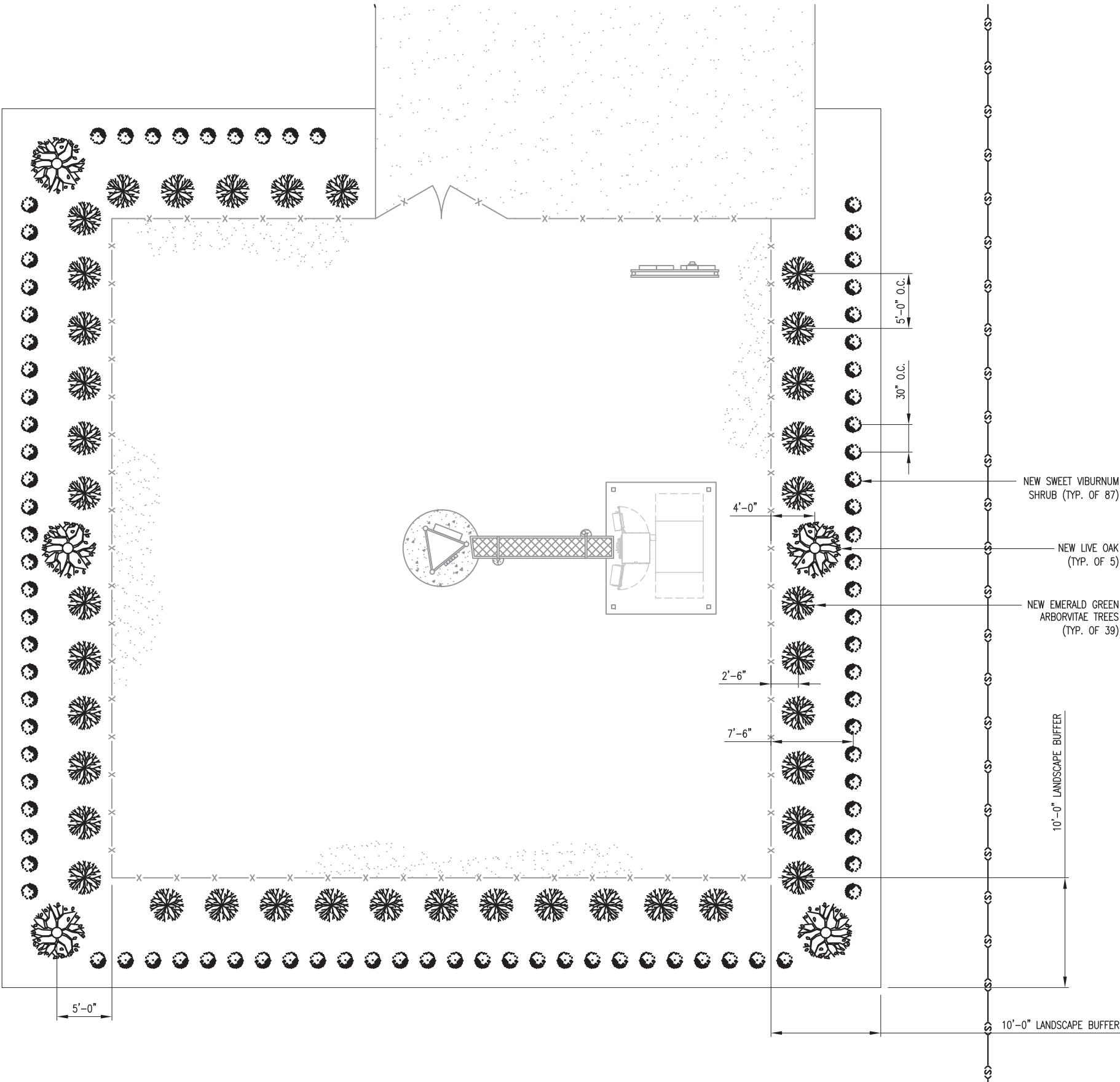
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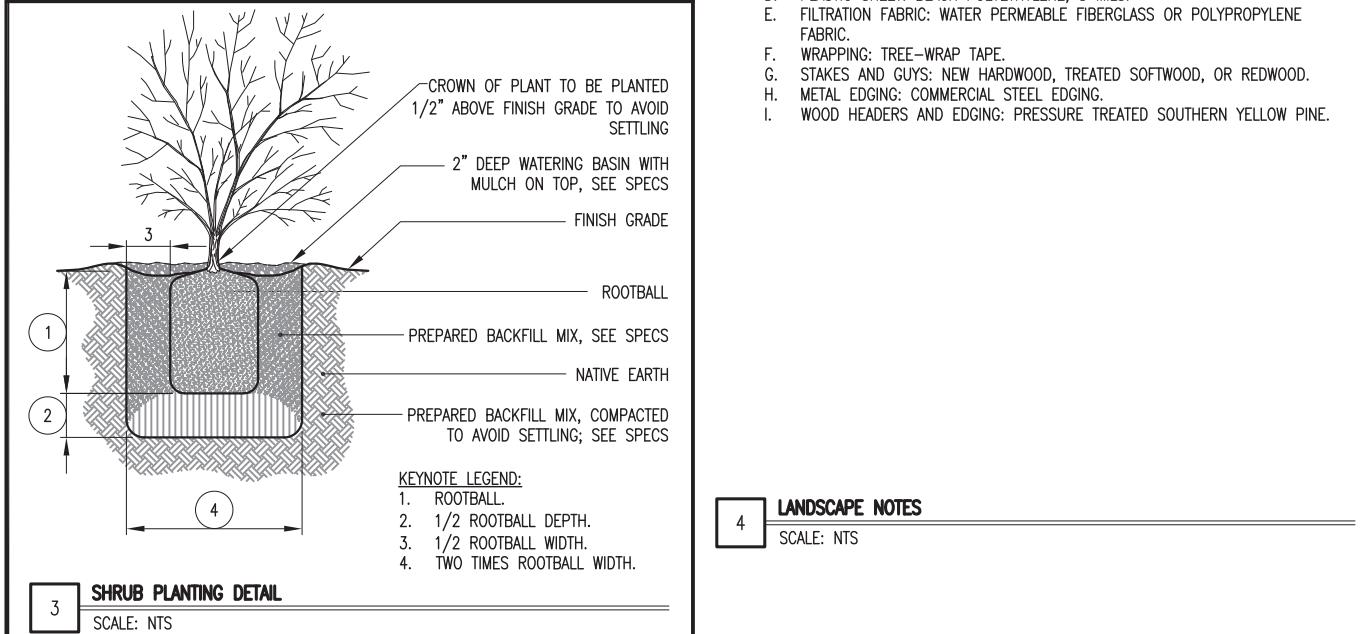
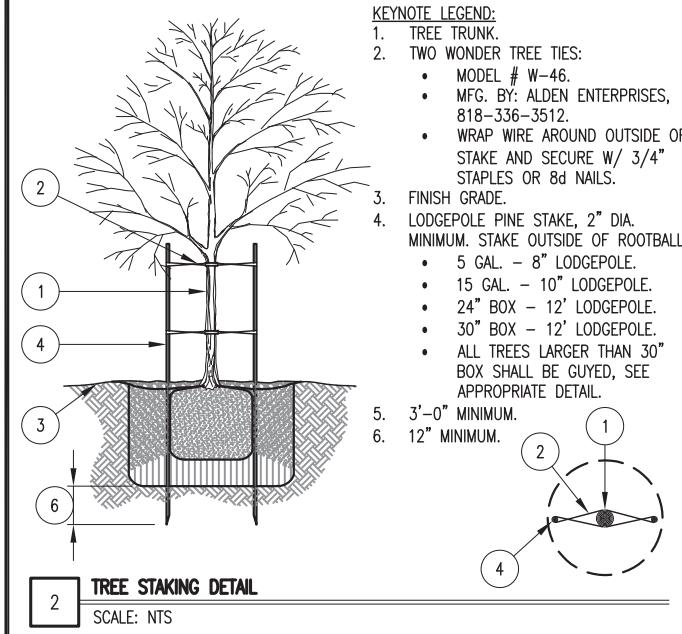
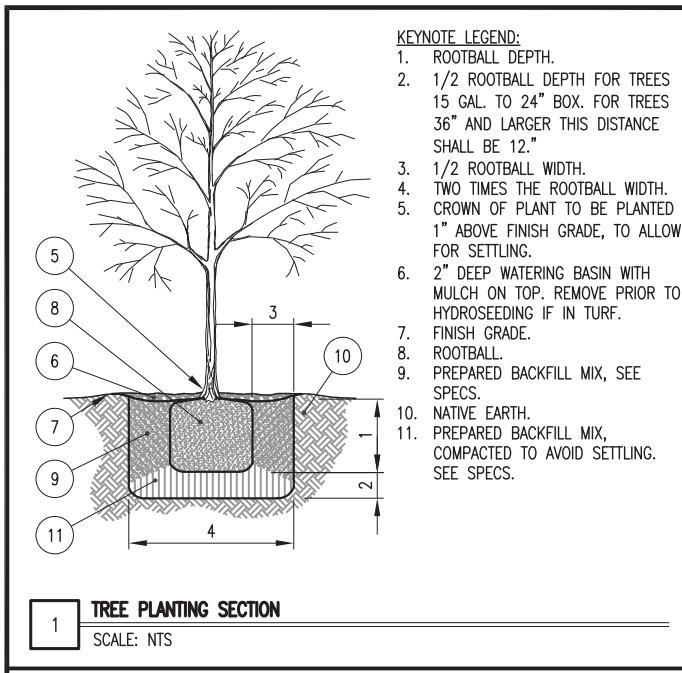
SHEET TITLE: LANDSCAPE PLAN

SHEET NUMBER: L1



PLANTING LIST

PLANT NAME	SIZE (HEIGHT) (AT PLANTING)	QUANTITY / SPACING
EMERALD GREEN ARBORVITAE	5 FT	(39) @ 5'
SWEET VIBURNUM	3 GALLON	(87) @ 30"
LIVE OAK	8 FT	(5) AS SHOWN
MULCH ALL DISTURBED AREAS WITH THREE (3) INCH MINIMUM LAYER OF PINE BARK NUGGETS		



LANDSCAPE NOTES

PROJECT INCLUDES:

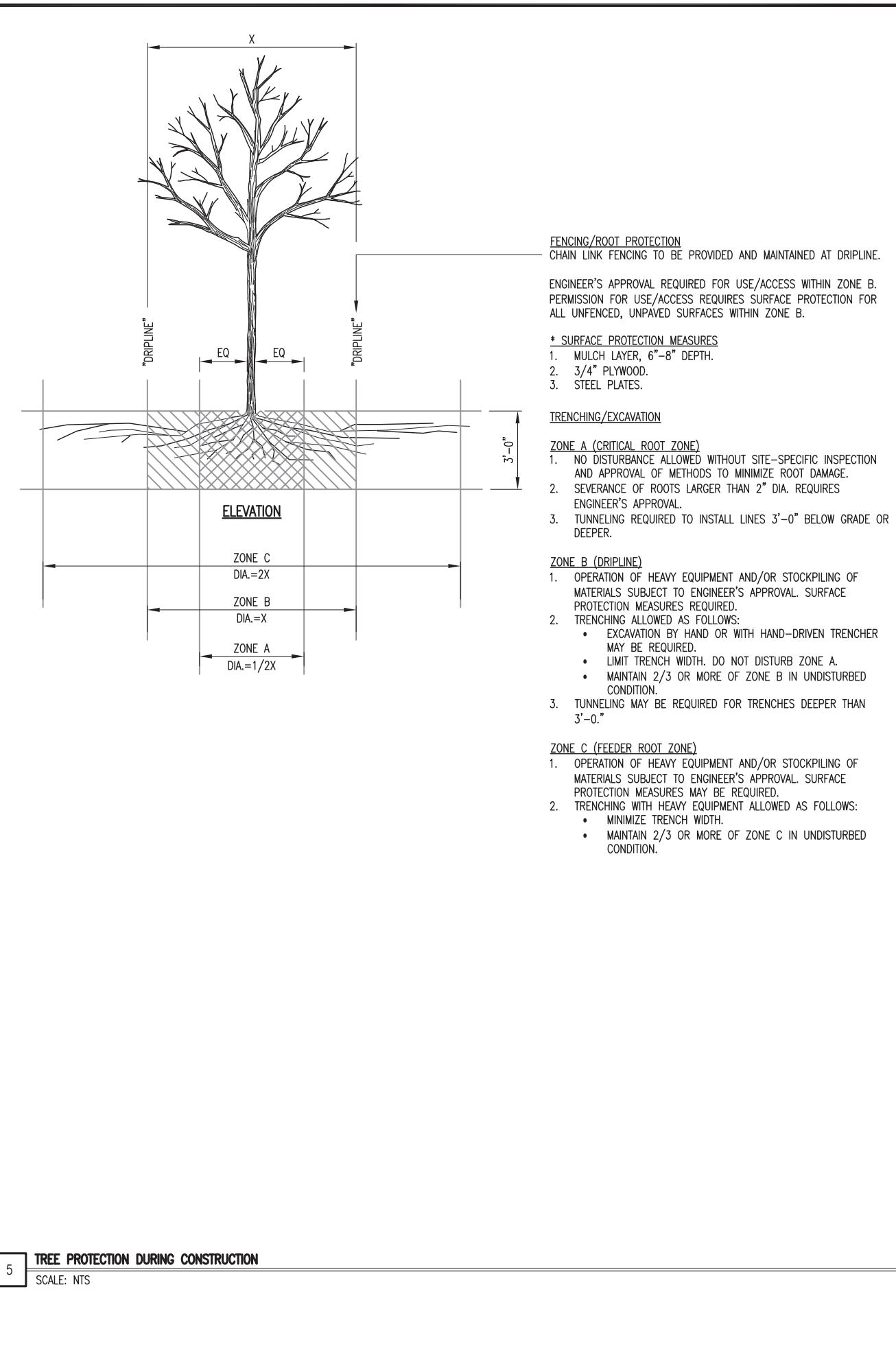
1. FURNISH, INSTALL, AND MAINTAIN LANDSCAPE WORK AS SHOWN ON THESE CONTRACT DRAWINGS OR AS IDENTIFIED HEREIN.
 - A. TREES, SHRUBS, AND GROUND COVER.
 - B. LAWNS.
 - C. TOPSOIL AND SOIL AMENDMENTS.
 - D. INITIAL MAINTENANCE OF INSTALLED LANDSCAPE MATERIALS.
 - E. PRUNING AND RELOCATION OF EXISTING PLANT MATERIALS.
 - F. RECONDITIONING EXISTING LAWNS AFFECTED BY CONSTRUCTION ACTIVITIES.
2. TESTING: LABORATORY TESTING OF EXISTING SOILS AND FILL MATERIALS FOR SUITABLE SOIL AMENDMENTS AND FERTILIZER SHALL BE PERFORMED BY THE LANDSCAPE CONTRACTOR.
3. CONTRACTOR SHALL PREPARE THE SURFACE OF DISTURBED AREAS PRIOR TO SODDING BY HAND RAKING GRADES TO A SURFACE UNIFORMITY OF 1" IN 10'.
4. FERTILIZER SHALL BE APPLIED AT UNIFORM RATES AS DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
5. CONTRACTOR SHALL WATER SODDED AREAS AS OFTEN AS REQUIRED TO OBTAIN GERMINATION AND TO OBTAIN AND MAINTAIN SATISFACTORY GROWTH.
6. THE STAND OF VEGETATIVE COVER RESULTING FROM SODDING SHALL NOT BE CONSIDERED SATISFACTORY UNTIL ACCEPTED BY THE ENGINEER. IF AREAS ARE DETERMINED TO BE UNACCEPTABLE, THE SOD WILL BE REMOVED AND ALL AREAS SHALL BE RESODDED AND, REFERTILIZED PER RECOMMENDED INSTALLATION PROCEDURES AT THE CONTRACTOR'S EXPENSE.
7. THE CONTRACTOR SHALL BEGIN MAINTENANCE PERIOD IMMEDIATELY AFTER SUBSTANTIAL COMPLETION OF LANDSCAPE & IRRIGATION WORK AS PROVIDED BY THE LANDSCAPE ARCHITECT IN WRITING.
8. THE CONTRACTOR SHALL MAINTAIN THE VEGETATIVE COVER AREA, FOR THE PERIODS REQUIRED TO ESTABLISH AN ACCEPTABLE GROWTH, BUT NOT LESS THAN 60 DAYS AFTER THE DATE OF SUBSTANTIAL COMPLETION.

PRODUCTS:

1. PLANT MATERIALS SHALL BE AS SHOWN ON THESE CONTRACT DRAWINGS AND MAY BE ANY COMBINATION OF THE FOLLOWING:
 - A. DECIDUOUS TREES.
 - B. DECIDUOUS SHRUBS.
 - C. CONIFEROUS AND BROAD LEAFED EVERGREEN TREES AND SHRUBS.
 - D. GROUND COVER.
 - E. PLANTS.
2. LAWNS: LAWN MAY BE ANY OF THE FOLLOWING, AS APPROVED BY THE ENGINEER: ARGENTINE BAHIA SOD, STRONGLY ROOTED, 2 YEARS OLD.
3. TOPSOIL: FERTILE, FRIBLLE TOPSOIL FROM OFFSITE, OR FROM SITE STOCKPILE WITH ADDITIONAL MIXED-IN FERTILE, FRIBLLE TOPSOIL FROM LOCAL SUPPLIERS OF TOPSOIL.
4. SOIL AMENDMENTS: THE SOIL AMENDMENTS MAY BE ANY OF THE FOLLOWING, AS REQUIRED OR INDICATED IN THE LABORATORY TESTING REPORTS.
 - A. LIME: DOLOMITIC LIMESTONE.
 - B. ALUMINUM SULFATE: COMMERCIAL GRADE.
 - C. PEAT HUMUS: FINELY DIVIDED PEAT.
 - D. SUPERPHOSPHATE: 20 PERCENT AVAILABLE PHOSPHORIC ACID.
 - E. SAND: CLEAN, WASHED SAND.
 - F. PERLITE: NBS PS 23.
 - G. SAWDUST: ROTTED SAWDUST FREE OF CHIPS AND STONES.
 - H. MANURE: ROTTED STABLE MANURE.
 - I. COMMERCIAL FERTILIZER: NEUTRAL CHARACTER FOR PLANT MATERIALS AND LAWNS.
 - J. MULCH: THREE INCHES OF PINE STRAW MULCH SHALL BE USED IN ALL PLANT BEDS. MULCH SHALL BE KEPT BACK FROM THE SHRUB'S TRUNK BY 3 TO 4 INCHES.
5. LANDSCAPE MATERIALS: THE LANDSCAPE MATERIALS MAY BE ANY OF THE FOLLOWING, AS SHOWN ON THESE CONTRACT DRAWINGS.
 - A. GRAVEL: WATER-WORN GRAVEL.
 - B. ANTI-EROSION MULCH: SEED-FREE SALT HAY OR THRESHED STRAW.
 - C. ANTI-DESCICCANT: EMULSION TYPE, FILM-FORMING.
 - D. PLASTIC SHEET: BLACK POLYETHYLENE, 8 MILS.
 - E. FILTRATION FABRIC: WATER PERMEABLE FIBERGLASS OR POLYPROPYLENE FABRIC.
 - F. WRAPPING: TREE-WRAP TAPE.
 - G. STAKES AND GUYS: NEW HARDWOOD, TREATED SOFTWOOD, OR REDWOOD.
 - H. METAL EDGING: COMMERCIAL STEEL EDGING.
 - I. WOOD HEADERS AND EDGING: PRESSURE TREATED SOUTHERN YELLOW PINE.

LANDSCAPE NOTES

SCALE: NTS



APPROVALS:

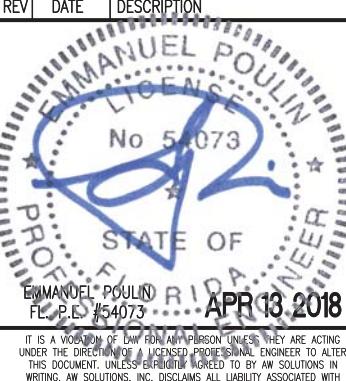
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SITE #: F8147

SITE NAME: ROUND LAKE

ADDRESS: 2449 REEDY CREEK ROAD
ALFORD, FL 32420

SITE TYPE: TOWER & MAKE READY

LANDSCAPE DETAILS:

SHEET NUMBER: L2

1 - GENERAL PROVISIONS

1.1 - CONTRACT OVERVIEW

- The intention of the documents is to show the complete installation and to include all labor and materials reasonably necessary, whether or not specifically indicated, for the proper execution and completion of the work as stipulated in the contract. The intent of this document is not to designate the means and methods of procedure of the work. The contractor shall supervise and coordinate all work, using his professional knowledge and skills. He is solely responsible for all construction means, methods, techniques, procedures, sequencing and coordinating all portions of the work under the contract.
- All work shall be performed in accordance with the latest edition of the following codes, standards and supplements:
 - FBC - FLORIDA BUILDING CODE 2017
 - AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS
 - IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
 - NEC - NATIONAL ELECTRICAL CODE
 - NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
 - UL - UNDERWRITERS LABORATORIES
 - NSPC - NATIONAL STANDARD PLUMBING CODE
 - IMC - INTERNATIONAL MECHANICAL CODE
 - NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
 - OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
 - ANS/TIA - TELECOMMUNICATIONS INDUSTRY ASSOCIATION - 222-C STANDARD
 - ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND ORDINANCES
- The most stringent code will apply in the case of discrepancies or differences in the code requirements.

3. The engineering drawings show principal areas where work must be accomplished under this contract. Incidental work may also be necessary in areas not shown on the engineering drawings due to changes affecting existing electrical or other systems. Such incidental work is also a part of this contract. Inspect those areas and ascertain what is needed to do that work in accordance with the contract requirements at no additional cost to the owner.

4. Do not scale drawings. All dimensions take precedence over scale.

5. Minor deviations from the design layout are anticipated and shall be considered as part of the work however, no change that alter the character intent of the design will be made or permitted by the owner without a change order.

6. General civil, structural, electrical and antenna drawings are interrelated. In performance of the work, each contractor must refer to all drawings. All coordination shall be the responsibility of the general contractor.

7. The general notes contained herein are part of the plans and specifications, and are to be complied with in all respects. The most restrictive notes specified are to take precedence. Certain sections of the general notes may not apply to every site. The contractor is to comply with all applicable general notes in all respects.

8. All general notes and standard details are the minimum requirement to be used in conditions which are not specifically shown otherwise.

9. Representation of true north other than those found on the plot of the survey drawing shall not be used to identify or establish the bearing of the true north at the site. The contractor shall rely solely on the plot of the survey drawing and any surveyor's marking at the site for the establishment of the true north, and shall notify the engineer prior to proceeding with the work if any discrepancy is found between the various elements of the working drawings and the true north orientation as depicted on the civil survey. The contractor shall assume sole liability for any failure to notify the engineer.

10. The contractor shall use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work.

11. The contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property, that this requirement shall be made to apply continuously and not be limited to normal working hours. The contractor further agrees to indemnify and hold the design engineer harmless from any and all liability, real or alleged, in connection with the performance of work on this project.

12. The contractor shall be responsible for complying with all safety precautions and regulations such as OSHA compliance during the progress of the work. The engineer will not advise nor provide direction as to safety precautions and programs.

13. The contractor shall assume complete responsibility of the security of the site until completion of the construction.

14. It is the contractor's responsibility to examine all plan sheets and specifications and coordinate his work with the work of all other contractors to ensure that work progression is not interrupted.

15. The contractor is instructed to cooperate with any and all other contractors performing work on this job site during the performance of this contract to avoid delays in the contract schedule or other work performed in the vicinity of the construction area.

16. The contractor shall submit a construction schedule to the property owner well in advance of the starting date of the work. The owner shall also be notified of a change in the construction schedule.

17. The contractor shall comply with all required permits.

18. Each contractor is responsible for placing the building permit at the local jurisdiction as the contractor of record, and shall provide the jurisdiction with all proof required to operate as the contractor in this jurisdiction. The contractor shall be responsible for obtaining, and incurring the cost of all required permits, inspections, certifications, etc. prior to begin the work.

19. The contractor is responsible for providing ample notice to the building inspection department to schedule the required inspections. A minimum of 48 hours of notice should be given to authorities. An extension in the contract schedule will not be granted due to delay caused by inspections.

20. Each contractor is responsible for application and payment of contractor licenses, bonds and insurances. Documentation shall be provided to the owner prior to the work.

21. A copy of the approved plans shall be kept in a place specified by the governing agency, and by law shall be available for inspection at all times. It is the contractor responsibility to ensure all construction sets reflect the same information as the approved plans. The contractor shall also maintain one set of plans at the site for the purpose of documenting all as-built changes, revisions, addenda, or changes orders.

22. The contractor is to provide the owner with a full set of record drawings with actual dimensions, routing and circuits upon completion of construction.

23. The contractor is to contact both local power and telephone utility companies before construction begins to order service, obtain and pay all fees associated with construction, schedule installation of service, coordinate conduit run/termination point and obtain any field materials that may be supplied by the utility companies and installed by the contractors.

24. The contractor shall be responsible for all temporary bracing, shoring, ties, form work and the protection of all work during construction to avoid damage, collapse, distortion, misalignment and alteration of roofing warranties.

25. The contractor is responsible to provide temporary power, water and toilet facilities as required by the property owner or governing agency.

26. The contractor shall monitor all existing structures during construction.

27. The contractor shall coordinate the final dimensions of any type of beam layout with the footprint of the new equipment before ordering any materials.

28. All materials and equipment shall be new and in safe conditions prior to installations, and shall be of the best grade and of the same manufacturer throughout for each class or group of equipment.

29. All materials must be stored in a level and dry location and in a manner that will not obstruct the flow of other work related or not to this contract. Any equipment or material storage must meet all recommendations of the manufacturer. The contractor shall inspect thoroughly all materials and equipment prior to final installation. Damaged equipment or materials shall not be installed permanently.

30. All materials shall be installed per the manufacturers' instructions.

31. Except for warning signs such as NO TRESPASSING and signs that state ownership and emergency telephone numbers, no sign shall be located on the tower.

32. All equipment shall be installed level and plumb.

1.2 EXISTING CONDITIONS AND STRUCTURES

1. Before beginning work at the site, the contractor shall inspect the existing compound or building and determine the extent of existing finishes, specialties, equipment and other items which must be removed and reinstated in order to perform the work under this contract. The contractor must verify all dimensions, conditions and elevations before starting work. No extra charge or compensation shall be allowed due to differences between actual dimensions and dimensions indicated on the construction drawings. All discrepancies shall be called to the attention of the engineer and shall be resolved before proceeding with the work. All work shall be performed in a workmanlike manner in accordance with accepted construction practices.

2. Submitting a bid for this work, the contractor acknowledges that he has thoroughly reviewed and understood the construction documents, visited the site and is familiar with the conditions encountered at the site.

3. The contractor, if awarded the contract, will not be allowed any extra compensation by reason of any matter or thing which such the contractor might not have fully informed himself prior to bidding.

4. No plea of ignorance of conditions that exist, or of difficulties that may be encountered or of any other relevant matter concerning the work to be performed will be accepted as a reason for any failure or omission on the part of the contractor to fulfill the requirements of the contract documents.

5. It is understood by the owner that the contractor in submitting his bid, warrants that he has carefully examined the site of the project to acquaint himself with the surrounding properties, the means of approach to the site, the conditions of the actual job site, the facilities for delivering, storing, placing,

handling and the removal of materials and equipment and any and all difficulties that may be encountered during the execution of the all work in accord with the contract documents.

- The location of existing underground utilities have not been verified by the owner or its representative. The contractor is responsible for having all underground utilities located within the limits of construction and accepts full responsibility for any and all damages which might be caused the contractor failure to locate all underground utilities before commencing work.
- Should any error or inconsistency appear in the drawings or specifications, the contractor before proceeding with the work must make mention of the same to the engineer and owner for proper adjustment and in no case proceed with the work in uncertainty or with insufficient drawings.
- The contractor and each subcontractor shall be responsible for verification of all measurements at the site before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to difference between actual dimensions and dimensions indicated on the construction drawings. Any discrepancy in dimensions which may be found shall be submitted to the engineer and the owner representative for consideration before the contractor proceeds with the work in the affected areas. The contractor's work shall not vary from the plans without the expressed approval of the owner or its representative.
- Trade, product names or manufacturer's names or catalog numbers and indications of existing product types shown on the drawings are believed to be accurate, if they are discovered to be inaccurate, notify engineers immediately and do not proceed without instructions.
- Prior to starting construction, the contractor shall protect all areas from damages which may occur during construction any damages to new or existing surfaces, structures or equipment shall be immediately repaired or replaced to the satisfaction of the property owner. The contractor shall bear the cost of repairing or replacing any damages areas.
- The contractor shall take all precautionary measures and efforts to protect the existing structures their structural integrity, when work is performed in the vicinity of existing structure, the structural integrity and stability shall be monitored at all times during every phase of the construction.
- The contractor shall protect existing property line monumentation. Any monumentation disturbed or destroyed, as judged by the owner or owner's representative shall be replaced at the contractor's expense under the supervision of a licensed land surveyor.
- Minor deviations from the design layout are anticipated and shall be considered as part of the work however, no change that alter the character intent of the design will be made or permitted by the owner without a change order.
- General civil, structural, electrical and antenna drawings are interrelated. In performance of the work, each contractor must refer to all drawings. All coordination shall be the responsibility of the general contractor.
- The general notes contained herein are part of the plans and specifications, and are to be complied with in all respects. The most restrictive notes specified are to take precedence. Certain sections of the general notes may not apply to every site. The contractor is to comply with all applicable general notes in all respects.
- All general notes and standard details are the minimum requirement to be used in conditions which are not specifically shown otherwise.
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- A copy of the approved plans shall be kept in a place specified by the governing agency, and by law shall be available for inspection at all times. It is the contractor responsibility to ensure all construction sets reflect the same information as the approved plans. The contractor shall also maintain one set of plans at the site for the purpose of documenting all as-built changes, revisions, addenda, or changes orders.
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- All materials must be stored in a level and dry location and in a manner that will not obstruct the flow of other work related or not to this contract. Any equipment or material storage must meet all recommendations of the manufacturer. The contractor shall inspect thoroughly all materials and equipment prior to final installation. Damaged equipment or materials shall not be installed permanently.
- All materials shall be installed per the manufacturers' instructions.
- Except for warning signs such as NO TRESPASSING and signs that state ownership and emergency telephone numbers, no sign shall be located on the tower.
- All equipment shall be installed level and plumb.

1.3 CONTRACT DOCUMENTS

- The location of existing underground utilities have not been verified by the owner or its representative. The contractor is responsible for having all underground utilities located within the limits of construction and accepts full responsibility for any and all damages which might be caused the contractor failure to locate all underground utilities before commencing work.
- Should any error or inconsistency appear in the drawings or specifications, the contractor before proceeding with the work must make mention of the same to the engineer and owner for proper adjustment and in no case proceed with the work in uncertainty or with insufficient drawings.
- The contractor and each subcontractor shall be responsible for verification of all measurements at the site before ordering any materials or doing any work. No extra charge or compensation shall be allowed due to difference between actual dimensions and dimensions indicated on the construction drawings. Any discrepancy in dimensions which may be found shall be submitted to the engineer and the owner representative for consideration before the contractor proceeds with the work in the affected areas. The contractor's work shall not vary from the plans without the expressed approval of the owner or its representative.
- Trade, product names or manufacturer's names or catalog numbers and indications of existing product types shown on the drawings are believed to be accurate, if they are discovered to be inaccurate, notify engineers immediately and do not proceed without instructions.
- Prior to starting construction, the contractor shall protect all areas from damages which may occur during construction any damages to new or existing surfaces, structures or equipment shall be immediately repaired or replaced to the satisfaction of the property owner. The contractor shall bear the cost of repairing or replacing any damages areas.
- The contractor shall take all precautionary measures and efforts to protect the existing structures their structural integrity, when work is performed in the vicinity of existing structure, the structural integrity and stability shall be monitored at all times during every phase of the construction.
- The contractor shall protect existing property line monumentation. Any monumentation disturbed or destroyed, as judged by the owner or owner's representative shall be replaced at the contractor's expense under the supervision of a licensed land surveyor.
- Minor deviations from the design layout are anticipated and shall be considered as part of the work however, no change that alter the character intent of the design will be made or permitted by the owner without a change order.
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1.4 CONTRACTOR'S RESPONSIBILITY

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- Minor deviations from the design layout are anticipated and shall be considered as part of the work however, no change that alter the character intent of the design will be made or permitted by the owner without a change order.
- General civil, structural, electrical and antenna drawings are interrelated. In performance of the work, each contractor must refer to all drawings. All coordination shall be the responsibility of the general contractor.
- The general notes contained herein are part of the plans and specifications, and are to be complied with in all respects. The most restrictive notes specified are to take precedence. Certain sections of the general notes may not apply to every site. The contractor is to comply with all applicable general notes in all respects.
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- Each contractor is responsible for application and payment of contractor licenses, bonds and insurances. Documentation shall be provided to the owner prior to the work.
- A copy of the approved plans shall be kept in a place specified by the governing agency, and by law shall be available for inspection at all times. It is the contractor responsibility to ensure all construction sets reflect the same information as the approved plans. The contractor shall

12. 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.
13. CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES (76 MM) NOR BE LESS THAN 2 INCHES (51 MM).
14. FOOTING IS DESIGNED TO BEAR ON EXISTING NATURALLY OCCURRING NON-EXPANSIVE SOILS OR ENGINEERED FILL CAPABLE OF SAFELY SUSTAINING 2000 PSF.
15. FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PRESCRIBED BY GOVERNING CODE. FOUNDATION DESIGN IS BASED ON SOIL PARAMETERS FROM THE FLORIDA BUILDING CODE AS FOLLOWS:
- ALLOWABLE SOIL BEARING PRESSURE = 2000 PSF
 - ALLOWABLE SLIDING RESISTANCE = 150 PSF/FT.

16. FOUNDATION SHALL BE FORMED WITH PLYWOOD OR METAL PANELS SUFFICIENT FOR STRUCTURAL AND VISUAL REQUIREMENTS. FORMS SHALL BE STRUCTURALLY ADEQUATE TO WITHSTAND UNCURLED CONCRETE PRESSURE. FORMS SHALL BE REMOVED ONCE CONCRETE HAS ATTAINED 75% OF ITS ULTIMATE STRENGTH.

17. THE CONTRACTOR SHALL EXPECT SUBMERGED DRILLING CONDITIONS FOR DEEP FOUNDATION CONSTRUCTION SUCH AS DRILLED PIERS OR DEADMAN ANCHORS AND SHALL MOBILIZE ACCORDINGLY.

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

19. FOUNDATION DESIGN 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.

20. 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.

21. FREE FALL CONCRETE MAY BE USED PROVIDED FALL IS VERTICAL DOWN WITHOUT HITTING SIDES OF EXCAVATION, FORM WORK, REINFORCING BARS, FORM TIES, OR OTHER OBSTRUCTIONS. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH WATER.

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

23. TOP OF FOUNDATION OUTSIDE LIMITS OF ANCHOR BOLTS SHALL BE SLOPED TO DRAWN WITH A FLOATED FINISH. AREA INSIDE LIMITS OF ANCHOR BOLTS SHALL BE LEVEL WITH A SCRATCHED FINISH.

24. EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4"x3/4" (19MM x 19MM) MINIMUM.

25. INTIMATE CONTACT BETWEEN CONCRETE AND SOIL-WALLS OF PAD IS ESSENTIAL FOR ADEQUATE FOUNDATION PERFORMANCE. THE CONCRETE SHOULD BE APPROPRIATELY VIBRATED DURING CONSTRUCTION.

26. THE CONTRACTOR MIGHT HAVE TO BUILD THE FOUNDATION WITH SUBMERGED CONDITIONS AND SHALL MOBILIZE ACCORDINGLY.

27. ALL EXISTING GROUNDRINGS AND DEVICES EXPOSED BY EXCAVATION OR REGRADE SHALL BE REPLACED AND PROPERLY CONNECTED TO EXISTING SYSTEM PER NEC OR LOCAL JURISDICTION REQUIREMENTS.

5.2 FOOTING FOUNDATION

1. THE BOTTOM BEARING SURFACE OF FOOTING SHOULD BEAR AGAINST UNDISTURBED SOIL. IF THIS CONDITION CANNOT BE MET BACK FILL MATERIAL MUST BE THOROUGHLY COMPACTED IN 8' LAYERS.

2. THE ANCHOR RODS MUST BE INSTALLED AS SHOWN AND SECURED IN SPECIFIED POSITION BEFORE CONCRETE IS POURED.

3. FOOTING MUST BE PROPERLY BACK FILLED PRIOR TO BEGINNING OF PLATFORM ERECTION.

4. THE FOUNDATION SHOWN SHALL BE CONSTRUCTED AS A MASS MEMBER. MEASURES SHALL BE TAKEN TO COPE WITH THE GENERATION OF HEAT AND ATTENDANT VOLUME CHANGE SO AS TO MINIMIZE CRACKING.

5.3 ANCHOR BLOCK FOUNDATION

1. THE ANCHOR ORIENTATION AND LOCATION WITH RESPECT TO TOWER MUST BE LAID OUT AS SHOWN ON PLAN. THE BOTTOM AND FRONT BEARING SURFACES OF THE ANCHOR BLOCK SHOULD BEAR AGAINST UNDISTURBED SOIL. IF THIS CONDITION CANNOT BE MET AND FORMS ARE USED, FORMS MUST BE REMOVED AND BACK FILL MATERIAL THOROUGHLY COMPACTED IN 8' LAYERS.

3. THE ANCHOR RODS MUST BE INSTALLED AS SHOWN AND SECURED IN SPECIFIED POSITION BEFORE CONCRETE IS POURED. BACK FILL COMPLETELY WITH ANCHOR ROD SECURED IN POSITION.

4. ANCHORS MUST BE PROPERLY BACK FILLED PRIOR TO BEGINNING OF TOWER ERECTION.

5. THE FOUNDATION SHOWN SHALL BE CONSTRUCTED AS A MASS MEMBER. MEASURES SHALL BE TAKEN TO COPE WITH THE GENERATION OF HEAT AND ATTENDANT VOLUME CHANGE SO AS TO MINIMIZE CRACKING.

6. FOR ANCHOR BLOCK TYPE FOUNDATIONS, THE PORTION OF ALL STEEL ANCHORS, FROM TOP OF ANCHOR BLOCK TO GROUND LEVEL, SHALL BE COATED WITH BITUMEN. DESIGN ASSUMES PERIODIC INSPECTIONS WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE TO DETERMINE IF ADDITIONAL ANCHOR CORROSION PROTECTION MEASURES MUST BE IMPLEMENTED BASED ON OBSERVED SITE-SPECIFIC CONDITIONS.

7. NO FILL SHALL BE REMOVED FROM THE COMPRESSION SIDE OF EXISTING ANCHORS IN A RADIUS OF 45 FT.

5.4 DRILLED SHAFT

1. REINFORCING CAGES SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE. WHEN TEMPORARY CAGES ARE UTILIZED, BRACING SHALL BE ADEQUATE TO RESIST FORCES OCCURRING FROM THE FLOWING CONCRETE DURING CASING EXTRACTION.

2. CONCRETE COVERED FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES (76 MM) NOR BE LESS THAN 2 INCHES (51 MM).

3. SPACERS SHALL BE ATTACHED INTERMITTENTLY THROUGHOUT THE ENTIRE LENGTH OF VERTICAL REINFORCING CAGES TO INSURE CONCENTRIC PLACEMENT OF CAGES IN EXCAVATIONS.

4. FOUNDATION DESIGN HAS BEEN BASED ON THE GEOTECHNICAL REPORT. CONTRACTOR SHALL CONFORM TO THE PROVISIONS OF THE GEOTECHNICAL STUDY FOR THIS SITE. COMPANY PROVIDING GEOTECHNICAL REPORT TO OBSERVE AND APPROVE IN WRITING DRILLING OF PIER AND POURING OF CONCRETE. COPIES OF WRITTEN APPROVAL SHALL BE SENT TO AW SOLUTIONS. CONTRACTOR SHALL PROVIDE ADEQUATE ASSISTANCE AND NOTIFICATION TO ACCOMPLISH THIS REQUIREMENT.

5. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT OF THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.

6. FOR FOUNDATION AND ANCHOR TOLERANCES REFER TO TOWER MANUFACTURER DRAWINGS FOR SPECIFIC JOB NUMBER AND DATE. IN ABSENCE OF MORE SPECIFIC INFORMATION, THE CONTRACTOR MAY USE THE FOLLOWING:

TOWER FOUNDATION:
-LOCATION: 1/8" OF SHAFT DIAMETER (MAX.)
-OUT OF PLUMB: 1.5% OF SHAFT LENGTH NOT TO EXCEED 12.5% OF SHAFT DIAMETER OR 12'.

-CONCRETE CUT OFF ELEVATION: +/- 1/8"

PLATFORM FOUNDATION:
-LOCATION: 1" IN PLAN
-OUT OF PLUMB: 2"

-CONCRETE CUT OFF ELEVATION: +/- 1/8"

7. 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.

8. DRILLING FLUID, IF USED, SHALL BE FULLY DISPLACED BY CONCRETE AND SHALL BE DETERIMENTAL TO CONCRETE OR SURROUNDING SOIL. CONTAMINATED CONCRETE SHALL BE REMOVED FROM TOP OF FOUNDATION AND REPLACED WITH FRESH CONCRETE.

9. INTIMATE CONTACT BETWEEN CONCRETE AND SOIL-WALLS OF DRILLED SHAFT IS ESSENTIAL FOR ADEQUATE FOUNDATION PERFORMANCE. THE CONCRETE SHOULD BE APPROPRIATELY VIBRATED DURING CONSTRUCTION.

10. FOUNDATION DESIGN HAS BEEN BASED ON THE GEOTECHNICAL ENGINEERING REPORT AS FOLLOW:

A. AXIAL UPLIFT DOES NOT OCCUR FOR THIS MONOPOLE APPLICATION.
B. AXIAL (GROSS) COMPRESSION (SUPERPOSED POLE LOAD PLUS PILE SELF WEIGHT) IS WITHIN ALLOWABLE POLE COMPRESSIVE CAPACITY BASED ON THE COMBINED ACTION OF THE PILE END ULTIMATE BEARING AND THE PILE ULTIMATE SKIN FRICITION WITH THEIR RESPECTIVE SAFETY FACTORS.

C. LATERAL STABILITY IS BASED ON AN ALLOWABLE SOIL PASSIVE SOIL WITH A MINIMUM SAFETY FACTOR OF 2 OF THE REPORT SOIL STRATA TO RESIST THE INDICATED BASE SHEAR AND OVERTURNING MOMENT.

11. DRILLED PIER INSTALLATION SHALL BE OBSERVED AND APPROVED IN WRITING BY GEOTECHNICAL ENGINEER PROVIDING GEOTECHNICAL REPORT.

12. TOWER BASE REACTIONS ARE GIVEN BY TOWER MANUFACTURER FOR TOWER SIZE, TYPE, AND SPECIFIC JOB NUMBER LISTED.

13. FOR ANCHOR BOLTS AND TEMPLATES, SEE TOWER MANUFACTURER. DRAWINGS PROVIDED BY THE TOWER MANUFACTURER REPRESENTATIVE.

14. THE SHAFT CASING SHALL BE A STEEL PIPE ASTM A252, GRADE 2 OR ASTM A36.

5.5 HELICAL ANCHORS

1. GROUT IS GRAVITY FEED INTO SHAFT AND SHOULD HAVE THE APPROPRIATE FLUIDITY TO FREELY FLOW INTO THE COLUMN. THE RATE OF ANCHOR PENETRATION INTO GROUND SHALL BE ADJUSTED TO AVOID AIR POCKETS INDUCED IN THE SHAFT. THE VOLUME OF GROUT CONTAINED IN THE RESERVOIR SHALL BE MAINTAINED AT A LEVEL SUFFICIENT TO MAINTAIN POSITIVE HYDROSTATIC PRESSURE ON THE GROUT COLUMN.

2. CEMENT FOR HELICAL FULL DOWN MICRO PILE GROUT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150 TYPE I OR TYPE II. PRE-PACKAGED, NON-SHRINK CEMENT GROUTS SHALL BE SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE ENGINEER, AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1107.

3. CHEMICAL ADMIXTURES FOR GROUT SHALL CONFORM TO THE REQUIREMENTS OF ASTM C494. CHEMICAL ADMIXTURES WHICH CONTROL BLEED WATER, IMPROVE CONSISTENCY, REDUCE WATER/CEMENT RATIO, AND RETARD SET MAY BE USED IN THE GROUT SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE OWNER. EXPANSIVE ADMIXTURES CAN BE USED TO FILL CONFINED AREAS OF THE CENTRAL STEEL SHAFT COUPLING JOINTS, OR TO COMPENSATE FOR DRYING SHRINKAGE. ACCELERATORS SHALL NOT BE PERMITTED. CHEMICAL ADMIXTURES, IF USED, SHALL BE COMPATIBLE WITH THE CENTRAL STEEL SHAFT AND MIXED IN ACCORDANCE WITH THE GROUT MANUFACTURER'S RECOMMENDATIONS.

4. MINERAL ADMIXTURES FOR GROUT SHALL CONFORM TO THE REQUIREMENTS OF ASTM C618 (COAL FLY ASH) OR C1240 (SILICA FUME). MINERAL ADMIXTURES, WHICH PROVIDE THIXOTROPIC CONSISTENCY, REDUCE POROSITY, INCREASE COMPRESSIVE STRENGTH, AND RESIST SEGREGATION MAY BE USED IN THE GROUT SUBJECT TO THE REVIEW AND ACCEPTANCE OF THE OWNER. MINERAL ADMIXTURES, IF USED, SHALL BE COMPATIBLE WITH THE CENTRAL STEEL SHAFT AND MIXED IN ACCORDANCE WITH THE GROUT MANUFACTURER'S RECOMMENDATIONS.

5. THE GROUT SHALL BE PLACED VIA A GRAVITY FEED RESERVOIR LOCATED AT THE SURFACE. THE RESERVOIR SHALL CONSIST OF A TEMPORARY CASING OR FORM, WHICH IS CAPABLE OF CONTAINING LIQUID GROUT. THE RESERVOIR SHALL

BE APPROPRIATELY SIZED (DIAMETER AND LENGTH) TO ACCOMMODATE THE SOIL CONDITIONS AND GROUT COLUMN DIAMETER. THE GROUT SHALL BE PLACED IN RESERVOIR IMMEDIATELY PRIOR TO THE ADVANCEMENT OF THE FIRST LDP INTO THE SOIL. THE VOLUME OF GROUT CONTAINED IN THE RESERVOIR SHALL BE MAINTAINED AT A LEVEL SUFFICIENT TO MAINTAIN POSITIVE HYDROSTATIC PRESSURE ON THE GROUT COLUMN.

6. GROUT PLACEMENT SHALL CONTINUE UNTIL THE MINIMUM GROUT COLUMN LENGTH HAS BEEN ACHIEVED AS SHOWN ON THE WORKING DRAWINGS. VOLUME MEASUREMENTS SHALL BE TAKEN THROUGHOUT THE INSTALLATION IN ORDER TO DETERMINE THE ACTUAL GROUT COLUMN DIAMETER.

7. GROUT SHALL BE ALLOWED TO ATTAIN THE MINIMUM DESIGN STRENGTH PRIOR TO BEING LOADED.

8. THE HPM CONTRACTOR SHALL BE EXPERIENCED IN PERFORMING DESIGN AND CONSTRUCTION OF HELICAL PULL DOWN MICRO PILES AND SHALL FURNISH ALL MATERIALS, LABOR, AND SUPERVISION TO PERFORM THE WORK. THE CONTRACTOR SHALL BE TRAINED AND CERTIFIED BY A.C. CHANCE COMPANY IN THE PROPER METHODS OF DESIGN AND INSTALLATION OF THE PATENTED HPM SYSTEM. THE CONTRACTOR SHALL PROVIDE NAMES OF ON-SITE PERSONNEL MATERIALLY INVOLVED WITH THE WORK, INCLUDING THOSE WHO CARRY DOCUMENTED CERTIFICATION FROM A.C. CHANCE COMPANY. AT A MINIMUM, THESE PERSONNEL SHALL INCLUDE FOREMAN, MACHINE OPERATOR, AND PROJECT ENGINEER/MANAGER.

9. THE HELICAL PULL DOWN MICRO PILE CONTRACTOR SHALL NOT SUBLET THE WHOLE OR ANY PART OF THE CONTRACT WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE ENGINEER.

6. ANCHORS & EPOXY

6.1 POST-INSTALLED ANCHORS

1. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE DRAWINGS. CONTRACTOR SHALL OBTAIN APPROVAL FROM ENGINEER OF RECORD PRIOR TO USING POST-INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.

2. CARE SHALL BE TAKEN TO AVOID CONFLICTS WITH EXISTING REBAR. WHEN EXISTING REBARS ARE ENCOUNTERED OFFSET THE LOCATION OF ANCHOR IF POSSIBLE. PATCH UNUSED HOLES WITH GROUT.

3. ANCHORS SHALL BE INSTALLED PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AT NOT LESS THAN MINIMUM EDGE DISTANCES AND/OR SPACINGS INDICATED IN THE MANUFACTURER'S LITERATURE. UNLESS SPECIFIED OTHERWISE, ANCHORS SHALL BE EMBEDDED IN THE APPROPRIATE SUBSTRATE WITH A MINIMUM EMBEDMENT OF 8 TIMES THE NOMINAL ANCHOR DIAMETER OR THE EMBEDMENT REQUIRED TO SUPPORT THE INTENDED LOAD.

4. SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE LISTED BELOW, SHALL BE SUBMITTED TO THE ENGINEER WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER SHOWING THAT THE SUBSTITUTED PRODUCT WILL ACHIEVE AN EQUIVALENT CAPACITY USING THE APPROPRIATE DESIGN PROCEDURE REQUIRED BY THE BUILDING CODE.

5. WHERE MANUFACTURER RECOMMENDS USE OF SPECIAL TOOLS FOR INSTALLATION OF ANCHORS, SUCH TOOLS SHALL BE USED, UNLESS OTHERWISE PERMITTED SPECIFICALLY BY THE ENGINEER.

6. WHERE HOLES ARE DRILLED IN CONCRETE OR MASONRY, HOLES SHALL BE ACCURATELY AND SQUARELY DRILLED, AND THE HOLES SHALL BE CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

6.2 ADHESIVE ANCHORS

1. EPOXY AND ACRYLIC ADHESIVES: ADHESIVES SHALL BE A CARTRIDGE TYPE, TWO-COMPONENT, SOLID EPOXY BASED SYSTEM DISPENSED AND MIXED THROUGH A STATIC MIXING NOZZLE SUPPLIED BY THE MANUFACTURER. ACCEPTABLE INSTALLATION AND PERFORMANCE TEMPERATURE RANGES SHALL BE VERIFIED WITH MANUFACTURER'S LITERATURE PRIOR TO INSTALLATION. EPOXY ADHESIVES SHALL HAVE AN EVALUATION REPORT ISSUED BY ICC/CBO EVALUATION SERVICE, INC. AND BE TESTED IN ACCORDANCE WITH ICC/CBO'S ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS (AC 58) FOR THE FOLLOWING:

- A. SEISMIC AND WIND LOADING
- B. LONG TERM CREEP AT ELEVATED TEMPERATURES
- C. STATIC LOADING AT ELEVATED TEMPERATURES
- D. DAMP AND WATER-FILLED HOLES
- E. FREEZE-THAW CONDITIONS
- F. CRITICAL AND MINIMUM EDGE DISTANCE AND SPACING

EOXY ADHESIVE SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM C-881 TYPE I, II, IV AND V, GRADE 3, CLASS B AND C. ACRYLIC ADHESIVE SHALL MEET THE MINIMUM PHYSICAL REQUIREMENTS OF ASTM C-881 TYPE I AND IV, GRADE 3, CLASS A, B AND C.

2. ENCAPSULATED ADHESIVES: CAPSULE SHALL BE A TWO-COMPONENT, VINYLSTERE BASED ADHESIVE CAPSULE-WITHIN-A-CAPSULE SYSTEM SUPPLIED IN MANUFACTURER'S STANDARD PACKAGING. THE CAPSULE IS PLACED IN THE HOLE AND THE RESIN AND INITIATOR COMPONENTS ARE COMBINED WHEN THE ROD OR REBAR IS DRIVEN THROUGH THE BOTTOM OF THE HOLE THROUGH THE CAPSULE. NO SPINNING OR INSERT END PREPARATION SHALL BE REQUIRED FOR PROPER INSTALLATION. ACCEPTABLE INSTALLATION AND PERFORMANCE TEMPERATURE RANGES SHALL BE VERIFIED WITH MANUFACTURER'S LITERATURE PRIOR TO INSTALLATION. CAPSULES SHALL BE TESTED IN ACCORDANCE WITH ICC/CBO'S ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS (AC 58) FOR THE FOLLOWING:

- A. LONG TERM CREEP AT ELEVATED TEMPERATURES
- B. CRITICAL AND MINIMUM EDGE DISTANCE AND SPACING

3. ADHESIVE LIMITATIONS:

A. INSTALLATION TEMPERATURE: WHEN THE BASE MATERIAL TEMPERATURE DROPS BELOW 40-DEGREES F (5-DEGREES C), ONLY ACRYLIC ADHESIVES SHALL BE USED FOR ADHESIVE INSTALLATIONS. SEE MANUFACTURER'S INSTRUCTIONS FOR ADDITIONAL MINIMUM TEMPERATURE REQUIREMENTS.

B. HOLLOW SUBSTRATES: THE ADHESIVE MANUFACTURER'S SCREEN TUBES SHALL BE USED FOR ADHESIVE INSTALLATIONS INTO HOLLOW SUBSTRATE MATERIAL. ENCAPSULATED ADHESIVES SHALL NOT BE USED IN HOLLOW SUBSTRATE APPLICATIONS.

C. MOISTURE: ENCAPSULATED ADHESIVES SHALL NOT BE USED WHEN MOISTURE IS PRESENT IN OR AROUND HOLE.

D. OVERSIZED HOLES: REFER TO MANUFACTURER'S INFORMATION IF DRILLED HOLE SIZE IS LARGER THAN WHAT IS RECOMMENDED.

4. CORE-DRILLED HOLES: REFER TO MANUFACTURER'S INFORMATION IF HOLES ARE DRILLED WITH A CORE-DRILL BIT.

5. DO NOT DISTURB ANCHORS DURING SPECIFIED CURE TIME.

6.3 MECHANICAL ANCHORS

1. ANCHORS USED TO TRANSMIT LOAD [I] BETWEEN STRUCTURAL ELEMENTS AND/OR [II] FROM LIFE SAFETY-RELATED ATTACHMENTS SHALL BE DESIGNED IN ACCORDANCE WITH ACI 355.2, WHICH SHALL BE AN IMPERIAL SIZED THREADED STUD WITH AN INTEGRAL CONE EXPANDER AND 3-SEGMENTED EXPANSION CLIP. THE STUD SHALL BE MANUFACTURED FROM CARBON STEEL AND THE EXPANSION CLIP SHALL HAVE 2 UNDERCUTTING EMBOSSED PER SEGMENT AND BE MANUFACTURED FROM 316 STAINLESS STEEL. CARBON STEEL ANCHORS SHALL HAVE AN ELECTROPLATED ZINC FINISH.

6.4 PENETRATION FREE ADHESIVE CONNECTION

1. ADHESIVES SHALL BE A CARTRIDGE TYPE, TWO-COMPONENT, SOLID EPOXY BASED SYSTEM DISPENSED AND MIXED THROUGH A STATIC MIXING NOZZLE SUPPLIED BY THE MANUFACTURER. THE ADHESIVE SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM C-881 TYPE I, II, IV AND V, GRADE 3, CLASS B AND C. ACCEPTABLE INSTALLATION AND PERFORMANCE TEMPERATURE RANGES SHALL BE VERIFIED WITH MANUFACTURER'S LITERATURE PRIOR TO INSTALLATION. EPOXY ADHESIVES SHALL HAVE AN EVALUATION REPORT ISSUED BY ICC/CBO EVALUATION SERVICE, INC. AND BE TESTED IN ACCORDANCE WITH ICC/CBO'S ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS (AC 58) FOR THE FOLLOWING:

- A. SEISMIC AND WIND LOADING
- B. LONG TERM CREEP AT ELEVATED TEMPERATURES
- C. STATIC LOADING AT ELEVATED TEMPERATURES
- D. DAMP AND WATER-FILLED HOLES
- E. FREEZE-THAW CONDITIONS
- F. CRITICAL AND MINIMUM EDGE DISTANCE AND SPACING

- TVSS DEVICES FOR AC POWER SHALL BE INSTALLED IN ALL EXISTING FACILITIES THAT ARE MISSING TVSS DEVICES OR HAVE UNSUITABLE TVSS DEVICES.
- THE AC POWER COMMON MODE SURGE SUPPRESSOR SHALL BE CONNECTED TO THE COMMERCIAL POWER INPUT SIDE OF THE MANUAL TRANSFER SWITCH.
- IN MARKETS WITH LIGHTNING ZONE > OR = TO 4, RF TVSS DEVICE SHALL BE INSTALLED AT THE ENTRANCE TO THE SHELTER OR AS CLOSE AS POSSIBLE TO THE BTS CABINET FOR OUTDOOR SITES, TO PROTECT AGAINST LIGHTNING AND TRANSIENT VOLTAGES.
- A TT TRANSPORT TVSS DEVICE SHALL BE INSTALLED AT ALL SITES BETWEEN THE NIU AND THE BTS.

12 - GROUNDING

12.1 GENERAL GROUNDING MATERIALS AND NOTES

- THE SUBCONTRACTOR SHALL VERIFY THAT THE SYSTEM IS EFFECTIVELY GROUNDED, MEETS NEC ARTICLE 250 REQUIREMENTS, IS ACCEPTABLE TO THE LOCAL UTILITY AND THE LOCAL AUTHORITY HAVING JURISDICTION, AND MEETS THE CARRIER'S ELECTRICAL AND GROUNDING SPECIFICATIONS. FOLLOWING COMPLETION OF WORK, CONDUCT GROUND TEST. OWNER'S REPRESENTATIVE WILL INSPECT CADWELDS AND REVIEW GROUND TEST PRIOR TO BURIAL USE CLEAN CLAY AND CLAY BACKFILL FOR BURIED GROUND CONDUCTORS.
- ALL DETAILS SHOWN ARE DIAGRAMMATICAL. ACTUAL GROUNDING INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
- NOTIFY CONSTRUCTION MANAGER IF THERE ARE ANY DIFFICULTIES INSTALLING THE GROUND SYSTEM DUE TO SITE/SOIL CONDITIONS.
- GROUND CONNECTIONS: WHERE GROUND CONNECTIONS ARE MADE, THE CONTACT POINTS SHALL BE THOROUGHLY CLEANED AND MADE FREE OF FOREIGN MATERIAL SUCH AS PAINT, GALVANIZATION, AND CORROSION, TO ENSURE AN ADEQUATE BOND. REFER TO EXOTHERMIC WELD, LUGS, AND ANTI-OXIDATION COMPOUND NOTES FOR FURTHER DETAILS.
- GROUND WIRE: OUTSIDE / UNDERGROUND: MINIMUM NO. 2 AMERICAN WIRE GAUGE (AWG) BARE, SOLID, ANNEALED, TINNED COPPER WIRE (BTCW) BUT SIZED ACCORDING TO NEC TABLE 250.66. UNDER NO CIRCUMSTANCES IS STRANDED WIRE ACCEPTABLE. ALL BURIED WIRE SHALL BE INSTALLED TO MEET MINIMUM BEND RADIUS. SHARP BENDS AND KINKS ARE NEVER ACCEPTABLE. WHEN ANY GROUNDING OR BONDING WIRE RUNS THROUGH CONCRETE, IT SHALL BE SLEVED IN PVC. GROUND WIRES SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS OR SUPPORTS.
- GROUND WIRE - INSIDE: WIRE SHALL BE NO. 2 AWG THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION, GREEN INSULATED (A HIGH-STRENGTH CABLE IS PREFERRED).
- BURIED GROUND RING: THE EQUIPMENT/SHELTER PAD OR PLATFORM SHALL HAVE A BURIED GROUND RING (BGR) THAT CONSISTS OF A RING OF NO. 2 AWG BARE, SOLID, ANNEALED, TINNED COPPER WIRE AND EXOTHERMICALLY WELDED GROUND RODS. THE BGR DESIGN SHOULD RESULT IN 5 OHMS OR LESS WITH SOIL RESISTIVITIES OF UP TO 50,000 OHM-CM. SOIL RESISTIVITIES HIGHER THAN THIS WILL REQUIRE FURTHER AUGMENTATION. ALL UNDERGROUND (BELLOW GRADE) GROUNDING CONNECTIONS, INCLUDING COPPER GROUND RODS, CHEMICAL GROUND ROD ATTACHMENTS, AND GROUND LEADS FROM EQUIPMENT, TOWER, AND COAX SHALL BE MADE BY AN EXOTHERMIC WELD. THE GROUND RING SHALL BE BETWEEN A MINIMUM OF TWO FEET FROM THE SHELTER FOUNDATION, BTS PAD, OR PLATFORM PERIMETER AT A MINIMUM DEPTH OF TWO FEET, SIX INCHES, AND WITH NO BEND HAVING A RADIUS OF LESS THAN TWO FEET. THE TRENCH SHALL BE DUG 6 INCHES BELOW THE REQUIRED WIRE DEPTH. GROUND RODS SHALL BE INSTALLED, AT A MINIMUM, AT EACH CORNER OF THE BGR, OR PER NFPA 70, ARTICLE 250-56. EVERY EFFORT SHALL BE MADE TO ENSURE THAT ALL GROUND PATHS TO THE BGR ARE INSTALLED SO THAT ANY POTENTIAL DISCHARGE OF ELECTRICITY WILL BE DOWNWARD, OR, IF NECESSARY, FLAT. AT NO POINT SHOULD ANY GROUND PATH GO UPWARD.
- EXOTHERMIC WELDING: EXOTHERMIC WELDS SHALL BE CADWELD, A REGISTERED TRADEMARK OF ERICO PRODUCTS, INC. OF CLEVELAND, OHIO, OR THERMOWELD, A DIVISION OF CONTINENTAL INDUSTRIES, INC. OF TULSA OKLAHOMA OR EQUIVALENT.
- GROUND ROD: 5/8" X 10-FEET (MINIMUM LENGTH) STEEL WITH PURE COPPER JACKET NOT LESS THAN 0.0012 INCHES THICK. GROUND RODS SHALL NOT BE SPACED 16 FT O.C.
- GROUND ROD COUPLING: 5/8" GROUND ROD COUPLING MADE OF THE SAME MATERIAL AS THE GROUND ROD TO PREVENT DISSIMILAR METAL HIGH OXIDATION POINTS.
- CHEMICAL GROUND ROD: COMPRISED OF A HOLLOW COPPER GROUND ROD, A GROUND TEST WELL, A 4'-0" EXOTHERMICALLY WELDED DIGITAL AND CONDUCTIVE BACKFILL MATERIAL. THE CHEMICAL GROUND ELECTRODE SHALL BE MADE OF A MINIMUM 2 INCH I.D. TYPE K COPPER TUBE WITH A MINIMUM WALL THICKNESS OF 0.083 INCH AND SHALL BE A MINIMUM OF 8 FEET IN LENGTH. THE CHEMICAL GROUND ROD COPPER TUBE SHALL BE FILLED WITH NON-HAZARDOUS METALLIC SALTS. CHEMICAL GROUND ROD SHALL BE UL LISTED. IN SITUATIONS WHERE DRILLING VERTICALLY IS TOO DIFFICULT OR COSTLY, HORIZONTAL L-SHAPE CHEMICAL GROUNDS ARE ACCEPTABLE.
- GROUND BARS: GROUND BARS SHALL BE MANUFACTURED EXACTLY AS SPECIFIED. NO DEVIATIONS ARE ALLOWED. DIMENSIONS SHALL BE ACCURATE WITHIN 1/32 INCH. HOLE DIAMETERS SHALL BE ACCURATE WITHIN 1/64 INCH. BARS SHALL BE 1/4 INCH THICK SOLID ELECTRICAL GRADE COPPER MANUFACTURED BY HARCO OR APPROVED EQUAL. GROUND BARS SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. COAXIAL CABLE GROUND BARS SHOULD BE MECHANICALLY CONNECTED TO THE TOWER STRUCTURAL STEEL. HOWEVER, DO NOT DRILL HOLES OR USE EXOTHERMIC WELDS TO CONNECT GROUND LEADS TO A STEEL TOWER EXCEPT ON STEEL TABS OR FLANGES SPECIFICALLY DESIGNED FOR THAT PURPOSE. HOLES AND/OR EXOTHERMIC WELDING CAN NEGATIVELY IMPACT THE STRUCTURAL INTEGRITY OF THE TOWER AND INCREASE CHANCES OF CORROSION.
- INSULATORS: POLYESTER FIBERGLASS, 15 KV MINIMUM DIELECTRIC STRENGTH, FLAME RESISTANT PER UL 94 VO CLASSIFICATION.
- CLIPS: WHEN SECURING ANY GROUND WIRES, SOLID OR STRANDED, INSULATED OR UNINSULATED, NEVER USE ANY CLIPS OR OTHER DEVICES THAT ARE CONDUCTIVE AND FORM A CLOSED LOOP. METALLIC CLIPS ARE ACCEPTABLE IF THEY DO NOT FORM A CLOSED LOOP.
- GROUND CLAMP: BURNNDY GAR STYLE UL CLAMP WITH TWO-HOLE PROVISIONS FOR LONG BARREL MULTIPLE CRIMP TWO-HOLE LUGS.
- COAX GROUNDING KIT: COAX GROUND KITS SHALL BE FROM THE SAME MANUFACTURER AS THE COAX. GROUND KITS SHALL BE SOLID STRAP TYPE WITH NO. 6 AWG WIRE AND 2-HOLE COMPRESSION CRIMPED LUGS (INSTALLED USING THE PROPER UL TOOL AND CIRCUMFERNETAL HEXAGON DIE). BRAID OR HOSE CLAMP TYPE SHALL NOT BE USED. SOLID COPPER STRAP TYPE WITH SINGLE HOLE LUGS SHALL NOT BE USED. ALL COAX CABLES SHOULD BE GROUNDED AT THEIR SECTOR CCB, THE COLLECTOR CCB, MIDPOINT CCB (IF REQUIRED), BOTTOM CCB, WAVEGUIDE BRIDGE CCB (IF REQUIRED), AND AT THE SHELTER WALL. A MIDPOINT CCB IS ONLY REQUIRED IF THE COAX LENGTH EXCEEDS 200'. A WAVEGUIDE BRIDGE CCB IS ONLY REQUIRED WHEN THE LENGTH OF COAX (FROM TOWER TO EQUIPMENT) IS GREATER THAN 15 FEET.
- WEATHERPROOFING: ALL COAX GROUND KITS SHALL BE WEATHERPROOFED. ONLY GROUND KITS APPROVED BY THE COAX MANUFACTURER SHALL BE USED.
- METALLIC CONDUIT: ANY GROUND WIRES, SOLID OR STRANDED, THAT PASS THROUGH CONDUIT, METALLIC SLEEVE, OR CABLE COVER, SHALL BE BONDED AT BOTH ENDS.
- ANTENNA GROUNDING - ALL ANTENNAS (INCLUDING THE GPS ANTENNAS) ARE GROUNDED BY THEIR MOUNTS/MASTS AND BY THE GROUND PLATE ON THE COAXIAL CABLE CONNECTED TO THE COAX GROUND BARS. DO NOT INSTALL SEPARATE ANTENNA GROUND CONNECTIONS UNLESS SPECIFIED BY THE ANTENNA'S MANUFACTURER. THE GPS ANTENNA(S) MUST BE INSTALLED AND CONNECTED TO THE COAX GROUND BAR AT THE END OF THE WAVEGUIDE BRIDGE.
- MICROWAVE ANTENNA GROUNDING: TOWERS THAT HAVE MICROWAVE ANTENNAS SHALL HAVE GROUND KITS AND A COAX GROUND BAR INSTALLED BELOW AT EACH DISH ELEVATION. INSTALL GROUND KITS ON ALL MICROWAVE LINES AT ALL OTHER COAX GROUND BAR LOCATIONS.
- WAVEGUIDE BRIDGE GROUNDING: BOND THE STEEL SUPPORTING STRUCTURE FOR THE WAVEGUIDE BRIDGE TO THE BGR AT EACH END OF THE SUPPORT STRUCTURE WITH A NO. 2 AWG BTCW CONDUCTOR AND EXOTHERMIC WELD AT 6 INCHES ABOVE GRADE OR FOUNDATION, WHICHEVER IS HIGHER. COLD-GALV AFTER. EXOTHERMICALLY WELD OTHER END TO GROUND. THE WAVEGUIDE BRIDGE/CABLE TRAY SHALL BE BONDED TOGETHER WITH SPLICE PLATES OF SIMILAR METAL OR WITH NO. 2 AWG BTCW OR #2 AWG STRANDED INSULATED WIRE, BONDING EACH SECTION TOGETHER AT EACH JOINT.
- PERIMETER FENCE GROUNDING: WHERE THE NEW BTS EQUIPMENT, OTHER NEW CABINETS, OR A SHELTER ARE LOCATED WITHIN 6 FEET OF METAL FENCING, THE BGR SHALL BE CONNECTED TO THE FENCE POSTS NEAREST THE EQUIPMENT USING BURIED RUNS OF NO. 2 AWG BTCW EXOTHERMICALLY WELDED AT BOTH ENDS. THE VERTICAL FENCE POSTS OF ANY RUN OF FENCE WITHIN 6' OF COMPANY BTS EQUIPMENT, PPC, CABLE TRAY, OR ANTENNA SUPPORT STRUCTURE MUST BE BONDED TO THE BGR USING #2 SOLID TINNED COPPER WIRE.
- GENERATOR GROUNDING: INSTALL A MINIMUM OF TWO GROUND RODS ADJACENT TO THE FUEL TANK SO THAT THE BOTTOM PORTION OF THE RODS ARE AT LEAST TWO FEET LOWER THAN THE BOTTOM OF THE FUEL TANK AND THE TOP OF THE GROUND RODS ARE A MINIMUM OF TWO FEET-SIX INCHES BELOW THE FINAL GRADING. TWO-HOLE COMPRESSION LUGS SHALL BE USED FOR BONDING TO THE GENERATOR AND TO THE LEGS OF THE FUEL TANK. MATING SURFACES SHALL BE PROPERLY PREPARED (PAINT REMOVED AND ANTI-OXIDATION COMPOUND APPLIED) BEFORE RECEIVING THE LUGS. CONNECT THE GROUND RODS TO THE FUEL TANK AND GENERATOR TO THE BGR USING NO. 2 AWG BTCW. BOND METAL FUEL LINES TO THE BGR IF THEY CROSS WITHIN SIX FEET OF THE BGR TO PREVENT LIGHTNING ARCS AND THE RESULTING FUEL LINE PUNCTURE. NO OPEN FLAMES OR ELECTRICAL SPARKS SHALL BE PERMITTED AROUND THE FUEL TANK DUE TO FUEL FLAMMABILITY. DO NOT EXOTHERMICALLY WELD NO. 2 AWG CONDUCTOR TO THE FUEL TANK.
- LUGS: ALL LUGS SHALL BE 2-HOLE, LONG BARREL, TINNED SOLID COPPER UNLESS OTHERWISE SPECIFIED, INSTALLED USING THE PROPER UL TOOL AND CIRCUMFERNETAL HEXAGON DIE. LUGS SHALL BE THOMAS AND BETTS, BURNNDY, ERICO OR EQUIVALENT. BOLT HOLE DIAMETER AND SPACING ON ALL GROUND LUGS SHALL MATCH HOLE DIAMETER AND SPACING OF THE GROUND BAR. TAG ALL GROUND LUGS THAT ARE ATTACHED TO ANY PUBLICLY ACCESSIBLE GROUND POINT (I.E. WATER PIPES, BUILDING STEEL, ETC.). THE TAGS SHALL READ, 'DO NOT DISCONNECT.' OUTDOOR SITES THAT ARE LOCATED INSIDE A LOCKED TELECOMMUNICATIONS COMPOUND ARE NOT CONSIDERED PUBLICLY ACCESSIBLE. PROVIDE STAINLESS STEEL HARDWARE AND LOCK WASHERS ON ALL MECHANICAL CONNECTIONS.
- ANTI-OXIDATION COMPOUND: ANTI-OXIDATION COMPOUND SHALL BE THOMAS AND BETTS KOPR-SHIELD (TM OF JET LUBE, INC.) OR BURNNDY PENETROX - E. ANTI-OXIDATION COMPOUND SHALL BE APPLIED BETWEEN LUG AND GROUND BAR ONLY. DO NOT COVER THE LUG.
- SERVICE DISCONNECT GROUNDING: IF THERE IS A SERVICE DISCONNECT SEPARATE FROM THE PPC MAIN CIRCUIT BREAKERS, THE NEUTRAL TO GROUND BOND SHALL BE MADE AT THE SERVICE DISCONNECT SWITCH LOCATED SEPARATELY AND ON THE SUPPLY SIDE OF THE PPC CABINET AND NO NEUTRAL TO GROUND CONNECTION SHOULD BE IN THE PPC. IT IS CRITICAL THAT ONLY ONE NEUTRAL TO GROUND BOND BE MADE AT THE SERVICE ENTRANCE EQUIPMENT AS DEFINED BY THE NATIONAL ELECTRIC CODE.
- 12.2 OUTDOOR EQUIPMENT SPECIFIC NOTES:

- ON CONCRETE PAD: BTS EQUIPMENT GROUND LEADS SHALL BE CONNECTED TO THE EQUIPMENT CABINETS AS DICTATED BY THE BTS MANUFACTURER. UNLESS SPECIFIED OTHERWISE BY MANUFACTURER, GROUND LEADS WILL BE NO. 2 AWG

BARE, SOLID, ANNEALED, TINNED COPPER WIRE. THE OTHER END OF THE GROUND LEADS SHALL BE CONNECTED TO THE EQUIPMENT GROUND BAR (EGB) OR MGB IF EACH EQUIPMENT CABINET HAS SEPARATE, EXTERNAL ATTACHMENT POINTS FOR GROUND LUGS. IF THE BTS EQUIPMENT CABINETS COLLECTIVELY HAVE A SINGLE GROUND ATTACHMENT, THE GROUND LEAD MAY BE EXOTHERMICALLY WELDED DIRECTLY TO THE BGR, ON A CONCRETE PAD, THE EGB WILL BE HELD FLAT, SEVERAL INCHES ABOVE THE SURFACE OF THE PAD, SECURELY BOLTED WITH CHERYL INSULATORS TO PREVENT MOVEMENT.

2. STEEL PLATFORM: IF THE BTS EQUIPMENT IS MOUNTED ON A STEEL FRAME OR I-BEAMS, THE STEEL SHALL BE BONDED TO THE BGR AT OPPOSITE SIDES WITH 2 NO. 2 AWG BTCW LEADS EXOTHERMICALLY WELDED AT EACH END. THE BTCW GROUND LEADS SHALL BE LOCATED AND SECURED TO MINIMIZE THE POSSIBILITY OF BEING A TRIP HAZARD. ON A PLATFORM, THE MGB WILL BE SECURELY MOUNTED BELOW THE PLATFORM USING CHERYL INSULATORS TO ELECTRICALLY ISOLATE THE BAR FROM THE STEEL PLATFORM. IN THIS CONFIGURATION, THE MGB WILL TYPICALLY BE USED FOR BTS EQUIPMENT, COAX CABLE, AND PLATFORM GROUNDING.

13.2 INDOOR EQUIPMENT/SHELTER SPECIFIC NOTES:

- INDOOR EQUIPMENT: SITES WHERE BTS EQUIPMENT IS LOCATED INDOORS SHALL INCLUDE THE INSTALLATION ON AN INTERIOR GROUND RING (HALO) INSTALLED APPROXIMATELY 6 INCHES BELOW THE CEILING OR 8 FEET ABOVE THE FINISHED FLOOR, WHICHEVER IS LOWER. THE INTERIOR GROUND HALO CABLE SHALL BE A MINIMUM OF NO. 2 AWG, STRANDED COPPER WITH MOISTURE RESISTANT GREEN INSULATION. THE PURPOSE OF THE INTERIOR HALO GROUND RING IS PROVIDED CONVENIENT GROUNDING AND BONDING POINT FOR ALL MISCELLANEOUS METALLIC OBJECTS TO REDUCE STEP AND TOUCH POTENTIAL. ALL MISCELLANEOUS METALLIC OBJECTS INCLUDING METAL DOOR FRAMES, AIR CONDITIONERS, CABLE RACKS, METALLIC CONDUITS, AND BATTERY STANDS, ETC. SHALL BE BONDED TO THE INTERIOR GROUND HALO WITH NO. 6 AWG CABLE. BOTH ENDS OF THE GROUND HALO CONDUCTOR SHALL BE BONDED TO THE MGB. THE INTERNAL MGB SHALL BE CONNECTED TO THE EQUIPMENT BGR USING 2 NO. 2 AWG BTCW GROUND LEADS. THE BTCW SHALL PENETRATE THE WALL OR FOUNDATION OF THE SHELTER IN TWO SEPARATE HOLES. WHENEVER GROUND LEADS PENETRATE CONCRETE, THEY SHALL BE PROTECTED BY PVC CONDUIT. SEAL OPENING AFTER INSTALLATION. GROUND CONDUCTORS ON EXTERIOR WALL OF SHELTER SHALL BE ENCASED IN 3/4" PVC CONDUIT TO GRADE. MOUNT PVC WITH GALVANIZED "C" CLAMPS. SEAL TOP ENDS.

12.4 COLLECTION SPECIFIC NOTES:

- THE NEW GROUNDING SYSTEM SHALL BE BONDED TO THE TOWER GROUND RING, ANOTHER PROVIDER'S GROUND SYSTEM, OR TO THE COMMON GROUND RING TO ENSURE THAT ALL GROUND SYSTEMS ARE AT THE SAME POTENTIAL. BONDING SHALL BE DONE AT THE EARTH GROUND RING LEVEL USING A MINIMUM OF NO. 2 AWG SOLID, BARE, TINNED COPPER WIRE. WHEN BONDING TO ANOTHER SERVICE PROVIDER'S GROUND RING, THE NEW RING SHALL BE CONNECTED AT TWO LOCATIONS TO THE EXISTING GROUNDING SYSTEMS.

12.5 RAWLAND SPECIFIC NOTES:

- GROUNDRING SYSTEM: THE COMPOUND SHALL ONLY HAVE ONE GROUNDING ELECTRODE SYSTEM. ALL GROUNDING MEDIA IN OR ON THE STRUCTURE SHALL BE INTERCONNECTED TO PROVIDE A COMMON GROUND POTENTIAL. THIS SHALL INCLUDE LIGHTNING PROTECTION, ELECTRIC SERVICE, TELEPHONE AND ANTENNA SYSTEM GROUNDS, AS WELL AS UNDERGROUND METALLIC PIPE SYSTEMS, UNDERGROUND METALLIC PIPING SYSTEMS TYPICALLY INCLUDE WATER SERVICE, WELL CASTINGS LOCATED WITHIN 25 FT. OF THE STRUCTURE, GAS PIPING, UNDERGROUND CONDUITS, UNDERGROUND LIQUEFIED PETROLEUM GAS PIPING SYSTEMS, AND SO ON. INTERCONNECTION TO A GAS LINE SHALL BE MADE ON THE CUSTOMER'S SIDE OF THE METER.
- PERIMETER GROUNDING: THE FENCE SHALL BE BONDED TO THE GROUND RING AT EACH CORNER POST AND AT EACH GATE POST WITH NO. 2 AWG BARE TINNED WIRE. THE CONNECTION TO EACH POST AND THE GROUND RING SHALL BE BY EXOTHERMIC WELD. AT RAW LAND SITES, BOND EACH GATE TO THE GATE POST AT THE HINGED END WITH A GATE JUMPER. DO NOT LOCATE GATE JUMPER AT THE BOTTOM TO PREVENT IT FROM DRAGGING OR BEING DAMAGED BY MOVING EQUIPMENT. THE GATE JUMPER SHALL BE NO. 2 AWG WELDING CABLE OR A FLEXIBLE 1 INCH TINNED COPPER BRAIDED JUMPER WITH SLEEVES ON EACH END DESIGNED FOR MECHANICAL CONNECTORS SUCH AS BURNNDY GAR. REMOVE THE INSULATION AT THE BOTTOM OF THE JUMPER DOWN TO THE BARE WIRE FOR WATER DRAINAGE. ACCEPTABLE PRODUCTS ARE ERICO, MODEL FU1024 OR BURNNDY, FLEXIBLE COPPER BRAIDED JUMPER, TYPE "B", WHERE THE NEW BTS EQUIPMENT OR OTHER NEW EQUIPMENT IS LOCATED WITHIN 6 FEET OF METAL FENCING. THE EQUIPMENT BGR SHALL BE CONNECTED TO THE FENCE POSTS NEAREST THE EQUIPMENT USING BURIED RUNS OF NO. 2 AWG BTCW EXOTHERMICALLY WELDED AT BOTH ENDS. THE VERTICAL FENCE POSTS OF ANY RUN OF FENCE WITHIN 6' OF COMPANY BTS EQUIPMENT, PPC, CABLE TRAY, OR ANTENNA SUPPORT STRUCTURE MUST BE BONDED TO THE BGR USING #2 SOLID TINNED COPPER WIRE.
- SELF SUPPORT (LATTICE) TOWER GROUNDING: A BGR SHALL BE INSTALLED THAT ENCircles ALL LEGS OF THE SELF SUPPORT TOWER. THE BGR WILL BE CONSTRUCTED IN THE SAME MANNER AS THE BTS EQUIPMENT BGR EXCEPT THAT GROUND RODS WILL BE INSTALLED EVERY 20 FEET UNLESS SOIL CONDITIONS DICTATE ADDITIONAL GROUND RODS. THE TOWER AND EQUIPMENT BGRS WILL BE CONNECTED USING TWO BURIED RUNS OF NO. 2 AWG BARE, SOLID, ANNEALED, TINNED COPPER WIRE. THESE CONNECTIONS WILL FOLLOW THE SAME PATH AS THE COAX BRIDGE IF POSSIBLE. EACH LEG END OF THE BGR SHALL BE EXOTHERMICALLY WELDED TO THE BGR. DO NOT EXOTHERMICALLY WELD TO A STRUCTURAL CROSS MEMBER OR TO A HOLLOW LEG. WHEN DRESSING THE NO. 2 AWG SOLID WIRE OFF THE TOWER INTO THE GROUND IT IS IMPORTANT TO HAVE A SMOOTH SWEEPING BEND AROUND THE TOWER FOUNDATION OR ANY OTHER OBJECT. ALL WIRE SHALL BE INSTALLED TO MEET THE MINIMUM BENDING RADIUS REQUIREMENT.
- MONPOLE TOWER GROUNDING: A BGR SHALL BE INSTALLED THAT ENCircles THE MONPOLE FOUNDATION. THE BGR WILL BE CONSTRUCTED IN THE SAME MANNER AS THE BTS EQUIPMENT BGR EXCEPT THAT FOUR GROUND RODS WILL BE INSTALLED 90 DEGREES APART. THE MONPOLE AND EQUIPMENT BGRS WILL BE CONNECTED USING TWO BURIED RUNS OF NO. 2 AWG BARE, SOLID, ANNEALED, TINNED COPPER WIRE. THESE CONNECTIONS WILL FOLLOW THE SAME PATH AS THE COAX BRIDGE IF POSSIBLE. EXOTHERMICALLY WELD NO. 2 AWG BARE TINNED COPPER WIRES LOCATED AT 90 DEGREE POINTS AROUND THE BASE PLATE OR WELD TABS OF A MONPOLE TOWER DO NOT EXOTHERMICALLY WELD DIRECTLY TO THE MONPOLE SHELL. THE OTHER END OF EACH NO. 2 AWG WIRE SHALL BE EXOTHERMICALLY WELDED TO GUY TOWER GROUNDING: A BGR SHALL BE INSTALLED THAT ENCircles THE MONPOLE FOUNDATION. THE BGR WILL BE CONSTRUCTED IN THE SAME MANNER AS THE BTS EQUIPMENT BGR EXCEPT THAT FOUR GROUND RODS WILL BE INSTALLED 90 DEGREES APART. 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