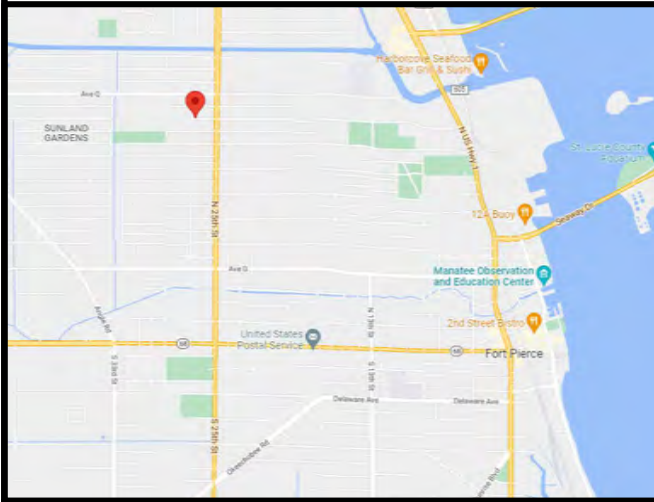


VICINITY MAP

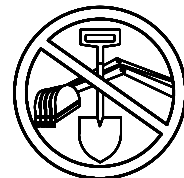


DRIVING DIRECTIONS

- DIRECTIONS FROM ST. LUCIE COUNTY COURTHOUSE
218 S 2ND ST, FORT PIERCE, FL 34950
- HEAD SOUTH ON S 2ND ST TOWARD BOSTON AVE
 - TURN RIGHT ONTO CITRUS AVE 0.2 MI
 - TURN RIGHT ONTO S US HWY 1 1.3 MI
 - TURN LEFT ONTO AVENUE M 1.4 MI
 - TURN RIGHT ONTO N 27TH ST & THE DESTINATION WILL BE ON THE RIGHT-HAND SIDE OF THE ROAD

SCOPE OF WORK

- THIS PROJECT CONSISTS OF:
- NEW 40'-0"X40'-0" FENCED COMPOUND INSIDE NEW 60'-0"X30'-0" LEASE AREA
 - NEW 160' TALL MONOPOLE
 - NEW T-MOBILE EQUIPMENT CABINETS & GENERATOR ON SEPARATE CONCRETE PADS
 - NEW T-MOBILE ANTENNAS ON MONOPOLE



FLORIDA ONE-CALL
STATE WIDE CALL: 811
CALL BEFORE YOU DIG

DEPARTMENT	NAME/SIGNATURE	DATE
LAND/TOWER OWNER		
SITE ACQU. AGENT		
ZONING/PERMITTING AGENT		
A&E MANAGER		
CONSTRUCTION MANAGER		
RF MANAGER		



T-Mobile

SITE NAME:

FORT PIERCE (TI-OPP-19131)

T-MOBILE SITE NUMBER:

A2P2303

PROJECT DESCRIPTION:

PROPOSED 160' MONOPOLE

FLORIDA CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

BUILDING CODE: FLORIDA BUILDING CODE (FBC), 7TH EDITION (2020) - 2018 IBC W/ASCE.
NATIONAL ELECTRICAL CODE: 2017 EDITION (NFPA 70).
MECHANICAL CODE: 2020, 7TH EDITION.
FIRE CODE: FLORIDA FIRE PREVENTION CODE, 7TH EDITION.
LIFE SAFETY CODE: NFPA-101-2018

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN.

PROJECT INFORMATION

SITE ADDRESS: 1601 N 25TH ST.
FORT PIERCE, FL 34947

LATITUDE (NAD 83): N 27° 27' 50.531"
LONGITUDE (NAD 83): W 80° 21' 05.599"

JURISDICTION: FORT PIERCE
PROPERTY OWNER: ALVIN MILLER
PARCEL ID: 2404-608-0095-050-9
LAND USE: COMMERCIAL
ZONING: C-3
LAND SIZE (ACRES): 2.19
LAND SIZE (SF): 95,550
TOTAL SITE AREA (ACRES): 0.12
TOTAL SITE AREA (SF): 5,250
IMPERVIOUS RATIO: 5.5%
FLOOR AREA RATIO: 0

APPLICANT: T-MOBILE
3757 HALLS MILL ROAD
MOBILE, AL 36693

PROJECT MANAGEMENT FIRM: TILLMAN INFRASTRUCTURE
152 W. 57TH STREET
NEW YORK, NY 10019
(212) 706-1677

ENGINEER: SMW ENGINEERING
158 BUSINESS CENTER DRIVE
BIRMINGHAM, AL 35244
CONTACT: JEREMY SHARIT, PE
PHONE: 205-397-6781

POWER: NOT PROVIDED
FIBER: NOT PROVIDED

DRAWING INDEX	
T-1	TITLE SHEET & PROJECT INFORMATION
-	SURVEY
C-1	AERIAL SITE PLAN
C-1.1	OVERALL SITE PLAN
C-1.2	ZONING MAP
C-2	DETAILED SITE PLAN
C-3	TOWER ELEVATION & SITE SIGNAGE
L-1	LANDSCAPE PLAN

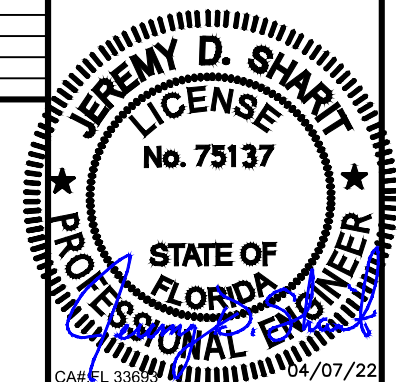


SMW#: 21-2072



T-Mobile

#	DATE	DESCRIPTION:
0	03/31/22	CLIENT REVIEW
1	04/01/22	CLIENT REVIEW
2	04/07/22	PRELIMINARY ZONING



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.

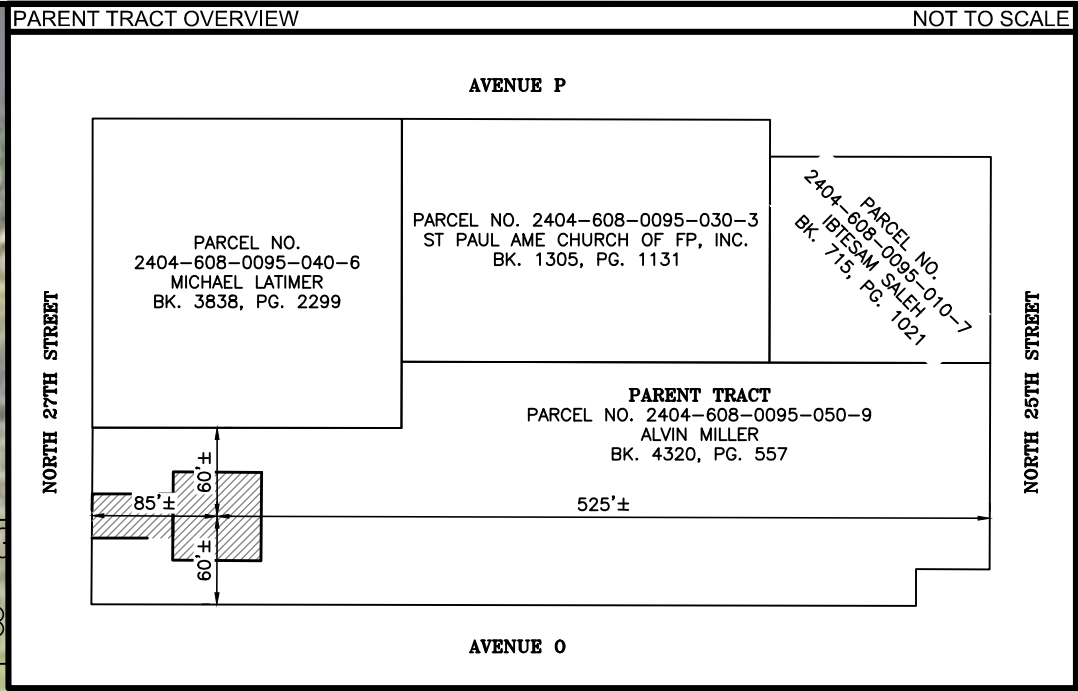
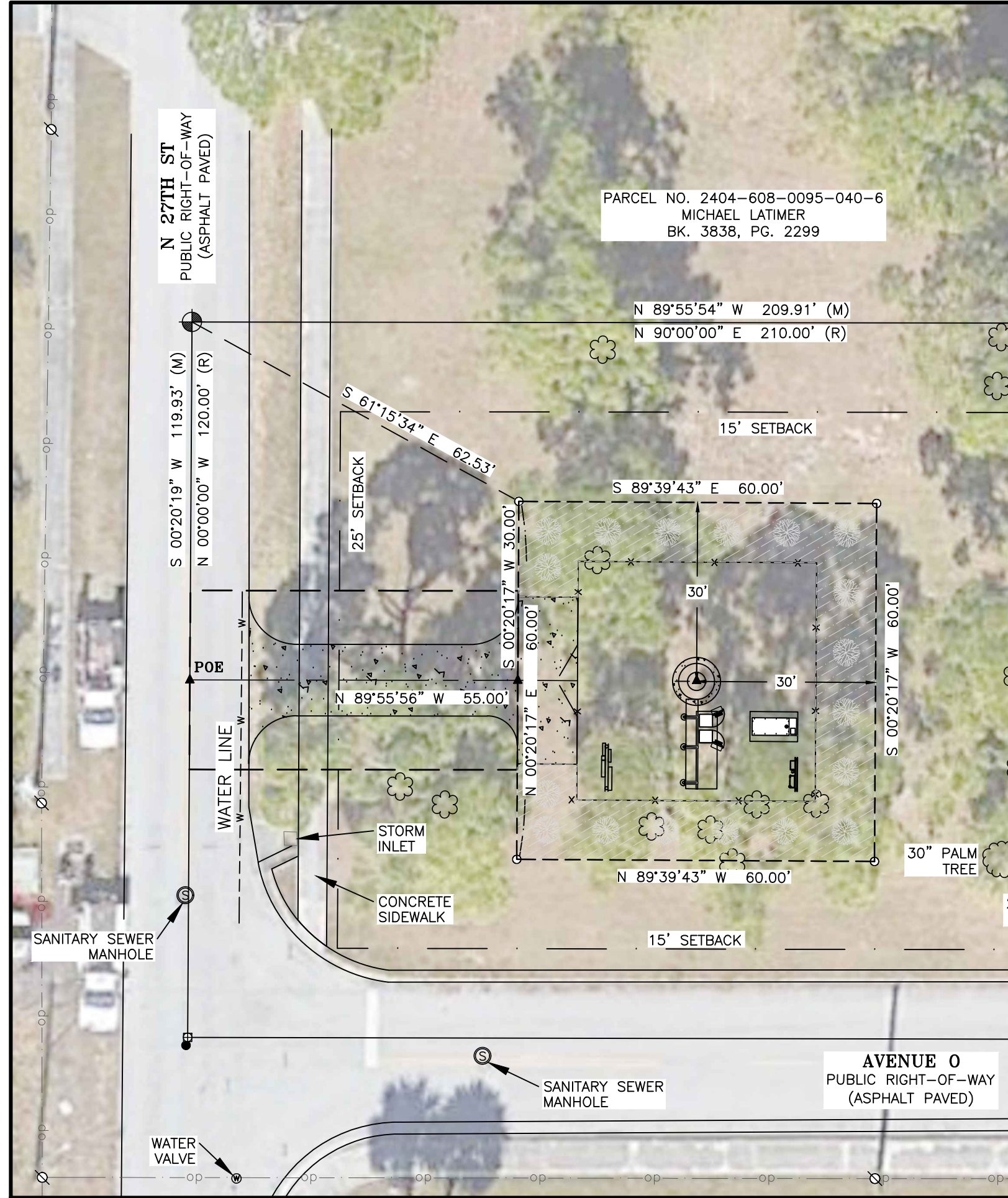
T-MOBILE SITE #: A2P2303

DESIGNED: JDS
CHECKED: RTB
DRAWN: BMD
LAST REV BY: BMD

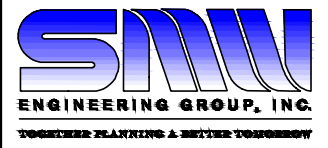
SITE NAME
FORT PIERCE (TI-OPP-19131)

SHEET NAME
TITLE SHEET & PROJECT INFORMATION

SHEET NUMBER
T-1



PARENT TRACT
PARCEL NO. 2404-608-0095-050-9
ALVIN MILLER
BK. 4320, PG. 557

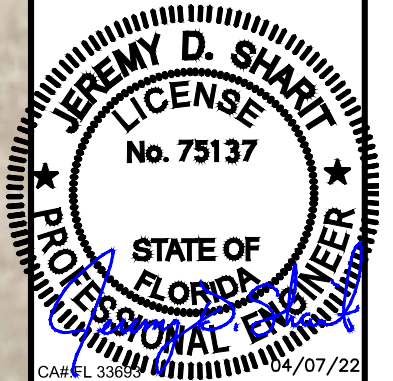


SMW#: 21-2072

Tillman Infrastructure
152 W. 57TH STREET
NEW YORK, NEW YORK 10019
TEL: 212-706-1677



#	DATE	DESCRIPTION:
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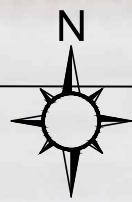
DESIGNED: JDS
CHECKED: RTB
DRAWN: BMD
LAST REV BY: BMD

SITE NAME
FORT PIERCE (TI-OPP-19131)

SHEET NAME
AERIAL SITE PLAN

SHEET NUMBER
C-1

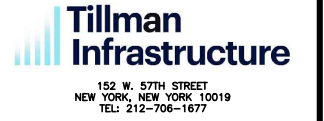
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C-1 AERIAL SITE PLAN



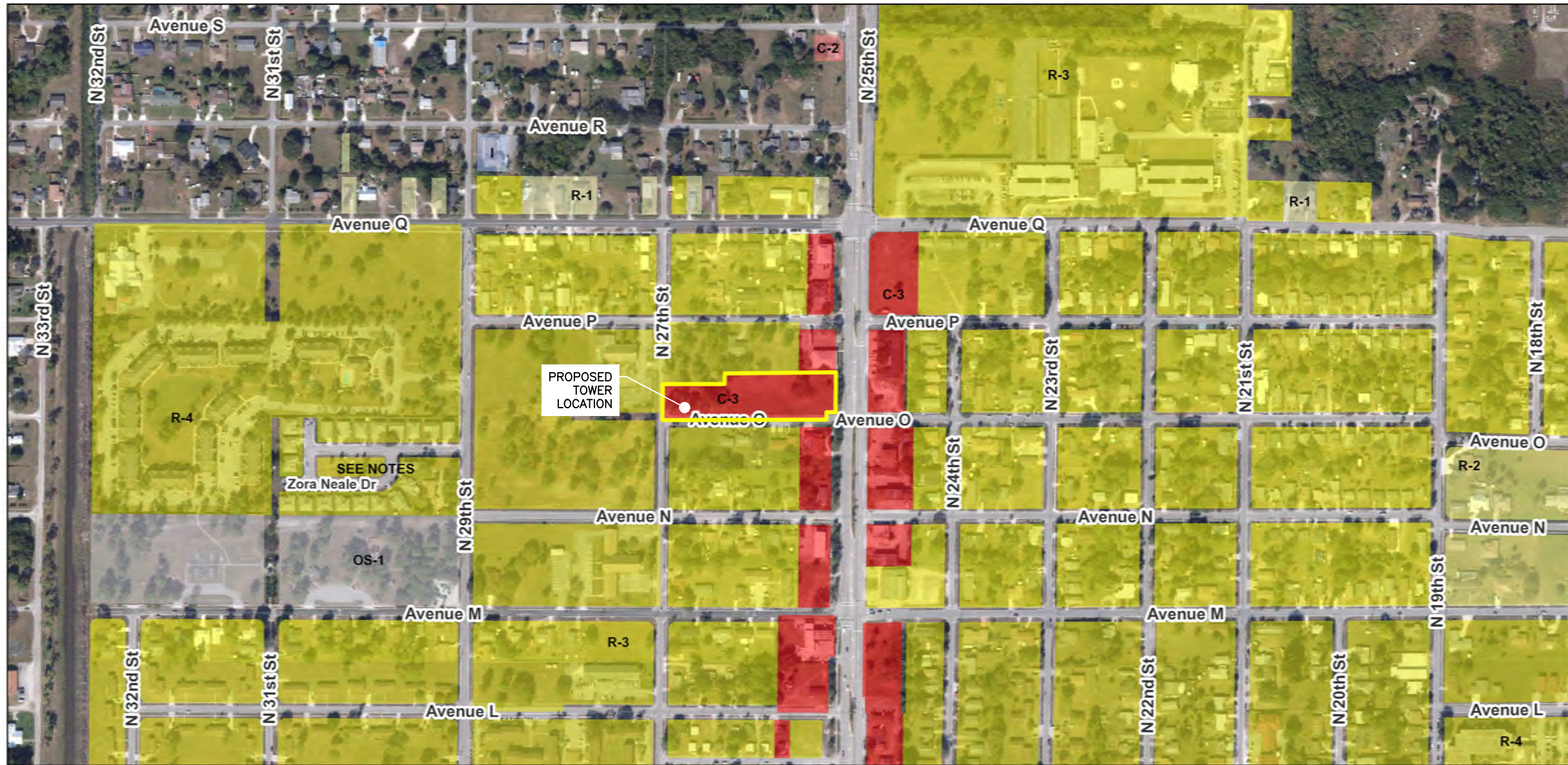
Saint Lucie County Property Appraiser



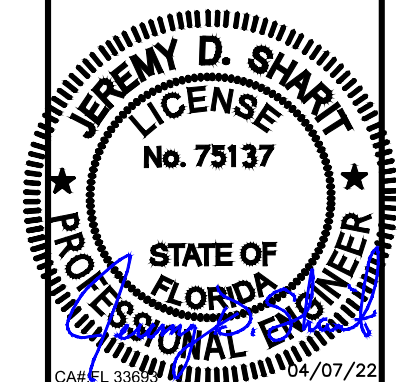
SMW#: 21-2072



#	DATE	DESCRIPTION:
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Search Results	Major Arterial	Other	C-1	C-6	E-2	I-1	OS-2	R-2
Comparable Search	Minor Arterial	FP Zoning	C-2	CP-1	E-3	I-2	PD	R-3
Street Centerline	Collector	ROW	C-3	D	ES	I-3	PUD	R-4
Freeway	Ramp	AG1	C-4	Drainage	HIRD	IX	PUR	R-4A
Highway	Local	AR1	C-5	E-1	I	OS-1	R-1	R-5



CA# FL 33693 04/07/22

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T-MOBILE SITE #: A2P2303
 DESIGNED: JDS
 CHECKED: RTB
 DRAWN: BMD
 LAST REV BY: BMD

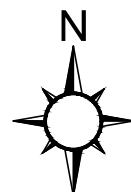
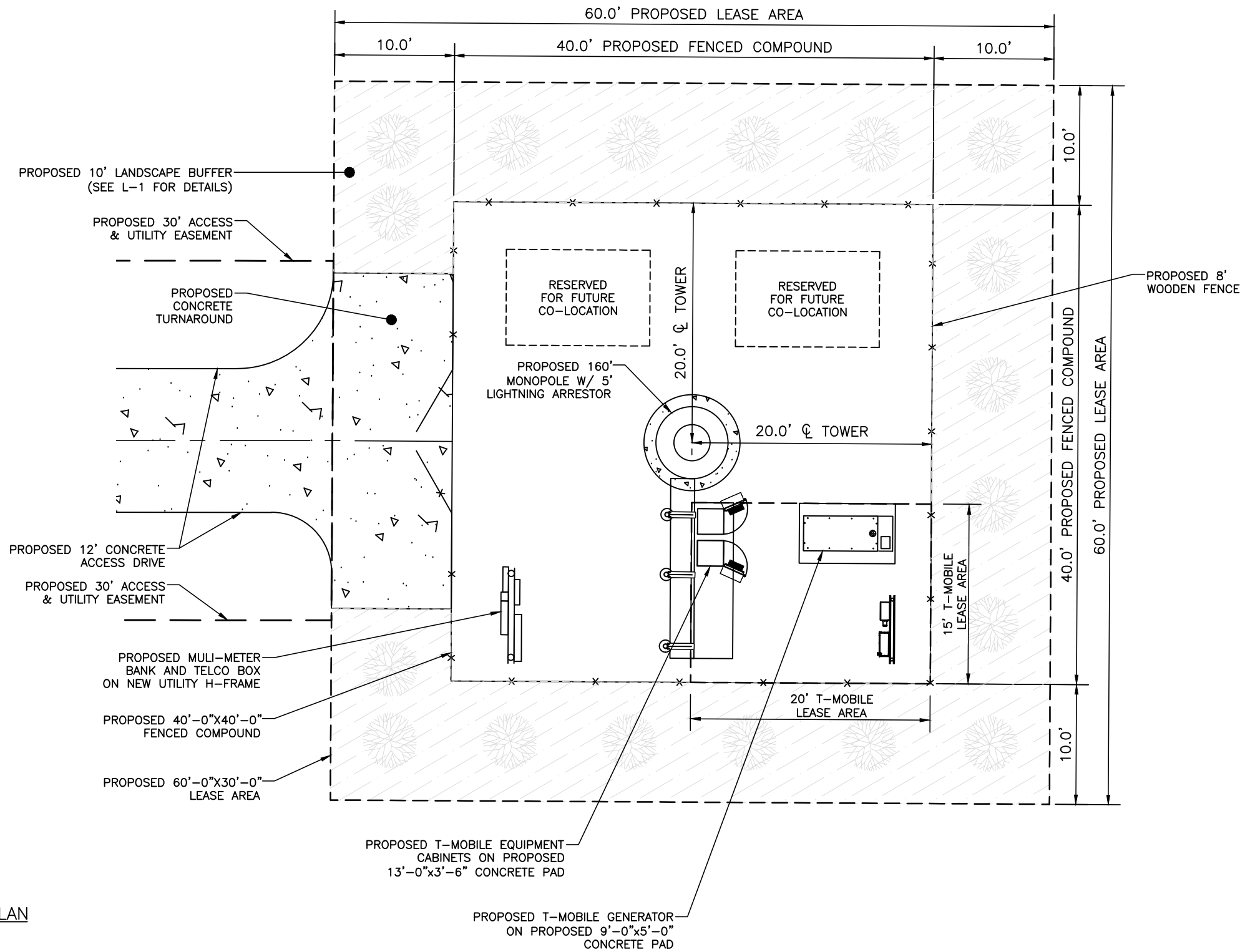
SITE NAME
 FORT PIERCE (TI-OPP-19131)

SHEET NAME
 ZONING MAP

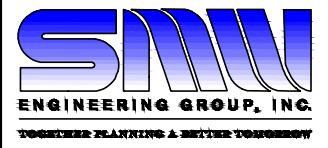
SHEET NUMBER
C-1.2

EXISTING TREES TO BE REMOVED WITHIN COMPOUND AND EASEMENT. CONTRACTOR TO FIELD VERIFY BEFORE CONSTRUCTION

REFER TO C-3 FOR PROPOSED EXTERIOR APPEARANCE AND MATERIALS



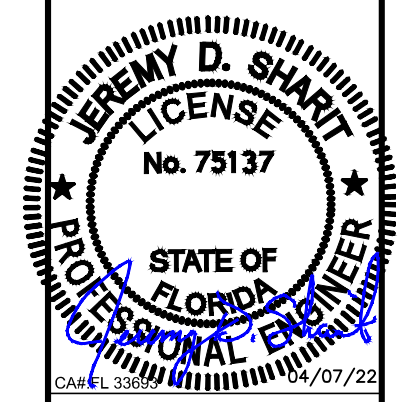
1
C-2 COMPOUND PLAN



SMW#: 21-2072



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CA# FL 33693 04/07/22

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T-MOBILE SITE #: A2P2303

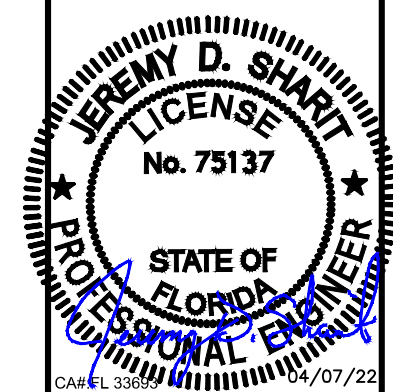
DESIGNED: JDS
 CHECKED: RTB
 DRAWN: BMD
 LAST REV BY: BMD

SITE NAME
 FORT PIERCE (TI-OPP-19131)

SHEET NAME
 COMPOUND PLAN

SHEET NUMBER
C-2

#	DATE	DESCRIPTION:
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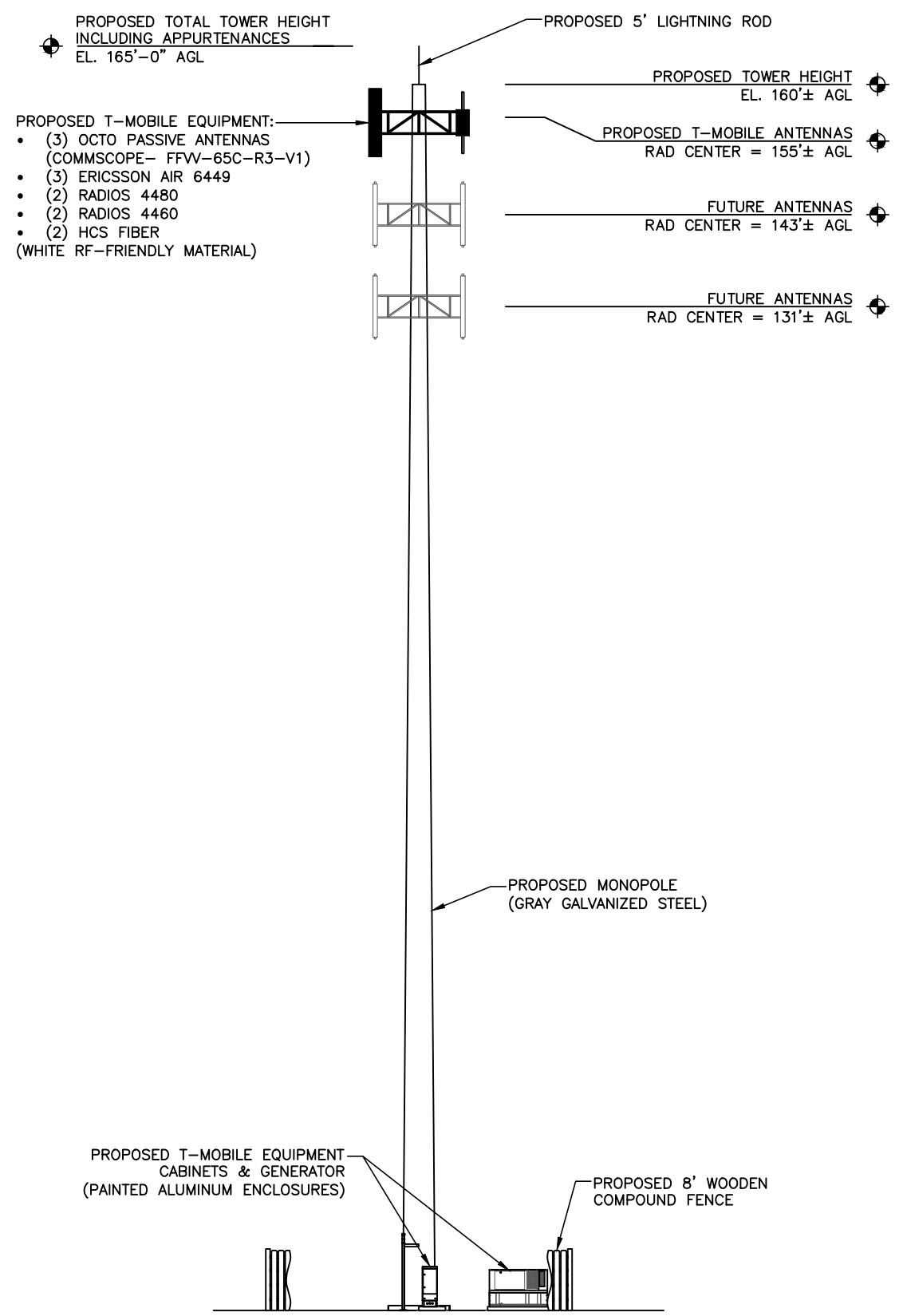
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T-MOBILE SITE #: A2P2303
DESIGNED: JDS
CHECKED: RTB
DRAWN: BMD
LAST REV BY: BMD

SITE NAME
FORT PIERCE (TI-OPP-19131)

SHEET NAME
TOWER ELEVATION

SHEET NUMBER
C-3



- PROPOSED T-MOBILE EQUIPMENT:
- (3) OCTO PASSIVE ANTENNAS (COMMSCOPE- FFV-65C-R3-V1)
 - (3) ERICSSON AIR 6449
 - (2) RADIOS 4480
 - (2) RADIOS 4460
 - (2) HCS FIBER (WHITE RF-FRIENDLY MATERIAL)

DO NOT CLIMB TOWER WITHOUT OWNER'S WRITTEN PERMISSION

1601
N 27TH ST.

DANGER
PROPANE NO SMOKING OR OPEN FLAMES

NOTICE
GUIDELINES FOR WORKING IN RADIO FREQUENCY ENVIRONMENT

WARNING
ARC FLASH AND SHOCK HAZARD APPROPRIATE PPE REQUIRED

NOTICE

Radio frequency fields beyond this panel may exceed the FCC general public exposure limit. Obey all posted signs and site guidelines for working in radio frequency environments. For more information visit the FCC website at: www.fcc.gov.

CAUTION

DO THIS TOWER: Radio frequency fields near some antennas may exceed human exposure. Personnel climbing this tower should be trained in working in radio frequency environments and use a personal RF monitor. In accordance with Federal Communications Commission rules on radio frequency emissions 47 CFR 1.1307b.

2
C-3 SITE SIGNAGE

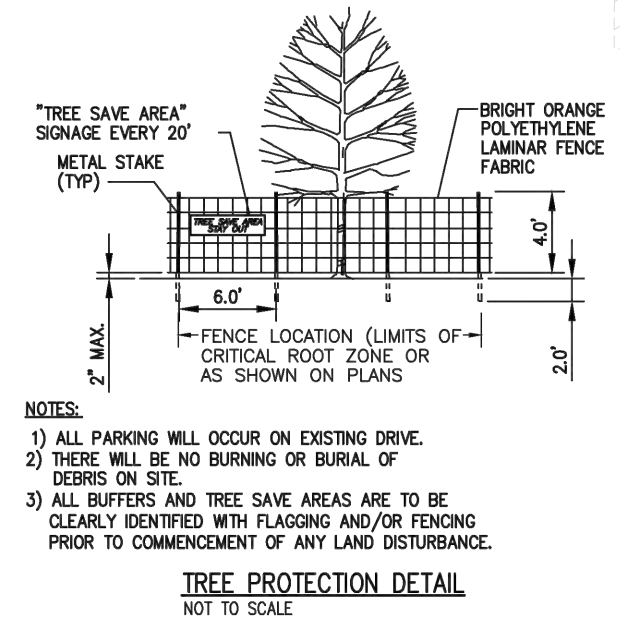
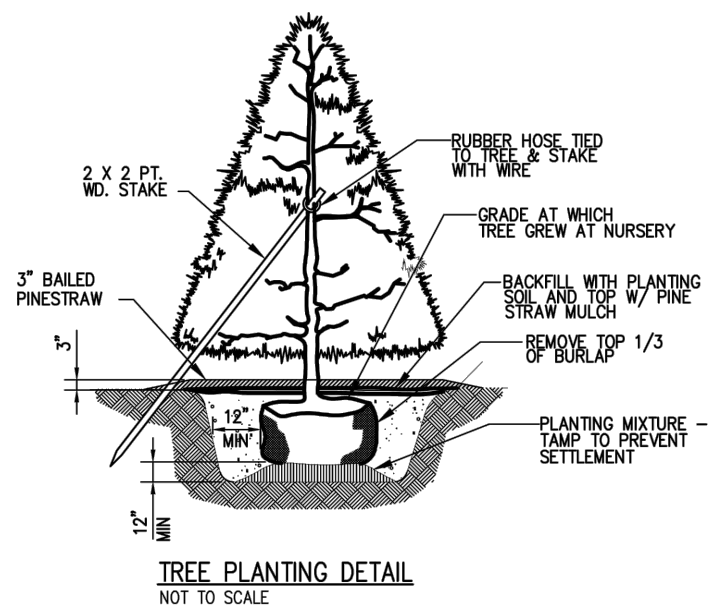
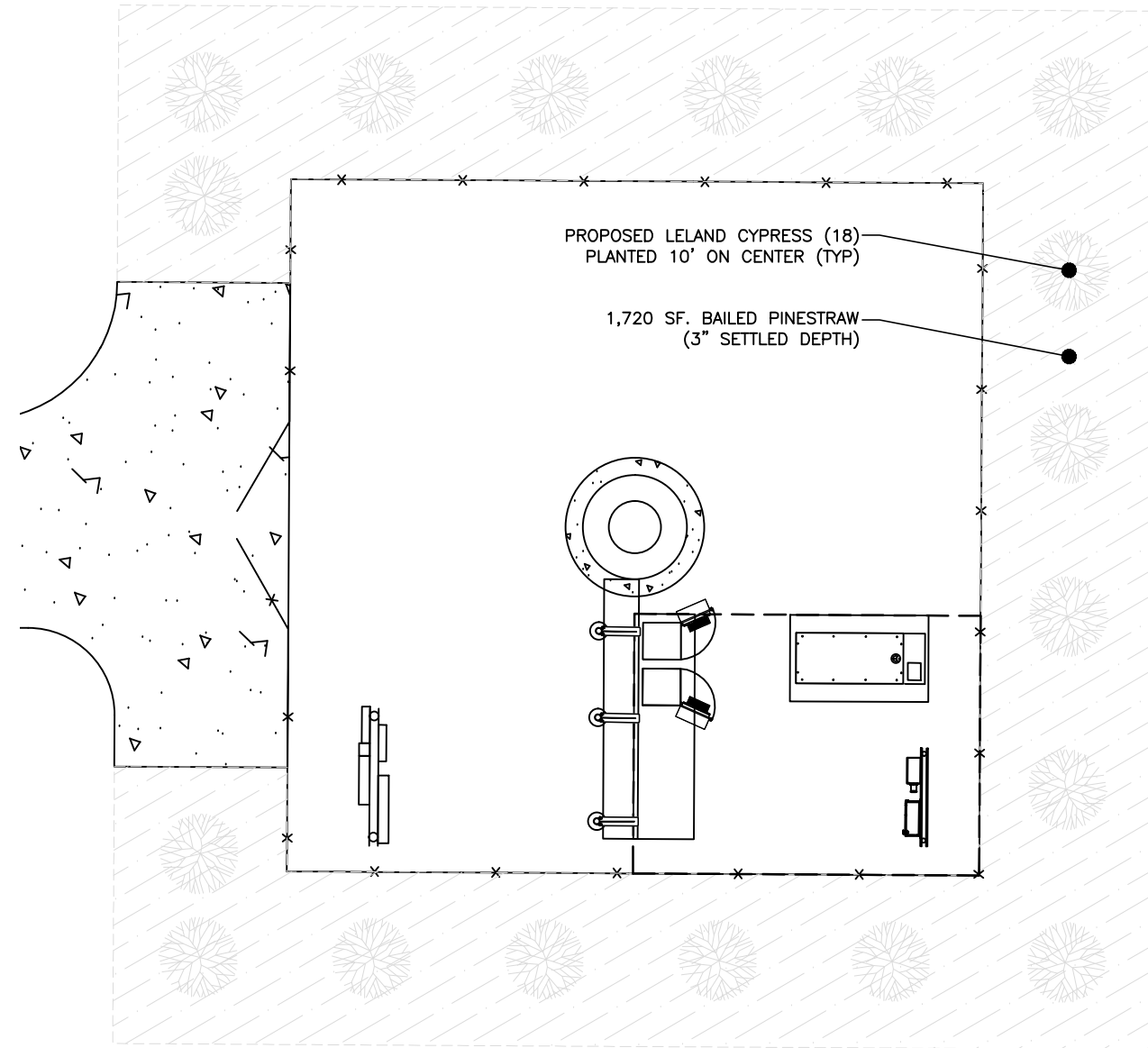
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C-3 TOWER ELEVATION



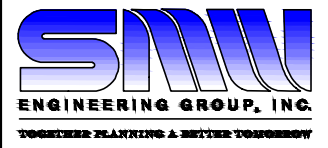
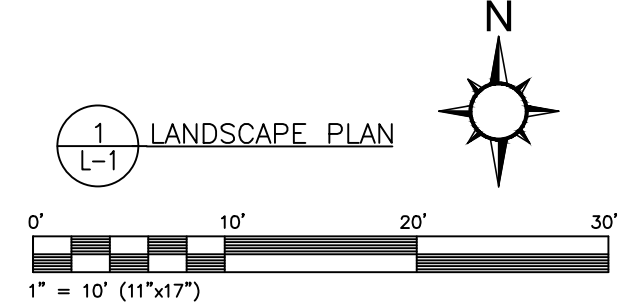
LANDSCAPE NOTES

- ALL PLANTS MUST BE HEALTHY, VIGOROUS MATERIAL, FREE OF PESTS AND DISEASE.
- ALL PLANTS MUST BE CONTAINER-GROWN OR BALLED AND BURLAPPED AS SPECIFIED.
- ALL TREES MUST BE STRAIGHT TRUNKED, FULL HEADED AND MEET ALL REQUIREMENTS SPECIFIED.
- ALL PLANTS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER'S REPRESENTATIVE BEFORE, DURING, AND AFTER INSTALLATION.
- ALL TREES MUST BE GUYED OR STAKED AS SHOWN.
- ALL PLANTS AND PLANTING AREAS MUST BE COMPLETELY MULCHED AS SPECIFIED.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE LANDSCAPE CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING (INCLUDING, BUT NOT LIMITED TO: WATERING, SPRAYING, MULCHING, FERTILIZATION, ETC.) OF PLANTING AREAS UNTIL THE WORK IS ACCEPTED IN TOTAL BY THE ENGINEER'S REPRESENTATIVE.
- THE CONTRACTOR SHALL COMPLETELY GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF TOTAL ACCEPTANCE. THE CONTRACTOR SHALL PROMPTLY MAKE ALL REPLACEMENTS BEFORE OR AT THE END OF THE GUARANTEE PERIOD.
- THE ENGINEER'S REPRESENTATIVE WILL APPROVE THE STAKED LOCATION OF ALL PLANT MATERIAL PRIOR TO INSTALLATION.
- AFTER BEING DUG AT THE NURSERY SOURCE, ALL TREES IN LEAF SHALL BE ACCLIMATED FOR TWO (2) WEEKS UNDER A MIST SYSTEM PRIOR TO INSTALLATION.
- ANY PLANT MATERIAL THAT DIES, TURNS BROWN OR DEFOLIATES (PRIOR TO TOTAL ACCEPTANCE OF THE WORK) SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY, SIZE AND MEETING ALL SPECIFICATIONS.
- STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK", LATEST EDITION, REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.

TOTAL AREA OF LANDSCAPE BUFFER: 1,720 SF - 0.0395 ACRES			
PLANT LIST:			
QTY.	COMMON NAME	BOTANICAL NAME	SIZE/REMARKS
18	LEYLAND CYPRESS	CUPRESSOCYPARIS LEYLANDII	6' MIN. HEIGHT AT PLANTING
1,720 SF PINESTRAW MULCH - 3" SETTLED LAYER OF CLEAN STRAW			



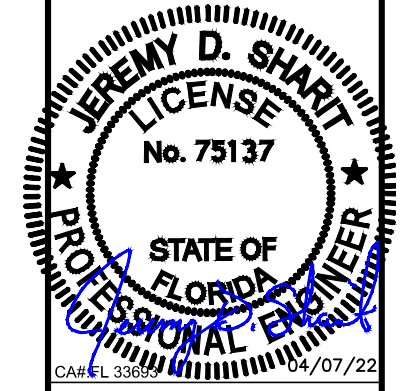
- NOTES:**
- ALL PARKING WILL OCCUR ON EXISTING DRIVE.
 - THERE WILL BE NO BURNING OR BURIAL OF DEBRIS ON SITE.
 - ALL BUFFERS AND TREE SAVE AREAS ARE TO BE CLEARLY IDENTIFIED WITH FLAGGING AND/OR FENCING PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE.



SMW#: 21-2072



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CA# FL 33693 04/07/22
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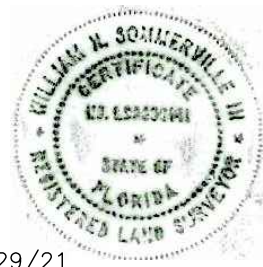
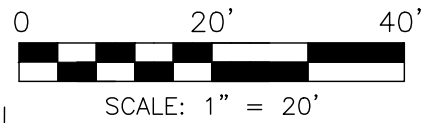
T-MOBILE SITE #: A2P2303

DESIGNED: JDS
CHECKED: RTB
DRAWN: BMD
LAST REV BY: BMD

SITE NAME
FORT PIERCE (TI-OPP-19131)

SHEET NAME
LANDSCAPE PLAN

SHEET NUMBER
L-1



William H. Sommerville, III
 William H. Sommerville, III
 Florida License No. 0006141

PARCEL NO. 2404-608-0095-040-6
 MICHAEL LATIMER
 BK. 3838, PG. 2299

11/29/21

N 27TH ST
 PUBLIC RIGHT-OF-WAY
 (ASPHALT PAVED)

TEMPORARY BENCHMARK
 NAIL IN CAP (LB 7056)
 N: 1138466.14
 E: 866357.36
 EL: 19.86'

N 89°55'54" W 209.91' (M)
 N 90°00'00" E 210.00' (R)

EXCEPTION (12)
 25' WATER EASEMENT
 BOOK 276, PAGE 598

POB
 60'x60' LEASE AREA
 (3600 SQ. FT. OR 0.083 ACRES)
 N: 1138436.08
 E: 866412.18

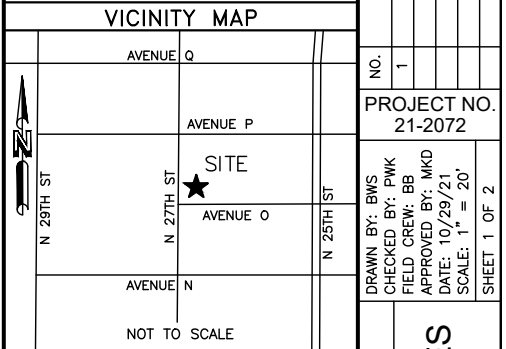
POC
 (5/8" REBAR)
 60'x60' LEASE AREA & 30' INGRESS/
 EGRESS & UTILITY/FIBER EASEMENT
 N: 1138465.89
 E: 866567.27

POB
 30' INGRESS/EGRESS &
 UTILITY/FIBER EASEMENT
 (1650 SQ. FT. OR 0.038± ACRES)
 N: 1138436.08
 E: 866412.18

PARENT TRACT
 PARCEL NO. 2404-608-0095-050-9
 ALVIN MILLER
 BK. 4320, PG. 557

EXCEPTION (11)
 25' EASEMENT/RIGHT-OF-WAY
 BOOK 356, PAGE 1575

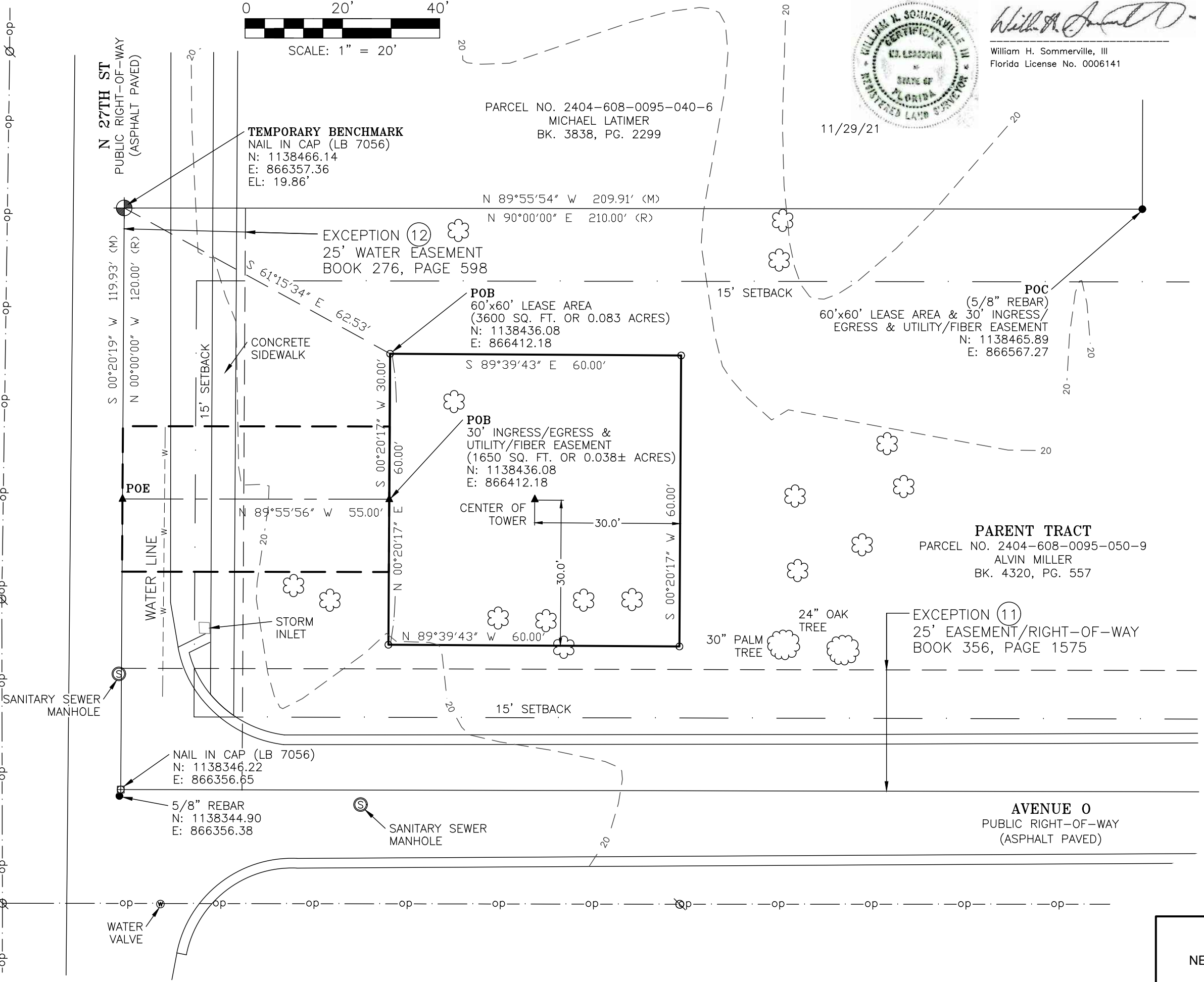
TOWER INFO	
CENTER OF TOWER:	
LATITUDE: 27°27'50.531" NORTH	
LONGITUDE: 80°21'05.599" WEST (NAD 83)	
GROUND ELEVATION: 20.2' ABOVE MEAN SEA LEVEL (NAVD88)	
SITE ADDRESS: 1601 N 25TH ST FORT PIERCE, FL 34947	
BY	DATE
PKW	11/29/21
REVISION	TITLE COMMITMENT
NO.	1
PROJECT NO.	21-2072
DRAWN BY: BWS	CHECKED BY: PKW
FIELD CREW: BB	APPROVED BY: MKD
DATE: 10/29/21	SCALE: 1" = 20'
SHEET 1 OF 2	



FLORIDA EAST GRID NORTH	
GRID TO TRUE NORTH CONVERGENCE 0'17"	
TRUE NORTH TO MAGNETIC DECLINATION 7.11' W	
COMBINED SCALE FACTOR 0.999991860	

LEGEND	
○	= 5/8" REBAR SET
●	= FOUND PROPERTY MARKER
POB	= POINT OF BEGINNING
POC	= POINT OF COMMENCEMENT
POE	= POINT OF ENDING
▲	= CALCULATED POINT
(R)	= REFERENCED INFORMATION
(M)	= MEASURED
⊗	= POWER POLE
⊕	= FOUND NAIL
⊙	= SANITARY SEWER MANHOLE
⊖	= WATER VALVE
⊗	= 24-30" PINE TREE
⊙	= TEMPORARY BENCHMARK NAIL IN CAP (LB 7056) EL: 19.86'
---	= RIGHT-OF-WAY
-o-o-	= OVERHEAD POWER

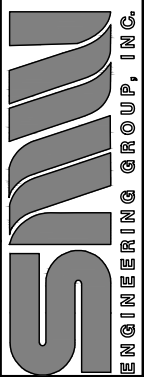
FLOOD NOTE
 By graphic plotting only, the subject property appears to lie in Zone 'X' of the Flood Insurance Rate Map Community Panel No. 12111C0178J, which bears an effective date of FEBRUARY 16, 2012 and IS NOT in a special flood hazard area.
 Zone 'X': Areas determined to be outside the 0.2% annual chance floodplain.

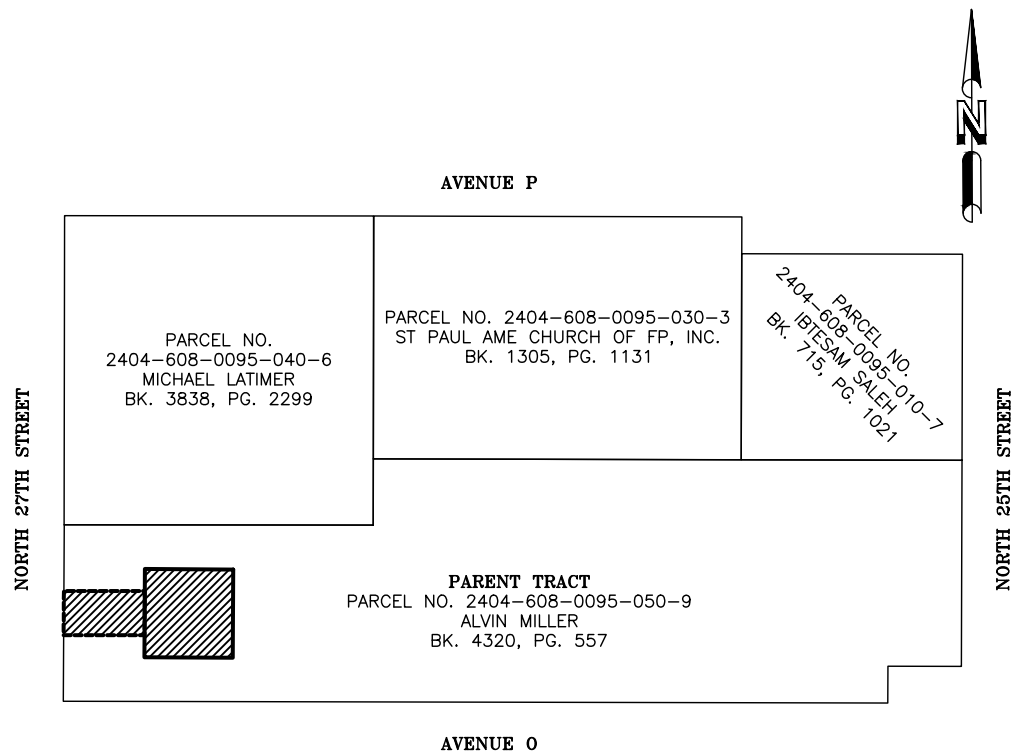


A2P2303
 TI-OPP-19131
 NE 1/4, SEC. 5, T-35-S, R-40-E
 SAINT LUCIE COUNTY, FLORIDA

FOR:
HIGH PERFORMANCE SERVICES
 111 EAST SAINT PETER STREET
 GARENCO, LA 70520

SMW Engineering Group, Inc.
 158 Business Center Drive
 Birmingham, Alabama 35244
 Ph: 205-252-6985
 www.simweng.com





SURVEYOR'S NOTES

- This is a Rawland Tower Survey, made on the ground under the supervision of a Florida Registered Land Surveyor. Date of field survey is October 6, 2021.
- The following surveying instruments were used at time of field visit: Topcon GM-55 and Topcon Hiper SR G.P.S. receiver, (R.T.K. network capable).
- Bearings are based on Florida East State Plane Coordinates NAD 83 by GPS observation.
- No underground utilities, underground encroachments or building foundations were measured or located as a part of this survey, unless otherwise shown. Trees and shrubs not located, unless otherwise shown.
- Benchmark used is a GPS Continuously Operating Reference Station, PID AJ3239. Onsite benchmark is as shown hereon. Elevations shown are in feet and refer to NAVD 88.
- This survey was conducted for the purpose of a Rawland Tower Survey only, and is not intended to delineate the regulatory jurisdiction of any federal, state, regional or local agency, board, commission or other similar entity.
- Attention is directed to the fact that this survey may have been reduced or enlarged in size due to reproduction. This should be taken into consideration when obtaining scaled data.
- This Survey was conducted in reference to a Commitment for Title Insurance prepared by Old Republic National Title Insurance Company, Commitment No. TFL827061, with an effective date of October 29, 2021 at 8:00 a.m.
- Surveyor hereby states the Geodetic Coordinates and the elevation shown for the proposed centerline of the tower are accurate to within +/- 20 feet horizontally and to within +/- 3 feet vertically (FAA Accuracy Code 1A).
- Survey shown hereon conforms to the Minimum Requirements as set forth by the State Board for a Class "A" Survey.
- Field data upon which this map or plat is based has a closure precision of not less than one-foot in 15,000 feet (1':15,000') and an angular error that does not exceed 10 seconds times the square root of the number of angles turned. Field traverse was not adjusted.
- This survey is not valid without the original signature and the original seal of a state licensed surveyor.
- This survey does not constitute a boundary survey of the Parent Tract. Any parent tract property lines shown hereon are from supplied information and may not be field verified.
- Zoning: (as supplied by client)
 Zoning Jurisdiction: Ft. Pierce
 Zoning District: C-3
 Surrounding Zoning:
 North-R-4
 South-R-4
 East-C-3
 West-R-4
 Setbacks:
 Front: 25'
 Side: 15'

PARENT TRACT (BK 4320, PG 557)

BEGIN AT THE SOUTHEAST CORNER OF TRACT 48 OF GARDEN CITY FARMS ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 2, PAGE 5, OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; AND RUN WEST 660 FEET, MORE OR LESS, TO THE SOUTHWEST CORNER OF SAID TRACT 48; THENCE RUN NORTH 120 FEET; EAST 210 FEET; NORTH 45 FEET; THENCE EAST 450 FEET TO EAST LINE OF SAID TRACT 48; THENCE SOUTH 165 FEET TO THE POINT OF BEGINNING. LESS THE SOUTH 25 FEET OF THE EAST 100 FEET AND LESS THE EAST 10 FEET OF THE SOUTH 165 FEET

60' x 60' LEASE AREA (AS-SURVEYED)

A PORTION OF THE MILLER TRACT DESCRIBED IN BOOK 4320, PAGE 557 OF THE PUBLIC RECORDS OF SAINT LUCIE COUNTY, FLORIDA, BEING IN THE SE 1/4 OF THE NE 1/4 OF SECTION 5, TOWNSHIP 35 SOUTH, RANGE 40 EAST, SAINT LUCIE COUNTY, FLORIDA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT A 5/8" REBAR MARKING A SOUTHWEST CORNER OF SAID MILLER TRACT, HAVING FLORIDA EAST STATE PLANE COORDINATES N: 1138465.89, E: 866567.27; THENCE N 89°55'54" W A DISTANCE OF 209.91 FEET TO A NAIL SET IN A CAP (LB 7056) FOUND IN THE CENTERLINE OF NORTH 27TH STREET, HAVING FLORIDA EAST STATE PLANE COORDINATES N: 1138466.14, E: 866357.36;

THENCE S 61°15'34" E A DISTANCE OF 62.53 FEET TO A 5/8" REBAR SET AND THE POINT OF BEGINNING;
 THENCE S 89°39'43" E A DISTANCE OF 60.00 FEET TO A 5/8" REBAR SET;
 THENCE S 00°20'17" W A DISTANCE OF 60.00 FEET TO A 5/8" REBAR SET;
 THENCE N 89°39'43" W A DISTANCE OF 60.00 FEET TO A 5/8" REBAR SET;
 THENCE N 00°20'17" E A DISTANCE OF 60.00 FEET TO THE POINT OF BEGINNING.

SAID LEASE AREA CONTAINS (3600 SQ. FT.) 0.083 ACRES.

30' INGRESS/EGRESS & UTILITY/FIBER EASEMENT (AS-SURVEYED)

A PORTION OF THE MILLER TRACT DESCRIBED IN BOOK 4320, PAGE 557 OF THE PUBLIC RECORDS OF SAINT LUCIE COUNTY, FLORIDA, BEING IN THE SE 1/4 OF THE NE 1/4 OF SECTION 5, TOWNSHIP 35 SOUTH, RANGE 40 EAST, SAINT LUCIE COUNTY, FLORIDA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT A 5/8" REBAR MARKING A SOUTHWEST CORNER OF SAID MILLER TRACT, HAVING FLORIDA EAST STATE PLANE COORDINATES N: 1138465.89, E: 866567.27; THENCE N 89°55'54" W A DISTANCE OF 209.91 FEET TO A NAIL SET IN A CAP (LB 7056) FOUND IN THE CENTERLINE OF NORTH 27TH STREET, HAVING FLORIDA EAST STATE PLANE COORDINATES N: 1138466.14, E: 866357.36; THENCE S 61°15'34" E A DISTANCE OF 62.53 FEET TO A 5/8" REBAR SET;

THENCE S 00°20'17" W A DISTANCE OF 30.00 FEET AND THE POINT OF BEGINNING OF AN INGRESS/EGRESS & UTILITY EASEMENT BEING 30 FEET IN WIDTH AND LYING 15 FEET ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE;

THENCE N 89°39'43" W A DISTANCE OF 55.00 FEET, MORE OR LESS, TO A POINT ON THE CENTER LINE OF NORTH 27TH STREET AND THE POINT OF ENDING.

SAID EASEMENT CONTAINS (1650.0 SQ.FT.) 0.038 ACRES, MORE OR LESS. LESS AND EXCEPT THE RIGHT-OF-WAY OF SAID NORTH 27TH STREET.

PLOTTABLE EXCEPTIONS

Old Republic National Title Insurance Company
 Commitment for Title Insurance Commitment No. TFL827061
 Date October 29, 2021 @ 8:00 am
 Schedule B, Section II

Exception No.	Instrument	Comment
1-9,13,&14		Standard exceptions or no recorded information provided. Contain no survey matters.
⑩	Plat Book 2, Page 5	Describes original subdivision of subject tract but contains no easements/encumbrances that affect Lease Area and/or Easement.
⑪	Book 356, Page 1575	Does Not Affect Lease Area and/or Easement.
⑫	Book 276, Page 598	Does Not Affect Lease Area and/or Easement.

SURVEYOR'S CERTIFICATION

I certify that all parts of this survey and drawing have been completed in accordance with the current requirements of the Standards of Practice for Surveying in the State of Florida to the best of my knowledge, information, and belief.



William H. Sommerville, III

William H. Sommerville, III
 Florida License No. 0006141

11/29/21

A2P2303
 TI-OPP-19131
 NE 1/4, SEC. 5, T-35-S, R-40-E
 SAINT LUCIE COUNTY, FLORIDA

BY	DATE	REVISION	NO.	PROJECT NO.	DRAWN BY: BWS	CHECKED BY: PWK	APPROVED BY: MKD	DATE: 10/29/21	SCALE: N/A	SHEET 2 OF 2
	11/29/21	TITLE COMMITMENT	1	21-2072						

FOR: RAWLAND TOWER SURVEY

HIGH PERFORMANCE SERVICES
 111 EAST SAINT PETER STREET
 CARENO, LA 70520

SMW Engineering Group, Inc.
 158 Business Center Drive
 Birmingham, Alabama 35244
 Ph: 205-252-6985
 www.simweng.com

ENGINEERING GROUP, INC.

AFFIDAVIT OF PATRICK KEANE

STATE OF FLORIDA
COUNTY OF BROWARD

BEFORE ME, the undersigned authority, duly authorized to administer oaths and take acknowledgements, personally appeared, PATRICK KEANE, who after me being first duly sworn, deposes and says:

1. My name is Patrick Keane and I am a competent adult over the age of 18 and a resident of the State of Florida.

2. I currently serve as the Senior Radio Frequency Design Engineer with T-Mobile, Inc.

3. I understand that this Affidavit is being submitted in support of Tillman Infrastructure, Inc.'s ("Applicant") permit application for the construction of an antenna support structure in Fort Pierce, Florida at site TI-OPP-19131.

4. The Applicant and RF Engineers have worked hard to identify an acceptable tower location that will provide improved coverage within T-Mobile's Targeted Search Area as T-Mobile looks to deploy 5G services nationwide.

5. Projected 5G service shows poor signal levels in approximately 3 square miles of Fort Pierce North without a 5G compatible tower.

6. There are no existing structures of sufficient height, or which can be upgraded to meet the 5G network requirements within T-Mobile's search ring radius.

7. There is currently a 150 ft. flagpole tower that is located at 910 N. 25th Street, Fort Pierce, Florida, which provides 4G service to residential and commercial areas in Fort Pierce North with T-Mobile antennas at 135 ft. in elevation. The flagpole design includes canisters that enclose the antennas.

8. The design of the flagpole tower enclosures is not compatible with the deployment of advanced 5G service. The diameter is not sufficient to house the antennas and radios, and there is no active or passive cooling. This precludes the deployment of 5G equipment due to space and operational constraints.

9. The statements made in this Affidavit are true and based upon personal knowledge, and if called as a witness, I could testify competently hereto.

FURTHER AFFIANT SAYETH NAUGHT

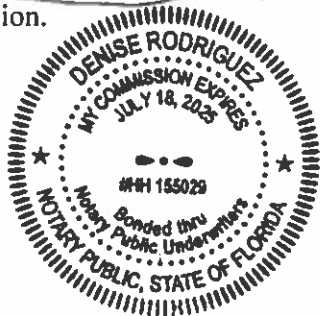


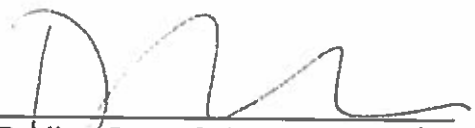
PATRICK KEANE

STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me by means of physical presence or online notarization, this 7th day of APRIL, 2022, by PATRICK KEANE, who is personally known to me or has produced _____ as identification.




Notary Public - State of Florida

My commission expires: 7/18/25

A2P2303A

TI-OPP-19131

Wireless Telecommunication Facility

Radio Frequency (RF) Engineering Report

Last Updated	03/28/22
Revision Number	V1.3

Table of Contents

Search Ring Area	1
5G Coverage Predictions	2
Cell Phone Traffic and Areas of High Usage	3
Certification Statement of Non-interference	4
FCC License Call Signs	5

Search Ring Area

Statement of Need

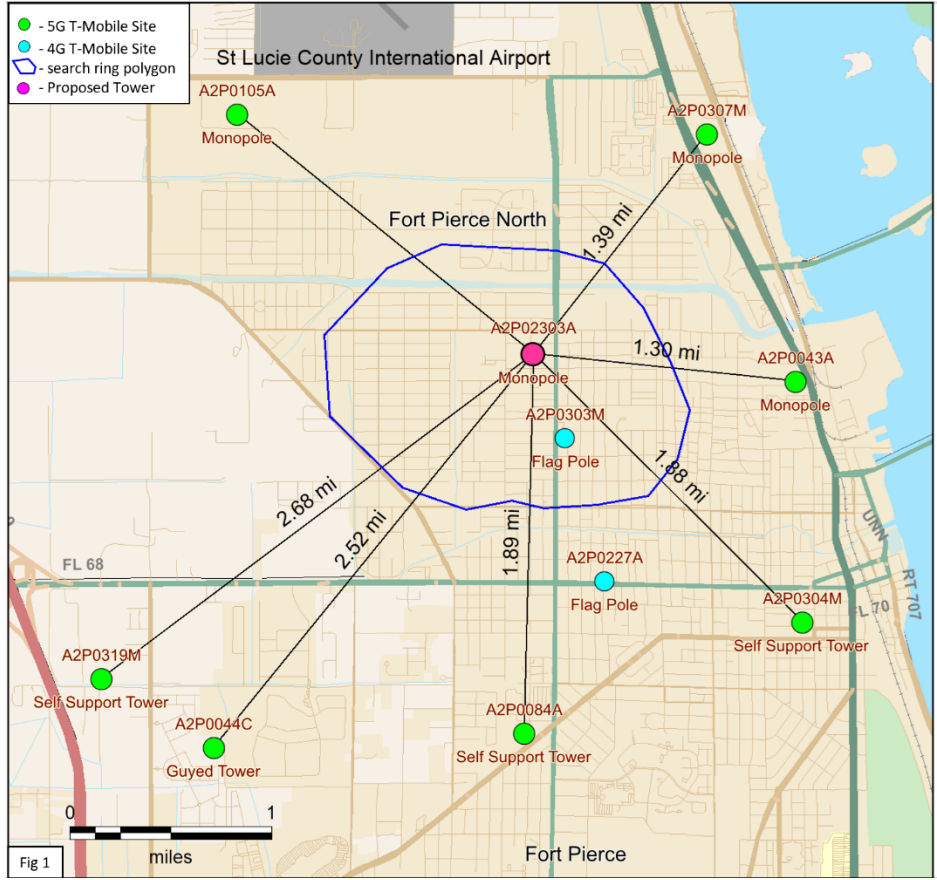
To comply with FCC guidelines as defined in the Code of Federal Regulations Title 47, T-Mobile is deploying 5G services nationwide.

In order to utilize the full suite of 5G services, equipment specifications for these technologies requires the installation of radio transceivers or “radios”, in close proximity to the antennas.

- the transmit/receive components are physically part of the antenna for some 5G antennas
- 5G antennas and transceivers will not physically fit in most enclosed unipole and flagpole towers at elevation.
- 5G equipment is susceptible to overheating in enclosed unipole and flagpole towers that do not have active or passive cooling

Currently, 4G service is provided to residential and commercial areas in parts of Fort Pierce North by a tower with T-Mobile antennas at one-hundred-thirty-five feet elevation. This tower, located at 910 N. 25th Street, Fort Pierce is a one-hundred-fifty foot flagpole design with canisters that enclose the antennas. The design of the enclosures is not compatible with deployment of advanced 5G services. The diameter is not sufficient to house the antennas and radios and there is no active or passive cooling. This precludes the deployment of 5G equipment due to space and operational constraints.

In figure 1, the T-Mobile facilities currently providing service in this area are shown. There are no existing structures of sufficient height or that can be upgraded to meet the network 5G requirements within the search ring radius. Based on the distances between the current 5G compatible facilities there is a network deficiency as shown in figure 2.



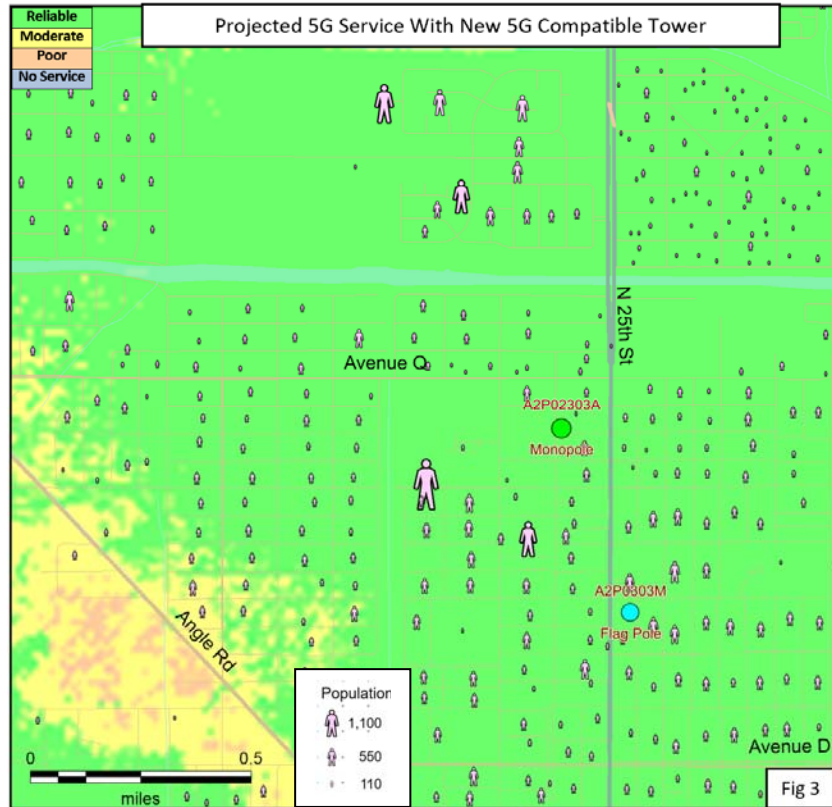
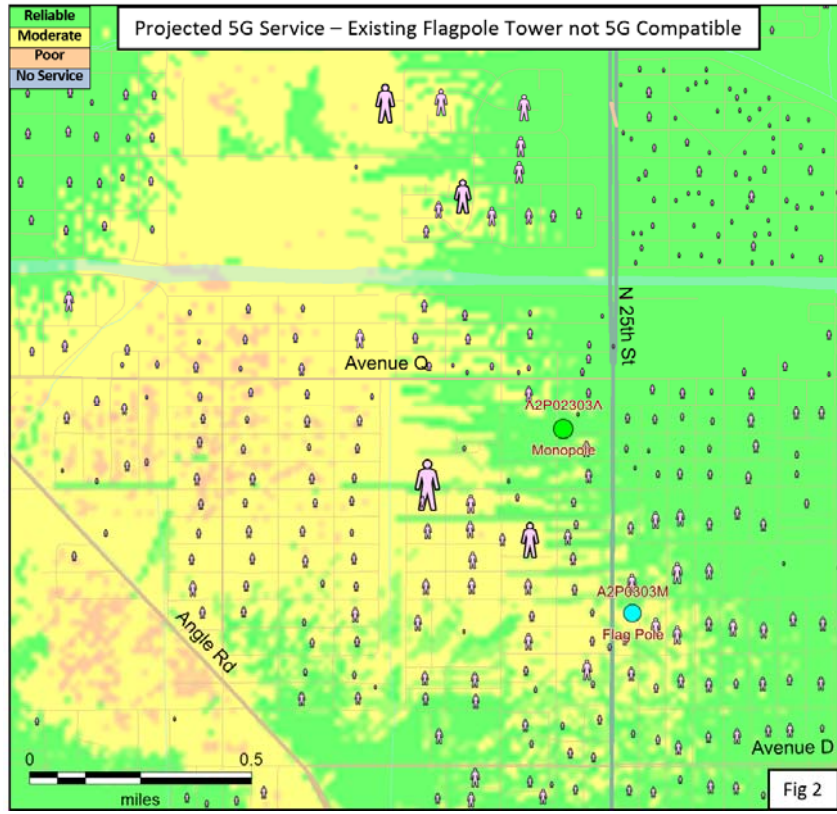
5G Coverage Predictions

5G Coverage Need

Projected 5G service shows poor signal levels in approximately 3 sq mi area of Fort Pierce North without a 5G compatible tower. (figure 2)

Significant improvement in 5G service with addition of 5G compatible tower. (figure 3)

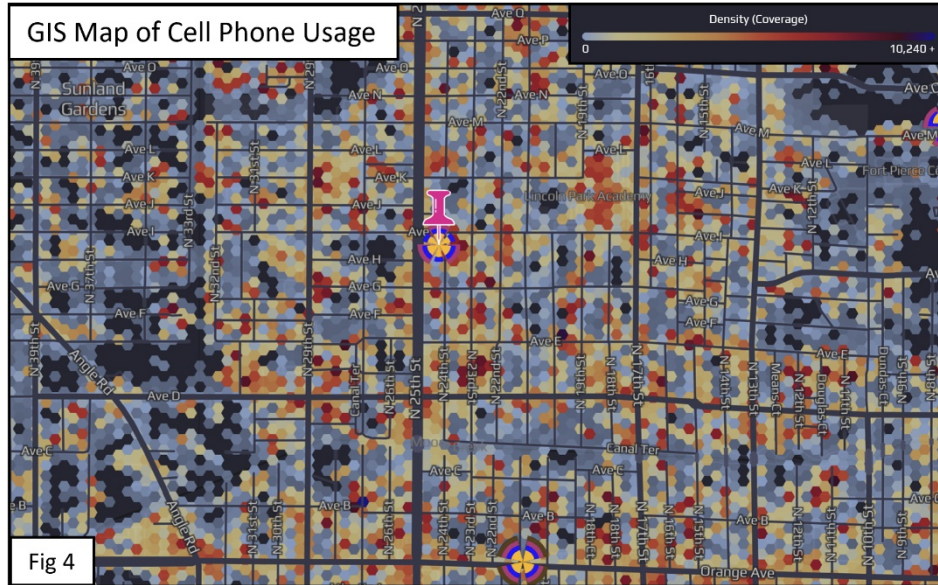
estimated that more that six-thousand residents will have indoor service levels as compared to marginal service before (based on latest US Census data)



Cell Phone Traffic and Areas of High Usage

Analysis of customer cell phone 'traffic' indicates generally high usage in this part of Fort Pierce. These areas are predominately residential but include some commercial locations, schools and collector roads such as NW 25th ST and Florida State Road 68.

In Figure 4, network statistics are shown. This graphic represents the number of cell phones users in the network.



Certification Statement of Non-interference

This letter provides information about the proposed T-Mobile transceiving equipment on an addition to an existing facility in Fort Pierce and its potential interference with communication facilities located nearby; as well as the FCC rules governing the human exposure to radio frequency energy (OET 65 guidelines). T-Mobile shall comply with all FCC rules regarding interference to other radio services and T-Mobile shall comply with all FCC rules regarding human exposure to radio frequency energy. The proposed monopole tower, and reception and transmission functions will not interfere with the visual and customary transmission or reception of radio, television or similar services as well as other wireless services enjoyed by surrounding properties.

The Federal Communication Commission (FCC) has allocated these frequencies exclusively for use by cellular service providers. Each cellular service provider is assigned specific frequencies (channels) on which to transmit and receive radio signals.

Cellular transmitters must be type-accepted by the FCC to ensure compliance with technical standards that limit the frequencies, output power, radio frequency emissions, spurious radio noise and other technical parameters. Cellular licensees like T-Mobile owns are required to use type-accepted equipment. The assignment of frequencies and FCC rules keep cellular radio signals from interfering with or being interfered with by other radio transmissions and provide guidelines outlining the limits for permissible human RF exposure. In the event of a complaint of interference or other concerns about cellular antenna facilities, the FCC has a resolution process to determine the source of interference and whether a facility is in compliance with FCC rules.

In the event of interference or other known issues with the transmission facility contact with the T-Mobile Network Operations Center (NOC) can be established 24 hours a day, 7 days a week 365/366 days per year at the following numbers: (877) 611-5868 (DAY), (877) 611-5868 (NIGHT)

Name Patrick Keane

Title T-Mobile Sr Engineer, Radio Frequency

Signature  _____

FCC License Call Signs

WT-600 MHz	WZ-WY-WU-700 MHz	YC-YH-800 MHz	CW-CY-PCS	AW-AWS	BR-ED-2.5 GHz	PM-C-BAND	UU-24 GHz	UU-39 GHz	UU-47 GHz
WQZL542	WQJQ700	WPLM636	KNLF229	WQGB374	B152	WRNL274	WRES297	WRHN232	WRHR230
WQZL543		WPLM637	KNLF560	WQGB375	B152	WRNL275	WRES548	WRHN233	WRHR231
WQZL544			KNLG729	WQPG206	B152		WRES833	WRHN234	WRHR232
WQZM244			WQKV553	WQPZ973	B152		WRET276	WRHN235	WRHR233
			WQNB570		B152				WRHR234
			WQYL213		B152				
					B152				
					B152				
					B152				
					WLX391				
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					WQYK897				

AFFIDAVIT OF CHRIS MULARADELIS

STATE OF NEW JERSEY
COUNTY OF BERGEN

BEFORE ME, the undersigned authority, duly authorized to administer oaths and take acknowledgements, personally appeared, CHRIS MULARADELIS, who after me being first duly sworn, deposes and says:

1. My name is Chris Mularadelis and I am a competent adult over the age of 18 and a resident of the State of New Jersey.

2. I currently serve as the Vice President of Legal with Tillman Infrastructure, Inc. (“Tillman”).

3. I understand that this Affidavit is being submitted in support of Tillman’s permit application for the construction of an antenna support structure in Fort Pierce, Florida.

4. At this time, it is unknown how many antennas the proposed antenna support structure is designed to carry, as a structural analysis will need to be completed each time a new carrier is added to the tower. Currently, T-Mobile is the only carrier that has committed to use the communication tower. T-Mobile is expected to utilize between 9-12 antennas.

5. Tillman has provided notice to other telecommunication carriers with potential interest in co-location on the proposed antenna support structure and will provide co-location at a reasonable market rate.

6. As the owner of the proposed antenna support structure, Tillman accepts the requirements of Section 125-365 of the City of Fort Pierce's Zoning Code concerning the removal of abandoned antenna support structures.

7. The statements made in this Affidavit are true and based upon personal knowledge, and if called as a witness, I could testify competently hereto.

FURTHER AFFIANT SAYETH NAUGHT

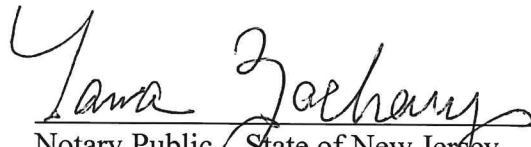


CHRIS MULARADELIS

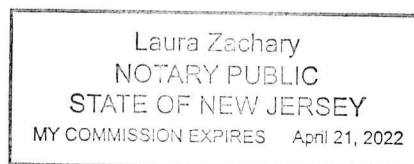
STATE OF NEW JERSEY

COUNTY OF BERGEN

The foregoing instrument was acknowledged before me by means of physical presence or online notarization, this 31 day of MARCH, 2022, by CHRIS MULARADELIS, who is personally known to me or has produced _____ as identification.



Notary Public - State of New Jersey
My commission expires: _____





TO: Technical Review Committee

FROM: Planning Department

RE: Technical Review Project: #22-04000003
(Conditional Use, Site Plan, Design Review)

BOARD DATE : May 19, 2022

**Conditional Use, Site Plan & Design Review
Telecommunications Tower – 1601 N 25th Street**

The above referenced project is being submitted for your review and comments. The applicant is requesting a site plan, design, and conditional use review for a 160-foot monopole with a 60' x 60' compound. The subject properties are located at 1601 N 25th Street.

Please send all comments to planning@cityoffortpierces.com and/or through interoffice mail to the Planning Department.

If you have comments, please respond prior to Tuesday, May 17, 2022.

If you have any questions, please contact the Planning Department at 772-467-3737.

Thank You



DESIGN REVIEW

Property Information

Property address or Location 1601 N 25th St, Fort Pierce, FL 34947
 Parcel ID #(s) 2404-608-0095-050-9
 Project description 160' Monopole tower with a 60'x60' compound

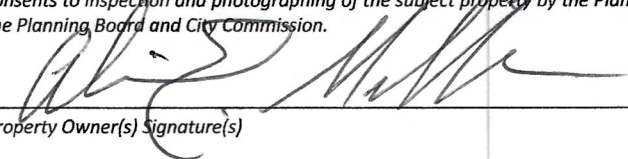
Alvin Miller

Property Owner(s)
4200 Enchanted CT
 Street Address
Nashville TN 34947
 City State Zip
615-473-3179
 Phone Number
radicalsophet@hotmail.com
 Email Address

Bill Weiland, Project Manager, Tillman

Applicant/Representative, Title, Company
152 West 57th Street
 Street Address
New York NY 10019
 City State Zip
770-289-9766
 Phone Number
wweiland@tillmaninfrastructure.com
 Email Address

Property Owner(s) Acknowledgements: - This application will not be considered complete without the signature of all property owners of record, which shall serve as an acknowledgement of the submission of this application. The property owner's signature below shall also authorize the Applicant (if other than the property owner) and/or Representative to act in his/her behalf for the purposes of seeking approval for the application described herein. The undersigned consents to inspection and photographing of the subject property by the Planning staff for purposes of consideration of this Application and/or presentation to the Planning Board and City Commission.


 Property Owner(s) Signature(s)

APPOINTMENTS ARE REQUIRED FOR APPLICATION SUBMITTALS

CALL 772.467.3737 OR E-MAIL PLANNING_DL@CITYOFFORTPIERCE.COM

For more information, please refer to the website:

<https://www.cityoffortpierce.com/971/Application-Submittal-for-Technical-Review>

Design Review Application Checklist **(City Code of Ordinances 125-314)**

Submittal for Administrative Approval

- a. A survey (1" = 30' minimum scale) of property lines, existing topography and the location of trees meeting the tree protection regulations of section 123-66, location of bordering streets and, if applicable, wetlands and beaches.
- b. A site analysis study to include a discussion of specimen trees and other natural vegetation, access, significant topography, wetlands, buffers, setbacks, views, orientation, the surrounding built environment, and other site features that may influence design elements.
- c. A draft written narrative describing the design intent of the project, its goals, and objectives and how it reflects the site analysis study results.
- d. Context photographs of neighboring uses and architectural styles.
- e. Photographs and/or drawings of architectural buildings or objects that serve as a precedent for the proposed building design. Models should be taken from local exemplary buildings, either existing or demolished. Documentation of such buildings is available in the city's planning department.
- f. Photographs of all existing structures located on the property. If existing structures on the property are more than fifty (50) years of age, documentation of these structures with data from the Florida Master Site File form is also required.
- g. Conceptual site plan (to scale) showing proposed location of all buildings, structures, parking areas, signs and landscaping.
- h. Landscape plan, at the same scale as the site plan. The planning director or designee may request enlarged plans of detailed planting areas. Planting schedule with sizes of proposed plantings must be included.
- i. Accurate color rendering of proposed signs showing dimensions, type of lettering, materials and actual color samples that demonstrates cohesiveness with the project design.
- j. Exterior elevations showing architectural character, external architectural features, and streetscape of the proposed development, including materials, colors, shadow lines and landscaping. The street elevation shall encompass the entire proposed project and generally identify the major elements of the adjacent two (2) properties on either side of the site. If the adjacent properties are vacant or underutilized, a diagram shall be provided that identifies the mass and form that is allowable under current zoning. If the street elevation must be drawn at such a scale as to render architectural details of the building unreadable, drawings of individual buildings at a larger scale should be provided as well.
- k. Design review concurrent with conceptual development plan procedure according to subsection 125-313 is also available.

Submittal for Board Approval

- a. A written narrative describing how the project conforms to administrative approval and design review guidelines of this section.
- b. A final site plan meeting the requirements of section 125-313.
- c. A final site lighting plan that meets the requirements of subsection 125-313(d)(8).
- d. A final landscape plan that meets the requirements of articles II and III of chapter 123.
- e. Final floor plans and elevation drawings (1/8" = 1'-0" minimum scale), as detailed under administrative approval, showing exterior building materials and colors with architectural sections and details to adequately describe the project.
- f. A color board (11"x17" maximum) containing actual color samples of all exterior finishes, keyed to the elevations, and indicating the manufacturer's name and color designation.



DEVELOPMENT REVIEW

Property Information

Property address or Location 1601 N 25th St, Fort Pierce, FL 34947
 Parcel ID #(s) 2404-608-0095-050-9
 Project description 160' Monopole tower with a 60'x60' compound

Application Type

- Site Plan Conditional Use w/New Construction Conceptual Development Plan
 Minor Amendment Major Amendment

Site Information

Non-Residential: Proposed Sq. Ft.: 3600 Site Acreage: 2.19
Residential: Proposed Units: N/A Proposed Sq. Ft.: N/A Site Acreage: N/A

Alvin Miller

Property Owner(s)
4200 Enchanted CT
 Street Address
Nashville TN 34947
 City State Zip
615-473-3179
 Phone Number
radicalsophet@hotmail.com
 Email Address

Bill Weiland, Project Manager, Tillman

Applicant/Representative, Title, Company
152 West 57th Street
 Street Address
New York NY 10019
 City State Zip
770-289-9766
 Phone Number
wweiland@tillmaninfrastructure.com
 Email Address

Property Owner(s) Acknowledgements: - This application will not be considered complete without the signature of all property owners of record, which shall serve as an acknowledgement of the submission of this application. The property owner's signature below shall also authorize the Applicant (if other than the property owner) and/or Representative to act in his/her behalf for the purposes of seeking approval for the application described herein. The undersigned consents to inspection and photographing of the subject property by the Planning staff for purposes of consideration of this Application and/or presentation to the Planning Board and City Commission.

Property Owner(s) Signature(s)

APPOINTMENTS ARE REQUIRED FOR APPLICATION SUBMITTALS

CALL 772.467.3737 OR E-MAIL PLANNING_DL@CITYOFFORTPIERCE.COM

For more information, please refer to the website:

<https://www.cityoffortpierce.com/571/Application-Submittal-for-Technical-Review>

General Information

- **Incomplete application packets will not be accepted.**
- In-take meetings are required for application submittals.
- Site plan approval is valid for one (1) year following City Commission approval. To maintain site plan approval, vertical improvements, permitted by the Building Department must commence prior to the 12-month expiration date.
- Fee Schedule - <https://www.cityoffortpierce.com/DocumentCenter/View/2620/Fee-Schedule>
- Public Notice Fees - <https://www.cityoffortpierce.com/DocumentCenter/View/8818/Public-Notice-Fees>

Pre-Application Meeting
Wednesday Afternoon

Application Intake Meeting
Call or e-mail to schedule

Technical Review Committee
3rd Thursday

Planning Board
2nd Monday

City Commission
1st & 3rd Monday

Site Plan submittal requirements:

Submit one (1) original & three (3) hard copies and one (1) CD or Flash Drive of the following. Additional copies will be required of subsequent submittals.

- Complete application
- Warranty Deed
- SLC Property Record Card
- Detailed project description
- General location map (see Section 125-313)
- Survey (see Section 125-313)
- Site Plan (see Section 125-313)
- Landscaping Plan (see Section 123-37)
- Conceptual Drainage Plan (see Section 125-313)
- Environmental Impact Report
- Beach/Dune System protection plan, if applicable (see Section 125-313)
- Lighting Plan (see Section 125-313)
- Design Review submittals (see Design Review application)
- Traffic Impact Report
- Concurrency Review submittals (see Concurrency Review application)

FFVV-65C-R3-V1

8-port sector antenna, 4x 617-894 and 4x 1695–2690 MHz, 65° HPBW, 3x RET



General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	4
RF Connector Quantity, total	8

Remote Electrical Tilt (RET) Information

RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
Input Voltage	10–30 Vdc
Internal RET	High band (2) | Low band (1)
Power Consumption, idle state, maximum	1 W
Power Consumption, normal conditions, maximum	10 W
Protocol	3GPP/AISG 2.0 (Single RET)

FFVV-65C-R3-V1

Dimensions

Width	640 mm | 25.197 in
Depth	235 mm | 9.252 in
Length	2437 mm | 95.945 in
Net Weight, without mounting kit	56.5 kg | 124.561 lb

Array Layout



Array	Freq (MHz)	Conns	RET (SRET)	AISG RET UID
R1	617-894	1-2	1	ANxxxxxxxxxxxxxxxxx1
R2	617-894	3-4		
Y1	1695-2690	5-6	2	ANxxxxxxxxxxxxxxxxx2
Y2	1695-2690	7-8	3	ANxxxxxxxxxxxxxxxxx3

Left
Right
Bottom

(Sizes of colored boxes are not true depictions of array sizes)

Port Configuration

FFVV-65C-R3-V1



Electrical Specifications

Impedance	50 ohm
Operating Frequency Band	1695 – 2690 MHz | 617 – 894 MHz
Polarization	±45°
Total Input Power, maximum	900 W @ 50 °C

Electrical Specifications

Frequency Band, MHz	617–698	698–894	1695–1880	1850–1990	1920–2200	2300–2500	2500–2690
Gain, dBi	16	16.3	17.6	18	18.6	18.5	18.6
Beamwidth, Horizontal, degrees	65	63	68	65	61	57	61
Beamwidth, Vertical, degrees	10.2	8.5	5.6	5.4	5.1	4.4	4.1
Beam Tilt, degrees	2–13	2–13	2–12	2–12	2–12	2–12	2–12
USLS (First Lobe), dB	17	19	19	20	22	19	18
Front-to-Back Ratio at 180°, dB	30	33	34	38	36	31	32
Isolation, Cross Polarization, dB	25	25	25	25	25	25	25
Isolation, Inter-band, dB	28	28	28	28	28	28	28
VSWR | Return loss, dB	1.5|14.0	1.5|14.0	1.5|14.0	1.5|14.0	1.5|14.0	1.5|14.0	1.5|14.0

FFVV-65C-R3-V1

PIM, 3rd Order, 2 x 20 W, dBc	-150	-153	-153	-153	-153	-153	-153
Input Power per Port at 50°C, maximum, watts	250	250	200	200	200	200	200

Electrical Specifications, BASTA

Frequency Band, MHz	617–698	698–894	1695–1880	1850–1990	1920–2200	2300–2500	2500–2690
Gain by all Beam Tilts, average, dBi	15.5	15.8	17.3	17.7	18.2	18.2	18.2
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.6	±0.3	±0.4	±0.6	±0.4	±0.5
Gain by Beam Tilt, average, dBi	2° | 15.4 7° | 15.7 13° | 15.6	2° | 15.7 7° | 16.0 13° | 15.6	2° | 17.2 7° | 17.4 12° | 17.3	2° | 17.7 7° | 17.8 12° | 17.6	2° | 18.0 7° | 18.3 12° | 18.2	2° | 18.1 7° | 18.5 12° | 18.1	2° | 18.1 7° | 18.5 12° | 18.0
Beamwidth, Horizontal Tolerance, degrees	±4.0	±5.9	±3.1	±3.9	±7	±7	±7.2
Beamwidth, Vertical Tolerance, degrees	±0.6	±1.1	±0.3	±0.4	±0.4	±0.3	±0.3
USLS, beampeak to 20° above beampeak, dB	16	12	14	16	17	15	14
Front-to-Back Total Power at 180° ± 30°, dB	22	22	28	30	27	26	27
CPR at Boresight, dB	15	15	20	22	19	16	23
CPR at Sector, dB	7	7	6	6	5	6	9

Mechanical Specifications

Effective Projective Area (EPA), frontal	0.99 m ² | 10.656 ft ²
Effective Projective Area (EPA), lateral	0.33 m ² | 3.552 ft ²
Wind Loading @ Velocity, frontal	1,055.0 N @ 150 km/h (237.2 lbf @ 150 km/h)
Wind Loading @ Velocity, lateral	355.0 N @ 150 km/h (79.8 lbf @ 150 km/h)
Wind Loading @ Velocity, maximum	1,433.0 N @ 150 km/h (322.2 lbf @ 150 km/h)
Wind Loading @ Velocity, rear	1,086.0 N @ 150 km/h (244.1 lbf @ 150 km/h)
Wind Speed, maximum	241 km/h | 149.75 mph

Packaging and Weights

Width, packed	752 mm | 29.606 in
Depth, packed	380 mm | 14.961 in
Length, packed	2590 mm | 101.969 in
Weight, gross	83.2 kg | 183.424 lb

FFVV-65C-R3-V1

Regulatory Compliance/Certifications

Agency

CHINA-ROHS

ISO 9001:2015

ROHS

Classification

Above maximum concentration value

Designed, manufactured and/or distributed under this quality management system

Compliant/Exempted



Included Products

- | | | |
|-----------|---|--|
| BSAMNT-4 | - | Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set. |
| BSAMNT-M4 | - | Middle Downtilt Mounting Kit for Long Antennas for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor bracket set. |

* Footnotes

Performance Note

Severe environmental conditions may degrade optimum performance



ENVIRONMENTAL CORPORATION OF AMERICA

ENVIRONMENTAL | GEOTECHNICAL | WETLANDS | ECOLOGY | CULTURAL RESOURCES

Geotechnical Investigation

**A2P2303 / Fort Pierce
(TI-OPP-19131)**

**1601 North 25th Street
Fort Pierce, Saint Lucie County,
Florida**

ECA Project No. 22-000422



SUBMITTED TO:

High Performance Services, LLC
3001 Mills Street,
Lafayette, LA 70507

PREPARED BY:

Environmental Corporation of America
1375 Union Hill Industrial Court, Suite A
Alpharetta, GA 30004



ENVIRONMENTAL CORPORATION OF AMERICA

ENVIRONMENTAL | GEOTECHNICAL | WETLANDS | ECOLOGY | CULTURAL RESOURCES

February 25, 2022

High Performance Services, LLC
3001 Mills Street,
Lafayette, LA 70507

Attention: Ms. Caitlin Rosamano, Senior Project Manager

**Subject: Geotechnical Investigation Report
A2P2303 / Fort Pierce (TI-OPP-19131)
1601 North 25th Street
Fort Pierce, Saint Lucie County, Florida
ECA Project No. 22-000422**

Dear Ms. Rosamano:

Environmental Corporation of America (ECA) is pleased to submit this report of our geotechnical investigation for the proposed project. Our services were provided as authorized by High Performance Services, LLC, via a purchase order dated January 25, 2022.

This report presents a review of the information provided to us, a description of the site and subsurface conditions, and our recommendations. The appendices contain a Site Location Map, a Boring Location Plan, and a Boring Log.

We will be happy to discuss our recommendations with you and look forward to providing the additional studies or services necessary to complete this project. We appreciate the opportunity to be of service. Please call us with any questions at (770) 667-2040.

Sincerely,
Environmental Corporation of America

A handwritten signature in blue ink, appearing to read 'Athulya', with a horizontal line underneath.

Mrs. Athulya Balakrishnan, P.E.
Project Engineer

A handwritten signature in blue ink, appearing to read 'Hector', with a horizontal line underneath.

Héctor A. Acosta, M.S.C.E., P.E.
Principal Geotechnical Engineer
State of Florida P.E. #78902

Geotechnical Investigation

Purpose and Scope of Work

The purpose of this investigation was to obtain specific subsurface data at the site and to provide geotechnical related parameters for the design and construction of the foundations for a proposed monopole tower.

Our scope of work included the following:

- One (1) soil test boring was drilled to a depth of 60 feet below the ground surface (bgs).
- Figure 1 shows the Site Location Map. Figure 2 shows the Boring Location Plan.
- Standard penetration tests (SPTs) were conducted to obtain soil samples and SPT N-values, in accordance with ASTM D-1586.
- The depth to groundwater, if any, was measured in the boring after drilling was completed.
- Natural moisture content (WC_N) tests were performed on a selected number of soil samples in accordance with ASTM D-2216.
- Unconfined compressive strength (q_u) index tests were performed using the pocket penetrometer test or the spring tester test (whenever possible).
- The soil samples were visually classified in accordance with ASTM D-2488 and a boring log was prepared.
- The soil conditions were evaluated by a registered professional engineer and this geotechnical report was prepared with our recommendations.

We have recommended design parameters and settlements based on the SPT N-values, an examination of the soil samples, and our experience with similar soil conditions and structures.

Project Information

We were provided with project site survey prepared by SMW Engineering Group and dated November 29, 2021. The proposed tower would be located at 1601 North 25th Street, near Fort Pierce, Saint Lucie County, in Florida.

We understand that plans include constructing a 160-foot tall monopole tower, approximately as shown in Figure 2.

We assume that the equipment building/cabinet will be a prefabricated structure supported on a perimeter grade beam, spread footing or turndown slab. The project also includes the construction of a 12-foot wide gravel access drive within a 30-foot wide ingress/egress and utility easement.

Field Drilling Work

The field drilling work was conducted on February 15, 2022. Information obtained from the boring log was used to help us evaluate the subsurface conditions and to assist in formulating our recommendations. The site was staked at the time of our field visit.

Subsurface Soil Conditions (Boring B-1)

In general, soils encountered initially consisted of Fill material manually described as very loose to medium dense fine Sand (Fill) to an approximate depth of 6 feet, underlain by loose to medium dense fine Sand (SP) to an approximate depth of 33.5 feet, underlain by Weathered Limestone manually described as medium dense silty Sand (SM) with trace amounts of shells to an approximate depth of 58.5 feet, underlain by dense fine silty Sand (SM) with trace amounts of shells to the full depth drilled of 60 feet.

The following table presents a summary of the existing soil conditions.

Soil Profile Depth (ft)		Type of Soils (Soil manual classification)	*Soil Symbol	SPT N-Values blows per foot (bpf)
0	6	Very loose to medium dense and fine Sand	Fill	5 to 12
6	33.5	Loose to medium dense fine Sand	SP	9 to 14
33.5	58.5	Weathered Limestone manually described as medium dense fine silty Sand	SM	24 to 26
58.5	60	Dense fine silty Sand	SM	35

*Soil symbols are based in the Unified Soil Classification (USC) system

Natural moisture (WC_N) content measurements were conducted on selected soil samples and ranged between 3.0% to 21.5%. A final boring log is shown in Appendix B.

Groundwater Level Condition

At the time of drilling (ATD), a groundwater level was encountered at a depth of 12 feet bgs. It should be noted that groundwater level observations made within mostly cohesive soils during drilling could be misleading. It should be anticipated that the groundwater level will fluctuate due to seasonal changes during the year. To determine actual groundwater level measurements, groundwater levels should be measured using observation wells installed for prolonged periods.

Foundation Construction Recommendations

The subsurface conditions are suitable for the support of the proposed tower using either a shallow foundation system or a deep foundation system.

Shallow Foundation System

For the case of a pad and pier or a mat foundation the soils are capable of a maximum net allowable soil bearing pressure (q_{ALL}) of 2,000 psf (pounds per square foot) at a minimum depth of foundation (D_f) of 6 feet below existing grade elevation. Total and differential settlement should be less than 1-inch and 1/2-inch, respectively.

A safety factor of 3 and a wet soil unit weight (γ_{wet}) between 105 and 110 pcf (pounds per cubic foot) were considered for soil bearing computations. The provided soil bearing pressure assumes the bottom of excavation would be dry and stable. The bottom of excavation should be proof rolled, observed, and inspected prior to placing any concrete. For more details, please refer to our Fill Placement section.

Deep Foundation System

Based on our review of the subsurface conditions encountered in the boring, we offer the following average soil parameters for the design of a proposed drilled shaft.

Boring Depth (feet)		*Unit Weight γ_{wet} / γ_b (pcf)	Friction Angle ϕ (deg)	Soil Cohesion C_u (psf)	K_p	Allowable Skin Friction f_s (psf)	Allowable Bearing Pressure q_{ALL} (psf)	Soil Modulus K_H (pci)
0	4	105	28	0	2.77	30	-	-
4	13.5	110	30	0	3.00	93	-	60
13.5	28.5	110 / 48	30	0	3.00	169	-	80
28.5	33.5	115 / 53	30	0	3.00	221	5,000	205
33.5	58.5	115 / 53	34	0	3.54	348	6,000	250
58.5	60	120 / 58	34	0	3.54	421	7,500	310

Notes: A safety factor of 2 is used for allowable skin friction (f_s). A safety factor of 5 is used for allowable soil bearing pressure (q_{ALL}). *Below the groundwater level designer should consider the buoyant unit weight (γ_b) = $\gamma_{wet} - \gamma_{water}$.

Active earth pressure coefficient $K_A = \tan^2(45 - \phi/2) = 1/K_P$.

At rest earth pressure coefficient $K_O = 1 - \sin(\phi)$.

The proposed drilled shaft should be designed using a combination of point bearing and friction forces. Total drilled shaft foundation settlement should be limited to 0.50-inch or 0.50% of the proposed drilled shaft diameter. Final shaft diameter (D) and embedment length (L) will depend upon final tower loading conditions. For these foundations ECA recommends a minimum concrete strength (f'_c) of 4,000 psi (pounds per square inch). To prevent further settlements within the proposed drilled shaft, ECA recommends placing the bottom of foundation at or below 30 feet.

Based on the existing soil conditions already described, project designer may consider using a single drilled pier for foundation support. The following table presents the relationship between the allowable drilled pier load capacity, pier diameter (Diam.), and pier length (L).

Pier Length (L) (feet)	Allowable Drilled Pier Capacities (Kips)					
	Pier Diameter-feet (inches)					
	2 feet (24-in.)		5 feet (60-in.)		6 feet (72-in.)	
	Compression	Tension	Compression	Tension	Compression	Tension
35	70	41	233	111	303	137
40	84	51	268	136	346	167
45	99	62	307	163	392	200

Notes: A safety factor of 2 is used for allowable skin friction (fs). A safety factor of 5 is used for allowable soil bearing pressure (q_{ALL}).

Building Foundations

The proposed equipment building can be supported on a perimeter grade beam, spread footing or turndown slab foundation. For the design of the building foundation the soils are capable of a maximum net allowable soil bearing pressure (q_{ALL}) of 2,000 psf. A minimum depth of foundation (D_f) of 1.5 feet below existing grades elevations should be considered. Total and differential settlements should be less than 1/2-inch and 1/4-inch, respectively.

For ground floor slabs may be designed as conventional slabs on grade over the existing soils or on engineered compacted fill using a Modulus of Subgrade Reaction (K_s) of 110 pci (pounds per cubic inch). The bearing pad should be prepared and compacted prior to placing any concrete. Contractors should verify the Fill Placement section of this report.

Soil Site Class

Based on our site evaluation and the information provided by the International Building Code (IBC 2012 / ASCE 7-10), to perform a dynamic analysis the clients design engineer should consider the information in the table below.

Soil Profile Depth (feet)	*Site Class Type
0 - 33.5	Soft Soil Profile and Site Class E
33.5 - 60	Stiff Soil Profile and Site Class D

*Average properties in top 100 feet.

Foundation Excavations

A groundwater level will be encountered during foundation excavation, therefore prospective contractor *should consider* excavation dewatering. We believe either casing or slurry drilling will be required. However, drilling method should be selected by the contractor based on their experience with similar soil conditions.

To avoid softening of the shallow soils exposed at the foundation bearing level, excavations should not be left open for extended periods prior to placing reinforcing steel and concrete. If rain or freezing weather is expected, excavations should not be completed. Leaving the excavations at least 1-foot above final grade should protect the bearing soils from deterioration.

If the excavation must remain open overnight or if rainfall becomes imminent while the bearing soils are exposed, we recommend that a 2 to 4-inch thick "mud-mat" of "lean" (2,000 psi) concrete be placed on the bearing soils before the placement of reinforcing steel. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete.

Fill Placement

If required, borrow materials for fill, unless otherwise specified, should consist of essentially granular material (GM, GP, GM, GC, SW, SP or SM Unified Soil Classification System); A-2-4 or better, AASHTO Classification, as approved by the Project Geotechnical Engineer. In situ sandy soils could be used as backfill. These should be free from vegetation and should not contain rocks greater than 6 inches in size.

The amount of fill required for this project depends on the planned final grades. Any fill or backfill required to attain finished grade should be placed in layers not exceeding 8 to 10-inch thick lifts and compacted to not less than 95% of the Standard Proctor Maximum dry density, as determined by method (ASTM D-698). The soil moisture content should be close to the optimum moisture content. All required fills should meet the specified compaction criteria.

ECA does not know the capability of the surficial soil to support pavements. However, we suggest that the upper soils be replaced by granular fill in areas of heavy traffic to improve the subgrade support capabilities and moisture sensitivity.

Field density tests should be conducted at routine intervals as the fill is being placed to verify that adequate compaction is achieved. Prior to placing any new fill, any soft or loose near surface soils should be removed and the area Proof-Rolled with a heavy vehicle or a heavy compaction vibratory roller to confirm that any unsuitable soil conditions have been discovered.

Basis for Recommendations

The subsurface conditions encountered at the boring location is shown on the Boring Log in Appendix B. The Boring Log represents our interpretation of the subsurface conditions based on the field logs and visual examination of field samples by an engineer. The lines designating the interface between various strata on the Boring Log represents the approximate interface

locations. In addition, the transition between strata may be gradual. The water level shown on the Boring Log, if any, represents the condition only at the time of our exploration.

The recommendations contained herein are based in part on project information provided to us and only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, please let us know so that we may review the validity of our recommendations.

Regardless of the thoroughness of a geotechnical investigation, there is always a possibility that conditions between borings will be different from those at specific boring locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. ECA is best qualified to provide this service based on our familiarity with the project, the subsurface conditions, and the intent of the recommendations and design.

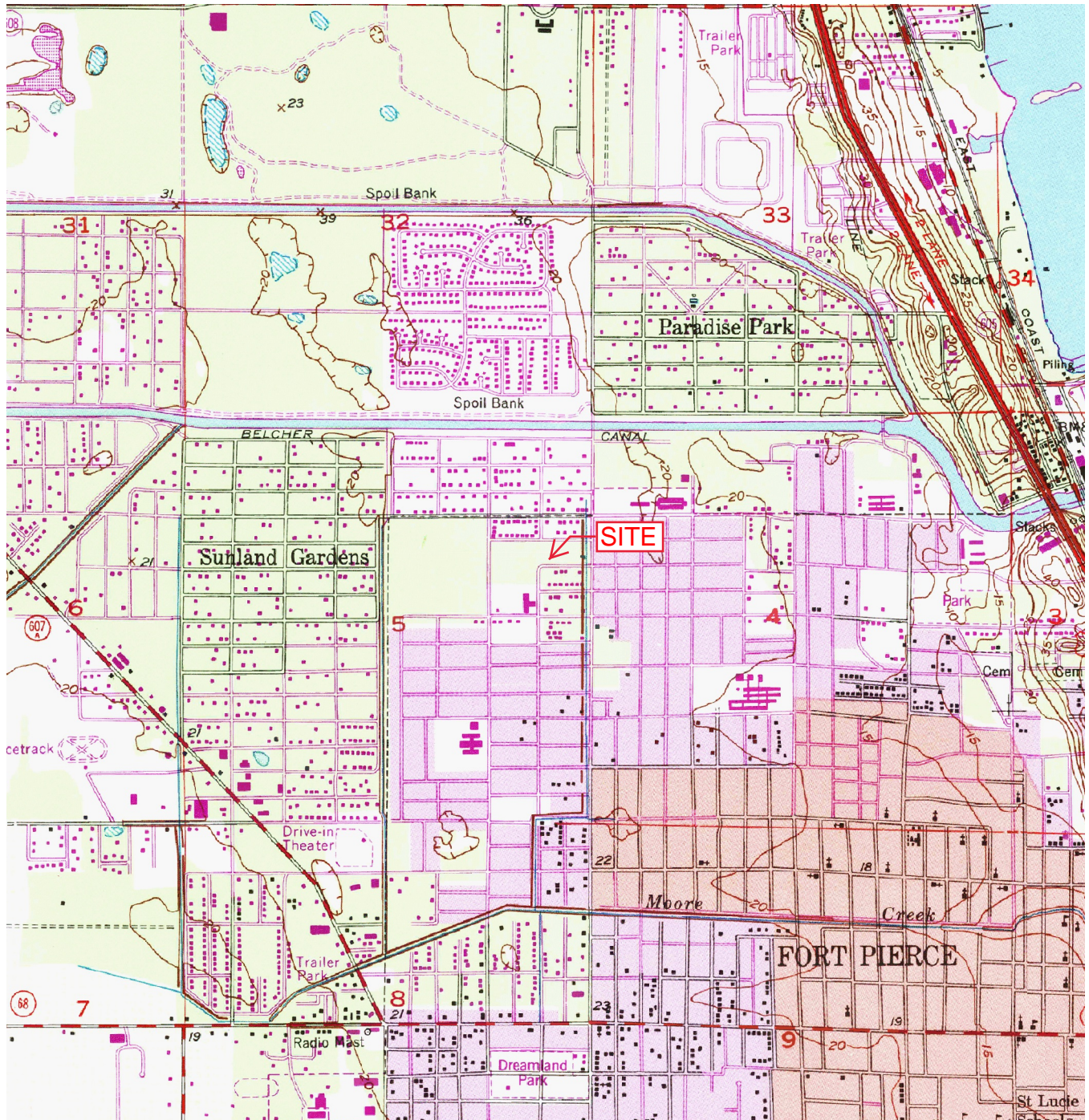
We wish to remind you that we will store the soil samples for 30 days. The samples will then be discarded unless you request otherwise.

APPENDICES

- Appendix A Figures
- Appendix B Boring Log

APPENDIX A

Figures



Source: USGS Topographic Map, 7.5 Minute Series, Fort Pierce, FL (2021).



A2P2303 / Fort Pierce (TI-OPP-19131)
 1601 North 25th Street
 Fort Pierce, Saint Lucie County, Florida
 Figure 1: Site Location Map



ECA Project No. 22-000422

APPENDIX B

Boring Log

Project: Fort Pierce	Environmental Corp of America 1375 Union Hill Industrial Ct. Suite-A Alpharetta, GA 30004 (770) 667-2040	Log of Boring B-1 Sheet 1 of 2
Project Location: Fort Pierce, FL		
Project Number: 22-000422		

Date(s) Drilled: 2/15/2022	Logged By: A. Balakrishnan	Checked By: H. Acosta
Drilling Method: HSA	Drill Bit Size/Type: 2.25 inches	Total Depth of Borehole: 60 feet bgs
Drill Rig Type: Truck CME-45	Drilling Contractor: UES	Approximate Surface Elevation: 20 feet AMSL
Groundwater Level and Date Measured: 12 feet ATD	Sampling Method(s): SPT	Hammer Data: 140 Lbs hammer, rope and cathead
Borehole Backfill: Cuttings	Location: Fort Pierce, Saint Lucie County, Florida	

Depth (feet)	Sample Number	Sample Type	Sampling Resistance, blows/ft	SPT N-Values	Rec (%) / RQD (%)	MATERIAL DESCRIPTION	Material Type	USCS Symbol	Water Content (%)	qu (tsf)	qu (tsf)- Spring Tester	LL (%)	PI (%)
0													
1	1	Diagonal Hatching	1-2-3-3	5		Dark brown, very loose fine silty Sand, damp (Fill)	Fill	Diagonal Hatching	-				
2	2	Diagonal Hatching	4-4-5-8	9		Same as above, loose, grey/brown, dry	Fill	Diagonal Hatching	3.0				
5	3	Diagonal Hatching	6-6-6-6	12		Black/brown, medium dense silty Sand, trace roots, damp (Fill)	Fill	Diagonal Hatching	-				
4	4	Diagonal Hatching	7-6-6-6	12		Brown, medium dense fine Sand, dry	SP	Stippled	6.7				
5	5	Diagonal Hatching	5-6-5-5	11		Same as above, medium dense, light brown/tan, dry	SP	Stippled	-				
10						▽							
15	6	Diagonal Hatching	4-4-6	10		Dark brown, loose fine Sand, wet	SP	Stippled	13.8				
20	7	Diagonal Hatching	3-3-6	9		Same as above, loose, wet	SP	Stippled	-				
25	8	Diagonal Hatching	5-5-5	10		Same as above, loose, wet	SP	Stippled	18.1				
30	9	Diagonal Hatching	6-7-7	14		Same as above, medium dense, dark brown, wet	SP	Stippled	-				
35	10	Diagonal Hatching	11-11-13	24		Weathered Limestone manually described as medium dense, white fine silty Sand, trace shells, wet	SM	Vertical Lines	13.9				
40	11	Diagonal Hatching	12-13-11	24		Same as above, medium dense, wet	SM	Vertical Lines	-				

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Project: **Fort Pierce**
 Project Location: **Fort Pierce, FL**
 Project Number: **22-000422**

Environmental Corp of America
 1375 Union Hill Industrial Ct. Suite-A
 Alpharetta, GA 30004
 (770) 667-2040

Log of Boring B-1
Sheet 2 of 2

Depth (feet)	Sample Number	Sample Type	Sampling Resistance, blows/ft	SPT N-Values	Rec (%) / RQD (%)	MATERIAL DESCRIPTION	Material Type	USCS Symbol	Water Content (%)	qu (tsf)	qu (tsf)- Spring Tester	LL (%)	PI (%)
40						Same as above, medium dense, wet	SM						
42	12		11-13-13	26		Same as above, medium dense, wet	SM		19.4				
48	13		10-14-12	26		Same as above, medium dense, wet	SM		-				
52	14		10-13-11	24		Same as above, medium dense, wet	SM		21.5				
58	15		19-17-18	35		Grey, dense fine silty Sand, trace shells, damp	SM		-				
60						End of Boring at 60 feet.							
65													
70													

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Project: **Fort Pierce**
 Project Location: **Fort Pierce, FL**
 Project Number: **22-000422**

Environmental Corp of America
 1375 Union Hill Industrial Ct. Suite-A
 Alpharetta, GA 30004
 (770) 667-2040

Key to Log of Boring
Sheet 1 of 1

Depth (feet)	Sample Number	Sample Type	Sampling Resistance, blows/ft	SPT N-Values	Rec (%) / RQD (%)	MATERIAL DESCRIPTION	Material Type	USCS Symbol	Water Content (%)	qu (tsf)	qu (tsf)- Spring Tester	LL (%)	PI (%)
1	2	3	4	5	6	7	8	9	10	11	12	13	14


COLUMN DESCRIPTIONS

- 1** Depth (feet): Depth in feet below the ground surface.
- 2** Sample Number: Sample identification number.
- 3** Sample Type: Type of soil sample collected at the depth interval shown.
- 4** Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
- 5** SPT N-Values: SPT N-values
- 6** Rec (%) / RQD (%): Core Recovery (%) and RQD (%)
- 7** MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
- 8** Material Type: Type of material encountered.
- 9** USCS Symbol: Graphic depiction of the subsurface material encountered.
- 10** Water Content (%): Water content of the soil sample, expressed as percentage of dry weight of sample.
- 11** qu (tsf): Unconfined compression test
- 12** qu (tsf)- Spring Tester: Unconfined Compression test value from a spring tester
- 13** LL (%): Liquid Limit, expressed as a water content.
- 14** PI (%): Plasticity Index, expressed as a water content.












FIELD AND LABORATORY TEST ABBREVIATIONS

- CHEM: Chemical tests to assess corrosivity
- COMP: Compaction test
- CONS: One-dimensional consolidation test
- LL: Liquid Limit, percent
- PI: Plasticity Index, percent
- SA: Sieve analysis (percent passing No. 200 Sieve)
- UC: Unconfined compressive strength test, Qu, in ksf
- WA: Wash sieve (percent passing No. 200 Sieve)






MATERIAL GRAPHIC SYMBOLS

-  AF
-  Silty SAND (SM)
-  Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS

-  Auger sampler
-  Grab Sample
-  Bulk Sample
-  HQ Rock Core
-  3-inch-OD California w/ brass rings
-  2.5-inch-OD Modified California w/ brass liners
-  CME Sampler
-  NQ Rock Core
-  Pitcher Sample
-  2-inch-OD unlined split spoon (SPT)
-  Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

-  Water level (at time of drilling, ATD)
-  Water level (after waiting)
-  Minor change in material properties within a stratum
-  Inferred/gradational contact between strata
-  Queried contact between strata

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

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Photograph of 1601 N. 27th Street – no structures on property.



Property to the west across the street N 27th – Church



Back side of LO property – N25th – commercial properties



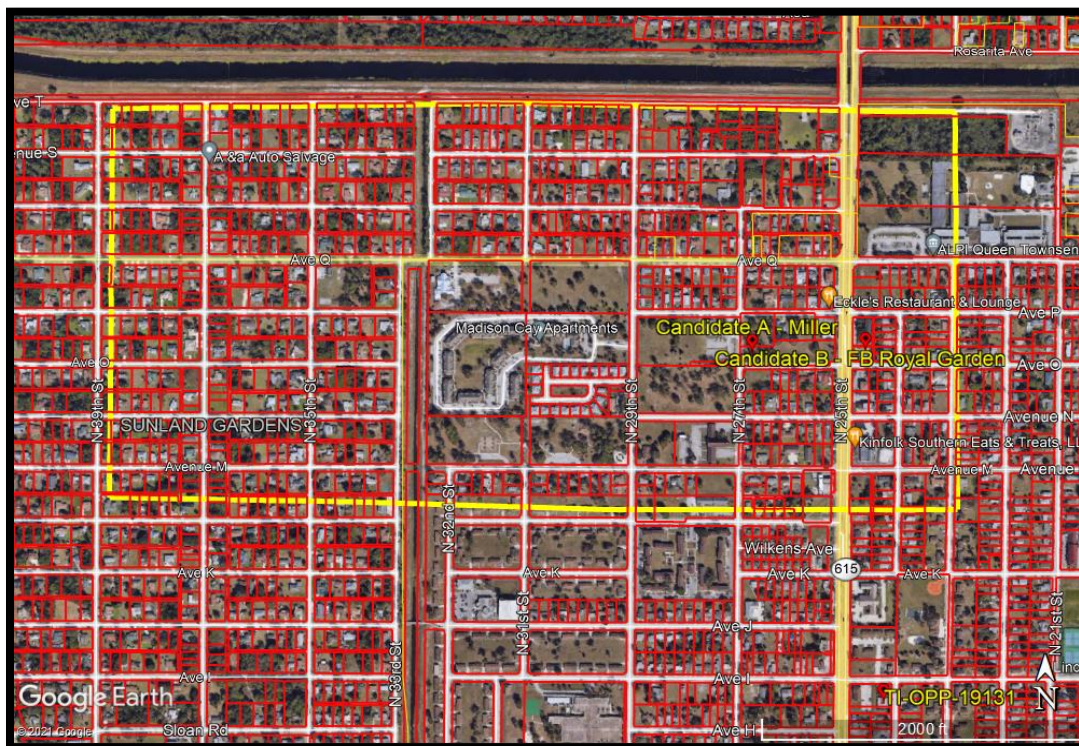
JUSTIFICATION STATEMENT

TMO Site: A2P2303/Tillman ID: TI-OPP-19131

April 7, 2022

On behalf of Tillman Infrastructure, Inc. (“Applicant”), Lewis, Longman & Walker, P.A., is submitting this application for Conditional Use and Site Plan Review to construct a new wireless communications tower for the 2.19-acre site located at 1601 N. 25th Street, in Fort Pierce Florida (“Site”). **See Figure 1.** The Site is zoned C-3, General Commercial, and is currently vacant land. Pursuant to Section 125-187 of the City of Fort Pierce’s Code of Ordinances (“City’s Code”), antenna support structures are permitted as a conditional use in the C-3 zoning district, if the City Commission, after a public hearing determines that the location and development plans comply with applicable standards and will not violate basic use standards specified in the C-3 Zoning District, other applicable use standards, additional zoning ordinance provisions and other City laws. As demonstrated by the application and supporting documents, the proposed use meets all applicable requirements. The purpose of this document is to provide information about the Applicant’s proposed tower, the technical details of the proposal, and the Applicant’s efforts to find an appropriate location for the tower siting. The 1601 N. 25th Street location is the ideal location to achieve a strong continuous network for telecommunications providers.

FIGURE 1 – Location Map



Property Address	1601 N. 25 th Street, Fort Pierce, Florida
Parcel Control Numbers (PCNs):	2404-608-0095-050-9
Property Owner	Alvin Miller
Lease Area Acreage	0.12 acres/5,250 sq. ft.
Future Land Use (FLU)	General Commercial
Existing Zoning	C-3
Proposed Use	Communication Tower
Impervious Ratio	5.5%

INTRODUCTION

There is an ever-growing consumer demand for wireless products in Florida. Thus, mobile operators are bringing attractive new choices for consumers and new technologies that allow for a richer “high speed” wireless experience. As the demand increases for mobile phones and new telecommunication services, additional towers are required to maintain or improve the quality of service to the public and restore contiguous wireless service. U.S. policy and laws support the growth of wireless networks.

In 1996, the U.S. Congress recognized the important public need for high quality wireless service throughout the U.S. in part through adoption of the Telecommunications Act (“the Act”). In Section 704 of the Act (codified at 47 U.S.C. § 332(c)(7)), Congress “struck a balance between the national interest in facilitating the growth of telecommunications and the local interest in making zoning decisions” over the siting of towers and other facilities that provide wireless services. *360 Communications v. Board of Supervisors of Albemarle County*, 211 F.3d 79, 86 (4th Cir. 2000). While expressly preserving local authority (47 U.S.C. § 332(c)(7)(A)), the Act requires that decisions denying wireless facilities be in writing and supported by substantial evidence (47 U.S.C. § 332(c)(7)(B)(iii)). The Act also prohibits localities from adopting regulations that prohibit or have the effect of prohibiting wireless services, or unreasonably discriminate against functionally equivalent providers. 47 U.S.C. §332(c)(B)(i). Finally, the Act requires that localities act on applications for approval of wireless facilities within a reasonable period of time. 47 U.S.C. §332(v)(7)(B)(ii).

The Applicant, Tillman Infrastructure, LLC, is a privately-held New York based tower company headquartered at 152 W. 57th Street, 27th Floor, New York, New York 10019. The Applicant develops/builds, own, and leases numerous communication towers in the United States. The Applicant is continually seeking to augment its portfolio in order to provide quality antenna site services to wireless operations, who in turn can introduce or improve their network capabilities for the benefit of a communities’ residents and businesses. To that end, the Applicant has already entered into a long-term lease agreement with T-Mobile. The Applicant will construct, maintain, and own the proposed facility and will be the Permit holder.

T-Mobile, as a wireless carrier, is committed and mandated by its license to ensure the best coverage and service to the public and private sectors. The proposed Site in the City of Fort Pierce is extremely important in terms of providing coverage to an area that is underserved. The proposed antenna support structure will add capacity to help carriers, like T-Mobile, eliminate poor reception, dropped calls, and missed texts. Therefore, the proposed antenna support structure infrastructure is necessary to ensure that both residents and visitors to the area have access to the service.

SITING SELECTION

Telecommunication towers do not work in isolation and therefore they all contribute to a network. Gaps in coverage create dropped calls and lead to unreliability, which can be unsafe for clients that rely on the service. Moreover, sites are not selected at random and are reliant on factors such as: site conditions, like topography, forecasted client usage patterns, the distance to existing sites, the obstruction of objects (trees & buildings) from one tower to the next, and the ability to lease lands with potential landowners. The Applicant and Radio Frequency Engineers (“RF Engineers”) have worked hard to identify an appropriately zoned site to locate this tower within T-Mobile’s Targeted Search Area to fill a noticeable gap in service in this geographic area as T-Mobile looks to deploy 5G services nationwide.

Currently, T-Mobile provides 4G services to residential and commercial areas in part of North Fort Pierce by a 150 ft. flagpole tower located at 910 N. 25th Street, Fort Pierce, Florida. T-Mobile currently has antennas located on that tower that are enclosed in a canister. The design of the enclosure is not compatible with deployment of advanced 5G services. The diameter is not sufficient to house the antennas and radios, and there is not active or passive cooling.

In order to utilize the full suite of 5G services, equipment specifications for these technologies requires the installation of radio transceivers or “radios,” in close proximity to the antennas. This proximity is important because the transmit/receive components are physically part of the antenna for some 5G antennas, 5G antennas and transceivers will not physically fit in most enclosed unipole and flagpole towers at elevation, and 5G equipment is susceptible to overheating in enclosed unipole and flagpole towers that do not have active or passive cooling.

RF Engineering performed an engineering study, considering multiple objectives, to determine the approximate site, location and antenna height required to best fulfill T-Mobile’s noted 5G service objectives within the Targeted Service Area. From this study, RF Engineers identified a “search ring” area where a communication tower facility may be located to provide effective 5G service in the Targeted Service Area. As this is a service coverage site intended to provide seamless coverage in the specific area, the proposed tower must be located within the identified search ring to be able to establish a dominant signal in the Targeted Search Area. **Figure 2** indicates the search ring RF Engineers established for the proposed site.

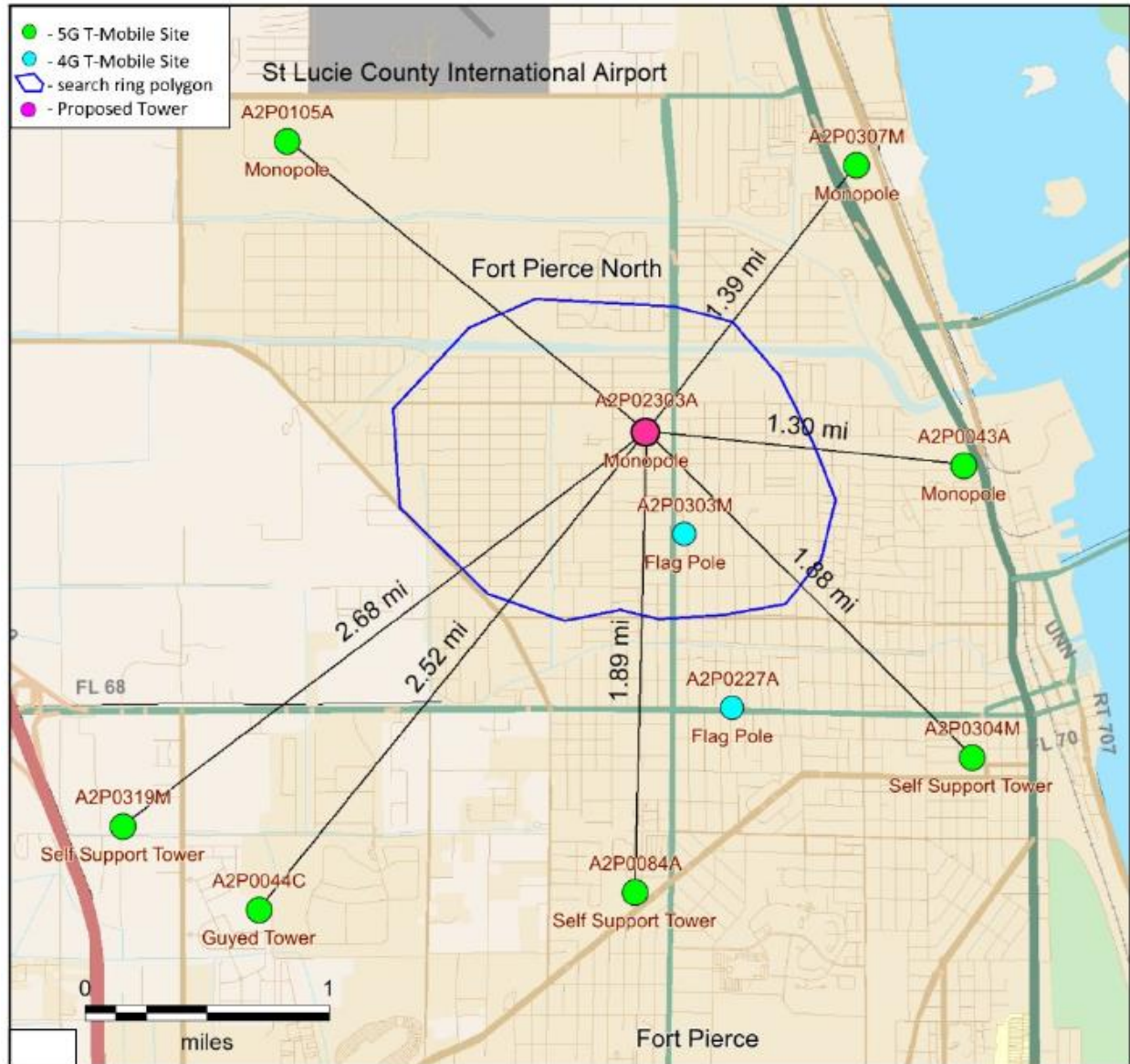


FIGURE 2 – SEARCH RING

Based on the investigation into strength signal at the location where towers are needed to deploy a successful network, it was determined that the area surrounding N. 25th Street is in need of new wireless infrastructure in order to support the requirements for improved service and additional mobile service providers. **See Figure 3.** This is given its location within the context of other existing and proposed communication towers and other antenna locations, as well as existing and proposed residential dwellings. Additionally, the existing telecommunication installations within the search area revealed that there are no existing structures of sufficient height or than can be upgraded to meet the 5G network requirements within the search ring radius. While there are other wireless communications facilities nearby, expansion of these facilities is limited by ground space and tower capacity. The design of the tower enclosures is not

compatible with deployment of advanced 5G services. Further, the diameter is not sufficient to house the antennas, radios and there is no active or passive cooling. Accordingly, the construction of the proposed telecommunications tower will be an integral component of T-Mobile's network in its FCC licensed areas throughout the state. By placing a tower on the proposed site, the network coverage will be improved, reliable and potentially safer for cellular phone users in the area. See Figure 4.

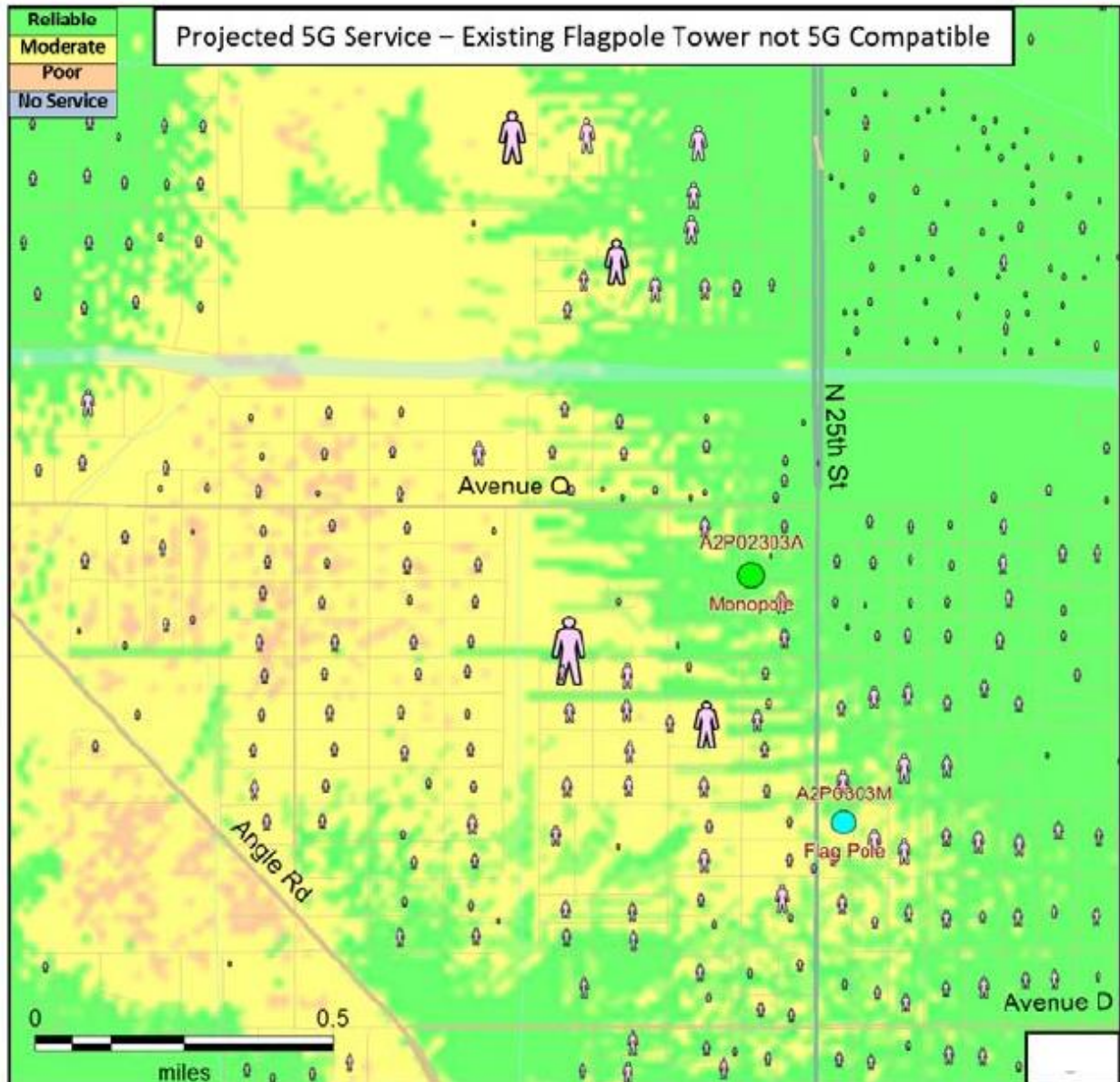


FIGURE 3– EXISTING 5G COVERAGE NEED

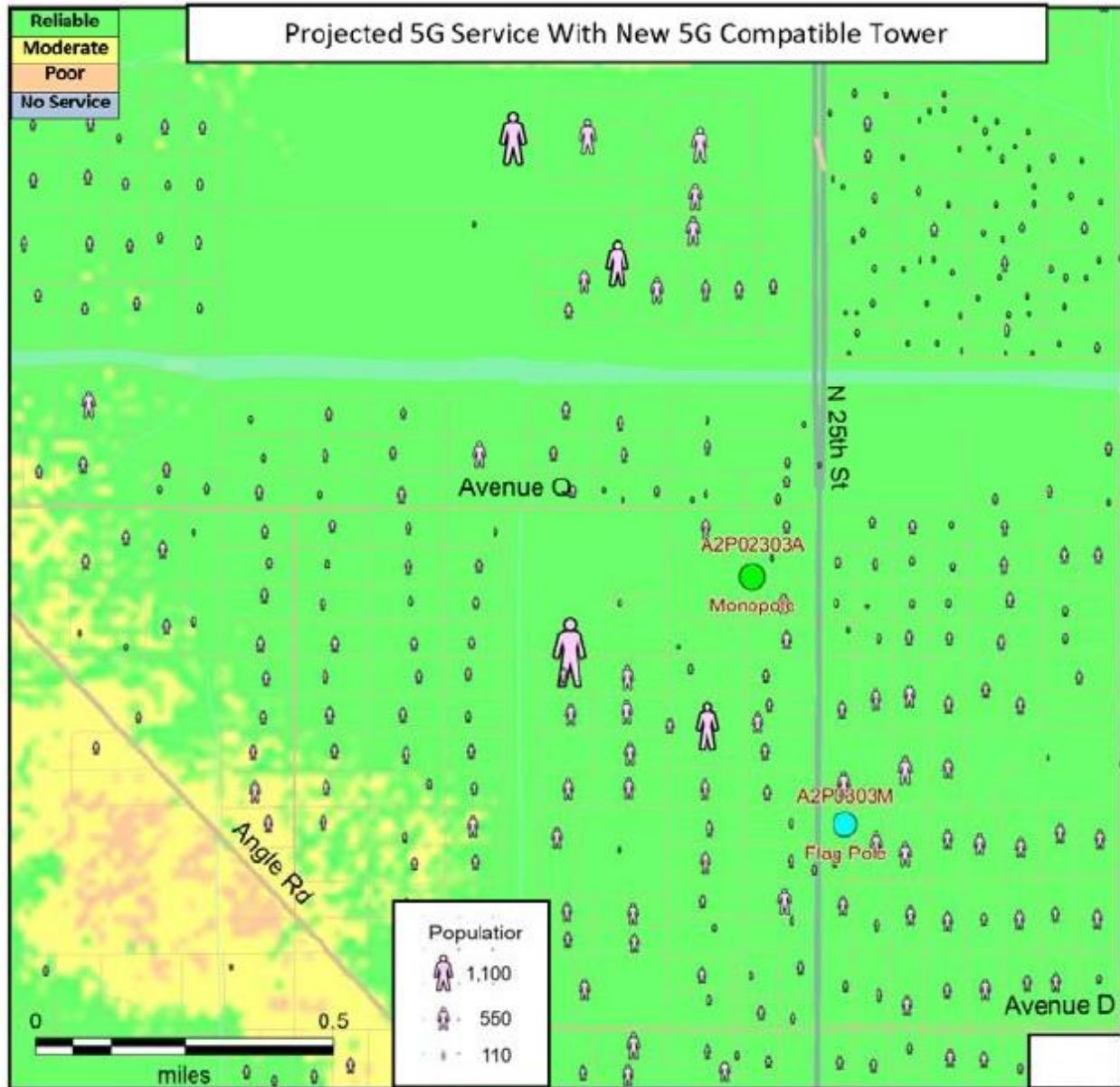


FIGURE 4 – 5G COVERAGE WITH PROPOSED MONOPOLE TOWER

After speaking with the City’s Planning staff and listening to their concerns regarding the proposed site, the Applicant considered City-owned properties within the City of Fort Pierce to place the proposed communication tower. The only City-owned parcels within the search ring which were large enough to site the proposed 160 ft. monopole communications tower were two parcels which comprise Pioneer Park. After further discussions with the City Planning staff, these parcels were rejected from consideration by City Planning staff. Therefore, 1601 N. 25th Street remains the most suitable location to achieve a strong continuous 5G network for the Applicant’s proposed communication tower.

The Applicant strongly supports co-location on existing towers and structures. The use of existing structures minimizes the number of new towers requested in any given area and is generally a more cost-effective way of doing businesses. However, tower infrastructure is a finite resource and over time most towers reach their engineered maximum. Unfortunately, there are no pre-existing towers that would work for co-location and given the low average height of structures in the search area, a rooftop installation is also not viable. Accordingly, the Applicant has designed the proposed tower to support and accommodate additional carriers.

The Applicant proposes to build a communication tower will accommodate at least three providers, in order to promote co-location. At this time, it is unknown how many antennas the proposed antenna support structure will be designed to carry as a structural analysis will need to be completed each time a new carrier is added to the tower. Currently T-Mobile is the only carrier that has committed to use the proposed antenna support structure. T-Mobile is expected to utilize between 9-12 antennas. The Applicant has provided notice to other telecommunication carriers with potential interest in co-location on the proposed antenna support structure and will provide co-location at a reasonable market rate. The construction of the proposed antenna support structure which permits co-location will eliminate the need for any additional communication towers within the surrounding area.

SITE CHARACTERISTICS

The undeveloped Site is located on the corner of N 27th St. and Avenue O. The site can be further identified as Parcel ID #2404-608-0095-050-9. The proposed area to be disturbed during construction is 3,600' (60' x 60' Lease Area). The site is surrounded by R-4 zoning on three sides. The areas to the north and south are zoned R-4 and are comprised of vacant lots. To the west across N 27th Street there is a church, the House of God Church. This property is zoned R-4. The closest residential structure is 178' to the southeast of the proposed tower location. N 25th Street is to the east of the property with a vacant parcel directly across N 25th Street. **See Figure 5.**

The surrounding topography is flat with a few trees in the surrounding area. There are trees located on a parcel to the north. There are no trees on the parcel to the east. To the west there is very little tree coverage and to the south the tree coverage is minimal. The location where the tower is proposed has trees located on it and the Applicant plans to keep the trees that are not within the lease area. The proposed access easement will come off N 27th Street facing the House of God Church's parking lot.



FIGURE 5 – PROPOSED SITE AND SURROUNDING PROPERTIES

C-3 Zoning District	REQUIRED BY CODE	PROPOSED	
Minimum Lot Area, Width and Depth	<ul style="list-style-type: none"> a. The minimum lot area shall be 10,000 sq. ft. b. The minimum lot width shall be 70 ft. c. The minimum lot depth shall be 90 ft. 	<ul style="list-style-type: none"> a. 25,200 sq. ft. b. 120 ft. c. 210 ft. 	
Setbacks	<ul style="list-style-type: none"> a. The minimum depth of the front yard will be 25 ft. 	<ul style="list-style-type: none"> a. 85 ft. front yard. 	

	<p>The minimum yard depth, if not the front yard, for portions of the property abutting a right-of-way or residential district shall be 15 ft.</p>	<p>b. 60 ft. side yard. c. 525 ft. rear yard.</p>	
Lot Coverage	<p>Buildings shall not cover more than 60 percent of the lot area</p>	<p>5.49%</p>	
Building Height	<p>No building shall exceed a height of 65 ft. above grade, except that multifamily developments in accordance with the requirements of the R-5 zone may be approved.</p>	<p>160 ft. monopole tower</p>	
Parking	<p>Upon receipt of an application of a use for which no parking ratio is established, the planning director is authorized to apply the parking ration that applies to the most similar use or</p>	<p>The Applicant proposes to provide one parking space at the tower, as no outside visitors will be frequenting the site. The parking space will be utilized</p>	

	<p>establish a different minimum parking requirement on the basis of parking data required by the Applicant and the Planning Department.</p>	<p>for maintenance purpose only.</p>	
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STANDARDS OF REVIEW

Pursuant to Section 125-361(d), the City shall consider and weigh the aesthetic impact and compatibility issues of the proposed antenna structure with the public benefit derived from having an efficient and reliable wireless communications system when determining whether or not to approve the application. Consideration shall be based upon these factors:

- (1) Height of the proposed antenna support structure.
- (2) Proximity of the antenna support structure to residential structures and residential district boundaries.
- (3) Nature of uses on adjacent and nearby properties.
- (4) Surrounding topography.
- (5) Surrounding tree coverage and foliage.
- (6) Design of the antenna support structure, with particular attention to design characteristics which have the effect of reducing or eliminating visual obtrusiveness, to the extent reasonably possible.
- (7) Proposed ingress and egress.
- (8) Availability of suitable existing antenna support structure and other structures. No new antenna support structure may be permitted unless the applicant demonstrates to the city’s reasonable satisfaction, that no existing antenna support structures or other suitable structure can accommodate the applicant’s proposed antenna. Evidence submitted to demonstrate that no existing antenna support structure or other structure can accommodate the applicant’s proposed antenna may consist of any of the following:
 - a. No existing antenna support structure or other suitable structures are located within the geographic area required to meet the applicant’s engineering requirements;
 - b. Existing antenna support structures or other suitable structures are not of sufficient height to meet applicant’s requirements;
 - c. Existing antenna support structures or other suitable structures are no of sufficient structural strength to support the applicant’s proposed antenna related equipment;
 - d. The applicant’s proposed antenna would cause electromagnetic interference with the antenna on the existing antenna support structure or other suitable structure, or the

- antenna on the existing antenna support structure would cause interference with the applicant's proposed antenna;
- e. The fees, cost or contractual provisions required by the applicant in order to share an existing antenna support structure or other structure or to adapt such structure for sharing are unreasonable. Costs exceeding a new antenna support structure are presumed to be unreasonable.
 - f. The applicant demonstrates that there are other limiting factors that render existing antenna support structures or other structures unsuitable.

The Applicant provided a Propagation Study prepared by a Professional Engineer, licensed in the State of Florida, to justify the need to construct the Tower. RF Engineering provided coverage predictions showing a lack of adequate coverage in the target area without the proposed site. The Study confirmed that there are no other viable alternative sites that will provide the coverage required by T-Mobile. Additionally, RF found that there are no existing antenna support structures or other suitable structures within T-Mobile's search area to meet T-Mobile's engineering requirements. If the Site is not permitted, would cause issues with T-Mobile's existing network.

The undeveloped Site is located on the corner of N 27th Street and Avenue O. It is currently designed with a land use of C-3, General Commercial within the City of Fort Pierce, Florida. Per Section 125-187 of the City's Code, telecommunication facilities are allowed as a conditional use for antenna support structures. Therefore, the Applicant's proposal to construct a 160 ft. monopole tower is an allowed conditional use in the C-3 zoning district upon approval by the City Commission.

Monopoles towers are one of the least intrusive and easiest communication towers to erect, making them one of the most popular structures in the wireless communication industry. The monopole tower is a single sleek tubular tower with antennas mounted on the exterior of the facility. **See Figure 6.** Due to monopoles requiring smaller footprints and foundations, and being more aesthetically pleasing, wireless carriers have increasingly turned to these structures to deploy in populated areas.



FIGURE 6

The undeveloped Site upon which the proposed communications tower will sit is surrounded by R-4 zoning on three sides. The areas to the north and south are zoned R-4 and are comprised of vacant lots. To the west across N 27th Street there is a church, the House of God Church. This property is zoned R-4. The closest residential structure is 178' to the southeast of the proposed tower location. N 25th Street is to the east of the property with a vacant parcel directly across N 25th Street.

The surrounding topography is flat with a few trees in the surrounding area. There are trees located on a parcel to the north. There are no trees on the parcel to the east. To the west there is very little tree coverage and to the south the tree coverage is minimal. The location where the tower is proposed has trees located on it and we plan to keep the trees that are not within the lease area. The proposed access easement will come off N 27th Street facing the House of God Church's parking lot.

The proposed tower will not alter the development patterns in the area since the tower is considered as a low traffic generated type of use. There are no significant environmental issues associated with the Applicant's request beyond compliance with the City's Code. The proposed tower would not require water supply or water utilities. Further, no outdoor storage or solid water receptacles would be needed, and the tower would not create or emit any smoke, gas, dust or other air contaminants, noise, odors or vibrations. The construction of the proposed communication tower would not have any significant impacts on air, water or noise quality.

COMPLIANCE WITH SECTION 125-362 OF CITY'S CODE

Article VII, Division 2 of the City's Code identifies the requirements for wireless communication facility siting. The Applicant is proposing to construct a 160' monopole tower. Below outlines the required material to allow approval of the conditional use request per Section 125-362 general requirements for all antenna support structures.

- a) Antenna support structures shall be constructed in compliance with all applicable construction building codes, which shall include Electronic and Technological Industry Association standards, as amended.

This site will be constructed to comply with the existing building codes.

- b) An antenna support structure may be located on a zoning lot containing other principal uses and may be located within an area smaller than the minimum lot size of the applicable zoning district if the zoning lot within which the antenna support structure is located complies with the applicable minimal lot size for the existing principal use or is a legal nonconforming or grandfathered lot.

The proposed site is located in a C-3 Commercial zoning district and the lot is currently vacant.

- c) Unless another section of this article indicates otherwise, the area within which the antenna support structure is located shall be the area subject to the requirements of this section, rather than the entire zoning lot.

This is understood.

- d) Antenna support. Structures shall comply with the minimum setback requirements of the underlying zoning district, except that additional setbacks due to height shall not be required. Ground anchors for guyed towers shall meet the minimum setbacks for accessory structures in the underlying zoning district.

The tower will meet the setbacks required by C-3 zoning. The tower will have a 85 ft. front yard setback, a 60-ft. side yard setback, and a 525 ft. rear yard setback. There are no ground anchors or guyed wires for this site.

- e) Prior to the issuance of a building permit, the applicant shall provide evidence that the antenna support structure is in compliance with regulatory standards imposed by the FAA.

All FAA regulations have been met.

- f) No advertising shall be allowed on the antenna support structure.

This is understood.

- g) No signals, lights, or illumination shall be permitted on the antenna support structure unless required by any federal, state, or local agency, or where such lighting or illumination is part of the design of a camouflaged structure.

This is understood and all regulations will be followed.

- h) The antenna support structure site (exclusive of guyed anchors where applicable) shall be enclosed within a metal or wood fence or a wall not to exceed eight feet in height. Barbed wire may not be used. This requirement shall not apply to camouflaged structures and may be waived by the administrator for other antenna support structures if the structure is made unclimbable up to a height in excess of 20 feet.

An 8 ft. wooden fence will enclose the location for safety. Barbed wire will not be used.

- i) Landscaping shall be provided between an antenna support structure or accessory equipment building and public streets or residential parcels, in accordance with Section 125-314 and as additionally required by the following:

1. If the antenna support structure or accessory equipment building abuts the public right-of-way or residentially developed or zoned property, the antenna support structure or accessory equipment building shall be screened from such abutting use by placing the landscaping along the security fence or wall.
2. If the antenna support structure or accessory equipment building is not immediately abutting a public right-of-way or residentially developed or zoned property, the landscaping shall be provided along the boundaries of the zoning lot between the antenna support structure or accessory equipment building and the public right-of-way or residentially developed or zoned property.
3. A hedge at least six feet high shall be maintained along the entire length of the perimeter, with a tree placed every 30 linear feet, with the width of the landscaping strip not to exceed ten feet. Existing landscaping, vegetation or intervening buildings or permanent structures may be substituted in place of the landscaping otherwise required for new approval, providing there is a determination that the screening is equivalent.

A landscaping plan has been included with the zoning drawings. See L-1

- j) The only signage which may be permanently attached to any fence or wall required by this article shall be for the purpose of identifying the party responsible for the operation and maintenance of the facility, its address and telephone number, and security or safety signs.

The only signage for the area will be for required maintenance and safety of the facility.

Should you have any questions or require further information regarding our proposal, please do not hesitate to contact the undersigned.

Sincerely,

/s/ Telsula C. Morgan

Telsula C. Morgan

Monopole Tower Designs



Monopole Tower Designs



Michelle Franklin, CFA -- Saint Lucie County Property Appraiser -- All rights reserved.

Property Identification

Site Address: 1601 N 25th ST
 Sec/Town/Range: 05/35S/40E
 Parcel ID: 2404-608-0095-050-9
 Jurisdiction: Fort Pierce

Use Type: 1000
 Account #: 16766
 Map ID: 24/05N
 Zoning: General Co

Ownership

Alvin Miller
 4200 Enchanted CT
 Nashville, TN 37218

Legal Description

GARDEN CITY FARMS 05 35 40 BEG AT SE COR TRACT 48, TH RUN W 660 FT, TH N 120 FT, TH E 210 FT, TH N 45 FT, TH E 450 FT, TH S 165 FT TO POB-LESS S 25 FT OF E 100 FT AND LESS E 10 FT OF S 165 FT-

Current Values

Just/Market Value: \$83,600
 Assessed Value: \$83,600
 Exemptions: \$0
 Taxable Value: \$83,600

Property taxes are subject to change upon change of ownership.

- Past taxes are not a reliable projection of future taxes.
- The sale of a property will prompt the removal of all exemptions, assessment caps, and special classifications.

Taxes for this parcel: [SLC Tax Collector's Office](#)

Download TRIM for this parcel: [Download PDF](#)



Total Areas

Finished/Under Air (SF): 0
 Gross Sketched Area (SF): 0
 Land Size (acres): 2.19
 Land Size (SF): 95,550

Building Design Wind Speed

Occupancy Category	I	II	III & IV
Speed	140	150	160

Sources/links:

All information is believed to be correct at this time, but is subject to change and is provided without any warranty.
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March 28, 2022

VIA CERTIFIED MAIL

AT&T Wireless
712 Citrus Ave.
Fort Pierce, FL 34950

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

T-Mobile will have equipment located at the 155' RAD center. Lease space is available for future tenants & will be negotiated based on the customer's needs. Tillman offers Competitive market rates, by customer tier. Enclosed please find a copy of Tillman Infrastructure's Co-location application. If you would like to share space on the referenced communications tower, please contact the City of Fort Pierce Planning Department in writing at Attention: Lance Lilly, 100 N. U.S. Highway 1, Fort Pierce, Florida 34950, or planning_dl@cityoffortpierce.com, within 20 days of receipt of this letter. Additionally, please complete, scan & e-mail the enclosed application to Gabriel Lindsey at gilindsey@tillmaninfrastructure.com within 20 days of receipt of this letter, and advise if either of the following applies:

- a. You intend to place additional wireless communications facilities within two miles of our proposed facility; or
- b. You know of an existing building or structure that might accommodate the antennas associated with our proposed facility.

Sincerely,

DocuSigned by:

Alexander Schwartz

612B2263EB3E48C...

Alex Schwartz

VP, Business Development

aschwartz@tillmaninfrastructure.com

(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

EMCI Wireless
2530 Okeechobee Rd.
Fort Pierce, FL 34947

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Sincerely,

DocuSigned by:

Alexander Schwartz

612B2263EB3E48C...

Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Reddick Fuel
3107 Avenue M
Fort Pierce, FL 34947

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Sincerely,

DocuSigned by:

612B2263EB3E48C...

Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

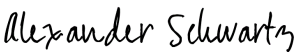
SBA Towers/site FL 014817
1111 S 27th St.
Fort Pierce, FL 34947

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Sincerely,

DocuSigned by:

612B2263EB3E48C...

Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Fort Pierce Police Department
920 S US 1
Fort Pierce, FL 34950

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Sincerely,

DocuSigned by:

612B2263EB3E48C...

Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

SLC Fire District - Chief Nate Spara
880 Seaway Dr (Fire Station #2)
Fort Pierce, FL 34949

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alexander Schwartz

612B2263EB3E48C...

Alex Schwartz

VP, Business Development

aschwartz@tillmaninfrastructure.com

(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Ft Pierce Utility Authority
1936 Harbortown Dr.
Fort Pierce, FL 34946

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


St Lucie County
6122 Glades Cut-off Rd.
Fort Pierce, FL 34981

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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612B2263EB3E48C...

Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Crown Communication, Inc
710 Avenue M

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

Indian River Community College
3209 Virginia Ave.
Fort Pierce, FL 34981

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alexander Schwartz

612B2263EB3E48C...

Alex Schwartz

VP, Business Development

aschwartz@tillmaninfrastructure.com

(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

State of Florida
3601 Oleander Ave.
Fort Pierce, FL 34982

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Sincerely,

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Alexander Schwartz

612B2263EB3E48C...

Alex Schwartz

VP, Business Development

aschwartz@tillmaninfrastructure.com

(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Pinnacle Towers LLC
3798 Selvitz Rd.
Fort Pierce, FL 34981

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

Ft Pierce Utility Authority
206 S 6th St.
Fort Pierce, FL 34950


Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

City of Ft Pierce
100 N. US Highway 1
Fort Pierce, Florida 34950

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March 28, 2022

VIA CERTIFIED MAIL

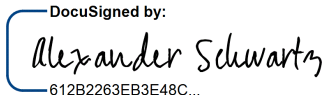
Roger Dean Buick GMC Inc
5255 S US 1
Fort Pierce, FL 34982

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

Fort Pierce Police Department
920 S US 1
Fort Pierce, FL 34950

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Alex Schwartz

VP, Business Development

aschwartz@tillmaninfrastructure.com

(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

SLC Fire District - Chief Nate Spara
2400 Rhode Island Ave (Fire Station #1)
Fort Pierce, FL 34950

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alex Schwartz

VP, Business Development

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(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

Varn Citrus
3302 Avenue C
Fort Pierce, FL 34947

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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March 28, 2022

VIA CERTIFIED MAIL

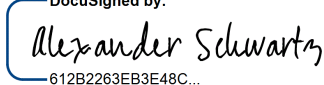
DATA FLOW SYSTEMS INC
715 S 25th St
Fort Pierce, FL 34947

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Florida Tower Partners, LLC
910 N 25th St
Fort Pierce, FL 34947

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL

Reel Telecommunication Services LLC
1501 S 31st St
Fort Pierce, FL 34947

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VP, Business Development

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(646) 354-7613



March 28, 2022

VIA CERTIFIED MAIL


Lawnwood Medical Center
1700 S 23rd St
Fort Pierce, FL 34950

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

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March 28, 2022

VIA CERTIFIED MAIL


Walmart Supercenter
5100 Okeechobee Rd.
Fort Pierce, FL 34947

Pursuant to the requirements of the City of Fort Pierce Land Development Code of Ordinances, Tillman Infrastructure is hereby providing you with notice of our intent to meet with the City of Fort Pierce Planning Department to discuss the location of a freestanding wireless communications facility that would be located at 1601 N 25th St, Fort Pierce, FL 34947 (Latitude: 27.464036, Longitude: -80.351555). We plan to construct a monopole style antenna-supporting structure of 160 feet in height for the purpose of providing wireless cellular service.

T-Mobile will have equipment located at the 155' RAD center. Lease space is available for future tenants & will be negotiated based on the customer's needs. Tillman offers Competitive market rates, by customer tier. Enclosed please find a copy of Tillman Infrastructure's Co-location application. If you would like to share space on the referenced communications tower, please contact the City of Fort Pierce Planning Department in writing at Attention: Lance Lilly, 100 N. U.S. Highway 1, Fort Pierce, Florida 34950, or planning_dl@cityoffortpierce.com, within 20 days of receipt of this letter. Additionally, please complete, scan & e-mail the enclosed application to Gabriel Lindsey at gilindsey@tillmaninfrastructure.com within 20 days of receipt of this letter, and advise if either of the following applies:

- a. You intend to place additional wireless communications facilities within two miles of our proposed facility; or
- b. You know of an existing building or structure that might accommodate the antennas associated with our proposed facility.

Sincerely,

DocuSigned by:

612B2263EB3E48C...

Alex Schwartz
VP, Business Development
aschwartz@tillmaninfrastructure.com
(646) 354-7613



ARTICLE ADDRESSED TO:

Reel Telecommunication Services LLC
1501 S 31st St
Fort Pierce FL 34947-4685

9415 5118 9956 1032 0443 59

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
Here

ARTICLE ADDRESSED TO:

Ft Pierce Utility Authority
206 S 6th St
Fort Pierce FL 34950-4222

9415 5118 9956 1035 9380 49

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

Lawwood Medical Center
1700 S 23rd St
Fort Pierce FL 34950-4803

9415 5118 9956 1032 0422 70

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

Roger Dean Buick GMC Inc
5255 S US 1
Fort Pierce FL 34982-0000

9415 5118 9956 1035 9814 39

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
Here

ARTICLE ADDRESSED TO:

Walmart Supercenter
5100 Okeechobee Rd
Fort Pierce FL 34947-5400

9415 5118 9956 1032 0405 28

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
Here

ARTICLE ADDRESSED TO:

Fort Pierce Police Department
920 S US 1
Fort Pierce FL 34950-0000

9415 5118 9956 1035 9068 21

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

Florida Tower Partners%2C LLC
1001 3rd Ave W Ste 420
Bradenton FL 34205-7873

9415 5118 9956 1032 3747 46

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

SLC Fire District - Chief Nate Spira
2400 Rhode Island Ave (Fire Station #1)
Fort Pierce FL 34950-0000

9415 5118 9956 1035 9011 92

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

City of Ft Pierce
100 N Us Highway 1
Fort Pierce FL 34950-4205

9415 5118 9956 1032 3778 30

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

Varn Citrus
3302 Avenue C
Fort Pierce FL 34947-2535

9415 5118 9956 1032 0391 88

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
Here

ARTICLE ADDRESSED TO:

Crown Communication%2C Inc
8000 Avalon Blvd
Alpharetta GA 30009-2467

9415 5118 9956 1032 3559 29

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
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ARTICLE ADDRESSED TO:

DATA FLOW SYSTEMS INC
715 S 25th St
Fort Pierce FL 34947-3618

9415 5118 9956 1032 0347 18

CERTIFIED MAIL
TRACKING NUMBER

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

Post Mark
Here

RECEIPT

9415 5118 9956 1035 9209 02

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
AT&T Wireless
712 Citrus Ave
Fort Pierce FL 34950-8549

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
SLC Fire District - Chief Nate Spara
880 Seaway Dr (Fire Station #2)
Fort Pierce FL 34949-0000

9415 5118 9956 1035 9511 73

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
Ft Pierce Utility Authority
1936 Harbortown Dr
Fort Pierce FL 34946-1446

9415 5118 9956 1035 9651 32

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
St Lucie County
6122 Glades Cut Off Rd
Fort Pierce FL 34981-4301

9415 5118 9956 1035 9684 85

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
Indian River Community College
3209 Virginia Ave
Fort Pierce FL 34981-5541

9415 5118 9956 1035 9892 99

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
St. Lucie County
3601 Oleander Ave
Fort Pierce FL 34982-6501

9415 5118 9956 1035 9849 80

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
Pinnacle Towers LLC
3798 Selvitz Rd
Fort Pierce FL 34981-4723

9415 5118 9956 1035 9922 83

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
EMCI Wireless
2530 Okeechobee Rd
Fort Pierce FL 34947-4609

9415 5118 9956 1035 9592 30

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
Reddick Fuel
3107 Avenue M
Fort Pierce FL 34947-1924

9415 5118 9956 1035 9531 77

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
SBA Towers/site FL 014817
1111 S 27th St
Fort Pierce FL 34947-4690

9415 5118 9956 1035 9550 72

CERTIFIED MAIL
TRACKING NUMBER

Post Mark
Here

FEES
Postage Per Piece \$2,380
Certified Fee \$3,750
Return Receipt Fee 3,050
Total Postage & Fees \$9,180

ARTICLE ADDRESSED TO:
Fort Pierce Police Department
920 S US 1
Fort Pierce FL 34950-1100

9415 5118 9956 1035 9507 94

CERTIFIED MAIL
TRACKING NUMBER

This Document Prepared By and Return to:
Elizabeth Moran
St. Lucie Title Services, Inc.
800 Virginia Ave., Suite 47
Fort Pierce, FL 34982

Parcel ID Number: 2404-608-0095-050/9

Warranty Deed

This Indenture, Made this 13th day of September, 2019 A.D., Between
Donald Scott and Gloria M. Johnson Scott, husband and wife

of the County of St. Lucie, State of Florida, grantors, and
Alvin Miller

whose address is: 4200 Enchanted Court, Nashville, TN 37218

of the County of Davidson, State of Tennessee, grantee.

Witnesseth that the GRANTORS, for and in consideration of the sum of

-----TEN DOLLARS (\$10)----- DOLLARS,
and other good and valuable consideration to GRANTORS in hand paid by GRANTEE, the receipt whereof is hereby acknowledged, have
granted, bargained and sold to the said GRANTEE and GRANTEE'S heirs, successors and assigns forever, the following described land, situate,
lying and being in the County of St. Lucie State of Florida to wit:

Begin at the Southeast corner of Tract 48 of Garden City Farms,
according to the Plat thereof as recorded in Plat Book 2, Page 5, of
the Public Records of St. Lucie County, Florida; and run West 660
feet, more or less, to the Southwest corner of said Tract 48; thence
run North 120 feet; East 210 feet; North 45 feet; thence East 450
feet to East line of said Tract 48; thence South 165 feet to the
Point of Beginning. Less the South 25 feet of the East 100 Feet and
less the East 10 feet of the South 165 feet.

and the grantors do hereby fully warrant the title to said land, and will defend the same against lawful claims of all persons whomsoever.

In Witness Whereof, the grantors have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in our presence:

Elizabeth Moran
Printed Name: Elizabeth MORAN
Witness

Donald Scott (Seal)
Donald Scott
P.O. Address: 1511 N 25th Street, Fort Pierce, FL 34947

Alvin Miller
Printed Name: Alvin Miller
Witness

Gloria M. Johnson Scott (Seal)
Gloria M. Johnson Scott
P.O. Address: 1511 N 25th Street, Fort Pierce, FL 34947

STATE OF Florida
COUNTY OF St. Lucie

The foregoing instrument was acknowledged before me this 13th day of September, 2019 by
Donald Scott and Gloria M. Johnson Scott, husband and wife

who are personally known to me or who have produced their Florida driver's license as identification.



Elizabeth Moran
Printed Name: Elizabeth MORAN
Notary Public
My Commission Expires: 3/6/2020

January 24, 2022

Eumie Rosicclair
Project Controls Coordinator
Tillman Infrastructure
299 Market St
Saddle Brook, NJ 07663

RE: Proposed 160' Monopole for TI-OPP-19131, FL

Dear Ms. Rosicclair,

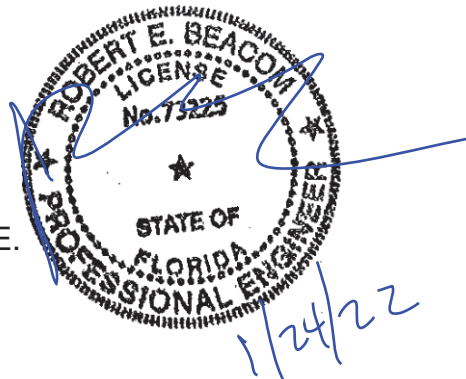
Upon receipt of order, we propose to design and supply the above referenced tower for a Basic Wind Speed of 158 mph with no ice, Risk Category II, Exposure Category C, and Topographic Category 1, in accordance with the Telecommunications Industry Association Standard ANSI/TIA-222-H, "Structural Standard for Antenna Supporting Structures and Antennas".

When designed according to this standard, the wind pressures and steel strength capacities include several safety factors, resulting in an overall minimum safety factor of 25%. Therefore, it is highly unlikely that the monopole will fail structurally in a wind event where the design wind speed is exceeded within the range of the built-in safety factors.

Should the wind speed increase beyond the capacity of the built-in safety factors, to the point of failure of one or more structural elements, the most likely location of the failure would be within the monopole shaft, above the base plate. Assuming that the wind pressure profile is similar to that used to design the monopole, the monopole will buckle at the location of the highest combined stress ratio within the monopole shaft. This is likely to result in the portion of the monopole above leaning over and remaining in a permanently deformed condition. *Please note that this letter only applies to the above referenced monopole designed and manufactured by Sabre Towers & Poles.* This would effectively result in a fall zone within a 60' x 60' lease area at ground level.

Sincerely,

Robert E. Beacom, P.E., S.E.
Engineering Manager





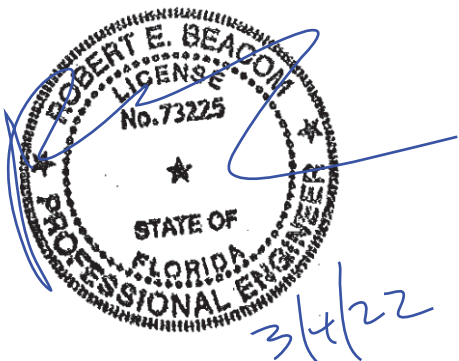
Structural Design Report
160' Monopole
Site: TI-OPP-19131, FL

Prepared for: TILLMAN INFRASTRUCTURE, LLC
by: Sabre Industries™

Job Number: 22-5020-TJH

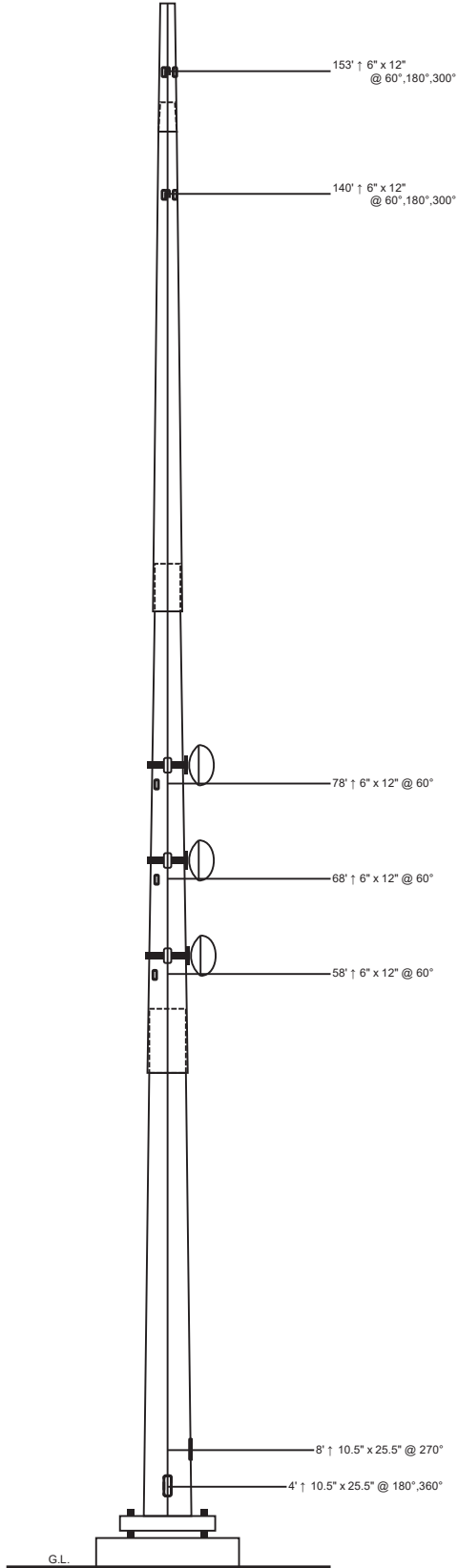
March 4, 2022

Monopole Profile.....	1
Foundation Design Summary (Option 1).....	2
Foundation Design Summary (Option 2).....	3
Pole Calculations.....	4-17
Foundation Calculations.....	18-27



This item has been digitally signed and sealed by Robert Beacom on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Length (ft)	53'-3"	53'-6"	53'-6"	13'-6"
Number Of Sides	18	18	18	18
Thickness (in)	1/2"	7/16"	3/8"	1/4"
Lap Splice (ft)	6'-9"	6'-0"	5'-0"	A
Top Diameter (in)	45.76"	33.2"	20.02"	17.5"
Bottom Diameter (in)	61.06"	48.57"	35.38"	21.38"
Taper (in/ft)	18.107	0.2873		
Grade		A572-65		
Weight (lbs)		10934	6365	829
Overall Steel Height (ft)		159		



Designed Appurtenance Loading

Elev	Description	Tx-Line
155	(1) 278 sq. ft. EPA 6000# (no Ice)	(9) 1 1/4"
143	(1) 208 sq. ft. EPA 4000# (no ice)	(9) 1 1/4"
80	(1) Dish Mount (Monopole Only) - Pipe Mount (up to 6' Dish)	
80	(1) 4' Solid Dish w/ Radome	(1) 1 1/4"
70	(1) Dish Mount (Monopole Only) - Pipe Mount (up to 6' Dish)	
70	(1) 4' Solid Dish w/ Radome	(1) 1 1/4"
60	(1) Dish Mount (Monopole Only) - Pipe Mount (up to 6' Dish)	
60	(1) 4' Solid Dish w/ Radome	(1) 1 1/4"

Design Criteria - ANSI/TIA-222-H

Wind Speed (No Ice)	158 mph
Wind Speed (Ice)	30 mph
Design Ice Thickness	0.00 in
Risk Category	II
Exposure Category	B
Topographic Factor Procedure	Method 1 (Simplified)
Topographic Category	1
Ground Elevation	18 ft
Seismic Importance Factor, Ie	1.00
0.2-sec Spectral Response, Ss	0.05 g
1-sec Spectral Response, S1	0.028 g
Site Class	D
Seismic Design Category	A
Basic Seismic Force-Resisting System	Telecommunication Tower (Pole: Steel)

Limit State Load Combination Reactions

Load Combination	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
1.2 D + 1.0 Wo	53.64	57.95	7173.5	14.41	10.93
0.9 D + 1.0 Wo	40.28	57.85	7094.15	14.2	10.77
1.2 D + 1.0 Ev + 1.0 Eh	55.7	1.37	185.96	0.38	0.28
0.9 D - 1.0 Ev + 1.0 Eh	40.92	1.38	185.38	0.38	0.28
1.0 D + 1.0 Wo (Service @ 60 mph)	44.6	7.5	932.14	1.93	1.44

Base Plate Dimensions

Shape	Diameter	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Round	74"	2.5"	68.25"	24	2.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	2906.4	A615-75	Galv

Material List

Display	Value
A	3' - 0"

Notes

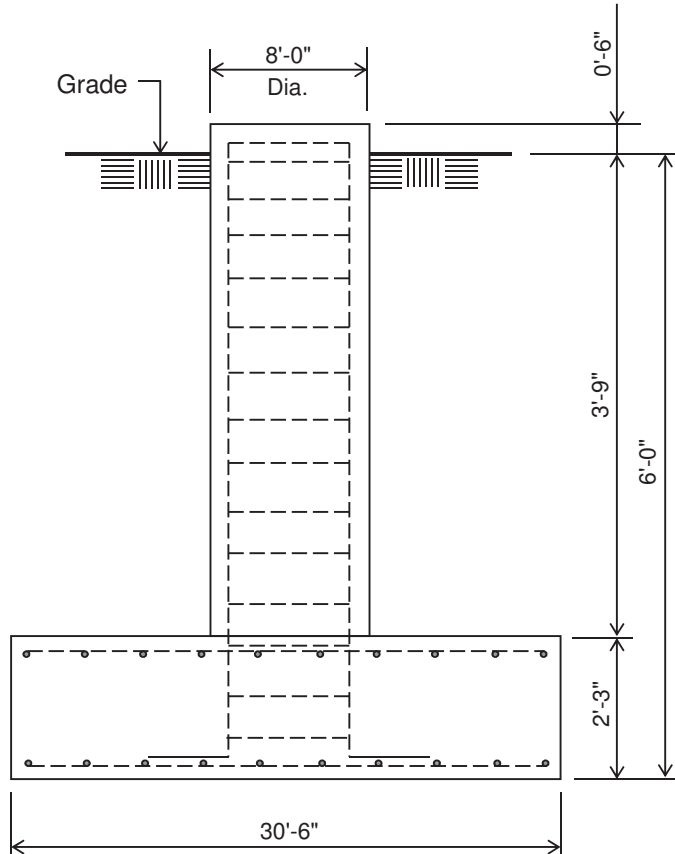
- 1) Antenna Feed Lines Run Inside Pole
- 2) All dimensions are above ground level, unless otherwise specified.
- 3) Weights shown are estimates. Final weights may vary.
- 4) Full Height Step Bolts
- 5) This tower design and, if applicable, the foundation design(s) shown on the following page(s) also meet or exceed the requirements of the 2020 Florida Building Code.
- 6) Tower Rating: 99.7%

 <p>Sabre Industries 7101 Southbridge Drive P.O. Box 658 Sioux City, IA 51102-0658 Phone: (712) 258-6690 Fax: (712) 279-0814</p> <p><small>Information contained herein is the sole property of Sabre Communications Corporation, constitutes a trade secret as defined by Iowa Code Ch. 550 and shall not be reproduced, copied or used in whole or part for any purpose whatsoever without the prior written consent of Sabre Communications Corporation.</small></p>	Job:	22-5020-TJH	
	Customer:	TILLMAN INFRASTRUCTURE, LLC	
	Site Name:	TI-OPP-19131, FL	
	Description:	160' Monopole	
	Date:	3/4/2022	By: REB

Customer: TILLMAN INFRASTRUCTURE, LLC

Site: TI-OPP-19131, FL

160' Monopole



ELEVATION VIEW

(85.43 Cu. Yds.)

(1 REQUIRED; NOT TO SCALE)

Notes:

- 1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-14.
- 2) Rebar to conform to ASTM specification A615 Grade 60.
- 3) All rebar to have a minimum of 3" concrete cover.
- 4) All exposed concrete corners to be chamfered 3/4".
- 5) The foundation design is based on the geotechnical report by ECA project no. 22-000422, dated: 2/25/22.
- 6) See the geotechnical report for compaction requirements, if specified.
- 7) 3.75 ft of soil cover is required over the entire area of the foundation slab.
- 8) This foundation is designed for an increase in base reactions of 10%.
- 9) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.

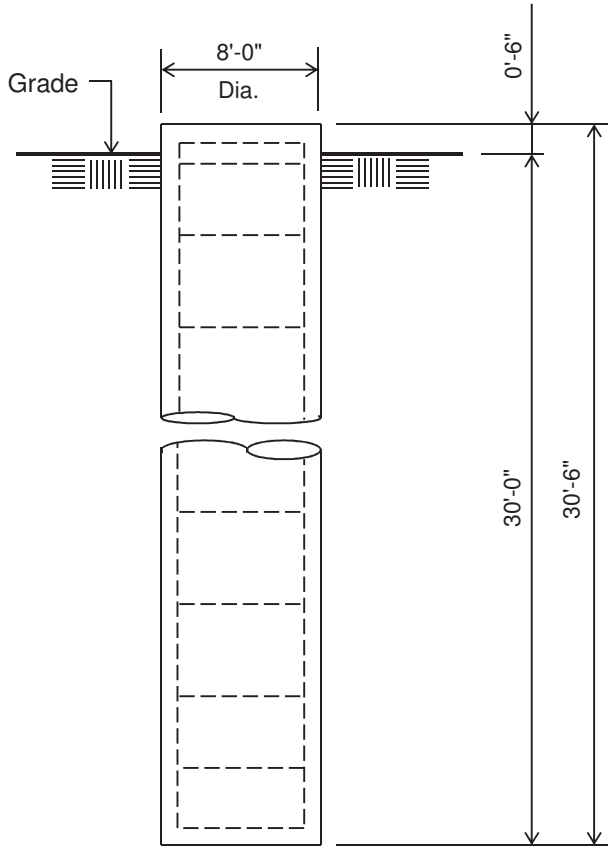
Rebar Schedule for Pad and Pier

Pier	(50) #11 vertical rebar w/ hooks at bottom w/ #5 ties, (2) within top 5" of pier, then 4" C/C
Pad	(42) #10 horizontal rebar evenly spaced each way top and bottom (168 total)

Customer: TILLMAN INFRASTRUCTURE, LLC

Site: TI-OPP-19131, FL

160' Monopole



ELEVATION VIEW

(56.78 Cu. Yds.)

(1 REQUIRED; NOT TO SCALE)

Notes:

- 1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-14.
- 2) Rebar to conform to ASTM specification A615 Grade 60.
- 3) All rebar to have a minimum of 3" concrete cover.
- 4) All exposed concrete corners to be chamfered 3/4".
- 5) The foundation design is based on the geotechnical report by ECA project no. 22-000422, dated: 2/25/22.
- 6) See the geotechnical report for drilled pier installation requirements, if specified.
- 7) This foundation is designed for an increase in base reactions of 10%.
- 8) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.

Rebar Schedule for Pier	
Pier	(50) #11 vertical rebar w/ #5 ties, (2) within top 5" of pier, then 7" C/C

Tel: (416) 736-7453 Fax: (416) 736-4372 Web: www.guymast.com

Processed under license at:

Sabre Towers and Poles on: 4 mar 2022 at: 14:09:16
 =====

160' Monopole / TI-OPP-19131, FL

* All pole diameters shown on the following pages are across corners.
 See profile drawing for widths across flats.

POLE GEOMETRY
 =====

ELEV	SECTION	No.	OUTSIDE	THICK	RESISTANCES		SPLICE	..OVERLAP..		w/t
ft	NAME	SIDE	DIAM	-NESS	*Pn	*Mn	TYPE	LENGTH	RATIO	
			in	in	kip	ft-kip		ft		
159.0	A	18	17.77	0.250	1016.9	358.5				11.1
			20.83	0.250	1194.3	495.5				
148.5	A/B	18	20.83	0.250	1194.3	495.5	SLIP	3.00	1.72	
			21.21	0.375	1813.8	757.6				
145.5	B	18	21.21	0.375	1813.8	757.6				8.9
			34.46	0.375	2968.1	2042.5				
100.0	B/C	18	34.46	0.375	2968.1	2042.5	SLIP	5.00	1.73	
			35.18	0.438	3529.5	2471.8				
95.0	C	18	35.18	0.438	3529.5	2471.8				13.1
			47.34	0.438	4635.0	4395.9				
53.2	C/D	18	47.34	0.438	4635.0	4395.9	SLIP	6.75	1.70	
			48.45	0.500	5565.9	5390.5				
46.5	D	18	48.45	0.500	5565.9	5390.5				16.0
			62.00	0.500	6660.6	8293.1				
0.0										

POLE ASSEMBLY
 =====

SECTION	BASE	.....BOLTS AT BASE OF SECTION.....				CALC
NAME	ELEV	NUMBER	TYPE	DIAM	STRENGTH	BASE
	ft			in	ksi	ELEV
						ft
A	145.500	0	A325	0.00	92.0	145.500
B	95.000	0	A325	0.00	92.0	95.000
C	46.500	0	A325	0.00	92.0	46.500
D	0.000	0	A325	0.00	92.0	0.000

POLE SECTIONS
 =====

SECTION	No. of	LENGTH	OUTSIDE DIAMETER		BEND	MAT-	FLANGE ID		FLANGE WELD	
NAME	SIDES		BOT	TOP	RAD	ERIAL	BOT	TOP	..GROUP.ID..	
		ft	*	*	in	ID			BOT	TOP
			in	in						
A	18	13.50	21.71	17.77	0.625	1	0	0	0	0
B	18	53.50	35.93	20.33	0.625	2	0	0	0	0
C	18	53.50	49.32	33.71	0.625	3	0	0	0	0
D	18	53.25	62.00	46.46	0.625	4	0	0	0	0

* - Diameter of circumscribed circle

MATERIAL TYPES

=====

TYPE OF SHAPE	TYPE NO	NO OF ELEM.	ORIENT	HEIGHT	WIDTH	.THICKNESS.		IRREGULARITY	
			& deg	in	in	WEB	FLANGE	PROJECTION. % OF AREA	ORIENT deg
PL	1	1	0.0	21.71	0.25	0.250	0.250	0.00	0.0
PL	2	1	0.0	35.93	0.38	0.375	0.375	0.00	0.0
PL	3	1	0.0	49.32	0.44	0.438	0.438	0.00	0.0
PL	4	1	0.0	62.00	0.50	0.500	0.500	0.00	0.0

& - With respect to vertical

MATERIAL PROPERTIES

=====

MATERIAL TYPE NO.	ELASTIC MODULUS ksi	UNIT WEIGHT pcf	.. STRENGTH ..		THERMAL COEFFICIENT /deg
			Fu ksi	Fy ksi	
1	29000.0	490.0	80.0	65.0	0.00001170
2	29000.0	490.0	80.0	65.0	0.00001170
3	29000.0	490.0	80.0	65.0	0.00001170
4	29000.0	490.0	80.0	65.0	0.00001170

* Only 4 condition(s) shown in full

* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

LOADING CONDITION A

158 mph wind with no ice. Wind Azimuth: 0° (1.2 D + 1.0 Wo)

LOADS ON POLE

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LOAD TYPE	ELEV ft	APPLY. RADIUS ft	LOAD. AT AZI	LOAD AZI FORCES MOMENTS	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	155.000	0.00	0.0	0.0	0.0546	0.0168	0.0000	0.0000
C	154.000	0.00	0.0	0.0	0.0000	1.0977	0.0000	0.0000
C	154.000	0.00	0.0	0.0	20.7812	7.2000	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0535	0.0168	0.0000	0.0000
C	142.000	0.00	0.0	0.0	0.0000	1.0122	0.0000	0.0000
C	142.000	0.00	0.0	0.0	15.2814	4.8366	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0525	0.0168	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0513	0.0168	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0501	0.0168	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0488	0.0168	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0474	0.0168	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0460	0.0168	0.0000	0.0000
C	79.000	0.00	0.0	0.0	0.0000	0.0626	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0443	0.0168	0.0000	0.0000
C	69.000	0.00	0.0	0.0	0.0000	0.0546	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0426	0.0168	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0000	0.0467	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0406	0.0168	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0383	0.0168	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0357	0.0168	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0341	0.0168	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0341	0.0168	0.0000	0.0000
D	159.000	0.00	180.0	0.0	0.0722	0.0576	0.0000	0.0000
D	148.500	0.00	180.0	0.0	0.0792	0.0640	0.0000	0.0000
D	148.500	0.00	180.0	0.0	0.0824	0.1651	0.0000	0.0000
D	145.500	0.00	180.0	0.0	0.0824	0.1651	0.0000	0.0000
D	145.500	0.00	180.0	0.0	0.0891	0.1106	0.0000	0.0000
D	130.333	0.00	180.0	0.0	0.0891	0.1106	0.0000	0.0000

D	130.333	0.00	180.0	0.0	0.1024	0.1315	0.0000	0.0000
D	115.167	0.00	180.0	0.0	0.1024	0.1315	0.0000	0.0000
D	115.167	0.00	180.0	0.0	0.1144	0.1524	0.0000	0.0000
D	100.000	0.00	180.0	0.0	0.1144	0.1524	0.0000	0.0000
D	100.000	0.00	180.0	0.0	0.1214	0.3565	0.0000	0.0000
D	95.000	0.00	180.0	0.0	0.1214	0.3565	0.0000	0.0000
D	95.000	0.00	180.0	0.0	0.1246	0.2055	0.0000	0.0000
D	81.083	0.00	180.0	0.0	0.1246	0.2055	0.0000	0.0000
D	81.083	0.00	180.0	0.0	0.1317	0.2280	0.0000	0.0000
D	67.167	0.00	180.0	0.0	0.1317	0.2280	0.0000	0.0000
D	67.167	0.00	180.0	0.0	0.1364	0.2504	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.1364	0.2504	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.1380	0.5671	0.0000	0.0000
D	46.500	0.00	180.0	0.0	0.1380	0.5671	0.0000	0.0000
D	46.500	0.00	180.0	0.0	0.1352	0.3169	0.0000	0.0000
D	34.875	0.00	180.0	0.0	0.1352	0.3169	0.0000	0.0000
D	34.875	0.00	180.0	0.0	0.1315	0.3384	0.0000	0.0000
D	23.250	0.00	180.0	0.0	0.1315	0.3384	0.0000	0.0000
D	23.250	0.00	180.0	0.0	0.1396	0.3598	0.0000	0.0000
D	11.625	0.00	180.0	0.0	0.1396	0.3598	0.0000	0.0000
D	11.625	0.00	180.0	0.0	0.1479	0.3813	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.1479	0.3813	0.0000	0.0000

ANTENNA LOADING

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..... ANTENNA	ATTACHMENT			 ANTENNA FORCES			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
STD+R	59.0	0.0	2.6	0.0	0.62	0.00	0.16	0.00
STD+R	69.0	0.0	2.5	0.0	0.65	0.00	0.16	0.00
STD+R	79.0	0.0	2.3	0.0	0.67	0.00	0.16	0.00

=====

LOADING CONDITION M

158 mph wind with no ice. Wind Azimuth: 0° (0.9 D + 1.0 Wo)

LOADS ON POLE

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LOAD	ELEV	APPLY.	LOAD.	AT	LOAD FORCES MOMENTS	
TYPE	ft	RADIUS	ft	AZI	AZI	HORIZ	DOWN	VERTICAL	TORSNAL
						kip	kip	ft-kip	ft-kip
C	155.000	0.00	0.0	0.0	0.0	0.0546	0.0126	0.0000	0.0000
C	154.000	0.00	0.0	0.0	0.0	0.0000	0.8233	0.0000	0.0000
C	154.000	0.00	0.0	0.0	0.0	20.7812	5.4000	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0	0.0535	0.0126	0.0000	0.0000
C	142.000	0.00	0.0	0.0	0.0	0.0000	0.7591	0.0000	0.0000
C	142.000	0.00	0.0	0.0	0.0	15.2814	3.6274	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0	0.0525	0.0126	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0	0.0513	0.0126	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0	0.0501	0.0126	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0	0.0488	0.0126	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0	0.0474	0.0126	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0	0.0460	0.0126	0.0000	0.0000
C	79.000	0.00	0.0	0.0	0.0	0.0000	0.0469	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0	0.0443	0.0126	0.0000	0.0000
C	69.000	0.00	0.0	0.0	0.0	0.0000	0.0410	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0	0.0426	0.0126	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0	0.0000	0.0350	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0	0.0406	0.0126	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0	0.0383	0.0126	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0	0.0357	0.0126	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0	0.0341	0.0126	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0	0.0341	0.0126	0.0000	0.0000
D	159.000	0.00	180.0	0.0	0.0	0.0722	0.0432	0.0000	0.0000
D	148.500	0.00	180.0	0.0	0.0	0.0792	0.0480	0.0000	0.0000
D	148.500	0.00	180.0	0.0	0.0	0.0824	0.1238	0.0000	0.0000
D	145.500	0.00	180.0	0.0	0.0	0.0824	0.1238	0.0000	0.0000
D	145.500	0.00	180.0	0.0	0.0	0.0891	0.0829	0.0000	0.0000
D	130.333	0.00	180.0	0.0	0.0	0.0891	0.0829	0.0000	0.0000
D	130.333	0.00	180.0	0.0	0.0	0.1024	0.0986	0.0000	0.0000
D	115.167	0.00	180.0	0.0	0.0	0.1024	0.0986	0.0000	0.0000
D	115.167	0.00	180.0	0.0	0.0	0.1144	0.1143	0.0000	0.0000

D	100.000	0.00	180.0	0.0	0.1144	0.1143	0.0000	0.0000
D	100.000	0.00	180.0	0.0	0.1214	0.2674	0.0000	0.0000
D	95.000	0.00	180.0	0.0	0.1214	0.2674	0.0000	0.0000
D	95.000	0.00	180.0	0.0	0.1246	0.1542	0.0000	0.0000
D	81.083	0.00	180.0	0.0	0.1246	0.1542	0.0000	0.0000
D	81.083	0.00	180.0	0.0	0.1317	0.1710	0.0000	0.0000
D	67.167	0.00	180.0	0.0	0.1317	0.1710	0.0000	0.0000
D	67.167	0.00	180.0	0.0	0.1364	0.1878	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.1364	0.1878	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.1380	0.4253	0.0000	0.0000
D	46.500	0.00	180.0	0.0	0.1380	0.4253	0.0000	0.0000
D	46.500	0.00	180.0	0.0	0.1352	0.2377	0.0000	0.0000
D	34.875	0.00	180.0	0.0	0.1352	0.2377	0.0000	0.0000
D	34.875	0.00	180.0	0.0	0.1315	0.2538	0.0000	0.0000
D	23.250	0.00	180.0	0.0	0.1315	0.2538	0.0000	0.0000
D	23.250	0.00	180.0	0.0	0.1396	0.2699	0.0000	0.0000
D	11.625	0.00	180.0	0.0	0.1396	0.2699	0.0000	0.0000
D	11.625	0.00	180.0	0.0	0.1479	0.2860	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.1479	0.2860	0.0000	0.0000

ANTENNA LOADING

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..... ANTENNA	ATTACHMENT			 ANTENNA FORCES			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
STD+R	59.0	0.0	2.6	0.0	0.62	0.00	0.12	0.00
STD+R	69.0	0.0	2.5	0.0	0.65	0.00	0.12	0.00
STD+R	79.0	0.0	2.3	0.0	0.67	0.00	0.12	0.00

LOADING CONDITION Y

Seismic - Azimuth: 0° (1.2 D + 1.0 Ev + 1.0 Eh)

LOADS ON POLE

=====

LOAD	ELEV	APPLY..	LOAD..	AT	LOAD	..... FORCES .....		..... MOMENTS	
TYPE	ft	RADIUS	ft	AZI	AZI	HORIZ	DOWN	VERTICAL	TORSNAL
						kip	kip	ft-kip	ft-kip
C	155.000	0.00	0.0	0.0	0.0	0.0010	0.0169	0.0000	0.0000
C	154.000	0.00	0.0	0.0	0.0	0.0676	1.1075	0.0000	0.0000
C	154.000	0.00	0.0	0.0	0.0	0.4434	7.2636	0.0000	0.0000
C	152.250	0.00	0.0	0.0	0.0	0.0504	0.8443	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0	0.0009	0.0169	0.0000	0.0000
C	142.000	0.00	0.0	0.0	0.0	0.0530	1.0211	0.0000	0.0000
C	142.000	0.00	0.0	0.0	0.0	0.2532	4.8793	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0	0.0008	0.0169	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0	0.0007	0.0169	0.0000	0.0000
C	121.750	0.00	0.0	0.0	0.0	0.2729	7.1517	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0	0.0006	0.0169	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0	0.0005	0.0169	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0	0.0004	0.0169	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0	0.0003	0.0169	0.0000	0.0000
C	79.000	0.00	0.0	0.0	0.0	0.0102	0.6380	0.0000	0.0000
C	79.000	0.00	0.0	0.0	0.0	0.0010	0.0631	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0	0.0002	0.0169	0.0000	0.0000
C	73.250	0.00	0.0	0.0	0.0	0.1705	12.3474	0.0000	0.0000
C	69.000	0.00	0.0	0.0	0.0	0.0102	0.8293	0.0000	0.0000
C	69.000	0.00	0.0	0.0	0.0	0.0007	0.0551	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0	0.0002	0.0169	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0	0.0074	0.8293	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0	0.0004	0.0471	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0	0.0001	0.0169	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0	0.0001	0.0169	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0	0.0001	0.0169	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0	0.0335	18.3723	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0	0.0000	0.0169	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0	0.0000	0.0169	0.0000	0.0000
D	159.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000	0.0000
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000	0.0000

ANTENNA LOADING

=====

..... ANTENNA	ATTACHMENT				..... ANTENNA FORCES			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
STD+R	59.0	0.0	2.6	0.0	0.00	0.00	0.00	0.00
STD+R	69.0	0.0	2.5	0.0	0.00	0.00	0.00	0.00
STD+R	79.0	0.0	2.3	0.0	0.00	0.00	0.00	0.00

=====
LOADING CONDITION Z =====

Seismic - Azimuth: 0° (0.9 D - 1.0 Ev + 1.0 Eh)

LOADS ON POLE
=====

LOAD	ELEV	APPLY	LOAD	AT	LOAD FORCES MOMENTS	
TYPE	ft	RADIUS	AZI	AZI		HORIZ	DOWN	VERTICAL	TORSNAL
		ft				kip	kip	ft-kip	ft-kip
C	155.000	0.00	0.0	0.0	0.0010	0.0125	0.0000	0.0000	
C	154.000	0.00	0.0	0.0	0.0676	0.8136	0.0000	0.0000	
C	154.000	0.00	0.0	0.0	0.4434	5.3364	0.0000	0.0000	
C	152.250	0.00	0.0	0.0	0.0504	0.6203	0.0000	0.0000	
C	145.000	0.00	0.0	0.0	0.0009	0.0125	0.0000	0.0000	
C	142.000	0.00	0.0	0.0	0.0530	0.7502	0.0000	0.0000	
C	142.000	0.00	0.0	0.0	0.2532	3.5848	0.0000	0.0000	
C	135.000	0.00	0.0	0.0	0.0008	0.0125	0.0000	0.0000	
C	125.000	0.00	0.0	0.0	0.0007	0.0125	0.0000	0.0000	
C	121.750	0.00	0.0	0.0	0.2729	5.2542	0.0000	0.0000	
C	115.000	0.00	0.0	0.0	0.0006	0.0125	0.0000	0.0000	
C	105.000	0.00	0.0	0.0	0.0005	0.0125	0.0000	0.0000	
C	95.000	0.00	0.0	0.0	0.0004	0.0125	0.0000	0.0000	
C	85.000	0.00	0.0	0.0	0.0003	0.0125	0.0000	0.0000	
C	79.000	0.00	0.0	0.0	0.0102	0.4687	0.0000	0.0000	
C	79.000	0.00	0.0	0.0	0.0010	0.0463	0.0000	0.0000	
C	75.000	0.00	0.0	0.0	0.0002	0.0125	0.0000	0.0000	
C	73.250	0.00	0.0	0.0	0.1705	9.0714	0.0000	0.0000	
C	69.000	0.00	0.0	0.0	0.0102	0.6092	0.0000	0.0000	
C	69.000	0.00	0.0	0.0	0.0007	0.0404	0.0000	0.0000	
C	65.000	0.00	0.0	0.0	0.0002	0.0125	0.0000	0.0000	
C	59.000	0.00	0.0	0.0	0.0074	0.6092	0.0000	0.0000	
C	59.000	0.00	0.0	0.0	0.0004	0.0346	0.0000	0.0000	
C	55.000	0.00	0.0	0.0	0.0001	0.0125	0.0000	0.0000	
C	45.000	0.00	0.0	0.0	0.0001	0.0125	0.0000	0.0000	
C	35.000	0.00	0.0	0.0	0.0001	0.0125	0.0000	0.0000	
C	26.620	0.00	0.0	0.0	0.0335	13.4977	0.0000	0.0000	
C	25.000	0.00	0.0	0.0	0.0000	0.0125	0.0000	0.0000	
C	15.000	0.00	0.0	0.0	0.0000	0.0125	0.0000	0.0000	
D	159.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000	
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000	

ANTENNA LOADING
=====

..... ANTENNA	ATTACHMENT				..... ANTENNA FORCES			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip
STD+R	59.0	0.0	2.6	0.0	0.00	0.00	0.00	0.00
STD+R	69.0	0.0	2.5	0.0	0.00	0.00	0.00	0.00
STD+R	79.0	0.0	2.3	0.0	0.00	0.00	0.00	0.00

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MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

MAST ELEV ft	DEFLECTIONS (ft)			ROTATIONS (deg)		
	HORIZONTAL ALONG	ACROSS	DOWN	TILT ALONG	ACROSS	TWIST
159.0	14.41G	-0.09W	1.92G	10.93D	-0.06W	-0.01I
155.5	13.76G	-0.09W	1.80G	10.93D	-0.06W	-0.01I
152.0	13.12G	-0.08W	1.67G	10.91D	-0.06W	-0.01I
148.5	12.48G	-0.08W	1.55G	10.81D	-0.06W	-0.01I
145.5	11.94G	-0.08W	1.45G	10.70D	-0.06W	-0.01I
130.3	9.31G	-0.06W	0.98G	9.68G	-0.06W	-0.01I
115.2	7.00B	-0.05W	0.62G	8.19G	-0.05W	-0.01I
100.0	5.07B	-0.03W	0.37B	6.64G	-0.04W	-0.01I
95.0	4.51B	-0.03W	0.31B	6.22G	-0.04W	-0.01I
81.1	3.16B	-0.02W	0.17B	5.01B	-0.03W	-0.01I
67.2	2.09B	-0.01W	0.09B	3.90B	-0.03W	-0.01I
53.2	1.27B	-0.01W	0.04B	2.89B	-0.02W	0.00I
46.5	0.96B	-0.01W	0.03B	2.48B	-0.02W	0.00I
34.9	0.52B	0.00W	0.01B	1.79B	-0.01W	0.00I
23.2	0.23B	0.00W	0.00B	1.15B	-0.01W	0.00I
11.6	0.06B	0.00W	0.00B	0.55B	0.00W	0.00I
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS

ELEV ft	ANT AZI deg	ANT TYPE	BEAM DEFLECTIONS (deg)			
			ROLL	YAW	PITCH	TOTAL
79.0	0.0	STD+R	4.831 D	0.179 L	-4.842 G	4.842 G
69.0	0.0	STD+R	4.033 D	0.126 W	-4.044 G	4.044 G
59.0	0.0	STD+R	3.291 D	0.084 W	-3.302 G	3.302 G

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION ft-kip
		ALONG kip	ACROSS kip	ALONG ft-kip	ACROSS ft-kip	
159.0	0.02 V	-0.04 R	0.03 I	-0.11 P	0.06 I	-0.01 I
155.5	0.22 I	0.29 G	0.03 I	-0.57 C	-0.06 I	0.01 I
152.0	0.24 P	0.50 R	0.13 U	-0.61 C	-0.12 W	0.02 W
152.0	9.23 Y	21.60 R	0.13 U	-45.79 D	-0.47 U	0.08 O
152.0	9.23 Y	21.56 R	0.18 U	-45.96 D	-0.53 U	0.09 O

148.5	9.23 Y	21.83 R	0.18 U	-125.01 D	-1.16 U	-0.13 H
	9.23 Y	21.91 Q	0.25 X	-124.95 D	-1.22 U	0.13 U
145.5	9.53 F	22.15 Q	0.25 X	-193.61 D	-1.63 U	0.22 K
	9.69 E	22.08 H	-0.26 W	-193.36 D	-1.65 U	0.22 X
130.3	17.22 E	38.80 H	-0.26 W	-739.59 D	4.36 W	1.03 K
	17.22 E	38.89 Q	-0.21 C	-739.62 D	4.36 W	1.03 K
115.2	22.34 Y	40.47 Q	-0.21 C	-1366.79 D	7.44 W	1.75 K
	22.33 Y	40.44 Q	-0.24 C	-1366.79 D	7.44 W	1.76 K
100.0	22.37 Y	42.26 Q	-0.24 C	-2021.56 D	10.65 W	2.45 K
	22.37 Y	42.21 D	0.24 K	-2021.46 D	10.65 W	2.44 K
95.0	23.34 E	42.82 D	0.24 K	-2243.64 D	11.53 W	2.66 K
	23.35 E	42.90 D	-0.29 W	-2243.74 D	11.58 W	2.65 K
81.1	26.22 E	44.67 D	-0.29 W	-2879.80 D	15.65 W	3.05 K
	26.18 E	44.61 B	-0.27 W	-2879.80 D	15.66 W	3.06 K
67.2	36.35 Y	47.80 B	-0.44 W	-3542.98 J	20.10 W	-4.37 I
	36.35 Y	47.80 B	-0.44 W	-3542.92 D	20.10 W	-4.37 I
53.2	37.26 Y	50.39 B	-0.52 W	-4242.70 G	26.45 W	-5.74 I
	37.26 Y	50.43 B	-0.52 W	-4242.70 G	26.47 W	-5.74 I
46.5	37.35 E	51.36 B	-0.52 W	-4595.05 B	29.99 W	-5.85 I
	37.35 E	51.36 B	-0.54 W	-4595.10 B	29.96 W	-5.85 I
34.9	41.06 E	53.00 B	-0.54 W	-5217.64 B	36.27 W	-6.00 I
	41.06 E	53.01 B	-0.52 W	-5217.64 B	36.27 W	-6.00 I
23.2	55.69 Y	54.57 B	-0.52 W	-5855.10 B	42.31 W	-6.10 I
	55.69 Y	54.58 B	-0.52 W	-5855.10 B	42.30 W	-6.10 I
11.6	55.70 Y	56.23 B	-0.52 W	-6506.97 B	48.39 W	-6.16 I
	55.70 Y	56.23 B	-0.53 W	-6506.97 B	48.40 W	-6.16 I
	55.70 Y	57.95 B	-0.53 W	-7173.50 B	54.52 W	-6.18 I
base reaction	55.70 Y	-57.95 B	0.53 W	7173.50 B	-54.52 W	6.18 I

COMPLIANCE WITH 4.8.2 & 4.5.4
=====

ELEV ft	AXIAL	BENDING	SHEAR + TORSIONAL	TOTAL	SATISFIED	D/t (w/t)	MAX ALLOWED
159.00	0.00V	0.00P	0.00R	0.00P	YES	11.11A	45.2
	0.00I	0.00C	0.00G	0.00C	YES	11.82A	45.2
155.50	0.00P	0.00C	0.00R	0.00C	YES	11.82A	45.2
	0.01Y	0.10D	0.04R	0.11D	YES	12.53A	45.2
152.00	0.01Y	0.10D	0.04R	0.11D	YES	12.53A	45.2
	0.01Y	0.25D	0.04R	0.26D	YES	13.24A	45.2
148.50	0.01Y	0.17D	0.02Q	0.18D	YES	8.71A	45.2

145.50	0.01F	0.24D	0.02Q	0.25D	YES	9.11A	45.2
	0.01E	0.26D	0.02H	0.26D	YES	8.88A	45.2
130.33	0.01E	0.66D	0.04H	0.67D	YES	10.93A	45.2
	0.01E	0.66D	0.04Q	0.67D	YES	10.93A	45.2
115.17	0.01Y	0.88D	0.03Q	0.89D	YES	12.98A	45.2
	0.01Y	0.88D	0.03Q	0.89D	YES	12.98A	45.2
100.00	0.01Y	0.99D	0.03Q	1.00D	YES	15.02A	45.2
	0.01Y	0.85D	0.02C	0.86D	YES	12.83A	45.2
95.00	0.01E	0.87D	0.02C	0.88D	YES	13.41A	45.2
	0.01E	0.91D	0.02J	0.92D	YES	13.10A	45.2
81.08	0.01E	0.93D	0.02J	0.94D	YES	14.72A	45.2
	0.01E	0.93D	0.02B	0.94D	YES	14.72A	45.2
67.17	0.01Y	0.94J	0.02B	0.95J	YES	16.33A	45.2
	0.01Y	0.94D	0.02B	0.95D	YES	16.33A	45.2
53.25	0.01Y	0.96G	0.02B	0.97G	YES	17.94A	45.2
	0.01Y	0.82G	0.02B	0.83G	YES	15.65A	45.2
46.50	0.01E	0.83B	0.02B	0.83B	YES	16.34A	45.2
	0.01E	0.85B	0.02B	0.86B	YES	16.03A	45.2
34.87	0.01E	0.86B	0.02B	0.87B	YES	17.21A	45.2
	0.01E	0.86B	0.02B	0.87B	YES	17.21A	45.2
23.25	0.01Y	0.86B	0.02B	0.87B	YES	18.38A	45.2
	0.01Y	0.86B	0.02B	0.87B	YES	18.38A	45.2
11.62	0.01Y	0.86B	0.02B	0.87B	YES	19.56A	45.2
	0.01Y	0.86B	0.02B	0.87B	YES	19.56A	45.2
0.00	0.01Y	0.86B	0.02W	0.87B	YES	20.74A	45.2

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)

DOWN kip	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION ft-kip
	ALONG kip	ACROSS kip	ALONG ft-kip	ACROSS ft-kip	
55.70 Y	57.95 B	-0.53 W	-7173.50 B	54.52 W	-6.18 I

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160' Monopole / TI-OPP-19131, FL

 ***** Service Load Condition *****

* Only 1 condition(s) shown in full
 * Some concentrated wind loads may have been derived from full-scale wind tunnel testing

LOADING CONDITION A =====

60 mph wind with no ice. Wind Azimuth: 0° (1.0 D + 1.0 Wo)

LOADS ON POLE
 =====

LOAD TYPE	ELEV ft	APPLY. RADIUS ft	LOAD. AT AZI	LOAD AZI	..... FORCES .....		..... MOMENTS	
					HORIZ kip	DOWN kip	VERTICAL ft-kip	TORSNAL ft-kip
C	155.000	0.00	0.0	0.0	0.0070	0.0140	0.0000	0.0000
C	154.000	0.00	0.0	0.0	0.0000	0.9148	0.0000	0.0000
C	154.000	0.00	0.0	0.0	2.6814	6.0000	0.0000	0.0000
C	145.000	0.00	0.0	0.0	0.0069	0.0140	0.0000	0.0000
C	142.000	0.00	0.0	0.0	0.0000	0.8435	0.0000	0.0000
C	142.000	0.00	0.0	0.0	1.9717	4.0305	0.0000	0.0000
C	135.000	0.00	0.0	0.0	0.0068	0.0140	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.0066	0.0140	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0065	0.0140	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0063	0.0140	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0061	0.0140	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0059	0.0140	0.0000	0.0000
C	79.000	0.00	0.0	0.0	0.0000	0.0521	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0057	0.0140	0.0000	0.0000
C	69.000	0.00	0.0	0.0	0.0000	0.0455	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0055	0.0140	0.0000	0.0000
C	59.000	0.00	0.0	0.0	0.0000	0.0389	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0052	0.0140	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0049	0.0140	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0046	0.0140	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0044	0.0140	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0044	0.0140	0.0000	0.0000
D	159.000	0.00	180.0	0.0	0.0093	0.0480	0.0000	0.0000
D	148.500	0.00	180.0	0.0	0.0102	0.0534	0.0000	0.0000
D	148.500	0.00	180.0	0.0	0.0106	0.1376	0.0000	0.0000
D	145.500	0.00	180.0	0.0	0.0106	0.1376	0.0000	0.0000
D	145.500	0.00	180.0	0.0	0.0115	0.0921	0.0000	0.0000
D	130.333	0.00	180.0	0.0	0.0115	0.0921	0.0000	0.0000
D	130.333	0.00	180.0	0.0	0.0132	0.1095	0.0000	0.0000
D	115.167	0.00	180.0	0.0	0.0132	0.1095	0.0000	0.0000
D	115.167	0.00	180.0	0.0	0.0148	0.1270	0.0000	0.0000
D	100.000	0.00	180.0	0.0	0.0148	0.1270	0.0000	0.0000
D	100.000	0.00	180.0	0.0	0.0157	0.2971	0.0000	0.0000
D	95.000	0.00	180.0	0.0	0.0157	0.2971	0.0000	0.0000
D	95.000	0.00	180.0	0.0	0.0161	0.1713	0.0000	0.0000
D	81.083	0.00	180.0	0.0	0.0161	0.1713	0.0000	0.0000
D	81.083	0.00	180.0	0.0	0.0170	0.1900	0.0000	0.0000
D	67.167	0.00	180.0	0.0	0.0170	0.1900	0.0000	0.0000
D	67.167	0.00	180.0	0.0	0.0176	0.2087	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0176	0.2087	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0178	0.4725	0.0000	0.0000
D	46.500	0.00	180.0	0.0	0.0178	0.4725	0.0000	0.0000
D	46.500	0.00	180.0	0.0	0.0174	0.2641	0.0000	0.0000
D	34.875	0.00	180.0	0.0	0.0174	0.2641	0.0000	0.0000
D	34.875	0.00	180.0	0.0	0.0170	0.2820	0.0000	0.0000
D	23.250	0.00	180.0	0.0	0.0170	0.2820	0.0000	0.0000
D	23.250	0.00	180.0	0.0	0.0180	0.2999	0.0000	0.0000
D	11.625	0.00	180.0	0.0	0.0180	0.2999	0.0000	0.0000
D	11.625	0.00	180.0	0.0	0.0191	0.3177	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0191	0.3177	0.0000	0.0000

ANTENNA LOADING
 =====

..... ANTENNA .....	..... ATTACHMENT .....		..... ANTENNA FORCES					
	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	59.0	0.0	2.6	0.0	0.08	0.00	0.13	0.00

STD+R	69.0	0.0	2.5	0.0	0.08	0.00	0.13	0.00
STD+R	79.0	0.0	2.3	0.0	0.09	0.00	0.13	0.00

=====

MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

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MAST ELEV ft	DEFLECTIONS (ft)			ROTATIONS (deg)		
	HORIZONTAL ALONG	ACROSS	DOWN	TILT ALONG	ACROSS	TWIST
159.0	1.93L	-0.01B	0.04L	1.44L	-0.01B	0.00I
155.5	1.84L	-0.01B	0.03L	1.44L	-0.01B	0.00I
152.0	1.75L	-0.01B	0.03L	1.44L	-0.01B	0.00I
148.5	1.67L	-0.01B	0.03L	1.43L	-0.01B	0.00I
145.5	1.59L	-0.01B	0.03L	1.41L	-0.01B	0.00I
130.3	1.23L	-0.01B	0.02L	1.28L	-0.01B	0.00I
115.2	0.92L	0.00B	0.01L	1.08L	-0.01B	0.00I
100.0	0.67L	0.00B	0.01L	0.87L	0.00B	0.00D
95.0	0.59L	0.00B	0.01L	0.81L	0.00B	0.00D
81.1	0.41L	0.00B	0.00L	0.65L	0.00B	0.00D
67.2	0.27L	0.00B	0.00L	0.51L	0.00B	0.00D
53.2	0.17L	0.00B	0.00L	0.38L	0.00B	0.00D
46.5	0.12L	0.00B	0.00L	0.32L	0.00B	0.00D
34.9	0.07L	0.00B	0.00L	0.23L	0.00B	0.00J
23.2	0.03L	0.00B	0.00L	0.15L	0.00B	0.00J
11.6	0.01L	0.00B	0.00L	0.07L	0.00B	0.00J
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

=====

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS

=====

ELEV ft	ANT AZI deg	ANT TYPE	BEAM DEFLECTIONS (deg)			
			ROLL	YAW	PITCH	TOTAL
79.0	0.0	STD+R	0.622 D	0.003 C	0.630 A	0.630 A
69.0	0.0	STD+R	0.519 D	0.002 C	0.526 A	0.526 A
59.0	0.0	STD+R	0.423 D	0.002 C	0.429 A	0.429 A

=====

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

=====

MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION ft-kip
		ALONG kip	ACROSS kip	ALONG ft-kip	ACROSS ft-kip	
159.0	0.00 G	-0.01 H	0.00 E	-0.01 E	0.00 I	0.00 C
155.5	0.17 E	0.04 B	0.00 E	-0.08 I	0.01 E	0.00 E
152.0	0.17 I	0.05 L	-0.01 I	-0.08 I	-0.01 C	0.00 E
152.0	7.28 I	2.77 L	-0.01 I	-6.03 L	0.02 L	0.00 L

	7.28 I	2.78 B	-0.01 K	-6.04 L	0.02 I	0.00 L
	7.46 I	2.81 B	-0.01 K	-16.41 L	-0.06 F	0.00 L
148.5	7.47 I	2.83 A	-0.02 K	-16.41 I	-0.04 F	0.00 L
	7.88 I	2.86 A	-0.02 K	-25.49 L	0.09 K	0.00 L
145.5	7.88 H	2.87 L	-0.03 B	-25.49 L	0.10 K	0.00 L
	14.18 H	5.03 L	-0.03 B	-97.81 L	-0.44 F	-0.01 L
130.3	14.18 C	5.02 L	-0.03 B	-97.81 L	-0.44 F	-0.01 L
	15.85 C	5.23 L	-0.03 B	-180.12 L	0.84 B	-0.02 L
115.2	15.85 C	5.22 L	-0.03 B	-180.12 L	0.84 B	-0.02 L
	17.81 C	5.46 L	-0.03 B	-265.49 L	1.25 B	-0.03 L
100.0	17.81 C	5.45 L	-0.02 B	-265.52 L	1.24 B	-0.03 L
	19.29 C	5.53 L	-0.02 B	-294.32 L	1.36 B	-0.03 L
95.0	19.31 C	5.55 L	0.03 F	-294.31 L	1.38 B	-0.03 L
	21.70 C	5.78 L	0.03 F	-376.70 L	1.71 B	-0.04 L
81.1	21.70 C	5.78 L	0.02 F	-376.70 L	1.71 B	-0.04 L
	24.72 C	6.19 L	-0.03 K	-462.68 L	2.35 B	0.31 D
67.2	24.72 C	6.19 L	-0.03 K	-462.68 L	2.35 B	0.31 D
	27.83 C	6.53 L	-0.04 K	-553.58 L	2.79 B	0.47 D
53.2	27.83 C	6.53 L	-0.04 K	-553.57 L	2.78 B	-0.47 J
	31.02 C	6.65 L	-0.04 K	-599.25 L	2.90 B	-0.47 J
46.5	31.02 C	6.65 L	-0.04 K	-599.24 L	2.91 B	-0.47 J
	34.12 C	6.86 L	-0.04 K	-679.56 L	3.13 B	-0.47 J
34.9	34.12 C	6.86 L	-0.04 K	-679.56 L	3.13 B	0.47 D
	37.41 C	7.06 L	-0.04 K	-761.82 L	3.34 B	-0.47 J
23.2	37.41 C	7.06 L	-0.04 K	-761.82 L	3.34 B	-0.47 J
	40.91 C	7.27 L	-0.04 K	-845.99 L	3.55 B	-0.47 J
11.6	40.91 C	7.27 L	-0.04 K	-845.99 L	3.55 B	-0.47 J
	44.60 C	7.50 L	-0.04 K	-932.14 L	3.75 B	-0.47 J
base						
reaction	44.60 C	-7.50 L	0.04 K	932.14 L	-3.75 B	0.47 J

COMPLIANCE WITH 4.8.2 & 4.5.4
=====

ELEV	AXIAL	BENDING	SHEAR +	TOTAL	SATISFIED	D/t (w/t)	MAX
ft			TORSIONAL				ALLOWED
159.00	0.00G	0.00E	0.00H	0.00E	YES	11.11A	45.2
	0.00E	0.00I	0.00B	0.00I	YES	11.82A	45.2
155.50	0.00I	0.00I	0.00L	0.00I	YES	11.82A	45.2
	0.01I	0.01L	0.00L	0.02L	YES	12.53A	45.2
152.00	0.01I	0.01L	0.00B	0.02L	YES	12.53A	45.2
	0.01I	0.03L	0.00B	0.04L	YES	13.24A	45.2
148.50							

	0.00I	0.02I	0.00A	0.03I	YES	8.71A	45.2
	0.00I	0.03L	0.00A	0.04L	YES	9.11A	45.2
145.50	0.00H	0.03L	0.00L	0.04L	YES	8.88A	45.2
	0.01H	0.09L	0.00L	0.09L	YES	10.93A	45.2
130.33	0.01C	0.09L	0.00L	0.09L	YES	10.93A	45.2
	0.01C	0.12L	0.00L	0.12L	YES	12.98A	45.2
115.17	0.01C	0.12L	0.00L	0.12L	YES	12.98A	45.2
	0.01C	0.13L	0.00L	0.14L	YES	15.02A	45.2
100.00	0.01C	0.11L	0.00L	0.12L	YES	12.83A	45.2
	0.01C	0.11L	0.00L	0.12L	YES	13.41A	45.2
95.00	0.01C	0.12L	0.00L	0.12L	YES	13.10A	45.2
	0.01C	0.12L	0.00L	0.13L	YES	14.72A	45.2
81.08	0.01C	0.12L	0.00L	0.13L	YES	14.72A	45.2
	0.01C	0.12L	0.00L	0.13L	YES	16.33A	45.2
67.17	0.01C	0.12L	0.00L	0.13L	YES	16.33A	45.2
	0.01C	0.13L	0.00L	0.13L	YES	17.94A	45.2
53.25	0.01C	0.11L	0.00L	0.11L	YES	15.65A	45.2
	0.01C	0.11L	0.00L	0.11L	YES	16.34A	45.2
46.50	0.01C	0.11L	0.00L	0.12L	YES	16.03A	45.2
	0.01C	0.11L	0.00L	0.12L	YES	17.21A	45.2
34.87	0.01C	0.11L	0.00L	0.12L	YES	17.21A	45.2
	0.01C	0.11L	0.00L	0.12L	YES	18.38A	45.2
23.25	0.01C	0.11L	0.00L	0.12L	YES	18.38A	45.2
	0.01C	0.11L	0.00L	0.12L	YES	19.56A	45.2
11.62	0.01C	0.11L	0.00L	0.12L	YES	19.56A	45.2
	0.01C	0.11L	0.00L	0.12L	YES	20.74A	45.2
0.00							

MAXIMUM LOADS ONTO FOUNDATION (w.r.t. wind direction)

DOWN kip	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION ft-kip
	ALONG kip	ACROSS kip	ALONG ft-kip	ACROSS ft-kip	
44.60 C	7.50 L	-0.04 K	-932.14 L	3.75 B	-0.47 J

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Seismic Load Effects
Equivalent Lateral Force Procedure
ANSI/TIA-222-H

Parameters	Risk Category	Description	h _i (ft.)	w _i (kips)	W _i (kips)	w _i /h _i ^{ke}	F _{sz} or E _{th} (kips)	Vertical Distribution of Seismic Forces		
								E _v (kips)	1.2 D + 1.0 E _v (kips)	0.9 D - 1.0 E _v (kips)
	II	Step Bolts Load	155.00	0.0140	0.0000	336.3500	0.0010	0.0001	0.0169	0.0125
	1.500	Antenna Load	154.00	6.0000	6.0000	142,296.0000	0.4434	0.0636	7.2636	5.3364
R	0.050	Line Deadload	154.00	0.9148	0.0000	21,695.3968	0.0676	0.0097	1.1075	0.8136
S _S	0.028	Structure - Section 1	152.25	0.6974	0.0000	16,165.7756	0.0504	0.0074	0.8443	0.6203
S ₁	D	Step Bolts Load	145.00	0.0140	0.0000	294.3500	0.0009	0.0001	0.0169	0.0125
Site Class	8.000	Antenna Load	142.00	4.0305	4.0305	81,271.0020	0.2532	0.0427	4.8793	3.5848
T _L (sec)	1.600	Line Deadload	142.00	0.8435	0.0000	17,008.3340	0.0530	0.0089	1.0211	0.7502
F _a	2.400	Step Bolts Load	135.00	0.0140	0.0000	255.1500	0.0008	0.0001	0.0169	0.0125
F _v	0.080	Step Bolts Load	125.00	0.0140	0.0000	218.7500	0.0007	0.0001	0.0169	0.0125
S _{MS}	0.067	Structure - Section 2	121.75	5.9076	0.0000	87,568.7240	0.2729	0.0626	7.1517	5.2542
S _{M1}	0.053	Step Bolts Load	115.00	0.0140	0.0000	185.1500	0.0006	0.0001	0.0169	0.0125
S _{DS}	0.045	Step Bolts Load	105.00	0.0140	0.0000	154.3500	0.0005	0.0001	0.0169	0.0125
S _{D1}	0.849	Step Bolts Load	95.00	0.0140	0.0000	126.3500	0.0004	0.0001	0.0169	0.0125
T _s	1.000	Step Bolts Load	85.00	0.0140	0.0000	101.1500	0.0003	0.0001	0.0169	0.0125
I _e	1.500	Line Deadload	79.00	0.0521	0.0000	325.1561	0.0010	0.0006	0.0631	0.0463
Ω	0.030	Mount/Antenna Load	79.00	0.5270	0.0000	3,289.0070	0.0102	0.0056	0.6380	0.4687
C _S	29,000	Step Bolts Load	75.00	0.0140	0.0000	78.7500	0.0002	0.0001	0.0169	0.0125
E (ksi)	516	Structure - Section 3	73.25	10.1994	0.0000	54,725.5182	0.1705	0.1081	12.3474	9.0714
l _{top} (in ⁴)	44,639	Line Deadload	69.00	0.0455	0.0000	216.6255	0.0007	0.0005	0.0551	0.0404
l _{bot} (in ⁴)	22,577	Mount/Antenna Load	69.00	0.6850	0.0000	3,261.2850	0.0102	0.0073	0.8293	0.6092
g (in/s ²)	46.013	Step Bolts Load	65.00	0.0140	0.0000	59.1500	0.0002	0.0001	0.0169	0.0125
W _t (kips)	10.031	Line Deadload	59.00	0.0389	0.0000	135.4109	0.0004	0.0004	0.0471	0.0346
W _u (kips)	35.982	Mount/Antenna Load	59.00	0.6850	0.0000	2,384.4850	0.0074	0.0073	0.8293	0.6092
W _L (kips)	1908	Step Bolts Load	55.00	0.0140	0.0000	42.3500	0.0001	0.0001	0.0169	0.0125
L _p (in)	0.387	Step Bolts Load	45.00	0.0140	0.0000	28.3500	0.0001	0.0001	0.0169	0.0125
f ₁ (Hertz)	2.587	Step Bolts Load	35.00	0.0140	0.0000	17.1500	0.0001	0.0001	0.0169	0.0125
T (sec)	2.0000	Structure - Section 4	26.62	15.1762	0.0000	10,754.2256	0.0335	0.1609	18.3723	13.4977
k _e	1.380	Step Bolts Load	25.00	0.0140	0.0000	8.7500	0.0000	0.0001	0.0169	0.0125
V _s (kips)	A	Step Bolts Load	15.00	0.0140	0.0000	3.1500	0.0000	0.0001	0.0169	0.0125
Seismic Design Category		Σ		46.01	10.0305	443,006.20	1.38	0.49	55.70	40.92

Round Base Plate and Anchor Rods, per ANSI/TIA 222-H

Pole Data

Diameter:	61.060	in (flat to flat)
Thickness:	0.5	in
Yield (Fy):	65	ksi
# of Sides:	18	"0" IF Round
Strength (Fu):	80	ksi

Reactions

Moment, Mu:	7173.5	ft-kips
Axial, Pu:	53.64	kips
Shear, Vu:	57.95	kips

Anchor Rod Data

Quantity:	24	
Diameter:	2.25	in
Rod Material:	A615	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
BC Diam. (in):	68.25	BC Override: []

Plate Data

Diameter (in):	74	Dia. Override: []
Thickness:	2.5	in
Yield (Fy):	50	ksi
Eff Width/Rod:	8.07	in
Drain Hole:	2.625	in. diameter
Drain Location:	28.25	in. center of pole to center of drain hole
Center Hole:	48.5	in. diameter

Anchor Rod Results

(per 4.9.9)

Maximum Put:	208.54 Kips
$\Phi_t^*R_{nt}$:	243.75 Kips
Vu:	2.41 Kips
$\Phi_v^*R_{nv}$:	149.10 Kips
Tension Interaction Ratio:	0.73
Maximum Puc:	212.45 Kips
$\Phi_c^*R_{nc}$:	268.39 Kips
Vu:	2.41 Kips
$\Phi_c^*R_{ncv}$:	120.77 Kips
Compression Interaction Ratio:	0.79
Maximum Interaction Ratio:	79.2% Pass

Base Plate Results

Base Plate (Mu/Z):	37.4 ksi
Allowable Φ^*F_y :	45.0 ksi (per AISC)
Base Plate Interaction Ratio:	83.2% Pass

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES

160' Monopole TILLMAN INFRASTRUCTURE, LLC TI-OPP-19131, FL (22-5020-TJH) 03/04/22 REB

Overall Loads:

Factored Moment (ft-kips)	7890.85
Factored Axial (kips)	59.004
Factored Shear (kips)	63.745
Bearing Design Strength (ksf)	4.5
Water Table Below Grade (ft)	999
Width of Mat (ft)	30.5
Thickness of Mat (ft)	2.25
Depth to Bottom of Slab (ft)	6
Quantity of Bolts in Bolt Circle	24
Bolt Circle Diameter (in)	68.25
Effective Anchor	
Bolt Embedment (in)	66.5
Diameter of Pier (ft)	8
Ht. of Pier Above Ground (ft)	0.5
Ht. of Pier Below Ground (ft)	3.75
Quantity of Bars in Mat	42
Bar Diameter in Mat (in)	1.27
Area of Bars in Mat (in ²)	53.20
Spacing of Bars in Mat (in)	8.75
Quantity of Bars Pier	50
Bar Diameter in Pier (in)	1.41
Tie Bar Diameter in Pier (in)	0.625
Spacing of Ties (in)	4
Area of Bars in Pier (in ²)	78.07
Spacing of Bars in Pier (in)	5.49
f'c (ksi)	4.5
fy (ksi)	60
Unit Wt. of Soil (kcf)	0.105
Unit Wt. of Concrete (kcf)	0.15

Max. Net Bearing Press. (ksf)	4.39
Allowable Bearing Pressure (ksf)	2.00
Safety Factor	3.00
Ultimate Bearing Pressure (ksf)	6.00
Bearing Φs	0.75

Minimum Pier Diameter (ft)	8.00
Equivalent Square b (ft)	7.09
Square Pier? (Y/N)	N

Recommended Spacing (in)	5 to 12
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Minimum Pier A _s (in ²)	36.19
Recommended Spacing (in)	5 to 12

Volume of Concrete (yd ³)	85.43
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Two-Way Shear Action:

Average d (in)	22.73
φv _c (ksi)	0.201
φv _c = φ(2 + 4/β _c)f' _c ^{1/2}	0.302
φv _c = φ(α _s d/b _o +2)f' _c ^{1/2}	0.207
φv _c = φ4f' _c ^{1/2}	0.201
Shear perimeter, b _o (in)	431.23
β _c	1

v _u (ksi)	0.116
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J (in ³)	1.920E+07
c + d (in)	107.81
0.40M _{sc} (ft-kips)	3264.7

One-Way Shear:

φV _c (kips)	837.1
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V _u (kips)	476.4
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Stability:

Overturning Design Strength (ft-k)	10179.4
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Total Applied M (ft-k)	8305.2
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Pier-Slab Transfer by Flexure:

b_{slab} (ft)	14.75		
ϕM_n (ft-kips)	4999.6	$0.60M_{sc}$ (ft-kips)	4897.1

Pier Design:

ϕV_n (kips)	1275.0	V_u (kips)	63.7
$\phi V_c = \phi 2(1 + N_u / (2000A_g)) f'_c{}^{1/2} b_w d$	744.9		
V_s (kips)	706.9	$*** V_s \max = 4 f'_c{}^{1/2} b_w d$ (kips)	1978.3
Maximum Spacing (in)	7.62	(Only if Shear Ties are Required)	
Actual Hook Development (in)	21.46	Req'd Hook Development l_{dh} (in) - Tension	17.66
		Req'd Hook Development l_{dc} (in) - Compression	19.04

Flexure in Slab:

ϕM_n (ft-kips)	5169.0	M_u (ft-kips)	4253.9
a (in)	2.28		
Steel Ratio	0.00640		
β_1	0.825		
Maximum Steel Ratio (ρ_t)	0.0197		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	132.00	Required Development in Pad (in)	34.08

Condition	1 is OK, 0 Fails
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Interaction Diagram	1
Two-Way Shear Action	1
One-Way Shear Action	1
Overturning	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1
Anchor Bolt Pullout	1
Anchor Bolt Punching Shear	1

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LFile for Windows, Version 2019-11.009

Analysis of Individual Files and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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Files Used for Analysis

Path to file locations:
\Program Files (x86)\Ensoft\Lpile2019\files\

Name of input data file:
22-5020-TJH.lp11d

Name of output report file:
22-5020-TJH.lp11o

Name of plot output file:
22-5020-TJH.lp11p

Name of runtime message file:
22-5020-TJH.lp11r

Date and Time of Analysis

Date: March 4, 2022

Time: 14:05:42

Problem Title

Site : TI-OPP-19131, FL

Tower : 160' Monopole

Prepared for : TILLMAN INFRASTRUCTURE, LLC

Job Number : 22-5020-TJH

Engineer : REB

Program Options and Settings

Computational Options:

- Conventional Analysis
- Engineering Units Used for Data Input and Computations:
- US Customary System Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed = 999
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 100.0000 in
- Number of pile increments = 100

Loading Type and Number of Cycles of Loading:

- Static loading specified
- Use of p-y modification factors for p-y curves not selected
- Analysis uses layering correction (Method of Georgiadis)
- No distributed lateral loads are entered
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Input of moment resistance at the pile tip not selected
- Input of side resistance moment along pile not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Report only summary tables of pile-head deflection, maximum bending moment, and maximum shear force in output report file.
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

- Number of pile sections defined = 1
- Total length of pile = 30.500 ft
- Depth of ground surface below top of pile = 0.5000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	96.0000
2	30.500	96.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

- Section 1 is a round drilled shaft, bored pile, or CIDH pile
- Length of section = 30.500000 ft
- Shaft Diameter = 96.000000 in
- Shear capacity of section = 0.0000 lbs

Ground Slope and Pile Batter Angles

- Ground Slope Angle = 0.000 degrees
- = 0.000 radians
- Pile Batter Angle = 0.000 degrees
- = 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	0.500000	ft
Distance from top of pile to bottom of layer	=	4.500000	ft
Effective unit weight at top of layer	=	105.000000	pcf
Effective unit weight at bottom of layer	=	105.000000	pcf
Friction angle at top of layer	=	28.000000	deg.
Friction angle at bottom of layer	=	28.000000	deg.
Subgrade k at top of layer	=	25.000000	pci
Subgrade k at bottom of layer	=	25.000000	pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	4.500000	ft
Distance from top of pile to bottom of layer	=	14.000000	ft
Effective unit weight at top of layer	=	110.000000	pcf
Effective unit weight at bottom of layer	=	110.000000	pcf
Friction angle at top of layer	=	30.000000	deg.
Friction angle at bottom of layer	=	30.000000	deg.
Subgrade k at top of layer	=	60.000000	pci
Subgrade k at bottom of layer	=	60.000000	pci

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	14.000000	ft
Distance from top of pile to bottom of layer	=	29.000000	ft
Effective unit weight at top of layer	=	48.000000	pcf
Effective unit weight at bottom of layer	=	48.000000	pcf
Friction angle at top of layer	=	30.000000	deg.
Friction angle at bottom of layer	=	30.000000	deg.
Subgrade k at top of layer	=	80.000000	pci
Subgrade k at bottom of layer	=	80.000000	pci

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	29.000000	ft
Distance from top of pile to bottom of layer	=	34.000000	ft
Effective unit weight at top of layer	=	53.000000	pcf
Effective unit weight at bottom of layer	=	53.000000	pcf
Friction angle at top of layer	=	30.000000	deg.
Friction angle at bottom of layer	=	30.000000	deg.
Subgrade k at top of layer	=	205.000000	pci
Subgrade k at bottom of layer	=	205.000000	pci

Layer 5 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	34.000000	ft
Distance from top of pile to bottom of layer	=	59.000000	ft
Effective unit weight at top of layer	=	53.000000	pcf
Effective unit weight at bottom of layer	=	53.000000	pcf
Friction angle at top of layer	=	34.000000	deg.
Friction angle at bottom of layer	=	34.000000	deg.
Subgrade k at top of layer	=	250.000000	pci
Subgrade k at bottom of layer	=	250.000000	pci

Layer 6 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	59.000000	ft
Distance from top of pile to bottom of layer	=	60.500000	ft
Effective unit weight at top of layer	=	58.000000	pcf
Effective unit weight at bottom of layer	=	58.000000	pcf
Friction angle at top of layer	=	34.000000	deg.
Friction angle at bottom of layer	=	34.000000	deg.
Subgrade k at top of layer	=	310.000000	pci
Subgrade k at bottom of layer	=	310.000000	pci

(Depth of the lowest soil layer extends 30.000 ft below the pile tip)

 Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.5000 4.5000	105.0000 105.0000	28.0000 28.0000	25.0000 25.0000
2	Sand (Reese, et al.)	4.5000 14.0000	110.0000 110.0000	30.0000 30.0000	60.0000 60.0000
3	Sand (Reese, et al.)	14.0000 29.0000	48.0000 48.0000	30.0000 30.0000	80.0000 80.0000
4	Sand (Reese, et al.)	29.0000 34.0000	53.0000 53.0000	30.0000 30.0000	205.0000 205.0000
5	Sand (Reese, et al.)	34.0000 59.0000	53.0000 53.0000	34.0000 34.0000	250.0000 250.0000
6	Sand (Reese, et al.)	59.0000 60.5000	58.0000 58.0000	34.0000 34.0000	310.0000 310.0000

 Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

 Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load Analysis No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length	Run
1	1	V = 84993. lbs	M = 126253600. in-lbs	78672.	No	
2	1	V = 8250. lbs	M = 12304248. in-lbs	49060.	No	

V = shear force applied normal to pile axis
 M = bending moment applied to pile head
 y = lateral deflection normal to pile axis
 S = pile slope relative to original pile batter angle
 R = rotational stiffness applied to pile head
 Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3).
 Thrust force is assumed to be acting axially for all pile batter angles.

 Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	30.500000 ft
Shaft Diameter	=	96.000000 in
Concrete Cover Thickness (to edge of long. rebar)	=	3.625000 in
Number of Reinforcing Bars	=	50 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	7238. sq. in.
Total Area of Reinforcing Steel	=	78.072504 sq. in.
Area Ratio of Steel Reinforcement	=	1.08 percent
Edge-to-Edge Bar Spacing	=	4.074124 in
Maximum Concrete Aggregate Size	=	0.750000 in

Ratio of Bar Spacing to Aggregate Size = 5.43
 Offset of Center of Rebar Cage from Center of Pile = 0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$ = 32071.951 kips
 Tensile Load for Cracking of Concrete = -3413.486 kips
 Nominal Axial Tensile Capacity = -4684.350 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.410000	1.561450	43.670000	0.00000
2	1.410000	1.561450	43.325649	5.473302
3	1.410000	1.561450	42.298027	10.860287
4	1.410000	1.561450	40.603339	16.075999
5	1.410000	1.561450	38.268313	21.038183
6	1.410000	1.561450	35.329772	25.668582
7	1.410000	1.561450	31.834060	29.894172
8	1.410000	1.561450	27.836306	33.648313
9	1.410000	1.561450	23.399556	36.871801
10	1.410000	1.561450	18.593782	39.513797
11	1.410000	1.561450	13.494772	41.532638
12	1.410000	1.561450	8.182942	42.896484
13	1.410000	1.561450	2.742062	43.583827
14	1.410000	1.561450	-2.742062	43.583827
15	1.410000	1.561450	-8.182942	42.896484
16	1.410000	1.561450	-13.494772	41.532638
17	1.410000	1.561450	-18.593782	39.513797
18	1.410000	1.561450	-23.399556	36.871801
19	1.410000	1.561450	-27.836306	33.648313
20	1.410000	1.561450	-31.834060	29.894172
21	1.410000	1.561450	-35.329772	25.668582
22	1.410000	1.561450	-38.268313	21.038183
23	1.410000	1.561450	-40.603339	16.075999
24	1.410000	1.561450	-42.298027	10.860287
25	1.410000	1.561450	-43.325649	5.473302
26	1.410000	1.561450	-43.670000	0.00000
27	1.410000	1.561450	-43.325649	-5.473302
28	1.410000	1.561450	-42.298027	-10.860287
29	1.410000	1.561450	-40.603339	-16.075999
30	1.410000	1.561450	-38.268313	-21.038183
31	1.410000	1.561450	-35.329772	-25.668582
32	1.410000	1.561450	-31.834060	-29.894172
33	1.410000	1.561450	-27.836306	-33.648313
34	1.410000	1.561450	-23.399556	-36.871801
35	1.410000	1.561450	-18.593782	-39.513797
36	1.410000	1.561450	-13.494772	-41.532638
37	1.410000	1.561450	-8.182942	-42.896484
38	1.410000	1.561450	-2.742062	-43.583827
39	1.410000	1.561450	2.742062	-43.583827
40	1.410000	1.561450	8.182942	-42.896484
41	1.410000	1.561450	13.494772	-41.532638
42	1.410000	1.561450	18.593782	-39.513797
43	1.410000	1.561450	23.399556	-36.871801
44	1.410000	1.561450	27.836306	-33.648313
45	1.410000	1.561450	31.834060	-29.894172
46	1.410000	1.561450	35.329772	-25.668582
47	1.410000	1.561450	38.268313	-21.038183
48	1.410000	1.561450	40.603339	-16.075999
49	1.410000	1.561450	42.298027	-10.860287
50	1.410000	1.561450	43.325649	-5.473302

NOTE: The positions of the above rebars were computed by LPILE

Minimum spacing between any two bars not equal to zero = 4.074 inches
 between bars 1 and 50.

Ratio of bar spacing to maximum aggregate size = 5.43

Concrete Properties:

Compressive Strength of Concrete = 4500. psi
 Modulus of Elasticity of Concrete = 3823676. psi

Modulus of Rupture of Concrete = -503.115295 psi
 Compression Strain at Peak Stress = 0.002001
 Tensile Strain at Fracture of Concrete = -0.0001152
 Maximum Coarse Aggregate Size = 0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 2

Number	Axial Thrust Force kips
1	49.060
2	78.672

 Summary of Results for Nominal Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
 or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	49.060	186156.578	0.00300000
2	78.672	187129.924	0.00300000

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resist. Factor	Nominal Ax. Thrust kips	Nominal Moment Cap in-kips	Ult. (Fac) Ax. Thrust kips	Ult. (Fac) Moment Cap in-kips	Bend. Stiff. at Ult Mom kip-in^2
1	0.65	49.060000	186157.	31.889000	121002.	4.2552E+09
2	0.65	78.672000	187130.	51.136800	121634.	4.2795E+09
1	0.75	49.060000	186157.	36.795000	139617.	4.1089E+09
2	0.75	78.672000	187130.	59.004000	140347.	4.1337E+09
1	0.90	49.060000	186157.	44.154000	167541.	2.7543E+09
2	0.90	78.672000	187130.	70.804800	168417.	2.7743E+09

 Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	0.5000	0.00	N.A.	No	0.00	50977.
2	4.5000	3.7842	Yes	No	50977.	663962.
3	14.0000	13.2249	Yes	No	714939.	1961742.
4	29.0000	31.0130	Yes	No	2676681.	260968.
5	34.0000	33.5000	No	No	2937649.	0.00
6	59.0000	58.5000	No	No	0.00	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

 Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
 Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
 Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
 Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
 Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Case No.	Load Type 1	Pile-head Load 1	Load Type 2	Pile-head Load 2	Axial Loading lbs	Pile-head Deflection inches	Pile-head Rotation radians	Max Shear in Pile lbs	Max Moment in Pile in-lbs
1	V, lb	84993.	M, in-lb	1.26E+08	78672.	4.3929	-0.02190	-806723.	1.30E+08
2	V, lb	8250.	M, in-lb	1.23E+07	49060.	0.1341	-5.99E-04	-70838.	1.27E+07

Maximum pile-head deflection = 4.3928905659 inches
 Maximum pile-head rotation = -0.0218984354 radians = -1.254688 deg.

The analysis ended normally.

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Moment (ft·k)	7,890.85	
Shear (k)	63.75	
Caisson diameter (ft)	8	
Caisson height above ground (ft)	0.5	
Caisson height below ground (ft)	28	
Lateral soil pressure (lb/ft ²)	450.00	
Ground to application of force, h (ft)	124.29	
Applied lateral force, P (lb)	63,745	
Lateral soil bearing pressure, S ₁ (lb/ft)	4,200.00	
Diameter, b (ft)	8	
A	4.44	$= (2.34P)/(S_1 b)$
Minimum depth of embedment, d (ft)	26.84	$= 0.5A[1 + (1 + (4.36h / A))^{1/2}]$