1 Industrial Ave, S re 3 N HWAH NJ 07430 P NE: 201.684.0055

201.684.0066



May 8, 2023

Members of the Siting Council Connecticut Siting Council 10 Franklin Square New Britain, CT 06051

RE: Notice of Exempt Modification

453 Loon Meadow Road, Norfolk, CT 06058

Latitude: 42.009075 Longitude: -73.1808881

T-Mobile Site#: CT11349A - Anchor / Hardening

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 120-foot level of the existing 160-foot guyed tower at 453 Loon Meadow Road, Norfolk, CT. The 160-foot guyed tower and property is owned and operated by SRR Towers. T-Mobile now intends to remove and replace six (6) antennas at the 120-foot level of the existing tower. The antennas support 5G services. T-Mobile also intends to add a 48 KW diesel powered backup generator. T-Mobile will be remodeling their existing ground equipment. They will remove their existing equipment room and install an 8' x 20' concrete pad for their cabinets and generator.

Planned Modifications:

Tower:

Install New:

- (3) AIR 6419 B41 Antennas
- (3) APXVAALL24 Antennas
- (3) Radio 4480 B71 B85
- (3) Radio 4460 B25 B66
- (2) 6x24 Hybrid Cables

To Be Removed:

Existing Coax Cables

Existing TMAs

Existing Diplexers

- (3) LNX-6515DS-A1M Antennas
- (3) RR90-17-XXDP Antennas

Ground:

Remove:

Existing T-Mobile Equipment Shelter and Existing Ground Equipment Existing T-Mobile Ice Bridge

Install New:

- (1) 200A PPC Cabinet
- (1) 6160 Power Enclosure and (1) B160 Battery Cabinet
- (1) 48 KW Diesel Powered Backup Generator
- (1) Cable Ice-Bridge

This facility was approved by the Connecticut Siting Council in Petition No. 106 on July, 17, 1984. The proposed modifications comply with existing conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to First Selectman Matthew Riiska, Elected Official, and Michael Halloran, Zoning Enforcement Officer, as well as the tower and property owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

- 1. The proposed modifications will not result in an increase in the height of the existing structure.
- 2. The proposed modifications will not require the extension of the site boundary.
- 3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
- 4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
- 5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
- 6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Eric Breun

Transcend Wireless Cell: 201-658-7728

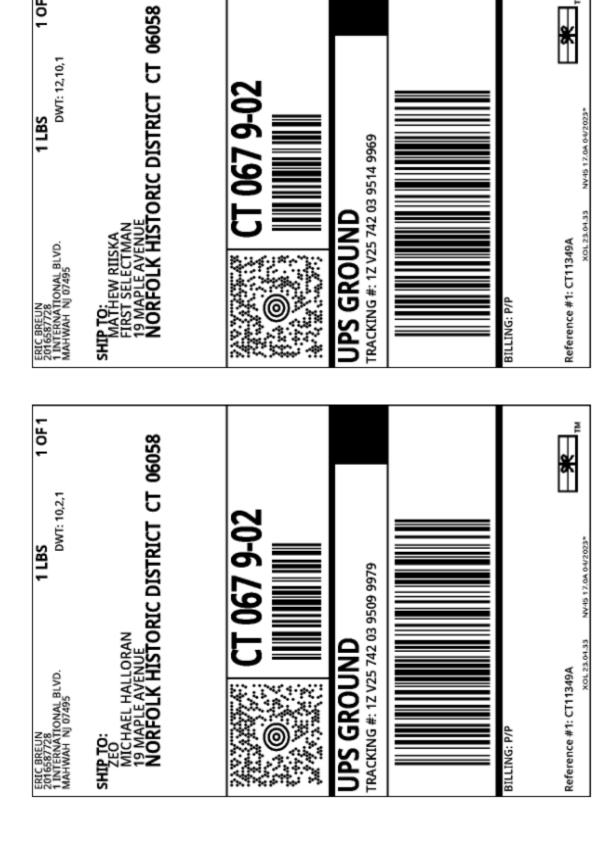
Email: ebreun@transcendwireless.com

Attachments

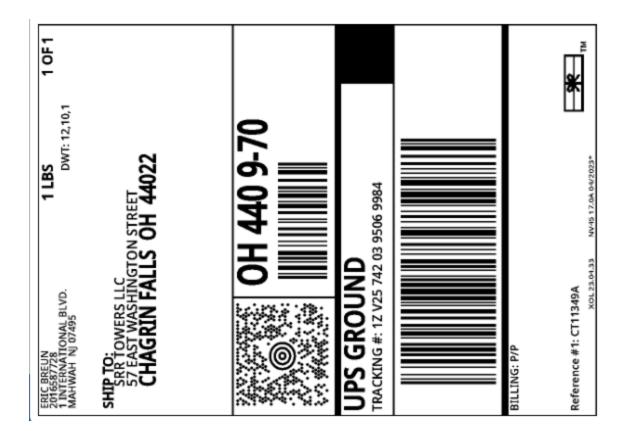
cc: Matthew Riiska - First Selectman of Norfolk

Michael Halloran - ZEO

SRR Towers LLC - Tower Owner



10F1



Hello, your package has been delivered.

Delivery Date: Tuesday, 05/02/2023

Delivery Time: 11:06 AM Signed by: PRENTICE

TRANSCEND WIRELESS

Tracking Number: <u>1ZV257420395069984</u>

SRR TOWERS LLC

Ship To: 57 EAST WASHINGTON STREET

CHAGRIN FALLS, OH 44022

US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CT11349A

Hello, your package has been delivered.

Delivery Date: Monday, 05/01/2023

Delivery Time: 10:25 AM

Signed by: YARD

TRANSCEND WIRELESS

Tracking Number: <u>1ZV257420395099979</u>

MICHAEL HALLORAN

Ship To: 19 MAPLE AVENUE

NORFOLK HISTORIC DISTRICT, CT 06058

US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CT11349A

Hello, your package has been delivered.

Delivery Date: Monday, 05/01/2023

Delivery Time: 10:25 AM

Signed by: YARD

TRANSCEND WIRELESS

Tracking Number: <u>1ZV257420395149969</u>

FIRST SELECTMAN

Ship To: 19 MAPLE AVENUE

NORFOLK HISTORIC DISTRICT, CT 06058

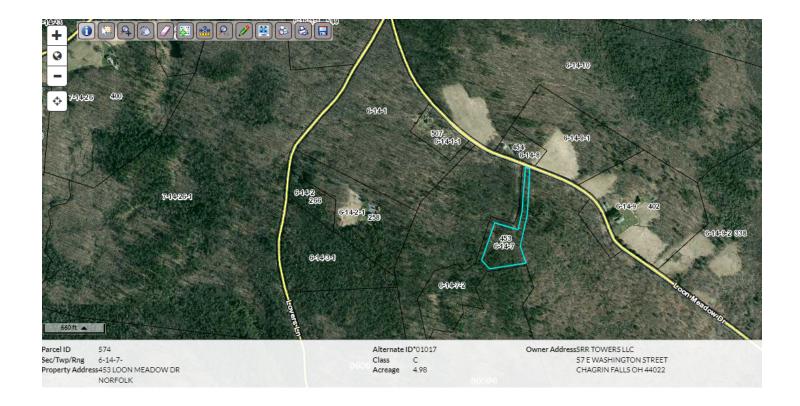
US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CT11349A



Summary

Account Number *01017 Parcel ID 574

Property Address 453 LOON MEADOW DR Use Class/Description 5-2 VAC COMM

Map/Block/Block Cut 6-14/7// Zoning RU Acres 4.98



View Map

□Owner

SRR TOWERS LLC 57 E WASHINGTON STREET CHAGRIN FALLS, OH 44022

□Valuation

		≣ Columns 🔸
Assessed Year	2022	2021
Appraised Building Value	\$0.00	\$0.00
Appraised XF/OB Value	\$1,048,780.00	\$1,048,780.00
Appraised Land Value	\$102,860.00	\$102,860.00
Appraised Total Value	\$1,151,640.00	\$1,151,640.00
Assessed Building Value	\$0.00	\$0.00
Assessed XF/OB Value	\$734,150.00	\$734,150.00
Assessed Land Value	\$72,000.00	\$72,000.00
Assessed Total Value	\$806,150.00	\$806,150.00

□Land

Building Number 1 Land Units 1 AC Land Use 5-2 - VAC COMM 75,000

Value

Building Number 1 Land Units 3.98 AC 5-2 - VAC COMM Land Use Value 27,860

■ Building Information

Building# Notes CELL TOWER

Style Outbuildings 2013 REVALUED CELL TOWER/BLDGS Occupancy 21GL GENERATOR

Actual Year Built 0 95 AC TO NORFOLK LAND TRUST V 83/401 Effective Year Built 0 Fireplaces

Living Area Roof Cover Roof Structure Stories Grade Floor Type Condition Heat Type Exterior Wall Fuel Type Interior Wall AC

Bdrms/Full Bth/Hlf Bth/Ttl Rm Basement Finished Area Basement Sq. Ft.

Code Description Living Area Effective Area Gross Area

■Out Buildings\Extra Features

360 L.F.

Area

Area

Description 1 STORY FRAME Year Built 0 Sub Description Value \$20,400 Area 408 S.F.

Description 1 STORY FRAME Year Built 0 Sub Description Value \$6,400 256 S.F.

Description 8' FENCE Year Built 0 Sub Description Value \$1,980

Description CELL TOWER C Year Built 0 Sub Description \$1,000,000 Value

1 UNITS Area

Year Built 2021 Description GENERATOR Value \$20,000 Sub Description 1 UNITS Area

Sales History

					iii Columns ❤
	Sales Date	Instrument Type	Grantor	Grantee	Book/Page
>	5/18/2020	Unqualified Sale - Nonspecific	NEW CINGULAR WIRELESS PCS LLC	SRR TOWERS LLC	125-001
>	6/22/2015	Unqualified Sale - Nonspecific	AT&T CAPITAL SERVICES INC	NEW CINGULAR WIRELESS PCS LLC ATTN PROPERTY TAX DEPT	0118-1088
>	10/28/2014	No Consideration Sale	SOUTHERN NEW ENGLAND TELEPHONE	AT&T CAPITAL SERVICES INC	0118-0311
>	8/2/1957			SOUTHERN NEW ENGLAND TELEPHONE	0042-0294

□Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
19-025E	04-01-2019	EL	Electric	\$7,000		100		GENERATOR
828E	03-27-2015	EL	Electric	\$15,000		100		UPG 3 ANTENNAS
388-E	03-02-2013	EL	Electric	\$12,000		100		6 NEW ANTENNAS
7470-E	01-18-2001	EL	Electric	\$54,000		100		ADD ANTENNAS TO TOWER
7457	12-18-2000	EL	Electric	\$10,000		100		INSTALL CONDUITS

⊟Photos





STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

1 CENTRAL PARK PLAZA • NEW BRITAIN, CONN. 06051
PHONE: 827-2604

Petition No. 106
Field Review of July 17, 1984
Norfolk, Connecticut

Owen Clark, Colin Tait, and Robert Erling of the Connecticut Siting Council met Richard Kischell of the Southern New England Telephone Company (SNET) for a field review of Petition No. 106 on July 17, 1984. SNET is petitioning the Council for a declaratory ruling that no certificate of environmental compatibility and public need is necessary for the replacement of the company's existing 160' guyed microwave tower in Norfolk, Connecticut.

SNET proposes to replace its existing tower with another tower the same height, but stronger, and thus more resistant to the high winds which cause signal fading. The new tower would be 8 feet away from the existing tower which would be dismantled and removed from the site. Two microwave dishes on the existing tower would be transferred to the new tower, and placed at the same height as at present. The project would take two weeks to complete, during which time SNET would utilize its existing land line cable system to provide service.

Power densities at the base of the proposed tower would remain the same as those at the existing tower, .00025 uW/cm².

The proposed tower would continue the service which links telephone traffic between towers in Canaan and Harwinton.

Robert K. Erling Siting Analyst

RKE/kp

- T-Mobile-

SITE NAME: NORFOLK SNET_1
SITE ID: CT11349A
453 LOON MEADOW DR
NORFOLK, CT 06058

T-MOBILE A/L TEMPLATE (PROVIDED BY RFDS)

67E5998E_1xAIR+10P

T-MOBILE RAN TEMPLATE (PROVIDED BY RFDS)

67E5D998E ODE+6160

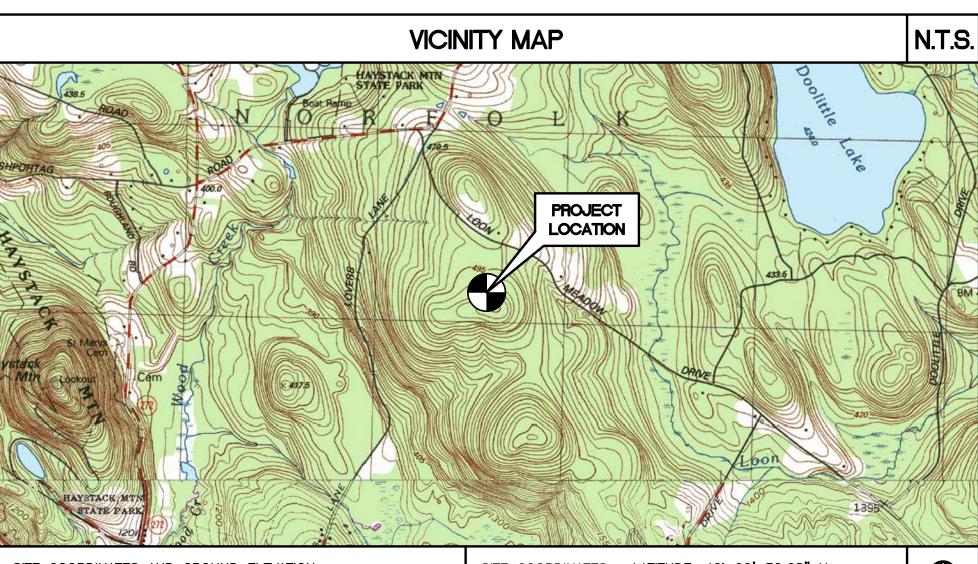
GENERAL NOTES

- 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- 2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
- 3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- 4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
- 5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
- 6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
- 7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD—OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- 8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
- 9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- 10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- 11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- 12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- 13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB—CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS.

 CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

- 14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- 15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- 16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- 17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
- 18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON—SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- 19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- 20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- 21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
- 22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- 23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
- 24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
- 25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- 26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
- 27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.





SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 1A SURVEY, COMPLETED BY CENTEK ENGINEERING, DATED 05/17/22.

SITE COORDINATES: LATITUDE: 42° 00' 32.68" N
LONGITUDE: 73° 10' 51.20" W
GROUND ELEVATION: ±1658.50' AMSL

<u>NORTH</u>

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

- 1. REPAIR CONCRETE SLAB PER SPECIFIED REQUIREMENTS PRIOR TO ANY INSTALLATION ATOP THE AFOREMENTIONED PAD. REFER TO SHEET S-1 AND S-2 FOR ADDITIONAL DEATILS.
- 2. REMOVE EXISTING COAX CABLES
- 3. REMOVE EXISTING EMS: RR90-17-XXDP ANTENNAS, TYP. (1) PER SECTOR; TOTAL OF (3)
- 4. REMOVE EXISTING TMA
- 5. REMOVE EXISTING DIPLEXER
- 6. REMOVE EXISTING ANDREW: LNX-6515DS-A1M ANTENNAS, TYP. (1) PER SECTOR; TOTAL OF (3)
- 7. REMOVE EXISTING ANTENNA MOUNTS
- 8. REMOVE EXISTING T-MOBILE EQUIPMENT LOCATED INSIDE THE EXISTING SHELTER.
- 9. REMOVE EXISTING T-MOBILE ICE-BRIDGE
- 10. INSTALL (2) 6x24 HYBRID CABLES
- 11. INSTALL ERICSSON: AIR6419 B41 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
- 12. INSTALL RFS: APXVAALL24_43-U-NA20 ANTENNA, TYP. (1) PER SECTOR; TOTAL OF (3)
- 13. INSTALL ERICSSON: RADIO 4460 B25+B66, TYP. (1) PER SECTOR; TOTAL OF (3)
- 14. INSTALL ERICSSON: RADIO 4480 B71+B85, TYP. (1) PER SECTOR; TOTAL OF (3)
- 15. INSTALL T-MOBILE 6160 POWER ENCLOSURE ATOP EXISTING CONCRETE PAD
- 16. INSTALL T-MOBILE B160 BATTERY CABINET ATOP EXISTING CONCRETE PAD
- 17. INSTALL NEW 200A PPC CABINET ON EXISTING FRAME.
- 18. INSTALL SITE PRO: VFA12-HD ANTENNA FRAMES, TYP. (1) PER SECTOR; TOTAL
- 19. INSTALL NEW CABLE ICE-BRIDGE

OF (3)

SITE COORDINATES:

PROJECT INFORMATION

SITE NAME:

NORFOLK SNET_1

SITE ID:

CT11349A

SITE ADDRESS:

453 LOON MEADOW DR NORFOLK, CT 06058

APPLICANT:

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT. 06002

CONTACT PERSON:

DAN REID (PROJECT MANAGER)

(203) 592–8291

ENGINEER OF RECORD:

CENTEK ENGINEERING, INC.
63–2 NORTH BRANFORD ROAD
BRANFORD, CT. 06405

CARLO F. CENTORE, PE
(203) 488-0580 EXT. 122

LATITUDE: 42*-00'-32.68" N
LONGITUDE: 73*-10'-51.20" W
GROUND ELEVATION: 1658.50'± AMSL

TRANSCEND WIRELESS, LLC

SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 1A SURVEY, COMPLETED BY CENTEK ENGINEERING, DATED 05/17/22.

	SHEET INDEX	
SHEET. NO.	DESCRIPTION	RE'
T-1	TITLE SHEET	2
N-1	NOTES AND SPECIFICATIONS, ANT. SCHEDULE	2
C-1	COMPOUND PLAN, EQUIPMENT PLANS AND ELEVATION	2
C-2	ANTENNA PLANS AND ELEVATIONS	2
C-3	TYPICAL EQUIPMENT DETAILS	2
C-4	TYPICAL EQUIPMENT DETAILS	2
S-1	CONCRETE RESTORATION NOTES	2
S-2	CONCRETE RESTORATION PLAN AND DETAILS	2
E-1	ELECTRICAL RISER DIAGRAM AND CONDUIT ROUTING	2
E-2	TYPICAL ELECTRICAL DETAILS	2
E-3	ELECTRICAL SPECIFICATIONS	2

PROFESSIONAL ENGINEER SEAL

MODULE

2 03/31/23 ASC TJR CONSTRUCTIC

1 01/27/23 RTS TJR CONSTRUCTIC

ed on Solutions **

88-0580

88-8587 Fax

or, CT 06405

IE: NORFOLK SNET_1 TE ID: CT11349A OON MEADOW DR

SITE N STE N STE N N N

DATE: 03/16/22 SCALE: AS NOTED

JOB NO. 22022.16

TITLE SHEET

T-1

SHEET NO. 1

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

- 1. DESIGN CRITERIA:
- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED: 89 MPH (Vasd) (EXPOSURE B/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

- 1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- 2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- 3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
- 4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- 5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

WORK.

- 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
- CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- 4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
- 5. ALL DIMENSIONS. ELEVATIONS. AND OTHER REFERENCES TO EXISTING STRUCTURES. SURFACE. AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS. ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY
- 6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
- CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE
- CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- 10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- 11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS. SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- 12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- 13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

- 14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- 15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- 16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- 17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
- 18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- 19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- 20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- 21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT
- 22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- 23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
- 24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
- 25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- 26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP, EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS. BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
- 27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

STRUCTURAL STEEL

(FY = 46 KSI)

- ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
- A. STRUCTURAL STEEL (W SHAPES)——ASTM A992 (FY = 50 KSI)
- STRUCTURAL STEEL (OTHER SHAPES) --- ASTM A36 (FY = 36 KSI) STRUCTURAL HSS (RECTANGULAR SHAPES)———ASTM A500 GRADE B,
- D. STRUCTURAL HSS (ROUND SHAPES) --- ASTM A500 GRADE B,
- (FY = 42 KSI)
- PIPE---ASTM A53 (FY = 35 KSI)
- CONNECTION BOLTS---ASTM A325-N U-BOLTS---ASTM A36
- ANCHOR RODS———ASTM F 1554
- WELDING ELECTRODE———ASTM E 70XX
- 2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
- 3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- 4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- 5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- 7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- 8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
- 9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- 10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
- 11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
- 12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE
- 13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- 14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
- 15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- 16. FABRICATE BEAMS WITH MILL CAMBER UP.
- 17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
- 18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- 19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- 20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ANTENNA/APPURTENANCE SCHEDULE SECTOR EXISTING/PROPOSED ANTENNA ANTENNA & AZIMUTH (E/P) TMA (QTY)(QTY) PROPOSED HYBRID/COAX SIZE (INCHES) (E/P) RRU (QTY) HEIGHT $(L \times W \times D)$ PROPOSED ERICSSON (AIR6419 B41) 33 x 16 x 9 120' 60° 120' 60° PROPOSED RFS (APXVAALL24_43-U_NA20) 95.9 x 24 x 8.7 (P) RADIO 4480 B71+B85 (1), (P) RADIO 4460 B25+B66 (1) 160° PROPOSED 33 x 16 x 9 120' ERICSSON (AIR6419 B41) (2) 6x24 HYBRID CABLE B2 120' 160° PROPOSED RFS (APXVAALL24_43-U_NA20) 95.9 x 24 x 8.7 (P) RADIO 4480 B71+B85 (1), (P) RADIO 4460 B25+B66 (1) 280° PROPOSED ERICSSON (AIR6419 B41) 33 x 16 x 9 120' 95.9 x 24 x 8.7 (P) RADIO 4480 B71+B85 (1), (P) RADIO 4460 B25+B66 (1) C2 120' 280° PROPOSED RFS (APXVAALL24_43-U_NA20)

ALL HYBRID/COAX LENGTHS TO BE MEASURED AND VERIFIÉD IN FIELD BEFORE ORDERING

ITE ITE ASC RTS RTS

NAME: STE!

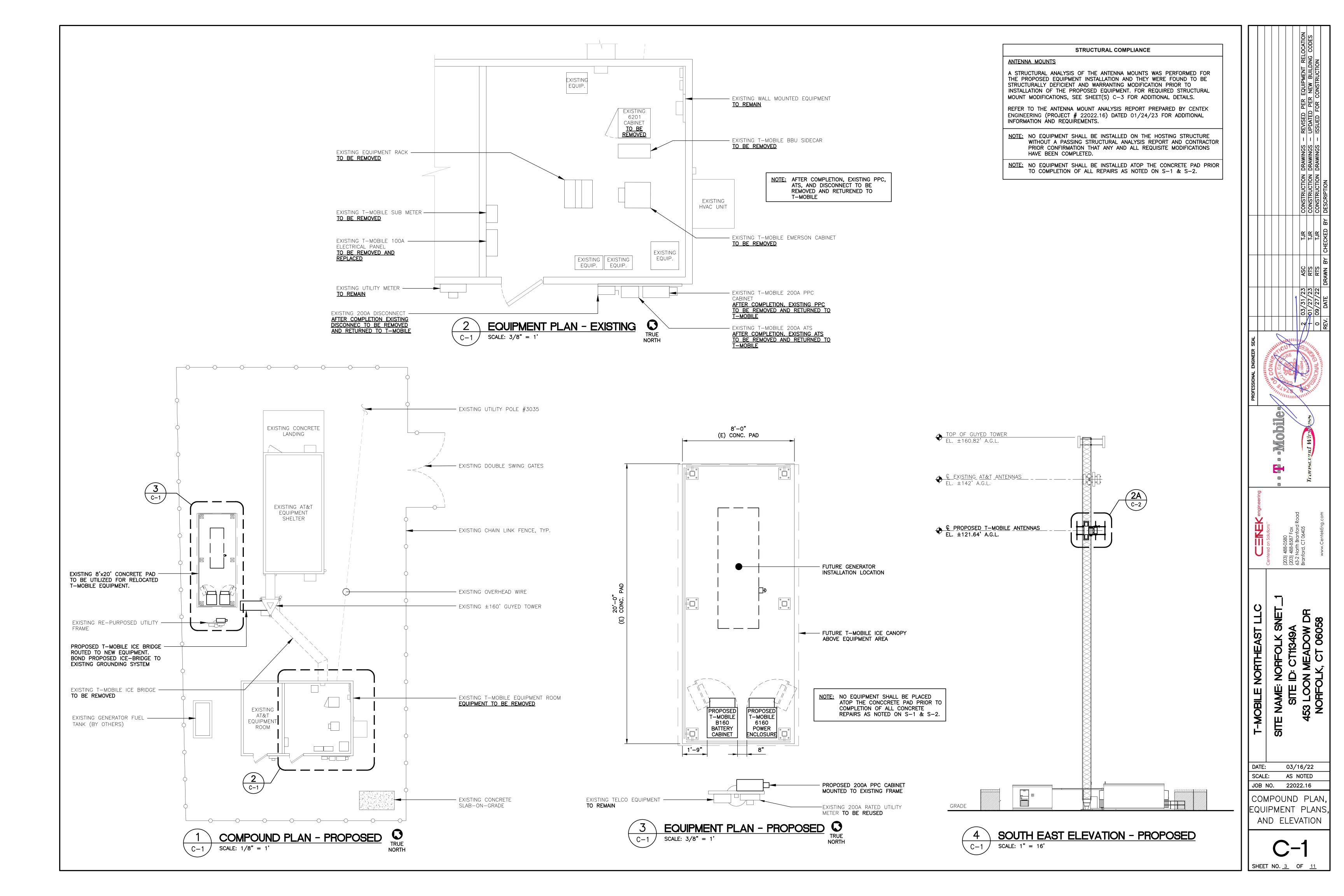
 \mathbf{O}

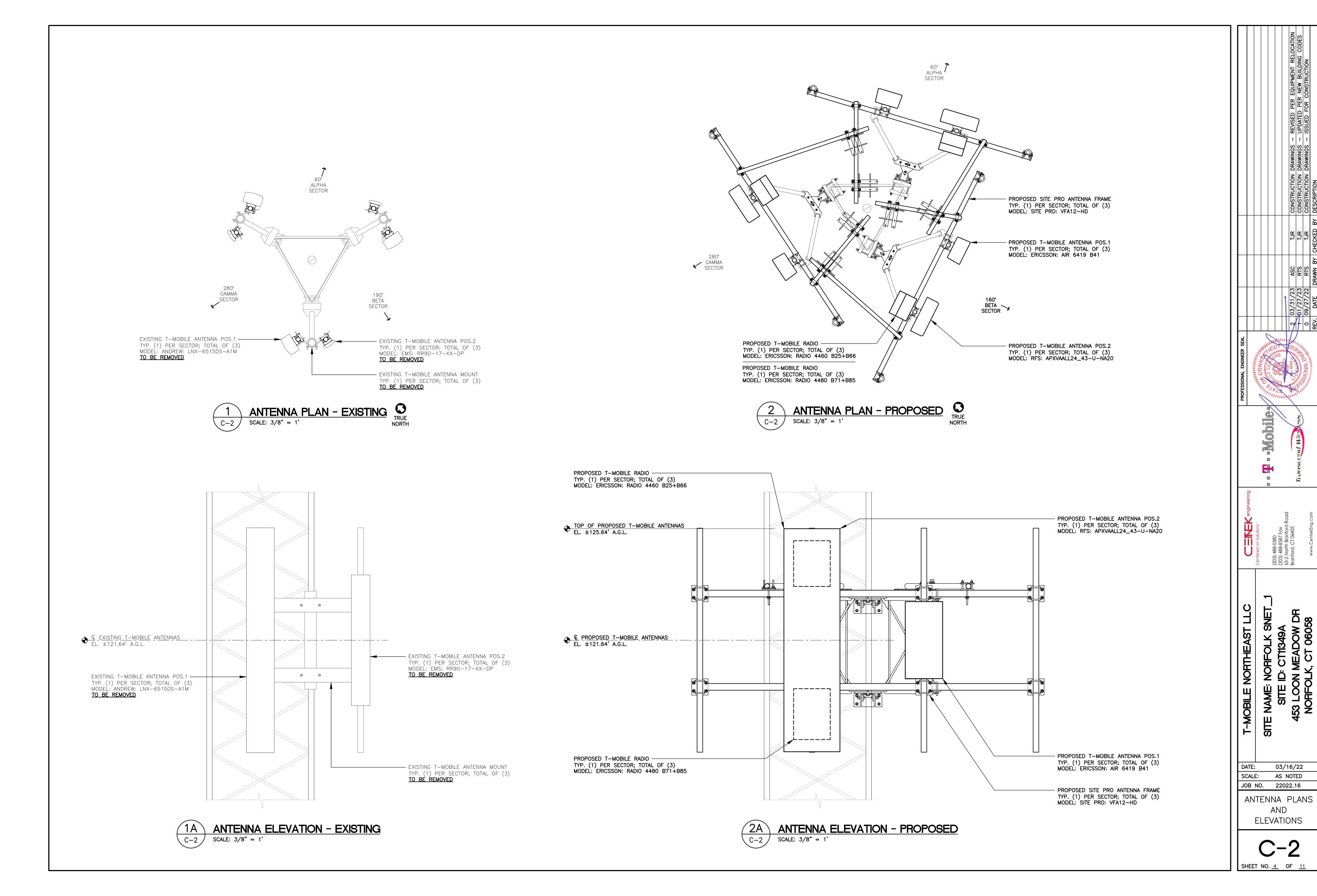
NORTHEAST

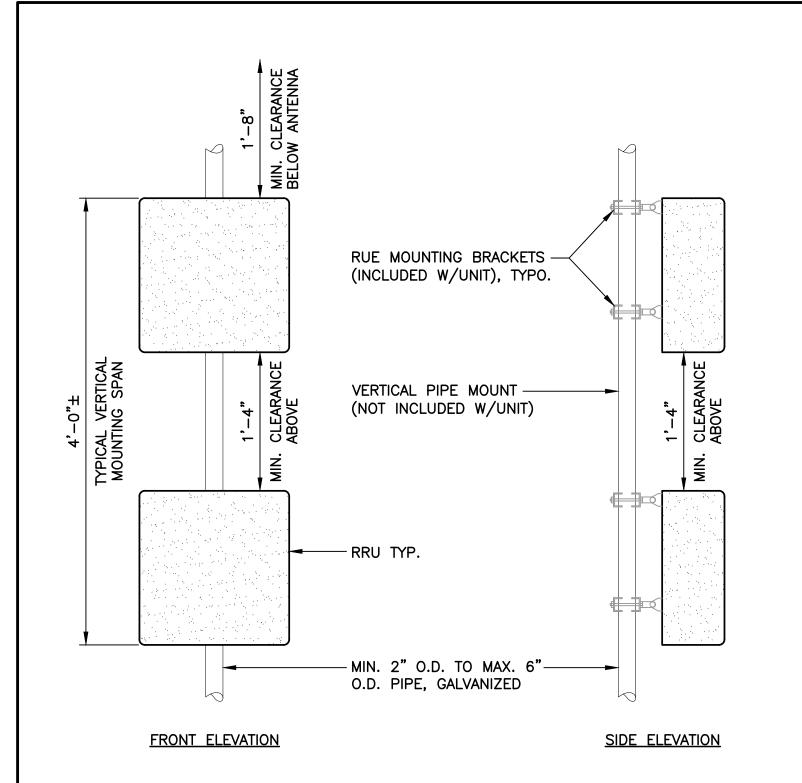
03/16/22 SCALE: AS NOTED JOB NO. 22022.16

NOTES AND **SPECIFICATIONS** ANT. SCHEDULE

SHEET NO. 2 OF 11







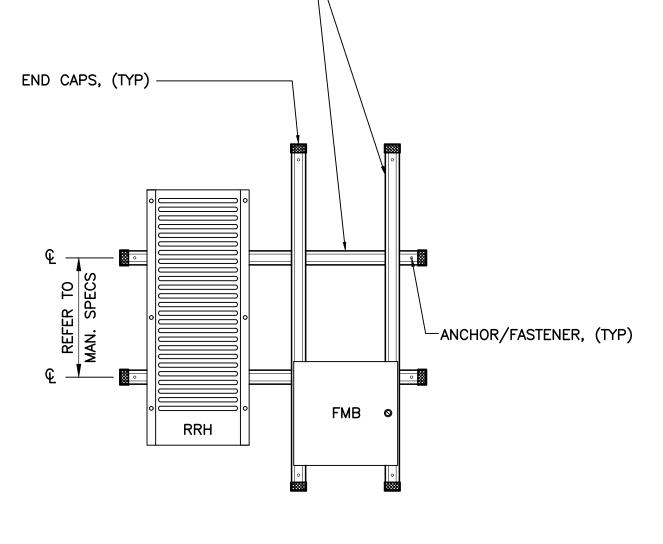
1. T-MOBILE SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET.

INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET.

2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE

NOTES: (PIPE MOUNTING)



NOTES: (UNISTRUT MOUNTING)

P1000T UNISTRUT

CHANNEL OR EQUIVALENT

- 1. INSTALL A MINIMUM OF (2) ANCHORS PER UNISTRUT (± 16"o/c MIN).
- 2. MOUNT RRU TO UNISTRUT WITH 3/8" UNISTRUT BOLTING HARDWARE AND SPRING NUTS. TYPICAL FOUR PER BRACKET.

FRONT ELEVATION

3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.



AIR6419 B41

EQUIPMENT

MODEL: APXVAALL24_43-U-NA20

MAKE: ERICSSON MODEL: AIR6419 B41



APXVAALL24_43-U-NA20

WEIGHT

±41 LBS.

±150 LBS.





RADIO 4460 B25+B66

RADIO 4480 B71+B85

	RRU (REMOTE RADIO UNIT)								
EQUIPMENT		DIMENSIONS	WEIGHT	CLEARANCES					
MAKE: MODEL:	ERICSSON RADIO 4460 B25+B66	19.6"L x 15.7"W x 12.1"D	±109 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.					
MAKE: MODEL:	ERICSSON RADIO 4480 B71+B85	21.8"L x 15.7"W x 7.5"D	±84 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.					

NOTES:

1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.



TYPICAL RRU MOUNTING DETAILS

SCALE: NOT TO SCALE





ALPHA/BETA/GAMMA ANTENNA

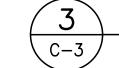
NOTES:

1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

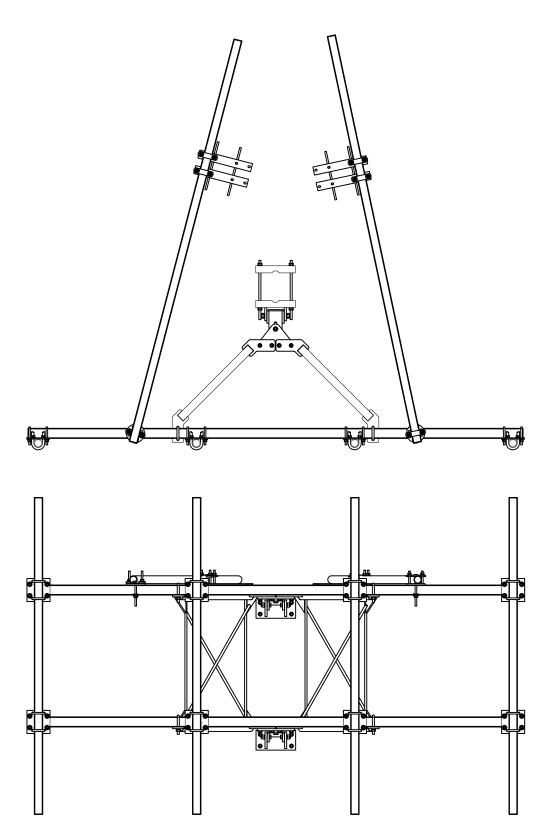
DIMENSIONS

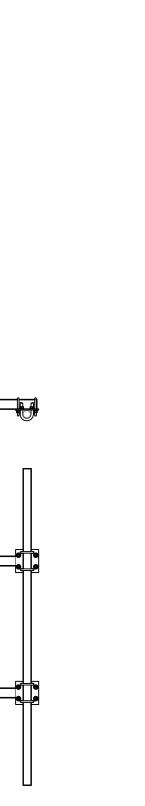
33"L × 16"W × 9"D

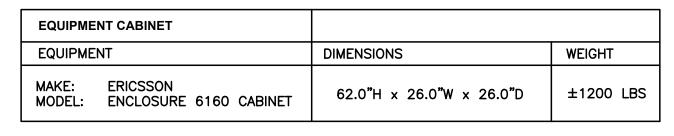
95.9"L x 24.0"W x 8.5"D

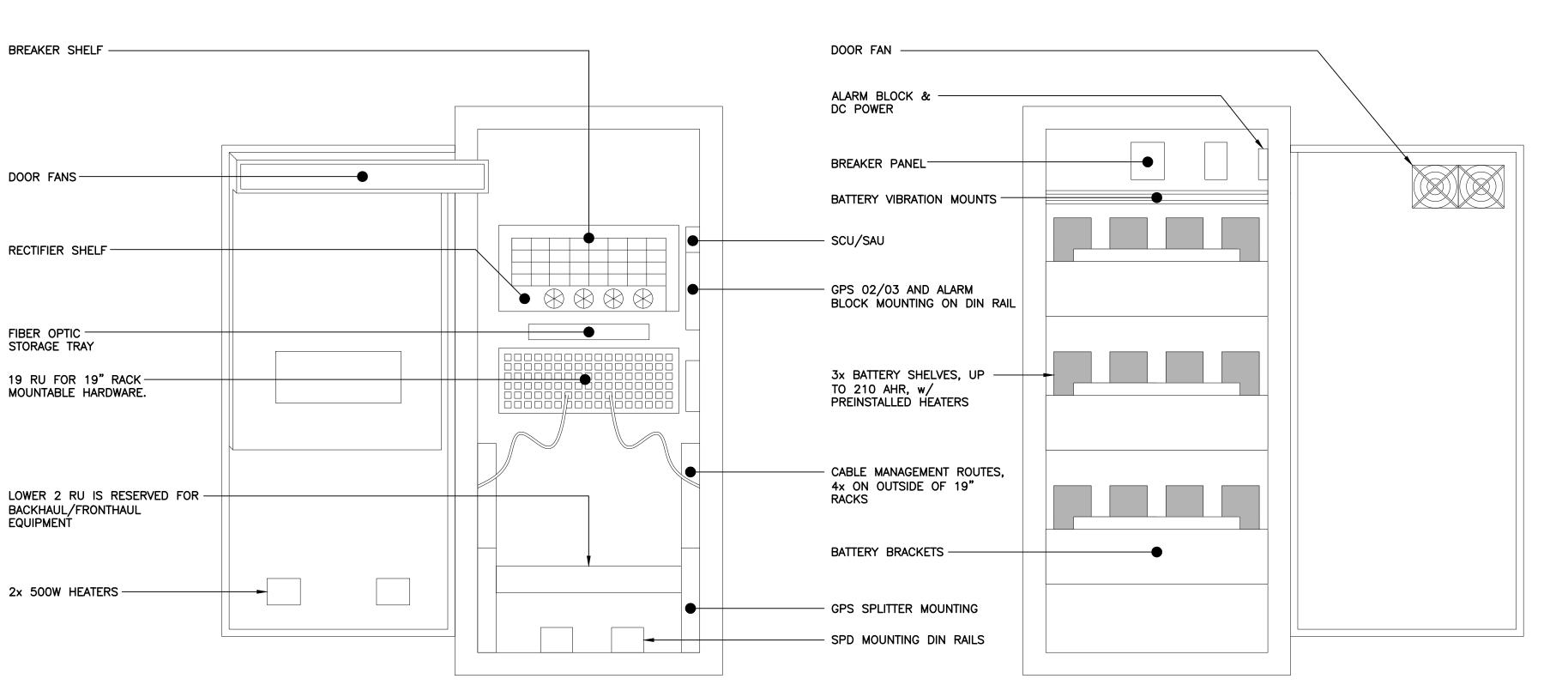


PROPOSED RRU DETAIL SCALE: NOT TO SCALE





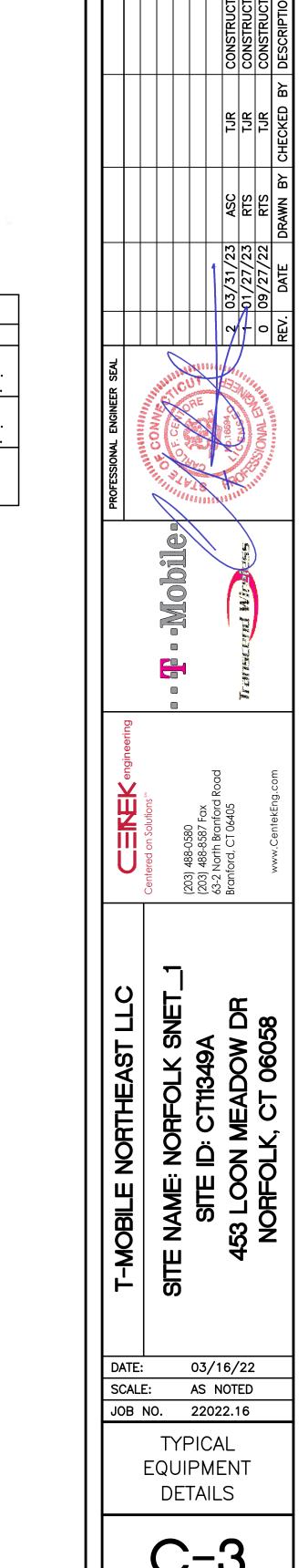




EQUIPMENT CABINET			
EQUIPMENT	DIMENSIONS	WEIGHT	
MAKE: ERICSSON MODEL: BATTERY B160 CAE	62.0"H x 26.0"W x 26.0"D	±1883 LBS	







SHEET NO. <u>5</u> OF <u>11</u>

PROPOSED ANTENNA MOUNT DETAIL SCALE: NOT TO SCALE

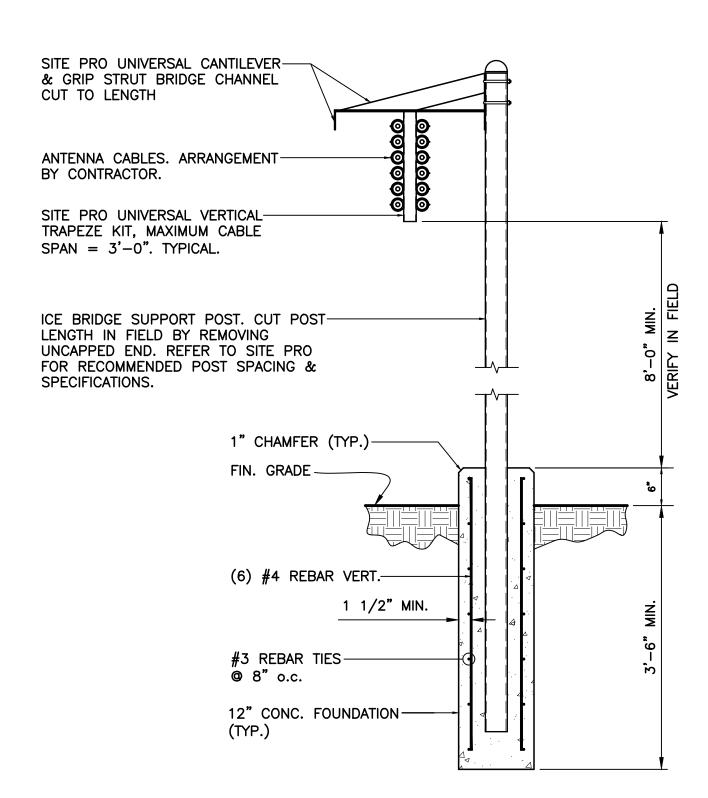
SITE PRO: VFA12-HD



VERTIV 200A PPC CABINET							
EQUIPMENT	PHASE	VOLTAGE	LOAD CENTER	AMP	DIMENSIONS		
MAKE: VERTIV MODEL: F1009593	1-PHASE	120/240	24 POSITIONS	200	59"L x 24"W x 10"D		

1 TYPICAL 200 AMP PPC CABINET DETAIL

C-4 SCALE: NOT TO SCALE





-Mobile-(203) 488-0580 (203) 488-8587 Fax 63-2 North Branford Branford, CT 06405 SITE NAME: NORFOLK SNET_ SITE ID: CT11349A 453 LOON MEADOW DR NORFOLK, CT 06058 T-MOBILE NORTHEAST LLC DATE: 03/16/22 SCALE: AS NOTED JOB NO. 22022.16 TYPICAL

EQUIPMENT DETAILS

C-4
SHEET NO. 6 OF 11

CONCRETE REPAIR NOTES AND SPECIFICATIONS:

GENERAL REQUIREMENTS:

- 1. WHEREVER THE WORDS "APPROVED BY", "EQUIVALENT" OR SIMILAR PHRASES ARE USED IN THIS SPECIFICATION, THEY SHALL BE UNDERSTOOD TO MEAN THAT THE MATERIAL, PROCESS OR ITEM REFERRED TO SHALL REQUIRE THE WRITTEN APPROVAL OF THE PATCHING SYSTEM MANUFACTURER.
- 2. THIS SPECIFICATION SHALL BE READ IN CONJUNCTION WITH PROJECT SPECIFICATIONS, SKETCHES, PHOTOGRAPHS AND/OR DRAWINGS INDICATING THE PRECISE EXTENT OF WORK AND THE USE AND LOCATION OF SPECIFIC
- 3. CONTRACTOR SHALL MAKE A PRE-BID FIELD VISIT TO VERIFY ALL WORK SHOWN OR NOT SHOWN ON THE DRAWINGS.

WORK INCLUDED

- 1. PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THE FOLLOWING CONCRETE REPAIR WORK:
 - A. PREPARATION OF ALL SURFACES TO RECEIVE PATCHING COMPOUND.
 - B. MIXING AND TRANSPORTATION OF PATCHING COMPOUND.
 - C. REPAIRS TO DELAMINATED AND SCALED AREAS OF EXISTING CONCRETE.
 - D. PRIMING OF REPAIR AREAS AND PLACEMENT OF PATCHING COMPOUND.
 - E. FINISHING AND CURING OF PATCHES.
 - F. REPAIR OF CRACKS AND SPALLING.

DELIVERY, STORAGE AND HANDLING

- 1. DELIVER MATERIALS TO SITE IN MANUFACTURER'S ORIGINAL UNOPENED CONTAINERS AND PACKAGING, BEARING LABELS AS TO TYPE AND NAMES OF PRODUCTS AND MANUFACTURERS.
- 2. DELIVER AND STORE RESTORATION MATERIAL IN MANUFACTURER'S ORIGINAL, UNOPENED CONTAINERS WITH THE GRADE, BATCH AND PRODUCTION DATA SHOWN ON THE CONTAINER OR PACKAGING.
- 3. PROTECT RESTORATION MATERIALS DURING STORAGE AND CONSTRUCTION FROM WETTING BY RAIN, SNOW OR GROUND WATER, AND FROM STAINING OR INTERMIXTURE WITH EARTH OR OTHER TYPES OF MATERIALS.
- 4. PROTECT GROUT, MORTAR AND OTHER MATERIALS FROM DETERIORATION BY MOISTURE AND TEMPERATURE. STORE IN A DRY LOCATION OR IN WATERPROOF CONTAINERS. KEEP CONTAINERS TIGHTLY CLOSED AND AWAY FROM OPEN FLAMES. PROTECT LIQUID COMPONENTS FROM FREEZING. COMPLY WITH MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM AND MAXIMUM TEMPERATURE REQUIREMENTS FOR STORAGE.
- 5. COMPLY WITH THE MANUFACTURER'S WRITTEN SPECIFICATIONS AND RECOMMENDATIONS FOR MIXING, APPLICATION, AND CURING OF GROUTS AND PATCHING MATERIALS.

PROTECTION/SITE CONDITIONS

- 1. PROTECT PERSONS, VEHICLES, BUILDING SITE AND SURROUNDING BUILDINGS FROM INJURY RESULTING FROM CONCRETE RESTORATION WORK.
- 2. CLEAN MASONRY SURFACES ONLY WHEN AIR TEMPERATURES ARE ABOVE 40 DEGREES F (4 DEG. C) AND WILL REMAIN SO UNTIL CONCRETE HAS DRIED OUT, BUT FOR NOT LESS THAN 7 DAYS AFTER COMPLETION OF CLEANING.
- 3. DO NOT PERFORM ANY PATCHING UNLESS AIR TEMPERATURES ARE BETWEEN 40 DEGREES FAHRENHEIT (10 DEG. C) AND 86 DEGREES FAHRENHEIT (30 DEG. C) AND WILL REMAIN SO FOR AT LEAST 48 HOURS AFTER COMPLETION OF WORK.
- 4. DO NOT PERFORM ANY PATCHING WORK IF PRECIPITATION IS EXPECTED. IN CASE OF UNEXPECTED PRECIPITATION, WORK SHALL CEASE, AND ALL UNCURED MATERIAL SHALL BE ADEQUATELY PROTECTED WITH AN IMPERMEABLE POLYETHYLENE SHEET.
- 5. IF EITHER THE AMBIENT OR SUBSURFACE TEMPERATURE IS EXPECTED TO FALL BETWEEN 35F (2C) AND 40F (4C) DURING CURING AND ULTIMATE DRYING OF THE PATCHING COMPOUND, THEN THE COLD WEATHER PRECAUTIONS OUTLINED IN ITEM 7, BELOW, OF THIS SECTION OF THE SPECIFICATION SHALL BE FOLLOWED.
- 6. IF AMBIENT OR SURFACE TEMPERATURE IS EXPECTED TO RISE ABOVE 86F (30C) DURING APPLICATION AND CURING OF THE PATCHING COMPOUND. THEN THE HOT WEATHER PRECAUTIONS OUTLINED IN ITEM 8 OF THIS SECTION OF THE SPECIFICATIONS SHALL BE FOLLOWED.
- 7. COLD WEATHER PRECAUTIONS:
- A. CURING TIMES SHALL BE EXTENDED TO COMPENSATE FOR LOWER TEMPERATURE CURE.
- B. DO NOT PROCEED IF TEMPERATURES WILL DROP BELOW FREEZING BEFORE PATCHING COMPOUND HAS REACHED FINAL SET. ANY MATERIAL DISRUPTED BY EARLY FREEZING MUST BE RE-MOVED AND REPLACED UNDER APPROPRIATE CONTROLS OR CONDITIONS.
- C. IF AUXILIARY HEATING WILL BE USED TO PROTECT FRESHLY PLACED MATERIALS FROM FREEZING, EQUIPMENT MUST NOT DIRECTLY VENT EXHAUST GASES ONTO THE REPAIR MATERIALS OR INTO REPAIR ENCLOSURE AIR. THIS MAY CAUSE CARBONATION AND LOW STRENGTH. USE MODERATE TEMPERATURES AND HEATED AIR OR RADIANT HEAT.

SEQUENCING AND SCHEDULING

- 1. PERFORM CONCRETE RESTORATION WORK IN THE FOLLOWING SEQUENCE:
- A. REMOVE PAINT, STAINS AND PLANT MATERIAL FROM ALL SURFACES.
- B. REMOVE EXISTING UNSOUND MATERIALS FROM AREAS INDICATED TO BE RESTORED.
- C. PRESSURE WASH BUILDING AND REPAIR SURFACES AS INDICATED.
- D. PATCH AND REPAIR EXISTING CONCRETE STRUCTURES AS INDICATED.

PRODUCTS

- 1. ACRYLIC LATEX PRIMER/BONDING AGENT.
- 2. PATCHING COMPOUND SHALL BE A CUSTOM, 1-COMPONENT, POLYMER-MODIFIED CEMENTITIOUS PRODUCT, OR APPROVED EQUAL. PATCHING COMPOUND SHALL BE AN ACRYLIC POLYMER MODIFIED BLEND OF PORTLAND CEMENT, SPECIALLY GRADED AGGREGATES, AND ADMIXTURES, DESIGNED FOR LOW SHRINKAGE, LOW STRESS CURE, AND COMPATIBILITY WITH EXISTING HOST CONCRETE. PRIOR TO PATCHING, SAMPLE CORES OF EXISTING CONCRETE SHALL BE DELIVERED BY CONTRACTOR TO MANUFACTURER FOR TESTING AND EVALUATION. PATCHING COMPOUND SHALL BE CUSTOMIZED BY MANUFACTURER, SO THAT COMPRESSIVE STRENGTH DOES NOT EXCEED 4000 PSI, OR 500 PSI ABOVE THE EXISTING CONCRETE'S COMPRESSIVE STRENGTH, WHICHEVER IS HIGHER, AS MEASURED BY ASTM C-109. MANUFACTURER SHALL HAVE A SUCCESSFUL PERFORMANCE HISTORY FOR SIMILAR PROJECTS OF NO LESS THAN 10 YEARS AND SHALL HAVE BEEN DOING BUSINESS AS THE SAME BUSINESS ENTITY FOR NO LESS THAN 10 YEARS.
- 3. PATCHING COMPOUND SHALL DEVELOP A MINIMUM 200 PSI DIRECT TENSILE ADHESION WITH HOST SUBSTRATE, WHEN APPLIED IN ACCORDANCE WITH THESE SPECIFICATIONS.
- 4. TENSILE STRENGTH OF PATCHING COMPOUND SHALL BE A MINIMUM OF 400 PSI. FLEXURAL MODULUS SHALL BE 1.1 X 106. MATERIAL MUST BE VAPOR PERMEABLE, WITH A MINIMUM PERMEANCE OF 8 PERMS AT 1/2" DEPTH AS MEASURED BY ASTM E-96.
- 5. WATER USED FOR CLEANING, MIXING AND FINISHING SHALL BE CLEAN, POTABLE, FREE FROM OIL, ACID, INJURIOUS AMOUNTS OF VEGETABLE MATTER, ALKALIES OR OTHER SALTS.
- 6. NO COLORANTS, ACCELERATORS, BONDING AGENTS OR OTHER ADDITIVES SHALL BE ADDED TO THE PATCHING COMPOUND WITHOUT EXPRESS WRITTEN DIRECTION OF THE MANUFACTURER.
- 7. CRACK SEALANT FOR SMALL CRACKS SHALL BE A 100% SOLIDS, 2-COMPONENT ELASTOMERIC EPOXY WITH 110% ELONGATION AND MINIMUM 1200 PSI TENSILE STRENGTH AS MEASURED BY ASTM D412.
- 8. REINFORCING STEEL PRIMER/CORROSION INHIBITOR SHALL BE AN ALKALINE, SILICA FUME MODIFIED, LATEX MODIFIED CEMENTITIOUS COATING.
- 9. THE PRODUCTS SPECIFIED HEREIN SHALL BE ASSUMED TO MEET THE PERFORMANCE CRITERIA SPECIFIED. IF A PROPOSED EQUAL IS SUBMITTED, THOROUGH LAB TESTING SHALL BE REQUIRED TO ESTABLISH EQUIVALENT PERFORMANCE LEVELS.

SURFACE PREPARATION

- 1. PRIOR TO PATCHING, ALL SURFACES MUST BE PREPARED IN ACCORDANCE WITH THIS SECTION OF THE SPECIFICATIONS.
- 2. REMOVE ALL UNSOUND CONCRETE, USING LIGHTWEIGHT DEMOLITION HAMMERS, NOT TO EXCEED 18 POUNDS IN WEIGHT. ALL REMOVALS TO BE PERFORMED IN ACCORDANCE WITH ICRI GUIDELINE #03730, WHICH SHALL BE A PART OF THESE SPECIFICATIONS, WITH REGARD TO REMOVAL GEOMETRY, EXPOSING, UNDERCUTTING AND CLEANING OF EMBEDDED REINFORCEMENT, AND CONDITIONING OF EDGES AND SURFACES. FOLLOWING DEMOLITION, TEST SURFACES FOR ALKALINITY/CARBONATION WITH A 1-2% SOLUTION OF PHENOLPHTHALINE. SURFACES WHICH DO NOT INDICATE ALKALINITY (SOLUTION TURNS PINK) SHALL REQUIRE FURTHER DEMOLITION.
- 3. PRESSURE WASH ALL INDICATED SURFACES USING 3000-4000 PSI WATER BLAST, AS REQUIRED TO REMOVE ALL DUST AND DIRT. ABRASIVE SHALL BE USED IN COMBINATION WITH WATER WHEN CLEANING REPAIR CAVITIES, AS REQUIRED TO ELIMINATE MICRO- CRACKED SURFACE MATERIALS RESULTING FROM DEMOLITION. NO WATER WITH CONCRETE DUST SHALL BE ALLOWED TO REMAIN ON ANY SURFACE FOLLOWING WASHING, AND MUST BE IMMEDIATELY REMOVED, PRIOR TO DRYING AND REHARDENING.
- 4. THE RESULT OF THIS PREPARATION SHALL RENDER A SURFACE CLEAN, MEANING HAVING COMPLETE EXPOSURE OF SOUND ORIGINAL MATERIAL WITHOUT ANY DEPOSITS OF CONTAMINANTS, FOREIGN MATTER OR LOOSE MATERIAL, WHICH COULD AFFECT THE BOND OR LONG-TERM DURABILITY OF THE SURFACE AND THE PATCHING COMPOUND.

CRACK REPAIR

- 1. PATCHING COMPOUNDS ARE NOT TO BE USED TO BRIDGE WORKING CRACKS OR JOINTS. PRIOR TO CRACK REPAIR, CONTRACTOR SHALL ENGAGE THE SERVICES OF THE CRACK SEALANT MANUFACTURER'S TECHNICAL REPRESENTATIVE TO ASSIST IN THE SELECTION OF THE APPROPRIATE GRADES OF CRACK SEALANTS FOR EACH AREA.
- 2. CRACK REPAIR FOR SMALL CRACKS LESS THAN 1/16" (62 MILS, 1.5 MM) SHALL BE PERFORMED FOLLOWING PRESSURE WASHING AND DRYING BY GRAVITY FILLING WITH ELASTOMERIC CRACK SEALANT. CRACKS WIDER THAN 1/16" SHALL BE GROOVED OUT TO A NOMINAL 1/2" X 1/2" (3MM X 3MM) AND FILLED WITH CRACK SEALANT.

PRIMING OF REINFORCED STEEL

- 1. ANY STEEL REINFORCEMENT EXPOSED IN THE COURSE OF REMOVING UNSOUND MATERIALS SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS.
- 2. FOLLOWING CLEANING AND PRIOR TO PATCHING, APPLY CEMENTITIOUS CORROSION INHIBITIVE PRIMER AND BONDING AGENT TO ALL STEEL SURFACES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CARE MUST BE TAKEN TO CREATE A CONTINUOUS COATING ON THE FULL SURFACE, INCLUDING THE UNDERSIDE OF THE UNDERCUT REINFORCEMENT. OBSERVE MANUFACTURER'S GUIDELINES WITH REGARD TO MINIMUM AND MAXIMUM TIMING "WINDOWS" FOR PATCHING AFTER APPLICATION OF PRIMER.

CONCRETE PATCHING

- 1. FOLLOWING PREPARATION, AS SPECIFIED ABOVE, CONTRACTOR SHALL MAINTAIN WORK AREA IN A CLEAN CONDITION, INCLUDING MATERIALS, EQUIPMENT AND WORKERS' FOOTWEAR, TO AVOID TRACKING IN OF CONTAMINANTS, DIRT, DUST, MUD OR OTHER MATERIALS WHICH MAY INTERFERE WITH ADHESION
- 2. PRIOR TO PATCHING, ALL REPAIR AREAS TO BE PATCHED SHALL BE KEPT CONTINUOUSLY WET FOR AT LEAST 20 MINUTES PRIOR TO APPLICATION OF PATCHING COMPOUND. BEFORE PLACING PATCH, EXCESS WATER SHALL BE BLOWN, VACUUMED OR OTHERWISE REMOVED FROM THE SURFACE, LEAVING
- 3. VIGOROUSLY BRUSH APPLY A THIN PRIMER COAT OF ACRYLIC LATEX BONDING AGENT WITH ADDED 10% NEAT TYPE 1 PORTLAND CEMENT INTO ALL CAVITY SURFACES.
- 4. WITHIN 4 HOURS OF PRIMER APPLICATION, MIX AND PLACE PATCHING COMPOUND IN ACCORDANCE
- 5. MIX THE PRECISELY MEASURED QUANTITY OF WATER SPECIFIED BY THE MANUFACTURER WITH FULL BAGS OF PATCHING COMPOUND ONLY. MIX USING SLOW SPEED DRILL (450 ROM MAXIMUM) WITH MUD OR PADDLE MIXER. MOTORIZED MORTAR MIXERS MAY BE USED FOR MIXING LARGER QUANTITIES. MIX FOR PRECISELY 4 MINUTES, USING A MIX TIMER. MIX TO A UNIFORM CONSISTENCY, FREE OF LUMPS
- 6. WHEN PLACING THE PATCHING COMPOUND. CARE SHALL BE TAKEN TO ASSURE THAT ALL CORNERS AND GAPS UNDER REINFORCING STEEL AND ENTIRE CAVITY PROFILE IS COMPLETELY FILLED AND PROPERLY COMPACTED TO PREVENT FORMATION OF VOIDS OR UNBONDED AREAS. "WORK" THE MATERIAL INTO CORNERS AND GAPS, AND ONTO CAVITY SIDEWALLS USING PRESSURE ON THE TROWEL TO ASSURE GOOD CONTACT BETWEEN PATCH AND SUBSTRATES.
- POUNDS OF CLEAN, WASHED, 3/8" PEA STONE SUITABLE IN COMPOSITION AND SURFACE PROFILE FOR USE AS A CONCRETE AGGREGATE, MAY BE ADDED TO EACH 50 POUND BAG OF PATCHING COMPOUND.
- 8. DO NOT RETEMPER MATERIAL WHICH HAS BEGUN TO SET. DISCARD ANY UNUSED MATERIAL AFTER 20 MINUTES. DO NOT EXCESSIVELY WET PATCH SURFACES AFTER PLACEMENT OR AS AN AID TO TROWELLING. LIMIT SURFACE WATER ADDITION TO LIGHT MISTING AND DO NOT WET OR REWORK
- 9. OBSERVE THE CURING REQUIREMENTS FOR EACH DAY'S WORKING CONDITIONS, AS SPECIFIED HEREIN. DO NOT EXTEND WET CURING BEYOND THE MAXIMUM SPECIFIED. DO NOT OPEN TO TRAFFIC OR EXPOSE TO WEATHER UNTIL ADEQUATE STRENGTH HAS BEEN REACHED, AS AFFECTED BY WORKING



AND DURABILITY OF REPAIRS.

THE SURFACE DAMP OR SATURATED/SURFACE DRY.

WITH MANUFACTURER'S INSTRUCTIONS.

OR DRY MATERIAL. DO NOT WHIP AIR INTO THE MIX. DO NOT OVERMIX.

7. PATCHES DEEPER THAN 1" (25 MM) MAY BE EXTENDED BY COARSE AGGREGATE ADDITION. 20

ITE ITE

ASC RTS RTS

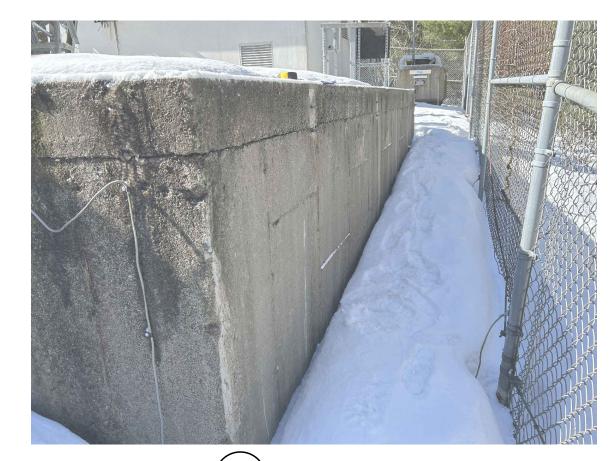
 \mathbf{O} E ID: CT11349A SON MEADOW DR FOLK, CT 06058 HEAST

NAME: SITE | 53 LOO NORFO

03/16/22 SCALE: AS NOTED JOB NO. 22022.16

CONCRETE RESTORATION NOTES

SHEET NO. 7 OF 11



(1) <u>TYPICAL SEPARATION</u>



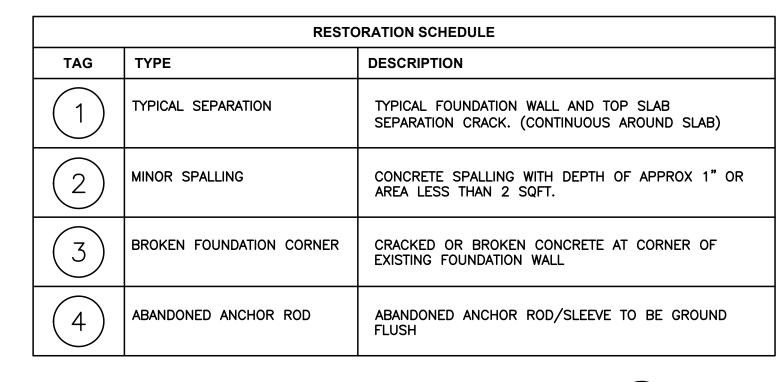
(2) MINOR SPALLING

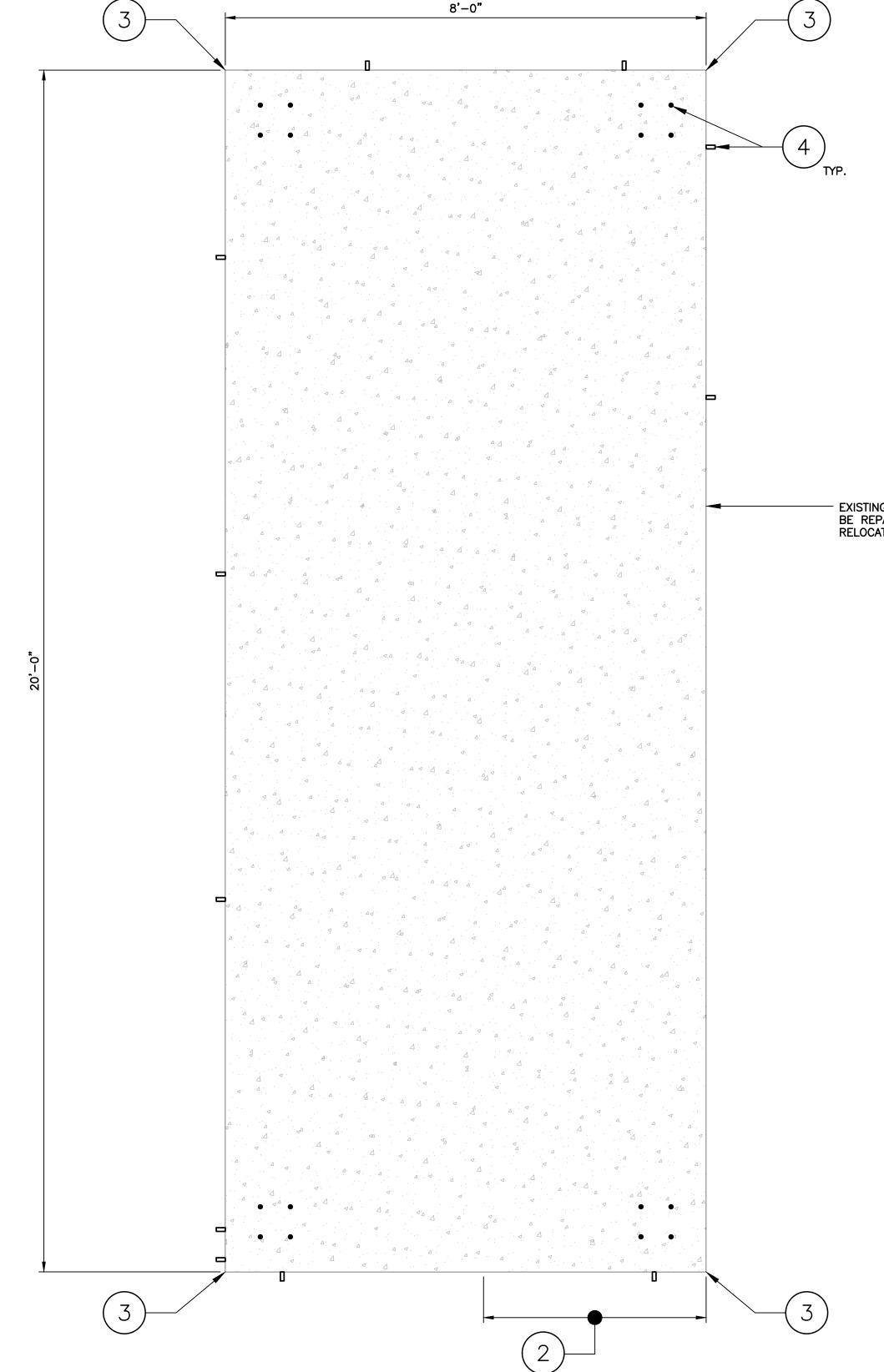


3 BROKEN FOUNDATION CORNER



(4) <u>ABONDANED ANCHOR ROD</u>





CONCRETE RESTORATION PLAN

SCALE: 3/4" = 1'

APPROX.
NORTH

RESTORATION NOTES

TYPICAL SEPERATION

- 1. PREPARE SEPARATION CRACKS PER MASTEREMACO NP 1 SPECIFICATIONS.
- 2. APPLY MASTEREMACO MASTERSEAL NP 1 PER MANUFACTURER RECOMMENDATIONS.

SPALLED CONCRETE AREAS:

- 1. "SOUND OUT" ALL CONCRETE AND REMOVE ALL UNSOUND CONCRETE TO DETERMINE PATCHING BOUNDARIES. SQUARE OFF ALL REPAIR AREAS AND SAW CUT (1/4" MINIMUM DEPTH).
- 2. CLEAN ALL EXPOSED REBAR TO A WHITE METAL FINISH AND APPLY MASTEREMACO P 124 PER MANUFACTURER'S RECOMMENDATIONS ALLOWING PRIMER TO DRY TO TOUCH.
- 3. PATCH AREAS WITH MASTEREMACO N 425 PER MANUFACTURER'S RECOMMENDATIONS.
- FOR ALL FORM AND POUR APPLICATIONS, APPLY MASTEREMACO REPAIR MORTAR PER MANUFACTURER'S RECOMMENDATIONS.

BROKEN CORNER REPLACEMENT

- 1. SOUND OUT AND REMOVE DAMAGED AND UNSOUND CONCRETE. SQUARE OFF ALL REPAIR AREAS.
- 2. CLEAN ALL EXPOSED BARS TO A WHITE METAL FINISH AND APPLY MASTEREMACO P 124 PER MANUFACTURER'S RECOMMENDATIONS. LET THE PRIMER DRY TO THE TOUCH.
- 3. PATCH AREAS WITH MASTEREMACO N 425 PER MANUFACTURER'S RECOMMENDATIONS.

ABANDONED ANCHOR RODS

- 1. CUT ALL EXISTING ANCHOR RODS/SLEEVES FLUSH WITH CONCRETE TO PREVENT INTERFERENCE WITH FUTURE CANOPY INSTALLATION.
- 2. APPLY COLD GALVANIZED TOUCH UP TO ALL EXPOSED METAL STUDS AFTER CUTTING/GRINDING FOR CORROSION PROTECTION.

RESTORATION PLAN NOTES

- 1. EXTENTS OF ALL DIMENSIONS FOR EXISTING CRACKING/SPALLING LOCATIONS ARE APPROXIMATE AND ARE TO BE VERIFIED IN FIELD BY CONTRACTOR PRIOR TO RESTORATION.
- . PHOTOS ARE PROVIDED AS EXAMPLES OF EACH TYPE OF RESTORATION REQUIRED. RESTORATION IS NOT LIMITED TO THE LOCATIONS SHOWN IN THE PHOTOS.

EXISTING 8'x20' CONCRETE PAD TO BE REPAIRED FOR USE OF RELOCATED T-MOBILE EQUIPMENT. OBILE NORTHEAST LLC

Centered on Solutions**

NAME: NORFOLK SNET_1
SITE ID: CT11349A

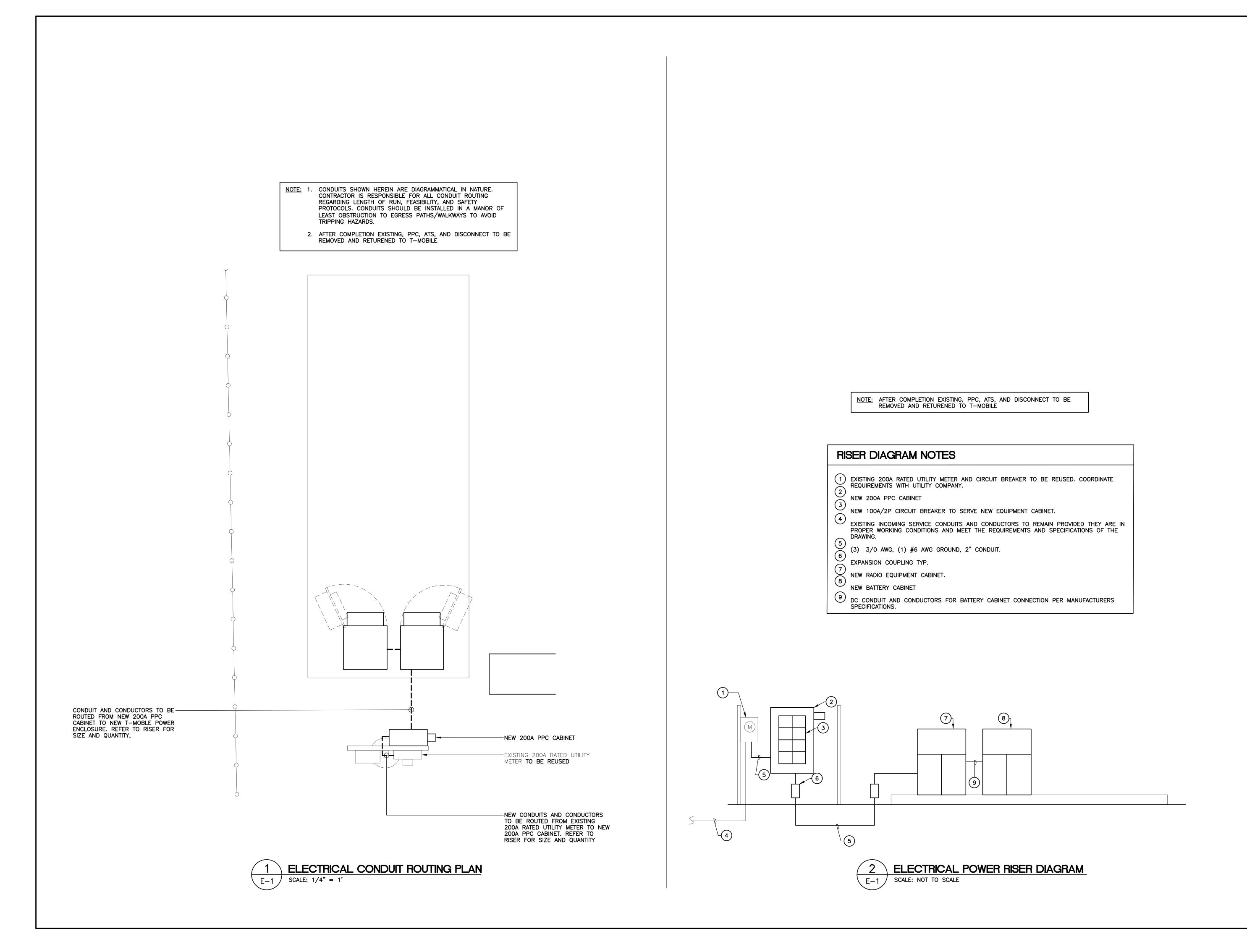
TJR TJR

DATE: 03/16/22
SCALE: AS NOTED
JOB NO. 22022.16

CONCRETE
RESTORATION
PLAN AND DETAILS

S-2

SHEET NO. <u>8</u> OF <u>11</u>

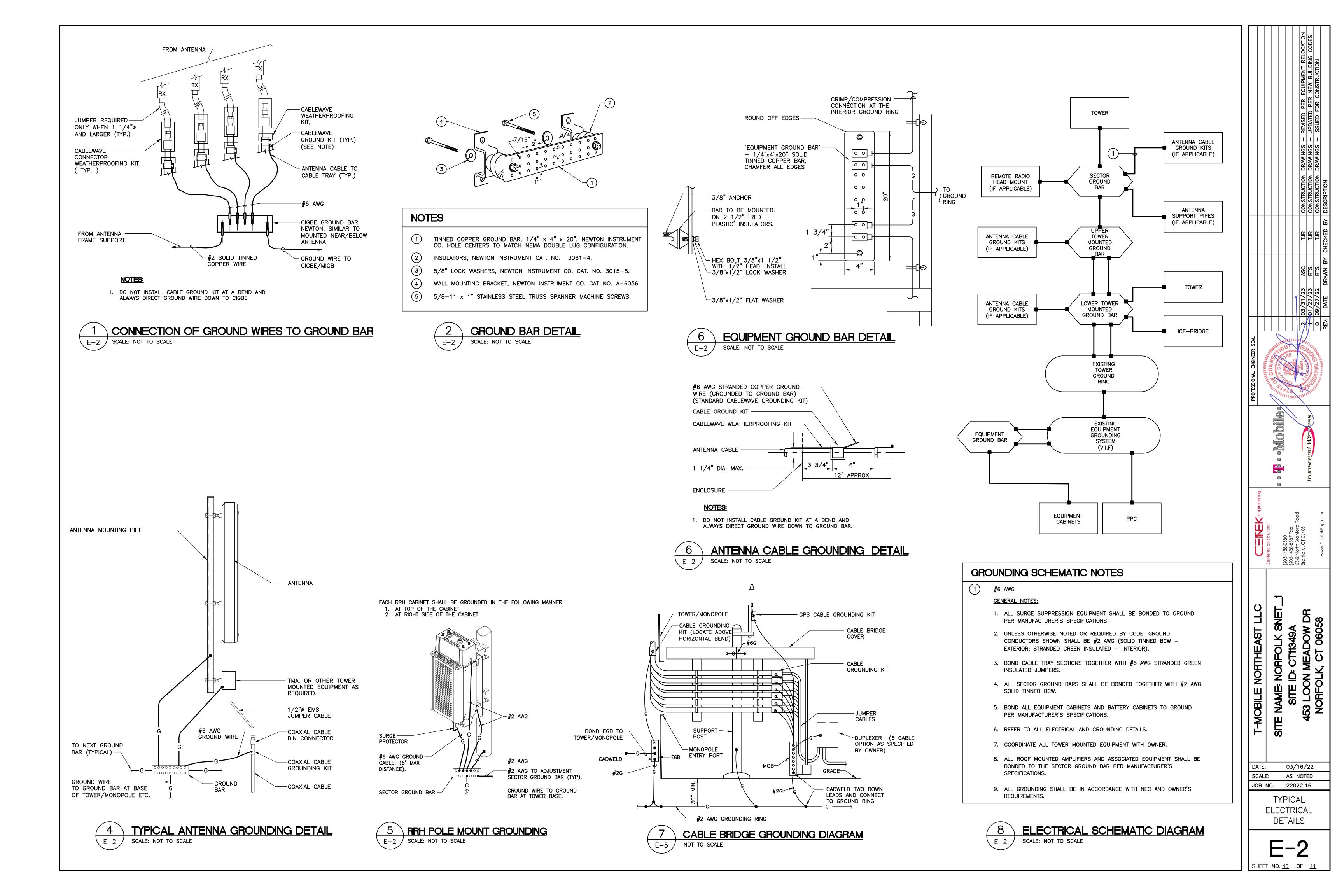


TJR TJR -Mobil (203) 488-0580 (203) 488-8587 Fax 63-2 North Branford Branford, CT 06405 SITE NAME: NORFOLK SNET_ SITE ID: CT11349A 453 LOON MEADOW DR NORFOLK, CT 06058 03/16/22 SCALE: AS NOTED JOB NO. 22022.16 ELECTRICAL RISER

DIAGRAM AND

CONDUIT ROUTING

SHEET NO. <u>9</u> OF <u>11</u>



ELECTRICAL SPECIFICATIONS

SECTION 16010

- 1.01. SCOPE OF WORK
- A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
- 1. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, ETC. AS INDICATED OR NOTED ON PLANS.
- 2. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
- 1.02. GENERAL REQUIREMENTS
- A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR THE SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.
- F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- G. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- H. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.
- I. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
- J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- K. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.
- L. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.
- M. SHOP DRAWINGS:
- CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
- 2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.
- N. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 16111

- 1.01. CONDUITS
- A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.
- B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.
- C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.
- D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS
- E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

EMT		APPLICATION	NEC TABLE 300.5) ^{2,3}
EMI	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A
	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES
	VC, SCHEDULE 40 ARTICLE 352, 300.5, 300.50 INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. 1		18 INCHES
	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. 1	18 INCHES
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A

³ WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED

RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2' OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT—BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

 120/208/240V
 277/480V

 LINE
 COLOR

 A
 BLACK
 BROWN

 B
 RED
 ORANGE

 C
 BLUE
 YELLOW

 N
 CONTINUOUS WHITE
 GREY

 G
 CONTINUOUS GREEN
 GREEN WITH YELLOW STRIPE

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

- A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.
- B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

<u>SECTION 16140</u>

1.01. WIRING DEVICES

- A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.
- 1. 15 MINUTE TIMER SWITCH INTERMATIC #FF15M (INTERIOR LIGHTS)
- 2. DUPLEX RECEPTACLE P&S #2095 (GFCI) SPECIFICATION GRADE
- 3. SINGLE POLE SWITCH P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
- 4. DUPLEX RECEPTACLE P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE
- B. PLATES ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.
- C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

- 1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT
- A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.
- B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS 1-1/2 INCH HIGH WITH 1/4 INCH MARGIN.
- C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

- A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- C. GROUNDING OF PANELBOARDS:
- 1. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
- 2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).
- D. EQUIPMENT GROUNDING CONDUCTOR:
- 1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
- 2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
- 3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).
- E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:

- 1. GROUND BARS
- 2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
- 3. ANTENNA GROUND CONNECTIONS AND PLATES.
- F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.
- G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

SECTION 16470

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

<u>SECTION 16477</u>

01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN-RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME-DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

- 1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM
- A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:
- TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.

TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

- 1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
- 2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
- 3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
- C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
- D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

SECTION 16961

1.01. TESTS BY CONTRACTOR

- A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.
- B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE CONNECTED TO THE PANELBOARDS SO THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.
- C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

CONVENTER SEAL

CONVENTED

CONVENTED

CONSTRUCTION DRAWINGS - REVISEI

1 01/27/23 RTS TJR CONSTRUCTION DRAWINGS - UPDATE

O 09/27/22 RTS TJR CONSTRUCTION DRAWINGS - ISSUED

30 37 Fax anford Road 06405

(203) 488-058 (203) 488-858 (3-2 North Br Branford, CT

 \mathbf{O}

EAST

NAME: NORFOLK SNET SITE ID: CT11349A 53 LOON MEADOW DR NORFOLK, CT 06058

DATE: 03/16/22

SCALE: AS NOTED

JOB NO. 22022.16

ELECTRICAL SPECIFICATIONS

E-3

SHEET NO. <u>11</u> OF <u>11</u>

- T- - Mobile -

SITE NAME: NORFOLK SNET_1 SITE ID: CT11349A 453 LOON MEADOW RD NORFOLK, CT 06058

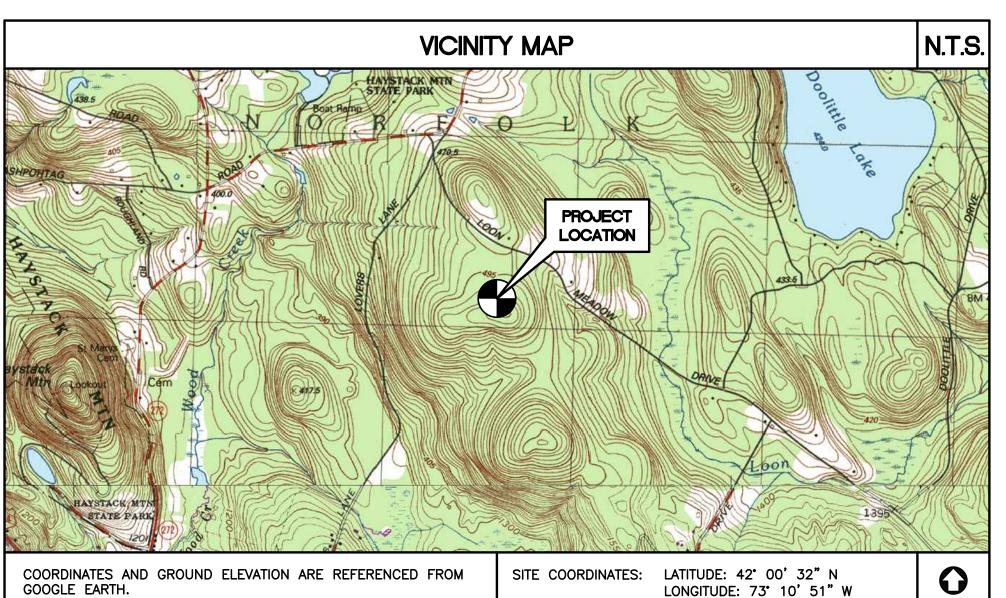
GENERAL NOTES

- 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 20121 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL
- 2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
- 3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- 4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
- 5. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
- 6. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
- 7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- 8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
- 9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- 10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- 11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- 12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- 13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB—CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS.

 CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

- 14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH HIS UNDERSTANDING.
- 15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILIT COMPANY REQUIREMENTS AND SPECIFICATIONS.
- 16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER
- 17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
- 18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON—SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- 19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- 20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- 21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
- 22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- 23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN ADD PROTECT MARKED UTILITIES THROUGHOUT PROJECT
- 24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
- 25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- 26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
- 27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.





PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

- 1. INSTALL (1) NEW 48 KW DIESEL FUELED BACK-UP AC GENERATOR ON AN EXISTING 8' \times 20' CONCRETE PAD.
- 2. INSTALL NEW ICE-CANOPY WITH ASSOCIATED HANDRAILS.
- 3. INSTALL (1) 200A AUTOMATIC TRANSFER SWITCH.

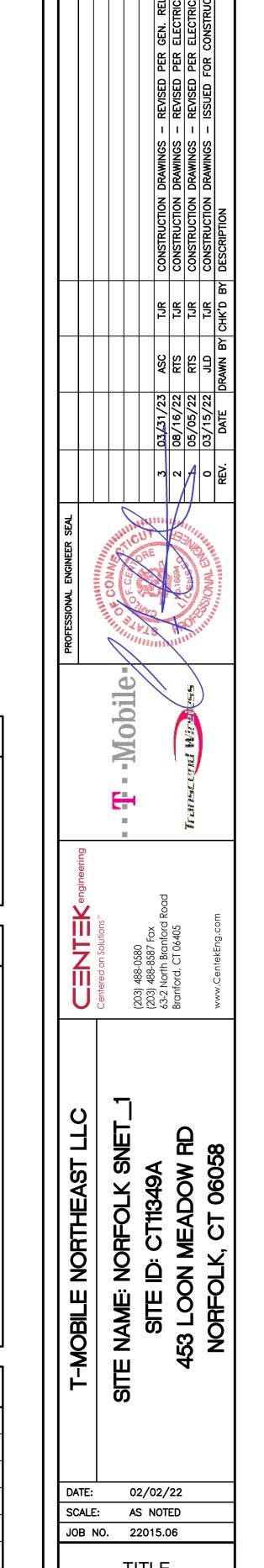
PRC	DJECT INFORMATION	
SITE NAME:	NORFOLK SNET_1	
SITE ID:	CT11349A	
SITE ADDRESS:	453 LOON MEADOW RD NORFOLK, CT 06058	
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT. 06002	
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291	
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT. 06405	
	CARLO F. CENTORE, PE (203) 488-0580 EXT. 122	
SITE COORDINATES:	LATITUDE: 42°-00'-32" N LONGITUDE: 73°-10'-51" W GROUND ELEVATION: 1656'± AMSL	
	SITE COORDINATES AND GROUND ELEVATION	

	SHEET INDEX									
SHEET. NO.	DESCRIPTION	REV.								
T-1	TITLE SHEET	3								
N-1	GENERAL NOTES AND SPECIFICATIONS	3								
C-1	COMPOUND AND EQUIPMENT PLANS	3								
C-2	TYPICAL EQUIPMENT DETAILS	3								
C-3	ICE-CANOPY PLANS AND DETAILS	3								
E-1	ELECTRICAL RISER, GROUNDING AND CONDUIT ROUTING	3								
E-2	ELECTRICAL SPECIFICATIONS	3								

<u>NORTH</u>

GROUND ELEVATION: ±1656' AMSL

REFERENCED FROM GOOGLE EARTH.



SHEET

NOTES AND SPECIFICATIONS:

DESIGN BASIS:

GOVERNING CODE: 2021 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2022 CONNECTICUT STATE BUILDING CODE.

- 1. DESIGN CRITERIA:
- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED: 89 MPH (Vasd) (EXPOSURE C/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-16).

SITE NOTES

- 1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
- 2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY. PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- 3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
- 4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- 5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

- 1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT. INCLUDING THE TIA/EIA-222 REVISION "H" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- 2. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
- CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- 4. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE, WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
- 5. ALL DIMENSIONS. ELEVATIONS. AND OTHER REFERENCES TO EXISTING STRUCTURES. SURFACE. AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY
- 6. AS THE WORK PROGRESSES. THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS, AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
- 7. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- 8. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE
- 9. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- 10. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- 11. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- 12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- 13. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.

- 14. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- 15. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- 16. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- 17. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
- 18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- 19. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- 20. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- 21. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND CONFIRMED WITH THE PROJECT MANAGER AND OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK
- 22. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- 23. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
- 24. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
- 25. THE COUNTY/CITY/TOWN MAY MAKE PERIODIC FIELD INSPECTIONS TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- 26. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS. METHODS OR WORKMANSHIP, EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION. POURING TOWER FOUNDATIONS. BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.
- 27. PRIOR TO THE SUBMISSION OF BIDS, THE CONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER ON RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK.

STRUCTURAL STEEL

- 1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
 - A. STRUCTURAL STEEL (W SHAPES)——ASTM A992 (FY = 50 KSI)
 - B. STRUCTURAL STEEL (OTHER SHAPES)——ASTM A36 (FY = 36 KSI) C. STRUCTURAL HSS (RECTANGULAR SHAPES) --- ASTM A500 GRADE B,
- (FY = 46 KSI)
 - D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B (FY = 42 KSI)
 - PIPE---ASTM A53 (FY = 35 KSI)
- CONNECTION BOLTS———ASTM A325—N U-BOLTS---ASTM A36
- ANCHOR RODS---ASTM F 1554 WELDING ELECTRODE———ASTM E 70XX
- 2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR
- APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
- 4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
- 5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
- INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
- 7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
- 8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
- 9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
- 10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
- 12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE

11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

- 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
- 13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
- 14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

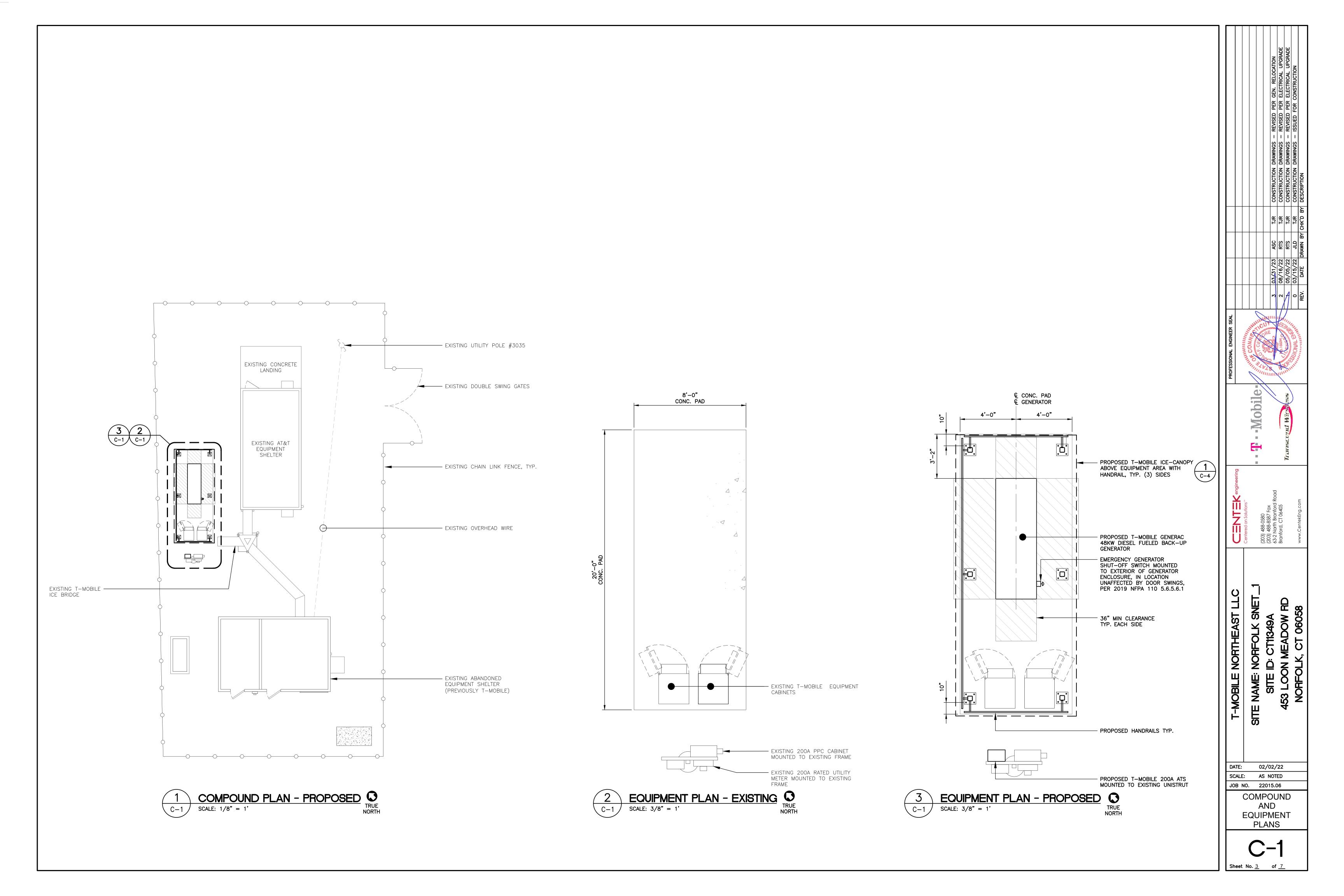
- 15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
- 16. FABRICATE BEAMS WITH MILL CAMBER UP.
- 17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
- 18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
- 19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
- 20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER

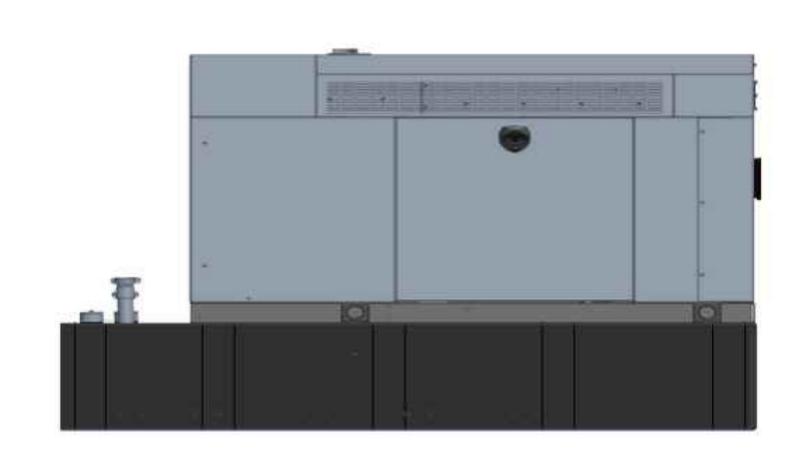
					V. RELOCATION	CTRICAL UPGRADE	CTRICAL UPGRADE	STRUCTION	
					– revised per ger	– revised per ele	– revised per ele	- ISSUED FOR CON	
					CONSTRUCTION DRAWINGS - REVISED PER GEN. RELOCATION	CONSTRUCTION DRAWINGS - REVISED PER ELECTRICAL UPGRADE	CONSTRUCTION DRAWINGS - REVISED PER ELECTRICAL UPGRADE	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION	
					TJR	TJR	TJR	TJR	
					ASC	RTS	RTS	JLD	
					03/31/23	08/16/22	05/05/22	03/15/22	
					3	2	1	0	
PROFESSIONAL ENGINEER SEAL	The state of the s	THE OF CONNESSED	THE CONTRACTOR OF THE PARTY OF	が一般を表現してい		THE 100.1000 AT	No.	IN SONAL BANK	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
							Frankling Williams		
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Centered on Solutions **		(203) 488-0580	(203) 488-8587 Fax	63-2 North Branford Road	Branford, CT 06405		: - - (20 CL2C+2C-2+34

1		4				SET SET
	Centered on Solutions "	(203) 488-0580	(203) 488-8587 Fax	63-2 North Branford Road	Branford, CT 06405	

02/02/22 SCALE: AS NOTED JOB NO. 22015.06

GENERAL NOTES SPECIFICATIONS



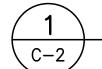


BACKUP POWER GENERATOR						
EQUIPMENT	POWER GENERATED	FUEL	MODEL NUMBER	FUEL TANK SIZE (GAL)	DIMENSIONS	WEIGHT
MAKE: GENERAC MODEL: RD48	48 KW, AC	DIESEL	7194	229	103.4"L × 35.0"W × 91.7"H	2915 LBS.

NOTES:

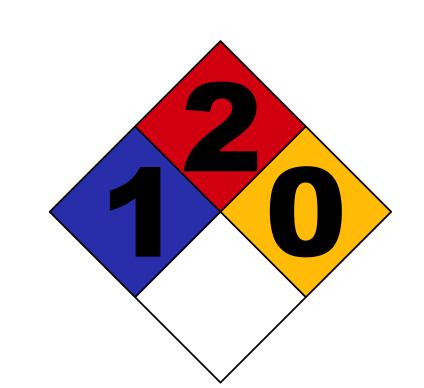
1. FUEL LEVEL/SECONDARY CONTAINMENT SHALL BE ALARMED AND IN COMMUNICATION WITH T-MOBILE'S

2. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION AND ALL OPTIONAL FEATURES WITH T-MOBILE'S CONSTRUCTION MANAGER PRIOR TO ORDERING.



PROPOSED GENERATOR DETAIL

SCALE: NOT TO SCALE



RED: FLAMMABILITY
BLUE: HEALTH
YELLOW: REACTIVITY
WHITE: BLANK

NFPA 704 HAZARD ID LEGEND:

SIGN NAME: REGULATORY, NFPA 704 HAZARD ID

DESCRIPTION: MOUNT ON GENERATOR ACCESS DOOR.
CONSULT WITH GENERATOR MANUFACTURER MSDS SHEET FOR BLUE AND RES POSITIONS 1) SIGNS EXPOSED TO WEATHER SHOULD BE CHECKED ANNUALLY FOR READABILITY.

2) SIGNS MUST BE UPDATED IF CHEMICAL STORAGE OR HAZARD INFORMATION FOR THE LOCATION CHANGES.

3) THE GC MUST REVIEW WITH LOCAL JURISDICTION WHEN FILLING FOR PERMITS, AS EACH JURISDICTION MAY HAVE DIFFERENT REQUIREMENTS AND COMPLY WITH POSTING REQUIREMENTS OR DIRECTIVES FROM THE LOCAL JURISDICTION.

NFPA 704 DIAMOND SIGNAGE DETAIL SCALE: NOT TO SCALE

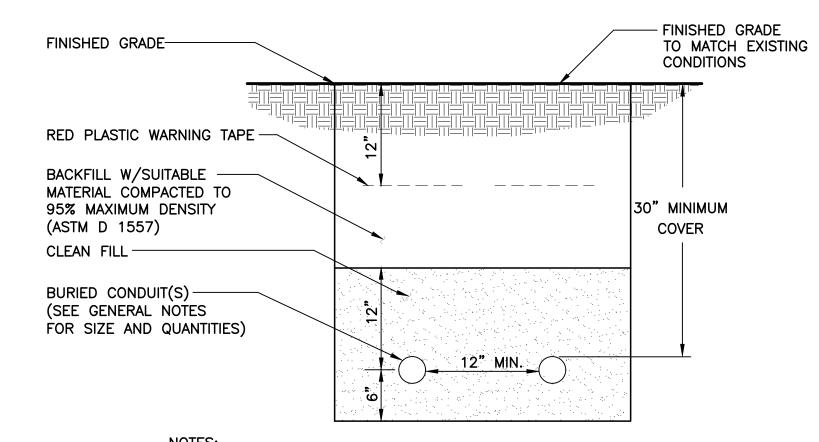


AUTOMATIC TRANSFER SWITCH					
EQUIPMENT	PHASE	VOLTAGE	ENCLOSURE	AMP	DIMENSIONS
MAKE: GENERAC MODEL: RXSC200A3	1-PHASE	120/240	NEMA-3R	200	17.3"L x 12.5"W
NOTES:					

AUTOMATIC TRANSFER SWITCH DETAIL SCALE: NOT TO SCALE

CONTRACTOR TO COORDINATE FINAL LOCATION AND MOUNTING CONFIGURATION OF THE AUTOMATIC

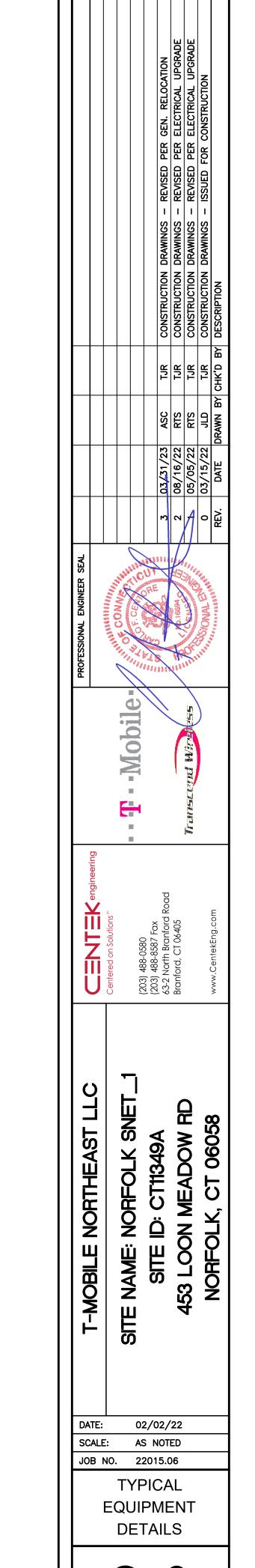
TRANSFER SWITCH INSTALLATION.

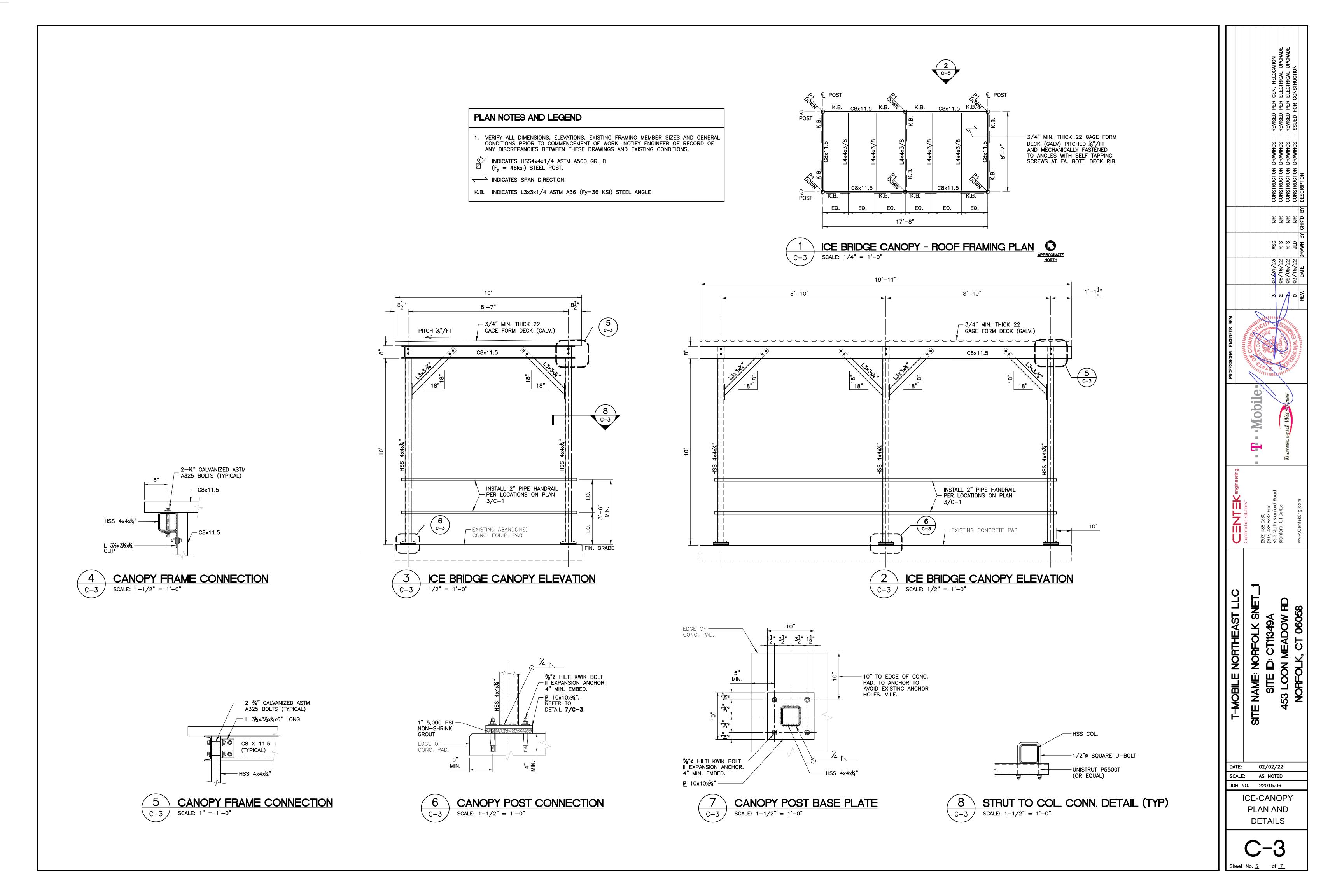


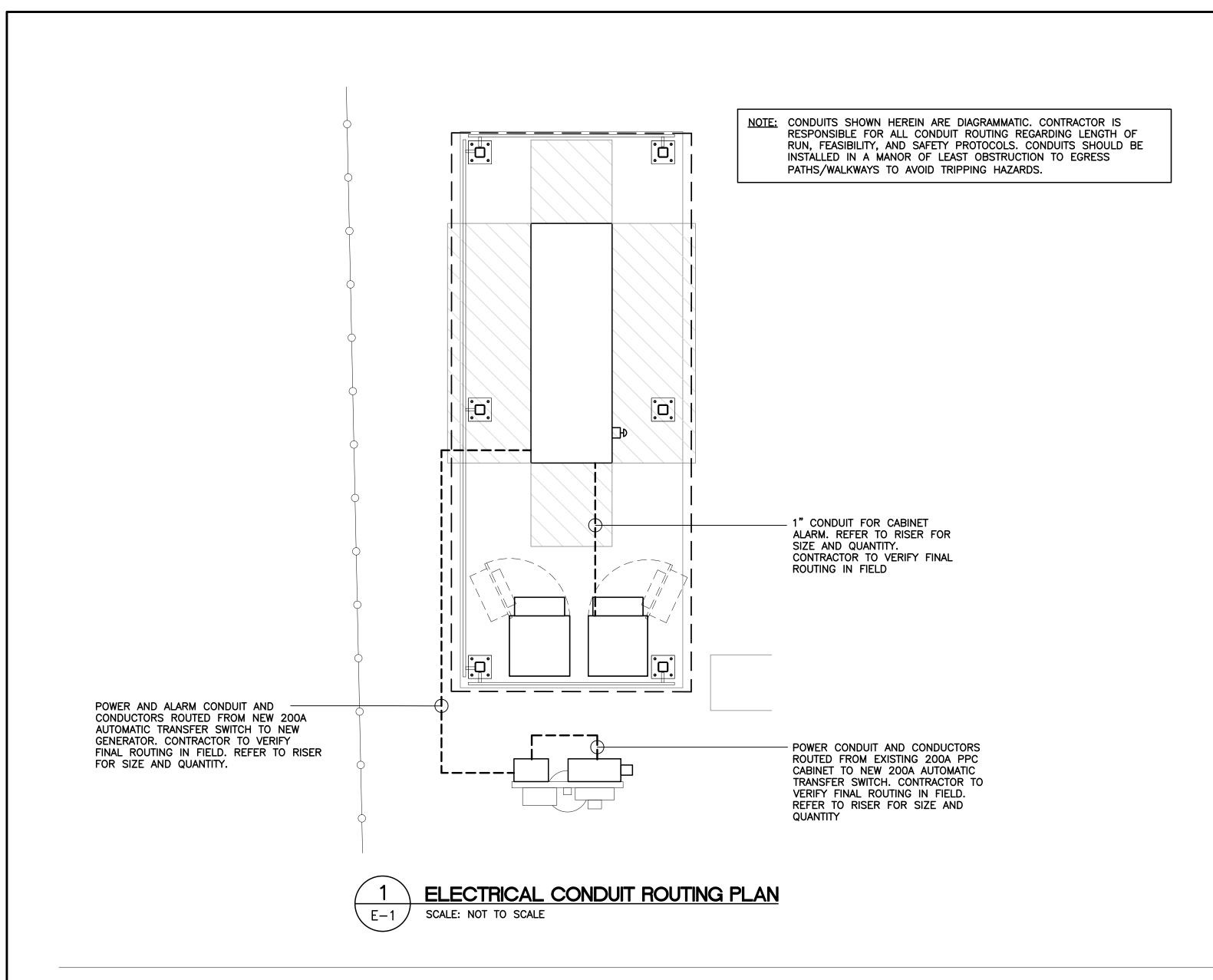
1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.

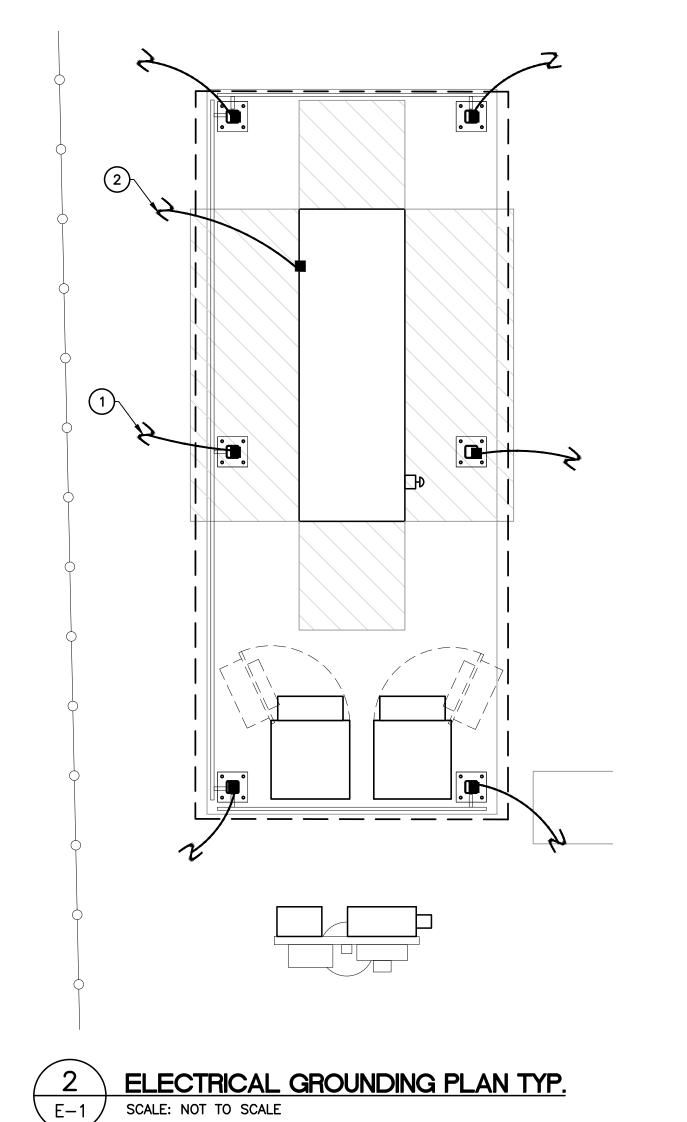
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.











GROUNDING SCHEMATIC NOTES

BOND STEEL ICE-BRIDGE CANOPY TO GROUND RING USING #2 AWG SOLID TINNED BCE

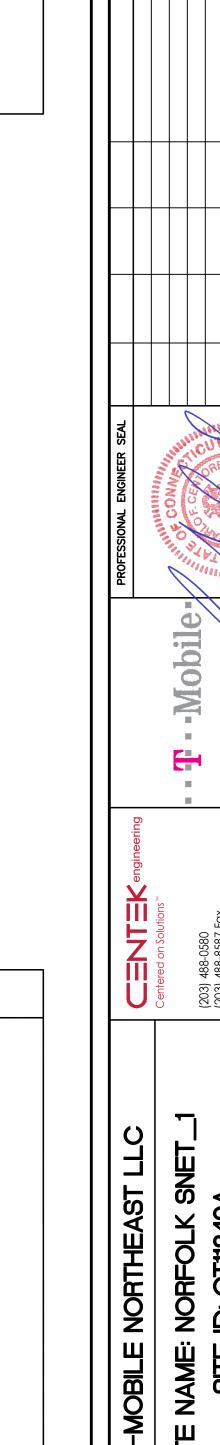
BOND GENERATOR TO GROUND RING PER NEC AND MANUFACTURER REQUIREMENTS

GENERAL NOTES:

- UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW — EXTERIOR; STRANDED GREEN INSULATED — INTERIOR).
- 2. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.
- 3. BOND GENERATOR TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS

RISER DIAGRAM NOTES

- 1) EXISTING 200A T-MOBILE UTILITY METER.
- 2 EXISTING CONDUITS AND CONDUCTORS TO REMAIN
- (3) EXISTING 200A PPC CABINET TO REMAIN
- (4) EXISTING CONDUITS AND CONDUCTORS TO BE REMOVED.
- 5 JUNCTION BOX SIZED PER NEC.
- (6) EXTEND EXISTING CONDUITS AND CONDUCTORS TO NEW ATS
- (7) (3) #3/0 AWG, (1) #6 AWG GROUND, 2" CONDUIT.
- 8 NEW 200A, 2 SOURCE AUTOMATIC TRANSFER SWITCH.
- 9 EXISTING EQUIPMENT CABINETS
- NEW STEEL ICE-BRIDGE CANOPY TO BE BONDED TO EQUIPMENT GROUND RING TYP. OF EACH POST.
- REMOTE GENERATOR SHUT OFF SWITCH IN WEATHER PROOF ENCLOSURE MOUNTED TO EXTERIOR OF GENERATOR ENCLOSURE PER 2019 NFPA 110 5.6.5.6.1.
- 3/4" CONDUIT AND CONDUCTORS REQUIRED FOR PROPER OPERATION OF EMERGENCY GENERATOR SHUT OFF SWITCH.
- GENERATOR BATTERY CHARGER AND CONVENIENCE GFCI OUTLET WIRED TO EXISTING PPC. OUTLET TO BE MOUNTED IN WEATHERPROOF ENCLOSURE.
- (14) GENERATOR BLOCK HEATER WIRED TO EXISTING PPC.
- 15) 48KW DIESEL FUELED BACK-UP GENERATOR.
- GENERATOR GROUNDING PER NEC AND MANUFACTURER'S REQUIREMENTS. BOND TO EXISTING GROUNDING SYSTEM. (MINIMUM OF (1) #2 AWG GROUND)
- (17) GENERATOR OUTPUT CIRCUIT BREAKER
- 18 1" CONDUIT FOR GENERATOR CONTROL AND SIGNAL WIRING.
- (19) 1" CONDUIT FOR CABINET ALARM CONNECTION
- 20 EXPANSION COUPLING TYPICAL.



3 ELECTRICAL RISER DIAGRAM

SCALE: NOT TO SCALE

DATE: 02/02/22
SCALE: AS NOTED

JOB NO. 22015.06

ELECTRICAL RISER,
GROUNDING AND

E-1

CONDUIT ROUTING

Sheet No. <u>6</u> of _

ELECTRICAL SPECIFICATIONS

SECTION 16010

1.01. SCOPE OF WORK

- A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
- 1. GENERATOR/TRANSFER SWITCH.
- 2. FEEDERS AND BRANCH CIRCUIT WIRING TO PANELS, RECEPTACLES, EQUIPMENT, ETC. AS INDICATED OR NOTED ON PLANS.
- 3. FIELD MEASURE EXISTING ELECTRICAL SERVICES TO CONFIRM AVAILABLE EXISTING POWER.
- 4. COORDINATE ALL WORK SHOWN, ON THESE PLANS WITH LOCAL UTILITY COMPANIES.
- B. LOCAL UTILITY COMPANIES SHALL PROVIDE THE FOLLOWING:
- 1. SHUTDOWN OF SERVICE (COORDINATE WITH OWNER).
- C. CONTRACTOR SHALL CONFER WITH LOCAL UTILITY COMPANIES TO ASCERTAIN THE LIMITS OF THEIR WORK AND SHALL INCLUDE IN BID ANY CHARGES OR FEES MADE BY THE UTILITY COMPANIES FOR THEIR PORTION OF THE WORK AND SHALL PROVIDE AND INSTALL ALL ITEMS REQUIRED. BUT NOT PROVIDED BY UTILITY COMPANY.
- D. ELECTRICAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH ELECTRIC UTILITY CO. PRIOR TO INSTALLATION.

1.02. GENERAL REQUIREMENTS

- A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- B. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNERS REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES THAT MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR THE SCHEDULING OF ALL INSPECTIONS THAT MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.
- F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- G. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- H. THE ELECTRICAL CONTRACTOR SHALL SUPPLY THREE (3) COMPLETE SETS OF APPROVED DRAWINGS, ENGINEERING DATA SHEETS, MAINTENANCE AND OPERATING INSTRUCTION MANUALS FOR ALL SYSTEMS AND THEIR RESPECTIVE EQUIPMENT. THESE MANUALS SHALL BE INSERTED IN VINYL COVERED 3-RING BINDERS AND TURNED OVER TO OWNER'S REPRESENTATIVE ONE (1) WEEK PRIOR TO FINAL PUNCH LIST.
- I. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
- J. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- K. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PRINTS (AS-BUILTS), LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.
- L. PROVIDE TEMPORARY POWER AND LIGHTING IN WORK AREAS AS REQUIRED.
- M. SHOP DRAWINGS:
- 1. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
- 2. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.
- N. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH OWNER'S SPECIFICATIONS, AND REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH APPROPRIATE INDIVIDUALS TO OBTAIN ALL SUCH SPECIFICATIONS AND REQUIREMENTS. NOTHING CONTAINED IN, OR OMITTED FROM, THESE DOCUMENTS SHALL RELIEVE CONTRACTOR FROM THIS OBLIGATION.

SECTION 1611

1.01. CONDUITS

- A. MINIMUM CONDUIT SIZE FOR BRANCH CIRCUITS, LOW VOLTAGE CONTROL AND ALARM CIRCUITS SHALL BE 3/4". CONDUITS SHALL BE PROPERLY FASTENED AS REQUIRED BY THE N.E.C.
- B. THE INTERIOR OF RACEWAYS/ENCLOSURES INSTALLED UNDERGROUND SHALL BE CONSIDERED TO BE WET LOCATION, INSULATED CONDUCTORS SHALL BE LISTED FOR USE IN WET LOCATIONS. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.
- C. CONDUIT INSTALLED UNDERGROUND SHALL BE INSTALLED TO MEET MINIMUM COVER REQUIREMENTS OF TABLE 300.5.
- D. PROVIDE RIGID GALVANIZED STEEL CONDUIT (RMC) FOR THE FIRST 10 FOOT SECTION WHEN LEAVING A BUILDING OR SECTIONS PASSING THROUGH FLOOR SLABS
- E. ONLY LISTED PVC CONDUIT AND FITTINGS ARE PERMITTED FOR THE INSTALLATION OF ELECTRICAL CONDUCTORS, SUITABLE FOR UNDERGROUND APPLICATIONS.

CONDUIT SCHEDULE SECTION 16111					
CONDUIT TYPE	NEC REFERENCE	APPLICATION	MIN. BURIAL DEPTH (PER NEC TABLE 300.5) ^{2,3}		
ЕМТ	ARTICLE 358	INTERIOR CIRCUITING, EQUIPMENT ROOMS, SHELTERS	N/A		
RMC, RIGID GALV. STEEL	ARTICLE 344, 300.5, 300.50	ALL INTERIOR/ EXTERIOR CIRCUITING, ALL UNDERGROUND INSTALLATIONS.	6 INCHES		
PVC, SCHEDULE 40	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE NOT SUBJECT TO PHYSICAL DAMAGE. 1	18 INCHES		
PVC, SCHEDULE 80	ARTICLE 352, 300.5, 300.50	INTERIOR/ EXTERIOR CIRCUITING AND GROUNDING SYSTEMS, UNDERGROUND INSTALLATIONS, WHERE SUBJECT TO PHYSICAL DAMAGE. 1	18 INCHES		
LIQUID TIGHT FLEX. METAL	ARTICLE 350	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A		
FLEX. METAL	ARTICLE 348	SHORT LENGTHS (MAX. 3FT.) WIRING TO VIBRATING EQUIPMENT IN WET LOCATIONS.	N/A		
¹ PHYSICAL DAMAGE IS SUBJECT TO THE AUTHORITY HAVING JURISDICTION.					

² UNDERGROUND CONDUIT INSTALLED UNDER ROADS, HIGHWAYS, DRIVEWAYS, PARKING LOTS SHALL HAVE MINIMUM DEPTH OF 24'.

³ WHERE SOLID ROCK PREVENTS COMPLIANCE WITH MINIMUM COVER DEPTHS, WIRING SHALL BE INSTALLED IN PERMITTED RACEWAY FOR DIRECT BURIAL. THE RACEWAY SHALL BE COVERED BY A MINIMUM OF 2' OF CONCRETE EXTENDING DOWN TO ROCK.

SECTION 16123

1.01. CONDUCTORS

A. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT—BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

	120/200/2704	2/// 4004
<u>LINE</u>	COLOR	COLOR
Α	BLACK	BROWN
В	RED	ORANGE
С	BLUE	YELLOW
N	CONTINUOUS WHITE	GREY
G	CONTINUOUS GREEN	GREEN WITH YELLOW STRIPE

120 /208 /240\/

B. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

SECTION 16130

1.01. BOXES

- A. FURNISH AND INSTALL OUTLET BOXES FOR ALL DEVICES, SWITCHES, RECEPTACLES, ETC.. BOXES TO BE ZINC COATED STEEL.
- B. FURNISH AND INSTALL PULL BOXES IN MAIN FEEDERS RUNS WHERE REQUIRED. PULL BOXES SHALL BE GALVANIZED STEEL WITH SCREW REMOVABLE COVERS, SIZE AND QUANTITY AS REQUIRED. PROVIDE WEATHERPROOF CONSTRUCTION IN WET LOCATIONS.

<u>SECTION 16140</u>

1.01. WIRING DEVICES

- A. THE FOLLOWING LIST IS PROVIDED TO CONVEY THE QUALITY AND RATING OF WIRING DEVICES WHICH ARE TO BE INSTALLED. A COMPLETE LIST OF ALL DEVICES MUST BE SUBMITTED BEFORE INSTALLATION FOR APPROVAL.
- 1. 15 MINUTE TIMER SWITCH INTERMATIC #FF15M (INTERIOR LIGHTS)
- 2. DUPLEX RECEPTACLE P&S #2095 (GFCI) SPECIFICATION GRADE
- 3. SINGLE POLE SWITCH P&S #CSB20AC2 (20A-120V HARD USE) SPECIFICATION GRADE
- 4. DUPLEX RECEPTACLE P&S #5362 (20A-120V HARD USE) SPECIFICATION GRADE
- B. PLATES ALL PLATES USED SHALL BE CORROSION RESISTANT TYPE 304 STAINLESS STEEL. PLATES SHALL BE FROM SAME MANUFACTURER AS SWITCHES AND RECEPTACLES. PROVIDE WEATHERPROOF HOUSING FOR DEVICES LOCATED IN WET LOCATIONS.
- C. OTHER MANUFACTURERS OF THE SWITCHES, RECEPTACLES AND PLATES MAY BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

SECTION 16170

1.01. DISCONNECT SWITCHES

A. FUSIBLE AND NON-FUSIBLE, 600V, HEAVY DUTY DISCONNECT SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D". PROVIDE FUSES AS CALLED FOR ON THE CONTRACT DRAWINGS. AMPERE RATING SHALL BE CONSISTENT WITH LOAD BEING SERVED. DISCONNECT SWITCH COVER SHALL BE MECHANICALLY INTERLOCKED TO PREVENT COVER FROM OPENING WHEN THE SWITCH IS IN THE "ON" POSITION. EXTERIOR APPLICATIONS SHALL BE NEMA 3R CONSTRUCTION WITH PADLOCK FEATURE.

SECTION 16190

1.01. SEISMIC RESTRAINT

A. ALL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH ZONE 2 SEISMIC REQUIREMENTS.

SECTION 16195

- 1.01. LABELING AND IDENTIFICATION NOMENCLATURE FOR ELECTRICAL EQUIPMENT
- A. CONTRACTOR SHALL FURNISH AND INSTALL NON-METALLIC ENGRAVED BACK-LIT NAMEPLATES ON ALL PANELS AND MAJOR ITEMS OF ELECTRICAL EQUIPMENT.
- B. LETTERS TO BE WHITE ON BLACK BACKGROUND WITH LETTERS $1\!-\!1/2$ INCH HIGH WITH 1/4 INCH MARGIN.
- C. IDENTIFICATION NOMENCLATURE SHALL BE IN ACCORDANCE WITH OWNER'S STANDARDS.

SECTION 16450

1.01. GROUNDING

- A. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- B. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- C. GROUNDING OF PANELBOARDS:
 - I. PANELBOARD SHALL BE GROUNDED BY TERMINATING THE PANELBOARD FEEDER'S EQUIPMENT GROUND CONDUCTOR TO THE EQUIPMENT GROUND BAR KIT(S) LUGGED TO THE CABINET. ENSURE THAT THE SURFACE BETWEEN THE KIT AND CABINET ARE BARE METAL TO BARE METAL. PRIME AND PAINT OVER TO PREVENT CORROSION.
- 2. CONDUIT(S) TERMINATING INTO THE PANELBOARD SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH BARE #10 AWG COPPER CONDUCTOR WHICH IN TURN IS TERMINATED INTO THE PANELBOARD'S EQUIPMENT GROUND BAR KIT(S).
- D. EQUIPMENT GROUNDING CONDUCTOR:
- 1. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122.
- 2. THE MINIMUM SIZE OF EQUIPMENT GROUND CONDUCTOR SHALL BE #12 AWG COPPER.
- 3. EACH FEEDER OR BRANCH CIRCUIT SHALL HAVE EQUIPMENT GROUND CONDUCTOR(S) INSTALLED IN THE SAME RACEWAY(S).
- E. CELLULAR GROUNDING SYSTEM:

CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 10 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

- PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:
- 1. GROUND BARS
- 2. EXTERIOR GROUNDING (WHERE REQUIRED DUE TO MEASURED AC RESISTANCE GREATER THAN SPECIFIED).
- 3. ANTENNA GROUND CONNECTIONS AND PLATES.
- F. CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY OWNER'S PROJECT ENGINEER WHO WILL HAVE A DESIGN ENGINEER VISIT SITE AND MAKE A VISUAL INSPECTION OF THE GROUNDING GRID AND CONNECTIONS OF THE SYSTEM.
- G. ALL EQUIPMENT SHALL BE BONDED TO GROUND AS REQUIRED BY N.E.C., MFG. SPECIFICATIONS, AND OWNER'S SPECIFICATIONS.

<u>SECTION 16470</u>

1.01. DISTRIBUTION EQUIPMENT

A. REFER TO CONTRACT DRAWINGS FOR DETAILS AND SCHEDULES.

SECTION 16477

.01. FUSES

A. FUSES SHALL BE NONRENEWABLE TYPE AS MANUFACTURED BY "BUSSMAN" OR APPROVED EQUAL. FUSES RATED TO 1/10 AMPERE UP TO 600 AMPERES SHALL BE EQUIVALENT TO BUSSMAN TYPE LPN—RK (250V) UL CLASS RK1, LOW PEAK, DUAL ELEMENT, TIME—DELAY FUSES. FUSES SHALL HAVE SEPARATE SHORT CIRCUIT AND OVERLOAD ELEMENTS AND HAVE AN INTERRUPTING RATING OF 200 KAIC. UPON COMPLETION OF WORK, PROVIDE ONE SPARE SET OF FUSES FOR EACH TYPE INSTALLED.

SECTION 16960

- 1.01. TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM
- A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:
- TEST 1: THERMAL OVERLOAD AND MAGNETIC TRIP TEST, AND CABLE INSULATION TEST FOR ALL CIRCUIT BREAKERS RATED 100 AMPS OR GREATER.
- TEST 2: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.
- THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:
- 1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
- 2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
- 3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- B. THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNER'S CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
- C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM'S REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
- D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

<u>SECTION 16961</u>

1.01. TESTS BY CONTRACTOR

- A. ALL TESTS AS REQUIRED UPON COMPLETION OF WORK, SHALL BE MADE BY THIS CONTRACTOR. THESE SHALL BE CONTINUITY AND INSULATION TESTS; TEST TO DETERMINE THE QUALITY OF MATERIALS, ETC. AND SHALL BE MADE IN ACCORDANCE WITH N.E.C. RECOMMENDATIONS. ALL FEEDERS AND BRANCH CIRCUIT WIRING (EXCEPT CLASS 2 SIGNAL CIRCUITS) MUST BE TESTED FREE FROM SHORT CIRCUIT AND GROUND FAULT CONDITIONS AT 500V IN A REASONABLY DRY AMBIENT OF APPROXIMATELY 70 DEGREES F.
- B. CONTRACTOR SHALL PERFORM LOAD PHASE BALANCING TESTS. CIRCUITS SHALL BE CONNECTED TO THE PANELBOARDS SO THAT THE NEW LOAD IS DISTRIBUTED AS EQUALLY AS POSSIBLE BETWEEN EACH LOAD AND NEUTRAL. 10% SHALL BE CONSIDERED AS A REASONABLE AND ACCEPTABLE ALLOWANCE. BRANCH CIRCUITS SHALL BE BALANCED ON THEIR OWN PANELBOARDS; FEEDER LOADS SHALL, IN TURN, BE BALANCED ON THE SERVICE EQUIPMENT. REASONABLE LOAD TEST SHALL BE ARRANGED TO VERIFY LOAD BALANCE IF REQUESTED BY THE ENGINEER.
- C. ALL TESTS, UPON REQUEST, SHALL BE REPEATED IN THE PRESENCE OF OWNER'S REPRESENTATIVE. ALL TESTS SHALL BE DOCUMENTED AND TURNED OVER TO OWNER. OWNER SHALL HAVE THE AUTHORITY TO STOP ANY OF THE WORK NOT BEING PROPERLY INSTALLED. ALL SUCH DETECTED WORK SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER AND THE TESTS SHALL BE REPEATED.

(203) 488-0580 (203) 488-8587 Fax 63-2 North Branford Road Branford, CT 06405

< SNET_1 I9A DW RD

IOBILE NUTITION IN INTERIOR SINGE ID: CT11349A
53 LOON MEADOW

: 02/02/22

SPECIFICATIONS

ELECTRICAL

JOB NO. 22015.06

SCALE: AS NOTED

E-2

heet No. <u>7</u> of



Centered on Solutions[™]

Structural Analysis Report

Antenna Mount Analysis

T-Mobile Site #: CT11349A

453 Loon Meadow Road Norfolk, CT

Centek Project No. 22022.16

Date: April 21, 2022

Rev 1: January 24, 2023

Max Stress Ratio = 54%

OF CONNECTIFICATION OF CON

Prepared for:

T-Mobile USA 35 Griffin Road Bloomfield, CT 06002 CENTEK Engineering, Inc.

Structural Analysis – Mount Analysis T-Mobile Site Ref. ~ CT11349A Norfolk, CT Rev 1 ~ January 24, 2023

Table of Contents

SECTION 1 - REPORT

- ANTENNA AND APPURTENANCE SUMMARY
- STRUCTURE LOADING
- CONCLUSION

SECTION 2 - CALCULATIONS

- WIND LOAD ON APPURTENANCES
- RISA3D OUTPUT REPORT
- MOUNT CONNECTION

TABLE OF CONTENTS TOC-1



Centered on Solutions[™]

January 24, 2023

Mr. Dan Reid Transcend Wireless 10 Industrial Ave Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount T-Mobile — Site Ref: CT11349A 453 Loon Meadow Road Norfolk, CT

Centek Project No. 22022.16

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the **proposed mount, consisting of three (3) V-frame sector mounts (SitePro P/N: VFA12-HD)** to support the proposed equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2021 International Building Code as modified by the 2022 Connecticut State Building Code (CTBC) including ASCE 7-16 and ANSI/TIA-222-H *Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures*".

The loads considered in this analysis consist of the following:

T-Mobile:

<u>V-Frames:</u> Three (3) Ericsson AIR6419 panel antennas, three (3) RFS APXVAALL24_43-U-NA20 panel antennas, three (3) Ericsson 4480 B71+B85 remote radio heads and three (3) Ericsson 4460 B25+B66 remote radio heads mounted on three (3) V-Frames with a RAD center elevation of 120-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2021 International Building Code as modified by the 2022 Connecticut State Building Code considering a Ultimate design wind speed of 115 mph for Norfolk as required in Appendix P of the 2022 Connecticut State Building Code.

Based on our review of the installation, it is our opinion that the **subject antenna mount has sufficient capacity** to support the aforementioned antenna configuration.

If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE

Structural Engineer

CENTEK Engineering, Inc.

Structural Analysis – Mount Analysis T-Mobile Site Ref. ~ CT11349A Norfolk, CT Rev 1 ~ January 24, 2023

Section 2 - Calculations



Centered on Solutions www.centekeng.com Branford, CT 06405

F: (203) 488-8587

Subject:

Location:

Rev. 1: 1/24/23

TIA-222-H Loads

Norfolk, CT

Prepared by: T.J.L. Checked by: C.F.C.

Job No. 22022.16

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-H

Wind Speeds

Basic Wind Speed V := 115mph (User Input - CSBC 2022 Appendix P) Basic Wind Speed with Ice $V_{i} := 50$ (User Input - TIA-222-H Annex B) mph Basic Wind Speed (Mount) $V_{m} := 30$ mph (User Input - TIA-222-H Section 16.3)

Input

Structure Type = Structure_Type := Flexible (User Input)

Structure Category = SC := II (User Input)

Exposure Category = (User Input) Exp := B

Structure Height = h:= 160 (User Input) ft

 $z_{ant} = 120$ Height to Center of Antennas= (User Input)

Radial Ice Thickness = $t_i := 1.0$ (User Input per Annex B of TIA-222-H)

Radial Ice Density= Id := 56.00pcf (User Input)

Topograpic Factor = $K_{7t} := 1$ (User Input)

Shielding Factor for Appurtenances = $K_a := 1.0$ (User Input)

Rooftop Wind Speed-up Factor = $K_s := 1.0$ (User Input)

Ground Elevation Factor = $K_{\Delta} = 0.996$ (User Input)

Gust Response Factor = $G_{H} = 1.35$ (User Input)

Output

Wind Direction Probability Factor =

 $K_d := 0.95$

(Per Table 2-2 of TIA-222-H)

Importance Factors =

 $I_{ice} := \begin{bmatrix} 0 & if & SC = 1 \\ 1.00 & if & SC = 2 \\ 1.15 & if & SC = 3 \end{bmatrix} = 1$

(Per Table 2-3 of TIA-222-H)

$$I_{Seismic} := \begin{bmatrix} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \\ 1.50 & \text{if } SC = 4 \end{bmatrix}$$

$$K_{iz} := \left(\frac{z_{ant}}{33}\right)^{0.1} = 1.138$$
 $t_{iz} := t_i \cdot l_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 1.138$

 $Kz_{ant} := 2.01 \left(\left(\frac{z_{ant}}{z_0} \right) \right)^{\frac{2}{\alpha}} = 1.041$ Velocity Pressure Coefficient Antennas =

 $qz_{ant} := 0.00256 \cdot K_{zt} \cdot K_{s} \cdot K_{e} \cdot K_{d} \cdot Kz_{ant} V^{2} = 33.337$ Velocity Pressure w/o Ice Antennas =

 $qz_{ice.ant} := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_{d} \cdot Kz_{ant} \cdot V_i^2 = 6.302$ Velocity Pressure with Ice Antennas =

 $qz_m := 0.00256 \cdot K_{zt} \cdot K_s \cdot K_e \cdot K_d \cdot K_{zant} \cdot V_m^2 = 2.269$ Velocity Pressure with Ice Antennas =



Centered on Solutions www.centekeng.com Branford, CT 06405

F: (203) 488-8587

Subject:

TIA-222-H Loads

Norfolk, CT

Location:

Rev. 1: 1/24/23

Prepared by: T.J.L. Checked by: C.F.C.

Job No. 22022.16

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model = RFSAPXVAALL24_43

Flat Appurtenance Shape = (User Input)

 $L_{app} := 95.9$ Appurtenance Height= (User Input)

 $W_{app} := 24$ Appurtenance Width = in (User Input)

Appurtenance Thickness = $T_{app} := 8.5$ in (User Input)

Appurtenance Weight = $WT_{app} := 150$ (User Input)

Number of Appurtenances= $N_{app} := 1$ (User Input)

 $Ar_{app} := \frac{L_{app}}{W_{app}} = 4.0$ Appurtenance Aspect Ratio =

Appurtenance Force Coefficient = $Ca_{app} = 1.27$

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =

Total Appurte rance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte rance Wind Force =

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front)=

Total Appurtenance Wind Force w/ be=

Surface Area for One Appurtenance w/Ice (Side) =

Total Appurtenance Wind Force w/lce=

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =

Total Appurte nance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte nance Wind Force =

Gravity Loads (ice only)

Volume of Each Appurtenance =

Volume of Ice on Each Appurtenance =

Weight of Ice on Each Appurtenance =

Weight of Ice on All Appurte rances =

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 16$$
 sf

$$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 911$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 5.7$$
 sf

$$SA_{ICEappF} := \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(W_{app} + 2 \cdot t_{iz}\right)}{144} = 17.9$$
 sf

$$SA_{ICEappS} := \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(T_{app} + 2 \cdot t_{iz}\right)}{144} = 7.3$$
 sf

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 16$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appF} = 62$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 5.7$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appS} = 22$$
 lbs

$$\begin{split} &\mathsf{V}_{app} \coloneqq \mathsf{L}_{app} \cdot \mathsf{W}_{app} \cdot \mathsf{T}_{app} = 2 \times 10^4 & \text{cu in} \\ &\mathsf{V}_{ice} \coloneqq \left(\mathsf{L}_{app} + 2 \cdot \mathsf{t}_{iz} \right) \! \left(\mathsf{W}_{app} + 2 \cdot \mathsf{t}_{iz} \right) \! \cdot \! \left(\mathsf{T}_{app} + 2 \cdot \mathsf{t}_{iz} \right) - \mathsf{V}_{app} = 8233 & \text{cu in} \\ &\mathsf{V}. \end{split}$$

$$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 267$$
 lbs



Centered on Solutions www.centekeng.com Branford, CT 06405

F: (203) 488-8587

Subject:

TIA-222-H Loads

Location:

Rev. 1: 1/24/23

Norfolk, CT

Prepared by: T.J.L. Checked by: C.F.C.

Job No. 22022.16

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model = Ericsson AIR6419

Appurtenance Shape = Flat (User Input)

 $L_{app} := 36.3$ Appurtenance Height= (User Input)

 $W_{app} := 20.9$ Appurtenance Width = (User Input)

 $T_{app} := 9.0$ Appurtenance Thickness = in (User Input)

Appurtenance Weight = $WT_{app} := 83$ lbs (User Input)

Number of Appurtenances= $N_{app} := 1$ (User Input)

 $Ar_{app} := \frac{L_{app}}{W_{app}} = 1.7$ Appurtenance Aspect Ratio =

Appurtenance Force Coefficient = $Ca_{app} = 1.2$

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =

Total Appurte nance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte nance Wind Force =

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front)=

Total Appurtenance Wind Force w/lce=

Surface Area for One Appurtenance w/ Ice (Side) =

Total Appurtenance Wind Force w/ be=

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =

Total Appurte nance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte nance Wind Force =

Gravity Loads (ice only)

Volume of Each Appurtenance =

Volume of Ice on Each Appurtenance =

Weight of Ice on Each Appurtenance =

Weight of Ice on All Appurte rances =

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 5.3$$
 sf

$$F_{app} := qz_{ant} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appF} = 285$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 2.3$$
 sf

$$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 123$$
 lbs

$$\mathsf{SA}_{\mbox{\scriptsize ICEappF}} \coloneqq \frac{\left(\mathsf{L}_{\mbox{\scriptsize app}} + 2 \cdot t_{\mbox{\scriptsize iz}} \right) \cdot \left(\mathsf{W}_{\mbox{\scriptsize app}} + 2 \cdot t_{\mbox{\scriptsize iz}} \right)}{144} = 6.2 \qquad \qquad \mathsf{sf}$$

$$SA_{ICEappS} := \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(T_{app} + 2 \cdot t_{iz}\right)}{144} = 3$$

sf

lbs

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 5.3$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appF} = 19$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 2.3$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appS} = 8$$
 lbs

$$\begin{split} & V_{app} \coloneqq L_{app} \cdot W_{app} \cdot T_{app} = 6828 & \text{cu in} \\ & V_{ice} \coloneqq \left(L_{app} + 2 \cdot t_{iz}\right) \! \left(W_{app} + 2 \cdot t_{iz}\right) \! \cdot \! \left(T_{app} + 2 \cdot t_{iz}\right) - V_{app} = 3253 & \text{cu in} \\ & W_{ICEapp} \coloneqq \frac{V_{ice}}{1728} \cdot Id = 105 & \text{lbs} \end{split}$$

 $W_{ICEapp} \cdot N_{app} = 105$



 Centered on Solutions
 www.centekeng.com

 63-2 North Branford Road
 P: (203) 488-0580

 Branford, CT 06405
 F: (203) 488-8887

Subject:

TIA-222-H Loads

Norfolk, CT

Location:

Rev. 1: 1/24/23

Prepared by: T.J.L. Checked by: C.F.C.

Job No. 22022.16

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =

Appurtenance Shape =

Appurtenance Height=

Appurtenance Width =

Appurtenance Thickness =

Appurtenance Weight =

Number of Appurtenances=

Appurtenance Aspect Ratio =

Appurtenance Force Coefficient =

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =

Total Appurte nance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte rance Wind Force =

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front)=

Total Appurtenance Wind Force w/lce=

Surface Area for One Appurtenance w/ Ice (Side) =

Total Appurtenance Wind Force w/lce=

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =

Total Appurte rance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte rance Wind Force =

Gravity Loads (ice only)

Volume of Each Appurtenance =

Volume of Ice on Each Appurtenance =

Weight of Ice on Each Appurtenance =

Weight of Ice on All Appurte rances =

Ericsson 4460 RRU

lat (User Input)

 $L_{app} := 19.6$ in (User Input)

 $W_{app} := 15.7$ in (User Input)

T_{app} := 12.1 in (User Input)

WT_{app} := 109 lbs (User Input)

N_{app} := 1 (User Input)

арр ____

 $Ar_{app} := \frac{L_{app}}{W_{app}} = 1.2$

 $Ca_{app} = 1.2$

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.1$$
 sf

$$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 115$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.6$$
 sf

$$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appS} = 89$$
 lbs

$$SA_{ICEappF} := \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(W_{app} + 2 \cdot t_{iz}\right)}{144} = 2.7$$
 sf

$$SA_{ICEappS} := \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(T_{app} + 2 \cdot t_{iz}\right)}{144} = 2.2$$
 sf

$$\frac{\text{Fi}_{\text{app}} := \text{qz}_{\text{ice,ant}} \cdot \text{G}_{\text{H}} \cdot \text{Ca}_{\text{app}} \cdot \text{K}_{\text{a}} \cdot \text{SA}_{\text{ICEappS}} = 22}{\text{lbs}}$$

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.1$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appF} = 8$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.6$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appS} = 6$$
 lbs

$$\begin{split} & V_{app} \coloneqq L_{app} \cdot W_{app} \cdot T_{app} = 3723 & \text{cu in} \\ & V_{ice} \coloneqq \left(L_{app} + 2 \cdot t_{iz}\right) \! \left(W_{app} + 2 \cdot t_{iz}\right) \cdot \left(T_{app} + 2 \cdot t_{iz}\right) - V_{app} = 1929 & \text{cu in} \\ & W_{ICEapp} \coloneqq \frac{V_{ice}}{1728} \cdot Id = 63 & \text{lbs} \end{split}$$

$$W_{ICEapp} \cdot N_{app} = 63$$
 lbs



Centered on Solutions www.centekeng.com Branford, CT 06405

F: (203) 488-8587

Subject:

TIA-222-H Loads

Norfolk, CT

Location:

Rev. 1: 1/24/23

Prepared by: T.J.L. Checked by: C.F.C.

Job No. 22022.16

Development of Wind & Ice Load on Appurtenances

Appurtenance Data:

Appurtenance Model =

Appurtenance Shape =

Appurtenance Height=

Appurtenance Width =

Appurtenance Thickness =

Appurtenance Weight =

Number of Appurtenances=

Appurtenance Aspect Ratio =

Appurtenance Force Coefficient =

Wind Load (without ice)

Surface Area for One Appurtenance (Front) =

Total Appurte nance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte rance Wind Force =

Wind Load (with ice)

Surface Area for One Appurtenance w/ Ice (Front)=

Total Appurtenance Wind Force w/lce=

Surface Area for One Appurtenance w/Ice (Side) =

Total Appurtenance Wind Force w/ be=

Wind Load (Mount)

Surface Area for One Appurtenance (Front) =

Total Appurte nance Wind Force =

Surface Area for One Appurtenance (Side) =

Total Appurte nance Wind Force =

Gravity Loads (ice only)

Volume of Each Appurtenance =

Volume of Ice on Each Appurtenance =

Weight of Ice on Each Appurtenance =

Weight of Ice on All Appurte rances =

Ericsson 4480 RRU

(User Input)

 $L_{app} := 21.8$ (User Input)

 $W_{app} := 15.7$ (User Input)

 $T_{app} = 7.5$ (User Input)

 $WT_{app} := 84$ lbs (User Input)

 $N_{app} := 1$ (User Input)

$$Ar_{app} := \frac{L_{app}}{W_{app}} = 1.4$$

$$Ca_{app} = 1.2$$

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.4$$
 sf

$$F_{app} := qz_{ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{appF} = 128$$

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.1$$
 sf

$$F_{app} := qz_{ant} G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appS} = 61$$
 lbs

$$SA_{ICEappF} \coloneqq \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(W_{app} + 2 \cdot t_{iz}\right)}{144} = 3 \qquad \qquad \text{sf}$$

$$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappF} = 31$$
 lbs

lhs

$$SA_{ICEappS} := \frac{\left(L_{app} + 2 \cdot t_{iz}\right) \cdot \left(T_{app} + 2 \cdot t_{iz}\right)}{144} = 1.6$$

$$Fi_{app} := qz_{ice.ant} \cdot G_H \cdot Ca_{app} \cdot K_a \cdot SA_{ICEappS} = 17$$

$$SA_{appF} := \frac{L_{app} \cdot W_{app}}{144} = 2.4$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appF} = 9$$
 lbs

$$SA_{appS} := \frac{L_{app} \cdot T_{app}}{144} = 1.1$$
 sf

$$F_{app} := qz_{m} \cdot G_{H} \cdot Ca_{app} \cdot K_{a} \cdot SA_{appS} = 4$$
 lbs

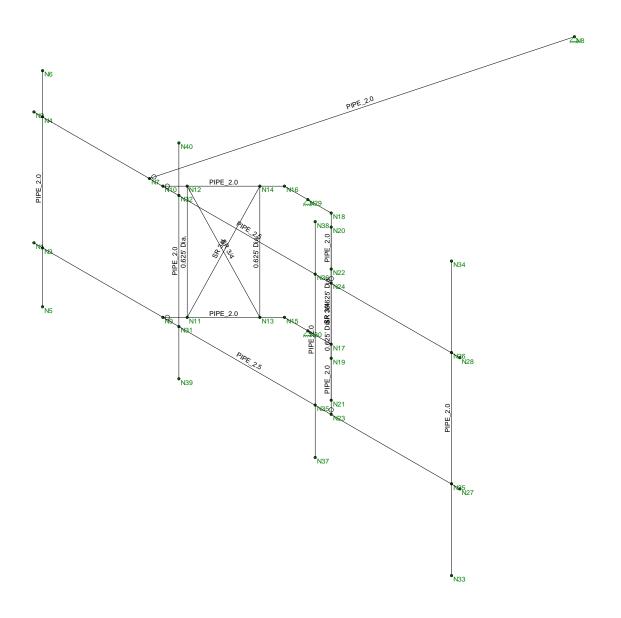
$$V_{app} := L_{app} \cdot W_{app} \cdot T_{app} = 2567$$
 cu in

$$V_{ice} \coloneqq \left(\mathsf{L}_{app} + 2 \cdot \mathsf{t}_{iz} \right) \! \left(\mathsf{W}_{app} + 2 \cdot \mathsf{t}_{iz} \right) \cdot \left(\mathsf{T}_{app} + 2 \cdot \mathsf{t}_{iz} \right) - \mathsf{V}_{app} = 1664 \qquad \qquad \mathsf{cu} \, \mathsf{in}$$

$$W_{ICEapp} := \frac{V_{ice}}{1728} \cdot Id = 54$$
 lbs

$$W_{ICEapp} \cdot N_{app} = 54$$
 lbs





Envelope Only Solution

Centek Engineering		
TJL	CT11349A	Jan 24, 2023 at 5:07 PM
22022.16	Member Framing	Mount.R3D



Company Designer Job Number Model Name : 22022.16 : CT11349A

Jan 24, 2023 5:06 PM Checked By:_

(Global) Model Settings

5
97
Yes
Yes
Yes
Yes
144
.12
0.50%
Yes
Yes
3
32.2
12
4
Υ
XZ
Sparse Accelerated
Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



Company Designer Job Number : 22022.16 : CT11349A

Jan 24, 2023 5:06 PM Checked By:__

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
RZ	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Grade B	29000	11154	.3	.65	.49	35	1.5	58	1.2



Company Designer Job Number : 22022.16 Model Name : CT11349A

Jan 24, 2023 5:06 PM Checked By:__

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul	A [in2]	lyy [in4]	Izz [in4]	J [in4]
1	Antenna Mast_2.0 STD	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
2	Horizontal_2.5 STD Pipe	PIPE_2.5	Beam	Pipe	A53 Grade B	Typical	1.61	1.45	1.45	2.89
3	Outrigger_2.0 STD Pipe	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
4	Stabilizer_2.0 STD Pipe	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
5	0.625" Dia. Bar	0.625' Dia.	Column	BAR	A36 Gr.36	Typical	.307	.007	.007	.015
6	0.75"Dia. Bar	SR 3/4	Column	BAR	A36 Gr.36	Typical	.442	.016	.016	.031

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[.Lcomp bot[L-torq	Kyy	Kzz	Cb	Functi
1	M1	Horizontal_2.5 STD	12.5	Segment		Lbyy						Lateral
2	M2	Horizontal_2.5 STD	12.5	Segment		Lbyy						Lateral
3	M3	Stabilizer_2.0 STD	10.18			Lbyy						Lateral
4	M4	Outrigger_2.0 STD	2.521	Segment	Segment	Lbyy						Lateral
5	M5	Outrigger_2.0 STD	2.521	Segment	Segment	Lbyy						Lateral
6	M6	Outrigger_2.0 STD	2.521	Segment	Segment	Lbyy						Lateral
7	M7	Outrigger_2.0 STD	2.521	Segment	Segment	Lbyy						Lateral
8	M8	0.625" Dia. Bar	3.333									Lateral
9	M9	0.625" Dia. Bar	3.333									Lateral
10	M10	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
11	M11	0.625" Dia. Bar	3.333									Lateral
12	M12	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
13	M13	0.625" Dia. Bar	3.333									Lateral
14	M14	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
15	M15	0.75"Dia. Bar	3.659	1.83	1.83	Lbyy						Lateral
16	M16	Antenna Mast_2.0	6			Lbyy						Lateral
17	M17	Antenna Mast_2.0	8			Lbyy						Lateral
18	M18	Antenna Mast_2.0	6			Lbyy						Lateral
19	M21	Antenna Mast_2.0	6			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(. Section/Shape	Туре	Design List	Material	Design
1	M1	N2	N28			Horizontal_2.5 STD Pipe	Beam	Pipe	A53 Grade B	Typical
2	M2	N1	N27			Horizontal_2.5 STD Pipe	Beam	Pipe	A53 Grade B	Typical
3	M3	N7	N8			Stabilizer_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
4	M4	N10	N16			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
5	M5	N9	N15			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
6	M6	N24	N18			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
7	M7	N23	N17			Outrigger_2.0 STD Pipe	Beam	Pipe	A53 Grade B	Typical
8	M8	N12	N11			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
9	M9	N14	N13			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
10	M10	N12	N13			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
11	M11	N22	N21			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
12	M12	N14	N11			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
13	M13	N20	N19			0.625" Dia. Bar	Column	BAR	A36 Gr.36	Typical
14	M14	N22	N19			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
15	M15	N20	N21			0.75"Dia. Bar	Column	BAR	A36 Gr.36	Typical
16	M16	N6	N5			Antenna Mast_2.0 STD Pi	Column	Pipe	A53 Grade B	Typical
17	M17	N34	N33			Antenna Mast_2.0 STD Pi	Column	Pipe	A53 Grade B	Typical



Company Designer Job Number : 22022.16 Model Name : CT11349A

Jan 24, 2023 5:06 PM Checked By:_

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint Ro		Type	Design List	Material	Design
18	M18	N37	N38		Antenna Mast_2.0 STD Pi	Column	Pipe	A53 Grade B	Typical
19	M19	N15	N17		RIGID	None	None	RIGID	Typical
20	M20	N16	N18		RIGID	None	None	RIGID	Typical
21	M21	N39	N40		Antenna Mast_2.0 STD Pi	Column	Pipe	A53 Grade B	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap
1	N1	0	0.	-0.	0	
2	N2	0	3.333334	-0.	0	
3	N3	.25	0.	-0.	0	
4	N4	.25	3.333334	-0.	0	
5	N5	.25	-1.5	0	0	
6	N6	.25	4.5	0	0	
7	N7	3.390625	3.333334	-0.	0	
8	N8	6.025403	3.333334	-9.833125	0	
9	N9	3.78125	0.	-0.	0	
10	N10	3.78125	3.333334	-0.	0	
11	N11	4.138628	0.	-0.357378	0	
12	N12	4.138628	3.333334	-0.357378	0	
13	N13	5.206335	0.	-1.425085	0	
14	N14	5.206335	3.333334	-1.425085	0	
15	N15	5.563713	0.	-1.782463	0	
16	N16	5.563713	3.333334	-1.782463	0	
17	N17	6.936287	0.	-1.782463	0	
18	N18	6.936287	3.333334	-1.782463	0	
19	N19	7.293665	0.	-1.425085	0	
20	N20	7.293665	3.333334	-1.425085	0	
21	N21	8.361372	0.	-0.357378	0	
22	N22	8.361372	3.333334	-0.357378	0	
23	N23	8.71875	0.	-0.	0	
24	N24	8.71875	3.333334	-0.	0	
25	N25	12.25	0.	-0.	0	
26	N26	12.25	3.333334	-0.	0	
27	N27	12.5	0.	-0.	0	
28	N28	12.5	3.333334	-0.	0	
29	N29	6.25	3.333334	-1.782463	0	
30	N30	6.25	0.	-1.782463	0	
31	N31	4.25	0.	-0.	0	
32	N32	4.25	3.333334	-0.	0	
33	N33	12.25	-2.333333	0	0	
34	N34	12.25	5.666667	0	0	
35	N35	8.25	0.	-0.	0	
36	N36	8.25	3.333334	-0.	0	
37	N37	8.25	-1.333333	-0.	0	
38	N38	8.25	4.666667	-0.	0	
39	N39	4.25	-1.333333	-0.	0	
40	N40	4.25	4.666667	-0.	0	



Company

: Centek Engineering : 22022.16

Job Number Model Name : CT11349A Jan 24, 2023 5:06 PM Checked By:__

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N8	Reaction	Reaction	Reaction			
2	N15						
3	N16						
4	N13						
5	N14						
6	N17						
7	N18						
8	N19						
9	N20						
10	N29	Reaction	Reaction	Reaction			
11	N30	Reaction	Reaction	Reaction			

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]	
1	M17	Υ	075	.5	
2	M17 Y		075	7.5	
3	M16	Υ	042	2	
4	M16	Υ	042	5	
5	M17	Υ	109 2		
6	M17	Υ	084	6	

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Υ	134	.5
2	M17	Υ	134	7.5
3	M16	Υ	053	2
4	M16	Υ	053	5
5	M17	Υ	063	2
6	M17	Υ	054	6

Member Point Loads (BLC 4 : Lm Maintenance Load (500lb))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Υ	5	%50

Member Point Loads (BLC 5 : Lv Maintenance Load (250lb))

Member Label		Member Label	Direction Magnitude[k,k-ft]		Location[ft,%]	
	1	M1	Υ	25	%50	

Member Point Loads (BLC 6 : Wind with Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	X	.04	.5
2	M17			7.5
3	M16	X	.016	2
4	M16	X	.016	5
5	M17	X	.022	2
6	M17	X	.017	6



Company

: Centek Engineering

Designer : TJL
Job Number : 22022.16
Model Name : CT11349A

Jan 24, 2023 5:06 PM Checked By:____

Member Point Loads (BLC 7: Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	X	.162	.5
2	M17	X	.162	7.5
3	M16	X	.062	2
4	M16	X	.062	5
5	M17	X	.089	2
6	M17	Х	.061	6

Member Point Loads (BLC 8: Wm Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	X	.011	.5
2	M17	X	.011	7.5
3	M16	X	.004	2
4	M16	X	.004	5
5	M17	X	.006	2
6	M17	X	.004	6

Member Point Loads (BLC 9: Wind with Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Z	.097	.5
2	M17	Z	.097	7.5
3	M16			2
4	M16	Z	.032	5

Member Point Loads (BLC 10 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Z	.456	.5
2	M17	Z	.456	7.5
3	M16	Z	.143	2
4	M16	Z	.143	5

Member Point Loads (BLC 11 : Wm Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M17	Z	.031	.5
2	M17	Z	.031	7.5
3	M16	Z	.01	2
4	M16	Z	.01	5

Member Distributed Loads (BLC 6 : Wind with Ice X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	.Start Location[ft	.End Location[ft,
1	M3	X	.002	.002	0	0
2	M4	X	.002	.002	0	0
3	M5	X	.002	.002	0	0
4	M6	X	.002	.002	0	0
5	M7	X	.002	.002	0	0
6	M8	X	.002	.002	0	0
7	M9	X	.002	.002	0	0
8	M10	X	.002	.002	0	0
9	M11	X	.002	.002	0	0



Company : Centek Engineering

Designer : TJL Job Number : 22022.16 Model Name : CT11349A Jan 24, 2023 5:06 PM Checked By:___

Member Distributed Loads (BLC 6: Wind with Ice X) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	.Start Location[ft.	.End Location[ft,
10	M12	X	.002	.002	0	0
11	M13	X	.002	.002	0	0
12	M14	X	.002	.002	0	0
13	M15	X	.002	.002	0	0
14	M16	X	.002	.002	0	0
15	M17	X	.002	.002	0	0
16	M18	X	.002	.002	0	0
17	M21	X	.002	.002	0	0

Member Distributed Loads (BLC 7: Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	.Start Location[ft	End Location[ft,
1	M3	X	.008	.008	0	0
2	M4	X	.008	.008	0	0
3	M5	X	.008	.008	0	0
4	M6	X	.008	.008	0	0
5	M7	X	.008	.008	0	0
6	M8	X	.008	.008	0	0
7	M9	X	.008	.008	0	0
8	M10	X	.008	.008	0	0
9	M11	X	.008	.008	0	0
10	M12	X	.008	.008	0	0
11	M13	X	.008	.008	0	0
12	M14	X	.008	.008	0	0
13	M15	X	.008	.008	0	0
14	M16	X	.008	.008	0	0
15	M17	X	.008	.008	0	0
16	M18	X	.008	.008	0	0
17	M21	X	.008	.008	0	0

Member Distributed Loads (BLC 8 : Wm Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	Start Location[ft	.End Location[ft,
1	M3	X	.002	.002	0	0
2	M4	X	.002	.002	0	0
3	M5	X	.002	.002	0	0
4	M6	X	.002	.002	0	0
5	M7	X	.002	.002	0	0
6	M8	X	.002	.002	0	0
7	M9	X	.002	.002	0	0
8	M10	X	.002	.002	0	0
9	M11	X	.002	.002	0	0
10	M12	X	.002	.002	0	0
11	M13	X	.002	.002	0	0
12	M14	X	.002	.002	0	0
13	M15	X	.002	.002	0	0
14	M16	X	.002	.002	0	0
15	M17	X	.002	.002	0	0
16	M18	X	.002	.002	0	0
17	M21	X	.002	.002	0	0

Member Distributed Loads (BLC 9: Wind with Ice Z)



Company Designer Job Number

: 22022.16 : CT11349A Jan 24, 2023 5:06 PM Checked By:_

Member Distributed Loads (BLC 9: Wind with Ice Z) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	.Start Location[ft	End Location[ft,
1	M1	Z	.002	.002	0	0
2	M2	Z	.002	.002	0	0
3	M4	Z	.002	.002	0	0
4	M5	Z	.002	.002	0	0
5	M6	Z	.002	.002	0	0
6	M7	Z	.002	.002	0	0
7	M8	Z	.002	.002	0	0
8	M9	Z	.002	.002	0	0
9	M10	Ζ	.002	.002	0	0
10	M11	Z	.002	.002	0	0
11	M12	Z	.002	.002	0	0
12	M13	Z	.002	.002	0	0
13	M14	Ζ	.002	.002	0	0
14	M15	Z	.002	.002	0	0
15	M18	Z	.002	.002	0	0
16	M21	Z	.002	.002	0	0

Member Distributed Loads (BLC 10 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	Start Location[ft	End Location[ft,
1	M1	Z	.008	.008	0	0
2	M2	Z	.008	.008	0	0
3	M4	Z	.008	.008	0	0
4	M5	Z	.008	.008	0	0
5	M6	Z	.008	.008	0	0
6	M7	Z	.008	.008	0	0
7	M8	Z	.008	.008	0	0
8	M9	Z	.008	.008	0	0
9	M10	Z	.008	.008	0	0
10	M11	Z	.008	.008	0	0
11	M12	Z	.008	.008	0	0
12	M13	Z	.008	.008	0	0
13	M14	Z	.008	.008	0	0
14	M15	Z	.008	.008	0	0
15	M18	Z	.008	.008	0	0
16	M21	Z	.008	.008	0	0

Member Distributed Loads (BLC 11: Wm Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	Start Location[ft	End Location[ft,
1	M1	Z	.002	.002	0	0
2	M2	Z	.002	.002	0	0
3	M4	Z	.002	.002	0	0
4	M5	Z	.002	.002	0	0
5	M6	Ζ	.002	.002	0	0
6	M7	Z	.002	.002	0	0
7	M8	Z	.002	.002	0	0
8	M9	Z	.002	.002	0	0
9	M10	Z	.002	.002	0	0
10	M11	Z	.002	.002	0	0
11	M12	Z	.002	.002	0	0
12	M13	Z	.002	.002	0	0
13	M14	Z	.002	.002	0	0



Company Designer Job Number : 22022.16 Model Name : CT11349A

Jan 24, 2023 5:06 PM Checked By:_

Member Distributed Loads (BLC 11: Wm Wind Z) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,k	Start Location[ft	End Location[ft,
14	M15	Z	.002	.002	0	0
15	M18	Z	.002	.002	0	0
16	M21	Z	.002	.002	0	0

Basic Load Cases

	BLC Description	Category	X Gra	Y Gra	Z Gra	Joint	Point	Distrib.	Area(Surfa
1	Self Weight	None								
2	Dead Load	None					6			
3	Ice Load	None					6			
4	Lm Maintenance Load (500lb)	None					1			
5	Lv Maintenance Load (250lb)	None					1			
6	Wind with Ice X	None					6	17		
7	Wind X	None					6	17		
8	Wm Wind X	None					6	17		
9	Wind with Ice Z	None					4	16		
10	Wind Z	None					4	16		
11	Wm Wind Z	None					4	16		

Load Combinations

	Description	So	.P	S	BLC	Fac	BLC	Fac	BLC	Fac	BLC	Fac	BLC	Fac.	BLC	Fac.	.BLC	Fac	BLC	Fac	BLC	Fac	.BLC	Fac
1	1.4D	Yes	Υ		1	1.4	2	1.4																
2	1.2D +1.5Lv	Yes	Υ		1	1.2	2	1.2	5	1.5														
3	1.2D + 1.0W (X-directi	Yes	Υ		1	1.2	2	1.2	7	1														
4	1.2D + 1.0Di + 1.0Wi (Yes	Υ		1	1.2	2	1.2	3	1	6	1												
5	1.2D +1.5Lm+ 1.0Wm	Yes	Υ		1	1.2	2	1.2	4	1.5	8	1												
6	1.2D + 1.0W (Z-directi	Yes	Υ		1	1.2	2	1.2	10	1														
7	1.2D + 1.0Di + 1.0Wi (Yes	Υ		1	1.2	2	1.2	3	1	9	1												
8	1.2D +1.5Lm+ 1.0Wm	Yes	Υ		1	1.2	2	1.2	4	1.5	11	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N8	max	.159	3	0	6	1.571	6	0	8	0	8	0	8
2		min	422	6	0	3	747	3	0	1	0	1	0	1
3	N29	max	137	6	.645	8	.474	3	0	8	0	8	0	8
4		min	-2.029	5	.157	6	-2.691	6	0	1	0	1	0	1
5	N30	max	1.909	8	.625	5	.676	5	0	8	0	8	0	8
6		min	007	3	.281	3	678	6	0	1	0	1	0	1
7	Totals:	max	0	8	1.262	5	0	2						
8		min	-1.192	3	.512	3	-1.798	6						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
1	N1	max	.028	3	.169	8	.272	6	2.821e-03	6	1.204e-02	6	4.803e-04	3
2		min	141	6	0	3	121	5	-9.932e-04	3	-1.085e-03	5	-2.107e-03	8
3	N2	max	.032	5	.169	8	.425	6	3.457e-03	6	1.142e-02	6	5.252e-04	3
4		min	051	6	0	3	023	5	-1.049e-03	3	-9.599e-04	5	-2.112e-03	8



Company Designer Job Number : 22022.16 Model Name : CT11349A

Jan 24, 2023 5:06 PM Checked By:_

Envelope Joint Displacements (Continued)

S		loint								V Dotation [real]	10	V Dotation Inc11	1.0	7 Detetion [ro-1]	10
Fig.	_	Joint N2	may	X [in]	LC	Y [in]	LC o	Z [in]	LC	X Rotation [rad]				Z Rotation [rad]	LC
No. Max Max		INJ					_		_						
Min		NI4			_				_		_		_		
No.		1114					_		_				_		
10		NIT			_		_		_		_		_		
11		CVI			_										
12		NIO			_		_		_		_		_		
13		N6							_						
14		N 1			_		_				_		_		
15		N/													
16															
17		<u>N8</u>					_								
18					_		_		_				-		
19		<u>N9</u>	_		_		_								
N11							_		_				-		$\overline{}$
21		N10											_		
22					_				_				_		$\overline{}$
N12		<u>N11</u>	_		_				_						
24			min		_		_		_		_		_		$\overline{}$
25		N12	max												
26			min		_		_		_		_		_		
27		N13	max												
28			min		_		_		_		3		_		
N15		N14	max	002			_								
30			min	011	_		3			5.536e-05			_	-5.035e-03	
N16	29	N15	max	0	8	.057	8	.013	3	5.109e-04	2	1.529e-03	3	-1.378e-03	
Min	30		min	0	1	.011	3	045	6		6		6		
N17	31	N16	max	0	8	.057	8		2	5.566e-04	2		2		3
34	32		min	0	1	.011	3	022	6	1.341e-04	3	-2.633e-03	6	-6.965e-03	
State	33	N17	max	0	8	011	3	.045	6	5.109e-04	2		3	-1.378e-03	3
Min	34		min	0	1	057	8	013	3	2.563e-07	6	-5.515e-03	6		
N19	35	N18	max	0	8	011	3	.022	6	5.566e-04	2		2	-1.385e-03	3
38	36		min	0	1	057	8	.006	2	1.341e-04	3	-2.633e-03	6	-6.965e-03	8
N20	37	N19	max	.006	3	017	3	.071	6	-8.367e-05	2	1.439e-03	3	-1.27e-03	3
40 min 011 6 084 8 .008 2 -1.285e-03 8 -2.602e-03 6 -5.514e-03 8 41 N21 max .023 3 026 3 .157 6 -3.189e-04 3 1.171e-03 3 -1.598e-03 2 42 min 112 6 098 8 036 3 -3.498e-03 6 -7.055e-03 6 -4.871e-03 8 43 N22 max .019 5 026 3 .066 6 -2.361e-04 3 3.067e-03 5 -8.812e-04 6 44 min 042 6 098 8 008 3 -3.157e-03 8 -2.389e-03 6 -4.742e-03 8 45 N23 max .028 3 041 3 -4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 <td>38</td> <td></td> <td>min</td> <td>025</td> <td>6</td> <td>084</td> <td>8</td> <td>019</td> <td>3</td> <td>-1.301e-03</td> <td>8</td> <td>-6.182e-03</td> <td>6</td> <td>-5.538e-03</td> <td>8</td>	38		min	025	6	084	8	019	3	-1.301e-03	8	-6.182e-03	6	-5.538e-03	8
41 N21 max .023 3 026 3 .157 6 -3.189e-04 3 1.171e-03 3 -1.598e-03 2 42 min 112 6 098 8 036 3 -3.498e-03 6 -7.055e-03 6 -4.871e-03 8 43 N22 max .019 5 026 3 .066 6 -2.361e-04 3 3.067e-03 5 -8.812e-04 6 44 min 042 6 098 8 008 3 -3.157e-03 8 -2.389e-03 6 -4.742e-03 8 45 N23 max .028 3 034 3 .188 6 4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47	39	N20	max	002	2	018	3	.033	6	-1.509e-06	3	2.428e-04	3	-1.13e-03	3
42 min 112 6 098 8 036 3 -3.498e-03 6 -7.055e-03 6 -4.871e-03 8 43 N22 max .019 5 026 3 .066 6 -2.361e-04 3 3.067e-03 5 -8.812e-04 6 44 min 042 6 098 8 008 3 -3.157e-03 8 -2.389e-03 6 -4.742e-03 8 45 N23 max .028 3 034 3 .188 6 4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48	40		min	011	6	084	8	.008	2	-1.285e-03	8	-2.602e-03	6	-5.514e-03	8
43 N22 max .019 5 026 3 .066 6 -2.361e-04 3 3.067e-03 5 -8.812e-04 6 44 min 042 6 098 8 008 3 -3.157e-03 8 -2.389e-03 6 -4.742e-03 8 45 N23 max .028 3 034 3 .188 6 4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49	41	N21	max	.023	3	026	3	.157	6	-3.189e-04	3	1.171e-03	3	-1.598e-03	2
43 N22 max .019 5 026 3 .066 6 -2.361e-04 3 3.067e-03 5 -8.812e-04 6 44 min 042 6 098 8 008 3 -3.157e-03 8 -2.389e-03 6 -4.742e-03 8 45 N23 max .028 3 034 3 .188 6 4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49	42		min	112	6	098	8	036	3	-3.498e-03	6	-7.055e-03	6	-4.871e-03	8
44 min 042 6 098 8 008 3 -3.157e-03 8 -2.389e-03 6 -4.742e-03 8 45 N23 max .028 3 034 3 .188 6 4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49 N25 max .028 3 164 3 1.36 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 51	43	N22	max	.019	5	026	3	.066	6		3	3.067e-03	5	-8.812e-04	6
45 N23 max .028 3 034 3 .188 6 4.963e-04 3 1.623e-03 3 -2.244e-03 2 46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49 N25 max .028 3 164 3 1.36 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 50 min 142 6 555 8 105 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 51			min		_		_				_				
46 min 142 6 109 5 041 3 -4.921e-03 6 -2.005e-02 6 -7.516e-03 8 47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49 N25 max .028 3 164 3 1.36 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 50 min 142 6 555 8 105 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 51 N26 max .033 5 164 3 1.222 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2 52	45	N23	max		3		_				3		3		
47 N24 max .033 5 03 3 .076 6 1.486e-03 6 1.312e-03 3 -1.902e-03 3 48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49 N25 max .028 3 164 3 1.36 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 50 min 142 6 555 8 105 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 51 N26 max .033 5 164 3 1.222 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2 52 min 052 6 555 8 077 3 -1.867e-03 5 -3.15e-02 6 -8.228e-03 8 53			min												
48 min 052 6 109 8 018 3 -8.943e-04 8 -1.787e-02 6 -7.539e-03 8 49 N25 max .028 3 164 3 1.36 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 50 min 142 6 555 8 105 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 51 N26 max .033 5 164 3 1.222 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2 52 min 052 6 555 8 077 3 -1.867e-03 5 -3.15e-02 6 -8.228e-03 8 53 N27 max .028 3 167 3 1.454 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 54	47	N24	max								6		3		$\overline{}$
49 N25 max .028 3 164 3 1.36 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 50 min 142 6 555 8 105 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 51 N26 max .033 5 164 3 1.222 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2 52 min 052 6 555 8 077 3 -1.867e-03 5 -3.15e-02 6 -8.228e-03 8 53 N27 max .028 3 167 3 1.454 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 54 min 142 6 579 8 109 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 55			min												
50 min 142 6 555 8 105 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 51 N26 max .033 5 164 3 1.222 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2 52 min 052 6 555 8 077 3 -1.867e-03 5 -3.15e-02 6 -8.228e-03 8 53 N27 max .028 3 167 3 1.454 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 54 min 142 6 579 8 109 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 55 N28 max .033 5 174 3 1.317 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2		N25	max												
51 N26 max .033 5 164 3 1.222 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2 52 min 052 6 555 8 077 3 -1.867e-03 5 -3.15e-02 6 -8.228e-03 8 53 N27 max .028 3 167 3 1.454 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 54 min 142 6 579 8 109 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 55 N28 max .033 5 174 3 1.317 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2			min												
52 min 052 6 555 8 077 3 -1.867e-03 5 -3.15e-02 6 -8.228e-03 8 53 N27 max .028 3 167 3 1.454 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 54 min 142 6 579 8 109 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 55 N28 max .033 5 174 3 1.317 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2		N26	max												
53 N27 max .028 3 167 3 1.454 6 6.381e-04 3 1.467e-03 3 -8.799e-04 3 54 min 142 6 579 8 109 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 55 N28 max .033 5 174 3 1.317 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2															
54 min 142 6 579 8 109 3 -1.135e-02 6 -3.138e-02 6 -8.227e-03 8 55 N28 max .033 5 174 3 1.317 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2		N27	max												
55 N28 max .033 5174 3 1.317 6 5.397e-03 6 1.448e-03 3 -2.701e-03 2			min												
		N28	max												
	56		min	052	6	579	8	082	3	-1.867e-03	5	-3.15e-02	6	-8.228e-03	8



Company Designer Job Number : 22022.16 : CT11349A

Jan 24, 2023 5:06 PM Checked By:_

Envelope Joint Displacements (Continued)

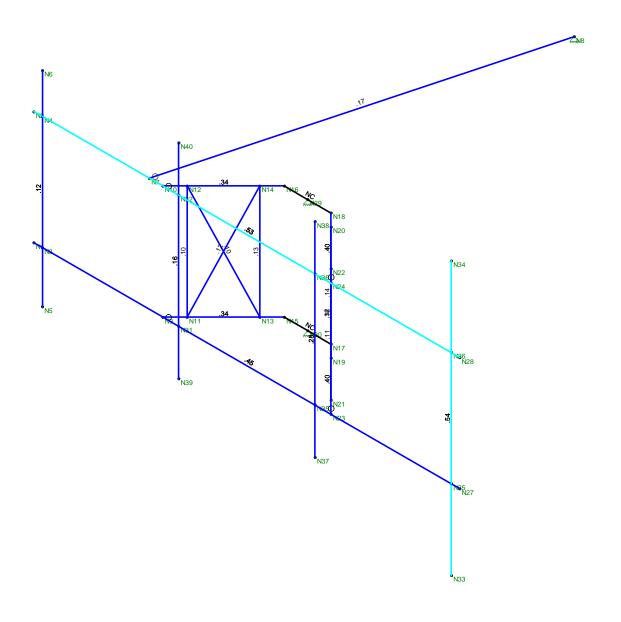
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotation [rad]	LC	Z Rotation [rad]	LC
57	N29	max	0	8	0	8	0	8	5.566e-04	2	-7.006e-04	2	-1.385e-03	3
58		min	0	1	0	1	0	1	1.341e-04	3	-2.633e-03	6	-6.965e-03	8
59	N30	max	0	8	0	8	0	8	5.109e-04	2	1.529e-03	3	-1.378e-03	3
60		min	0	1	0	1	0	1	2.564e-07	6	-5.515e-03	6	-6.968e-03	8
61	N31	max	.028	3	.076	5	.036	3	1.556e-03	8	3.621e-03	6	-8.815e-05	3
62		min	141	6	.016	2	211	6	-2.399e-04	3	-1.901e-03	5	-2.03e-03	8
63	N32	max	.032	5	.076	5	.019	3	2.642e-03	6	7.484e-03	6	-1.687e-04	3
64		min	051	6	.016	2	116	6	-3.297e-04	3	-3.694e-04	3	-2.024e-03	8
65	N33	max	.064	3	164	3	1.836	6	6.365e-04	3	1.467e-03	3	2.013e-03	3
66		min	314	8	555	8	123	3	-1.89e-02	6	-3.138e-02	6	-8.206e-03	8
67	N34	max	.267	5	164	3	1.532	6	1.302e-02	6	1.448e-03	3	-2.709e-03	2
68		min	.057	6	555	8	06	3	-1.872e-03	5	-3.15e-02	6	-8.418e-03	5
69	N35	max	.028	3	02	6	.084	6	4.444e-04	3	1.645e-03	3	-1.639e-03	2
70		min	142	6	072	5	031	3	-4.279e-03	6	-1.703e-02	6	-5.541e-03	8
71	N36	max	.033	5	02	6	002	2	1.032e-03	6	1.267e-03	3	-1.196e-03	2
72		min	052	6	072	5	014	6	-9.013e-04	8	-1.437e-02	6	-5.556e-03	8
73	N37	max	0	3	02	6	.153	6	4.444e-04	3	1.645e-03	3	-1.639e-03	2
74		min	177	6	072	5	038	3	-4.311e-03	6	-1.703e-02	6	-5.541e-03	8
75	N38	max	.12	5	02	6	.003	6	1.063e-03	6	1.267e-03	3	-1.196e-03	2
76		min	014	6	072	5	024	5	-8.935e-04	8	-1.437e-02	6	-5.556e-03	8
77	N39	max	.027	3	.076	5	.04	3	1.548e-03	8	3.621e-03	6	-5.686e-05	3
78		min	155	6	.016	2	225	6	-2.399e-04	3	-1.901e-03	5	-2.03e-03	8
79	N40	max	.063	5	.076	5	.034	5	2.674e-03	6	7.484e-03	6	-2.e-04	3
80		min	038	6	.016	2	074	6	-3.297e-04	3	-3.694e-04	3	-2.024e-03	8

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Memb.	Shape	Code Check	L	LC	ShL D	ir	phi*P	phi*Pn	phi*Mn y-y [k-ft]	phi*Cb Eqn
1	M1	PIPE_2.5	.533	8	6	.122 3	6	14.559	50.715	3.596	3.596 2H1
2	M2	PIPE_2.5	.451	8	6	.161 8	6	14.559	50.715	3.596	3.596 2 H1
3	M3	PIPE_2.0	.171	0	6	.004 1			32.13	1.872	1.872 1 H1
4	M4	PIPE_2.0	.342	2	5	.098 2	5	32.032	32.13	1.872	1.872 1H1
5	M5	PIPE_2.0	.336	2	8	.094 .5	8	32.032	32.13	1.872	1.872 1H1
6	M6	PIPE_2.0	.404	2	8	.122 .4	5	32.032	32.13	1.872	1.872 1 H1
7	M7	PIPE_2.0	.402	2	8	.128 .4	8	32.032	32.13	1.872	1.872 1H1
8	M8	0.625' Dia.	.099	3	6	.037 0	8	1.058	9.94	.104	.104 2 H1
9	M9	0.625' Dia.	.130	0	5	.019 0	6	1.058	9.94	.104	.104 2H1
10	M10	SR 3/4	.103	0	5	.026 0	8	6.954	14.314	.179	.179 1 H1
11	M11	0.625' Dia.	.107	3	6	.037 3	8	1.058	9.94	.104	.104 1H1
12	M12	SR 3/4	.120	0	5	.026 0	8	6.954	14.314	.179	.179 2H1
13	M13	0.625' Dia.	.139	0	5	.019 0	6	1.058	9.94	.104	.104 2 H1
14	M14	SR 3/4	.322	0	5	.022 0	6	6.954	14.314	.179	.179 1H1
15	M15	SR 3/4	.180	3	8	.022 3			14.314	.179	.179 2H1
16	M16	PIPE_2.0	.120	4.5	6	.026 4.5			32.13	1.872	1.872 1H1
17	M17	PIPE_2.0	.538	2	5	.065 2			32.13	1.872	1.872 4H1
18	M18	PIPE_2.0	.285	4	5	.072 4	8	20.867	32.13	1.872	1.872 1H1
19	M21	PIPE_2.0	.156	1	6	.085 1	6	20.867	32.13	1.872	1.872 1H1







Member Code Checks Displayed (Enveloped) Envelope Only Solution

Centek	Engineering
TJL	

22022.16

CT11349A Unity Check Jan 24, 2023 at 5:06 PM Mount.R3D



Centered on Solutions www.centekeng.com 43-3 North Branford Road P: (203) 488-0580 Branford, CT 06405

F: (203) 488-8587

Subject:

Location:

Connection to Host Building

Norfolk, CT

Prepared by: T.J.L. Checked by: C.F.C.

Job No. 22022.16

Antenna Mount Connection:

Anchor Data:

A307 Thru-Bolt =

Rev. 1: 2/24/23

Number of Anc hor Bolts = $N := \, 4$ (User Input)

Diameter of Bolts= D := 0.625in(User Input)

Design Tension = $T_{design} := 10.4 \cdot kips$ (User Input)

Design Shear = V_{design} := 6.23·kips (User Input)

Design Reactions:

Shear X = $F_x := 2.1 \cdot kips$ (User Input)

Shear Y= $\boldsymbol{F_V} \coloneqq 0.7 {\cdot} kips$ (User Input)

Shear Z = $F_7 := 2.7 \cdot kips$ (User Input)

Anchor Check:

 $T_{Max} := \frac{F_z}{N} = 675 lb$ Max Tension Force =

 $V_{\mbox{Max}} := \frac{\mbox{F}_{\mbox{y}} + \mbox{F}_{\mbox{x}}}{\mbox{N}} = 700 \mbox{lb}$ Max Shear Force =

 $\left(\frac{T_{Max}}{T_{design}} + \frac{V_{Max}}{V_{design}} \le 1.0, "OK", "NG"\right)$ Condition 1 =

V_{design} T_{design} % of Capacity=



BST Management, LLC 352 Park Street, Suite 106 North Reading, MA 01864



GPD Engineering and Architecture Professional Corporation

Dan Palkovic

520 South Main Street, Suite 2531

Akron, OH 44311

(216) 927-8663

dpalkovic@gpdgroup.com

GPD# 2022703.43 January 18, 2023

COMPREHENSIVE STRUCTURAL ANALYSIS REPORT

SITE DESIGNATION: BST Site #: CT-1188

T-Mobile Site #: CT11349A T-Mobile Site Name: Norfolk SNET 1

ANALYSIS CRITERIA: Codes: TIA-222-H & 2022 Connecticut State Building Code

114 mph (ultimate 3-second gust) w/ 0" ice

40 mph (3-second gust) w/ 1" ice

SITE DATA: 402 Loon Meadow Drive, Norfolk, CT 6058, Litchfield County

Latitude 42° 00' 32.00" N, Longitude 73° 10' 50.99" W

160' Guyed Tower

To whom it may concern,

GPD is pleased to submit this Comprehensive Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment: 62.3% Sufficient Capacity Foundation Ratio with Proposed Equipment: 72.2% Sufficient Capacity

We at GPD appreciate the opportunity of providing our continuing professional services to you and BST Management, LLC. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,

Christopher J. Scheks, P.E. Connecticut #: 0030026

CONNECTION AL MINISTER JONAL ENGINEER JONAL ENGINEE

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by T-Mobile and commissioned by BST Management, LLC.

This analysis utilizes an ultimate 3-second gust wind speed of 114 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Appendices A & B.

The proposed feedlines shall be installed as shown in Appendices A & B for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Legs	35.5%	Pass
Bracing	62.3%	Pass
Bolt Checks	62.3%	Pass
Guy Wires	49.8%	Pass
Torque Arm	13.7%	Pass
Guy Anchors	28.3%	Pass
Base Foundation	72.2%	Pass

RECOMMENDATIONS

The tower and its foundation(s) have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

ANALYSIS METHOD

tnxTower (Version 8.1.1.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various load cases. Selected output from the analysis is included the report appendices. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
		BST
Collocation Application	Application site #: CT-1188, dated 3/18/2022	Management,
		LLC
Tower Design	Not Provided	N/A
Foundation Design	WEI Project #: 2010-1212, dated 9/15/2010	BST
Geotechnical Report	WEI Project #: 2010-1212, dated 9/15/2010	BST
Previous Tower Analysis	GPD Job #:2022702.97, dated 6/7/2022	GPD
Tower Mapping	GPD & MTSI Northeast, dated 7/21/2010	GPD
Boring Log Review	GPD Job #: 2018704.07, dated 5/15/2018	GPD

1/18/2023 Page 2 of 4

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

- 1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
- 2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
- 3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
- 4. The soil parameters are as per data supplied or as assumed and stated in the calculations.
- 5. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
- 6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
- 7. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
- 8. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
- 9. Loading interpreted from photos is accurate to ±5' AGL, antenna size accurate to ±3.3 sf, and coax equal to the number of existing antennas without reserve.
- 10. All existing and proposed loading has been taken from the available site photos as well as documents supplied to GPD at the time of generating this report. All such documents are listed in the Documents Provided Table and are assumed to be accurate. GPD is not responsible for loading scenarios outside those conveyed in the supplied documentation.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

1/18/2023 Page 3 of 4

DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Rigorous Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

1/18/2023 Page 4 of 4

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	Norfolk
Site Number	CT-1188
Date of Analysis	1/18/2023
Company Performing Analysis	GPD

Tower Info	Description	Date
Tower Type (G, SST, MP)	G	
Tower Height (top of steel AGL)	160'	
Tower Manufacturer	N/A	
Tower Model	N/A	
Tower Design	N/A	
Foundation Mapping	WEI Project #: 2010-1212	9/15/2010
Geotechnical Report	WEI Project #: 2010-1212	9/15/2010
Previous Tower Analysis	GPD Job #: 2022702.97	6/7/2022
Tower Mapping	GPD & MTSI Northeast	7/21/2010
Broing Log Review	GPD Job #: 2018704.07	5/15/2018

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Design Parameters

Design Code Used	TIA-222-H & 2022 Connecticut State Building Code					
Location of Tower (County, State)	Litchfield, CT					
Wind Speed (mph)	114 mph (3-second gust)					
Ice Thickness (in)	1					
Risk Category (I, II, III)	II					
Exposure Category (B, C, D)	В					
Topographic Category (1 to 5)	1					

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition								
Tower (%)	62.3%							
Guy Wire (%)	28.3%							
Foundation (%)	72.2%							
Foundation Adequate?	Yes							

Existing / Reserved Loading

				Antenna					Mount		Transmission Line				
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Туре	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Туре	Quantity	Model	Size	Attachment Face/Leg	
AT&T Mobility	160	168	1	Dipole	Unknown	10' Dipole		1	Unknown	Pipe Mount	1	Unknown	7/8"	Face A	
AT&T Mobility	160	160	1	Omni	Unknown	3' Omni				Flush Mount					
Sprint	158	158	3	Panel	RFS	APXVSPP18-C-A20	50/170/250	3	Unknown	12' Boom Gate	3	Hybriflex	1-1/4"	Face A	
0.1.1	454	4=4		DDU		0000000				Et al. Maria de d				-	
Sprint	154	154	3	RRU		800MHz 2x50w				Flush Mounted					
Sprint	154	154	3	RRU	Panasonic	1900MHz 2x40w				Flush Mounted					
Sprint	154	154	3	Filter	Andrew	800MHz 2x50w Notch Filter				Flush Mounted					
AT&T Mobility	148	148	1	Yagi	Unknown	4' Yagi		1	Unknown	Pipe Mount	1	Unknown	1/2"	Face A	
AT&T Mobility	142	143	3	Panel	KMW	AM-X-CD-16-65-00T-RET	23/143/264	3	Unknown	8' Frame	12	Unknown	1-5/8"	Face B	
AT&T Mobility	142	143	6	Panel	Powerwave	7770	23/143/264		0	on the same mounts	2	DC/Fiber Bundle	1-1/2"	Face B	
AT&T Mobility	142	143	3	Panel		800-10965	23/143/264			on the same mounts	_	Don ibor Danaio		1. 000 2	
AT&T Mobility	142	143	6	TMA		TT19-08BP111-001				on the same mounts					
AT&T Mobility	142	143	12	RET	Powerwave	7020				on the same mounts					
AT&T Mobility	142	143	3	RRU		RRUS 11				on the same mounts					
AT&T Mobility	142	143	3	RRU	Ericsson	B14 4478				on the same mounts					
AT&T Mobility	142	143	3	RRU	Ericsson	RRUS-32 B2				on the same mounts					
AT&T Mobility	142	143	2	Surge	Andrew	ABT-DFDM-ADBH				on the same mounts					
Unknown	137							2	Unknown	4' Sidearm					
T-Mobile	120	120	3*	Panel	EMS	RR90-17-02DP	60/190/280	3*	Unknown	4' Standoff	4 *	Unknown	1-1/4"	Face A	
T-Mobile	120	120	3*	Panel	Andrew	LNX-6515DS-VTM	60/190/280		0	on the same mounts	4*	Unknown	1-5/8"	Face C	
T-Mobile	120	120	3*	TMA	Ericsson	1A-PCS				on the same mounts	1*	RET Cable	3/8"	Face C	
Sprint	75	75	1	GPS	PCTEL	GPS-TMG-HR-26NCM		1	Unknown	2' Sidearm	1	Unknown	1/4"	Face A	
ATOT 88 - 1-174	40	40		000		one				41.01.1			1/2"		
AT&T Mobility	13	13	1	GPS	Unknown	GPS		1	Unknown	1' Sidearm	1	Unknown	1/2"	Face B	

*Indicates equipment/feedline quantity to be removed.

Proposed Loading

F10p03eu Loauling														
	Antenna									Mount				
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Туре	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Туре	Quantity	Model	Size	Attachment Face/Leg
T-Mobile	120	120	3	Panel	Ericsson	AIR6419	60/190/280	3	SitePro1	VFA12-HD	3	Hybrid	1.99"	Face C
T-Mobile	120	120	3	Panel	RFS	APXVAALL24_43-U-NA20	60/190/280			on the same mounts				
T-Mobile	120	120	3	RRH	Ericsson	Radio 4480 B71 B85				on the same mounts				
T-Mobile	120	120	3	RRH	Ericsson	Radio 4460 B25 B66				on the same mounts				

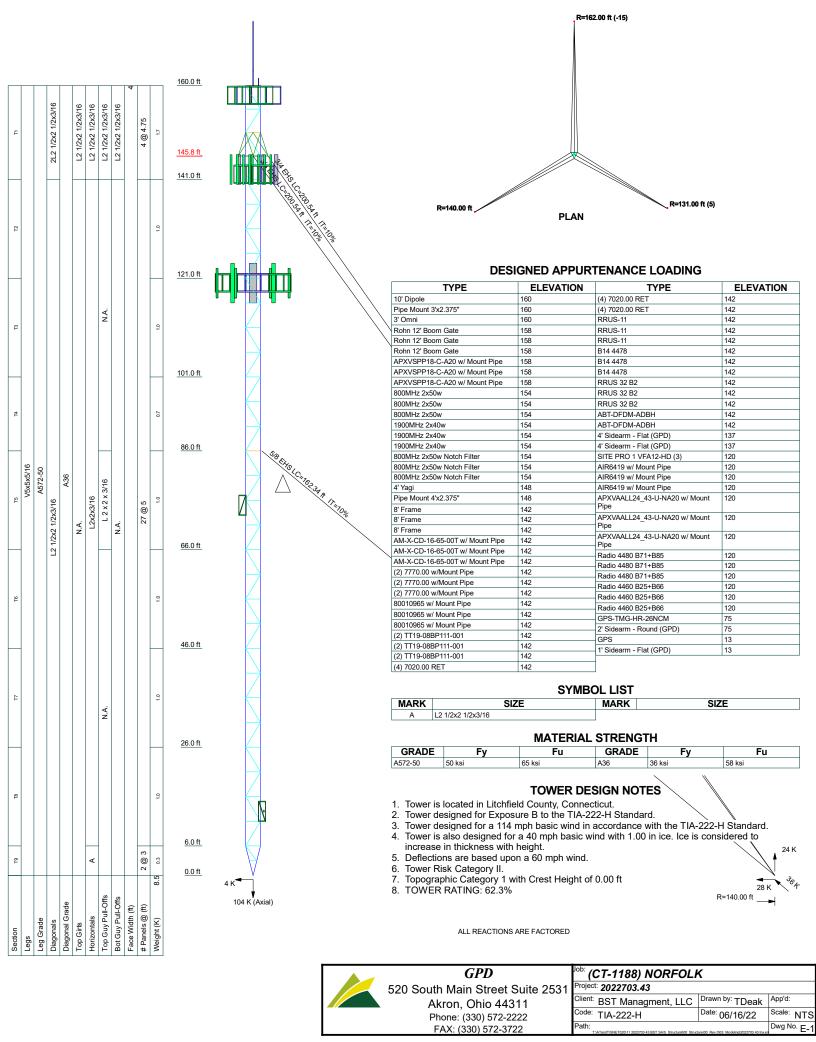
Note: The proposed loading shall be in addition to the remaining existing equipment at the same elevation.

Future Loading

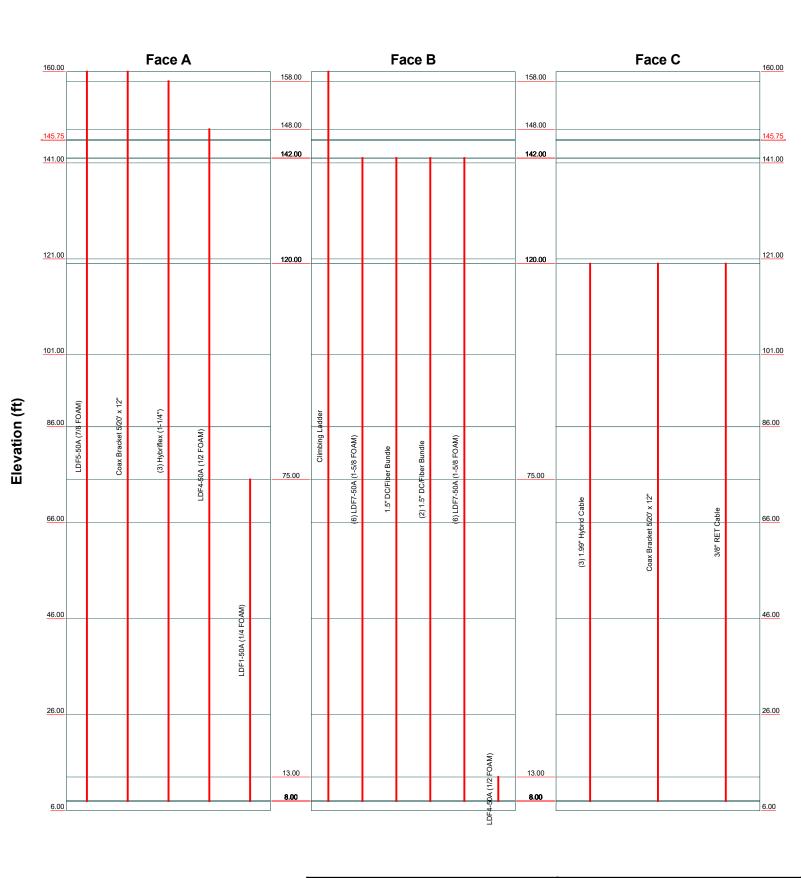
			Mount				Transmission Line							
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Туре	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Туре	Quantity	Model	Size	Attachment Face/Leg

APPENDIX B

Tower Analysis Output File



App Out Face Round Flat App In Face Truss Leg





GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222

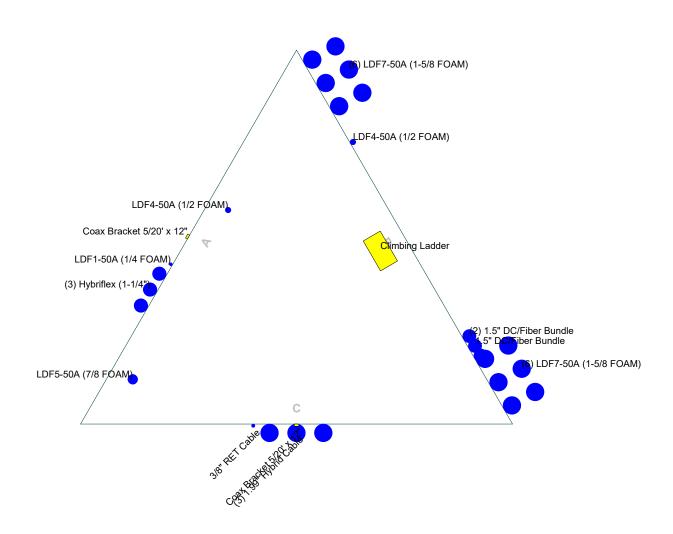
FAX: (330) 572-3722

C
С
Pa

ob: (CT-1188) NORFOLK Project: **2022703.43** lient: BST Managment, LLC Drawn by: TDeak App'd: Scale: NTS ode: TIA-222-H Date: 06/16/22 Dwg No. E-7

Feed Line Plan

__ App Out Face Round __ __ Flat _____ App In Face





GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222

FAX: (330) 572-3722

-		
Job: (CT-1188) NORFOLI	K	
Project: 2022703.43		
	Drawn by: TDeak	App'd:
Code: TIA-222-H	Date: 06/16/22	Scale: NTS
Path:		Dwg No. E-7

4 5		
tnv	Tower	þ

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	1 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 160.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 4.00 ft at the top and tapered at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Litchfield County, Connecticut.

Tower base elevation above sea level: 0.00 ft.

Basic wind speed of 114 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Safety factor used in guy design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification

- √ Use Code Stress Ratios
- √ Use Code Safety Factors Guys Escalate Ice

Always Use Max Kz Use Special Wind Profile

- √ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section
- √ Secondary Horizontal Braces Leg
 Use Diamond Inner Bracing (4 Sided)
- √ SR Members Have Cut Ends SR Members Are Concentric

- Distribute Leg Loads As Uniform Assume Legs Pinned
- √ Assume Rigid Index Plate
- √ Use Clear Spans For Wind Area
 Use Clear Spans For KL/r
- √ Retension Guys To Initial Tension
- √ Bypass Mast Stability Checks
- √ Use Azimuth Dish Coefficients
- √ Project Wind Area of Appurt.
- √ Autocalc Torque Arm Areas Add IBC .6D+W Combination
- √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs

- Use ASCE 10 X-Brace Ly Rules
- √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA
- √ SR Leg Bolts Resist Compression
 All Leg Panels Have Same Allowable
 Offset Girt At Foundation
- √ Consider Feed Line Torque
- √ Include Angle Block Shear Check
 Use TIA-222-H Bracing Resist. Exemption
 Use TIA-222-H Tension Splice Exemption
 Poles

 √
 Include Angle Block Shear Check
 Use TIA-222-H Bracing Resist.

 Exemption
 Poles

 √
 Include Angle Block Shear Check
 Use TIA-222-H Bracing Resist.

 Exemption

 Output

 Description

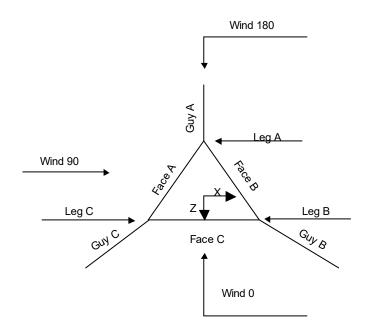
 Description

Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	2 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

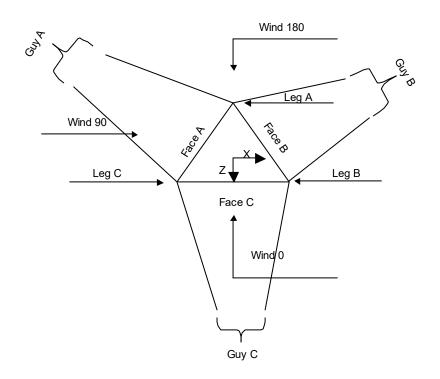


Corner & Starmount Guyed Tower

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	3 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak



Face Guyed

Tower	<u>Section</u>	Geometry

Tower	Tower	Assembly	Description	Section	Number	Section
Section	Elevation	Database		Width	of	Length
					Sections	
	ft			ft		ft
T1	160.00-141.00			4.00	1	19.00
T2	141.00-121.00			4.00	1	20.00
T3	121.00-101.00			4.00	1	20.00
T4	101.00-86.00			4.00	1	15.00
T5	86.00-66.00			4.00	1	20.00
T6	66.00-46.00			4.00	1	20.00
T7	46.00-26.00			4.00	1	20.00
T8	26.00-6.00			4.00	1	20.00
Т9	6.00-0.00			4.00	1	6.00

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	4 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Tower	Tower	Diagonal	Bracing	Has	Has	Top Girt	Bottom Girt
Section	Elevation	Spacing	Туре	K Brace	Horizontals	Offset	Offset
				End			
	ft	ft		Panels		in	in
T1	160.00-141.00	4.75	K Brace Left	No	Yes	0.0000	0.0000
T2	141.00-121.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T3	121.00-101.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T4	101.00-86.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T5	86.00-66.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T6	66.00-46.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T7	46.00-26.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T8	26.00-6.00	5.00	K Brace Left	No	Yes	0.0000	0.0000
T9	6.00-0.00	3.00	Diag Down	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower	Leg	Leg	Leg	Diagonal	Diagonal	Diagonal
Elevation	Туре	Size	Grade	Туре	Size	Grade
ft						
T1 160.00-141.00	60 Angle	V5x5x5/16	A572-50	Double Equal	2L2 1/2x2 1/2x3/16	A36
			(50 ksi)	Angle		(36 ksi)
T2 141.00-121.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T3 121.00-101.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T4 101.00-86.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T5 86.00-66.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T6 66.00-46.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T7 46.00-26.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T8 26.00-6.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)
T9 6.00-0.00	60 Angle	V5x5x5/16	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36
			(50 ksi)			(36 ksi)

Tower	No.	Mid Girt	Mid Girt	Mid Girt	Horizontal	Horizontal	Horizontal
Elevation	of	Туре	Size	Grade	Туре	Size	Grade
	Mid						
ft	Girts						
Γ1 160.00-141.00	None	Flat Bar		A36	Equal Angle	L2 1/2x2 1/2x3/16	A36
				(36 ksi)			(36 ksi)
Γ2 141.00-121.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)
ТЗ 121.00-101.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)
T4 101.00-86.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)
T5 86.00-66.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)
T6 66.00-46.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	5 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Tower	No.	Mid Girt	Mid Girt	Mid Girt	Horizontal	Horizontal	Horizontal
Elevation	of	Туре	Size	Grade	Туре	Size	Grade
	Mid						
ft	Girts						
T7 46.00-26.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)
T8 26.00-6.00	None	Flat Bar		A36	Equal Angle	L2x2x3/16	A36
				(36 ksi)			(36 ksi)
T9 6.00-0.00	None	Flat Bar		A36	Equal Angle	L2 1/2x2 1/2x3/16	A36
				(36 ksi)			(36 ksi)

Tower Section Geometry (cont'd)

Tower	Gusset	Gusset	Gusset Grade	Adjust. Factor	Adjust.	Weight Mult.	Double Angle	Double Angle	Double Angle
Elevation	Area	Thickness		A_f	Factor		Stitch Bolt	Stitch Bolt	Stitch Bolt
	(per face)				A_r		Spacing	Spacing	Spacing
							Diagonals	Horizontals	Redundants
ft	ft ²	in					in	in	in
T1	0.00	0.3125	A572-50	1	1	1	23.2400	36.0000	36.0000
160.00-141.00			(50 ksi)						
T2	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
141.00-121.00			(50 ksi)						
T3	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
121.00-101.00			(50 ksi)						
T4	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
101.00-86.00			(50 ksi)						
T5 86.00-66.00	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
			(50 ksi)						
T6 66.00-46.00	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
			(50 ksi)						
T7 46.00-26.00	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
			(50 ksi)						
T8 26.00-6.00	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
			(50 ksi)						
T9 6.00-0.00	0.00	0.3125	A572-50	1	1	1	36.0000	36.0000	36.0000
			(50 ksi)						

						K Fac	ctors ¹			
Tower	Calc	Calc	Legs	X	K	Single	Girts	Horiz.	Sec.	Inner
Elevation	K	K	_	Brace	Brace	Diags			Horiz.	Brace
	Single	Solid		Diags	Diags					
	Angles	Rounds		X^{-}	X	X	X	X	X	X
ft				Y	Y	Y	Y	Y	Y	Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
160.00-141.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
141.00-121.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
121.00-101.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
101.00-86.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
86.00-66.00				1	1	1	1	1	1	1

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	6 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

			K Factors ¹											
Tower Elevation	Calc K Single	Calc K Solid	Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace				
C.	Angles	Rounds		X	X	X	X	X	X	X				
ft				Y	Y	Y	Y	Y	Y	Y				
T6	Yes	Yes	1	1	1	1	1	1	1	1				
66.00-46.00				1	1	1	1	1	1	1				
T7	Yes	Yes	1	1	1	1	1	1	1	1				
46.00-26.00				1	1	1	1	1	1	1				
T8 26.00-6.00	Yes	Yes	1	1	1	1	1	1	1	1				
				1	1	1	1	1	1	1				
T9 6.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1				
				1	1	1	1	1	1	1				

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Elevation	Leg		Diago	nal	Top G	irt	Botton	n Girt	Mid	Girt	Long Ho	rizontal	Short Ho	rizontal
ft														
-	Net Width	U	Net Width	U	Net Width	U	Net	U	Net	U	Net	U	Net	\overline{U}
	Deduct		Deduct		Deduct		Width		Width		Width		Width	
	in		in		in		Deduct		Deduct		Deduct		Deduct	
							in		in		in		in	
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
160.00-141.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
141.00-121.00	1													
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
121.00-101.00	1													
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
101.00-86.00														
T5 86.00-66.00		1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 66.00-46.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 46.00-26.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 26.00-6.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 6.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Reduna Horizoi		Reduna Diago		Reduna Sub-Diag			dundant Redundant Ve Horizontal		Redundant Vertical Redundant Hip			Redundant Hip Diagonal	
J	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
160.00-141.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
141.00-121.00	1													
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
121.00-101.00	1	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
101.00-86.00 T5 86.00-66.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 66.00-46.00	0.000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 46.00-26.00		0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	7 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client		Designed by
	BST Managment, LLC	TDeak

Tower Elevation ft	Reduna Horizoi		Reduna Diago		Redund Sub-Diag		Redun Sub-Hor		Redundan	t Vertical	Redundo	ant Hip	Redunda Diago	
	Net Width	U	Net Width	U	Net Width	U	Net	U	Net	U	Net	U	Net	U
	Deduct		Deduct		Deduct		Width		Width		Width		Width	
	in		in		in		Deduct		Deduct		Deduct		Deduct	
							in		in		in		in	
T8 26.00-6.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 6.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation	Leg Connection	Leg		Diagoi	nal	Top G	irt	Bottom	Girt	Mid G	irt	Long Hori	zontal	ntal Short Horizon	
ft	Туре														
,	- 1	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.						
		in		in		in		in		in		in		in	
T1	Sleeve DS	0.6250	12	0.6250	2	0.6250	0	0.6250	0	0.6250	0	0.6250	2	0.6250	0
160.00-141.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Sleeve DS	0.6250	12	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
141.00-121.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Sleeve DS	0.6250	12	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
121.00-101.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Sleeve DS	0.6250	12	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
101.00-86.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5 86.00-66.00	Sleeve DS	0.6250	12	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6 66.00-46.00	Sleeve DS	0.6250	12	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7 46.00-26.00	Sleeve DS	0.6250	12	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8 26.00-6.00	Flange	0.7500	3	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9 6.00-0.00	Flange	0.7500	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Guy Data

Guy	Guy		Guy	Initial	%	Guy	Guy	L_u	Anchor	Anchor	Anchor	End
Elevation	Grade		Size	Tension		Modulus	Weight		Radius	Azimuth	Elevation	Fitting
										Adj.		Efficiency
ft				K		ksi	plf	ft	ft	ŏ	ft	%
145.75	EHS	A	3/4	5.83	10%	24000	1.155	226.46	162.00	0.0000	-15.00	100%
		В	3/4	5.83	10%	24000	1.155	190.62	131.00	0.0000	5.00	100%
		C	3/4	5.83	10%	24000	1.155	200.40	140.00	0.0000	0.00	100%
86	EHS	A	5/8	4.24	10%	23000	0.813	188.81	162.00	0.0000	-15.00	100%
		В	5/8	4.24	10%	23000	0.813	151.94	131.00	0.0000	5.00	100%
		C	5/8	4.24	10%	23000	0.813	162.22	140.00	0.0000	0.00	100%

Guy Data(cont'd)

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	8 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Guy Elevation ft	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
145.75	Torque Arm	8.00	30.0000	Dog Ear	A36 (36 ksi)	Double Angle	2L2 1/2x2x1/4 2L3x2 1/2x1/4
86	Corner				(2 3 1101)		

	Guy Data (cont'd)								
Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size	
145.75	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	
86.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L 2 x 2 x 3/16	

Guy Data (cont'd)								
Guy	Cable	Cable	Cable	Cable	Tower	Tower	Tower	Tower
Elevation	Weight	Weight	Weight	Weight	Intercept	Intercept	Intercept	Intercept
	A	B	C	D	A	B	C	D
ft	K	K	K	K	ft	ft	ft	ft
145.75	0.26	0.22	0.23		5.00	3.55	3.92	•
					3.9 sec/pulse	3.3 sec/pulse	3.4 sec/pulse	
86	0.15	0.12	0.13		3.39	2.20	2.50	
					3.2 sec/pulse	2.6 sec/pulse	2.7 sec/pulse	

				Gı	u y D a	ta (co	nt'd)	
			Torqu	e Arm	Pul	! Off	Diag	gonal
Guy	Calc	Calc	K_x	K_{y}	K_x	K_{y}	K_x	K_{y}
Elevation	K	K				•		
ft	Single	Solid						
	Angles	Rounds						
145.75	No	No	1	1	1	1	1	1
86	No	No			1	1	1	1

		Torque-Arm				Pull Off				Diagonal			
Guy	Bolt Size	Number	Net Width	U	Bolt Size	Number	Net Width	U	Bolt Size	Number	Net Width	U	
Elevation	in		Deduct		in		Deduct		in		Deduct		
ft			in				in				in		
145.75	0.0000	0	0.0000	1	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75	
	A325N				A325N				A325N				

Guy Data (cont'd)

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	9 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

		Torque-Arm				Pull Off				Diagonal			
Guy	Bolt Size	Number	Net Width	U	Bolt Size	Number	Net Width	U	Bolt Size	Number	Net Width	U	
Elevation	in		Deduct		in		Deduct		in		Deduct		
ft			in				in				in		
86	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75	
	A325N				A325N				A325N				

Gu	y Pressures

Guy	Guy	z	q_z	q_z	Ice
Elevation	Location			Ice	Thickness
ft		ft	psf	psf	in
145.75	A	65.38	25	3	1.0708
	В	75.38	26	3	1.0861
	C	72.88	26	3	1.0824
86	A	35.50	21	3	1.0073
	В	45.50	22	3	1.0326
	C	43.00	22	3	1.0268

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face	Allow	Exclude	Component	Placement	Face	Lateral	#	#	Clear	Width or	Perimeter	Weight
	or	Shield	From	Туре		Offset	Offset		Per	Spacing	Diameter		
	Leg		Torque		ft	in	(Frac FW)		Row	in	in	in	plf
			Calculation										
Climbing	В	No	No	Af (CaAa)	160.00 -	-2.0000	0	1	1	1.0000	3.8400		7.90
Ladder					8.00								
LDF5-50A	Α	No	No	Ar (CaAa)	160.00 -	-2.0000	-0.35	1	1	1.0000	1.0900		0.33
(7/8 FOAM)					8.00								
Coax Bracket	Α	No	No	Af (CaAa)	160.00 -	0.0000	0	1	1	0.5000	0.5000		0.43
5/20' x 12"					8.00								
Hybriflex	Α	No	No	Ar (CaAa)	158.00 -	0.0000	-0.15	3	3	0.5000	1.5400		1.30
(1-1/4")					8.00								
LDF4-50A	Α	No	No	Ar (CaAa)	148.00 -	-2.0000	0.1	1	1	0.0000	0.6300		0.15
(1/2 FOAM)					8.00								
LDF7-50A	В	No	No	Ar (CaAa)	142.00 -	0.0000	0.4	6	3	1.0000	1.9800		0.82
(1-5/8 FOAM)					8.00								
1.5" DC/Fiber	В	No	No	Ar (CaAa)	142.00 -	0.0000	0.3	1	1	1.0000	1.5000		0.80
Bundle					8.00								
1.5" DC/Fiber	В	No	No	Ar (CaAa)	142.00 -	0.0000	0.3	2	2	1.0000	1.5000		0.80
Bundle					8.00								
LDF7-50A	В	No	No	Ar (CaAa)	142.00 -	0.0000	-0.4	6	3	1.0000	1.9800		0.82
(1-5/8 FOAM)					8.00								
1.99" Hybrid	C	No	No	Ar (CaAa)	120.00 -	0.0000	0	3	3	1.0000	1.9900		0.32
Cable					8.00								
Coax Bracket	C	No	No	Af (CaAa)	120.00 -	0.0000	0	1	1	0.5000	0.5000		0.43
5/20' x 12"	_				8.00								
3/8" RET	C	No	No	Ar (CaAa)	120.00 -	0.0000	0.1	1	1	0.3750	0.3750		0.10
Cable					8.00			_					
LDF1-50A	A	No	No	Ar (CaAa)	75.00 - 8.00	0.0000	-0.075	1	1	0.3500	0.3500		0.06
(1/4 FOAM)					12.00 0.00	0.0000	0.05			0.6200	0.6206		0.15
LDF4-50A	В	No	No	Ar (CaAa)	13.00 - 8.00	0.0000	-0.25	1	1	0.6300	0.6300		0.15
(1/2 FOAM)													

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	10 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Feed Line/Linear Appurtenances Section Areas

Tower	Tower	Face	A_R	A_F	C_AA_A	$C_A A_A$	Weight
Section	Elevation		- 2	- 2	In Face	Out Face	
	ft		ft²	ft²	ft ²	ft ²	K
T1	160.00-141.00	A	0.000	0.000	11.949	0.000	0.08
		В	0.000	0.000	14.986	0.000	0.16
		C	0.000	0.000	0.000	0.000	0.00
T2	141.00-121.00	A	0.000	0.000	14.347	0.000	0.10
		В	0.000	0.000	69.320	0.000	0.40
		C	0.000	0.000	0.000	0.000	0.00
T3	121.00-101.00	A	0.000	0.000	14.347	0.000	0.10
		В	0.000	0.000	69.320	0.000	0.40
		C	0.000	0.000	13.639	0.000	0.03
T4	101.00-86.00	Α	0.000	0.000	10.760	0.000	0.07
		В	0.000	0.000	51.990	0.000	0.30
		C	0.000	0.000	10.768	0.000	0.02
T5	86.00-66.00	A	0.000	0.000	14.662	0.000	0.10
		В	0.000	0.000	69.320	0.000	0.40
		C	0.000	0.000	14.357	0.000	0.03
T6	66.00-46.00	Α	0.000	0.000	15.047	0.000	0.10
		В	0.000	0.000	69.320	0.000	0.40
		C	0.000	0.000	14.357	0.000	0.03
T7	46.00-26.00	A	0.000	0.000	15.047	0.000	0.10
		В	0.000	0.000	69.320	0.000	0.40
		C	0.000	0.000	14.357	0.000	0.03
T8	26.00-6.00	A	0.000	0.000	13.542	0.000	0.09
		В	0.000	0.000	62.703	0.000	0.36
		C	0.000	0.000	12.921	0.000	0.03
T9	6.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	0.000	0.000	0.00
		С	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower	Tower	Face	Ice	A_R	A_F	C_AA_A	$C_A A_A$	Weight
Section	Elevation	or	Thickness			In Face	Out Face	
	ft	Leg	in	ft ²	ft ²	ft ²	ft ²	K
T1	160.00-141.00	A	1.164	0.000	0.000	33.353	0.000	0.36
		В		0.000	0.000	21.038	0.000	0.36
		C		0.000	0.000	0.000	0.000	0.00
T2	141.00-121.00	A	1.148	0.000	0.000	40.871	0.000	0.43
		В		0.000	0.000	106.093	0.000	1.56
		C		0.000	0.000	0.000	0.000	0.00
T3	121.00-101.00	A	1.129	0.000	0.000	40.518	0.000	0.42
		В		0.000	0.000	105.550	0.000	1.55
		C		0.000	0.000	37.179	0.000	0.34
T4	101.00-86.00	A	1.110	0.000	0.000	30.120	0.000	0.31
		В		0.000	0.000	78.748	0.000	1.15
		C		0.000	0.000	29.143	0.000	0.26
T5	86.00-66.00	A	1.087	0.000	0.000	42.006	0.000	0.42
		В		0.000	0.000	104.342	0.000	1.51
		C		0.000	0.000	38.526	0.000	0.34
T6	66.00-46.00	A	1.054	0.000	0.000	44.042	0.000	0.43
		В		0.000	0.000	103.400	0.000	1.48
		C		0.000	0.000	38.051	0.000	0.33
T7	46.00-26.00	A	1.009	0.000	0.000	43.010	0.000	0.41
		В		0.000	0.000	102.089	0.000	1.45
		C		0.000	0.000	37.390	0.000	0.32

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	11 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Tower Section	Tower Elevation	Face or	Ice Thickness	A_R	A_F	C_AA_A In Face	C_AA_A Out Face	Weight
	ft	Leg	in	ft²	ft^2	ft²	ft^2	K
T8	26.00-6.00	A	0.930	0.000	0.000	37.108	0.000	0.34
		В		0.000	0.000	91.088	0.000	1.25
		C		0.000	0.000	32.627	0.000	0.26
Т9	6.00-0.00	Α	0.787	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X	CP_Z
				Ice	Ice
	ft	in	in	in	in
T1	160.00-141.00	-0.4527	-0.5364	-1.3289	-0.5921
T2	141.00-121.00	3.2278	-1.9895	3.0813	-1.6290
Т3	121.00-101.00	2.9405	-1.3311	2.5491	-0.2147
T4	101.00-86.00	2.9267	-1.2978	2.5319	-0.1583
T5	86.00-66.00	2.8938	-1.3032	2.3878	-0.2078
T6	66.00-46.00	2.8538	-1.3097	2.2217	-0.2692
T7	46.00-26.00	2.8538	-1.3097	2.2422	-0.2977
T8	26.00-6.00	2.6870	-1.2725	2.1776	-0.4321
Т9	6.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower	Feed Line	Description	Feed Line	K_a	K_a
Section	Record No.	_	Segment Elev.	No Ice	Ice
T1	1	Climbing Ladder	141.00 -	0.6000	0.5703
			160.00		
T1	2	LDF5-50A (7/8 FOAM)	141.00 -	0.6000	0.5703
			160.00		
T1	3	Coax Bracket 5/20' x 12"	141.00 -	0.6000	0.5703
			160.00		
T1	4	Hybriflex (1-1/4")	141.00 -	0.6000	0.5703
			158.00		
T1	5	LDF4-50A (1/2 FOAM)	141.00 -	0.0000	0.0000
1			148.00		
T1	6	LDF7-50A (1-5/8 FOAM)	141.00 -	0.6000	0.5703
1			142.00		
T1	7	1.5" DC/Fiber Bundle	141.00 -	0.6000	0.5703
			142.00		
T1	8	1.5" DC/Fiber Bundle	141.00 -	0.6000	0.5703
			142.00		
T1	9	LDF7-50A (1-5/8 FOAM)	141.00 -	0.6000	0.5703
			142.00		
T2	1	Climbing Ladder	121.00 -	0.6000	0.5841
			141.00		
T2	2	LDF5-50A (7/8 FOAM)	121.00 -	0.6000	0.5841
			141.00		
T2	3	Coax Bracket 5/20' x 12"	121.00 -	0.6000	0.5841
			141.00		
T2	4	Hybriflex (1-1/4")	121.00 -	0.6000	0.5841

GPD

Job		Page
	(CT-1188) NORFOLK	12 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	DOT M	Designed by
	BST Managment, LLC	TDeak

-					_
Tower	Feed Line	Description	Feed Line	K_a	K_a
Section	Record No.		Segment Elev.	No Ice	Ice
T2	5	LDF4-50A (1/2 FOAM)	141.00 121.00 - 141.00	0.0000	0.0000
T2	6	LDF7-50A (1-5/8 FOAM)	121.00 - 141.00	0.6000	0.5841
T2	7	1.5" DC/Fiber Bundle	121.00 - 141.00	0.6000	0.5841
T2	8	1.5" DC/Fiber Bundle	121.00 - 141.00	0.6000	0.5841
T2	9	LDF7-50A (1-5/8 FOAM)	121.00 - 141.00	0.6000	0.5841
Т3	1	Climbing Ladder	101.00 - 121.00	0.6000	0.5864
Т3	2	LDF5-50A (7/8 FOAM)	101.00 - 121.00	0.6000	0.5864
Т3	3	Coax Bracket 5/20' x 12"	101.00 - 121.00	0.6000	0.5864
Т3	4	Hybriflex (1-1/4")	101.00 - 121.00	0.6000	0.5864
Т3	5	LDF4-50A (1/2 FOAM)	101.00 - 121.00	0.0000	0.0000
T3	6	LDF7-50A (1-5/8 FOAM)	101.00 - 121.00	0.6000	0.5864
T3	7	1.5" DC/Fiber Bundle	101.00 - 121.00	0.6000	0.5864
T3	8	1.5" DC/Fiber Bundle	101.00 - 121.00	0.6000	0.5864
T3	9	LDF7-50A (1-5/8 FOAM)	101.00 - 121.00	0.6000	0.5864
T3 T3	10 11	1.99" Hybrid Cable Coax Bracket 5/20' x 12"	101.00 - 120.00 101.00 -	0.6000	0.5864 0.5864
T3	12	3/8" RET Cable	120.00 101.00 -	0.6000	0.5864
T4	1	Climbing Ladder	120.00	0.6000	0.5888
T4	2	LDF5-50A (7/8 FOAM)		0.6000	0.5888
T4	3	Coax Bracket 5/20' x 12"	86.00 - 101.00	0.6000	0.5888
T4	4	Hybriflex (1-1/4")	86.00 - 101.00	0.6000	0.5888
T4	5	LDF4-50A (1/2 FOAM)		0.0000	0.0000
T4	6	LDF7-50A (1-5/8 FOAM)		0.6000	0.5888
T4	7	1.5" DC/Fiber Bundle		0.6000	0.5888
T4	8	1.5" DC/Fiber Bundle		0.6000	0.5888
T4	9	LDF7-50A (1-5/8 FOAM)		0.6000	0.5888
T4	10	1.99" Hybrid Cable		0.6000	0.5888
T4	11	Coax Bracket 5/20' x 12"	86.00 - 101.00	0.6000 0.6000	0.5888
T4 T5	12	3/8" RET Cable	86.00 - 101.00 66.00 - 86.00	0.6000	0.5888
T5	1	Climbing Ladder LDF5-50A (7/8 FOAM)	1	0.6000	0.5916
T5	2 3	Coax Bracket 5/20' x 12"	66.00 - 86.00		0.5916
T5	4	Hybriflex (1-1/4")	66.00 - 86.00 66.00 - 86.00	0.6000 0.6000	0.5916 0.5916
T5	5	LDF4-50A (1/2 FOAM)	66.00 - 86.00	0.0000	0.0000
T5	6	LDF7-50A (1-5/8 FOAM)	1	0.6000	0.5916
T5	7	1.5" DC/Fiber Bundle	66.00 - 86.00	0.6000	0.5916
T5	8	1.5" DC/Fiber Bundle	66.00 - 86.00	0.6000	0.5916
T5	ğ	LDF7-50A (1-5/8 FOAM)	66.00 - 86.00	0.6000	0.5916
T5	10	1.99" Hybrid Cable	66.00 - 86.00	0.6000	0.5916
T5	11	Coax Bracket 5/20' x 12"	66.00 - 86.00	0.6000	0.5916
T5	12	3/8" RET Cable	66.00 - 86.00	0.6000	0.5916
T5	13	LDF1-50A (1/4 FOAM)	66.00 - 75.00	0.6000	0.5916
T6	1	Climbing Ladder	46.00 - 66.00	0.6000	0.5957
T6	2	LDF5-50A (7/8 FOAM)	46.00 - 66.00	0.6000	0.5957

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	13 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Tower	Feed Line	Description	Feed Line	K_a	K_a
Section	Record No.		Segment Elev.	No Ice	Ice
T6	3	Coax Bracket 5/20' x 12"	46.00 - 66.00	0.6000	0.5957
Т6	4	Hybriflex (1-1/4")	46.00 - 66.00	0.6000	0.5957
Т6	5	LDF4-50A (1/2 FOAM)	46.00 - 66.00	0.0000	0.0000
Т6	6	LDF7-50A (1-5/8 FOAM)	46.00 - 66.00	0.6000	0.5957
Т6	7	1.5" DC/Fiber Bundle	46.00 - 66.00	0.6000	0.5957
Т6	8	1.5" DC/Fiber Bundle	46.00 - 66.00	0.6000	0.5957
Т6	9	LDF7-50A (1-5/8 FOAM)	46.00 - 66.00	0.6000	0.5957
Т6	10	1.99" Hybrid Cable	46.00 - 66.00	0.6000	0.5957
Т6	11	Coax Bracket 5/20' x 12"	46.00 - 66.00	0.6000	0.5957
Т6	12	3/8" RET Cable	46.00 - 66.00	0.6000	0.5957
Т6	13	LDF1-50A (1/4 FOAM)	46.00 - 66.00	0.6000	0.5957
T7	1	Climbing Ladder	26.00 - 46.00	0.6000	0.6000
T7	2	LDF5-50A (7/8 FOAM)	26.00 - 46.00	0.6000	0.6000
T7	3	Coax Bracket 5/20' x 12"	26.00 - 46.00	0.6000	0.6000
T7	4	Hybriflex (1-1/4")	26.00 - 46.00	0.6000	0.6000
T7	5	LDF4-50A (1/2 FOAM)	26.00 - 46.00	0.0000	0.0000
T7	6	LDF7-50A (1-5/8 FOAM)	26.00 - 46.00	0.6000	0.6000
T7	7	1.5" DC/Fiber Bundle	26.00 - 46.00	0.6000	0.6000
T7	8	1.5" DC/Fiber Bundle	26.00 - 46.00	0.6000	0.6000
T7	9	LDF7-50A (1-5/8 FOAM)	26.00 - 46.00	0.6000	0.6000
T7	10	1.99" Hybrid Cable	26.00 - 46.00	0.6000	0.6000
T7	11	Coax Bracket 5/20' x 12"	26.00 - 46.00	0.6000	0.6000
T7	12	3/8" RET Cable	26.00 - 46.00	0.6000	0.6000
Т7	13	LDF1-50A (1/4 FOAM)	26.00 - 46.00	0.6000	0.6000
Т8	1	Climbing Ladder	8.00 - 26.00	0.6000	0.6000
Т8	2	LDF5-50A (7/8 FOAM)	8.00 - 26.00	0.6000	0.6000
T8	3	Coax Bracket 5/20' x 12"	8.00 - 26.00	0.6000	0.6000
T8	4	Hybriflex (1-1/4")	8.00 - 26.00	0.6000	0.6000
Т8	5	LDF4-50A (1/2 FOAM)	8.00 - 26.00	0.0000	0.0000
T8	6	LDF7-50A (1-5/8 FOAM)	8.00 - 26.00	0.6000	0.6000
T8	7	1.5" DC/Fiber Bundle	8.00 - 26.00	0.6000	0.6000
T8	8	1.5" DC/Fiber Bundle	8.00 - 26.00	0.6000	0.6000
T8	9	LDF7-50A (1-5/8 FOAM)	8.00 - 26.00	0.6000	0.6000
T8	10	1.99" Hybrid Cable	8.00 - 26.00	0.6000	0.6000
T8	11	Coax Bracket 5/20' x 12"	8.00 - 26.00	0.6000	0.6000
T8	12	3/8" RET Cable	8.00 - 26.00	0.6000	0.6000
T8	13	LDF1-50A (1/4 FOAM)	8.00 - 26.00	0.6000	0.6000
T8	14	LDF4-50A (1/2 FOAM)	8.00 - 13.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			Vert ft ft ft	٥	ft		ft²	ft²	K
10' Dipole	A	From Leg	0.50	0.0000	160.00	No Ice	2.00	2.00	0.02
•		C	0.00			1/2" Ice	3.02	3.02	0.04
			8.00			1" Ice	4.07	4.07	0.06
Pipe Mount 3'x2.375"	A	From Leg	0.25	0.0000	160.00	No Ice	0.58	0.58	0.01
•			0.00			1/2" Ice	0.77	0.77	0.02
			1.50			1" Ice	0.97	0.97	0.02
3' Omni	В	From Face	0.50	0.0000	160.00	No Ice	0.52	0.52	0.02

GPD

Job		Page
	(CT-1188) NORFOLK	14 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Description	Face or	Offset Type	Offsets: Horz	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
	Leg		Lateral Vert						
			ft	0	ft		ft^2	ft ²	K
			ft ft		J		J	v	
			0.00			1/2" Ice	0.71	0.71	0.02
			0.00			1" Ice	0.90	0.90	0.03
Rohn 12' Boom Gate	Α	From Leg	1.29	50.0000	158.00	No Ice	15.35	14.00	0.56
			1.53			1/2" Ice	21.29	20.81	0.74
	_		0.00			1" Ice	27.23	27.62	0.92
Rohn 12' Boom Gate	В	From Leg	1.29	50.0000	158.00	No Ice	15.35	14.00	0.56
			1.53			1/2" Ice	21.29	20.81	0.74
Rohn 12' Boom Gate	C	F I	0.00	50,0000	150.00	1" Ice	27.23	27.62	0.92
Ronn 12 Boom Gate	C	From Leg	1.29 1.53	50.0000	158.00	No Ice 1/2" Ice	15.35 21.29	14.00 20.81	0.56 0.74
			0.00			172 ICe	27.23	27.62	0.74
APXVSPP18-C-A20 w/	A	From Leg	2.57	70.0000	158.00	No Ice	8.02	6.71	0.92
Mount Pipe	7.	Trom Leg	3.05	70.0000	150.00	1/2" Ice	8.48	7.66	0.14
Would Tipe			0.00			1" Ice	8.94	8.49	0.22
APXVSPP18-C-A20 w/	В	From Leg	2.57	70.0000	158.00	No Ice	8.02	6.71	0.08
Mount Pipe		110111 200	3.05	, 0.0000	120.00	1/2" Ice	8.48	7.66	0.14
			0.00			1" Ice	8.94	8.49	0.22
APXVSPP18-C-A20 w/	C	From Leg	2.57	30.0000	158.00	No Ice	8.02	6.71	0.08
Mount Pipe		C	3.05			1/2" Ice	8.48	7.66	0.14
-			0.00			1" Ice	8.94	8.49	0.22
800MHz 2x50w	A	From Leg	0.50	0.0000	154.00	No Ice	2.49	2.07	0.05
			0.00			1/2" Ice	2.71	2.27	0.07
			0.00			1" Ice	2.93	2.48	0.10
800MHz 2x50w	В	From Leg	0.50	0.0000	154.00	No Ice	2.49	2.07	0.05
			0.00			1/2" Ice	2.71	2.27	0.07
			0.00			1" Ice	2.93	2.48	0.10
800MHz 2x50w	C	From Leg	0.50	0.0000	154.00	No Ice	2.49	2.07	0.05
			0.00			1/2" Ice	2.71	2.27	0.07
10000 414 2 40		Б. Т	0.00	0.0000	154.00	1" Ice	2.93	2.48	0.10
1900MHz 2x40w	A	From Leg	0.50	0.0000	154.00	No Ice	2.49	3.06	0.09
			$0.00 \\ 0.00$			1/2" Ice 1" Ice	2.71 2.93	3.30 3.54	0.12 0.15
1900MHz 2x40w	В	From Leg	0.50	0.0000	154.00	No Ice	2.93	3.06	0.13
1900W11Z ZX40W	ь	rioin Leg	0.00	0.0000	134.00	1/2" Ice	2.49	3.30	0.09
			0.00			1" Ice	2.93	3.54	0.12
1900MHz 2x40w	C	From Leg	0.50	0.0000	154.00	No Ice	2.49	3.06	0.09
190011111111111111111111111111111111111		Trom 20g	0.00	0.000	1200	1/2" Ice	2.71	3.30	0.12
			0.00			1" Ice	2.93	3.54	0.15
00MHz 2x50w Notch Filter	Α	From Leg	0.50	0.0000	154.00	No Ice	0.85	0.37	0.01
		C	0.00			1/2" Ice	0.97	0.46	0.02
			0.00			1" Ice	1.11	0.56	0.03
00MHz 2x50w Notch Filter	В	From Leg	0.50	0.0000	154.00	No Ice	0.85	0.37	0.01
			0.00			1/2" Ice	0.97	0.46	0.02
			0.00			1" Ice	1.11	0.56	0.03
00MHz 2x50w Notch Filter	C	From Leg	0.50	0.0000	154.00	No Ice	0.85	0.37	0.01
			0.00			1/2" Ice	0.97	0.46	0.02
	_		0.00			1" Ice	1.11	0.56	0.03
4' Yagi	В	From Face	6.50	0.0000	148.00	No Ice	0.79	0.79	0.01
			0.00			1/2" Ice	1.03	1.03	0.01
Din - M 41 2 275"	P	E E	0.00	0.0000	1.40.00	1" Ice	1.28	1.28	0.02
Pipe Mount 4'x2.375"	В	From Face	6.00	0.0000	148.00	No Ice	0.87	0.87	0.02
			0.00			1/2" Ice	1.11	1.11	0.03
****			0.00			1" Ice	1.36	1.36	0.04
an an an an									
Q! Erore a	۸	Erom I aa	0.40	50 0000	1/2 00	No Loc	1/1/10	2 4 1	0.21
8' Frame	A	From Leg	0.48 0.57	50.0000	142.00	No Ice 1/2" Ice	14.48 18.67	3.61 4.62	0.31 0.45

GPD

Job		Page
	(CT-1188) NORFOLK	15 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Description	Face or	Offset Type	Offsets: Horz	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
	Leg		Lateral Vert						
			ft	0	ft		ft^2	ft^2	K
			ft ft		<i>y</i> -		J.	<i>J</i> *	-
8' Frame	В	From Leg	0.48	50.0000	142.00	No Ice	14.48	3.61	0.31
			0.57			1/2" Ice	18.67	4.62	0.45
01.75			0.00	5 0,000	1.12.00	1" Ice	22.86	5.62	0.60
8' Frame	C	From Leg	0.48	50.0000	142.00	No Ice	14.48	3.61	0.31
			0.57 0.00			1/2" Ice 1" Ice	18.67 22.86	4.62 5.62	0.45 0.60
AM-X-CD-16-65-00T w/	A	From Leg	0.96	43.0000	142.00	No Ice	8.55	6.65	0.00
Mount Pipe	Α	From Leg	1.15	45.0000	142.00	1/2" Ice	9.18	7.68	0.09
Would I ipe			1.00			1" Ice	9.79	8.56	0.23
AM-X-CD-16-65-00T w/	В	From Leg	0.96	43.0000	142.00	No Ice	8.55	6.65	0.09
Mount Pipe		J	1.15			1/2" Ice	9.18	7.68	0.16
•			1.00			1" Ice	9.79	8.56	0.23
AM-X-CD-16-65-00T w/	C	From Leg	0.96	43.0000	142.00	No Ice	8.55	6.65	0.09
Mount Pipe			1.15			1/2" Ice	9.18	7.68	0.16
			1.00			1" Ice	9.79	8.56	0.23
(2) 7770.00 w/Mount Pipe	A	From Leg	0.96	43.0000	142.00	No Ice	5.51	4.10	0.06
			1.15			1/2" Ice	5.87	4.73	0.11
(O) 7770 00 O.	ъ	г т	1.00	12 0000	1.42.00	1" Ice	6.23	5.37	0.16
(2) 7770.00 w/Mount Pipe	В	From Leg	0.96	43.0000	142.00	No Ice	5.51	4.10	0.06
			1.15			1/2" Ice	5.87	4.73	0.11
(2) 7770 00 vv/Movet Pino	C	Enom Loo	1.00	44,0000	142.00	1" Ice	6.23	5.37	0.16
(2) 7770.00 w/Mount Pipe	С	From Leg	0.96 1.15	44.0000	142.00	No Ice 1/2" Ice	5.51 5.87	4.10 4.73	0.06 0.11
			1.13			1" Ice	6.23	5.37	0.11
80010965 w/ Mount Pipe	A	From Leg	0.96	43.0000	142.00	No Ice	14.05	7.63	0.10
oooroyos w would ripe	71	Trom Leg	1.15	13.0000	142.00	1/2" Ice	14.69	8.90	0.22
			1.00			1" Ice	15.30	9.96	0.33
80010965 w/ Mount Pipe	В	From Leg	0.96	43.0000	142.00	No Ice	14.05	7.63	0.13
	_		1.15		- 1-10	1/2" Ice	14.69	8.90	0.22
			1.00			1" Ice	15.30	9.96	0.33
80010965 w/ Mount Pipe	C	From Leg	0.96	43.0000	142.00	No Ice	14.05	7.63	0.13
•		C	1.15			1/2" Ice	14.69	8.90	0.22
			1.00			1" Ice	15.30	9.96	0.33
(2) TT19-08BP111-001	A	From Leg	0.96	50.0000	142.00	No Ice	0.55	0.45	0.02
			1.15			1/2" Ice	0.65	0.53	0.02
			1.00			1" Ice	0.75	0.63	0.03
(2) TT19-08BP111-001	В	From Leg	0.96	50.0000	142.00	No Ice	0.55	0.45	0.02
			1.15			1/2" Ice	0.65	0.53	0.02
(2) TT10 00DD111 001		г т	1.00	50,0000	1.42.00	1" Ice	0.75	0.63	0.03
(2) TT19-08BP111-001	C	From Leg	0.96	50.0000	142.00	No Ice	0.55	0.45	0.02
			1.15			1/2" Ice	0.65	0.53	0.02
(4) 7020 00 DET	A	From Leg	1.00 0.96	50.0000	142.00	1" Ice No Ice	0.75 0.10	0.63 0.17	0.03
(4) 7020.00 RET	А	From Leg	1.15	30.0000	142.00	1/2" Ice	0.10	0.17	0.00 0.01
			1.13			1" Ice	0.13	0.24	0.01
(4) 7020.00 RET	В	From Leg	0.96	50.0000	142.00	No Ice	0.20	0.17	0.00
(4) 7020.00 KE1	ь	110III Leg	1.15	30.0000	142.00	1/2" Ice	0.15	0.17	0.01
			1.00			1" Ice	0.20	0.31	0.01
(4) 7020.00 RET	C	From Leg	0.96	50.0000	142.00	No Ice	0.10	0.17	0.00
· · · · · · · · · · · · · · · · · · ·		8	1.15			1/2" Ice	0.15	0.24	0.01
			1.00			1" Ice	0.20	0.31	0.01
RRUS-11	A	From Leg	0.96	50.0000	142.00	No Ice	2.78	1.19	0.05
		Č	1.15			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.09
RRUS-11	В	From Leg	0.96	50.0000	142.00	No Ice	2.78	1.19	0.05
			1.15			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.09

GPD

Job		Page
	(CT-1188) NORFOLK	16 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Description	Face or	Offset Type	Offsets: Horz	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weigh
	Leg		Lateral Vert						
			ft	0	ft		ft^2	ft^2	K
			ft ft		<i>J</i> e		J.	Je	
RRUS-11	С	From Leg	0.96	50.0000	142.00	No Ice	2.78	1.19	0.05
			1.15			1/2" Ice	2.99	1.33	0.07
			1.00			1" Ice	3.21	1.49	0.09
B14 4478	Α	From Leg	0.96	50.0000	142.00	No Ice	1.84	1.06	0.06
			1.15			1/2" Ice 1" Ice	2.01	1.20	0.08
B14 4478	В	From Leg	1.00 0.96	50.0000	142.00	No Ice	2.19 1.84	1.34 1.06	0.09 0.06
B14 4478	ь	From Leg	1.15	30.0000	142.00	1/2" Ice	2.01	1.00	0.08
			1.00			1" Ice	2.19	1.34	0.09
B14 4478	C	From Leg	0.96	50.0000	142.00	No Ice	1.84	1.06	0.06
	_		1.15		- 1-100	1/2" Ice	2.01	1.20	0.08
			1.00			1" Ice	2.19	1.34	0.09
RRUS 32 B2	A	From Leg	0.96	50.0000	142.00	No Ice	2.73	1.67	0.05
			1.15			1/2" Ice	2.95	1.86	0.07
			1.00			1" Ice	3.18	2.05	0.10
RRUS 32 B2	В	From Leg	0.96	50.0000	142.00	No Ice	2.73	1.67	0.05
			1.15			1/2" Ice	2.95	1.86	0.07
	_		1.00			1" Ice	3.18	2.05	0.10
RRUS 32 B2	C	From Leg	0.96	50.0000	142.00	No Ice	2.73	1.67	0.05
			1.15			1/2" Ice	2.95	1.86	0.07
ADT DEDM ADDII		г т	1.00	50,0000	1.42.00	1" Ice	3.18	2.05	0.10
ABT-DFDM-ADBH	A	From Leg	0.96	50.0000	142.00	No Ice 1/2" Ice	0.02	0.04	0.00
			1.15 1.00			1/2" Ice	0.04 0.07	0.08 0.11	$0.00 \\ 0.00$
ABT-DFDM-ADBH	В	From Leg	0.96	50.0000	142.00	No Ice	0.07	0.11	0.00
ABT-DI DM-ADBIT	Ь	1 Ioni Leg	1.15	30.0000	142.00	1/2" Ice	0.02	0.04	0.00
****			1.00			1" Ice	0.07	0.11	0.00
4' Sidearm - Flat (GPD)	D	Enom Loo	2.00	0.0000	137.00	No Ice	0.80	3.20	0.06
4 Sideariii - Flat (GPD)	В	From Leg	0.00	0.0000	137.00	1/2" Ice	1.05	4.00	0.08
			0.00			1" Ice	1.30	4.80	0.07
4' Sidearm - Flat (GPD)	C	From Leg	2.00	0.0000	137.00	No Ice	0.80	3.20	0.06
4 Sidearin Tiat (GLD)	C	Trom Leg	0.00	0.0000	137.00	1/2" Ice	1.05	4.00	0.07
			0.00			1" Ice	1.30	4.80	0.09
*** SITE PRO 1 VFA12-HD (3)	A	None		0.0000	120.00	No Ice	25.20	25.20	1.97
SITE FRO I VI AIZ-IID (3)	А	None		0.0000	120.00	1/2" Ice	38.36	38.36	2.41
						1" Ice	51.52	51.52	2.85
AIR6419 w/ Mount Pipe	A	From Leg	4.00	60.0000	120.00	No Ice	5.29	3.96	0.11
Tinto (1) w would ripe		r rom Leg	0.00	00.0000	120.00	1/2" Ice	6.13	4.98	0.16
			0.00			1" Ice	6.73	5.67	0.22
AIR6419 w/ Mount Pipe	В	From Leg	4.00	70.0000	120.00	No Ice	5.29	3.96	0.11
•		Č	0.00			1/2" Ice	6.13	4.98	0.16
			0.00			1" Ice	6.73	5.67	0.22
AIR6419 w/ Mount Pipe	C	From Leg	4.00	40.0000	120.00	No Ice	5.29	3.96	0.11
			0.00			1/2" Ice	6.13	4.98	0.16
			0.00			1" Ice	6.73	5.67	0.22
APXVAALL24_43-U-NA20	A	From Leg	4.00	60.0000	120.00	No Ice	20.24	10.63	0.18
w/ Mount Pipe			0.00			1/2" Ice	20.89	12.06	0.31
ADVI/A ATT 24 42 TT NT 420	Р	E 1	0.00	70,0000	120.00	1" Ice	21.55	13.34	0.46
APXVAALL24_43-U-NA20	В	From Leg	4.00	70.0000	120.00	No Ice	20.24	10.63	0.18
w/ Mount Pipe			0.00			1/2" Ice 1" Ice	20.89	12.06	0.31
APXVAALL24 43-U-NA20	С	From Lag	0.00 4.00	40.0000	120.00		21.55	13.34	0.46
w/ Mount Pipe	C	From Leg	0.00	40.0000	120.00	No Ice 1/2" Ice	20.24 20.89	10.63 12.06	0.18 0.31
w/ iviount ripe			0.00			1" Ice	21.55	13.34	0.31

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job	(CT-1188) NORFOLK	Page 17 of 29
Project	2022703.43	Date 11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
	Ü		Vert ft	0	ft		ft²	ft²	K
			ft ft		v		v	v	
			0.00			1/2" Ice	3.06	1.54	0.11
			0.00			1" Ice	3.28	1.71	0.13
Radio 4480 B71+B85	В	From Leg	4.00	0.0000	120.00	No Ice	2.85	1.38	0.08
		, ,	0.00			1/2" Ice	3.06	1.54	0.11
			0.00			1" Ice	3.28	1.71	0.13
Radio 4480 B71+B85	C	From Leg	4.00	0.0000	120.00	No Ice	2.85	1.38	0.08
		C	0.00			1/2" Ice	3.06	1.54	0.11
			0.00			1" Ice	3.28	1.71	0.13
Radio 4460 B25+B66	A	From Leg	4.00	0.0000	120.00	No Ice	2.14	1.69	0.11
		J	0.00			1/2" Ice	2.32	1.85	0.13
			0.00			1" Ice	2.51	2.02	0.16
Radio 4460 B25+B66	В	From Leg	4.00	0.0000	120.00	No Ice	2.14	1.69	0.11
		, ,	0.00			1/2" Ice	2.32	1.85	0.13
			0.00			1" Ice	2.51	2.02	0.16
Radio 4460 B25+B66	C	From Leg	4.00	0.0000	120.00	No Ice	2.14	1.69	0.11
		, ,	0.00			1/2" Ice	2.32	1.85	0.13
			0.00			1" Ice	2.51	2.02	0.16

GPS-TMG-HR-26NCM	C	From Leg	2.00	0.0000	75.00	No Ice	0.80	0.93	0.03
		J	0.00			1/2" Ice	1.05	1.17	0.03
			0.00			1" Ice	1.30	1.41	0.04
' Sidearm - Round (GPD)	С	From Leg	1.00	0.0000	75.00	No Ice	0.80	0.93	0.03
,		8	0.00			1/2" Ice	1.05	1.17	0.03
			0.00			1" Ice	1.30	1.41	0.04
GPS	В	From Leg	1.00	0.0000	13.00	No Ice	0.13	0.13	0.00
		8	0.00			1/2" Ice	0.21	0.21	0.00
			0.00			1" Ice	0.28	0.28	0.01
1' Sidearm - Flat (GPD)	В	From Leg	0.50	0.0000	13.00	No Ice	0.80	0.80	0.02
('-)		8	0.00			1/2" Ice	1.05	1.00	0.02
			0.00			1" Ice	1.30	1.20	0.03

Load Combinations

Comb.	Description
No.	· · · · · · · · · · · · · · · · · · ·
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy
4	1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy
5	1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
7	1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy
8	1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy
9	1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
11	1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy
12	1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy
13	1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
15	1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy

GPD

Job		Page
	(CT-1188) NORFOLK	18 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Comb.	Description
No.	12D-10W/ (, 2) 00 1 N L -10 C
16	1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy
17 18	1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy 1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
19	1.2 Dead+1.0 W ind 120 deg - No Ice+1.0 duy 1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy
20	1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy
21	1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy
22	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
23	1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy
24	1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy
25	1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy
26	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
27	1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy
28	1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy
29	1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy
30	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
31	1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy
32	1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy
33 34	1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy 1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
35	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy 1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy
36	1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy
37	1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy
38	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
39	1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy
40	1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy
41	1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy
42	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
43	1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy
44 45	1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy 1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy
46	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
47	1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy
48	1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy
49	1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy
50	1.2 Dead+1.0 Ice+1.0 Temp+Guy
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
55 56	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
58	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
63	Dead+Wind 0 deg - Service+Guy
64	Dead+Wind 30 deg - Service+Guy
65	Dead+Wind 60 deg - Service+Guy
66 67	Dead+Wind 90 deg - Service+Guy Dead+Wind 120 deg - Service+Guy
67 68	Dead+Wind 150 deg - Service+Guy Dead+Wind 150 deg - Service+Guy
69	Dead+Wind 180 deg - Service+Guy Dead+Wind 180 deg - Service+Guy
70	Dead+Wind 210 deg - Service+Guy
71	Dead+Wind 240 deg - Service+Guy
72	Dead+Wind 270 deg - Service+Guy
73	Dead+Wind 300 deg - Service+Guy
74	Dead+Wind 330 deg - Service+Guy

tnxT ₀	ower
-------------------	------

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	19 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Maximum Tower Deflections - Service Wind

Section	Elevation	Horz.	Gov.	Tilt	Twist
No.		Deflection	Load		
	ft	in	Comb.	0	0
T1	160 - 141	0.612	63	0.0590	0.0368
T2	141 - 121	0.823	63	0.0606	0.0643
T3	121 - 101	1.015	63	0.0366	0.1047
T4	101 - 86	1.062	63	0.0089	0.1421
T5	86 - 66	1.036	63	0.0068	0.1890
T6	66 - 46	1.036	71	0.0175	0.2165
T7	46 - 26	0.909	71	0.0524	0.2304
T8	26 - 6	0.603	71	0.0910	0.2387
T9	6 - 0	0.149	71	0.1146	0.2368

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov.	Deflection	Tilt	Twist	Radius of Curvature
ft		Load Comb.	in	0	0	Curvature ft
160.00	10' Dipole	63	0.612	0.0590	0.0368	Inf
158.00	Rohn 12' Boom Gate	63	0.634	0.0597	0.0393	Inf
154.00	800MHz 2x50w	63	0.679	0.0611	0.0444	871982
148.00	4' Yagi	63	0.745	0.0622	0.0527	435991
145.75	Guy	63	0.770	0.0621	0.0562	367181
142.00	8' Frame	63	0.812	0.0611	0.0625	395859
137.00	4' Sidearm - Flat (GPD)	63	0.867	0.0578	0.0721	137167
120.00	SITE PRO 1 VFA12-HD (3)	63	1.021	0.0350	0.1064	24801
86.00	Guv	63	1.036	0.0068	0.1890	48339
75.00	GPS-TMG-HR-26NCM	71	1.039	0.0096	0.2086	97166
13.00	GPS	71	0.319	0.1071	0.2379	60296

Maximum Tower Deflections - Design Wind

Section	Elevation	Horz.	Gov.	Tilt	Twist
No.		Deflection	Load		
	ft	in	Comb.	0	٥
T1	160 - 141	2.546	7	0.4371	0.1685
T2	141 - 121	3.444	34	0.4344	0.2152
T3	121 - 101	4.862	34	0.3114	0.3622
T4	101 - 86	5.572	34	0.1397	0.4766
T5	86 - 66	5.698	34	0.0806	0.5712
T6	66 - 46	5.625	34	0.1146	0.6507
T7	46 - 26	4.808	37	0.3013	0.6986
T8	26 - 6	3.124	37	0.4845	0.7262
T9	6 - 0	0.763	37	0.5904	0.7298

Critical Deflections and Radius of Curvature - Design Wind

GPD

Job		Page
	(CT-1188) NORFOLK	20 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	0	٥	ft
160.00	10' Dipole	7	2.546	0.4371	0.1685	78730
158.00	Rohn 12' Boom Gate	7	2.604	0.4395	0.1706	78730
154.00	800MHz 2x50w	7	2.721	0.4436	0.1756	65608
148.00	4' Yagi	6	2.975	0.4452	0.1878	32804
145.75	Guy	6	3.084	0.4436	0.1947	27625
142.00	8' Frame	34	3.366	0.4370	0.2101	23356
137.00	4' Sidearm - Flat (GPD)	34	3.754	0.4196	0.2395	22855
120.00	SITE PRO 1 VFA12-HD (3)	34	4.917	0.3029	0.3690	5180
86.00	Guy	34	5.698	0.0806	0.5712	14433
75.00	GPS-TMG-HR-26NCM	34	5.717	0.0869	0.6216	8470
13.00	GPS	37	1.636	0.5567	0.7295	13764

— 14			—
$D \wedge I +$	110	\sim 1 \sim 10	Data
	116	-1111	11414
		JIMII	Dutu

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt	Allowable Load per Bolt	Ratio Load Allowable	Allowable Ratio	Criteria
T1	160	Leg	A325N	0.6250	12	3.05	22.75	0.134	1	Bearing
		Diagonal	A325N	0.6250	2	3.49	14.38	0.134	1	Member Block Shear
		Horizontal	A325N	0.6250	2	0.29	7.19	0.040	1	Member Block Shear
T2	141	Leg	A325N	0.6250	12	5.67	22.75	0.249	1	Bearing
		Diagonal	A325N	0.6250	1	4.88	7.83	0.623	1	Member Bearing
		Horizontal	A325N	0.6250	1	1.34	6.83	0.196	1	Member Block Shear
T3	121	Leg	A325N	0.6250	12	5.38	22.75	0.237	1	Bearing
		Diagonal	A325N	0.6250	1	3.41	7.83	0.435	1	Member Bearing
		Horizontal	A325N	0.6250	1	1.32	6.83	0.193	1	Member Block Shear
T4	101	Leg	A325N	0.6250	12	4.25	22.75	0.187	1	Bearing
		Diagonal	A325N	0.6250	1	4.49	7.83	0.574	1	Member Bearing
		Horizontal	A325N	0.6250	1	2.66	6.83	0.389	1	Member Block Shear
T5	86	Leg	A325N	0.6250	12	6.27	22.75	0.275	1	Bearing
		Diagonal	A325N	0.6250	1	3.71	7.83	0.474	1	Member Bearing
		Horizontal	A325N	0.6250	1	0.80	6.83	0.117	1	Member Block Shear
T6	66	Leg	A325N	0.6250	12	7.35	22.75	0.323	1	Bearing
		Diagonal	A325N	0.6250	1	3.07	13.05	0.235	1	Member Bearing
		Horizontal	A325N	0.6250	1	0.85	6.83	0.125	1	Member Block Shear
T7	46	Leg	A325N	0.6250	12	6.79	22.75	0.298	1	Bearing
		Diagonal	A325N	0.6250	1	2.91	13.05	0.223	1	Member Bearing
		Horizontal	A325N	0.6250	1	0.89	6.83	0.130	1	Member Block Shear
T8	26	Leg	A325N	0.7500	3	3.95	30.10	0.131	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3.60	7.83	0.459	1	Member Bearing

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	21 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of	Maximum Load	Allowable Load	Ratio Load	Allowable Ratio	Criteria
	ft			in	Bolts	per Bolt K	per Bolt K	Allowable	•	
		Horizontal	A325N	0.6250	1	0.89	6.83	0.131	1	Member Block Shear

				Guy De	sign Da	ta		
Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T _u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T1	145.75 (A) (235)	3/4 EHS	5.83	58.30	11.78	34.98	1.000	2.969
	145.75 (A) (236)	3/4 EHS	5.83	58.30	11.30	34.98	1.000	3.096
	145.75 (B) (229)	3/4 EHS	5.83	58.30	12.00	34.98	1.000	2.916
	145.75 (B) (230)	3/4 EHS	5.83	58.30	12.44	34.98	1.000	2.811
	145.75 (C) (223)	3/4 EHS	5.83	58.30	12.15	34.98	1.000	2.879
	145.75 (C) (224)	3/4 EHS	5.83	58.30	12.26	34.98	1.000	2.854
T5	86.00 (A) (243)	5/8 EHS	4.24	42.40	11.84	25.44	1.000	2.149
	86.00 (B) (242)	5/8 EHS	4.24	42.40	12.38	25.44	1.000	2.054
	86.00 (C) (241)	5/8 EHS	4.24	42.40	12.67	25.44	1.000	2.008

Compression Checks

		Leg	g Desig	n Dat	a (Coi	mpres	sion)		
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	V5x5x5/16	19.00	4.75	47.7 K=1.00	3.0273	-18.28	125.41	0.146 1
T2	141 - 121	V5x5x5/16	20.00	5.00	50.2 K=1.00	3.0273	-33.99	124.06	0.274 1
Т3	121 - 101	V5x5x5/16	20.00	5.00	50.2 K=1.00	3.0273	-37.18	124.06	0.300 1
T4	101 - 86	V5x5x5/16	15.00	5.00	50.2 K=1.00	3.0273	-29.32	124.06	0.236 1
T5	86 - 66	V5x5x5/16	20.00	5.00	50.2 K=1.00	3.0273	-37.60	124.06	0.303 1
Т6	66 - 46	V5x5x5/16	20.00	5.00	50.2 K=1.00	3.0273	-44.08	124.06	0.355 1

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	22 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P_u
	ft		ft	ft		in^2	K	K	ϕP_n
T7	46 - 26	V5x5x5/16	20.00	5.00	50.2 K=1.00	3.0273	-43.62	124.06	0.352 1
Т8	26 - 6	V5x5x5/16	20.00	5.00	50.2 K=1.00	3.0273	-38.47	124.06	0.310 1
Т9	6 - 0	V5x5x5/16	6.43	3.21	32.3 K=1.00	3.0273	-38.29	132.18	0.290 1

¹ P_u / ϕP_n controls

Diagonal Design Data (Compression
--

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P_u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	2L2 1/2x2 1/2x3/16	6.21	5.81	89.7 K=1.00	1.8000	-8.00	48.41	0.165
T2	141 - 121	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-5.25	11.56	0.454
Т3	121 - 101	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-4.04	11.56	0.349
T4	101 - 86	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-5.75	11.56	0.497
T5	86 - 66	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-4.77	11.56	0.412
Т6	66 - 46	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-3.07	11.56	0.265
T7	46 - 26	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-2.91	11.56	0.251
Т8	26 - 6	L2 1/2x2 1/2x3/16	6.40	6.16	149.4 K=1.00	0.9020	-4.25	11.56	0.368
Т9	6 - 0	L2 1/2x2 1/2x3/16	4.28	4.28	111.9 K=1.08	0.9020	-0.75	19.69	0.038

¹ P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	3.60	103.7 K=1.19	0.9020	-0.56	21.49	0.026 1
T2	141 - 121	L2x2x3/16	4.00	3.76	117.3 K=1.02	0.7148	-0.79	14.60	0.054 1
Т3	121 - 101	L2x2x3/16	4.00	3.76	117.3 K=1.02	0.7148	-0.64	14.60	0.044 1
T4	101 - 86	L2x2x3/16	4.00	3.76	117.3	0.7148	-2.27	14.60	0.155^{-1}

GPD

Job		Page
Job	(CT-1188) NORFOLK	23 of 29
Project	2022703.43	Date 11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P_u
	ft		ft	ft		in^2	K	K	ΦP_n
					K=1.02				~
T5	86 - 66	L2x2x3/16	4.00	3.76	117.3 K=1.02	0.7148	-0.65	14.60	0.045 1
Т6	66 - 46	L2x2x3/16	4.00	3.76	117.3 K=1.02	0.7148	-0.76	14.60	0.052 1
Т7	46 - 26	L2x2x3/16	4.00	3.76	117.3 K=1.02	0.7148	-0.76	14.60	0.052 1
Т8	26 - 6	L2x2x3/16	4.00	3.76	117.3 K=1.02	0.7148	-0.67	14.60	0.046 1
Т9	6 - 0	L2 1/2x2 1/2x3/16	4.00	4.00	108.5 K=1.12	0.9020	-0.70	20.46	0.034 1

¹ P_u / ϕP_n controls

		Top G	irt Des	ign C	oata (C	Compr	ession)		
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	4.00	108.5 K=1.12	0.9020	-0.40	20.46	0.019 1

¹ P_u / ϕP_n controls

		Top Guy P	ull-Off	Desi	ign Da	ta (Co	mpres	sion)	
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	4.00	97.0 K=1.00	0.9020	-2.15	22.87	0.094 1

¹ P_u / ϕP_n controls

		Bottom Guy	Pull-C	off De	sign L	Data (C	ompre	ssion)	
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	4.00	97.0 K=1.00	0.9020	-3.53	22.87	0.154 1

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	24 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	DOT 14	Designed by
	BST Managment, LLC	TDeak

¹ P_u / ϕP_n controls

	Torque-Arm Bottom Design Data												
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P_u				
	ft		ft	ft		in^2	K	K	ϕP_n				
T1	160 - 141 (227)	2L3x2 1/2x1/4	4.00	4.00	50.8 K=1.00	2.6300	-7.01	85.42	0.082 1				
T1	160 - 141 (228)	2L3x2 1/2x1/4	4.00	4.00	50.8 K=1.00	2.6300	-6.55	85.42	0.077 1				
T1	160 - 141 (233)	2L3x2 1/2x1/4	4.00	4.00	50.8 K=1.00	2.6300	-6.89	85.42	0.081 1				
T1	160 - 141 (234)	2L3x2 1/2x1/4	4.00	4.00	50.8 K=1.00	2.6300	-7.49	85.42	0.088 1				
T1	160 - 141 (239)	2L3x2 1/2x1/4	4.00	4.00	50.8 K=1.00	2.6300	-7.66	85.42	0.090 1				
T1	160 - 141 (240)	2L3x2 1/2x1/4	4.00	4.00	50.8 K=1.00	2.6300	-6.61	85.42	0.077 1				

¹ P_u / ϕP_n controls

Tension Checks

			Leg Des	sign [Data (Tensio	n)		
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	V5x5x5/16	19.00	4.75	44.1	2.5586	2.21	124.73	0.018 1
T2	141 - 121	V5x5x5/16	20.00	5.00	46.4	2.5586	17.33	124.73	0.139 1
Т3	121 - 101	V5x5x5/16	20.00	5.00	46.4	2.5586	20.25	124.73	0.162 1
T4	101 - 86	V5x5x5/16	15.00	5.00	46.4	2.5586	10.21	124.73	0.082 1
T5	86 - 66	V5x5x5/16	20.00	5.00	46.4	2.5586	13.03	124.73	0.104 1
Т6	66 - 46	V5x5x5/16	20.00	5.00	46.4	2.5586	18.25	124.73	0.146 ¹
T7	46 - 26	V5x5x5/16	20.00	5.00	46.4	2.5586	17.29	124.73	0.139 1
Т8	26 - 6	V5x5x5/16	20.00	5.00	46.4	3.0273	6.29	136.23	0.046 1

¹ P_u / ϕP_n controls

GPD

Job		Page
	(CT-1188) NORFOLK	25 of 29
Pro	ject [Date
	2022703.43	11:55:52 06/16/22
Cli	BST Managment, LLC	Designed by TDeak

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	$Ratio$ P_u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	2L2 1/2x2 1/2x3/16	6.21	5.81	95.8	1.1391	6.98	49.55	0.141 1
T2	141 - 121	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	4.88	24.84	0.197 1
T3	121 - 101	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	3.41	24.84	0.137 1
T4	101 - 86	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	4.49	24.84	0.181 1
T5	86 - 66	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	3.71	24.84	0.150 1
Т6	66 - 46	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	1.57	24.84	0.063 1
Т7	46 - 26	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	1.61	24.84	0.065 1
T8	26 - 6	L2 1/2x2 1/2x3/16	6.40	6.16	98.8	0.5710	3.60	24.84	0.145 1

¹ P_u / ϕP_n controls

Section	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio
No.	Elevation	5126	L	L_u	Kt/I		1 _u	$\Psi \Gamma_n$	P_u
	ft		ft	ft		in ²	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	3.60	61.7	0.5710	0.58	24.84	0.023 1
T2	141 - 121	L2x2x3/16	4.00	3.76	77.8	0.4307	1.34	18.73	0.071 1
Т3	121 - 101	L2x2x3/16	4.00	3.76	77.8	0.4307	1.32	18.73	0.070 1
T4	101 - 86	L2x2x3/16	4.00	3.76	77.8	0.4307	2.66	18.73	0.142 1
Т5	86 - 66	L2x2x3/16	4.00	3.76	77.8	0.4307	0.80	18.73	0.043 1
Т6	66 - 46	L2x2x3/16	4.00	3.76	77.8	0.4307	0.85	18.73	0.046 1
Т7	46 - 26	L2x2x3/16	4.00	3.76	77.8	0.4307	0.89	18.73	0.047 1
Т8	26 - 6	L2x2x3/16	4.00	3.76	77.8	0.4307	0.89	18.73	0.048 1
Т9	6 - 0	L2 1/2x2 1/2x3/16	4.00	4.00	61.7	0.9020	8.13	29.22	0.278 1

¹ P_u / ϕP_n controls

GPD

Job		Page
	(CT-1188) NORFOLK	26 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

	Top Girt Design Data (Tension)								
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P_u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	4.00	61.7	0.9020	0.40	29.22	0.014 1

¹ P_u / ϕP_n controls

		Top Guy	/ Pull-	Off De	esign	Data (Tensio	n)	
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	4.00	61.7	0.9020	3.64	29.22	0.124 1
T5	86 - 66	L 2 x 2 x 3/16	4.00	4.00	77.8	0.7150	6.33	23.17	0.273 1

¹ P_u / ϕP_n controls

	Bottom Guy Pull-Off Design Data (Tension)								
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P.,
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141	L2 1/2x2 1/2x3/16	4.00	4.00	61.7	0.9020	5.15	29.22	0.176 1

¹ P_u / ϕP_n controls

	Torque-Arm Top Design Data								
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P _u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141 (225)	2L2 1/2x2x1/4	6.21	6.21	95.0	2.1300	7.89	69.01	0.114 1
T1	160 - 141 (226)	2L2 1/2x2x1/4	6.21	6.21	95.0	2.1300	9.21	69.01	0.133 1
T1	160 - 141 (231)	2L2 1/2x2x1/4	6.21	6.21	95.0	2.1300	9.38	69.01	0.136 1
T1	160 - 141 (232)	2L2 1/2x2x1/4	6.21	6.21	95.0	2.1300	8.50	69.01	0.123^{-1}

GPD

520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2222 FAX: (330) 572-3722

Job		Page
	(CT-1188) NORFOLK	27 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	$Ratio$ P_u
ft		ft	ft		in^2	K	K	ϕP_n
								~
160 - 141 (237)	2L2 1/2x2x1/4	6.21	6.21	95.0	2.1300	9.38	69.01	0.136 1
								/
160 - 141 (238)	2L2 1/2x2x1/4	6.21	6.21	95.0	2.1300	8.27	69.01	0.120 1
	ft	ft 160 - 141 (237) 2L2 1/2x2x1/4	ft ft ft 160 - 141 (237) 2L2 1/2x2x1/4 6.21	ft ft ft ft 160 - 141 (237) 2L2 1/2x2x1/4 6.21 6.21	ft ft ft ft 160 - 141 (237) 2L2 1/2x2x1/4 6.21 6.21 95.0	ft ft ft in ² 160 - 141 (237) 2L2 1/2x2x1/4 6.21 6.21 95.0 2.1300	ft ft ft in ² K 160 - 141 (237) 2L2 1/2x2x1/4 6.21 6.21 95.0 2.1300 9.38	ft ft ft in² K K 160 - 141 (237) 2L2 1/2x2x1/4 6.21 6.21 95.0 2.1300 9.38 69.01

¹ P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio P_u
	ft		ft	ft		in^2	K	K	ϕP_n
T1	160 - 141 (227)	2L3x2 1/2x1/4	4.00	4.00	50.8	2.6300	3.27	85.21	0.038 1
T1	160 - 141 (228)	2L3x2 1/2x1/4	4.00	4.00	50.8	2.6300	4.36	85.21	0.051 1
T1	160 - 141 (233)	2L3x2 1/2x1/4	4.00	4.00	50.8	2.6300	4.08	85.21	0.048 1
T1	160 - 141 (234)	2L3x2 1/2x1/4	4.00	4.00	50.8	2.6300	3.62	85.21	0.042 1
T1	160 - 141 (239)	2L3x2 1/2x1/4	4.00	4.00	50.8	2.6300	3.69	85.21	0.043 1
T1	160 - 141 (240)	2L3x2 1/2x1/4	4.00	4.00	50.8	2.6300	4.24	85.21	0.050 1

¹ P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$ otag P_{allow} $ $ otag K $	% Capacity	Pass Fail
T1	160 - 141	Leg	V5x5x5/16	2	-18.28	125.41	14.6	Pass
T2	141 - 121	Leg	V5x5x5/16	30	-33.99	124.06	27.4	Pass
T3	121 - 101	Leg	V5x5x5/16	55	-37.18	124.06	30.0	Pass
T4	101 - 86	Leg	V5x5x5/16	84	-29.32	124.06	23.6	Pass
T5	86 - 66	Leg	V5x5x5/16	105	-37.60	124.06	30.3	Pass
T6	66 - 46	Leg	V5x5x5/16	132	-44.08	124.06	35.5	Pass
T7	46 - 26	Leg	V5x5x5/16	157	-43.62	124.06	35.2	Pass
T8	26 - 6	Leg	V5x5x5/16	184	-38.47	124.06	31.0	Pass
T9	6 - 0	Leg	V5x5x5/16	212	-38.29	132.18	29.0	Pass
T1	160 - 141	Diagonal	2L2 1/2x2 1/2x3/16	8	-8.00	48.41	16.5 24.3 (b)	Pass
T2	141 - 121	Diagonal	L2 1/2x2 1/2x3/16	47	-5.25	11.56	45.4 62.3 (b)	Pass
Т3	121 - 101	Diagonal	L2 1/2x2 1/2x3/16	63	-4.04	11.56	34.9 43.5 (b)	Pass
T4	101 - 86	Diagonal	L2 1/2x2 1/2x3/16	90	-5.75	11.56	49.7	Pass

GPD

Job		Page
	(CT-1188) NORFOLK	28 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client	BST Managment, LLC	Designed by TDeak

Section	Elevation	Component	Size	Critical Element	P K	øP _{allow}	%	Pass Fail
No.	ft	Туре		Element	Λ.	K	Capacity	Fail
T5	86 - 66	Diagonal	L2 1/2x2 1/2x3/16	128	-4.77	11.56	57.4 (b) 41.2 47.4 (b)	Pass
T6	66 - 46	Diagonal	L2 1/2x2 1/2x3/16	155	-3.07	11.56	26.5	Pass
T7	46 - 26	Diagonal	L2 1/2x2 1/2x3/16	165	-2.91	11.56	25.1	Pass
T8	26 - 6	Diagonal	L2 1/2x2 1/2x3/16	198	-4.25	11.56	36.8 45.9 (b)	Pass
T9	6 - 0	Diagonal	L2 1/2x2 1/2x3/16	222	-0.75	19.69	3.8	Pass
T1	160 - 141	Horizontal	L2 1/2x2 1/2x3/16	24	-0.56	21.49	2.6 4.0 (b)	Pass
T2	141 - 121	Horizontal	L2x2x3/16	31	1.34	18.73	7.1 19.6 (b)	Pass
T3	121 - 101	Horizontal	L2x2x3/16	58	1.32	18.73	7.0 19.3 (b)	Pass
T4	101 - 86	Horizontal	L2x2x3/16	87	-2.27	14.60	15.5 38.9 (b)	Pass
T5	86 - 66	Horizontal	L2x2x3/16	119	-0.65	14.60	4.5 11.7 (b)	Pass
T6	66 - 46	Horizontal	L2x2x3/16	134	-0.76	14.60	5.2 12.5 (b)	Pass
T7	46 - 26	Horizontal	L2x2x3/16	168	-0.76	14.60	5.2 13.0 (b)	Pass
T8	26 - 6	Horizontal	L2x2x3/16	187	0.89	18.73	4.8 13.1 (b)	Pass
T9	6 - 0	Horizontal	L2 1/2x2 1/2x3/16	214	8.13	29.22	27.8	Pass
T1 T1	160 - 141	Top Girt	L2 1/2x2 1/2x3/16	5 225	-0.40	20.46	1.9	Pass
T5	160 - 141 86 - 66	Guy A@145.75	3/4 5/8	235 243	11.78 11.84	34.98 25.44	33.7 46.5	Pass
T1	80 - 00 160 - 141	Guy A@86 Guy B@145.75	3/8 3/4	243	12.44	25.44 34.98	46.5 35.6	Pass Pass
T5	86 - 66	Guy B@143.73 Guy B@86	5/8	242	12.38	25.44	48.7	Pass
T1	160 - 141	Guy C@145.75	3/4	224	12.36	34.98	35.0	Pass
T5	86 - 66	Guy C@143.73 Guy C@86	5/8	241	12.67	25.44	49.8	Pass
T1	160 - 141	Top Guy Pull-Off@145.75	L2 1/2x2 1/2x3/16	17	3.64	29.22	12.4	Pass
T5	86 - 66	Top Guy Pull-Off@86	L 2 x 2 x 3/16	108	6.33	23.17	27.3	Pass
T1	160 - 141	Bottom Guy Pull-Off@145.75	L2 1/2x2 1/2x3/16	11	5.15	29.22	17.6	Pass
T1	160 - 141	Torque Arm Top@145.75	2L2 1/2x2x1/4	231	9.38	69.01	13.6	Pass
T1	160 - 141	Torque Arm Bottom@145.75	2L3x2 1/2x1/4	239	-7.66	85.42	9.0	Pass
						Summary	ELC:	Proposed
						Leg (T6) Diagonal	35.5 62.3	Pass Pass
						(T2) Horizontal (T4)	38.9	Pass
						Top Girt (T1)	1.9	Pass
						Guy A (T5)	46.5	Pass
						Guy B (T5)	48.7	Pass
						Guy C (T5)	49.8	Pass
						Top Guy Pull-Off (T5)	27.3	Pass
						Bottom Guy Pull-Off (T1)	17.6	Pass

GPD

Job		Page
	(CT-1188) NORFOLK	29 of 29
Project		Date
	2022703.43	11:55:52 06/16/22
Client		Designed by
	BST Managment, LLC	TDeak

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	øP _{allow} K	% Capacity	Pass Fail
						Torque Arm Top (T1)	13.6	Pass
						Torque Arm Bottom (T1)		Pass
						Bolt Checks	62.3	Pass
						Rating =	62.3	Pass

APPENDIX C

Additional Calculations



Mat Foundation Analysis NORFOLK (CT-1188) 2022703.43

Genera	l Info
Foundation Criteria	GPD
TIA Code	TIA-222-H
Apply TIA-222-H Section 15.5?	No
Soil Code	AASHTO 2012
Concrete Code	ACI 318-11
Seismic Design Category	В
Tower Height	160 ft
Bearing On	Rock
Foundation Type	Guyed Pad
Pier Type	None
Reinforcing Known	Yes
Max Bearing Capacity	105%
Max Overturning Capacity	105%

Tower Reactions						
Moment, M	0 k-ft					
Axial, P	104 k					
Shear, V	4 k					

Pad & Pier Geometry			
Pier N/A	0 ft		
Pad Length, L [y]	4 ft		
Pad Width, W [x]	4 ft		
Pad Thickness, t	3.5 ft		
Depth, D	3.5 ft		
Height Above Grade, HG	0.5 ft		
Tower Centroid, X	2 ft		
Tower Centroid, Y	2 ft		
Tower Eccentricity	0.0000 ft		

Pad & Pier Reinforcing					
Rebar Fy	60 ksi				
Concrete F'c	3 ksi				
Pier Reinforcing Clear Cover					
Shear Rebar Type	Tie				
Shear Rebar Size	# 4				
Pad Reinforcing Clear Cover	3 in				
Reinforced Top & Bottom?	No				
Pad Reinforcing Size	# 6				
Pad Quantity Per Layer	5				
Pier Rebar Size					
Pier Quantity of Rebar					

Soil Properties					
Soil Type	Cohesive				
Soil Unit Weight	135 pcf				
Cohesion, Cu (ksf)	2.5				
Base Friction Coeff. Provided in Geo?	Yes				
Base Friction Coefficient, μ	0.4				
Bearing Type	Net				
Ultimate Bearing	21 ksf				
Water Table Depth	99 ft				
Neglected Depth	3.33 ft				

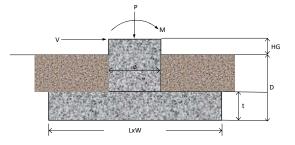
GPD Mat Foundation Analysis - V4.4

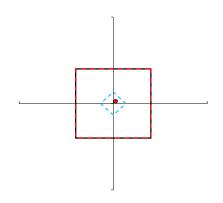
Bearing Summary					
Case	Demand/Limits	Capacity/Availability	Check	Eccentricity	Load Case
Qxmax	8.70 ksf	12.88 ksf	OK, <= 105%	L/29.3	1.2D+1.0W
Qymax	8.70 ksf	12.88 ksf	OK, <= 105%	W/29.3	1.2D+1.0W
Qmax @ 45°	9.30 ksf	12.88 ksf	OK, <= 105%	W/41.7	1.2D+1.0W
Controlling (Controlling Capacity 72.2% Pass				

Overturning Summary					
Case	Demand/Limits	Capacity/Availability	Check		Load Case
Ovtx	15.8 k-ft	231.0 k-ft	9.1%	ОК	0.9D+1.0W
Ovty	15.8 k-ft	231.0 k-ft	9.1%	ОК	0.9D+1.0W
Ovtxy	11.1 k-ft	231.0 k-ft	6.4%	OK	0.9D+1.0W
Controllin	Controlling Capacity 9.1% Pass				

Sliding Summary					
Case	Demand/Limits	Capacity/Availability	Check		Load Case
Slidingx	4.0 k	28.8 k	13.9%	ОК	0.9D+1.0W
Slidingy	4.0 k	28.8 k	13.9%	ОК	0.9D+1.0W
Controlling (Controlling Capacity 13.9% Pass				

	Reinforcement Summary					
Component	Demand/Limits	Capacity/Availability	Check			
Pad Flexural Bending	59.9 k-ft	429.0 k-ft	14.0%	ОК		
One-Way Shear in Pad	0.0 k	173.0 k	0.0%	OK		
Two-Way Shear in Pad	41.2 k	1265.2 k	3.3%	OK		
As Min Pad Met?	0.55 sg. in.	0.14 sq. in.	Yes			
		·				
Controlling C	apacity	14.0%	Pass			







Guyed Tower Anchor Foundation NORFOLK (CT-1188) 2022703.43

Guy Anchor Location					
Azimuth/Leg A/B/C					
Radius (ft)	131'				
Tower Height (ft)	160'				

Tower Reactions				
Vertical	24	k		
Horizontal	28	k		

Anchor Block Geometry				
Width	5	ft		
Height	5	ft		
Length	12.5	ft		
Depth	4.5	ft		

General Info				
Foundation Criteria	GPD			
TIA Code	TIA-222-H			
Soil	105%			
Reinforcement/Steel	105%			
Apply TIA-222-H Section 15.5? No				

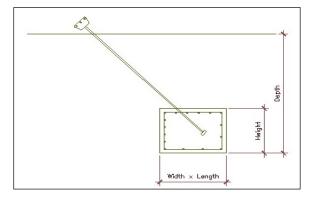
Soil Capacity Calculations				
W _s	0.00	k		
W _c	46.88	k		
Uplift Resistance	84.96	k		
Horizontal Resistance	110.83	k		
Uplift Capacity=	28.3%	OK		
Horizontal Capacity=	25.3%	OK		

Anchor Block Rei	Anchor Block Reinforcement				
Is Reinforcement Known?	assume min				
fc'	4	ksi			
Fy	60	ksi			

Capacity Sur	nmary	
Soil Capacity=	28.3%	ок
Reinforcing Capacity=	4.4%	ОК
Controlling Capacity=	28.3%	ОК

Minimum steel has been assumed

Soil Properties								
Layer	C _u , psf	φ, degrees	γ_{soil} , pcf	$\gamma_{\rm concrete}, \operatorname{pcf}$	Thickness, ft	P _{p,top} , psf	P _{p,bot} , psf	f _s ,psf
1	0	0	120	150	2.5	0	0	0
2	2500	0	135	150	2.5	5000	5000	1500
3								
4								
5								
6								
Ignored Depth	2.5	ft	Co	nsider soil for	uplift	User Input A	Angle (°)	
Water Table	99	ft		Cohesive		Angle for Up	olift (°)	0



Block Moment and Shear Calculations					
Moment Check					
M _{ux} =	37.50 k-ft	M _{uy} =	43.75 k-ft		
φM _{nx} =	2736.73 k-ft	$\phi M_{ny} =$	2748.96 k-ft		
Capacity	1.4% OK	Capacity	1.6% OK		
Shear Check					
V _{ux} =	12.00 k	V _{uy} =	14.00 k		
$\phi V_{nx} =$	318.76 k	φV _{ny} =	319.47 k		
Capacity	3.8% OK	Capacity	4.4% OK		

Guy Anchor Shaft Calculations				
Shape of Anchor Shaft	Unknown			

RAN Template: A&L Template: 67E5D998E ODE+6160 67E5998E_1xAIR+1OP

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

Section 1 - Site Information

Site ID: CT11349A Status: Final Version: 3

Project Type: Anchor
Approved: 3/7/2022 8:24:09 AM
Approved By: Pratik.Patil30@T-Mobile.com
Last Modified: 3/7/2022 8:24:09 AM Last Modified By: Pratik.Patil30@T-Mobile.com

Site Name: Norfolk SNET_1 Site Class: Self Support Tower Site Type: Structure Non Building Plan Year: 2022 Market: CONNECTICUT CT Vendor: Ericsson

Latitude: 42.00907300 Longitude: -73.18093400 Address: 453 Loon Meadow Road City, State: Norfolk, CT Region: NORTHEAST

RAN Template: 67E5D998E ODE+6160 AL Template: 67E5998E_1xAIR+1OP

Landlord: SNET LL

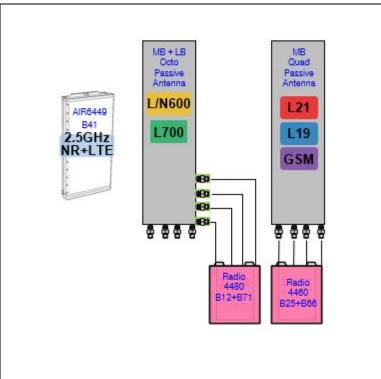
Coax Line Count: 0 TMA Count: 0 RRU Count: 6 Sector Count: 3 Antenna Count: 6

Section 2 - Existing Template Images

---- This section is intentionally blank. ----

Section 3 - Proposed Template Images

67E5A998E.JPG



Notes:

Section 4 - Siteplan Images

---- This section is intentionally blank. ----

RAN Template: A&L Template: 67E5D998E ODE+6160 67E5998E_1xAIR+1OP

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

Section 5 - RAN Equipment

	Existing RAN Equipment				
	Template: 704G				
Enclosure	1				
Enclosure Type	RBS 6201				
Baseband	DUG20 G1900 L1900 L700				
Radio	RUS01 B2 (x 3) L1900 RUS01 B2 (x 3) RUS01 B2 (x 6) L700				

	Proposed RAN Equipment					
	Template: 67E5D998E ODE+6160					
Enclosure	1	2	3	4		
Enclosure Type	(RBS 6201)	(Ancillary Equipment (Ericsson)	Enclosure 6160 AC V1	B160		
Baseband	DUG20 RP 6651 RP 6651 L2100 L600 N600		RP 6651 L2500 N2500			
Hybrid Cable System	PSU 4813 vR4A (Kit)	Ericsson Hybrid Trunk 6/24 4AWG 50m (x 3)	(PSU 4813 vR4A (Kit)			
Multiplexer	XMU					
Transport System			CSR IXRe V2 (Gen2)			

RAN Scope of Work:

Remove and return all cabinet radios from existing base station cabinet.

Remove (1) BB 5216 from 6201.

Add (1) RP 6651 for L1900, L2100 to existing cabinet 6201.

Add (1) RP 6651 for L600, L700 and N600 to existing cabinet 6201.

Add (1) XMU to existing cabinet 6201 for climate control.

Add (1) Enclosure 6160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) RP 6651 for L2500/N2500 to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to 6201.

Add (1) Battery Cabinet B160.

Existing:

Add (2) 6X24 HCS terminating at the Enclosure 6160. And (1) 6x24 terminating at 6201. Connect DC for the AIR6419 B41 to the PSU4813 Voltage Booster.

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

Section 6 - A&L Equipment

Existing Template: 704G
Proposed Template: 67E5998E_1xAIR+1OP

	Sector 1 (Existing) view from behind				
Coverage Type	A - Outdoor Macro				
Antenna	1	2	3		
Antenna Model	Empty Antenna Mount (Empty mount)	EMS - RR90-17-XXDP (Dual)	(Andrew - LNX-6515DS-A1M (Dual)		
Azimuth		60	60		
M. Tilt		0	0		
Height		120	120		
Ports		P1	P2		
Active Tech.		L1900 G1900	L700		
Dark Tech.					
Restricted Tech.					
Decomm. Tech.					
E. Tilt		2	2		
Cables		1-5/8" Coax - 210 ft.	1-5/8" Coax - 210 ft.		
TMAs		Generic Twin Style 1A - PCS (AtAntenna)			
Diplexers / Combiners					
Radio					
Sector Equipment					
Unconnected Equipment: Scope of Work:					

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

Coverage Type		Sector 1 (Proposed) view from behind					
oorolage lype	A - Outdoor Macro						
Antenna		1		2	2		
Antenna Model	AIR 6419 B41 (Active Antenna - I	Massive MIMO)	RFS - APXVAALL	24_43-U-NA20 (Octo	D)		
Azimuth	60		60				
M. Tilt	0		0				
Height	120		120				
Ports	P1	P2	P3	P4	P5	P6	
Active Tech.	L2500 (N2500)	(L2500) (N2500)	(L700) (L600) (N600)	L700 L600 N600	L2100 L1900 G1900	(L2100) (L1900) (G1900)	
Dark Tech.							
Restricted Tech.							
Decomm. Tech.							
E. Tilt	2	2	2	2	2	2	
Cables	Fiber Jumper (x2)	(Fiber Jumper (x2)	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)	Coax Jumper (x2)	
TMAs							
Diplexers / Combiners							
Radio			Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)	
Sector Equipment							

Scope of Work:

**new azimuths at 60/160/280

There will be two antennae per sector.

Remove all TMAs.

Remove all diplexers.

Remove all Coaxial Lines.

Install (1) AIR6419 B41 for L2500 and N2500 in Position 1.

Replace antenna in Position 2 with (1) MB LB Octo.

Add (1) Radio 4480 B71+B85 for L600, L700 and N600 at antenna to Position 2.

Add (1) Radio 4460 B25+B66 for L2100, L1900 (Both carriers), and GSM to Position 2 at antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

	Sector 2 (Existing) view from behind					
Coverage Type	A - Outdoor Macro					
Antenna	1	2	3			
Antenna Model	Empty Antenna Mount (Empty mount)	EMS - RR90-17-XXDP (Dual)	(Andrew - LNX-6515DS-A1M (Dual)			
Azimuth		190	190			
M. Tilt		0	0			
Height		120	120			
Ports		P1	P2			
Active Tech.		L1900 G1900	L700			
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt		2	2			
Cables		1-5/8" Coax - 210 ft.	1-5/8" Coax - 210 ft.			
TMAs		Generic Twin Style 1A - PCS (AtAntenna)				
Diplexers / Combiners						
Radio						
Sector Equipment						
Unconnected Equipment:						
Scope of Work:						

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

		Sector 2 (Proposed) v	iew from behind			
Coverage Type	A - Outdoor Macro					
Antenna		1		2	2	
Antenna Model	(AIR 6419 B41 (Active Antenna - Mas	sive MIMO)	RFS - APXVAALL	24_43-U-NA20 (Octo	D))	
Azimuth	160		160			
M. Tilt	0		0			
Height	120		120			
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	L2500 N2500	(L2500) (N2500)	(L700) (L600) (N600)	L700 L600 N600	(L2100) (L1900) (G1900)	(L2100) (L1900) (G1900)
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper (x2)	Fiber Jumper (x2)	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) Fiber Jumper
TMAs						
Diplexers / Combiners						
Radio			Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

**new azimuths at 60/160/280

There will be two antennae per sector.

Remove all TMAs.

Remove all diplexers.

Remove all Coaxial Lines.

Install (1) AIR6419 B41 for L2500 and N2500 in Position 1.

Replace antenna in Position 2 with (1) MB LB Octo.

Add (1) Radio 4480 B71+B85 for L600, L700 and N600 at antenna to Position 2.

Add (1) Radio 4460 B25+B66 for L2100, L1900 (Both carriers), and GSM to Position 2 at antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

Sector 3 (Existing) view from behind								
Coverage Type	A - Outdoor Macro							
Antenna	1	2	3					
Antenna Model	Empty Antenna Mount (Empty mount)	EMS - RR90-17-XXDP (Dual)	(Andrew - LNX-6515DS-A1M (Dual)					
Azimuth		280	280					
M. Tilt		0	0					
Height		120	120					
Ports		P1	P2					
Active Tech.		L1900 G1900	L700					
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt		2	2					
Cables		1-5/8" Coax - 210 ft.	1-5/8" Coax - 210 ft.					
TMAs		Generic Twin Style 1A - PCS (AtAntenna)						
Diplexers / Combiners								
Radio								
Sector Equipment								
Unconnected Equipment:								
Scope of Work:								

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3
L600_L600 Coverage

		Sector 3 (Proposed) view	from behind			
Coverage Type	A - Outdoor Macro					
Antenna			2			
Antenna Model	AIR 6419 B41 (Active Antenna - Mass	RFS - APXVAALL	(RFS - APXVAALL24_43-U-NA20 (Octo))			
Azimuth	280	280	(280)			
M. Tilt	0	0	0			
Height	120	120				
Ports	P1	P2	Р3	P4	P5	P6
Active Tech.	L2500 (N2500)	L2500 N2500	L700 L600 N600	L700 L600 N600	L2100 L1900 G1900	(L2100) (L1900) (G1900)
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper (x2)	(Fiber Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) Fiber Jumper
TMAs						
Diplexers / Combiners						
Radio			Radio 4480 B71+B85 (At Antenna)	SHARED Radio 4480 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

**new azimuths at 60/160/280

There will be two antennae per sector.

Remove all TMAs.

Remove all diplexers.

Remove all Coaxial Lines.

Install (1) AIR6419 B41 for L2500 and N2500 in Position 1.

Replace antenna in Position 2 with (1) MB LB Octo.

Add (1) Radio 4480 B71+B85 for L600, L700 and N600 at antenna to Position 2.

Add (1) Radio 4460 B25+B66 for L2100, L1900 (Both carriers), and GSM to Position 2 at antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

CT11349A_Anchor_3

Print Name: Preliminary (RFDS_For_Scoping)
PORs: Anchor_Phase 3

L600_L600 Coverage					
Section 7 - Power Systems Equipment					
Existing Power Systems Equipment					
This section is intentionally blank					
Proposed Power Systems Equipment					
1					
Enclosure 6160 AC V1					



RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTII349A

Norfolk SNET_I 453 Loon Meadow Road Norfolk, Connecticut 06058

January 26, 2023

EBI Project Number: 6222005902

Site Compliance Summary				
Compliance Status:	COMPLIANT			
Site total MPE% of FCC general population allowable limit:	1.17%			



January 26, 2023

T-Mobile Attn: Jason Overbey, RF Manager 35 Griffin Road South Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11349A - Norfolk SNET_I

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **453 Loon Meadow Road** in **Norfolk, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μ W/cm²). The number of μ W/cm² calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) - (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (μ W/cm²). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 μ W/cm² and 467 μ W/cm², respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 μ W/cm². Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 453 Loon Meadow Road in Norfolk, Connecticut using the equipment information listed below. Modeling of the antennas and associated equipment was completed using RoofMaster™ software, which is a widely-used predictive modeling program that has been developed to predict RF power density values for rooftop and tower telecommunications sites produced by vertical collinear antennas that are typically used in the cellular, PCS, paging and other communications services. Using the computational methods set forth in Federal Communications (FCC) Office of Engineering & Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields" (OET-65), RoofMaster™ calculates predicted power density in a scalable grid based on the contributions of all RF sources characterized in the study scenario. At each grid location, the cumulative power density is expressed as a percentage of the FCC limits. Manufacturer antenna pattern data is utilized in these calculations. RoofMaster™ models consist of the Far Field model as specified in OET-65 and an implementation of the OET-65 Cylindrical Model (Sula9). The models utilize several operational specifications for different types of antennas to produce a plot of spatially-averaged power densities that can be expressed as a percentage of the applicable exposure limit.

Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 or similar SON antenna has been considered. Due to the beamforming nature of these antennas, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

For all calculations, telecommunications equipment was modeled using the following assumptions:

- 1) I LTE channel (600 MHz Band) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 2) I NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) I LTE channel (700 MHz Band) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) I GSM channel (PCS Band 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 10 Watts per Channel.
- 5) I LTE channel (PCS Band 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 160 Watts per Channel.
- 6) I LTE channel (AWS Band 2100 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 160 Watts per Channel.
- 7) I LTE Traffic channel (LTE IC and 2C BRS Band 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 45 Watts.
- 8) I LTE Broadcast channel (LTE IC and 2C BRS Band 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 15 Watts.
- 9) I NR Traffic channel (BRS Band 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 90 Watts.
- 10) I NR Broadcast channel (BRS Band 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 30 Watts.
- 11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused

parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 13) The antennas used in this modeling are the ERICSSON SON AIR6419 B41 LTE TB 02.09.21 2500 TMO for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24 43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the ERICSSON SON AIR6419 B41 LTE TB 02.09.21 2500 TMO for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24 43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the ERICSSON SON AIR6419 B41 LTE TB 02.09.21 2500 TMO for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24 43-U-NA20 02DT 600 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 14) The antenna mounting height centerline of the proposed antennas is 120 feet above ground level (AGL).
- 15) Emissions values for additional carriers were calculated in Far Field utilizing the antenna models provided in the structural analysis.
- 16) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	Α	Sector:	В	Sector:	С
Antenna #:	I	Antenna #:	ı	Antenna #:	I
Make / Model:	ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO	Make / Model:	ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO	Make / Model:	ERICSSON SON_AIR6419 B41 LTE TB 02.09.21 2500 TMO
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd / 15.55 dBd / 15.55 dBd	Gain:	22.05 dBd / 22.05 dBd / 15.55 dBd / 15.55 dBd	Gain:	22.05 dBd / 22.05 dBd / 15.55 dBd / 15.55 dBd
Height (AGL):	I 20 feet	Height (AGL):	I20 feet	Height (AGL):	I 20 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	180.00 Watts	Total TX Power (W):	180.00 Watts	Total TX Power (W):	180.00 Watts
ERP (W):	23,258.96	ERP (W):	23,258.96	ERP (W):	23,258.96
Antenna A1 MPE %:	6.43%	Antenna B1 MPE %:	6.43%	Antenna C1 MPE %:	6.43%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAALL24_43-U- NA20 02DT 600	Make / Model:	RFS APXVAALL24_43-U- NA20 02DT 600	Make / Model:	RFS APXVAALL24_43-U- NA20 02DT 600
			NA20 02D1 600		147 (20 021) 1 000
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Frequency Bands: Gain:	/ 700 MHz / 1900 MHz / 1900 MHz /	Frequency Bands: Gain:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz /	Frequency Bands: Gain:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz /
. ,	/ 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45		600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45		600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45
Gain:	/ 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd
Gain:	/ 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd	Gain:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd 120 feet	Gain:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd 120 feet
Gain: Height (AGL): Channel Count:	/ 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd 120 feet	Gain: Height (AGL): Channel Count:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd 120 feet	Gain: Height (AGL): Channel Count:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz 12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd 120 feet

Site Composite MPE %					
Carrier	MPE %				
T-Mobile (Combined Sectors):	1.06%				
AT&T	0.03%				
PageNet	0.08%				
Sprint	0.003%				
Site Total MPE %:	1.17%				

T-Mobile MPE % Per Sector					
T-Mobile Sector A Total:	1.03%				
T-Mobile Sector B Total:	1.06%				
T-Mobile Sector C Total:	1.03%				
T-Mobile Total MPE % : 1.06%					

T-Mobile Maximum MPE Power Values (Sector B)							
T-Mobile Frequency Band / Technology (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (µW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 2500 MHz LTE	I	7214.604258	120	19.95810727	2500 MHz LTE	1000.0	2.00%
T-Mobile 2500 MHz NR	I	14429.20852	120	39.91621455	2500 MHz NR	1000.0	3.99%
T-Mobile 2500 MHz LTE	I	538.382902	120	1.489354555	2500 MHz LTE	1000.0	0.15%
T-Mobile 2500 MHz NR	I	1076.765804	120	2.978709109	2500 MHz NR	1000.0	0.30%
T-Mobile 600 MHz LTE	I	689.5408364	120	1.90751003	600 MHz LTE	400.0	0.48%
T-Mobile 600 MHz NR	I	1379.081673	120	3.815020059	600 MHz NR	400.0	0.95%
T-Mobile 700 MHz LTE	I	810.1398427	120	2.24112887	700 MHz LTE	467.0	0.48%
T-Mobile 1900 MHz GSM	I	304.0885026	120	0.841214672	1900 MHz GSM	1000.0	0.08%
T-Mobile 1900 MHz LTE	I	4865.416041	120	13.45943475	1900 MHz LTE	1000.0	1.35%
T-Mobile 2100 MHz LTE	ı	6125.195893	120	16.94442444	2100 MHz LTE	1000.0	1.69%
						T-Mobile Total:	1.06%

[•] NOTE: Total T-Mobile MPE values reflect all T-Mobile antennas as reported by RoofMaster™ combined modeling.

[•] NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)		
Sector A:	1.03%		
Sector B:	1.06%		
Sector C:	1.03%		
T-Mobile Maximum MPE % (Sector B):	1.06%		
T-Mobile Combined Sectors MPE %:	1.06%		
Site Total:	1.17%		
Site Compliance Status:	COMPLIANT		

The anticipated composite MPE value for this site assuming all carriers present is 1.17% of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions or documents available on the Connecticut Siting Council website.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.