SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Kacie Costello
Town Planner, Town of Wallingford
45 South Main Street
Room #G-40
Wallingford, CT 06492

9590 9402 1864 6104 9427 84

2. Article Number *(Transfer from service label)*

7016 1370 0000 4741 4337

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* [illegible] C. Date of Delivery 11-28

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☐ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

William J. Dickinson, Jr.
Mayor, Town of Wallingford
45 South Main Street
Room #310
Wallingford, CT 06492

9590 9402 1864 6104 9427 77

2. Article Number *(Transfer from service label)*

7016 1370 0000 4741 4320

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* [illegible] C. Date of Delivery 11-28

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☐ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Amy Torre
Zoning Enforcement Officer
Town of Wallingford
45 South Main Street, Room #G-40
Wallingford, CT 06492

9590 9402 1864 6104 9427 91

2. Article Number *(Transfer from service label)*

7016 1370 0000 4741 4344

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☒ Agent ☐ Addressee

B. Received by *(Printed Name)* [illegible] C. Date of Delivery 11-28

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☐ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Shawn Dunn
Account Project Manager
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

9590 9402 1864 6104 9428 07

2. Article Number *(Transfer from service label)*

7016 1370 0000 4741 4351

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Donna Long C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☐ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☒ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

November 21, 2017

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Regarding:	Notice of Exempt Modification – Antenna and RRH Swap
Property Address:	90 North Plains Industrial Road, Wallingford, CT 06492
AT&T Site:	CT5173/FA 10071351

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing monopole at the above-referenced address, latitude 41.4810919, longitude -72.8191989. Said monopole is owned by the Town of Wallingford.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas and three (3) remote radio heads ("RRHs") and adding (6) combiners. The centerline height of the existing antennas will remain the same.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to a copy of this letter is being sent to William W. Dickinson, Jr., Mayor of the Town of Wallingford, as the chief elected official of the municipality in which the facility is located. A copy of this letter is also being sent to Kacie Costello, Town Planner of the Town of Wallingford, Amy Torre, Zoning Enforcement Officer for the Town of Wallingford and the tower owner, American Tower Corporation.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The equipment to be swapped and added will be installed at the existing height of approximately 160-feet on the 178.5-foot monopole.

2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.

3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.

Jennifer Iliades • Empire Telecom USA, LLC • 16 Esquire Road, Billerica, MA 01862 • 978-284-0701 • jiliades@empiretelecomm.com

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T's modified facility is herein provided.

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 AT&T's proposed modifications (please see enclosed structural evaluation completed by American Tower Corporation dated September 8, 2017. Because the engineer provided us with a passing PE letter in lieu of a full report, we have also enclosed the prior previous passing full structural analysis report dated December 8, 2015).

For the foregoing reasons, AT&T respectfully requests that the proposed upgrades be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Jennifer Iliades

Jennifer Iliades
Site Acquisition Specialist

Enclosures: Exhibit 1 – Property Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Evaluation and Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc: William W. Dickinson, Jr., Mayor of the Town of Wallingford
Kacie Costello, Town Planner, Town of Wallingford
Amy Torre, Zoning Enforcement Officer, Town of Wallingford
American Tower Corporation

Exhibit 1

Property Location: 90 NORTH PLAINS IND RD | **MAP ID:** 63/ / 15/ 2/ | **Bldg Name:** | **State Use:** 4300

Vision ID: 133726 | **Account #** N20000164 | **Bldg #:** 1 of 1 | **Sec #:** 1 of 1 | **Card** 1 of 1 | **Print Date:** 11/16/2017 13:21

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
AT&T WIRELESS PCS INC	1 Level	2 Public Water	1 Paved	
C/O AT&T MOBILITY				
575 MOROSGO DR				
SUITE 13-F WEST TOWER				
ATLANTA, GA 30324				
Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	059001023A002
Census:	
Old MBLU	
TC MAP #	
TC MAP #	
Record Lot	
GIS ID: 63/15	
P/Z MAP #	
ENG MAP #	
Easement	
Town Line?	
IND PARKS IN	
ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
UTL BLDG	4-2	29,900	20,900
UTL OUTBL	4-3	60,400	42,300
		Total 90,300	63,200

6148
WALLINGFORD, CT

VISION

RECORD OF OWNERSHIP	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
AT&T WIRELESS PCS INC	/					

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2016	4-2	20,900	2015	4-2	20,900	2014	4-2	14,600
2016	4-3	42,300	2015	4-3	42,300	2014	4-3	42,300
	Total:	63,200		*Total:*	63,200		*Total:*	56,900

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
I2/A				

NOTES

TELEPHONE EQUIPT
BLDG 5
5 SITES
INFO ON PID 15720

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	29,900
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	60,400
Appraised Land Value (Bldg)	0
Special Land Value	0
Total Appraised Parcel Value	90,300
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	90,300

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
30262	02/10/2016	CM	Commercial	25,000	04/13/2016	100		TRANSMISSION EQUI
30242	01/27/2016	CM	Commercial	15,000	04/13/2016	100		REPLACE ANTENNAS
30194	12/28/2015	CM	Commercial	15,000	04/13/2016	100		T-MOBILE-ADD ANTE
29119	10/22/2014	CM	Commercial	25,000	05/05/2015	100		REPLACE TELCOM E
28469	03/17/2014	CM	Commercial	40,000	09/22/2014	100		REPLACE ANTENNAS
27904	01/10/2014	CA	C - Approval	0	09/25/2013	100		T-MOBILE-REPLACE
22735	09/04/2013	EL	Electric	42,000	09/25/2013	100		AMER TOWER GENEI

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
04/13/2016	02		KC	63	Permit Check - No Measu
05/05/2015	02		KC	63	Permit Check - No Measu
09/22/2014	02		TH	63	Permit Check - No Measu
09/25/2013	02		TH	63	Permit Check - No Measu
07/25/2013	02		TH	63	Permit Check - No Measu

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing		S Adj Fact	Adj. Unit Price	Land Value
1	4300	TEL X STA M96	I40				0	SF	0.00	1.0000	0	1.0000	1.00		0.00	NO LAND			.00	0.00	0

Total Card Land Units: 0.00 AC | **Parcel Total Land Area:** 0 AC | **Total Land Value:** 0

Property Location: 90 NORTH PLAINS IND RD **MAP ID:** 63/ / 15/ 2/ **Bldg Name:** **State Use:** 4300

Vision ID: 133726 **Account #** N20000164 **Bldg #:** 1 of 1 **Sec #:** 1 of 1 **Card** 1 of 1 **Print Date:** 11/16/2017 13:21

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Style	406		Telephone Building
Model	96		Ind/Comm
Grade	C		
Stories	1		
Occupancy	1		
Exterior Wall 1	23		Pre-cast Concr
Exterior Wall 2			
Roof Structure	03		Gable
Roof Cover	01		Metal/Tin
Interior Wall 1	01		Minim/Masonry
Interior Wall 2			
Interior Floor 1	03		Concr-Finished
Interior Floor 2			
Heating Fuel	04		Electric
Heating Type	03		Hot Air-no Duc
AC Type	02		Heat Pump
Bldg Use	4300		TEL X STA M96
Total Rooms			
Total Bedrms	00		
Total Baths	0		
Heat/AC	01		Heat/AC Pkgs
Frame Type	03		Masonry
Baths/Plumbing	00		None
Ceiling/Wall	00		None
Rooms/Prtns	01		Light
Wall Height	9		
% Comn Wall	0		

CONSTRUCTION DETAIL (CONTINUED)

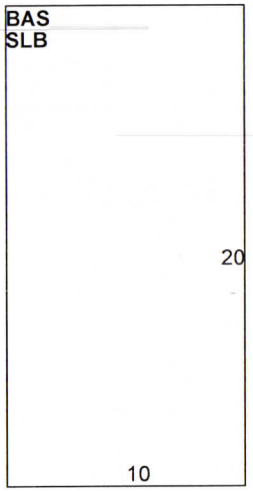
Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
4300	TEL X STA M96	100

COST/MARKET VALUATION

Adj. Base Rate:	173.85
	34,770
Net Other Adj:	0.00
Replace Cost	34,770
AYB	2000
Dep Code	A
Remodel Rating	
Year Remodeled	
Dep %	14
Functional Obslnc	0
External Obslnc	0
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	86
Apprais Val	29,900
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	

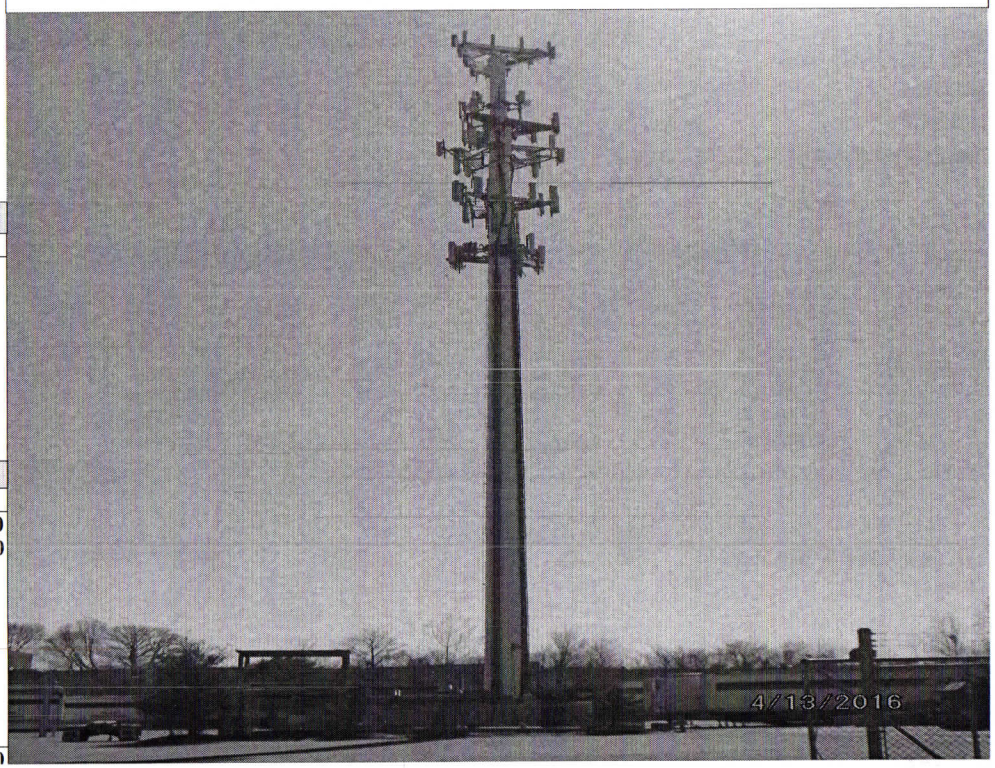


OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
ES1	Equipmnt Shel			L	220	150.00	2009	C		E	90	29,700
ES1	Equipmnt Shel			L	220	150.00	2013	C		E	90	29,700
FOP	Open Porch			L	120	12.00	2013	C		G	70	1,000

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	200	200	200	173.85	34,770
SLB	Slab	0	200	0	0.00	0
	Ttl. Gross Liv/Lease Area:	200	400	200		34,770



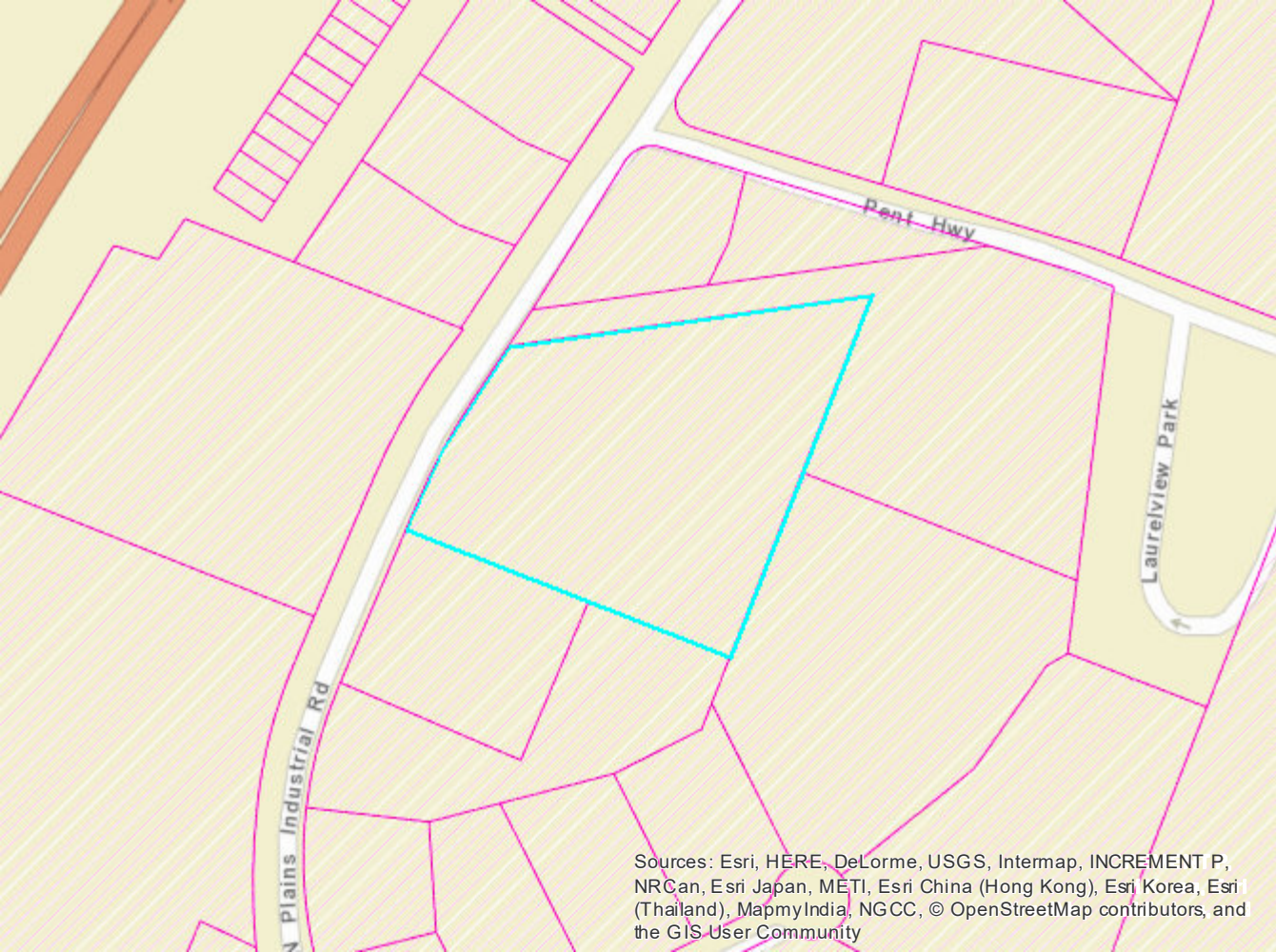

Penl Hwy
Laurelview Park
Plains Industrial Rd
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Exhibit 2

WIRELESS COMMUNICATIONS FACILITY
CT5173 - LTE 5C AND RETRO
YALESVILLE
90 NORTH PLAINS INDUSTRIAL ROAD
WALLINGFORD, CT 06492

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA–222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. 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. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. 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.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T 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.
14. 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.
15. 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.
16. 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.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. 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.
19. 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.
20. 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 PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT

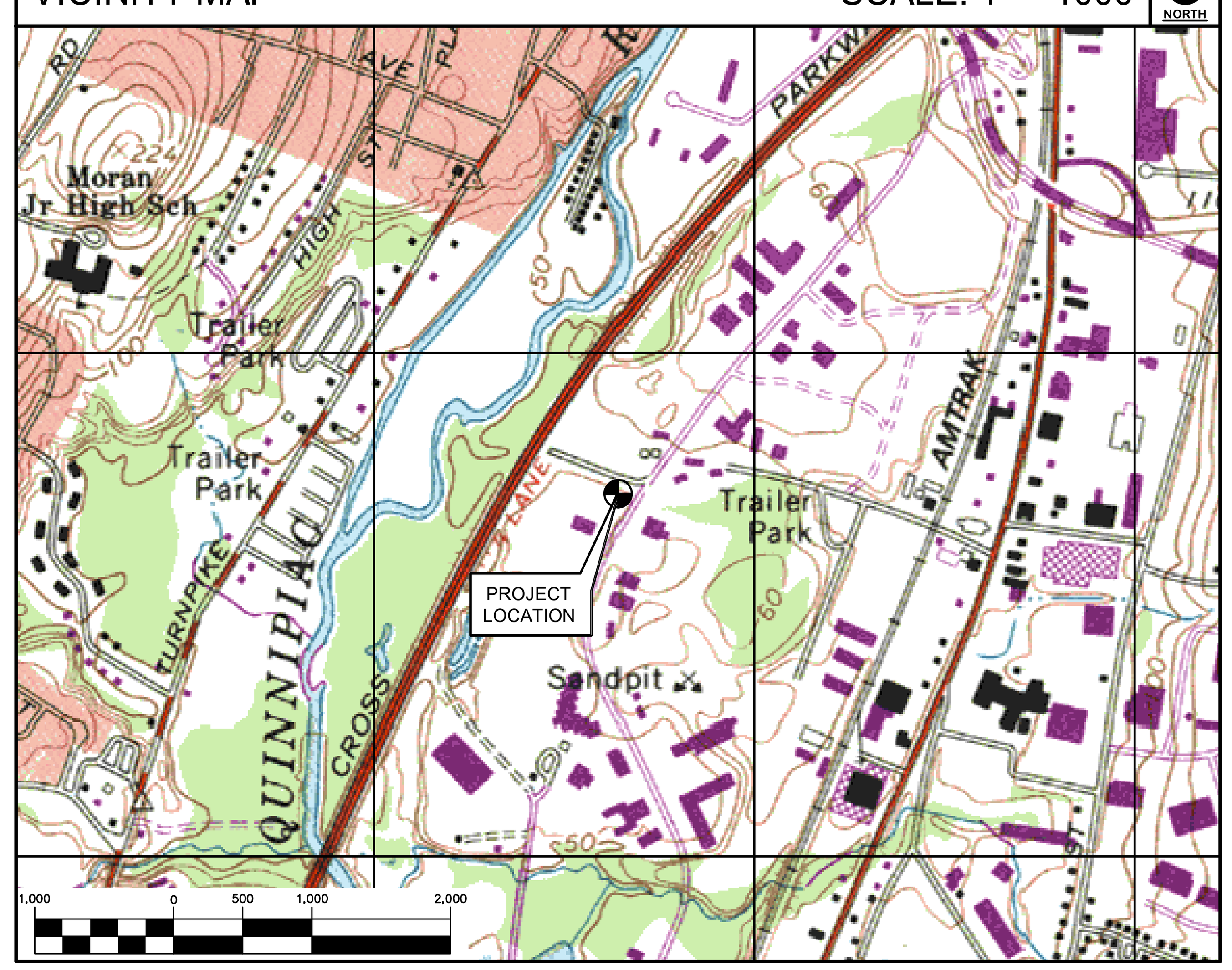
TO: 90 NORTH PLAINS INDUSTRIAL RD, WALLINGFORD, CONNECTICUT

1. TURN LEFT ONTO CAPITAL BLVD	0.37 MI
2. TURN LEFT ONTO WEST ST	0.27 MI
3. TURN LEFT TO MERGE ONTO I–91 S TOWARD NEW HAVEN	0.30 MI
4. TAKE EXIT 17 FOR CT–15 S/W CROSS PKWY	9.59 MI
5. TAKE EXIT 66 FOR US–5 TOWARD WALLINGFORD/MERIDEN	3.58 MI
6. KEEP LEFT TOWARD WALLINGFORD/MERIDEN–MARKHAM AIRPORT	0.17 MI
7. TURN LEFT ONTO US–5 S/N COLONY ROAD	0.10 MI
8. TAKE EXIT ON THE LEFT FOR NEW HAVEN/DURHAM/CHESIRE/MERIDEN–MARKHAM AIRPORT	0.43 MI
9. TURN RIGHT ONTO CT–68/ CHURCH ST	0.17 MI
10. TAKE FIRST LEFT ONTO N PLAINS INDUSTRIAL RD	0.28 MI
11. END AT 90 N PLAINS INDUSTRIAL ROAD WALLINGFORD, CT	0.61 MI

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   - A. REMOVE & REPLACE LTE EXISTING ANTENNA FOR A NEW (12) PORT ANTENNA, (1) PER SECTOR.
   - B. INSTALL (3) NEW RRUS–E2 WITHIN EQUIPMENT SHELTER, (1) PER SECTOR WALL–MOUNTED TO PROPOSED EQUIPMENT RACK.
   - C. REMOVE AND REPLACE (3) EXISTING RRUS–12 FOR (3) NEW RRUS–32 B2 ON POSITION 4, (1) PER SECTOR.
   - D. REMOVE (6) EXISTING DIPLEXERS WITHIN EXISTING EQUIPMENT SHELTER AND INSTALL (6) LOW BAND COMBINERS.
   - E. ADD XMU UNIT WITHIN LTE RACK WITHIN AT&T EQUIPMENT RACK.
   - F. INSTALL (6) NEW AT&T SURGE ARRESTORS WITHIN PROPOSED POSITION 4 ANTENNA.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5173
AT&T SITE NAME:	YALESVILLE
SITE ADDRESS:	90 NORTH PLAINS INDUSTRIAL ROAD WALLINGFORD, CT 06492
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
CONTACT PERSON:	LAUREN GROPPI EMPIRE TELECOM, LLC (978) 430–2534
ENGINEER:	CENTEK ENGINEERING, INC. 63–2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°–28'–51.93" N LONGITUDE: 72°–49'–09.12 W GROUND ELEVATION: ±51' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	0
N–1	NOTES, SPECIFICATIONS AND DETAILS	0
C–1	PLANS AND ELEVATION	0
C–2	LTE 5C AND RETRO EQUIPMENT DETAILS	0
E–1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E–2	LTE WIRING DIAGRAM	0
E–3	TYPICAL ELECTRICAL DETAILS	0

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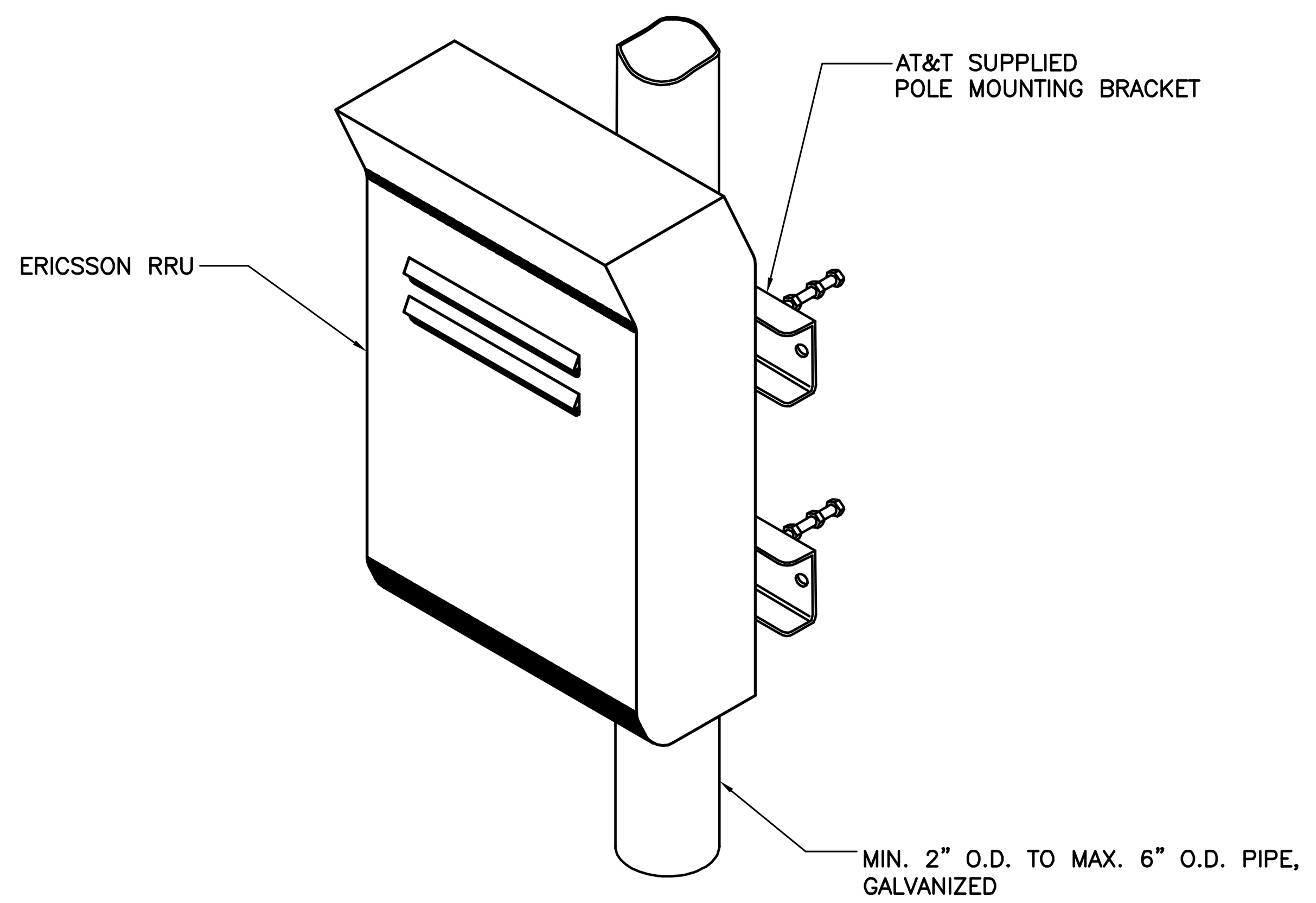
TITLE SHEET

T–1

Sheet No. 1 of 7



ISOMETRIC VIEW

NOTES:

1. AT&T SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 / N–1 **TYPICAL RRUS MOUNTING DETAILS**

SCALE: NTS

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 95–115 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. 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.
3. 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.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. 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, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. 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.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. 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. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. 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.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

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)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. 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.
6. 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 ON THE DRAWINGS.
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.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   A. SHERWIN WILLIAMS POLANE–B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   A. ONE COAT OF DTM BONDING PRIMER (2–5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5–5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI–SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH–PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON–PETROLEUM–BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

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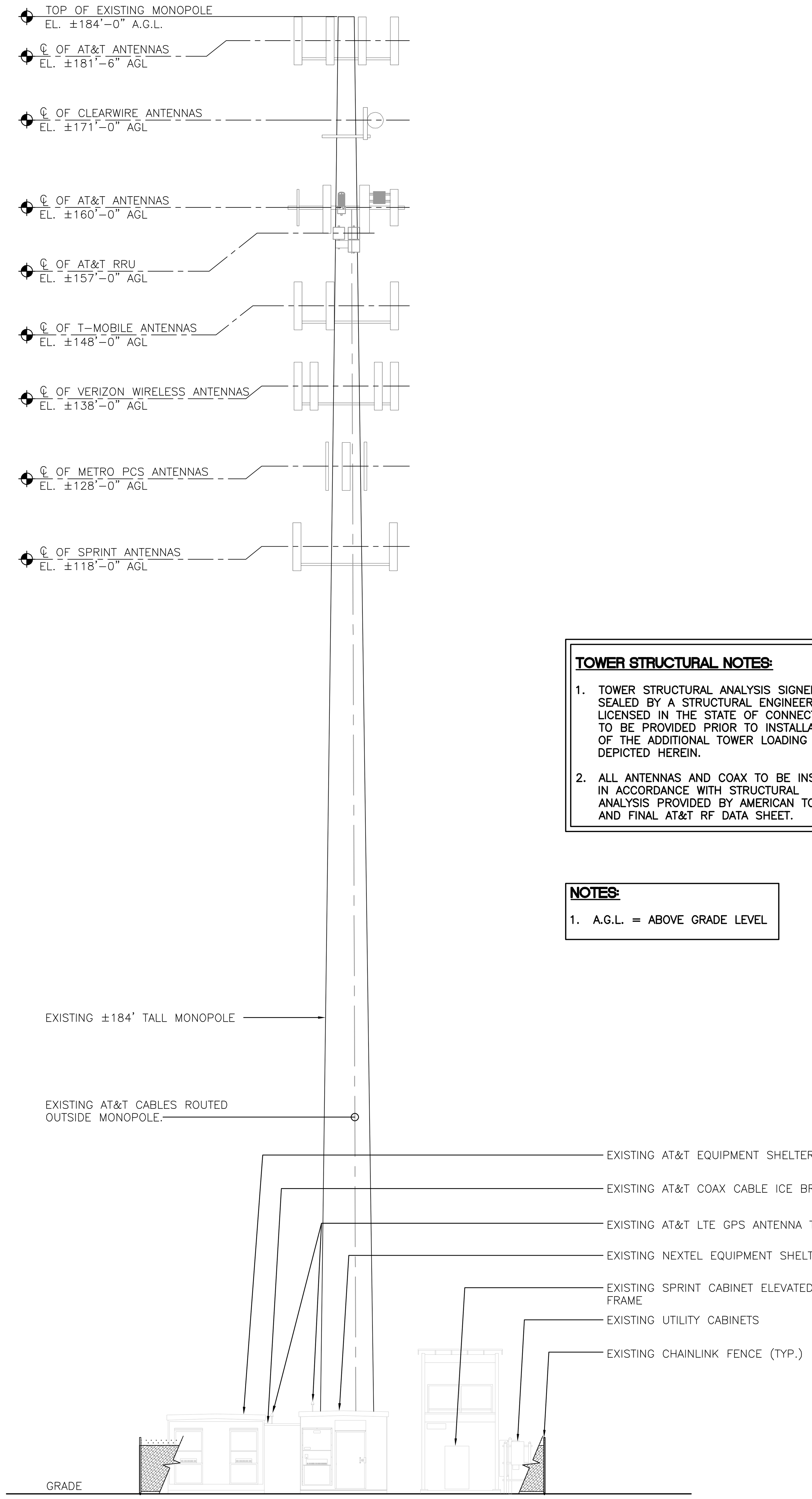
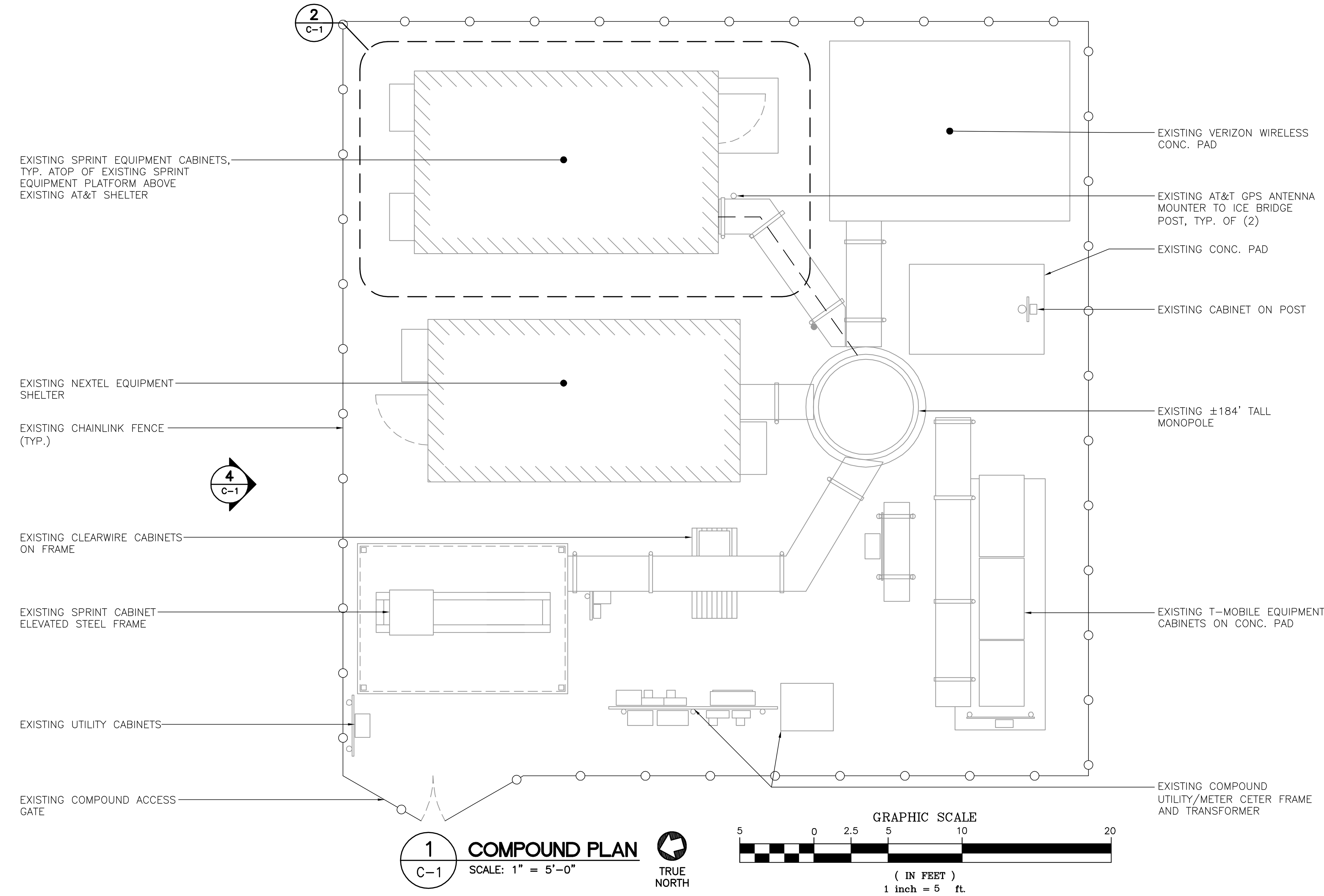
NOTES, SPECIFICATIONS AND DETAILS

N–1

Sheet No. 2 of 7



4 / C-1 **TOWER ELEVATION**
SCALE: 1" = 10'



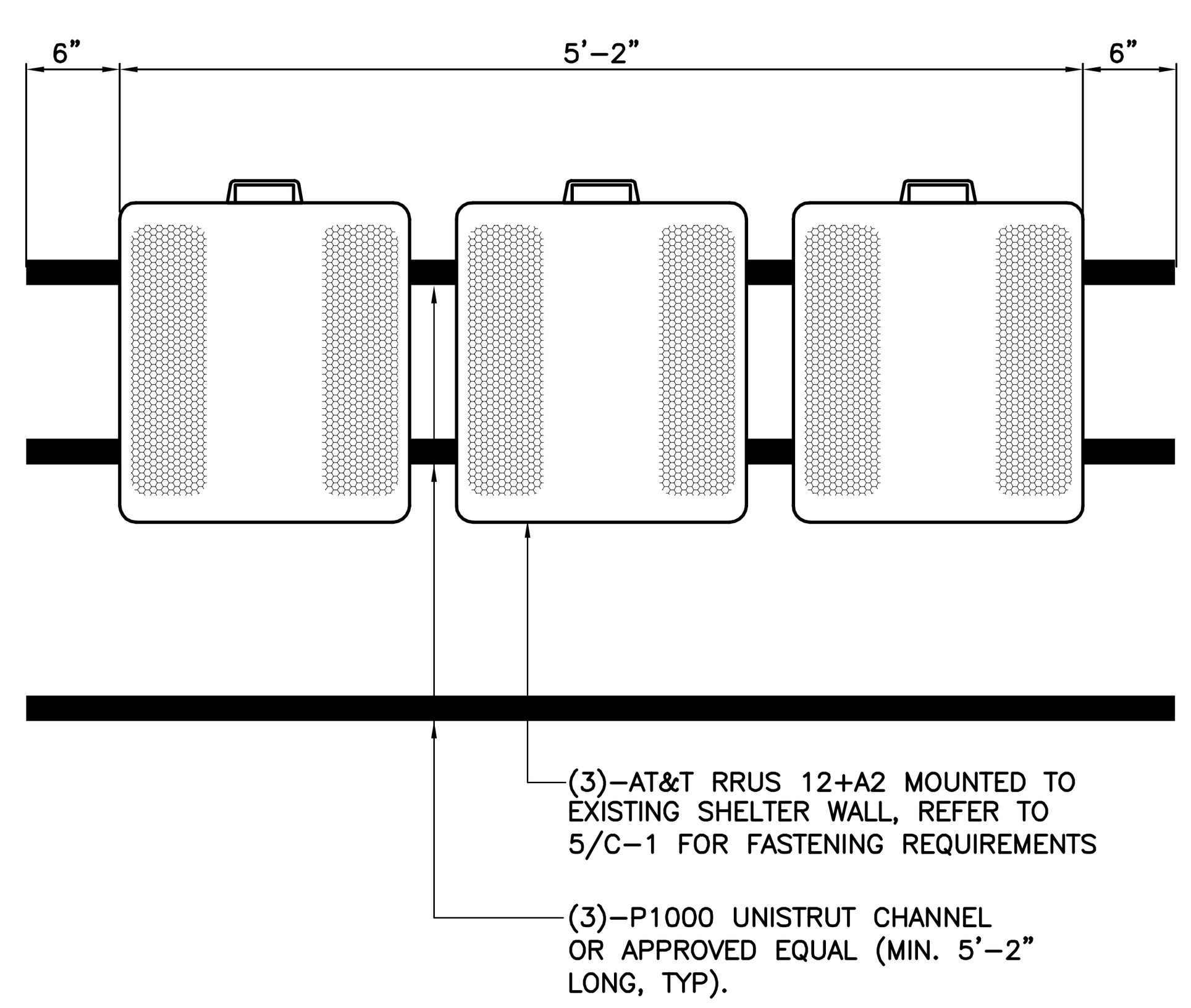
1 / C-1 **COMPOUND PLAN**
SCALE: 1" = 5'–0"

TOWER STRUCTURAL NOTES:

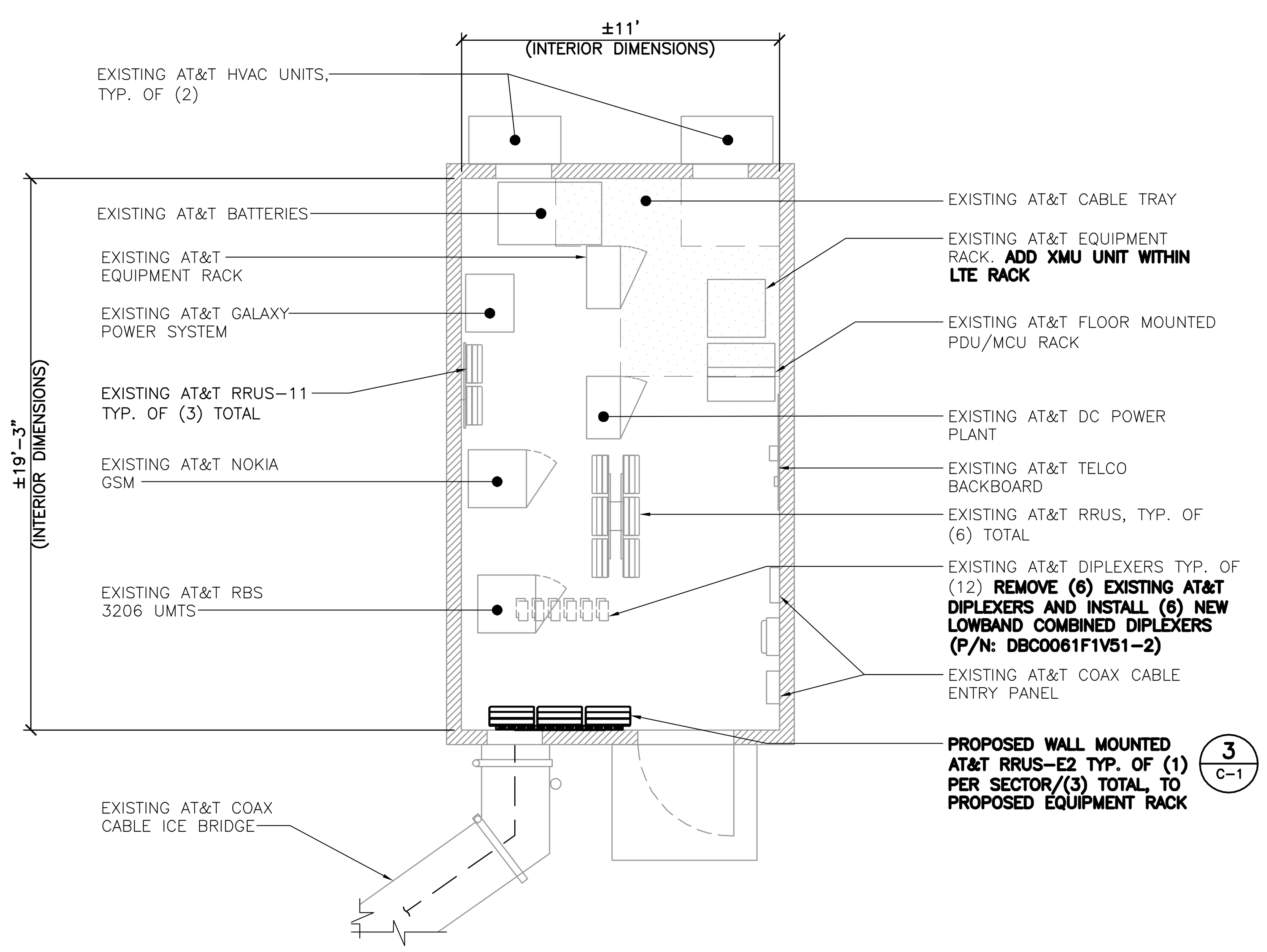
1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AMERICAN TOWER. AND FINAL AT&T RF DATA SHEET.

NOTES:

1. A.G.L. = ABOVE GRADE LEVEL



3 / C-1 **EQUIPMENT ELEVATION**
SCALE: 1" = 1'–0"



2 / C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'–0"

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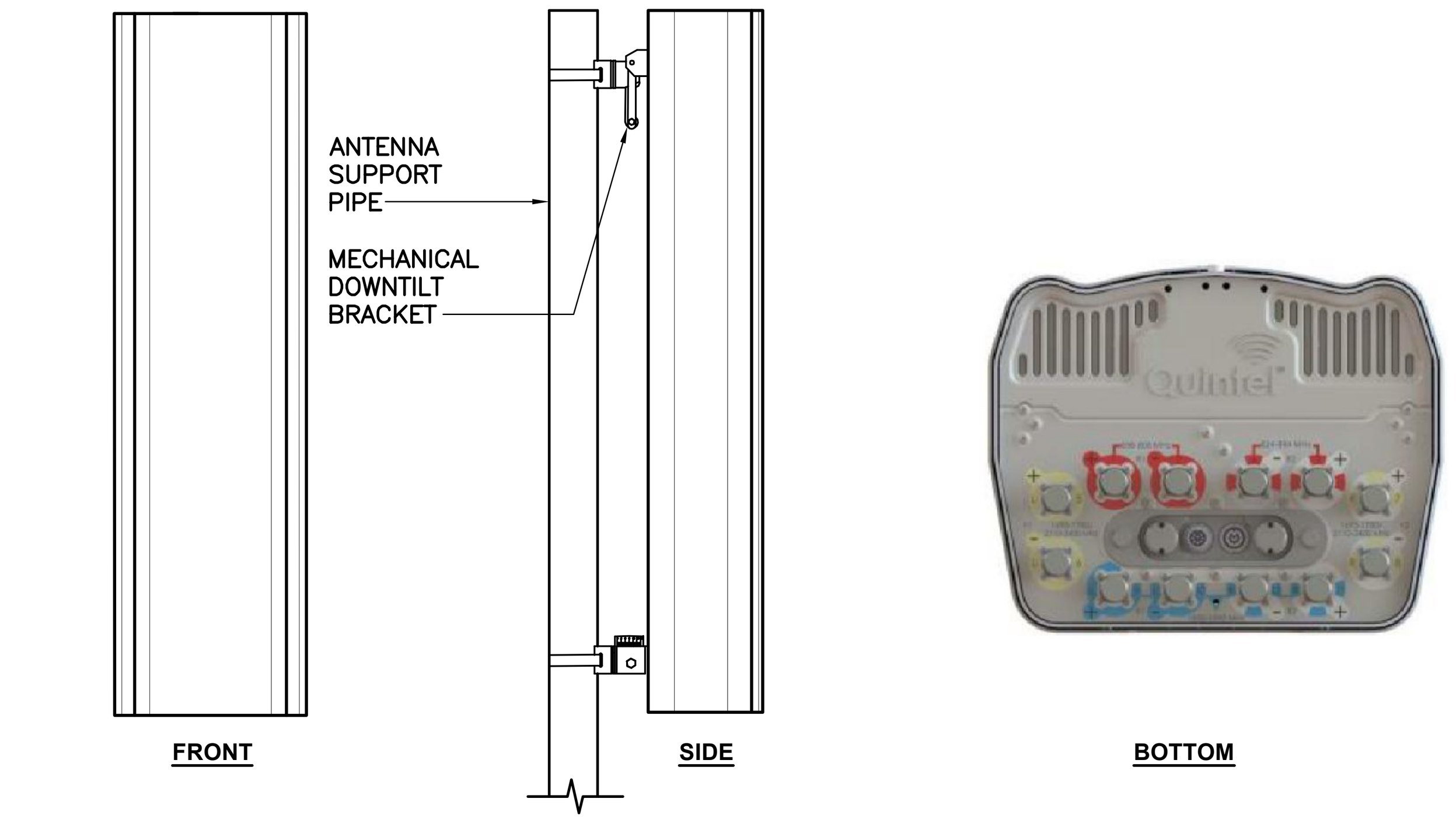
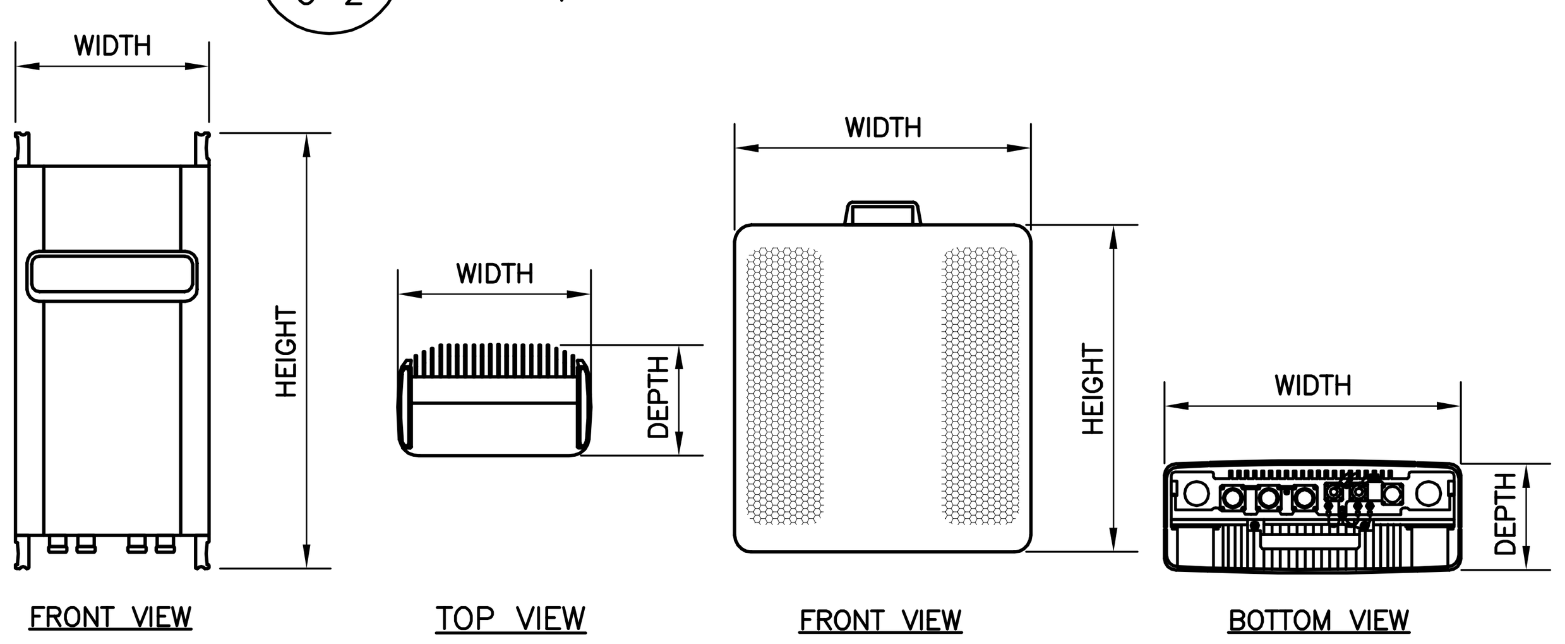
PLANS AND ELEVATION

C-1



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: QUINTEL MODEL: QS66512-2	72"L x 12"W x 9.6"D	111 LBS.

5 C-2 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B2	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRUS-E2	20.4"H x 18.5"W x 7.5"D	59.52 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

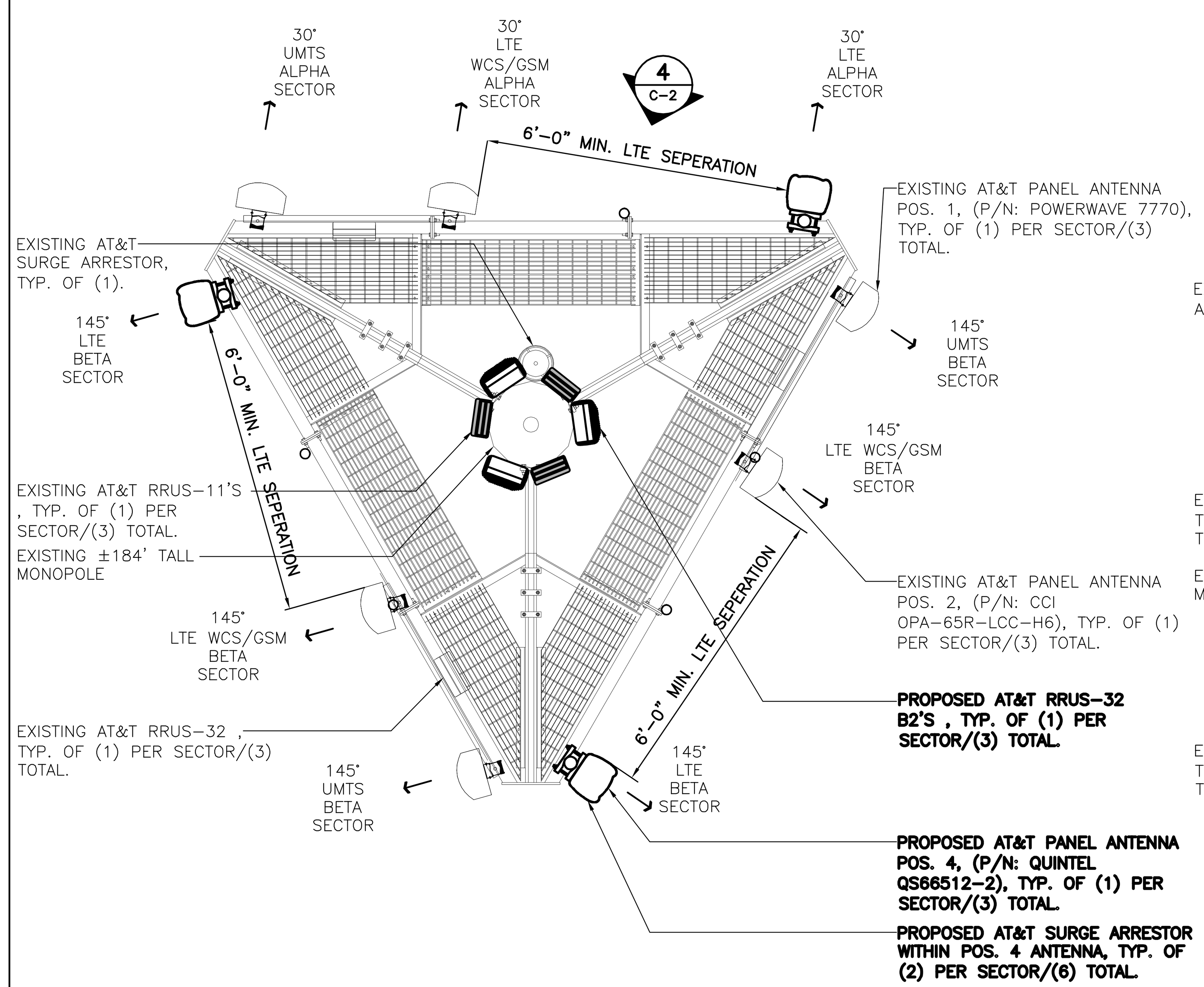
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

6 C-2 ERICSSON REMOTE RADIO UNITS
SCALE: 1" = 1'-0"

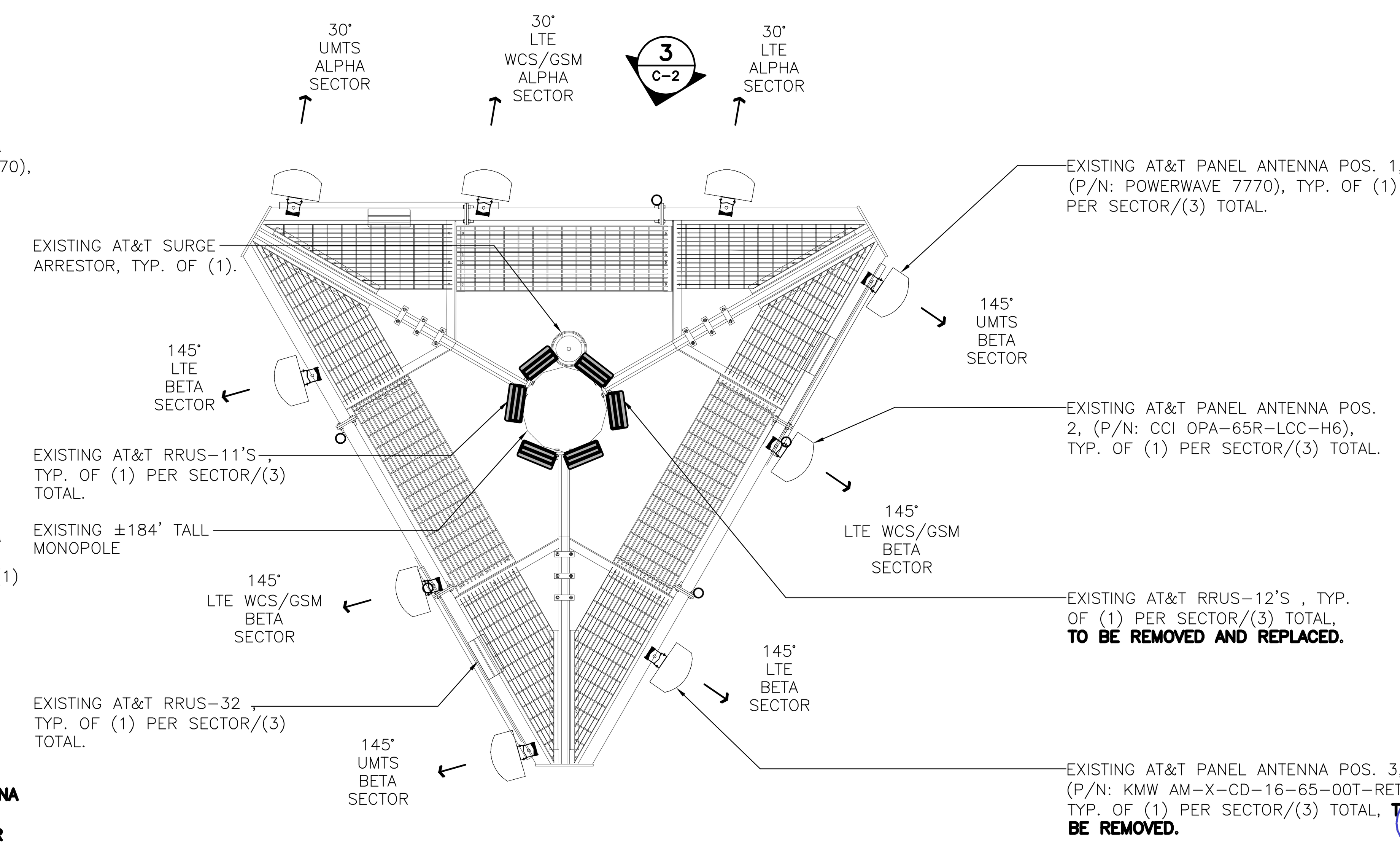
SURGE ARESSTOR		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ANDREW MODEL: APTDC-BDFDM-DB	3.46"H x 3.46"W x 1.65"D	1.32 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

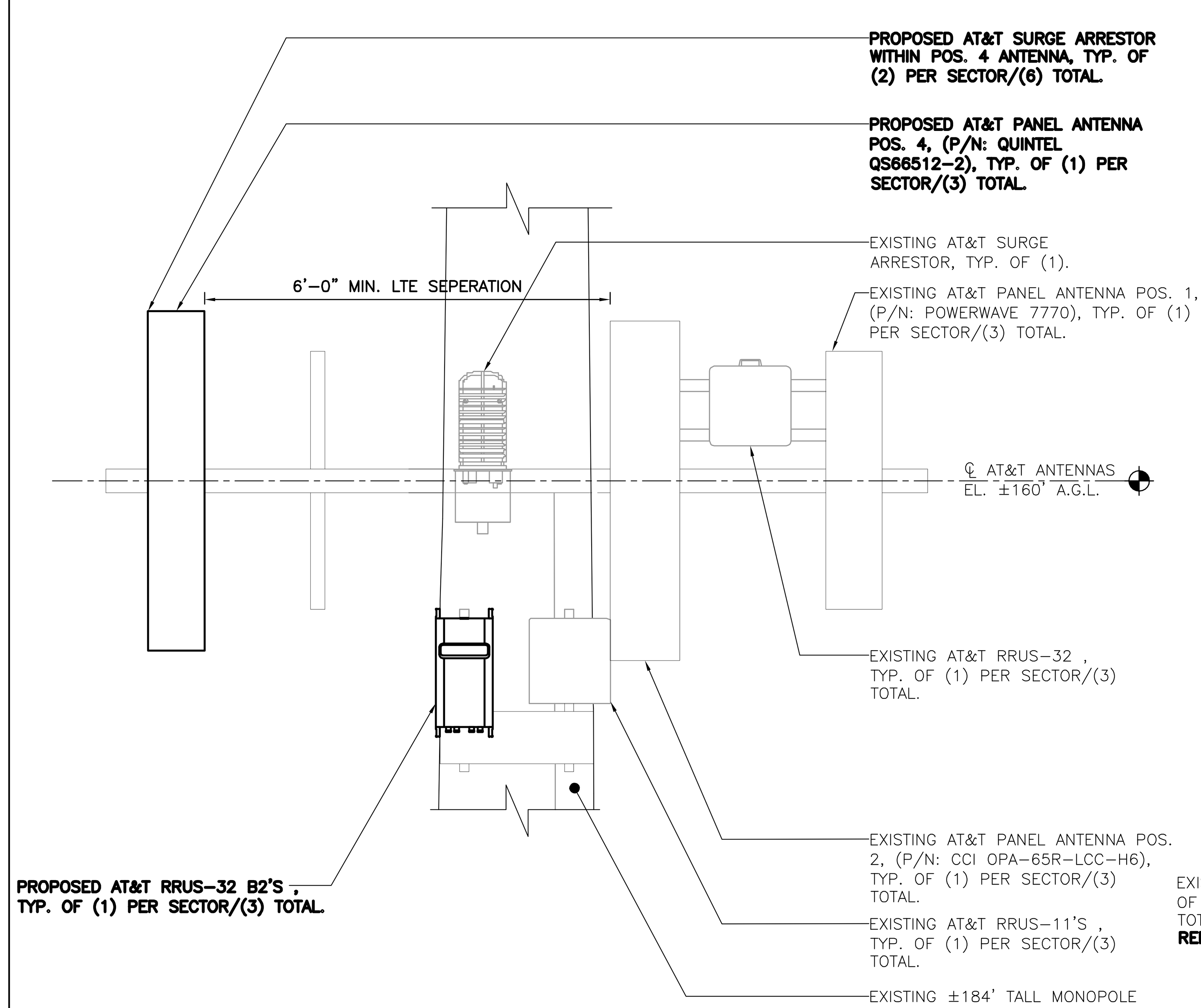
7 C-2 ANDREW APTDC-BDFDM-DB DETAIL
SCALE: NOT TO SCALE



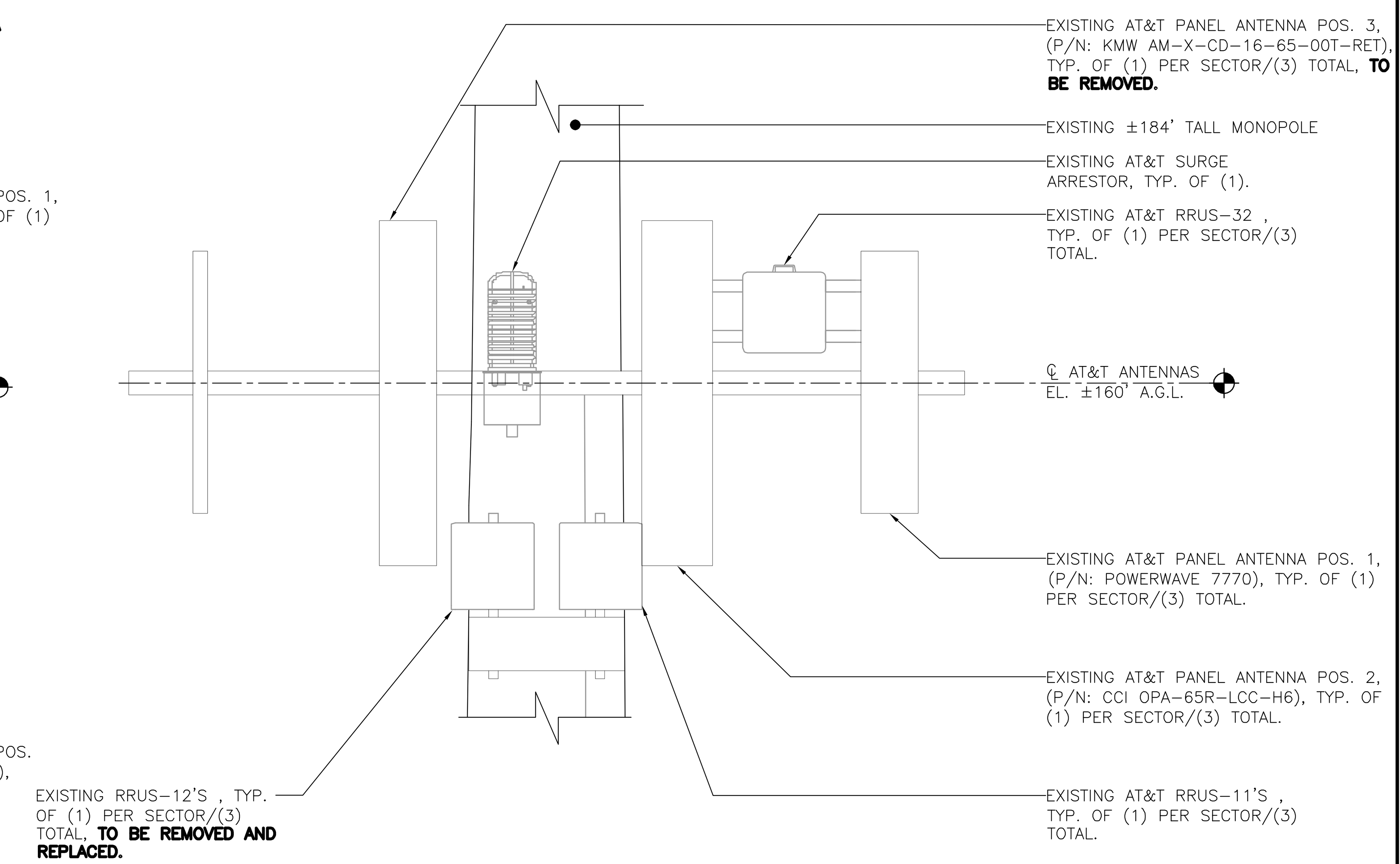
2 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0"



1 C-2 EXISTING ANTENNA PLAN
SCALE: 1/2" = 1'-0"



4 C-2 PROPOSED ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"



3 C-2 EXISTING ANTENNA ELEVATION
SCALE: 1/2" = 1'-0"

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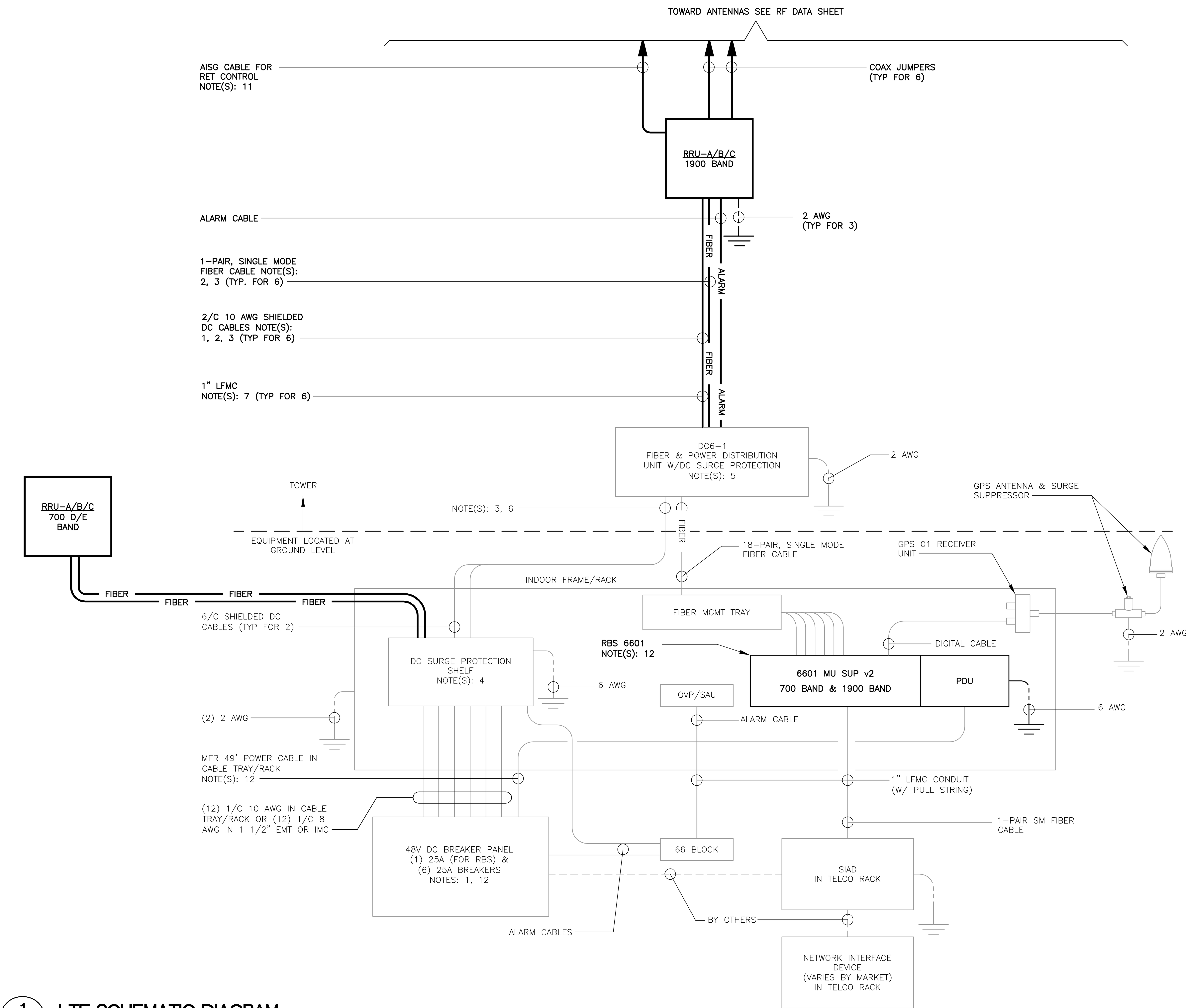
LTE 5C AND RETRO EQUIPMENT DETAILS

C-2



1 / E-1

LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. 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:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. 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.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. 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.
16. 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.
17. 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.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

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: 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. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM 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.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/21/17	LGL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

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CT5173 YALESVILLE
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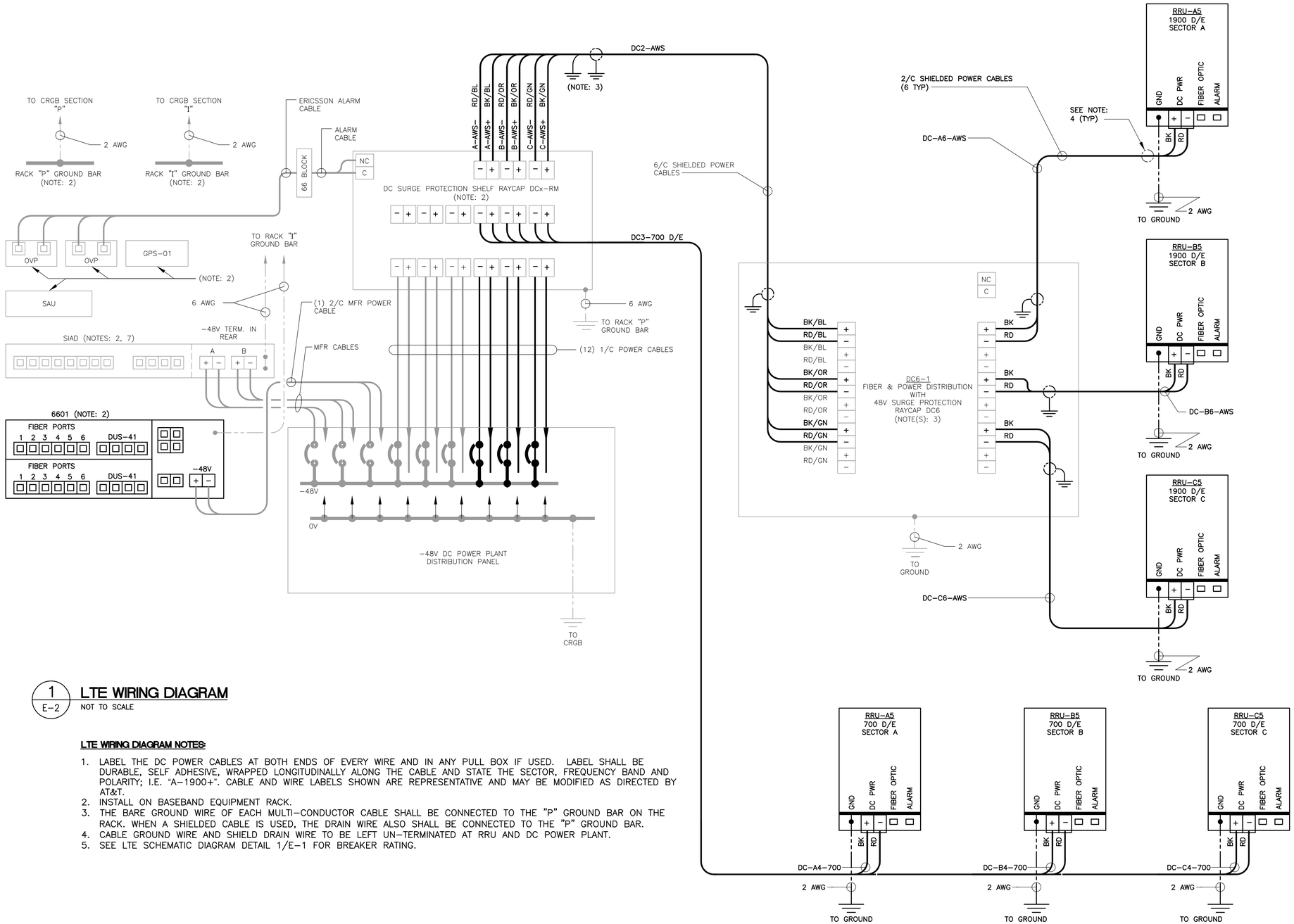
90 NORTH PLAINS INDUSTRIAL ROAD
WALLINGFORD, CT 06492

DATE: 08/30/17
SCALE: AS NOTED
JOB NO. 17004.41

LTE SCHEMATIC DIAGRAM AND NOTES

E-1



1 E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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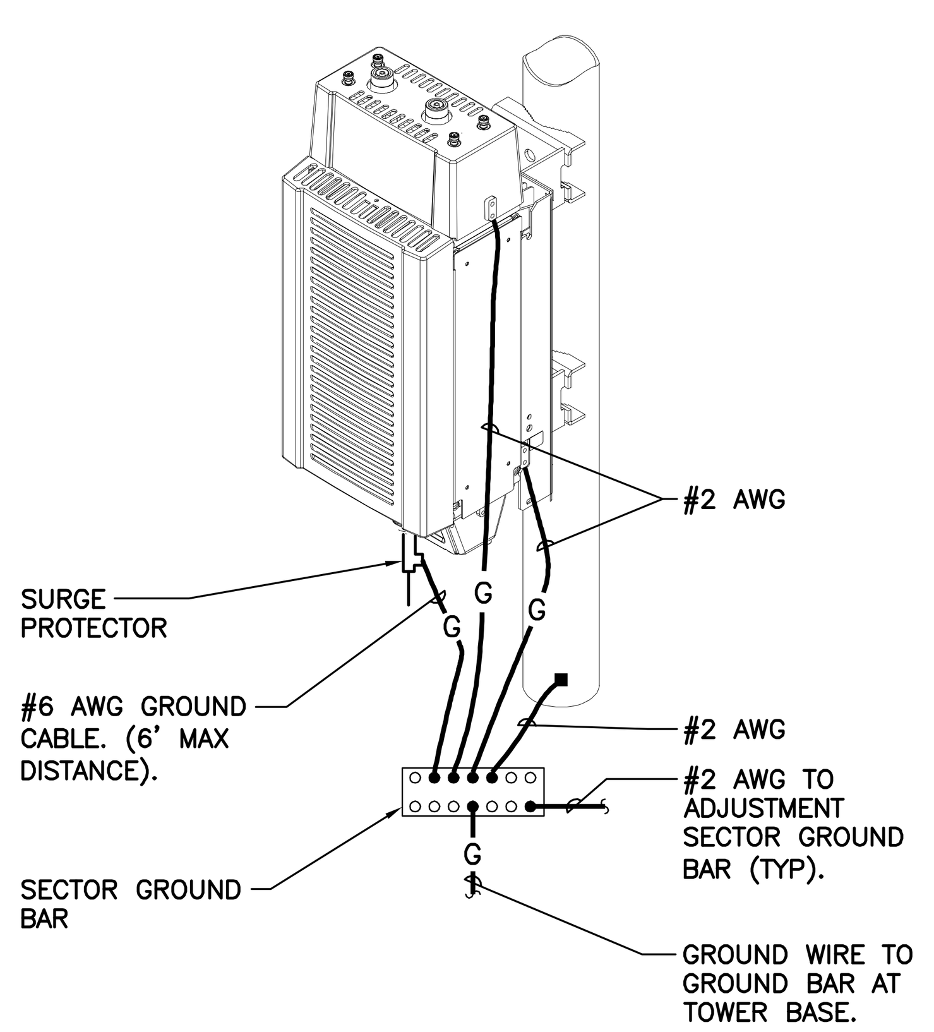
WALLINGFORD, CT 06492

DATE: 08/30/17
SCALE: AS NOTED
JOB NO. 17004.41

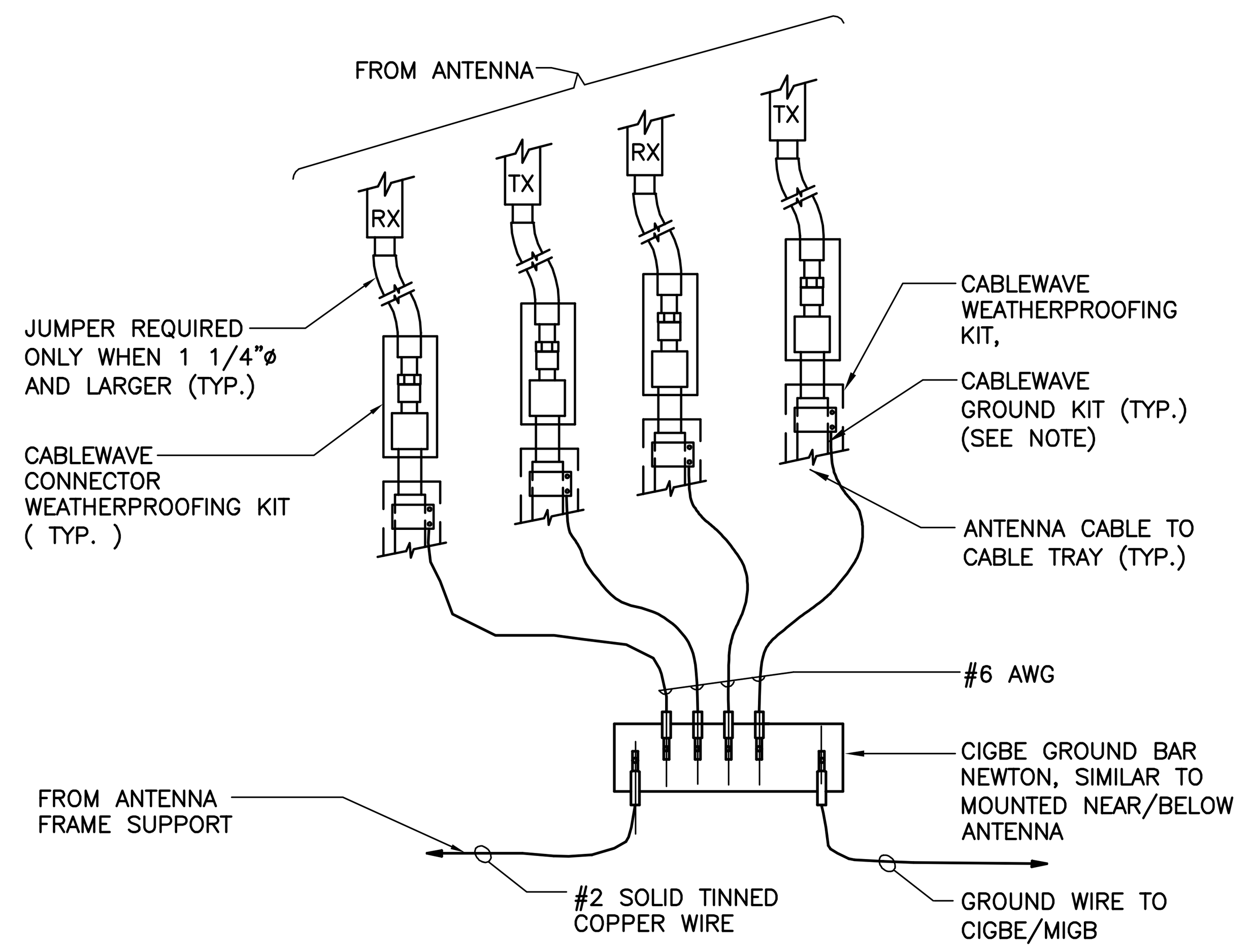
LTE WIRING DIAGRAM

E-2

Sheet No. 6 of 7



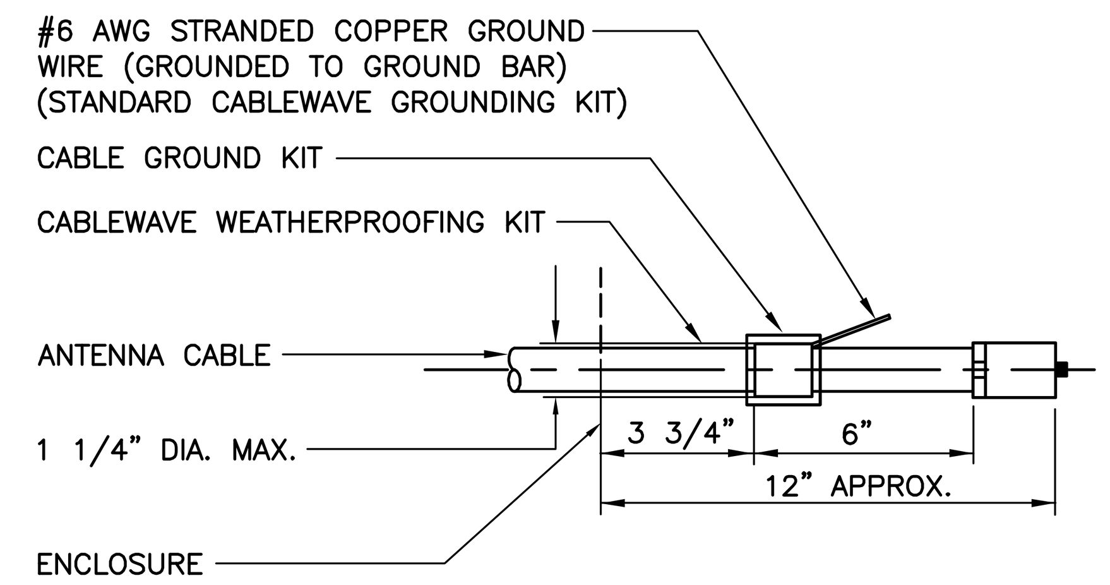
4 E-3 **RRU POLE MOUNT GROUNDING**
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

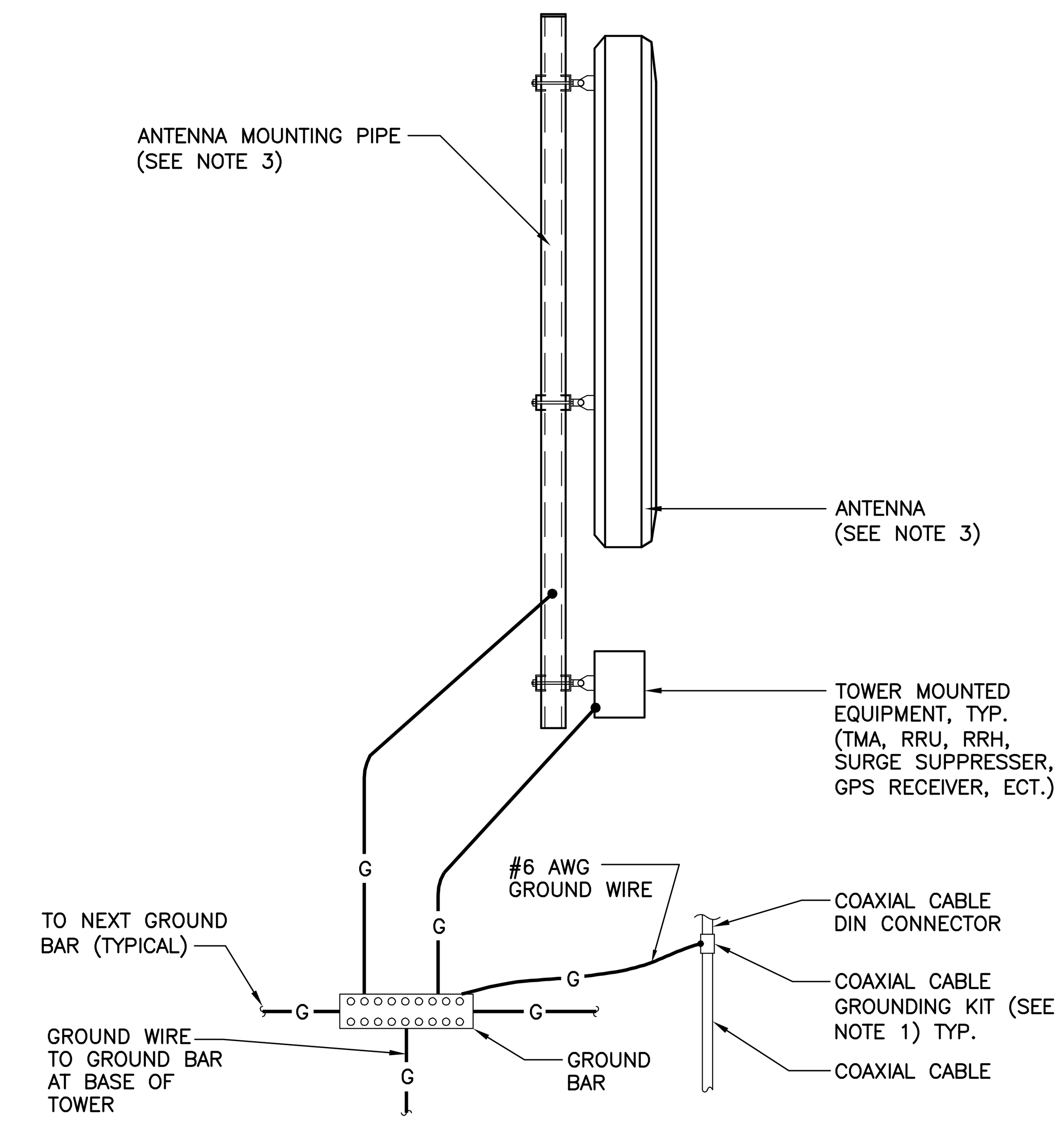
3 E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

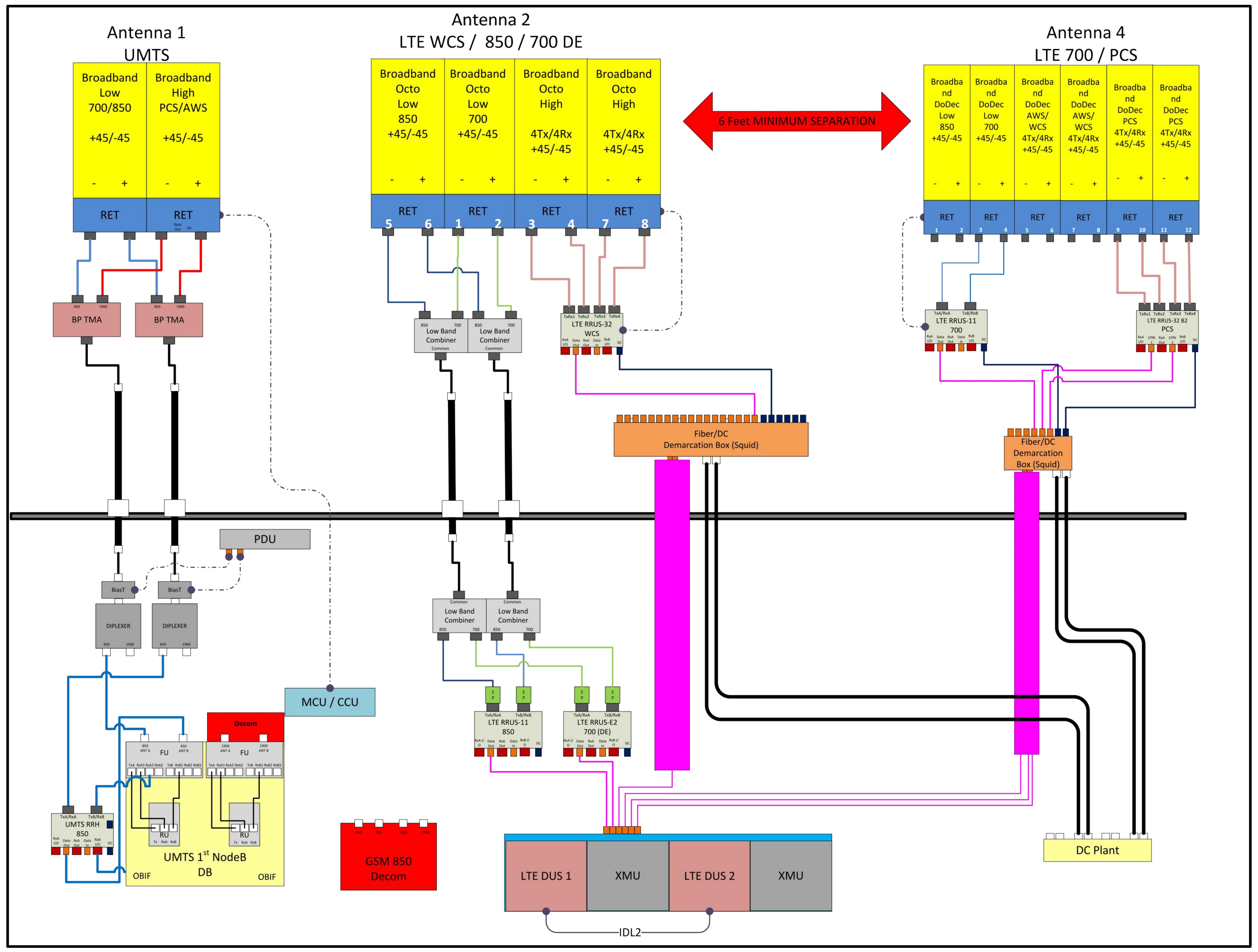
2 E-3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 E-3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE



5 E-3 **RF PLUMBING DIAGRAM**
NOT TO SCALE

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0	11/21/17	LGL	CAG	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

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DATE: 08/30/17
SCALE: AS NOTED
JOB NO. 17004.41

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 7 of 7

Exhibit 3

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Structural Evaluation	
ATC Site Number & Name	**302467, Bilkays Express, CT**
Carrier Site Number & Name	**CT5173, YALESVILLE/PC173**
Site Location	90 North Plains Industrial Road Wallingford, CT 06492-2334, New Haven County 41.48076111 N / 72.8177 W
Tower Description	**178.5 ft Monopole**
Basic Wind Speed Basic Wind Speed w/ Ice Code	97 mph (3-Second Gust, V_{asd}) / 124 mph (3-Second Gust, V_{ult}) 50 mph (3-Second Gust) w/ ¾" ice ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
182.0	182.0	12	Decibel DB844H90E-XY	Low Profile Platform	(12) 1 5/8" Coax	Sprint Nextel
168.0	168.0	2	DragonWave Horizon Compact	Side Arms	(2) 1/2" Coax	Clearwire
		3	NextNet BTS-2500			
		1	DragonWave A-ANT-11G-2-C			
		1	DragonWave A-ANT-18G-2-C			
167.0	167.0	3	Argus LLPX310R		(6) 5/16" Coax	
163.0	163.0	1	18" x 12" Junction Box	Flush	(1) 2" conduit	
160.0	160.0	6	Powerwave 7020	Low Profile Platform	(12) 1 5/8" Coax	AT&T Mobility
		2	Raycap DC6-48-60-18-8F			
		6	Powerwave LGP21401			
		3	Ericsson RRUS-11 800MHz			
		3	Ericsson RRUS 11 (Band 7)			
		3	Ericsson RRUS-32			
		3	Powerwave 7770.00			
		3	CCI OPA-65R-LCUU-H6			
152.0	152.0	3	Ericsson KRY 112 144/1	Low Profile Platform	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-VTM			
136.0	136.0	3	Alcatel-Lucent RRH2X60-AWS	Low Profile Platform	(18) 1 5/8" Coax (2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH 2X60-1900			
		3	Alcatel-Lucent RRH2x60			
		2	RFS DB-T1-6Z-8AB-0Z			
		3	Antel BXA-80063-6BF-EDIN-X			
		9	Commscope SBNHH-1D65B			
129.0	129.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	Metro PCS
128.0	128.0	1	Nortel NTGB01MA		(1) 7/8" Coax	
122.0	122.0	3	Alcatel-Lucent 800MHz RRH	Low Profile Platform	(4) 1 1/4" Hybriflex	Sprint Nextel
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
		3	RFS RFS APXV9TM14-ALU-I20			
		3	RFS APXVSPP18-C-A20			
20.0	20.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(1) 1/2" Coax	

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
160.0	160.0	3	KMW AM-X-CD-16-65-00T-RET	-	(1) 3" conduit	AT&T Mobility
		3	Ericsson RRUS-12 B2			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
160.0	160.0	6	Kaelus DBC0061F1V51-2	Low Profile Platform	(3) 2" conduit (6) 0.78" 8 AWG 6 (2) 0.39" Fiber Trunk (1) 3/8" RET Cable	AT&T Mobility
		3	Ericsson RRUS 32 B2			
		3	Quintel QS66512-2			

[1] Mount elevation is defined as height above bottom of steel structure to bottom of mount, RAD elevation is defined as center of antenna above grade level (AGL).

Install proposed coax inside of the pole shaft.

The existing and proposed loads listed in the tables above are compared to the tower's current design capacity or previous structural analysis. The tower should be re-evaluated as future loads are added or if actual loads are found different from those listed in the tables. The subject tower and foundation ***are adequate*** to support the above stated loads in conformance with specified requirements.

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32593
LICENSED
PROFESSIONAL ENGINEER

ASP/ANG

Sep 8 2017 5:29 PM cosign

AMERICAN TOWER®
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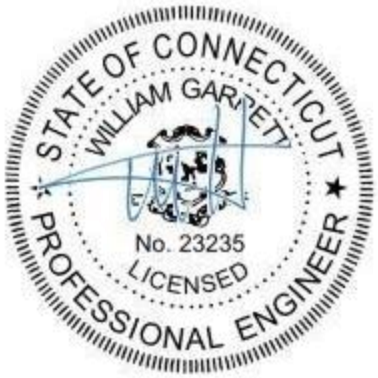
Structural Analysis Report

Structure	:	**178.5 ft Monopole**
ATC Site Name	:	**Bilkays Express, CT**
ATC Site Number	:	**302467**
Engineering Number	:	**64274421**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Yalesville**
Carrier Site Number	:	**CTL05173/FA#10071351**
Site Location	:	**90 North Plains Industrial Rd.** **Wallingford, CT 06492-2334** **41.480761,-72.817700**
County	:	**New Haven**
Date	:	**December 8, 2015**
Max Usage	:	**63%**
Result	:	**Pass**

Reviewed by:
William Garrett, PE
Chief Engineer



Prepared By:
John D. Bigham, E.I.
Structural Engineer II

Dec 8 2015 1:09 PM

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 178.5 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	FWT Job #18357, dated March 19, 1999
Foundation Drawing	FWT Job #18357, dated March 19, 1999
Geotechnical Report	Tectonic Work Order #1170.C947C, dated March 11, 1999

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	105 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.18, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
178.5	181.0	12	Decibel DB844H90E-XY	Low Profile Platform	(12) 1 5/8" Coax	Sprint Nextel
171.0	165.0	3	NextNet BTS-2500	Side Arms	(6) 5/16" Coax (2) 1/2" Coax	Clearwire
		3	Argus LLPX310R			
		1	DragonWave A-ANT-11G-2-C			
		1	DragonWave A-ANT-18G-2-C			
163.0		2	Generic TTA	Flush	(2) 2" Conduit	
160.0	160.0	6	Powerwave 7020	Low Profile Platform	(12) 1 5/8" Coax (4) 0.78" 8 AWG 6 (2) 3" Conduit (2) 0.39" Fiber Trunk	AT&T Mobility
		6	Powerwave LGP21401			
		2	Raycap DC6-48-60-18-8F (23.5" Height)			
		3	Ericsson RRUS 11 (Band 7)			
		3	Ericsson RRUS-12 B2			
		3	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
148.0	150.0	6	Ericsson KRY 112 144/1	Low Profile Platform	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex Cable	T-Mobile
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR 21, 1.3M, B4A B2P			
135.0	138.0	6	RFS FD9R6004/2C-3L	Low Profile Platform	(18) 1 5/8" Coax (1) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent RRH2x40 (700)			
		3	Alcatel-Lucent RRH2x40-AWS			
		3	Antel BXA-171063-8BF-EDIN-X			
		3	Antel BXA-171063-12BF-EDIN-X			
		1	RFS DB-T1-6Z-8AB-0Z			
		3	Antel BXA-80063-6BF-EDIN-X			
		3	Antel BXA-70063-6CF-EDIN-X			
128.0	130.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax (1) 7/8" Coax	Metro PCS
	128.0	1	Nortel NTGB01MA			
116.0	122.0	3	RFS RFS APXV9TM14-ALU-I20	Low Profile Platform	(4) 1 1/4" Hybriflex	Sprint Nextel
		3	RFS APXVSPP18-C-A20			
	120.0	3	Alcatel-Lucent 800MHz RRH			
		3	Alcatel-Lucent 1900MHz 4X45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
20.0	20.0	1	PCTEL GPS-TMG-HR-26N	Standoff	(1) 1/2" Coax	

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
160.0	160.0	3	Powerwave 7770.00	-	-	AT&T Mobility

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
160.0	160.0	3	Ericsson RRUS-11 800MHz	Low Profile Platform	-	AT&T Mobility
		3	Ericsson RRUS-32			
		3	CCI OPA-65R-LCUU-H6			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	59%	Pass
Shaft	55%	Pass
Base Plate	26%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	4,871.1	63%
Axial (Kips)	114.9	56%
Shear (Kips)	40.2	53%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
171.0	DragonWave A-ANT-11G-2-C	Clearwire	1.177	0.715
	DragonWave A-ANT-18G-2-C			
160.0	Ericsson RRUS-11 800 MHz	AT&T Mobility	1.041	0.704
	Ericsson RRUS-32			
	CCI OPA-65R-LCUU-H6			

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

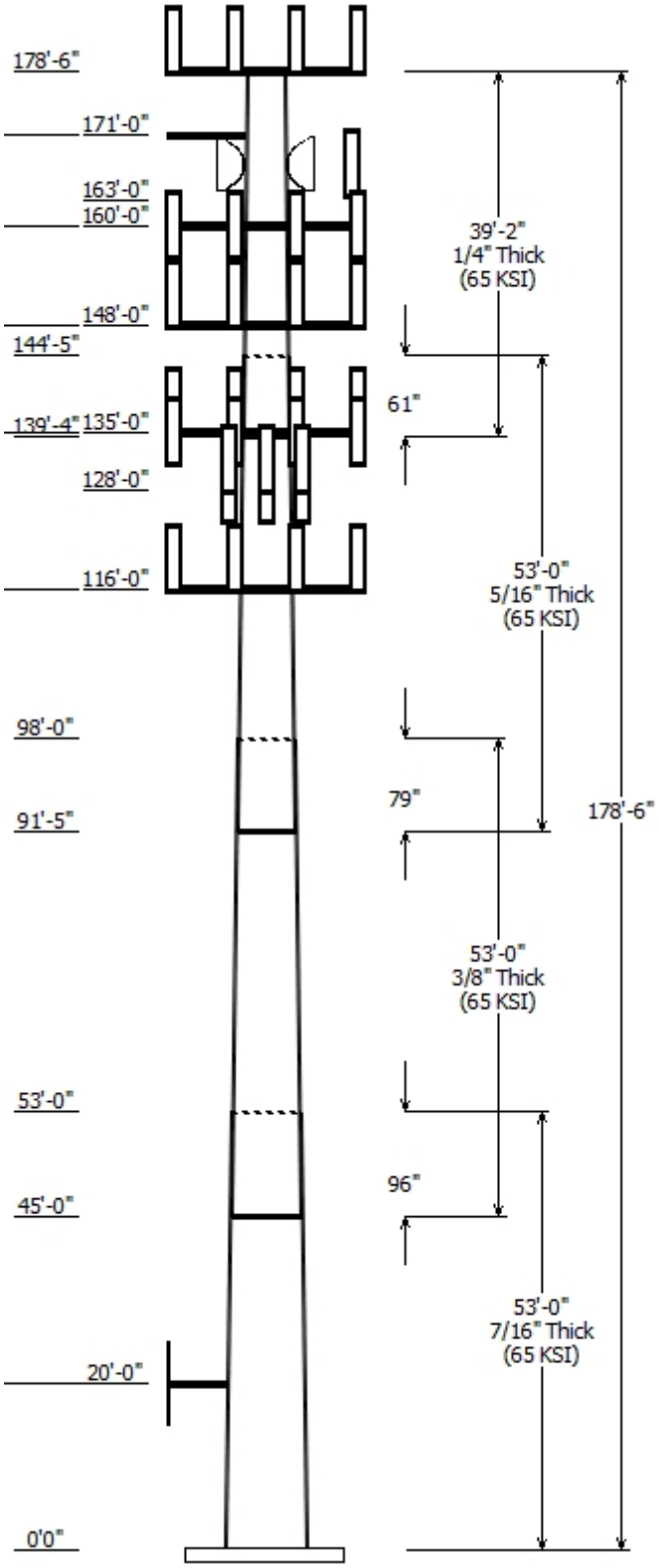
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Job Information

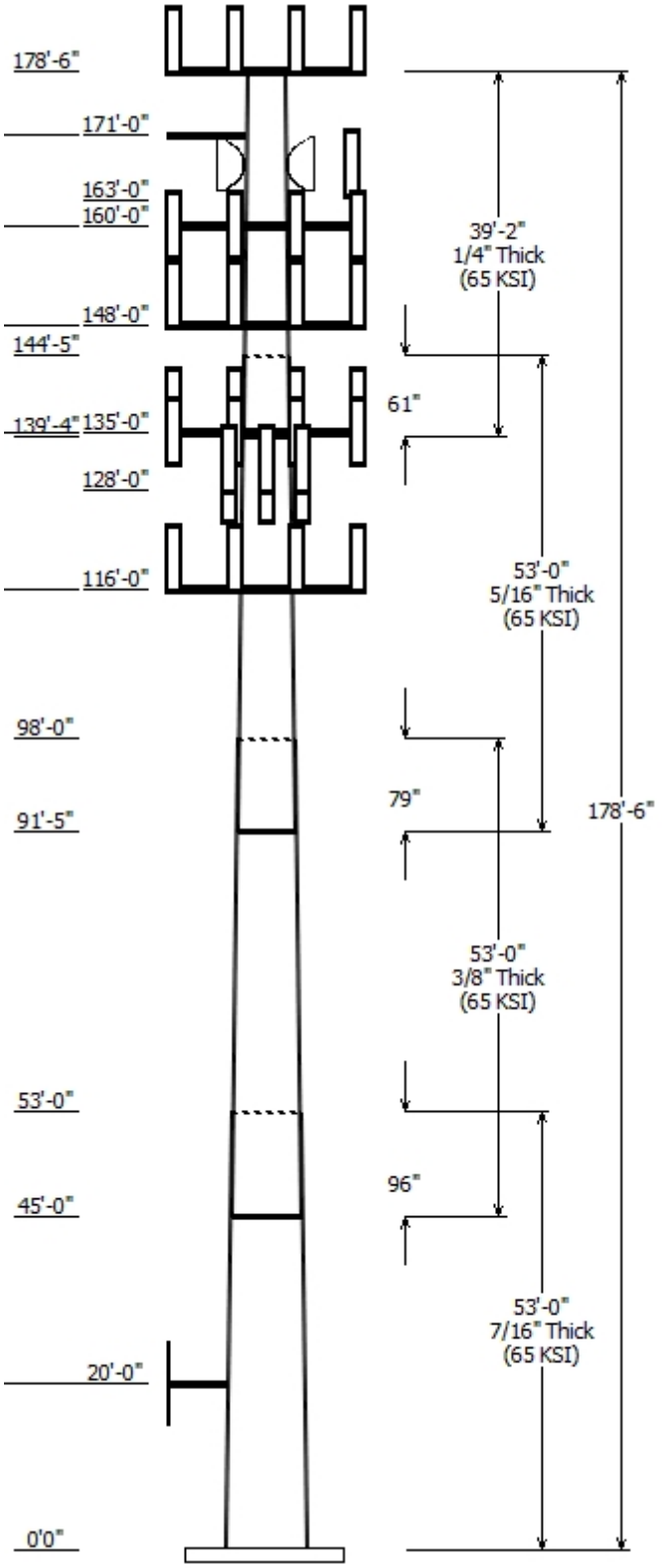
Pole :	302467	Code:	ANSI/TIA-222-G
Description :	178.5' FWT Monopole		
Client :	AT&T MOBILITY	Struct Class :	II
Location :	Bilkays Express, CT		
Shape :	18 Sides	Exposure :	B
Height :	178.50 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.25140 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
1	53.000	58.67	72.00	0.438		0.000	0.251400	65
2	53.000	48.11	61.43	0.375	Slip Joint	96.000	0.251400	65
3	53.000	37.06	50.39	0.313	Slip Joint	79.000	0.251400	65
4	39.167	29.00	38.84	0.250	Slip Joint	61.000	0.251400	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
178.500	181.000	12	Decibel DB844H90E-XY
178.500	178.500	1	Flat Low Profile Platform
171.000	165.000	1	DragonWave A-ANT-11G-2-C
171.000	165.000	3	Argus LLPX310R
171.000	165.000	3	NextNet BTS-2500
171.000	165.000	1	DragonWave A-ANT-18G-2-C
171.000	171.000	1	Side Arms
163.000	165.000	2	Generic TTA
160.000	160.000	3	KMW AM-X-CD-16-65-00T-RET
160.000	160.000	3	Ericsson RRUS-12 B2
160.000	160.000	3	Ericsson RRUS-11 800 MHz
160.000	160.000	3	CCI OPA-65R-LCUU-H6
160.000	160.000	6	Powerwave Allgon LGP21401
160.000	160.000	1	Flat Low Profile Platform
160.000	160.000	3	Powerwave Allgon 7770.00
160.000	160.000	3	Ericsson RRUS-32
160.000	160.000	3	Ericsson RRUS 11 (Band 7)
160.000	160.000	2	Raycap DC6-48-60-18-8F (23.5"
160.000	160.000	6	Powerwave Allgon 7020
148.000	150.000	3	Ericsson AIR 21, 1.3M, B4A B2P
148.000	150.000	3	Ericsson AIR 21, 1.3 M, B2A B4
148.000	150.000	6	Ericsson KRY 112 144/1
148.000	148.000	1	Round Low Profile Platform
135.000	138.000	3	Alcatel-Lucent RRH2X60-1900
135.000	138.000	3	Alcatel-Lucent RRH2X60-AWS
135.000	138.000	3	Antel BXA-80063-6BF-EDIN-X
135.000	138.000	1	RFS DB-T1-6Z-8AB-0Z
135.000	138.000	1	RFS DB-T1-6Z-8AB-0Z
135.000	138.000	3	Alcatel-Lucent RRH2x60 700
135.000	135.000	9	Commscope SBNHH-1D65B
135.000	135.000	1	Round Low Profile Platform
128.000	128.000	1	Nortel NTGB01MA
128.000	130.000	3	RFS APXV18-206517S-C
116.000	122.000	3	RFS RFS APXV9TM14-ALU-I20
116.000	120.000	3	Alcatel-Lucent TD-RRH8x20-25
116.000	122.000	3	RFS APXVSPP18-C-A20
116.000	116.000	1	Round Low Profile Platform
116.000	120.000	3	Alcatel-Lucent 1900 MHz 4X45
116.000	120.000	3	Alcatel-Lucent 800 MHz RRH
20.000	20.000	1	Standoff
20.000	20.000	1	PCTEL GPS-TMG-HR-26N



Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	20.000	1/2" Coax	Yes
0.000	116.0	1 1/4" Hybriflex	Yes
0.000	128.0	1 5/8" Coax	Yes
0.000	128.0	7/8" Coax	No
0.000	135.0	1 5/8" Coax	No
0.000	135.0	1 5/8" Hybriflex	No
0.000	135.0	1 5/8" Hybriflex	No
0.000	148.0	1 1/4" Hybriflex	Yes
0.000	148.0	1 5/8" Coax	No
0.000	160.0	0.39" Fiber Trunk	No
0.000	160.0	0.78" 8 AWG 6	No
0.000	160.0	1 5/8" Coax	No
0.000	160.0	3" Conduit	No
0.000	163.0	2" Conduit	Yes
0.000	171.0	1/2" Coax	Yes
0.000	171.0	5/16" Coax	No
0.000	178.5	1 5/8" Coax	No

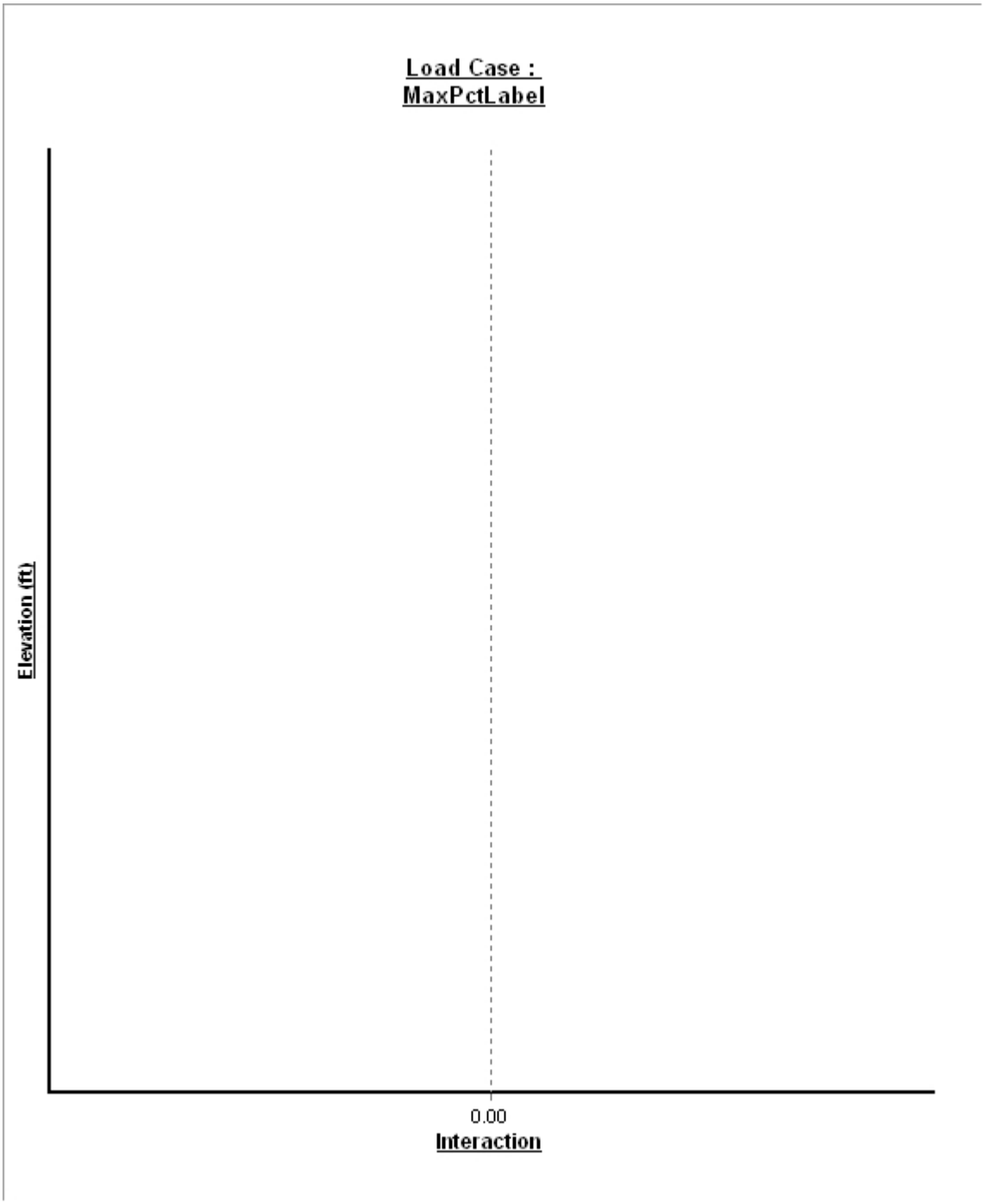
Load Cases

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
	0.00	0.00	0.00

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


Load Case :
MaxPctLabel
Elevation (ft)
0.00
Interaction

Site Number:	**302467**	**Code: ANSI/TIA-222-G**	
Site Name:	**Bilkays Express, CT**	**Engineering Number: 64274421**	**12/8/2015 11:10:49 AM**
Customer:	**AT&T MOBILITY**		

Analysis Parameters

Location:	**New Haven County, CT**		
Code:	**ANSI/TIA-222-G**	**Height (ft):**	**178.**
Shape:	**18 Sides**	**Base Diameter (in):**	**72.00**
Pole Type:	**Taper**	**Top Diameter (in):**	**29.00**
Pole Manfacturer:	**FWT**	**Taper (in/ft) :**	**0.251**

Ice & Wind Parameters

Structure Class:	**II**	**Design Wind Speed Without Ice:**	**105 mph**
Exposure Category:	**B**	**Design Wind Speed With Ice:**	**50 mph**
Topographic Category:	**1**	**Operational Wind Speed:**	**60 mph**
Crest Height:	**0.0 ft**	**Design Ice Thickness:**	**0.75 in**

Load Cases

Site Number:	**302467**	**Code: ANSI/TIA-222-G**	
Site Name:	**Bilkays Express, CT**	**Engineering Number: 64274421**	**12/8/2015 11:10:49 AM**
Customer:	**AT&T MOBILITY**		

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.000	0.4375	65		0.00	16,253	72.00	0.00	99.37	64295.3	27.61	164.57	58.67	53.00	80.87	34653.6	22.24	134.12	0.251401
2-18	53.000	0.3750	65	Slip	96.00	11,677	61.43	45.00	72.68	34236.4	27.48	163.83	48.11	98.00	56.82	16359.2	21.21	128.30	0.251401
3-18	53.000	0.3125	65	Slip	79.00	7,766	50.39	91.42	49.67	15739.6	27.02	161.26	37.06	144.42	36.46	6222.7	19.51	118.62	0.251401
4-18	39.167	0.2500	65	Slip	61.00	3,561	38.84	139.33	30.63	5764.1	25.99	155.39	29.00	178.50	22.81	2382.3	19.04	116.00	0.251401
				Shaft Weight		39,257													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
178.50	Decibel DB844H90E-XY	12	14.00	3.610	0.92	126.96	3.938	0.92	0.000	2.500
178.50	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,159.96	45.548	1.00	0.000	0.000
171.00	Argus LLPX310R	3	28.60	4.290	0.73	138.17	5.202	0.73	0.000	-6.000
171.00	DragonWave A-ANT-11G-2-C	1	27.00	4.690	1.00	125.91	5.983	1.00	0.000	-6.000
171.00	DragonWave A-ANT-18G-2-C	1	27.10	4.690	1.00	126.15	5.983	1.00	0.000	-6.000
171.00	NextNet BTS-2500	3	35.00	1.820	0.50	93.07	2.371	0.50	0.000	-6.000
171.00	Side Arms	1	560.00	8.500	1.00	1,035.16	15.712	1.00	0.000	0.000
163.00	Generic TTA	2	10.00	1.200	1.00	56.25	1.670	1.00	0.000	2.000
160.00	CCI OPA-65R-LCUU-H6	3	73.00	9.660	0.79	306.09	11.033	0.79	0.000	0.000
160.00	Ericsson RRUS 11 (Band 7)	3	50.70	2.790	0.67	137.64	3.473	0.67	0.000	0.000
160.00	Ericsson RRUS-11 800 MHz	3	54.00	2.520	0.67	143.87	3.181	0.67	0.000	0.000
160.00	Ericsson RRUS-12 B2	3	58.00	3.150	0.67	153.96	3.868	0.67	0.000	0.000
160.00	Ericsson RRUS-32	3	77.00	3.310	0.67	174.93	4.601	0.67	0.000	0.000
160.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,152.40	45.325	1.00	0.000	0.000
160.00	KMW AM-X-CD-16-65-00T-	3	48.50	8.020	0.79	238.43	9.321	0.79	0.000	0.000
160.00	Powerwave Allgon 7020	6	2.20	0.400	0.50	18.04	0.623	0.50	0.000	0.000
160.00	Powerwave Allgon 7770.00	3	35.00	5.510	0.77	170.90	6.565	0.77	0.000	0.000
160.00	Powerwave Allgon LGP21401	6	14.10	1.100	0.50	68.23	2.657	0.50	0.000	0.000
160.00	Raycap DC6-48-60-18-8F	2	20.00	1.260	1.00	101.01	2.525	1.00	0.000	0.000
148.00	Ericsson AIR 21, 1.3 M, B2A	3	83.00	6.050	0.86	251.56	7.145	0.86	0.000	2.000
148.00	Ericsson AIR 21, 1.3M, B4A	3	81.50	6.090	0.85	250.02	7.190	0.85	0.000	2.000
148.00	Ericsson KRY 112 144/1	6	11.00	0.410	0.50	27.33	0.634	0.50	0.000	2.000
148.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,147.69	40.893	1.00	0.000	0.000
135.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	129.02	3.133	0.67	0.000	3.000
135.00	Alcatel-Lucent RRH2X60-	3	39.60	1.880	0.67	107.79	2.465	0.67	0.000	3.000
135.00	Alcatel-Lucent RRH2X60-	3	44.00	1.880	0.67	112.19	2.465	0.67	0.000	3.000
135.00	Antel BXA-80063-6BF-EDIN-X	3	19.20	7.260	0.78	161.91	9.893	0.78	0.000	3.000
135.00	Commscope SBNHH-1D65B	9	50.70	8.170	0.83	251.16	9.460	0.83	0.000	0.000
135.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	185.64	5.662	0.67	0.000	3.000
135.00	RFS DB-T1-6Z-8AB-0Z	1	44.00	4.800	0.67	185.64	5.662	0.67	0.000	3.000
135.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,141.22	40.701	1.00	0.000	0.000
128.00	Nortel NTGB01MA	1	1.00	0.090	0.50	12.18	0.322	0.50	0.000	0.000
128.00	RFS APXV18-206517S-C	3	26.40	5.160	0.80	141.49	6.386	0.80	0.000	2.000
116.00	Alcatel-Lucent 1900 MHz	3	60.00	2.320	0.67	152.18	2.974	0.67	0.000	4.000
116.00	Alcatel-Lucent 800 MHz RRH	3	53.00	2.130	0.67	137.65	2.728	0.67	0.000	4.000
116.00	Alcatel-Lucent TD-RRH8x20-	3	70.00	4.050	0.67	160.12	5.708	0.67	0.000	4.000
116.00	RFS APXVSPP18-C-A20	3	57.00	8.020	0.83	250.56	9.279	0.83	0.000	6.000
116.00	RFS RFS APXV9TM14-ALU-I20	3	55.10	6.340	0.78	195.10	8.466	0.78	0.000	6.000
116.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,132.47	40.442	1.00	0.000	0.000
20.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	1.00	8.11	0.228	1.00	0.000	0.000
20.00	Standoff	1	75.00	2.500	1.00	146.50	3.906	1.00	0.000	0.000
	Totals	119	12442.70			28,158.97			Number of Loadings :	41

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
0.00	178.50	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	171.00	2	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
0.00	171.00	6	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
0.00	163.00	2	2" Conduit	2.38	3.65	N	2.38	Y	Clearwire
0.00	160.00	2	0.39" Fiber Trunk	0.39	0.07	N	0.00	N	AT&T Mobility
0.00	160.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	160.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
0.00	160.00	2	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
0.00	148.00	1	1 1/4" Hybriflex Cab	1.54	1.00	N	1.54	Y	T-Mobile
0.00	148.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
0.00	135.00	18	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon Wireless
0.00	135.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon Wireless
0.00	135.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	N	Verizon Wireless
0.00	128.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Metro PCS
0.00	128.00	1	7/8" Coax	1.09	0.33	N	0.00	N	
0.00	116.00	4	1 1/4" Hybriflex	1.54	1.00	N	0.00	Y	Sprint Nextel
0.00	20.00	1	1/2" Coax	0.63	0.15	N	0.00	Y	Sprint Nextel

Site Number:	**302467**	**Code: ANSI/TIA-222-G**	
Site Name:	**Bilkays Express, CT**	**Engineering Number: 64274421**	**12/8/2015 11:10:49 AM**
Customer:	**AT&T MOBILITY**		

Load Case: **0 Iterations**

Gust Response Factor : 0.00
Dead Load Factor : 0.00
Wind Load Factor : 0.00

Wind Importance Factor : 0.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		0.0	0.0					0.0	0.0	0.0	0.0	0.0	0.0
								Totals:		0.00	0.00	0.00	0.00

Load Case:

0 Iterations

Gust Response Factor : 0.00
Dead Load Factor : 0.00
Wind Load Factor : 0.00

Wind Importance Factor : 0.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Base Summary

Reactions

Original Design			Analysis			
Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment (kip-ft)	Axial (kip)	Shear (kip)	Moment Design %
5,025.00	56.80	39.90				

Base Plate

Yield (ksi)	Thick (in)	Width (in)	Style	Poly Sides	Clip Len (in)	Effective Len (in)	Mu (kip-in)	Phi Mn (kip-in)	Ratio
60.0	2.750	85.000	Round	0	0.00	0.000	0.00	0.00	0.00

Anchor Bolts

Bolt Circle	Num Bolts	Bolt Type	Bolt Dia (in)	Yield (ksi)	Ultimate (ksi)	Arrange	Cluster Dist (in)	Start Angle (deg)	Compression Force (kip)	Compression Allow (kip)	Compression Ratio	Tension Force (kip)	Tension Allow (kip)	Tension Ratio
79.00	20	2.25" 18J	2.25	75.00	100.00	Radial	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00

Base/Flange Plate			
	Plate Type	***Baseplate***	
	Pole Diameter	72	in
	Pole Thickness	0.4375	in
	Plate Diameter	85	in
	Plate Thickness	2.75	in
	Plate Fy	60	ksi
	Weld Length	0.25	in
	ϕ_s Resistance	1149.41	k-in
	Applied	297.75	k-in
Stiffeners	#	***0***	

Bolts			
	#	***20***	
	Bolt Circle	79	in
	(R)adial / (S)quare	R	
●	Diameter	2.25	in
	Hole Diameter	2.625	in
	Type	18J	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	153.68	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev. ***G***

Moment 4871.1 k-ft
Axial 114.9 k

Date	12/4/2015
Engineer	JDB
Site #	302467
Carrier	AT&T Mobility

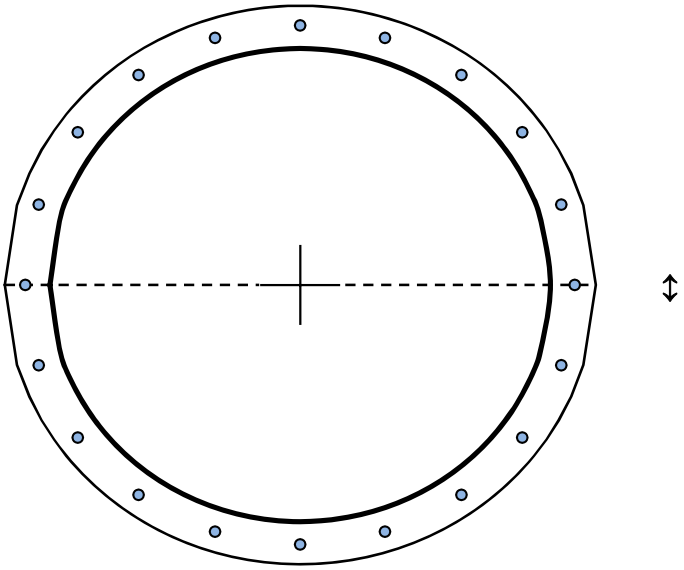
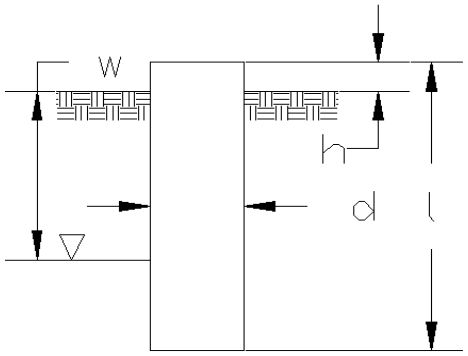


Plate Stress Ratio:
0.26 (Pass)

Bolt Stress Ratio:
0.59 (Pass)

Site Name:	Bilkay Express, CT, CT	*Program Last Updated:*	*5/13/2014*
Site Number:	302467	*American Tower Corporation*	
Engineer:	JDB		
Engineering Number:	64274421		
Date:	12/04/15		



Design Base Loads (Factored) - Analysis per TIA-222-G Standards

Analyze or Design a Foundation?	Analyze	
Foundation Mapped:	N	
Moment (M):	4871.1	k-ft
Shear/Leg (V):	40.2	k
Axial Load (P):	114.9	k
Uplift/Leg (U):	0.0	k
Tower Type (GT / SST / MP):	MP	
Diameter of Caisson (d):	8.5	ft
Caisson Embedment (L-h):	29.5	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	6.0	ft
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Water:	62.4	pcf
Tension Skin Friction/Compression Skin Friction:	1.00	
Pullout Angle:	30.0	degrees

Engineer Notes

Soil Mechanical Properties

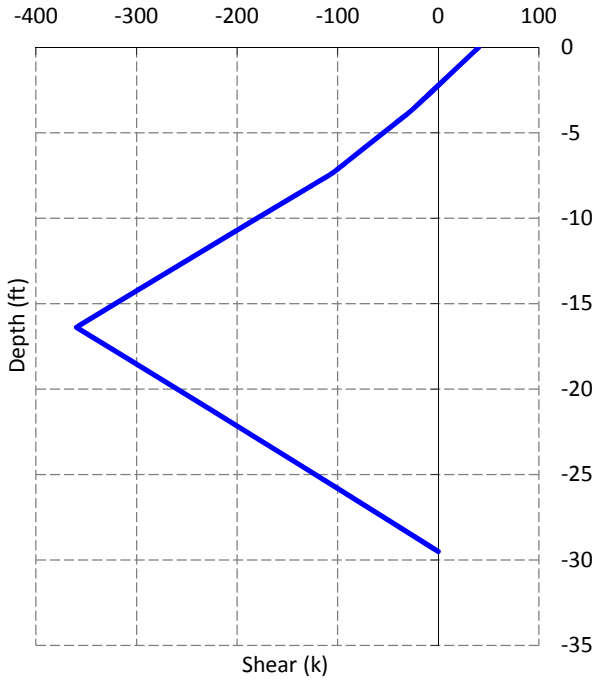
Depth (ft) Top	Depth (ft) Bottom	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
0.0	5.0	125	0	34	0	0
5.0	15.0	60	0	34	480	0
15.0	20.0	60	0	34	480	5000
20.0	30.0	60	0	34	690	5000
30.0	42.0	60	0	34	820	5000
42.0	47.0	60	0	34	1020	5000

Required Embedment:	25.7	ft - OK, Caisson Embedment Satisfactory
Volume of Concrete:	1702.4	ft^3 = 63.1 yd^3
Weight of Concrete (Buoyancy Effect Considered):	172.1	k
Average Soil Unit Weight:	21.3	pcf
Skin Friction Resistance:	367.3	k
Compressive Bearing Resistance:	283.7	k
Pullout Weight (Minus Concrete Weight):	333.9	k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	250.4	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	488.3	k
P_u:	273.6	k
$T_u/\phi_s T_n$:	0.00	Result: OK
$P_u/\phi_s P_n$:	0.56	Result: OK
Total Lateral Resistance:	1786.2	k
Inflection Point (Below Ground Surface):	16.4	ft
Design Overturning Moment At Inflection Point (M_D):	5549.9	k-ft
Nominal Moment Capacity ($\phi_s M_n$):	8819.8	k-ft
$M_D/\phi_s M_n$:	0.63	Result: OK
ϕ_s:	0.75	

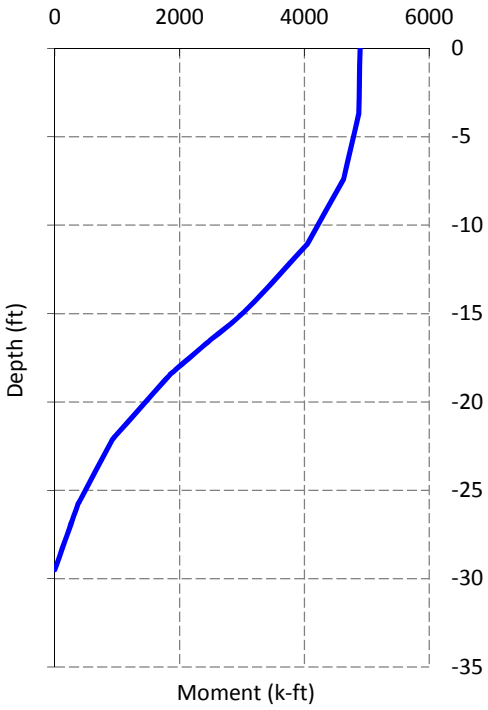
Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000	psi
Vertical Steel Rebar Size #:	11	
Vertical Steel Rebar Area:	1.56	in^2
# of Vertical Steel Rebars:	27	
Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Horizontal Tie / Stirrup Size #:	5	
Horizontal Tie / Stirrup Area:	0.31	in^2
Design Horizontal Tie / Stirrup Spacing:	12.0	in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	60	ksi
Rebar Cage Diameter:	94.0	in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90	ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.75	ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor (ϕ_V):	0.65	ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000	ksi
Design Moment (M_u):	4891.2	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	8066.2	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.61	Result: OK
Design Shear (V_u):	359.8	k
Nominal Shear Capacity ($\phi_V V_n$):	676.1	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.53	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	2274.5	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	273.6	k
Nominal Compression Capacity ($\phi_P P_n$):	10779.3	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.03	Result: OK
Bending Reinforcement Ratio:	0.005	ACI318-05 - 10.8.4 & 10.9.1
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.61	Result: OK

Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads

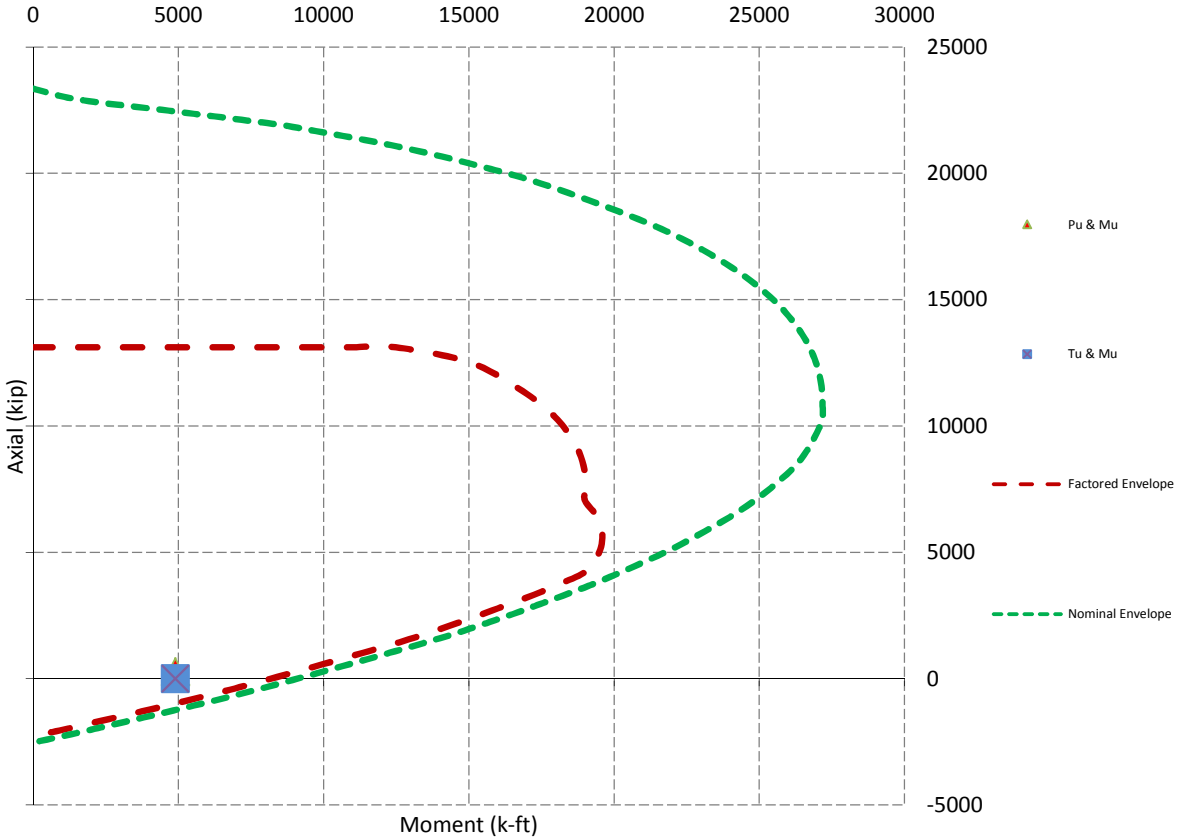


Exhibit 4

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5173

Yalesville
90 North Plains Industrial Road
Wallingford, CT 06492

November 8, 2017

Centerline Communications Project Number: 950006-083

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**8.68 %**

November 8, 2017

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5173 – Yalesville**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **90 North Plains Industrial Road, Wallingford, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 performed for the proposed AT&T Wireless antenna facility located at **90 North Plains Industrial Road, Wallingford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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 manufactures supplied specifications, minus 10 dB, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
LTE	850 MHz	2	60
LTE	700 MHz	4	60
LTE	2300 MHz (WCS)	2	60
LTE	1900 MHz (PCS)	4	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	160
A	2	CCI OPA-65R-LCUU-H6	160
A	3	Quintel QS66512-2	160
B	1	Powerwave 7770	160
B	2	CCI OPA-65R-LCUU-H6	160
B	3	Quintel QS66512-2	160
C	1	Powerwave 7770	160
C	2	CCI OPA-65R-LCUU-H6	160
C	3	Quintel QS66512-2	160

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.22
Antenna A2	CCI OPA-65R-LCUU-H6	850 MHz / 700 MHz / 2300 MHz (WCS)	12.45 / 11.65 / 15.45	6	360	8,073.14	1.77
Antenna A3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	360	7,283.29	1.36
						Sector A Composite MPE%	**3.35**
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.22
Antenna B2	CCI OPA-65R-LCUU-H6	850 MHz / 700 MHz / 2300 MHz (WCS)	12.45 / 11.65 / 15.45	6	360	8,073.14	1.77
Antenna B3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	360	7,283.29	1.36
						Sector B Composite MPE%	**3.35**
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.22
Antenna C2	CCI OPA-65R-LCUU-H6	850 MHz / 700 MHz / 2300 MHz (WCS)	12.45 / 11.65 / 15.45	6	360	8,073.14	1.77
Antenna C3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS)	10.85 / 13.85	6	360	7,283.29	1.36
						Sector C Composite MPE%	**3.35**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**3.35 %**
Sprint	1.64 %
Clearwire	0.07 %
MetroPCS	0.82 %
T-Mobile	0.02 %
XM Satellite Radio	0.12 %
Verizon Wireless	2.66 %
Site Total MPE %:	**8.68 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.35 %
AT&T Sector B Total:	3.35 %
AT&T Sector C Total:	3.35 %
Site Total:	8.68 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS (Antenna 1)	2	414.12	160	1.26	850 MHz	567	0.22%
AT&T 850 MHz LTE (Antenna 2)	2	1,054.75	160	3.20	850 MHz	567	0.56%
AT&T 700 MHz LTE (Antenna 2)	2	877.31	160	2.66	700 MHz	467	0.57%
AT&T 2300 MHz (WCS) LTE (Antenna 2)	2	2,104.51	160	6.38	2300 MHz (WCS)	1000	0.64%
AT&T 700 MHz LTE (Antenna 3)	2	729.71	160	2.21	700 MHz	467	0.47%
AT&T 1900 MHz (PCS) LTE (Antenna 3)	4	1,455.97	160	8.83	1900 MHz (PCS)	1000	0.88%
						Total:	**3.35%**

Table 6: AT&T Maximum Sector MPE Power Values

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 AT&T 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:

AT&T Sector	Power Density Value (%)
Sector A:	3.35 %
Sector B:	3.35 %
Sector C:	3.35 %
AT&T Maximum Total (per sector):	3.35 %
Site Total:	8.68 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.68 %** 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.

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.

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