

Customer: TEP Northeast (formerly Hudson Design Group, LLC)
ICC Project Number: 2198
Site: 63 Elm Street | Manchester, CT 06040
Chimney Description: 199'-7" Common Brick Chimney

Summary:

The following is a structural analysis of a 182'-8" circular, common brick chimney per the 2022 Connecticut Building Code. With the proposed AT&T cellular equipment modifications at the 175' and 165' elevations, the chimney shell was found to be stressed to about 76% of the maximum allowable stress, and is therefore acceptable as noted below.

This analysis assumes that all required repairs have been completed. Analysis of the existing foundation and design of the antenna mounts were not included in ICC Commonwealth's scope of work.

Repairs required:

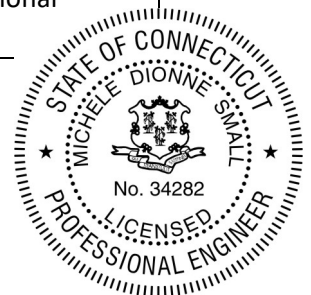
- Rake out and point all open and loose mortar joints within the lower 130' section of the chimney column. 10%-15% pointing is required.
- There is a vertical stress crack that has been detected within the South Side of the chimney column. This crack begins at the 30' Elevation and continues up the column for up to 17 Courses of brickwork. This stress crack should be sealed with elastomeric sealant; Sikaflex 11FC or equal.
- There are numerous spalled bricks that can be seen within the base region of the chimney column. This area of deterioration is within the lower 20 courses of brickwork that spans from the north side of the column around to the south side of the column. Given the thickness redundancy of the column, we don't believe replacement of so many face bricks are warranted for structural reasons. However, brickwork in this area should be sealed with masonry sealant waterproofing to prevent rapid deterioration.

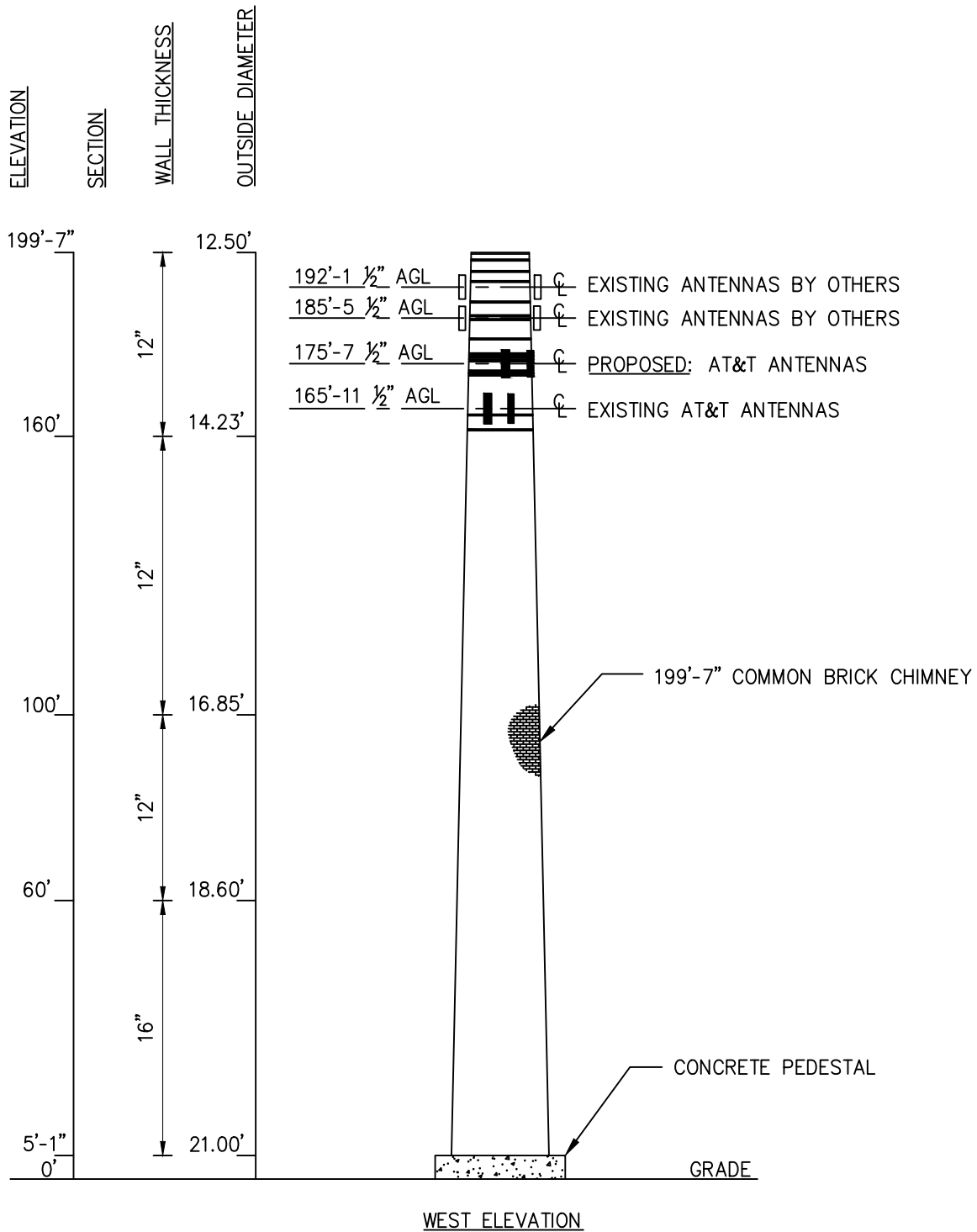
Analysis Results

- Approved – Structure can accommodate the proposed changes. No repairs required.
- Conditional Approval – Structure can accommodate the proposed changes. Repairs required.
- Not Approved – Structure cannot accommodate the proposed changes without reinforcement.

All repairs should be supervised under a qualified and experienced professional. If repairs are required and not performed and supervised by a licensed professional engineer, additional inspection is required.

Completed by: Michele Dionne Small, P.E.
Date: 01/03/2023





Site Input Data

ASCE 7-16 Risk Category & Wind Velocity

Risk = "II"

V = 120-mph

ASCE 7 Wind Exposure Category & Shape

Exposure :=

shape :=

- B
- C
- D

- Round Smooth
- Round Rough
- Round Very Rough
- Square Normal
- Square Diagonal
- Octagonal

Material :=

- Radial Brick, Type M or S
- Radial Brick, Type N
- Common Brick, Type M or S
- Common Brick, Type N

Density & Compressive Strength

$\gamma_m = 125 \cdot \text{pcf}$

$f_m = 1000 \text{ psi}$

Tensile Strength & Elastic Modulus

$F_{bt} = 40 \text{ psi}$

$E_m = 1050 \cdot \text{ksi}$

Measurements

		1				1				1				1	
		1	199.6			1	12.5			1	12			1	0
		2	195.7			2	12.67			2	12			2	0
		3	192.1			3	12.828			3	12			3	43.6
		4	185.5			4	13.116			4	12			4	43.6
		5	175.6			5	13.549			5	12			5	32.3
		6	166			6	13.968			6	12			6	43.6
		7	150			7	14.667			7	12			7	0
		8	135			8	15.323			8	12			8	0
		9	120			9	15.978			9	12			9	0
EL =		10	105	·ft	D =	10	16.634	·ft	t =	10	12	·in	A _A =	10	0
		11	90			11	17.289			11	12			11	0
		12	80			12	17.726			12	12			12	0
		13	70			13	18.163			13	12			13	0
		14	60			14	18.6			14	16			14	0
		15	50			15	19.037			15	16			15	0
		16	40			16	19.474			16	16			16	0
		17	30			17	19.911			17	16			17	0
		18	20			18	20.348			18	16			18	0
		19	10			19	20.785			19	16			19	0
		20	5.083			20	21			20	16			20	0
		21				21				21				21	

"EL" is the elevation above grade level.

"D" is the diameter of a circular cross section or the least horizontal dimension of square, hexagonal or octagonal cross sections.

"t" is the thickness of the outer shell wall.

"A_A" is the projected area of appurtenances.

Chimney Properties

$A := A_{\text{shapes}_{\text{shape}}}$		$I := I_{\text{shapes}_{\text{shape}}}$		$S := S_{\text{shapes}_{\text{shape}}}$		$r := \sqrt{\frac{I}{A}}$	
	1		1		1		1
1	36.128	1	601.762	1	96.282	1	4.081
2	36.664	2	628.777	2	99.251	2	4.141
3	37.158	3	654.422	3	102.032	3	4.197
4	38.064	4	703.236	4	107.232	4	4.298
5	39.423	5	780.927	5	115.277	5	4.451
6	40.741	6	861.547	6	123.358	6	4.599
7	42.937	7	1007.948	7	137.44	7	4.845
8	44.997	8	1159.481	8	151.34	8	5.076
9	47.056	9	1325.513	9	165.914	9	5.307
10	49.115	10	1506.708	10	181.162	10	5.539
11	51.174	11	1703.73	11	197.085	11	5.77
12	52.547	12	1844.197	12	208.075	12	5.924
13	53.92	13	1992.191	13	219.365	13	6.078
14	72.327	14	2711.59	14	291.565	14	6.123
15	74.158	15	2921.869	15	306.964	15	6.277
16	75.988	16	3142.768	16	322.762	16	6.431
17	77.819	17	3374.55	17	338.96	17	6.585
18	79.649	18	3617.476	18	355.558	18	6.739
19	81.48	19	3871.81	19	372.556	19	6.893
20	82.38	20	4001.129	20	381.06	20	6.969
21		21		21		21	

Estimated First Mode Period of Vibration

Calculated per ASCE 7 Equations C26.11-12 & -13

Chimney thickness at top and bottom

$$e_t := t_1 = 1 \text{ ft} \qquad e_b := t_{n_{jts}} = 1.333 \text{ ft}$$

Chimney Width at top and bottom

$$d_t := \text{width}_1 = 12.5 \cdot \text{ft} \qquad d_b := \text{width}_{n_{jts}} = 21 \cdot \text{ft}$$

Mass per unit of height at base

$$m_b := \frac{\gamma_m}{g} \cdot A_{n_{jts}} = 10297.443 \cdot \frac{\text{lb}}{\text{ft}}$$

Moment of Inertia at base

$$I_b := I_{n_{jts}} = 4001.129 \cdot \text{ft}^4$$

Factor to account for chimney taper

$$\lambda := 1.9 \exp\left(\frac{-4 \cdot d_t}{d_b}\right) + \frac{6.65}{0.9 + \left(\frac{e_t}{e_b}\right)^{\frac{2}{3}}} = 4.03$$

Approximate natural frequency

$$n_1 := \frac{\lambda}{2 \cdot \pi \cdot h_s^2} \cdot \sqrt{\frac{E_m \cdot I_b}{m_b}} = 0.74 \frac{1}{s}$$

Chimney Dead Load

Antenna weights are conservatively neglected

$$DL := \begin{cases} DL_1 \leftarrow 0 \\ \text{for } j \in 2 \dots n_{jts} \\ DL_j \leftarrow \gamma_m (EL_{j-1} - EL_j) \cdot (A_{j-1} + A_j) \cdot \frac{1}{2} + DL_{j-1} \\ DL \end{cases}$$

DL =

	1
1	0
2	17.7
3	34.4
4	65.4
5	113.3
6	161.4
7	245.1
8	327.5
9	413.8
10	504
11	598
12	662.8
13	729.4
14	808.3
15	899.8
16	993.7
17	1089.8
18	1188.2
19	1288.9
20	1339.3
21	

 ·kip

	1
1	0
2	17.7
3	34.4
4	65.4
5	113.3
6	161.4
7	245.1
8	327.5
9	413.8
10	504
11	598
12	662.8
13	729.4
14	808.3
15	899.8
16	993.7
17	1089.8
18	1188.2
19	1288.9
20	1339.3
21	

Allowable Load and Stresses on Unreinforced Masonry

Allowable Axial Load $P_{max} := \frac{1}{4} \left[\frac{\pi^2 \cdot E_m \cdot I}{h^2} \cdot \left(1 - 0.577 \cdot \frac{0.1 \cdot D}{r} \right)^3 \right]$

Allowable Axial Compression $F_a :=$ for $j \in 1 \dots n_{jts}$

$$F_{a_j} \left\{ \begin{array}{l} \leftarrow \frac{1}{4} f_m \left(\frac{70 \cdot r}{h} \right)^2 \text{ if } \frac{h}{r_j} > 99 \\ \leftarrow \frac{1}{4} f_m \cdot \left[1 - \left(\frac{h}{140 \cdot r} \right)^2 \right] \text{ if } \frac{h}{r_j} \leq 99 \end{array} \right.$$

Allowable Flexural Compression $F_b := \frac{1}{3} \cdot f_m = 333.333 \text{ psi}$

Allowable Flexural Tension $F_{bt} = 40 \text{ psi}$

$F_a =$

	1
1	219.5
2	220.4
3	221.1
4	222.5
5	224.3
6	226
7	228.4
8	230.3
9	232
10	233.4
11	234.7
12	235.5
13	236.2
14	236.4
15	237.1
16	237.7
17	238.3
18	238.8
19	239.3
20	239.5
21	

psi

$P_{max} =$

	1
1	3144
2	3288
3	3424
4	3683
5	4097
6	4526
7	5306
8	6115
9	7003
10	7972
11	9027
12	9780
13	10574
14	14243
15	15364
16	16542
17	17778
18	19075
19	20434
20	21125
21	

·kip

ASCE Design Wind Velocity Pressure

Wind Velocity $V = 120 \cdot \text{mph}$

Topographic and Directionality Factors $K_{zt} := 1 \quad K_d = 1$

Exposure Coefficients $\alpha = 7 \quad z_g = 1200$

Velocity Pressure Exposure Coefficient
$$K(z) := 2.01 \cdot \left(\frac{\max(z, 15\text{ft})}{z_g \text{ft}} \right)^{\frac{2}{\alpha}}$$

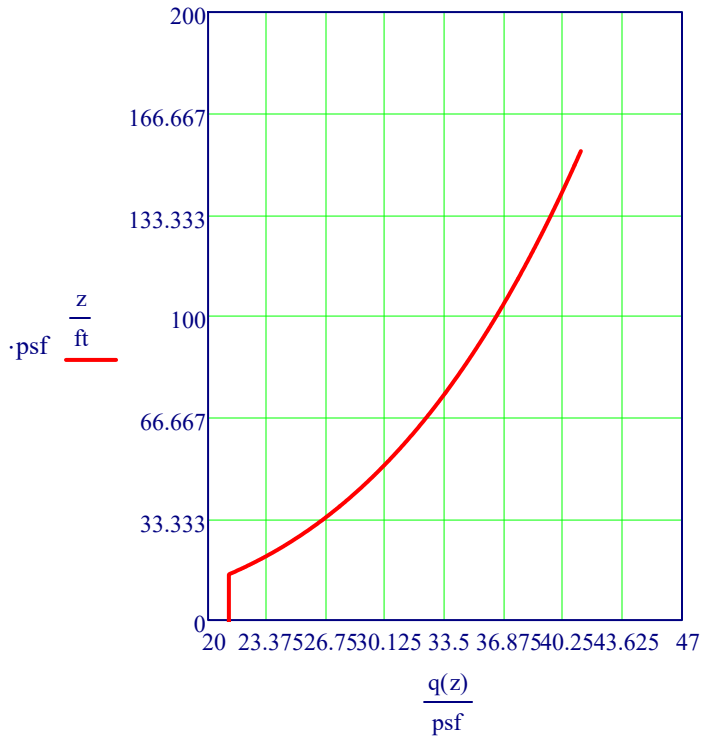
Wind Velocity Pressure Equation
$$q(z) := 0.00256 \text{psf} \cdot K(z) \cdot K_{zt} \cdot K_d \cdot \left(\frac{V}{\text{mph}} \right)^2$$

$\overrightarrow{K(EL)} =$

	1
1	1.204
2	1.197
3	1.191
4	1.179
5	1.161
6	1.142
7	1.11
8	1.077
9	1.041
10	1.002
11	0.959
12	0.927
13	0.892
14	0.854
15	0.811
16	0.761
17	0.701
18	0.624
19	0.575
20	0.575
21	

$\overrightarrow{q(EL)} =$

	1
1	44.383
2	44.134
3	43.9
4	43.464
5	42.788
6	42.106
7	40.905
8	39.692
9	38.378
10	36.942
11	35.35
12	34.18
13	32.901
14	31.483
15	29.885
16	28.039
17	25.827
18	23.001
19	21.186
20	21.186
21	



Wind Velocity Pressure at Top of Stack $q(h) = 44.383 \cdot \text{psf}$

ASCE Design Wind Force on Structure

	1
1	15.968
2	15.753
3	15.56
4	15.218
5	14.732
6	14.29
7	13.608
8	13.026
9	12.492
10	12
11	11.545
12	11.26
13	10.989
14	10.731
15	10.485
16	10.249
17	10.025
18	9.809
19	9.603
20	9.505
21	

 $\frac{h}{D} =$

	1
1	0.65
2	0.649
3	0.648
4	0.646
5	0.643
6	0.64
7	0.637
8	0.633
9	0.631
10	0.628
11	0.625
12	0.624
13	0.622
14	0.621
15	0.619
16	0.618
17	0.617
18	0.616
19	0.614
20	0.614
21	

 $C_f =$

	1
1	28.841
2	28.627
3	28.428
4	28.063
5	27.511
6	26.969
7	26.045
8	25.144
9	24.198
10	23.191
11	22.102
12	21.317
13	20.469
14	19.542
15	18.51
16	17.33
17	15.93
18	14.16
19	13.018
20	13.007
21	

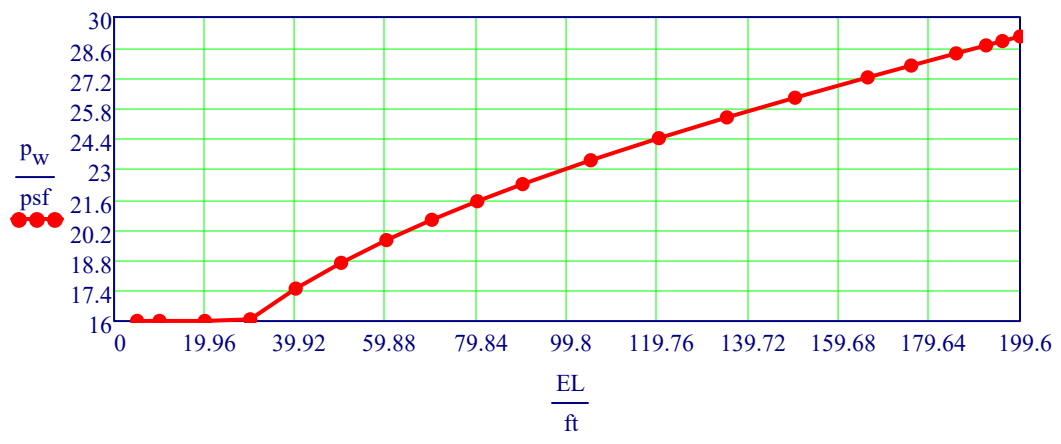
 $\overrightarrow{(q(EL) \cdot C_f)} =$

	1
1	28.841
2	28.627
3	28.428
4	28.063
5	27.511
6	26.969
7	26.045
8	25.144
9	24.198
10	23.191
11	22.102
12	21.317
13	20.469
14	19.542
15	18.51
16	17.33
17	15.93
18	14.16
19	13.018
20	13.007
21	

 $\cdot \text{psf}$

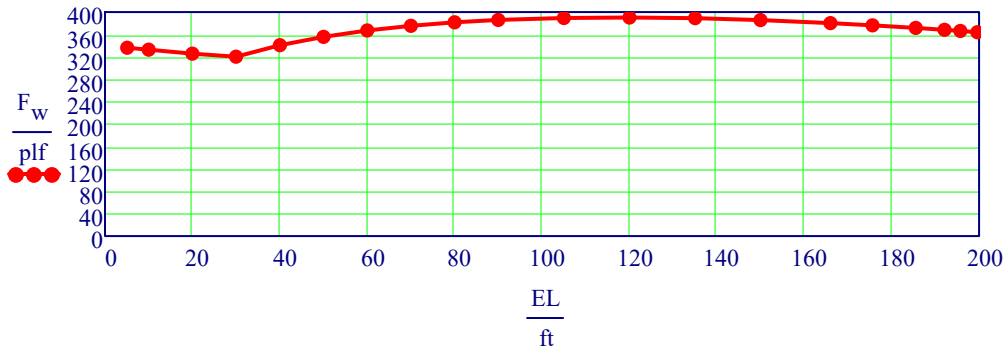
Gust Factor $G_w := \text{if}(n_1 > 1 \cdot s^{-1}, 0.85, G_f) = 1.009$

Design Wind Pressure $p_w := \begin{cases} \text{for } j \in 1 \dots n_{jts} \\ P_{w_j} \leftarrow K_{wind_j} \cdot \max(q(EL_j) \cdot G_w \cdot C_{f_j}, 16\text{psf}) \\ P_w \end{cases}$



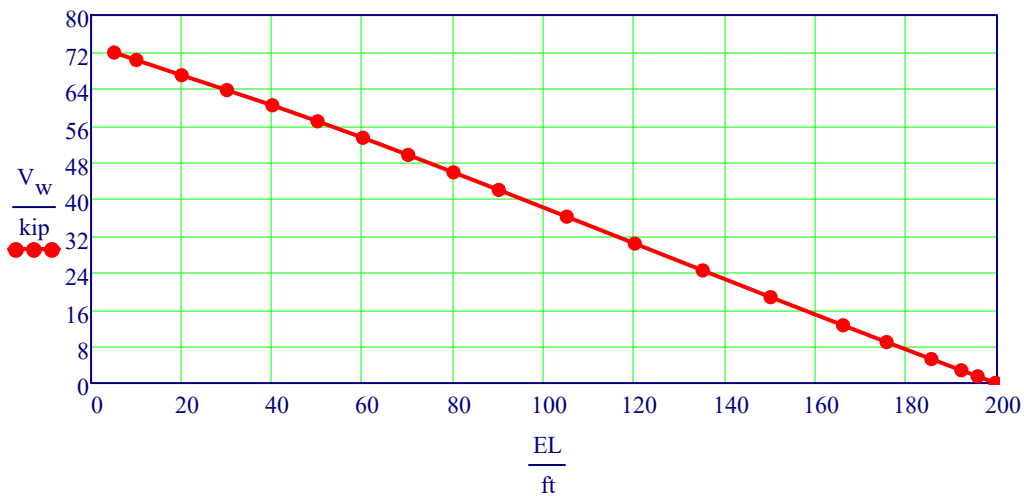
Design Wind Force

$$F_w := \begin{cases} \text{for } j \in 1 \dots n_{jts} \\ F_{w_j} \leftarrow p_{w_j} \cdot A_{f_j} \\ F_w \end{cases}$$



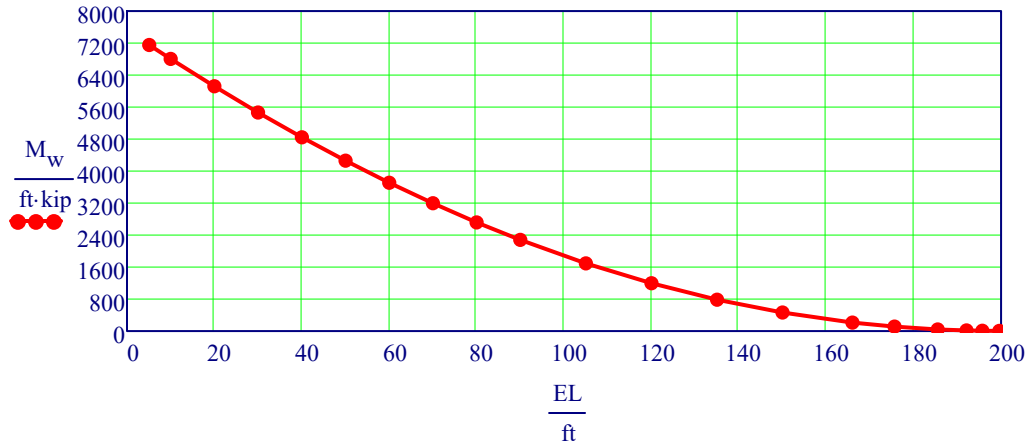
Design Wind Shear

$$V_w := \begin{cases} V_{w_1} \leftarrow 0 \\ \text{for } j \in 2 \dots n_{jts} \\ V_{w_j} \leftarrow (EL_{j-1} - EL_j) \cdot (F_{w_{j-1}} + F_{w_j}) \cdot \frac{1}{2} + V_{w_{j-1}} \\ V_w \end{cases}$$



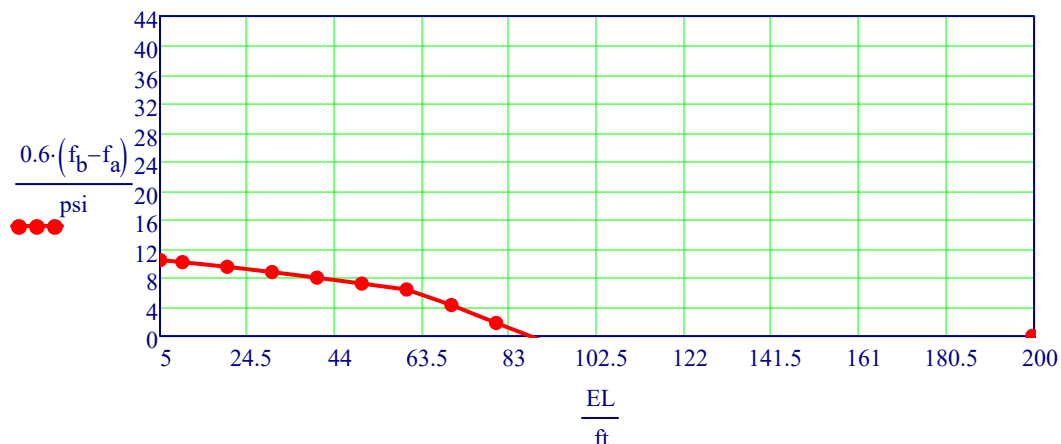
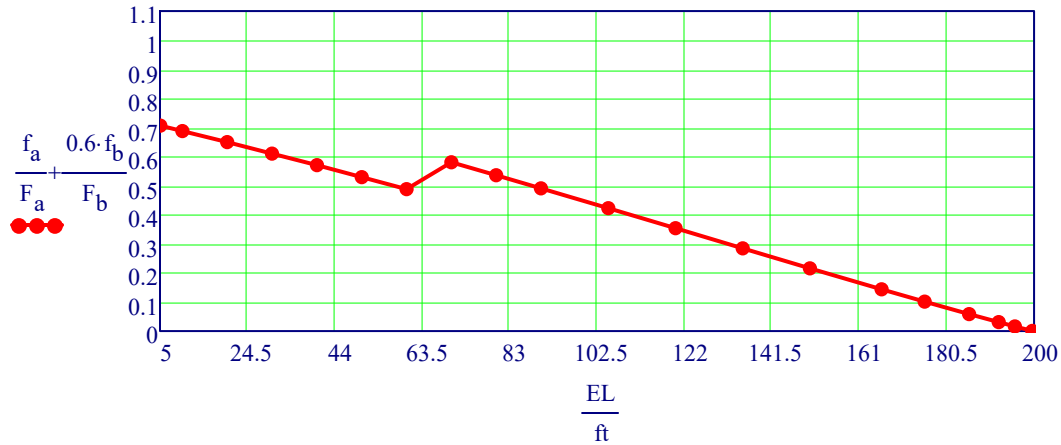
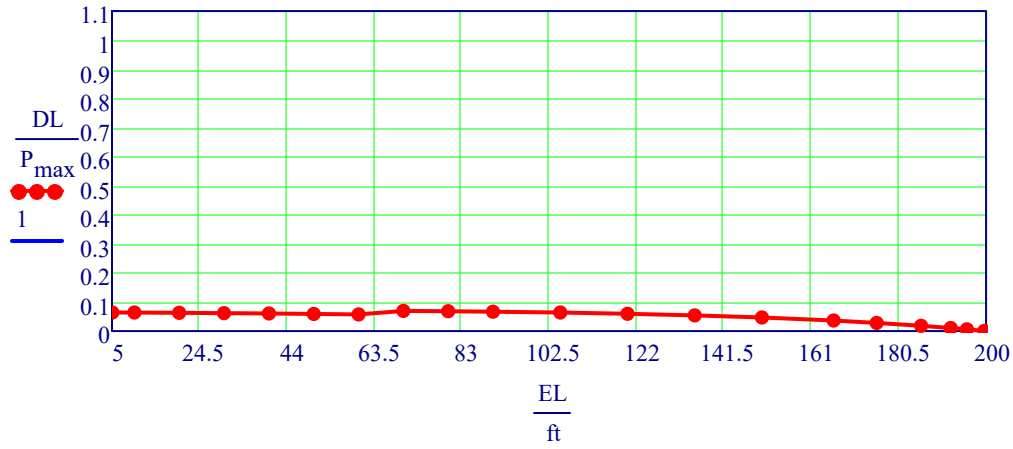
Design Wind Moment

$$M_w := \begin{cases} M_{w_1} \leftarrow 0 \\ \text{for } j \in 2 \dots n_{jts} \\ M_{w_j} \leftarrow (EL_{j-1} - EL_j) \cdot (V_{w_{j-1}} + V_{w_j}) \cdot \frac{1}{2} + M_{w_{j-1}} \\ M_w \end{cases}$$



Check Chimney Masonry without Cellular Loading

$$f_a := \frac{DL}{A} \quad f_b := \frac{M_w}{S}$$



% Compression $\max\left(\frac{f_a}{F_a} + \frac{0.6 \cdot f_b}{F_b}\right) = 70.6\%$

% Tension $\max\left[0.6 \cdot \frac{(f_b - f_a)}{F_{bt}}\right] = 26.1\%$

ASCE Design Wind Force on Cellular Components

A_A - Estimated projected area of cellular components

F_A - Wind Load on cellular components

$$F_A := \overrightarrow{(q(EL) \cdot A_A)} \cdot G_w$$

EL =

	1	
1	199.6	
2	195.7	
3	192.1	
4	185.5	
5	175.6	
6	166	
7	150	
8	135	ft
9	120	
10	105	
11	90	
12	80	
13	70	
14	60	
15	50	
16	...	

$A_A =$

	1	
1	0	
2	0	
3	43.635	
4	43.635	
5	32.302	
6	43.635	
7	0	
8	0	ft ²
9	0	
10	0	
11	0	
12	0	
13	0	
14	0	
15	0	
16	...	

$F_A =$

	1	
1	0	
2	0	
3	1.933	
4	1.914	
5	1.395	
6	1.854	
7	0	
8	0	kip
9	0	
10	0	
11	0	
12	0	
13	0	
14	0	
15	0	
16	...	

Proposed 8'-5" diameter x 10' tall Stack Extension

$$d_x := 8.417 \text{ ft} \quad h_x := 10 \text{ ft}$$

Wind Load on Extension

$$V_x := q(148 \text{ ft}) \cdot C_{f1} \cdot G_w \cdot d_x \cdot h_x = 2.249 \cdot \text{kip}$$

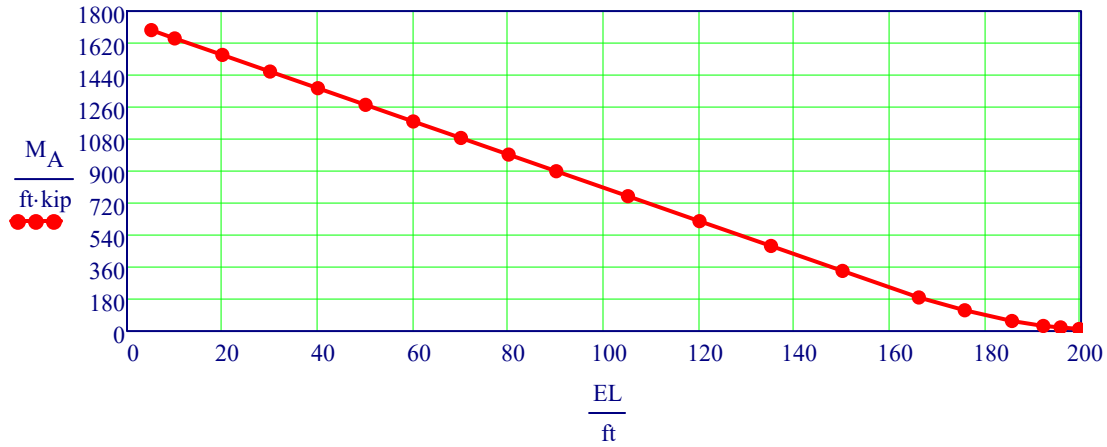
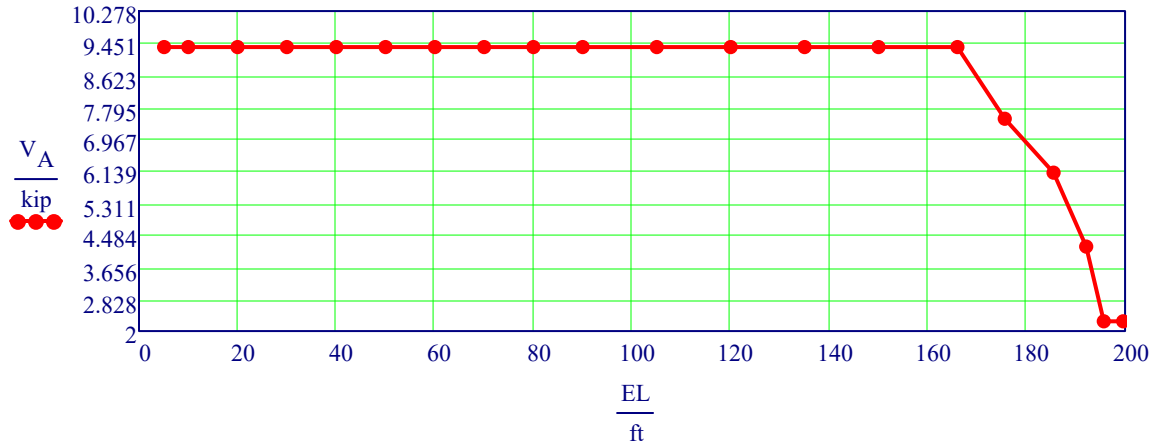
Moment from Extension at Top of Chimney

$$M_x := V_x \cdot 0.5 \cdot h_x = 11.244 \cdot \text{ft} \cdot \text{kip}$$

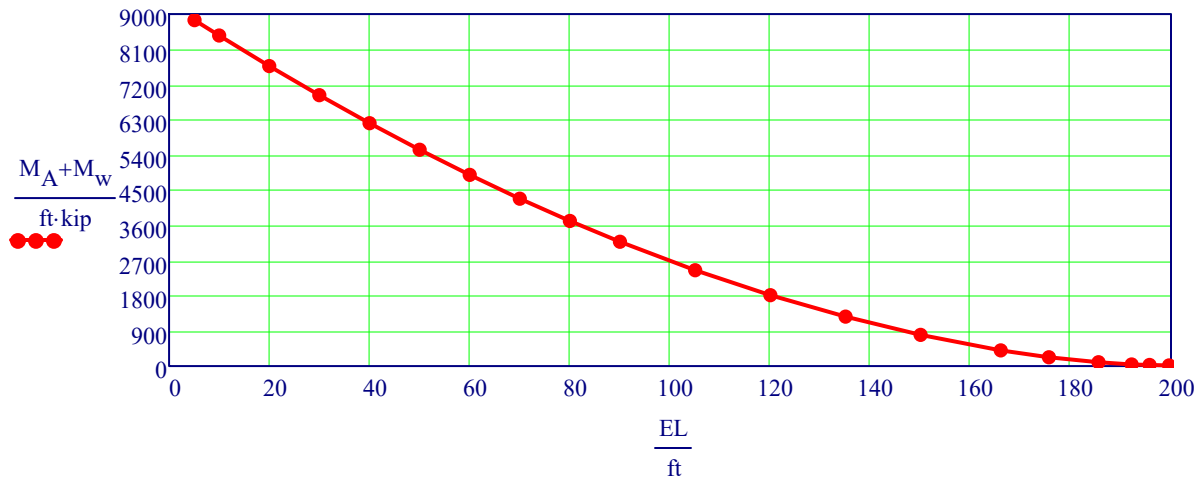
Wind Shear and Moment due to the Antennas & Extension

$$V_A := \begin{cases} V_{A_1} \leftarrow V_x + F_{A_1} \\ \text{for } j \in 2 \dots n_{jts} \\ V_{A_j} \leftarrow (V_{A_{j-1}} + F_{A_j}) \\ V_A \end{cases}$$

$$M_A := \begin{cases} M_{A_1} \leftarrow M_x \\ \text{for } j \in 2 \dots n_{jts} \\ M_{A_j} \leftarrow (EL_{j-1} - EL_j) \cdot V_{A_{j-1}} + M_{A_{j-1}} \\ M_A \end{cases}$$

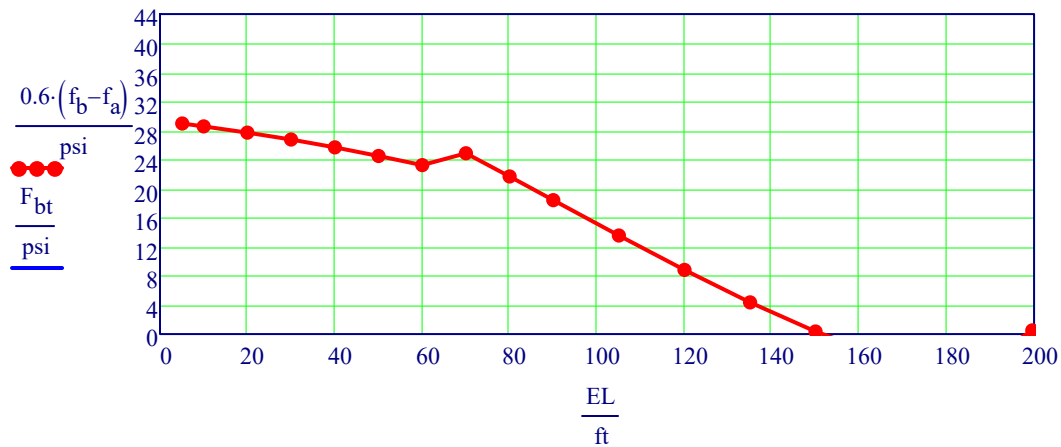
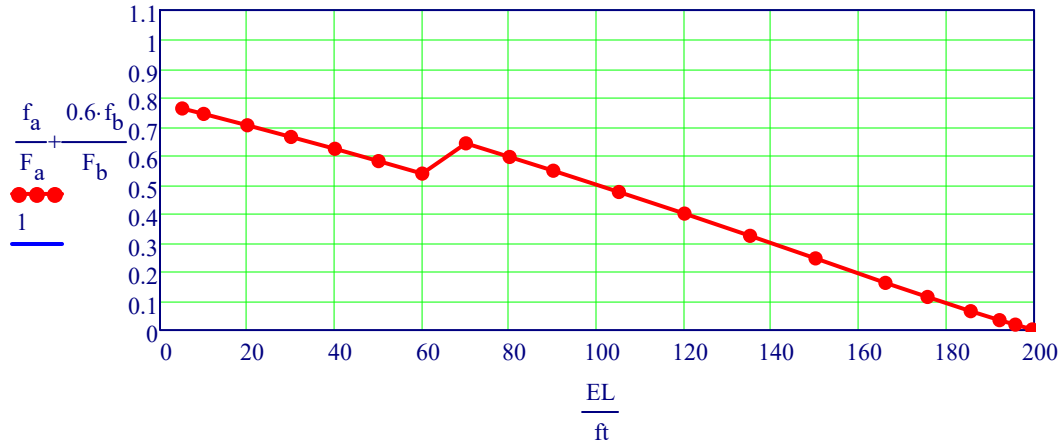


Total Wind Moment on Chimney (including Cellular Loading)



Check Chimney Masonry with Cellular Loading

$$f_b := \frac{M_w + M_A}{S}$$



Worst Case Stress Ratios:

$$\% \text{ Compression } \quad C_{\max} := \max \left[\frac{f_a}{F_a} + \frac{0.6 \cdot f_b}{F_b} \right] = 76.1\%$$

$$\% \text{ Tension } \quad T_{\max} := \max \left[\frac{0.6 \cdot (f_b - f_a)}{F_{bt}} \right] = 72.3\%$$

$$\text{Check}(\max(C_{\max}, T_{\max})) = \text{"OK"}$$

Note that the weight of the cellular components is considered to be negligible by comparison the weight of the chimney itself. Consequently, the additional seismic demand on the chimney due to the cellular components is also considered to be negligible.

PROJECT INFORMATION

SCOPE OF WORK: **ITEMS TO BE MOUNTED ON THE EXISTING SMOKE STACK:**

- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3) (STACKED).
- NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRU'S: RRUS-2012 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRU'S: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: RRUS-32 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 3).
- EXISTING AT&T RRU'S: 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T (3) Y-CABLES.
- INSTALL (3) 6 AWG DC TRUNKS AND (3) 24 PAIR FIBER.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- INSTALL (1) OUTDOOR DC12-48-60-0-25E MOUNTED ON EXISTING RAILING
- INSTALL (1) 6648 WITH XCEDE CABLE.
- FINAL CONFIG: 5216-XMU/6630-IDLE/6648 WITH XCEDE CABLE
- INSTALL (4) -48V RECTIFIERS IN EXISTING POWER PLANT
- INSTALL (1) NEW BATTERY CABINET WITH (2) STRINGS OF 170AH BATTERIES

ITEMS TO BE REMOVED:

- EXISTING AT&T ANTENNAS: 80010121 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXERS: DBCT108F1V9202 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T (6) 1-5/8 COAX CABLES.
- EXISTING (3) 18 PAIR FIBER.

ITEMS TO REMAIN:

- (6) ANTENNAS, (12) RRU'S, (6) DC POWER.

SITE ADDRESS: 63 ELM STREET
MANCHESTER, CT 06040

LATITUDE: 41.770556° N, 41° 46' 14" N

LONGITUDE: 72.527333° W, 72° 31' 38.4" W

TYPE OF SITE: SMOKE STACK / INDOOR EQUIPMENT

STRUCTURE HEIGHT: 200'-0"±

RAD CENTER: 175'-0"± (POS. 1 & 4) & 165'-0" (POS. 2 & 3)

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLANS	B
A-2	EXISTING ANTENNA PLAN	B
A-3	PROPOSED ANTENNA PLAN	B
A-4	ELEVATION	B
A-5	DETAILS	B
A-6	DETAILS	B
SN-1	STRUCTURAL NOTES	B
G-1	GROUNDING DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B



SITE NUMBER: CTL05322

SITE NAME: MANCHESTER SOUTH CENTRAL

FA CODE: 10071101

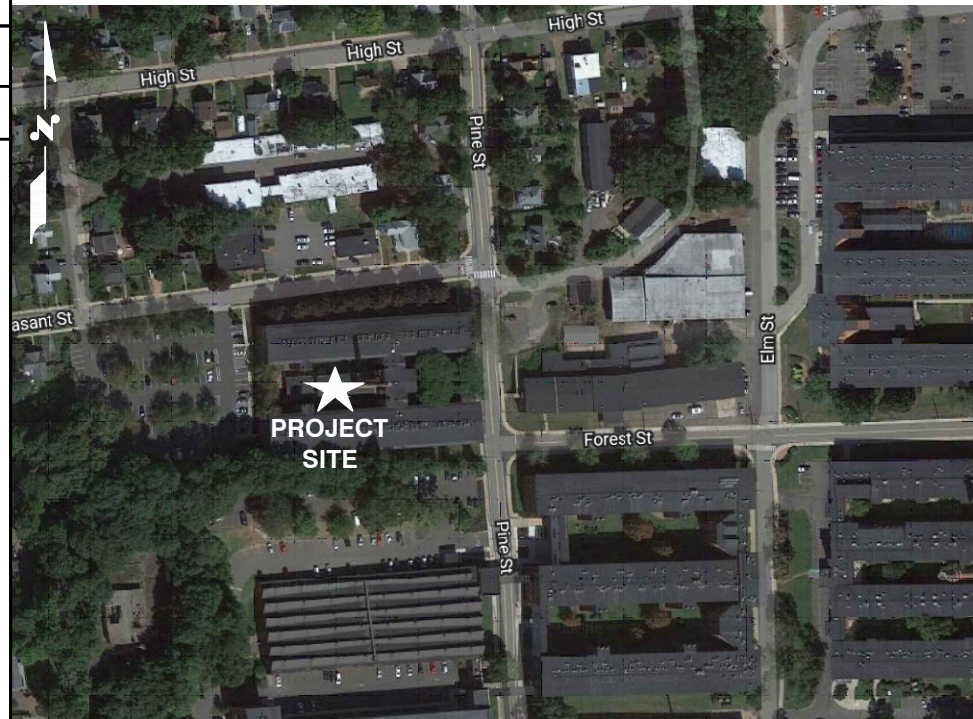
PACE ID: MRCTB062617,MRCTB054200,MRCTB057628,MRCTB057633,MRCTB052258,MRCTB051209,MRCTB051116,MRCTB050992

PROJECT: 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. MERGE ONTO CT-15 N VIA EXIT 29 TOWARD BOSTON/E HARTFORD/I-84 E. CT-15 N BECOMES I-84 E/US-6 E. MERGE ONTO I-384 E VIA EXIT 59 TOWARD PROVIDENCE. TAKE EXIT 2 TOWARD KEENEY STREET. TURN LEFT ONTO WETHERELL ST. TAKE THE 1ST LEFT ONTO KEENEY ST. TURN RIGHT ONTO HARTFORD RD. OXFORD LIQUORS IS ON THE CORNER TURN LEFT ONTO ELM ST. ELM ST IS JUST PAST PINE ST. 63 ELM ST, MANCHESTER, CT 06040 IS ON THE RIGHT.



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS



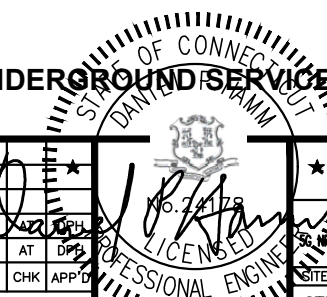
CALL BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT



750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

B 10/27/22 ISSUED FOR PERMITTING		MR AT DPE		AT&T	
A 03/31/22 ISSUED FOR REVIEW		MR AT DPE		TITLE SHEET	
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT		DRAWN BY: MR	
SITE NUMBER		DRAWING NUMBER		REV	
CTL05322		T-1		B	

ISSUED FOR PERMITTING

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – CENTERLINE
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL 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 CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. **APPLICABLE BUILDING CODES:**
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

**BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)**

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

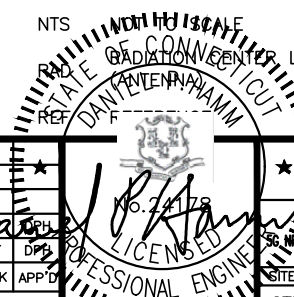
AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

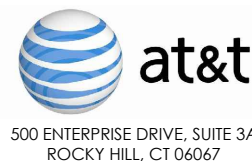
FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	CL	CENTER LINE	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING				



**SITE NUMBER: CTL05322
 SITE NAME: MANCHESTER SOUTH CENTRAL**

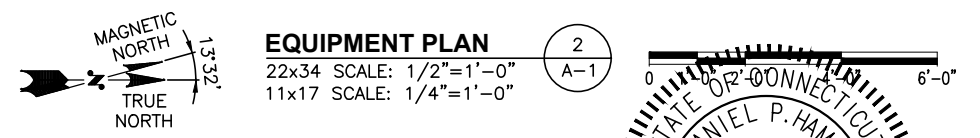
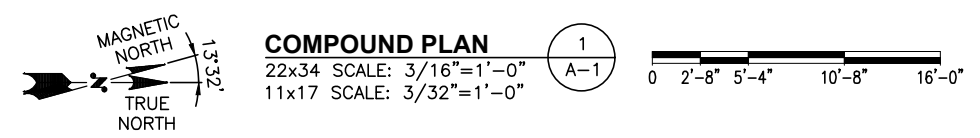
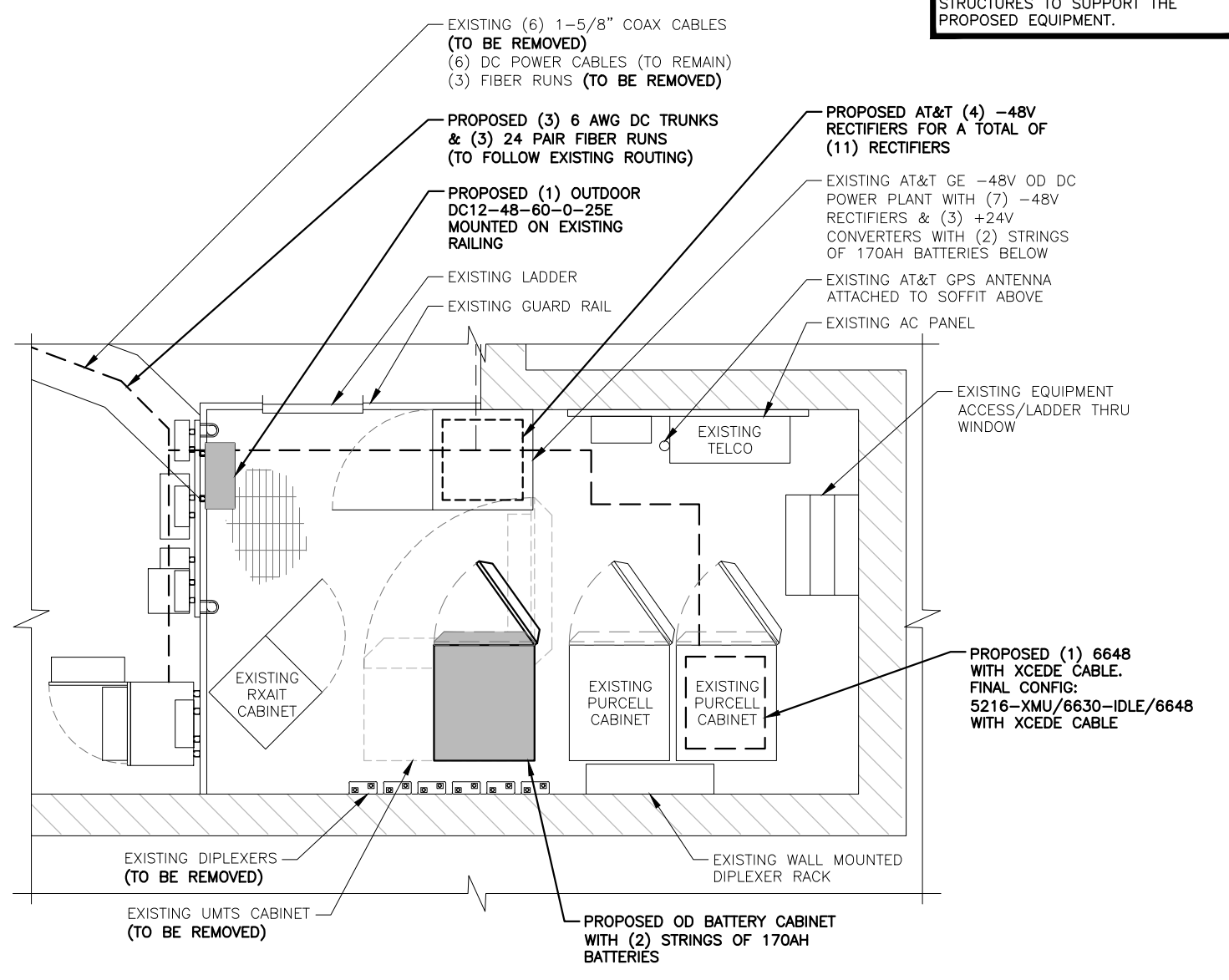
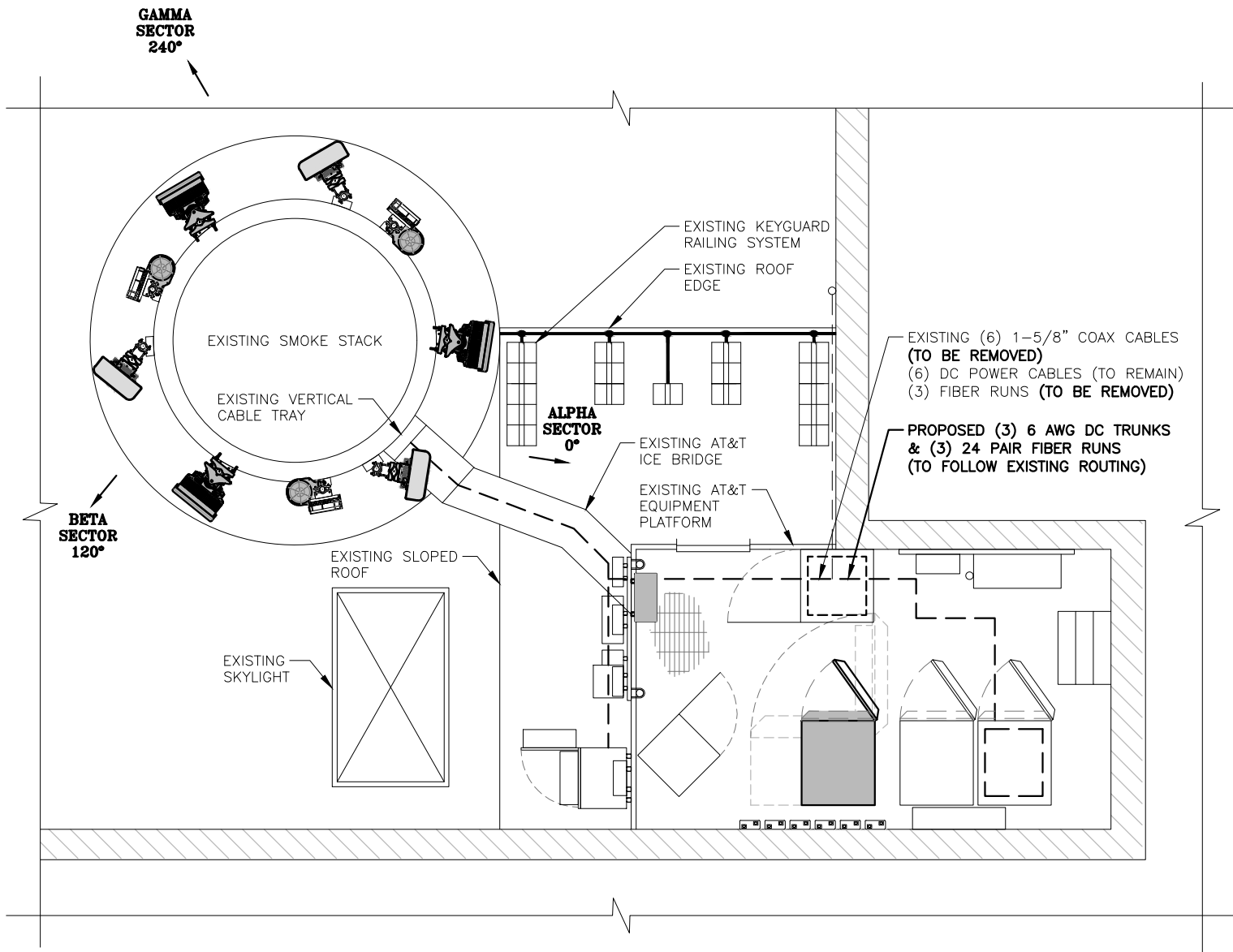
 63 ELM STREET
 MANCHESTER, CT 06040
 HARTFORD COUNTY



B 10/27/22 ISSUED FOR PERMITTING		MR	AT	DPS	AT&T
A 03/31/22 ISSUED FOR REVIEW		BY	CHK	APP'D	
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: MR		
				GENERAL NOTES	
				56 NR 1SR CBAND, 56 NR RADIO, ANTENNA MODIFICATIONS, 4TRX SOFTWARE RETROFIT, 4TRX ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE	
SITE NUMBER		DRAWING NUMBER		REV	
CTL05322		GN-1		B	

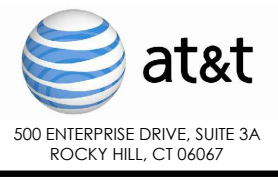
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



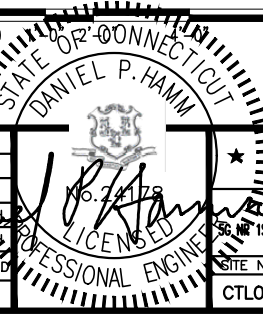
SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPB
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPB

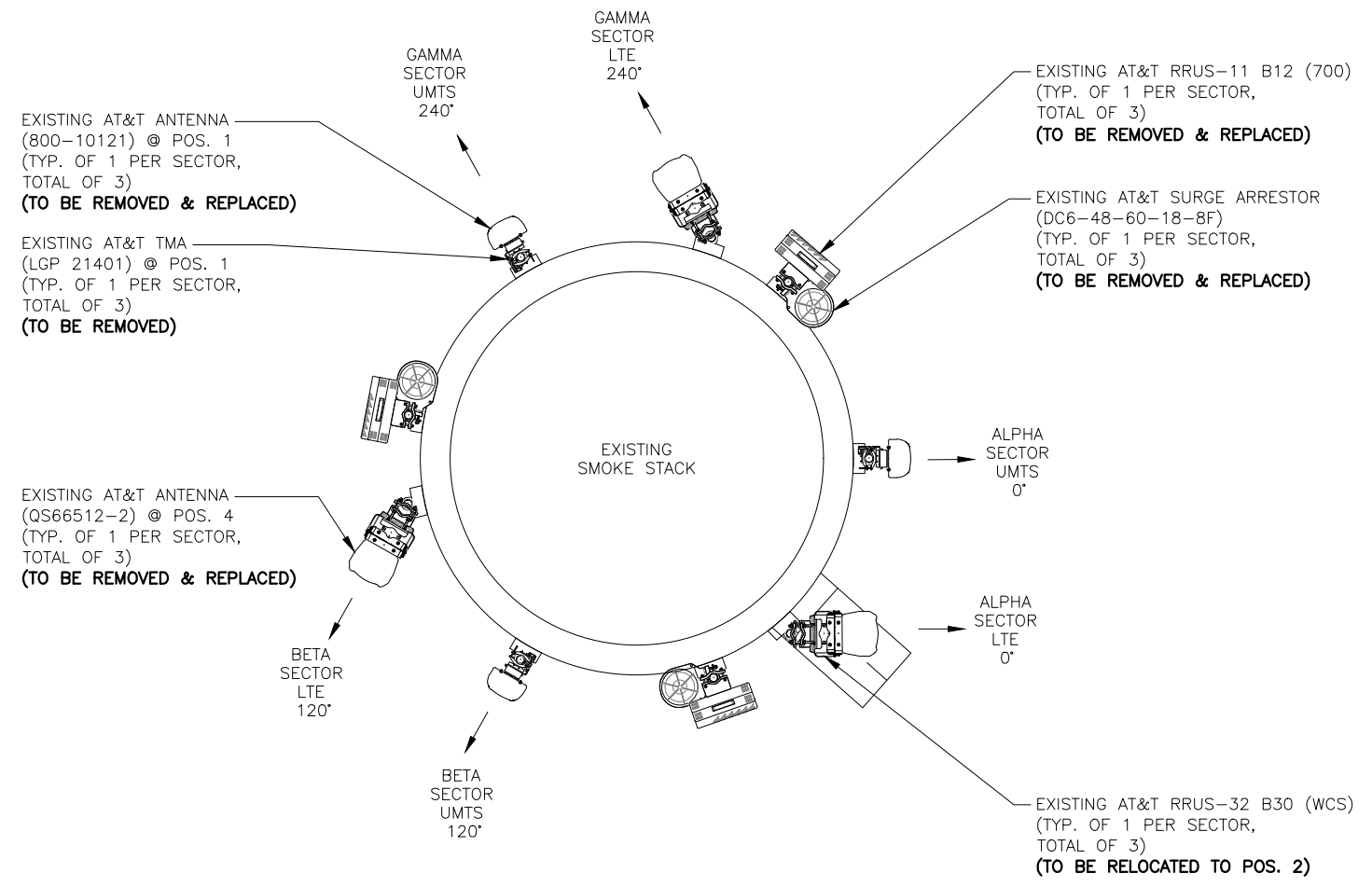
SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: MR



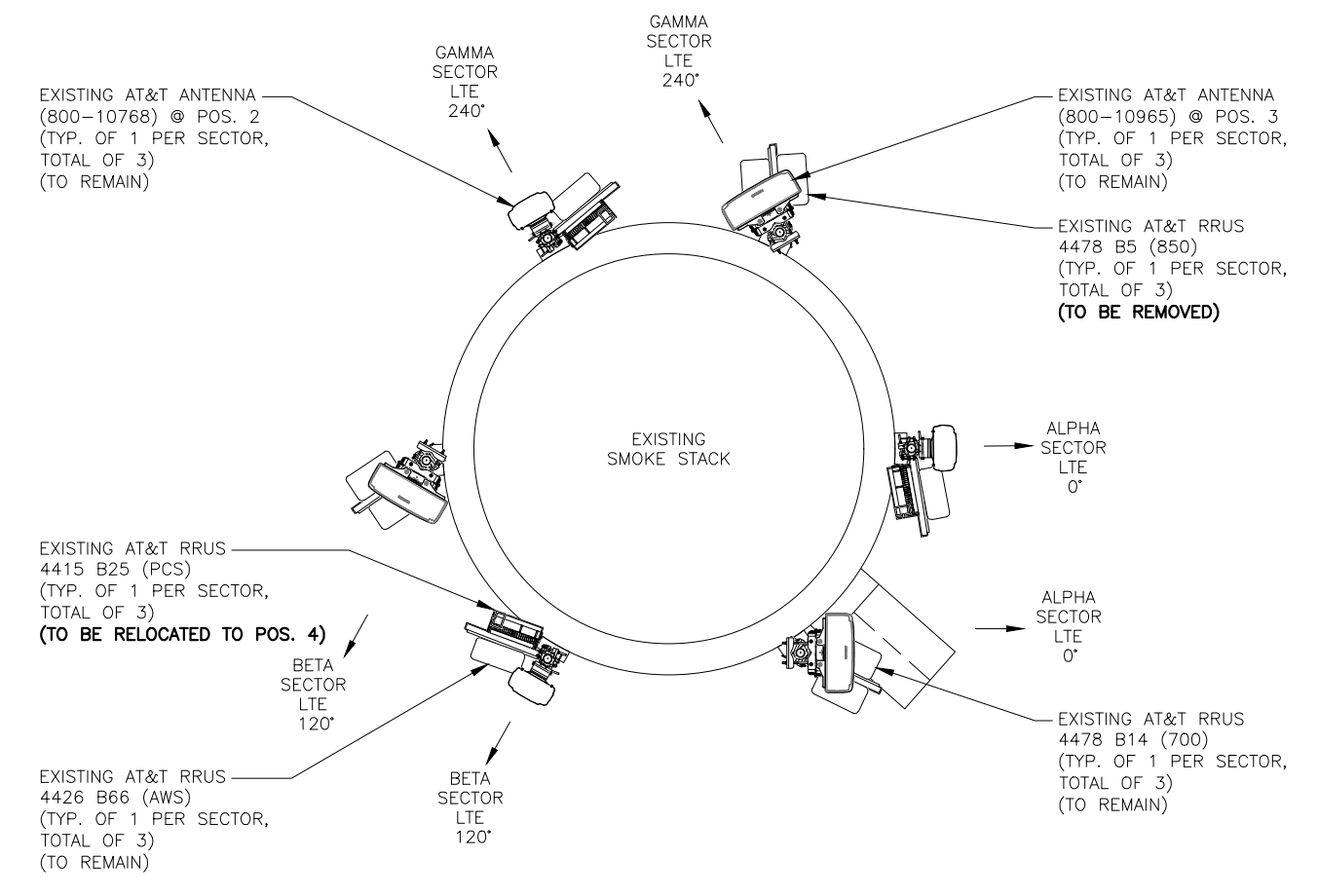
AT&T	
COMPOUND & EQUIPMENT PLANS	
<small>5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TNRX SOFTWARE RETROFIT, 4TNR ANTENNA RETROFIT, 88U RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE</small>	
SITE NUMBER	DRAWING NUMBER
CTL05322	A-1
REV	
B	

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



EXISTING ANTENNA PLAN
(@ RAD = 175'-0"±)
SCALE: N.T.S.

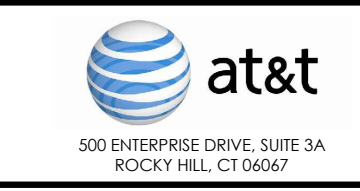


EXISTING ANTENNA PLAN
(@ RAD = 165'-0"±)
SCALE: N.T.S.

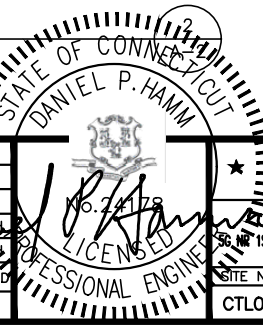


SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



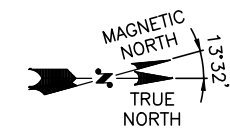
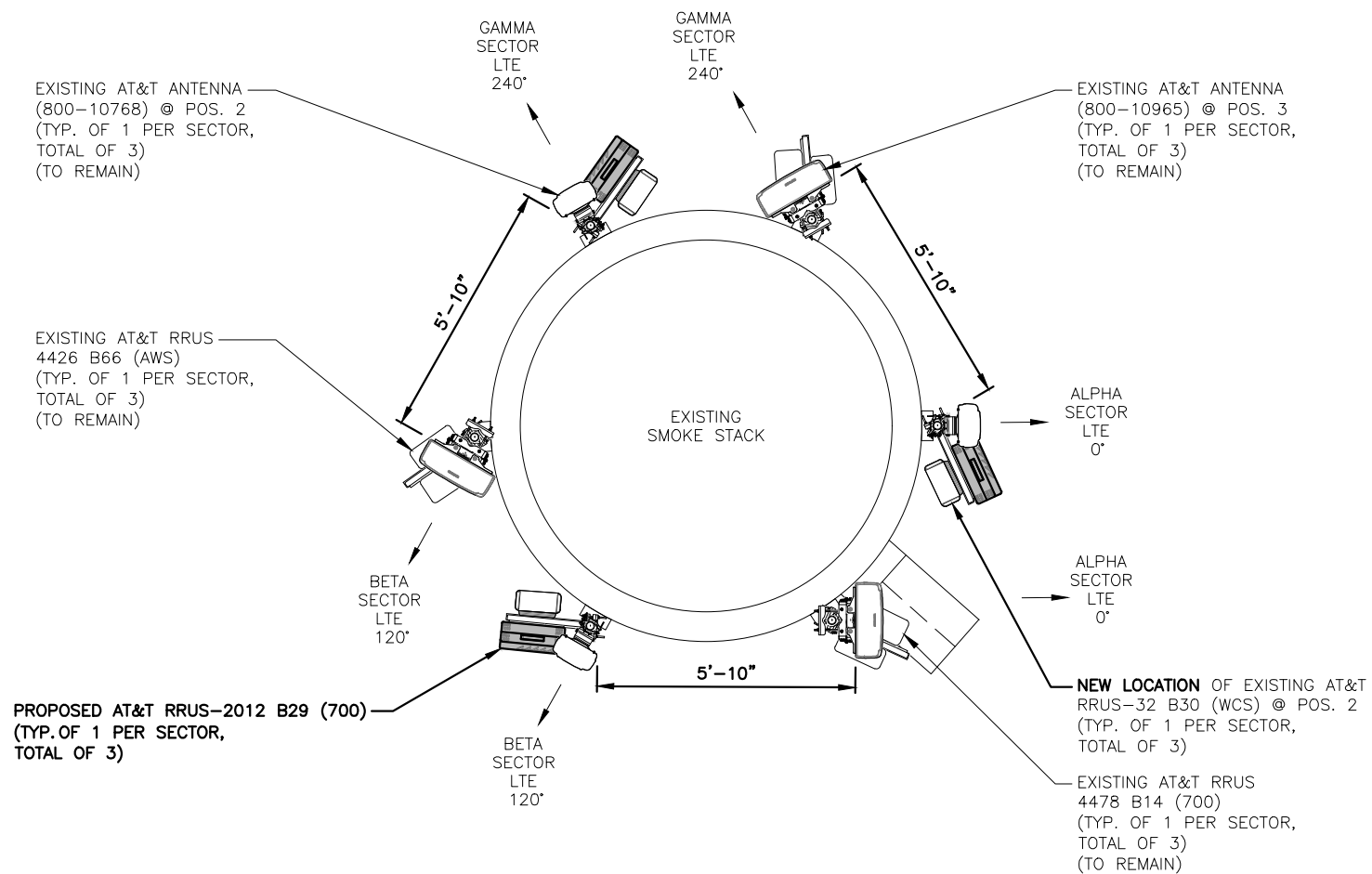
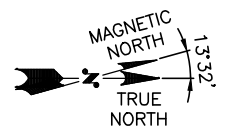
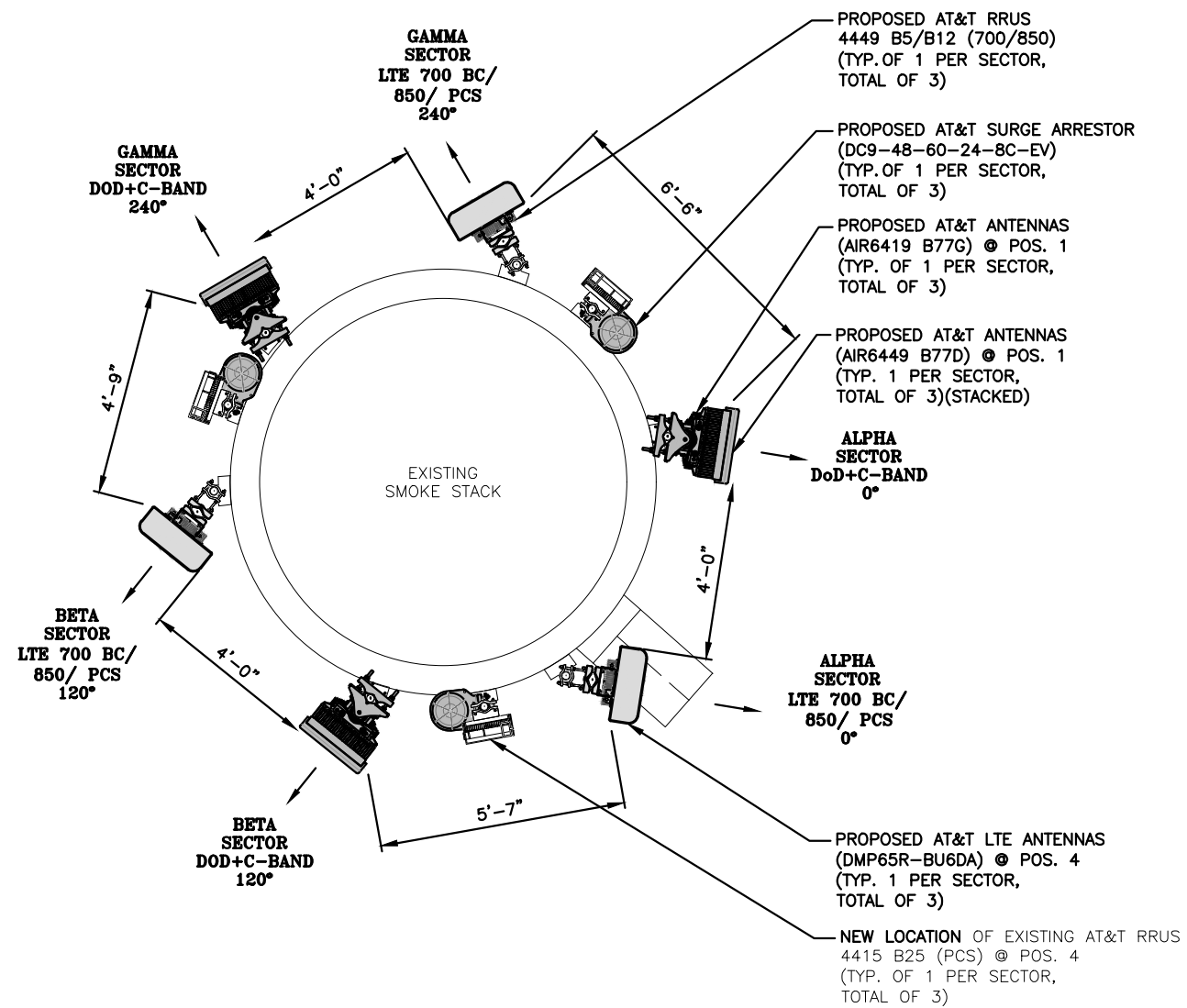
NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPB
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPB



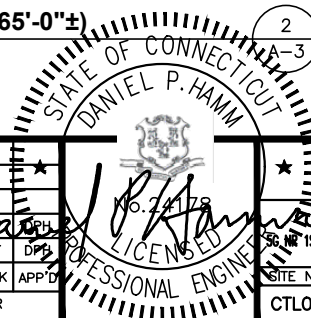
AT&T		
EXISTING ANTENNA PLAN		
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TRX SOFTWARE RETROFIT, 4TRX ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL05322	A-2	B

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED ANTENNA PLAN (@ RAD = 165°-0"±)
SCALE: N.T.S.



SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPB
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPB

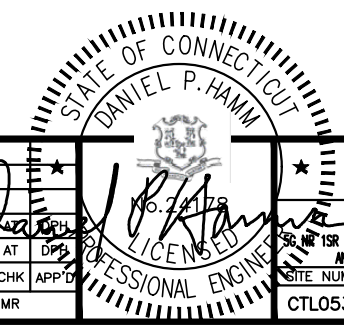
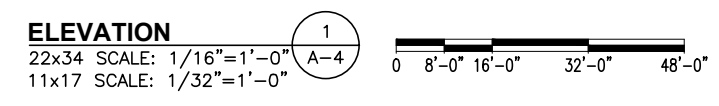
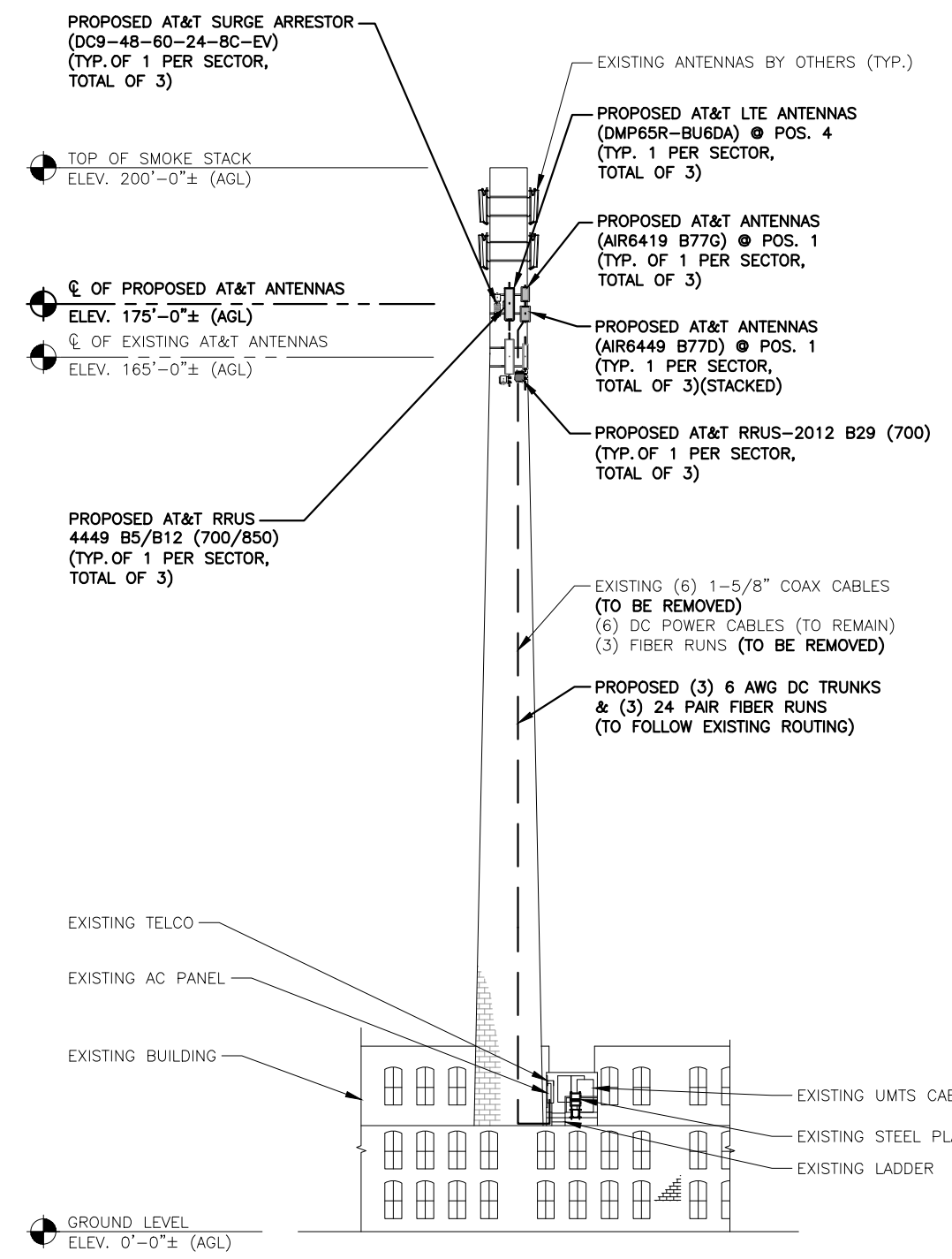
SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: MR

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	A-3	B

AT&T
PROPOSED ANTENNA PLAN
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, 88U RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
 MANCHESTER, CT 06040
 HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPP
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPP

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: MR

AT&T	
ELEVATION	
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE	
SITE NUMBER	DRAWING NUMBER
CTL05322	A-4
REV	B

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ϕ HEIGHT	AZIMUTH	TMA/ COMBINER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	DOD+C-BAND	AIR 6419 B77G AIR 6449 B77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	175'-0"±	0°	-	-	-	-	(P) (1) RAYCAP DC9-48-60-24-8C-EV
A2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	0°	-	(P)(1) RRUS-2012 B29 (700) (E)(1) RRUS-32 B30 (WCS)	20.4"x18.5"x7.5"	(E)(1) 8 AWG DC CABLE	
A3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	0°	-	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	-	(E)(1) 8 AWG DC CABLE	
A4	PROPOSED	LTE 700 BC/850/PCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	175'-0"±	0°	-	(P)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B25 (PCS)	17.9"x13.2"x10.4"	(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE	
B1	PROPOSED	DOD+C-BAND	AIR 6419 B77G AIR 6449 B77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	175'-0"±	120°	-	-	-	-	(P) (1) RAYCAP DC9-48-60-24-8C-EV
B2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	120°	-	(P)(1) RRUS-2012 B29 (700) (E)(1) RRUS-32 B30 (WCS)	20.4"x18.5"x7.5"	(E)(1) 8 AWG DC CABLE	
B3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	120°	-	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	-	(E)(1) 8 AWG DC CABLE	
B4	PROPOSED	LTE 700 BC/850/PCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	175'-0"±	120°	-	(P)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B25 (PCS)	17.9"x13.2"x10.4"	(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE	
C1	PROPOSED	DOD+C-BAND	AIR 6419 B77G AIR 6449 B77D	31.1"X16.1X7.3" 30.4"X15.9"X8.1"	175'-0"±	240°	-	-	-	-	(P) (1) RAYCAP DC9-48-60-24-8C-EV
C2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	240°	-	(P)(1) RRUS-2012 B29 (700) (E)(1) RRUS-32 B30 (WCS)	20.4"x18.5"x7.5"	(E)(1) 8 AWG DC CABLE	
C3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	240°	-	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	-	(E)(1) 8 AWG DC CABLE	
C4	PROPOSED	LTE 700 BC/850/PCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	175'-0"±	240°	-	(P)(1) 4449 B5/B12 (850/700) (E)(1) 4415 B25 (PCS)	17.9"x13.2"x10.4"	(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE	

NOTE:
REFER TO THE FINAL RF DATA SHEET
FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS
BY: HUDSON DESIGN GROUP, LLC,
DATED:
FOR THE CAPACITY OF THE EXISTING
STRUCTURES TO SUPPORT THE
PROPOSED EQUIPMENT.

QUANTITY	MODEL	SIZE (L x W x D)
P(3)	RRUS-2012 B29 (700)	20.4"x18.5"x7.5"
P(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
E(3)	RRUS-32 B30(WCS)	27.2"x12.1"x7.0"
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4426 B66 (AWS)	14.9"x13.2"x5.8"
E(3)	4415 B25 (PCS)	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

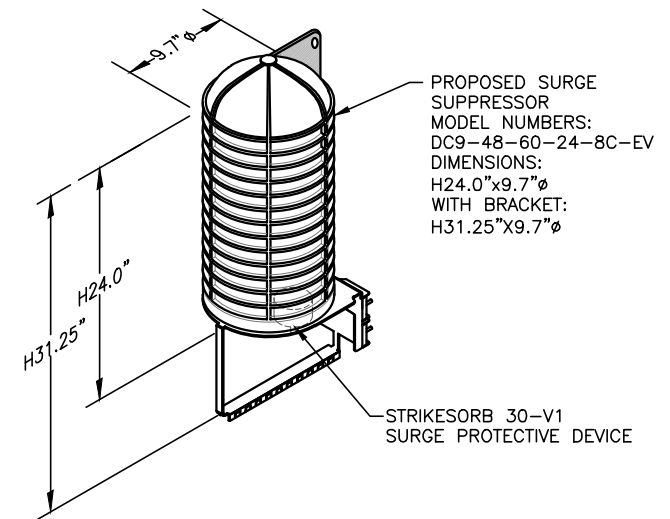
FINAL ANTENNA CONFIGURATION
SCALE: N.T.S.

NOTE:
SEE RFDS FOR RRU
FREQUENCY AND
MODEL NUMBER

PROPOSED RRU REFER TO THE
FINAL RFDS AND CHART FOR
QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S
SPECIFICATIONS.

PROPOSED RRUS DETAIL
SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL
SCALE: N.T.S.



SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPB
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPB

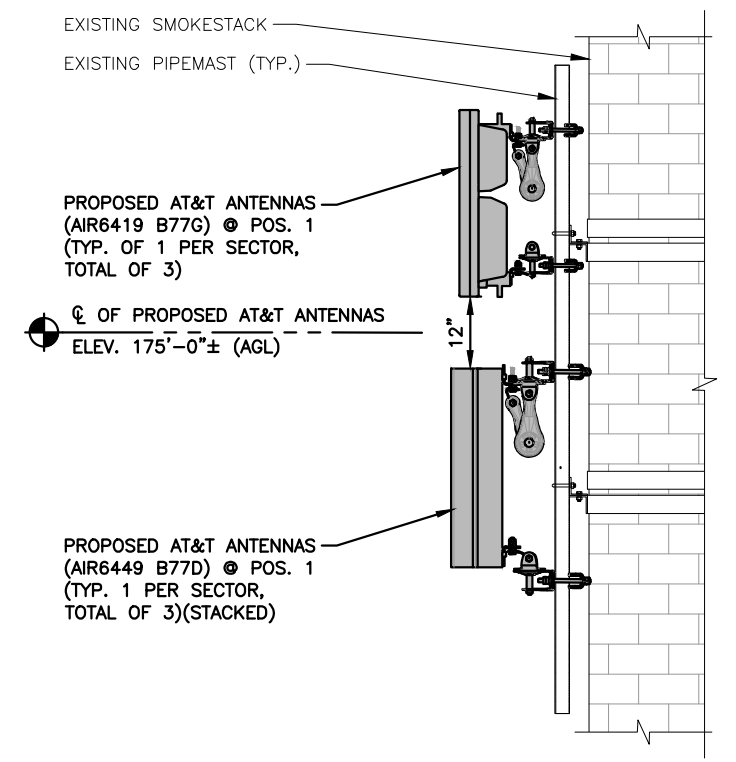
SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: MR



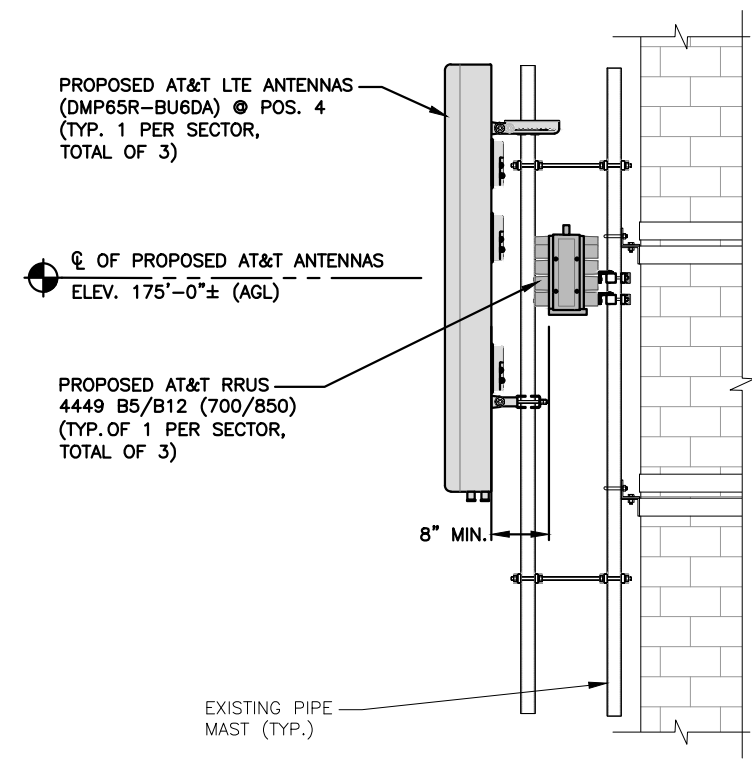
AT&T	
DETAILS	
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TRX SOFTWARE RETROFIT, 4TRX ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE	
SITE NUMBER	DRAWING NUMBER
CTL05322	A-5
REV	B

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

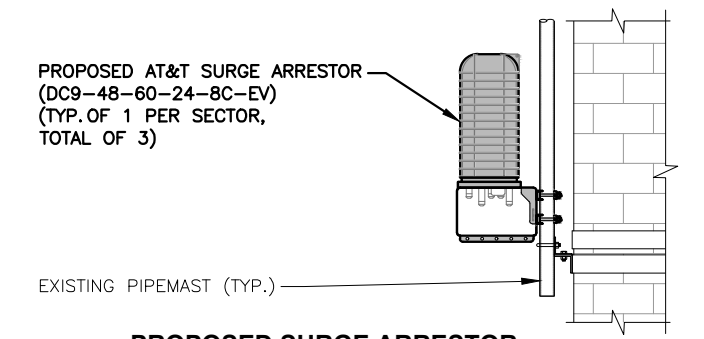
NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



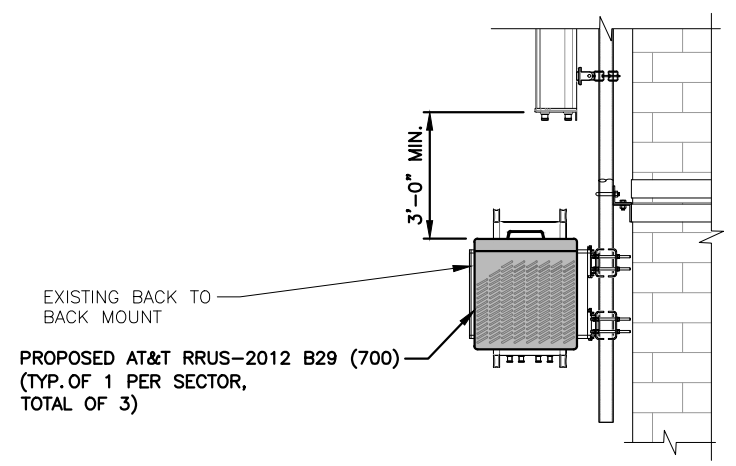
PROPOSED DoD + C-Band ANTENNA MOUNTING DETAIL
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0" 1 A-6



PROPOSED ANTENNA MOUNTING DETAIL
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0" 2 A-6



PROPOSED SURGE ARRESTOR MOUNTING DETAIL
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0" 3 A-6



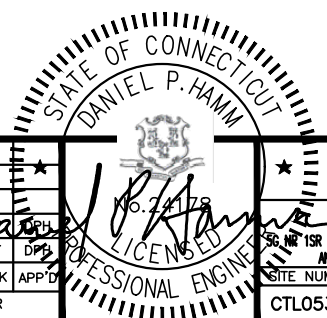
PROPOSED RRUS MOUNTING DETAIL
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0" 4 A-6



SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL
63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPB
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPB



AT&T	
DETAILS	
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE	
SITE NUMBER	DRAWING NUMBER
CTL05322	A-6
REV	B

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

NOTES:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
N/A	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS ³

ADDITIONAL TESTING AND INSPECTIONS:

DURING CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	STEEL INSPECTIONS
REQUIRED	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT

ADDITIONAL TESTING AND INSPECTIONS:

AFTER CONSTRUCTION

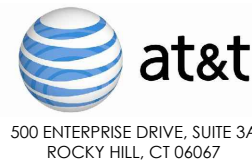
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS

ADDITIONAL TESTING AND INSPECTIONS:

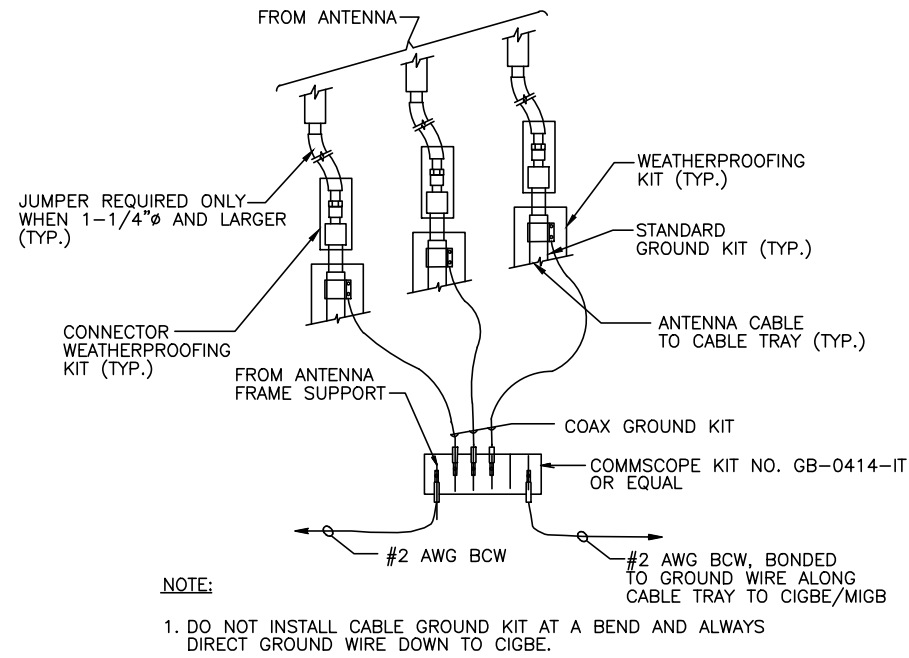


SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

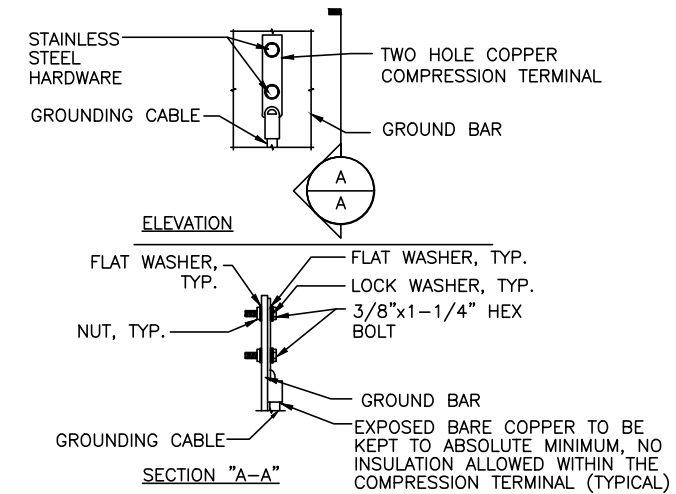
63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



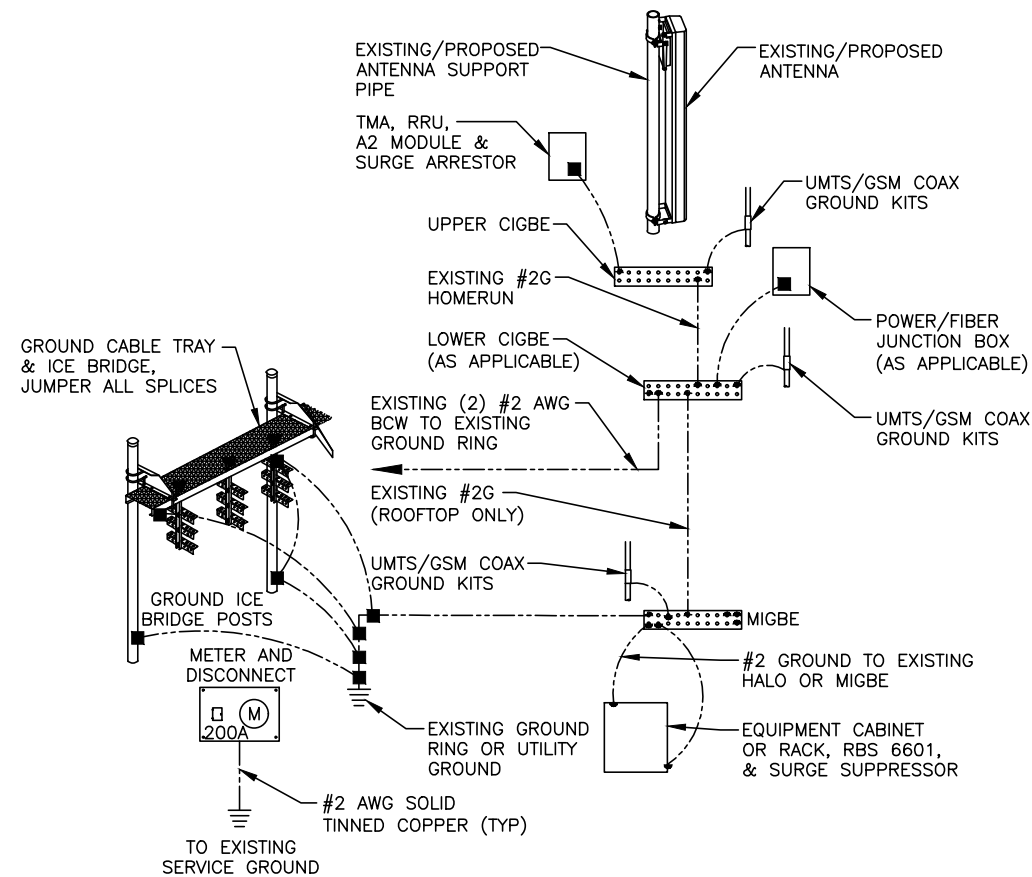
		AT&T	
B 10/27/22 ISSUED FOR PERMITTING A 03/31/22 ISSUED FOR REVIEW		STRUCTURAL NOTES 5G NR 15R CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, 88U RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE	
NO.	DATE	REVISIONS	BY
SCALE:	DESIGNED BY:	AT	DRAWN BY:
AS SHOWN	MR	CHK	MR
SITE NUMBER: CTL05322		DRAWING NUMBER: SN-1	
		REV: B	



GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



TYPICAL GROUND BAR CONNECTION DETAIL 3
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. G-1

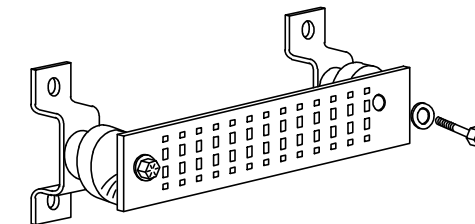
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

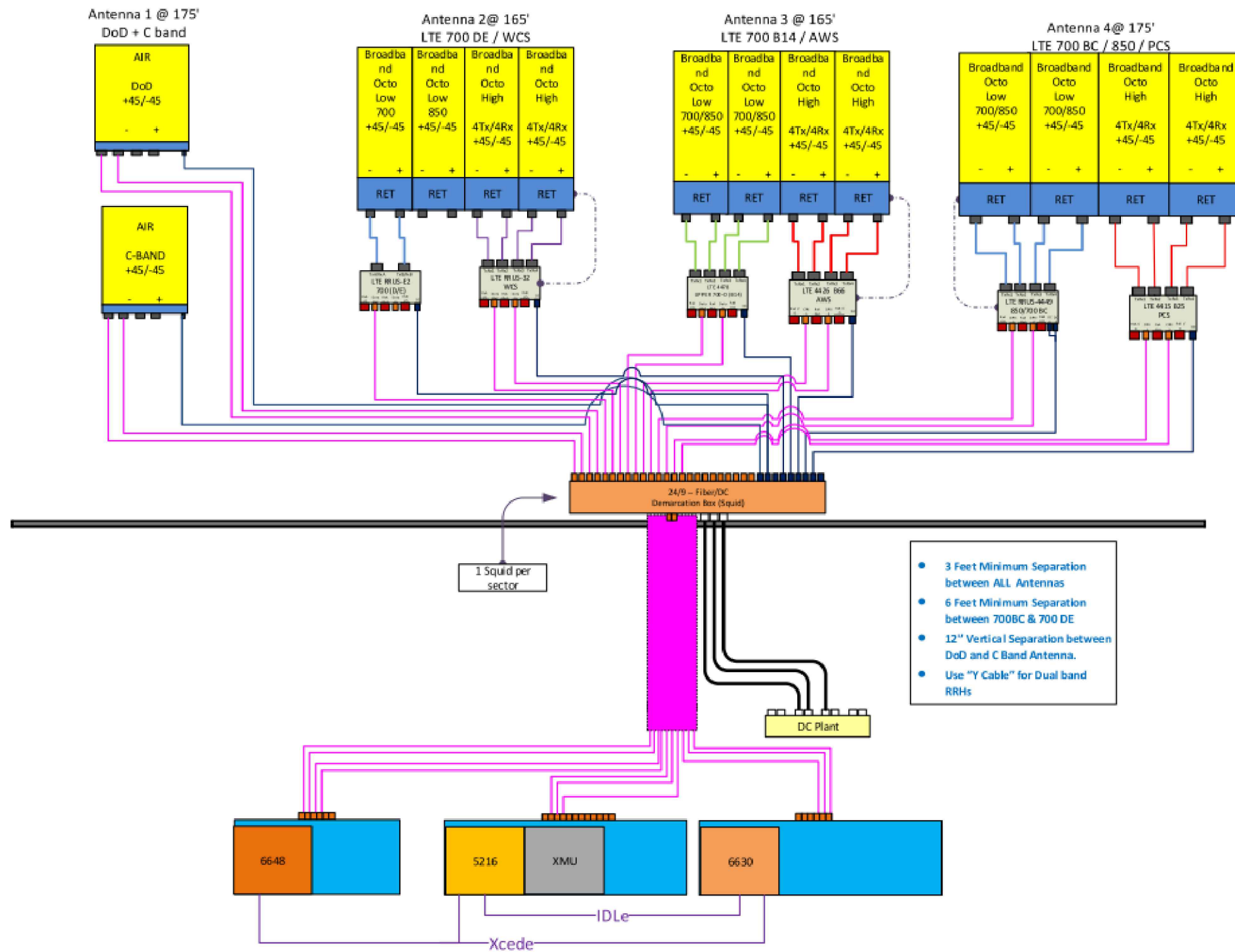
- CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
- +24V POWER SUPPLY RETURN BAR (#2 AWG)
- 48V POWER SUPPLY RETURN BAR (#2 AWG)
- RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)
SCALE: N.T.S.



- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

RF PLUMBING DIAGRAM 1
SCALE: N.T.S. RF-1

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY



B	10/27/22	ISSUED FOR PERMITTING	KW	AT	DPH
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: MR		

AT&T		
RF PLUMBING DIAGRAM		
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TRX SOFTWARE RETROFIT, 4TRX ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL05322	RF-1	B