EMPIRE telecom

July 14, 2016

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

Regarding:	Notice of Exempt Modification – Swap of 3 Antennas and addition of radios and associated lines
Property Address:	10 Willard Road, Norwalk, CT (the "Property")
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 350 foot Lattice tower ("tower") at the above-referenced address, latitude 41.12827, longitude -73.3901661. AT&T's facility consists of nine (9) wireless telecommunications antennas at 347 feet. The tower is controlled and owned by Frontier Communications. Assessor's information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas and adding (3) remote radios and associated lines. The centerline height of said antennas is and will remain at 347 feet.

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 the Mayor of the City of Norwalk, The Building Director of the City of Norwalk and the Planning and Zoning Director of the City of Norwalk. A copy of this letter is also being sent to Frontier Communications, the owner of the structure that AT&T is located.

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).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's antennas and associated lines will be installed at 347 foot level of the 350 foot Lattice tower.
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 decibel or more, or to levels that exceed state and local criteria.

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@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 the Federal Communications Commission (FCC) safety standard. An RF emissions calculation is attached.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Malouf Engineering Intl., Inc. dated July 1, 2016).

For the foregoing reasons AT&T respectfully requests that the proposed swap of 3 antennas and addition of 3 radios and associated lines be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Harry Rilling, Mayor, City of Norwalk
William Ireland, Chief Building Official, City of Norwalk
Michael E. Wrinn, Director of Planning and Zoning, City of Norwalk
Frontier Communications, c/o Elissa McOmber

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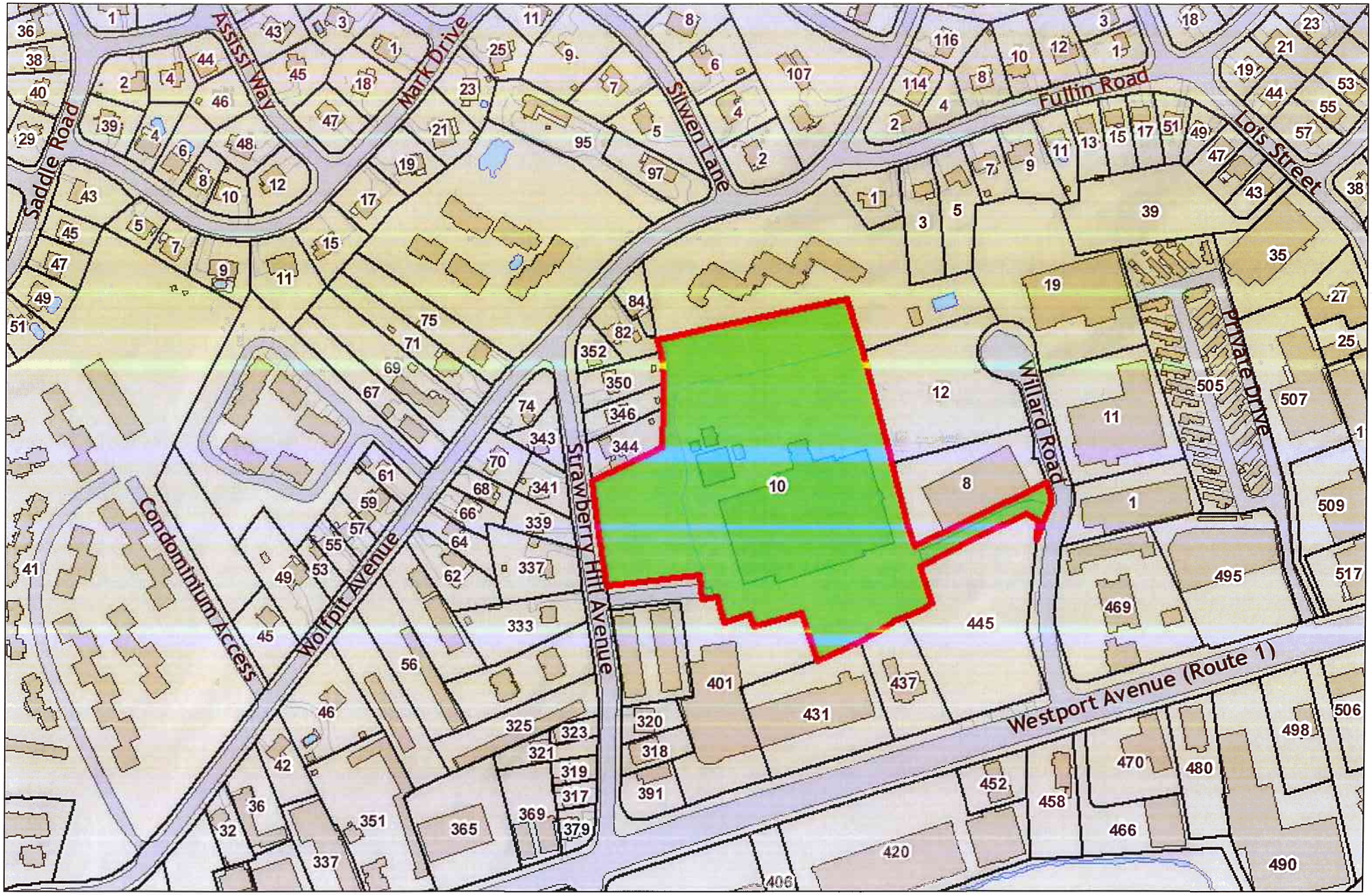


N
W E
S

Norwalk, CT

Feet
0 250 500 1,000

1 inch = 362 feet

SEAL OF THE CITY OF NORWALK
E PLURIBUS UNUM
INCORPORATED 1913

10 WILLARD RD

Location	10 WILLARD RD	**Mblu**	5/ 17/ 2/ 0/
Acct#	11273	**Owner**	SOUTHERN NEW ENG TEL CO
Assessment	$3,967,780	**Appraisal**	$5,668,250
PID	11273	**Building Count**	3

Assessing Distr...

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$1,175,000	$4,493,250	$5,668,250
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$822,500	$3,145,280	$3,967,780

Owner of Record

Owner SOUTHERN NEW ENG TEL CO
Co-Owner PROPERTY TAX ADMIN
Address ONE SBC CENTER RM 36-M-01
ST LOUIS, MO 63101

Sale Price $0
Certificate
Book & Page 401/370
Sale Date 03/10/1954

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SOUTHERN NEW ENG TEL CO	$0		401/370	03/10/1954

Building Information

Building 1 : Section 1

Year Built: 1956
Living Area: 46,692
Replacement Cost: $2,157,385
Building Percent Good: 43
Replacement Cost Less Depreciation: $927,680

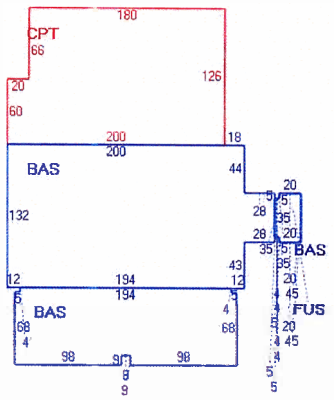
Building Photo

Building Attributes	
Field	**Description**
STYLE	Warehouse

MODEL	Industrial
Stories:	1.00
Occupancy	2.00
Exterior Wall 1	Brick Veneer
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rolled Compos
Interior Wall 1	Drywall
Interior Wall 2	Minimum
Interior Floor 1	Concrete
Interior Floor 2	Vinyl
Heating Fuel	Oil
Heating Type	Forced Air
AC Percent	35
Heat Percent	100
Bldg Use	Utility
Total Rooms	0
Bedrooms	0
FBM Area	
Heat/AC	Heat/AC Split
Frame	Steel
Plumbing	Average
Foundation	Slab
Partitions	Average
Wall Height	12.00
% Sprinkler	65.00

(http://images.vgsi.com/photos/NorwalkCTPhotos//00\00\31/78.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	45,652	45,652
FUS	Finished Upper Story	1,040	1,040
CPT	Carport	23,880	0
		70,572	46,692

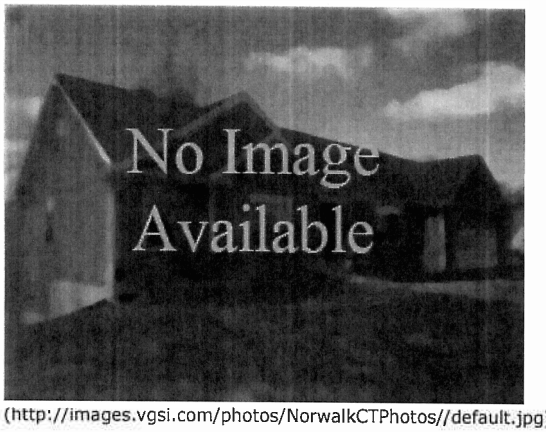
Building 2 : Section 1

Year Built: 1972
Living Area: 988
Replacement Cost: $91,686
Building Percent Good: 47
Replacement Cost Less Depreciation: $43,090

Building Attributes : Bldg 2 of 3	
Field	**Description**
STYLE	Commercial

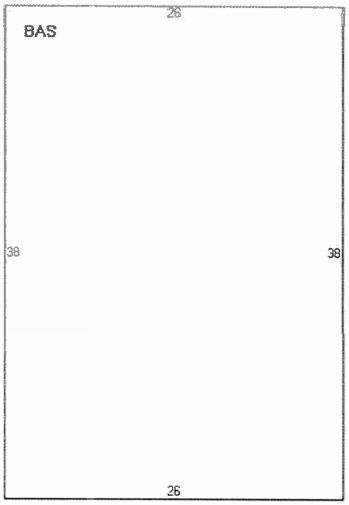
Building Photo

MODEL	Industrial
Stories:	1.00
Occupancy	1.00
Exterior Wall 1	Concrete
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar and Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Vinyl
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Percent	100
Heat Percent	100
Bldg Use	Utility
Total Rooms	0
Bedrooms	0
FBM Area	
Heat/AC	None
Frame	Typical
Plumbing	Average
Foundation	Slab
Partitions	Light
Wall Height	12.00
% Sprinkler	0.00



(http://images.vgsi.com/photos/NorwalkCTPhotos//default.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	988	988
		988	988

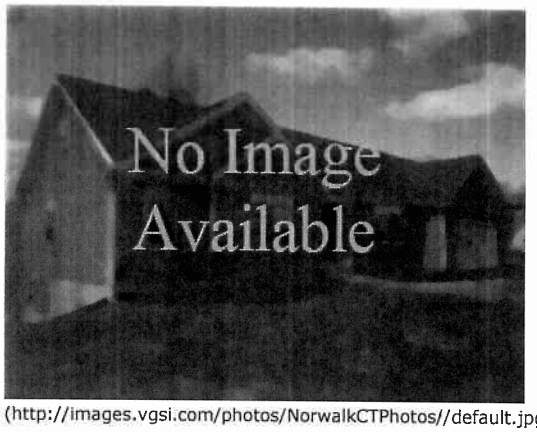
Building 3 : Section 1

Year Built: 1988
Living Area: 560
Replacement Cost: $36,019
Building Percent Good: 55
Replacement Cost Less Depreciation: $19,810

Building Photo

Building Attributes : Bldg 3 of 3	
Field	**Description**
STYLE	Telephone Bldg
MODEL	Industrial
Stories:	1.00
Occupancy	1.00

Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rolled Compos
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Vinyl
Interior Floor 2	
Heating Fuel	None
Heating Type	None
AC Percent	100
Heat Percent	100
Bldg Use	Utility
Total Rooms	0
Bedrooms	0
FBM Area	
Heat/AC	None
Frame	Typical
Plumbing	Average
Foundation	Slab
Partitions	Average
Wall Height	
% Sprinkler	0.00



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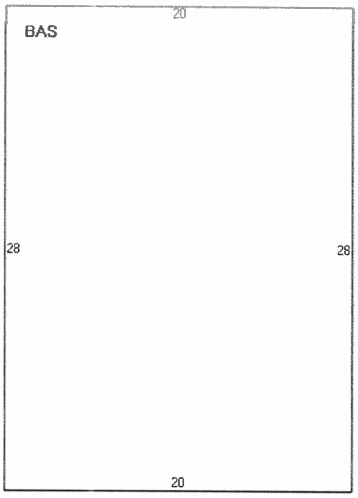
Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	560	560
		560	560

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	401
Description	Utility
Zone	B2
Neighborhood	C330

Land Line Valuation

Size (Acres)	8.29
Frontage	
Depth	
Assessed Value	$3,145,280
Appraised Value	$4,493,250

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asph.			12000.00 S.F.	$12,600	1
PAV1	Paving Asph.			60300.00 S.F.	$63,320	1
FN6	Fence 6'			3000.00 L.F.	$21,000	1
TNK1	Tank Under Grn			10000.00 GALS	$7,500	1
CEL1	Cell Tower			1.00 UNITS	$80,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2014	$1,175,000	$4,493,250	$5,668,250
2013	$1,175,000	$4,493,250	$5,668,250
2012	$1,703,300	$4,289,700	$5,993,000

Assessment			
Valuation Year	Improvements	Land	Total
2014	$822,500	$3,145,280	$3,967,780
2013	$822,500	$3,145,280	$3,967,780
2012	$1,192,310	$3,002,790	$4,195,100

PROJECT INFORMATION

SCOPE OF WORK:
- ADD (1) RRH PER SECTOR (TOTAL OF 3 NEW RRHs)
- REPLACE BOTTOM DIPLEXERS WITH TRIPLEXERS
- INSTALL NEW ANTENNA MOUNT (COMMSCOPE MTC3615)
- DECOMMISSION GSM TECHNOLOGY

SITE ADDRESS:	WILLARD ROAD NORWALK, CT 06851
LATITUDE: LONGITUDE:	41.1282700 41° 07' 41.77"N −73.3901661 73° 23' 24.59"W
USID:	60416
TOWER OWNER:	TBD
TYPE OF SITE:	SELF−SUPPORT TOWER/OUTDOOR EQUIPMENT
TOWER HEIGHT:	350−0"±
RAD CENTER:	347'−0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

at&t MOBILITY

FA CODE: 10034993
SITE NUMBER: CTU2132
SITE NAME: NORWALK EAST - WILLARD RD

PROJECT TEAM

CLIENT REPRESENTATIVE
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

ZONING:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:
COMPANY: COM−EX CONSULTANTS, LLC
ADDRESS: 4 SECOND AVENUE, SUITE 204, DENVILLE, NJ 07834
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862−209−4300
EMAIL: nbarile@comexconsultants.com

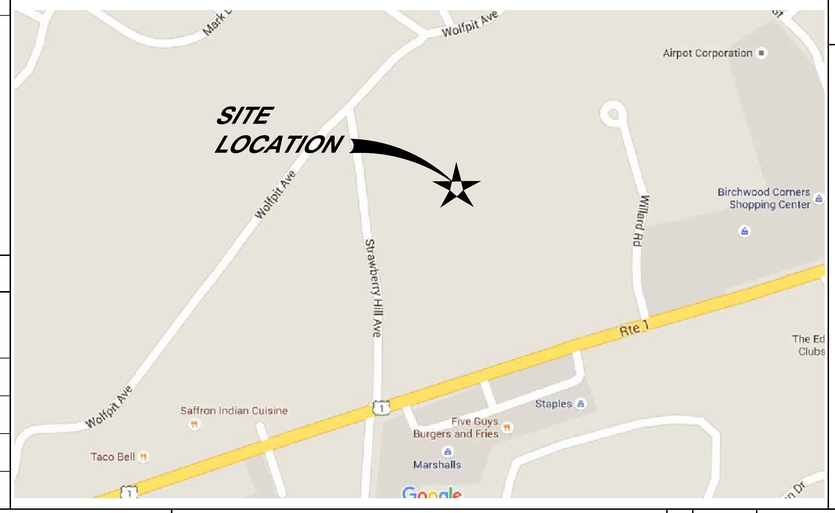
RF ENGINEER:
COMPANY: AT&T MOBILITY − NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD, SUITE 550 13 & 14, FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508−596−7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484−683−1750
EMAIL: gdorman@empiretelecomm.com

DRAWING INDEX

VICINITY MAP

FROM ROCKY HILL, HEAD SOUTHWEST ON CONCRIB LN. TURN LEFT ONTO SOLO DR. TURN RIGHT ONTO GILBERT AVE. TURN RIGHT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I−91 S. TAKE EXIT 17 TO MERGE ONTO CT−15 S. TAKE EXIT 42 FOR CT−57 TOWARD WESTPORT WESTON. TURN RIGHT ONTO CT−57/WESTON RD. SLIGHT RIGHT ONTO MAIN ST. TURN RIGHT CANAL ST. CONTINUE ONTO KINGS HWY N. SLIGHT RIGHT ONTO POST RD. CONTINUE ONTO WESTPORT AVE. TURN RIGHT ONTO WILLARD RD. TURN LEFT PAST CVS. DRIVE THROUGH PARKING LOT. SITE WILL BE ON 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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP - CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800−922−4455 OR DIAL 811

COM−EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTL2132
SITE NAME: NORWALK EAST - WILLARD RD
88 PARSONAGE HILL ROAD
NORTHFORD, CT 06472
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
D	07/11/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
C	1/20/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
B	01/05/16	PER CLIENT COMMENTS	NJM	NDB	NDB
A	11/18/15	INITIAL SUBMISSION	JW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15182−EMP	T−1	D

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) LIGHTING 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) 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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

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; 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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER 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 AND TRAY SHALL BE GROUNDED AND 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. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – EMPIRE TELECOM
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

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. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. 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.

8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. 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.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF 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.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. 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). 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.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. 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.

17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. 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.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. 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, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. 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.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY COM-EX CONSULTANTS FOR A RECENT UPGRADE DATED 06/04/2015. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTL2132
SITE NAME: NORWALK EAST - WILLARD RD
88 PARSONAGE HILL ROAD
NORTHFORD, CT 06472
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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C	1/20/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
B	01/05/16	PER CLIENT COMMENTS	NJM	NDB	NDB
A	11/18/15	INITIAL SUBMISSION	JW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

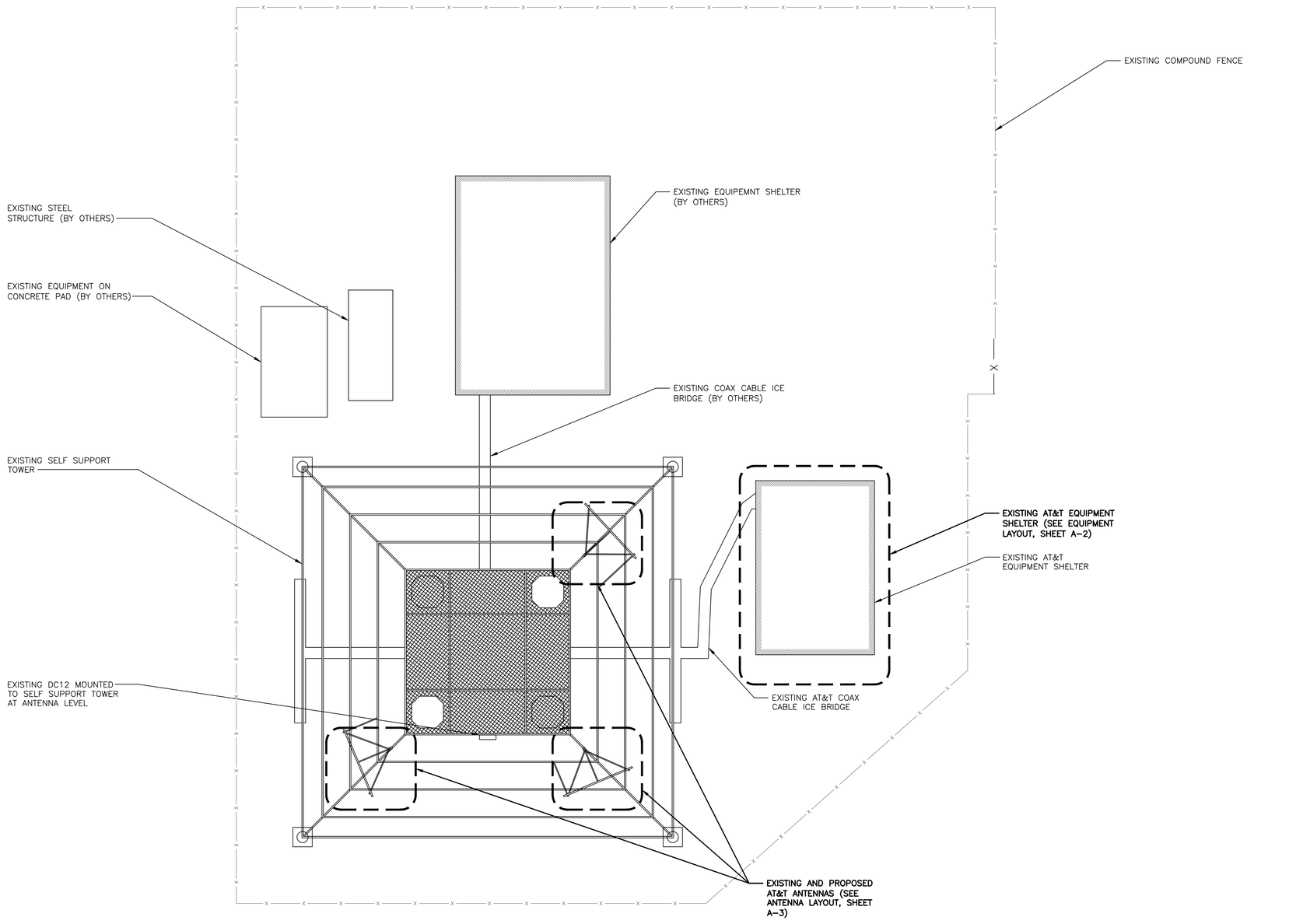
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
GROUNDING NOTES & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15182-EMP	GN-1	D



COMPOUND PLAN
SCALE: 3/32" = 1'-0"

GRAPHIC SCALE

8 0 4 8 16 32

(IN FEET)
3/32 Inch = 1 Foot

NORTH

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

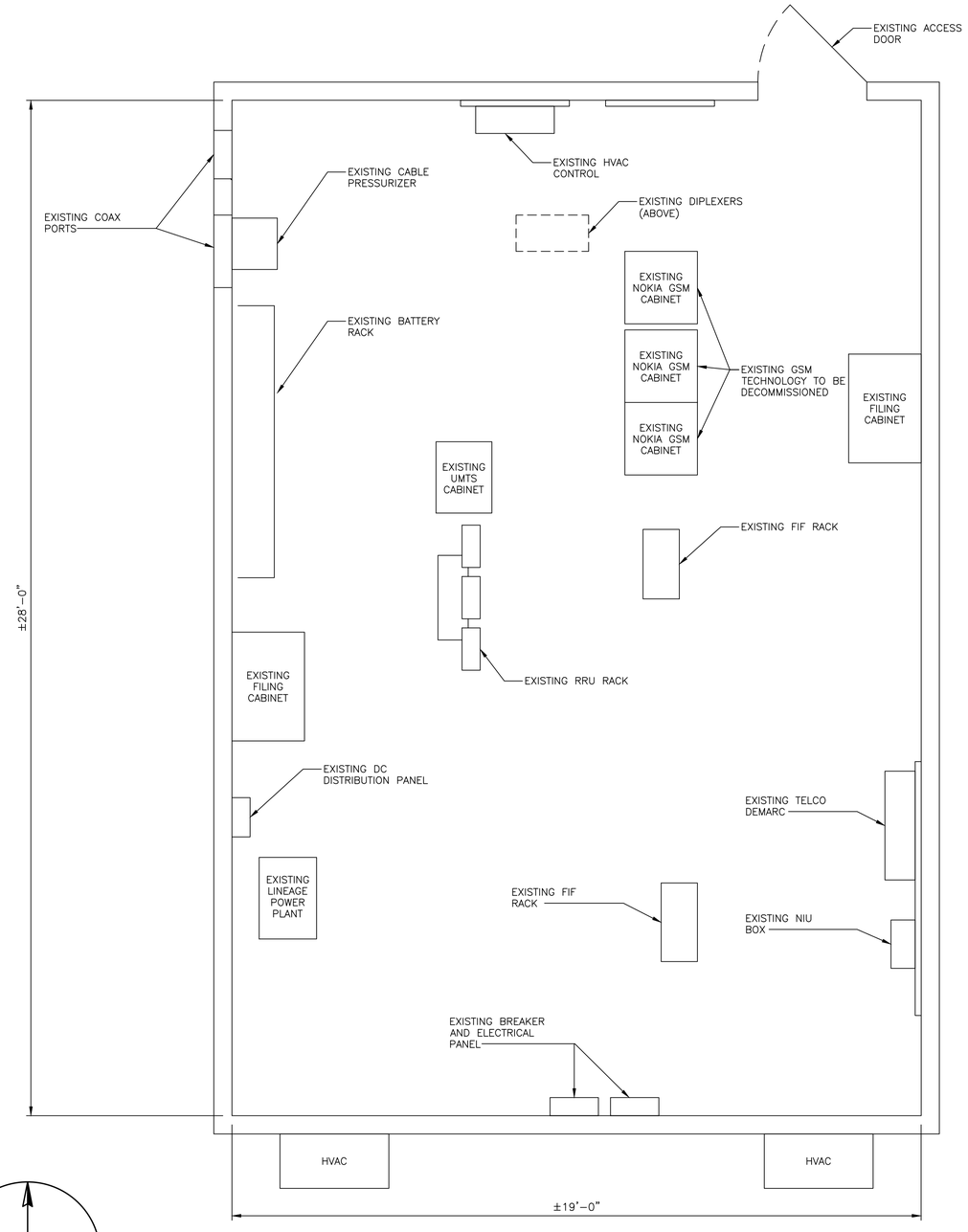
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15182-EMP	A-1	D



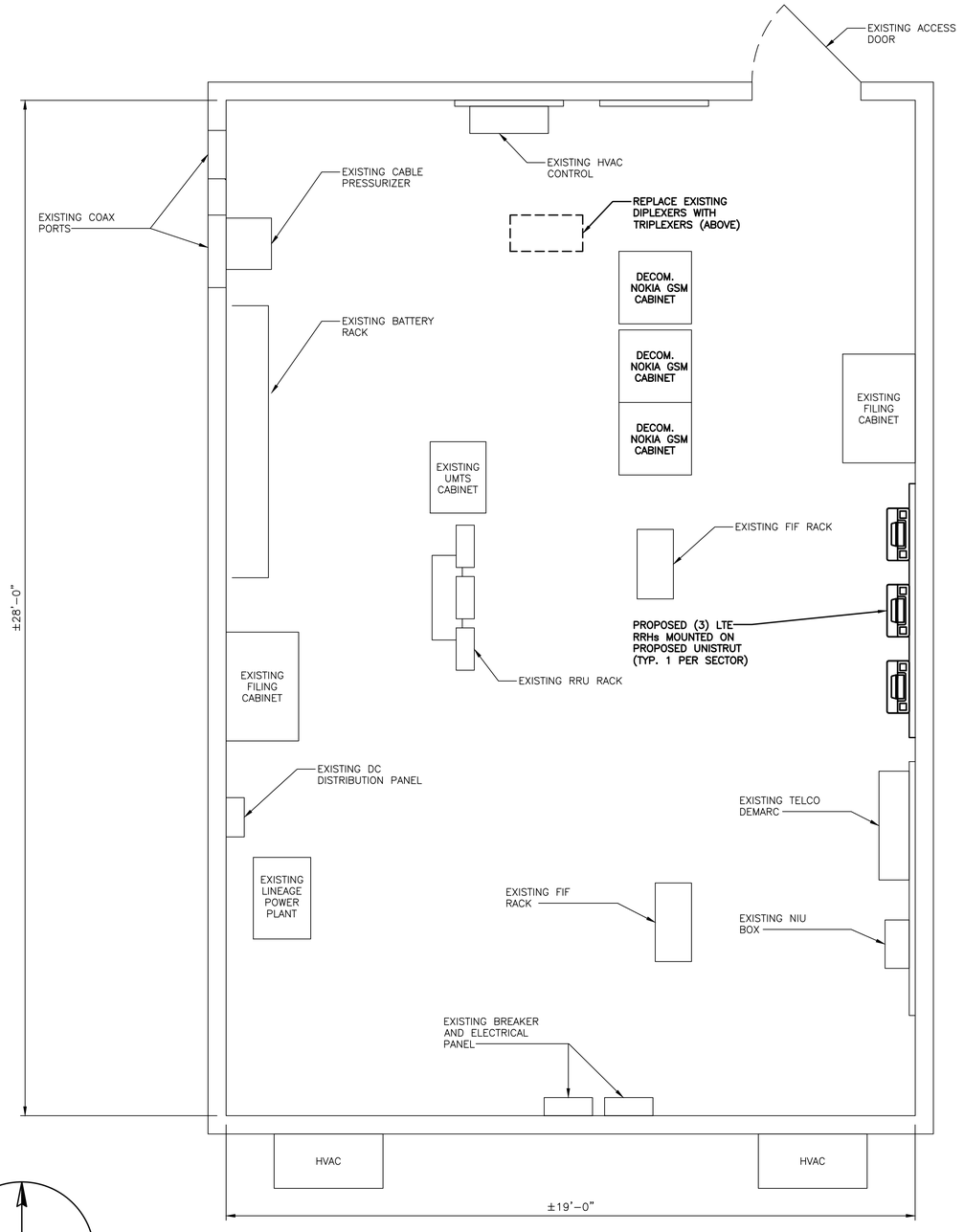
NORTH

EXISTING EQUIPMENT LAYOUT

SCALE: 1/2" = 1'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



NORTH

PROPOSED EQUIPMENT LAYOUT

SCALE: 1/2" = 1'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

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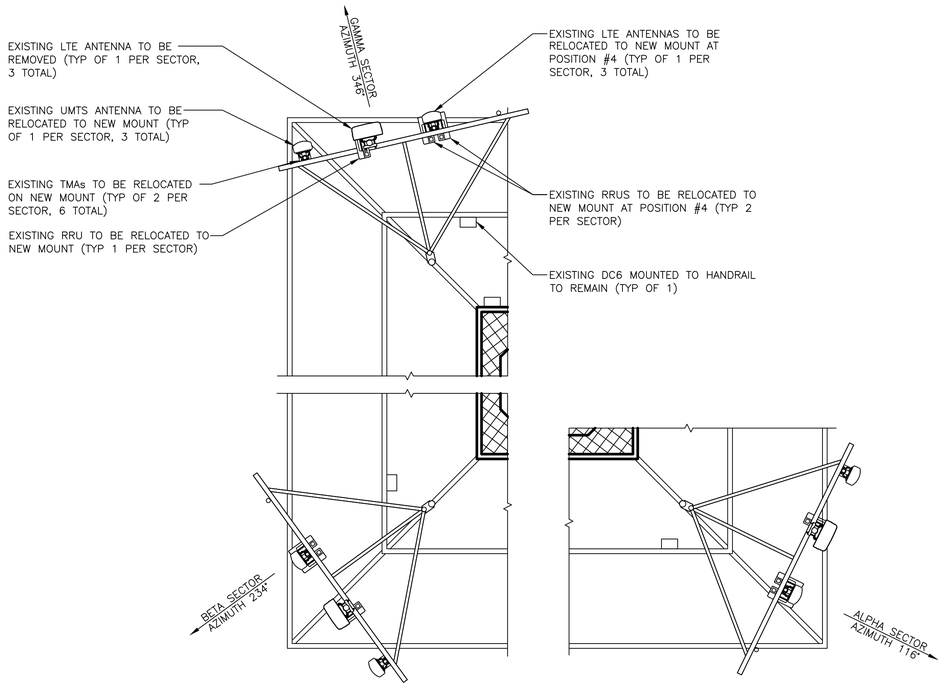
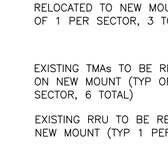
CT LICENSE NO. 28643

AT&T

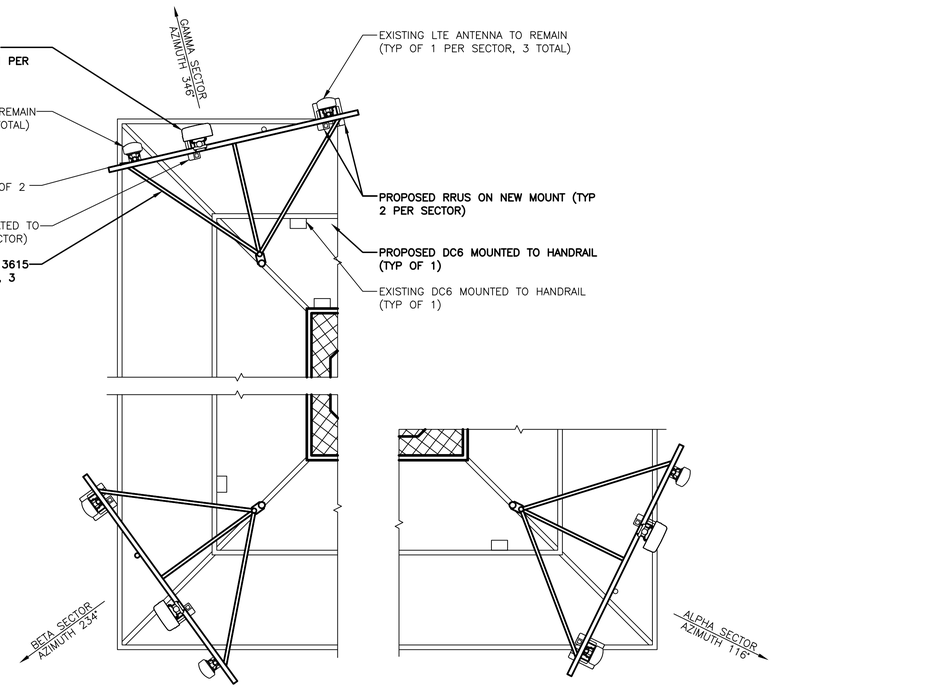
DRAWING TITLE:
EQUIPMENT LAYOUTS

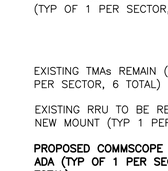
JOB NUMBER	DRAWING NUMBER	REV
15182-EMP	A-2	D





EXISTING ANTENNA LAYOUT
SCALE: N.T.S.





PROPOSED ANTENNA LAYOUT
SCALE: N.T.S.

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

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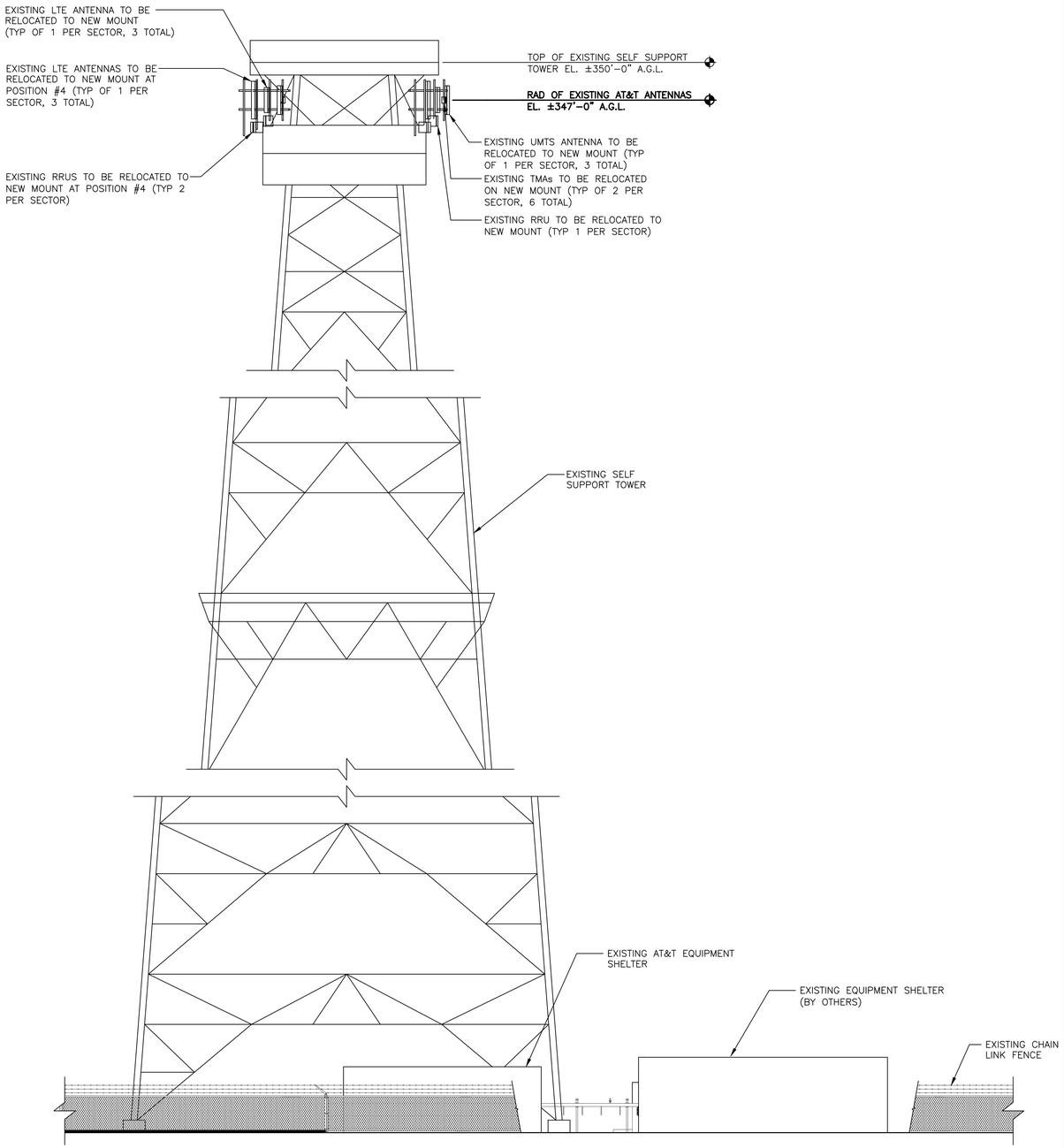
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15182-EMP	A-3	D

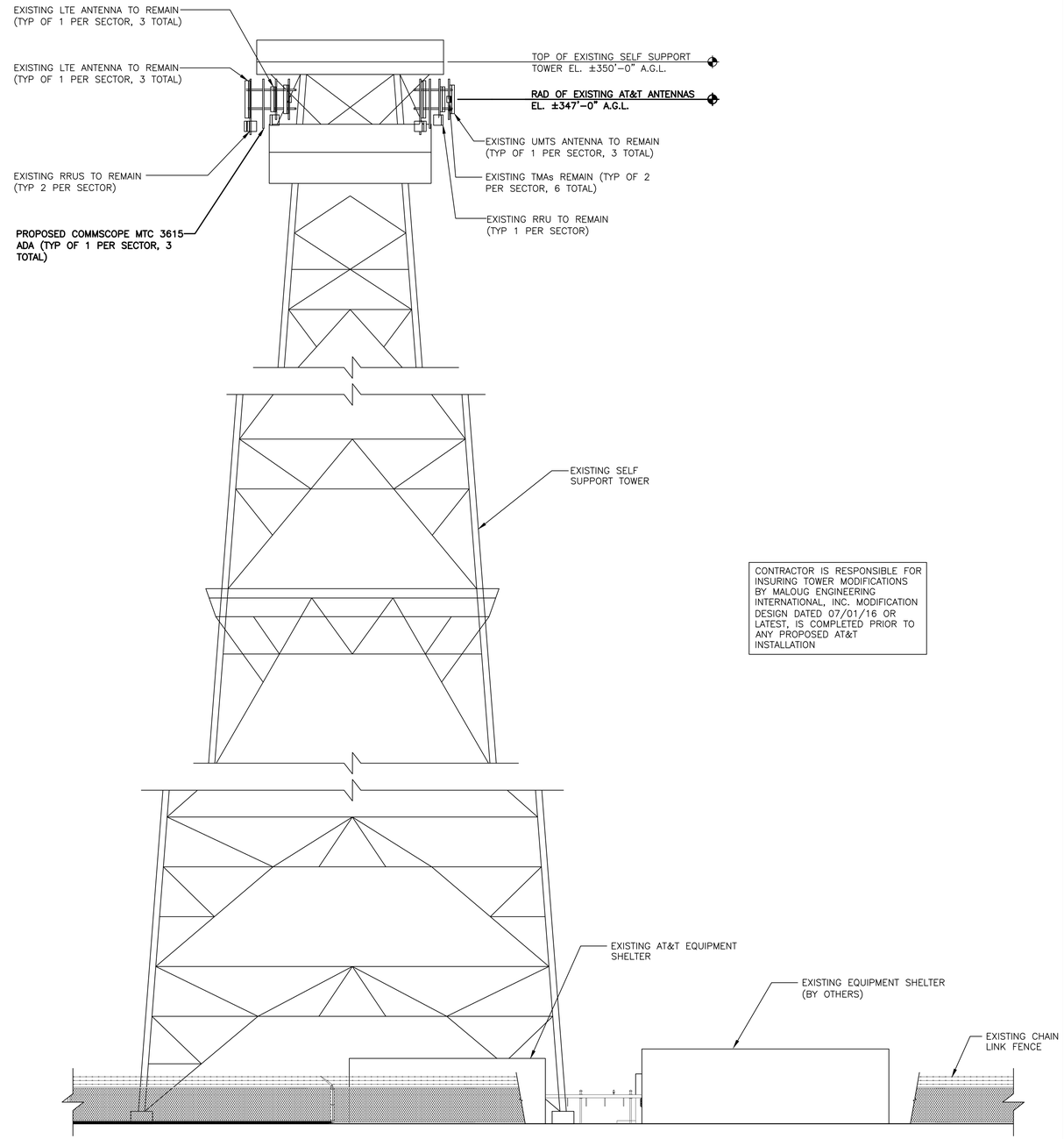


EXISTING TOWER ELEVATION

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"



PROPOSED TOWER ELEVATION

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"

CONTRACTOR IS RESPONSIBLE FOR INSURING TOWER MODIFICATIONS BY MALOUG ENGINEERING INTERNATIONAL, INC. MODIFICATION DESIGN DATED 07/01/16 OR LATEST, IS COMPLETED PRIOR TO ANY PROPOSED AT&T INSTALLATION

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SEAL:

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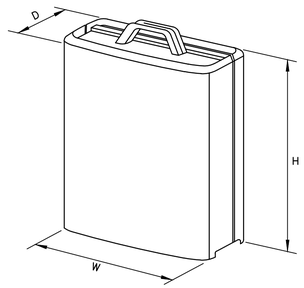
AT&T

DRAWING TITLE:
ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15182-EMP	A-4	D

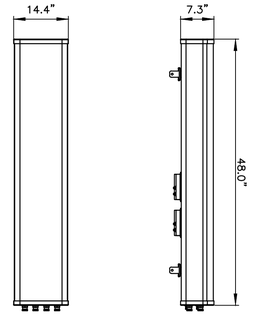


MODEL	L x W x H	WEIGHT
*RRUS-11	19.7" x 16.97" x 7.17"	50.7 LBS
*RRUS-32	29.9" x 13.3" x 9.5"	77 LBS
RRUS-11	**19.7" x 16.97" x 7.17"**	**50.7 LBS**

* DENOTES EXISTING / PROPOSED

RRUS DETAIL

SCALE: N.T.S.



FRONT VIEW

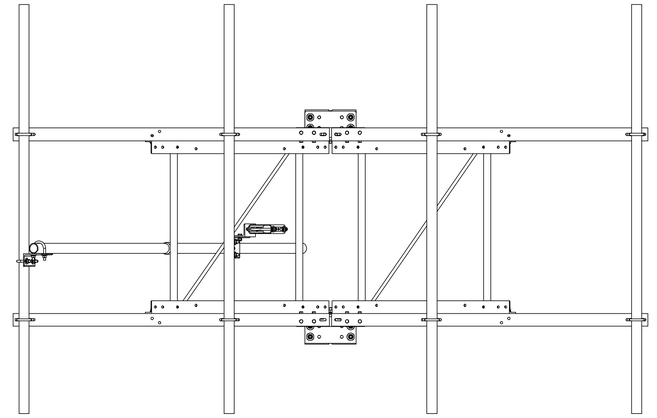
SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H4
WEIGHT	57.0 LBS

ANTENNA DETAIL

SCALE: N.T.S.



MOUNT DETAIL - COMMSCOPE MTC 3615 ADA

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770.00.850.07	55"x11"x5"
	A2	–	–	–
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	POWERWAVE	7770.00.850.07	55"x11"x5"
BETA	B1	POWERWAVE	7770.00.850.07	55"x11"x5"
	B2	–	–	–
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	POWERWAVE	7770.00.850.07	55"x11"x5"
GAMMA	G1	POWERWAVE	7770.00.850.07	55"x11"x5"
	G2	–	–	–
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	POWERWAVE	7770.00.850.07	55"x11"x5"

PROPOSED ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	CCI	OPA-65R-LCUU-H4	48"x14.4"x7.3"
	A3	–	–	–
	A4	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	CCI	OPA-65R-LCUU-H4	48"x14.4"x7.3"
	B3	–	–	–
	B4	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"
GAMMA	C1	POWERWAVE	7770	55"x11"x5"
	C2	CCI	OPA-65R-LCUU-H4	48"x14.4"x7.3"
	C3	–	–	–
	C4	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	(2) RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"		
	ERICSSON	**RRUS-11**	**19.7"x16.9"x7.2"**		
BETA	ERICSSON	(2) RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"		
	ERICSSON	**RRUS-11**	**19.7"x16.9"x7.2"**		
GAMMA	ERICSSON	(2) RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32 (EXISTING)	29.9"x13.3"x9.5"		
	ERICSSON	**RRUS-11**	**19.7"x16.9"x7.2"**		

CONTRACTOR IS RESPONSIBLE FOR INSURING TOWER MODIFICATIONS BY MALOUG ENGINEERING INTERNATIONAL, INC. MODIFICATION DESIGN DATED 07/01/16 OR LATEST, IS COMPLETED PRIOR TO ANY PROPOSED AT&T INSTALLATION

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

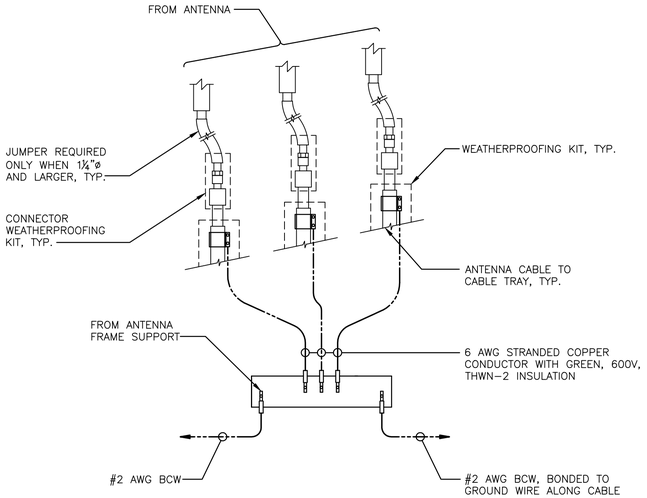
SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

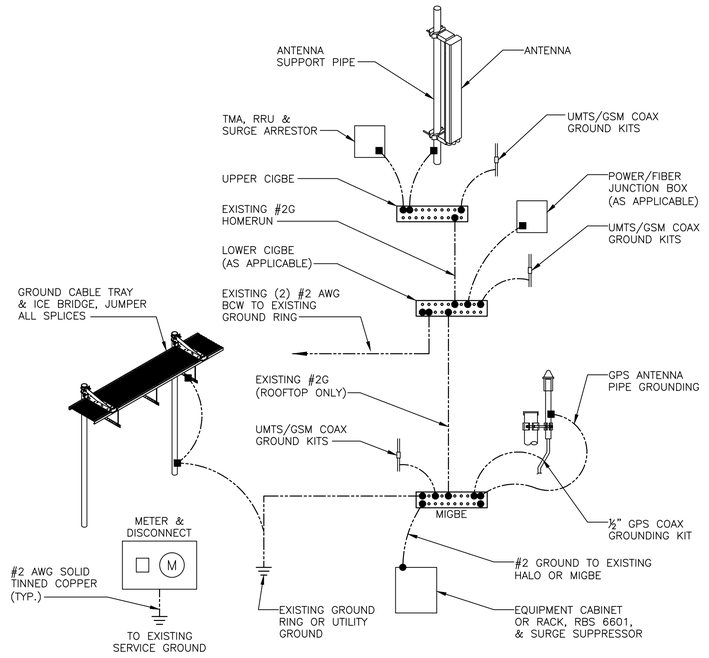
DRAWING TITLE:
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15182-EMP	A-5	D



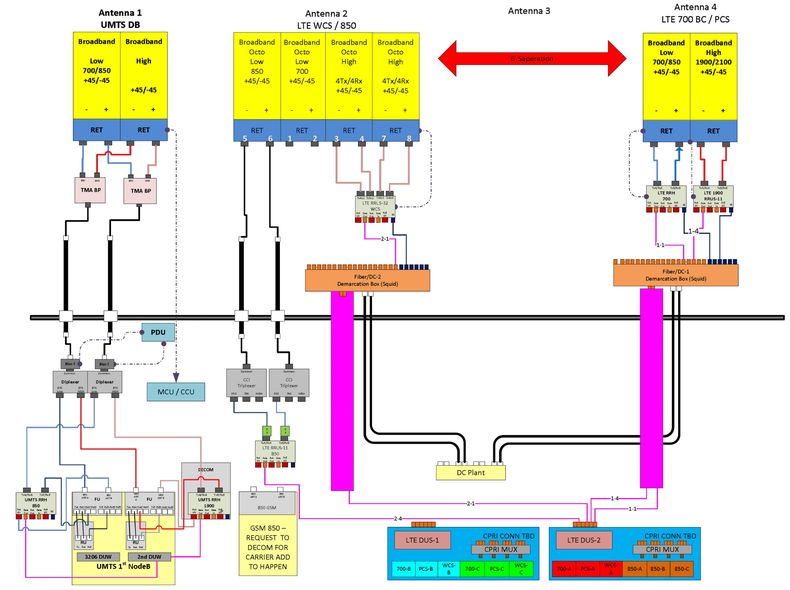
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



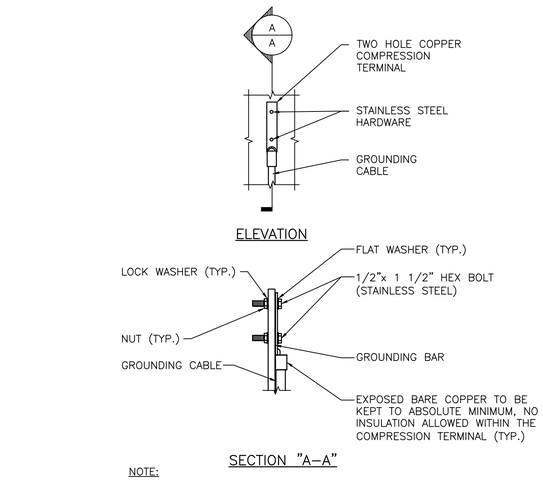
GROUNDING RISER DIAGRAM

SCALE: N.T.S.



TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.

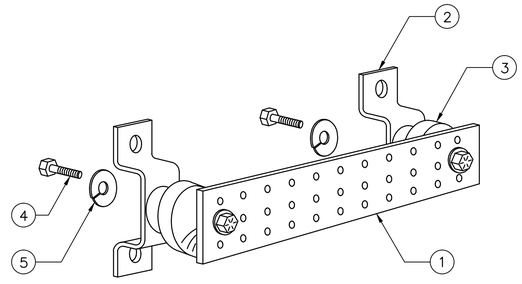


NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

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)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- –48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
D	07/11/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
C	1/20/16	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
B	01/05/16	PER CLIENT COMMENTS	NJM	NDB	NDB
A	11/18/15	INITIAL SUBMISSION	JW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
GROUNDING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15182–EMP	G–1	D

PROJECT INFORMATION

CLIENT:
MR. DAVID COOPER
EMPIRE TELECOM / AT&T
KYLE RICHERS
TRANSCEND WIRELESS / T-MOBILE

OWNER:
FRONTIER TOWER
SITE: NORWALK TOWER
CONTACT: ELISSA McOMBER
(931) 528-1584

STRUCTURAL ENGINEER:
MALOUF ENGINEERING INTERNATIONAL, INC.
17950 PRESTON RD, SUITE 720
DALLAS, TX 75252

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LAT: 41-07-41.8 N - LON: 73-23-24.9 W

DRAWING INDEX

TECHNICAL SPECIFICATION NOTES

STRUCTURAL STRENGTHENING REQUIRED

- ELEV. 250 TO 275FT: ADD INTERNAL HIP BRACES REINFORCING DIAGONALS.
- ELEV. 225 TO 250FT: REINFORCE DIAGONALS AS DETAILED.
- ELEV. 200 TO 250FT: ADD SUB BRACES AND INTERNALS REINFORCING HORIZONTALS.
- ELEV. 175 TO 200FT: ADD INTERNALS REINFORCING HORIZONTALS.
- ELEV. 150 TO 175FT: ADD SUB BRACES AND INTERNALS REINFORCING HORIZONTALS. REINFORCE SUB DIAGONALS AS DETAILED. REPLACE END BOLTS OF SUB HORIZONTAL AND THE DIAGONALS.
- ELEV. 125 TO 150FT: ADD SUB BRACES AND INTERNALS REINFORCING HORIZONTALS. REINFORCE DIAGONALS AND REPLACE END BOLTS. REINFORCE SUB DIAGONALS AND REPLACE END BOLTS. REPLACE SUB DIAGONALS 2 WITH BIGGER SIZE MEMBERS. ADD INTERNAL KICKER REINFORCING SUB HORIZONTALS AS DETAILED.
- ELEV. 100 TO 125FT: ADD SUB BRACES AND INTERNALS REINFORCING HORIZONTALS. REPLACE DIAGONAL END BOLTS. REINFORCE SUB DIAGONALS. ADD INTERNAL KICKER REINFORCING SUB HORIZONTALS AS DETAILED. REPLACE LEG SPLICE BOLTS AT ELEV. 103.5FT±.
- ELEV. 75 TO 100FT: REINFORCE HORIZONTALS AS DETAILED. REPLACE SUB DIAGONALS 2 WITH BIGGER SIZE MEMBERS. ADD INTERNAL KICKER REINFORCING SUB HORIZONTALS AS DETAILED. REPLACE LEG SPLICE BOLTS AT ELEV. 78.5FT±.
- ELEV. 50 TO 75FT: REINFORCE HORIZONTALS AS DETAILED. ADD SUB MEMBERS REINFORCING LEG. REINFORCE SUB DIAGONALS. ADD INTERNAL KICKER REINFORCING SUB HORIZONTALS AS DETAILED. REPLACE LEG SPLICE BOLTS AT ELEV. 53.5FT±.
- ELEV. 25 TO 50FT: REINFORCE HORIZONTALS AS DETAILED. REINFORCE SUB DIAGONALS. ADD INTERNAL KICKER REINFORCING SUB HORIZONTALS AS DETAILED. REPLACE LEG SPLICE BOLTS AT ELEV. 28.5FT±.
- ELEV. 0 TO 25FT: REINFORCE INNER VERTICAL AND HIP SUB INTERNAL AS DETAILED. REPLACE LEG SPLICE BOLTS AT ELEV. 3.5FT±.
- RE-LOCATE AND BUNDLE EXISTING COAXES AS SHOWN IN THE SCHEMATIC TX-LINE LAYOUT.
- PROVIDE TEMPORARY BRACING AS REQUIRED FOR STABILITY OF STRUCTURE DURING REINFORCEMENT / REPLACEMENT OF MEMBERS / BOLTS. REPLACE ONE MEMBER OF BOLT EACH AT A TIME.
- PERFORM MAINTENANCE WORK AS REQUIRED TO HAVE THE STRUCTURE IN GOOD OPERATIONAL CONDITION.
- FIELD DETERMINATION/VERIFICATION BEFORE ANY FABRICATION AND INSTALLATION IS RECOMMENDED.

GENERAL

1. STRUCTURAL MODIFICATIONS HAVE BEEN DESIGNED IN CONFORMANCE WITH ANSI/TIA/EIA-222-F STANDARD SPECIFICATIONS FOR LOADING SPECIFIED ON SHEET S01.

2. SOURCE DATA REGARDING SUBJECT STRUCTURE HAS BEEN OBTAINED FROM LIMITED MEI FIELD MAPPING REPORT (HTS SUB) DATED 11/30/2015 FOR ANALYSIS PURPOSE AND FROM GPD MODIFICATION DESIGN JOB #2012766.02 DATED 6/27/2012. NO ORIGINAL TOWER DRAWINGS WERE MADE AVAILABLE. THEREFORE, ACTUAL SITE DIMENSIONS SHOULD BE DETERMINED / VERIFIED PRIOR TO FABRICATION OF ANY MATERIAL OR PROVISION FOR FIELD ADAPTATION SHOULD BE MADE. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK.

3. THESE DRAWINGS INDICATE THE MAJOR OPERATIONS TO BE PERFORMED, BUT DO NOT SHOW EVERY FIELD CONDITION THAT MAY BE ENCOUNTERED. THEREFORE, PRIOR TO BEGINNING OF WORK, THE CONTRACTOR SHOULD SURVEY THE JOB SITE THOROUGHLY TO MINIMIZE FUTURE FIELD PROBLEMS. BID PRICE TO INCLUDE ALL RELATED COSTS TO FAMILIARIZE WITH ACTUAL SITE CONDITIONS AND FIELD DETERMINATIONS/VERIFICATION OF NOTED DIMENSIONS. MATERIAL QUANTITIES AND LENGTH ARE FOR BIDDING PURPOSE - CONTRACTOR TO BE RESPONSIBLE FOR PROPER FIT AND CLEARANCES.

4. ALL WORK SHALL BE PERFORMED AND INSTALLED BY A TOWER CONTRACTOR WITH MIN. 5 YEARS EXPERIENCE IN SIMILAR WORK. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER IN ACCORDANCE WITH ACCEPTED CONSTRUCTION AND INDUSTRY PRACTICE.

5. ALL PERMITS, LICENSES, APPROVALS, AND OTHER REQUIREMENTS FOR CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AMPLE NOTICE TO BUILDING INSPECTION DEPARTMENT TO SCHEDULE ANY REQUIRED INSPECTIONS.

6. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILTY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

7. CONTRACTOR SHALL SUBMIT TO ENGINEER ANY INTENT TO DEVIATE FROM PLANS AND DETAILS FOR APPROVAL PRIOR TO START OF ANY WORK. CONTACT THE ENGINEER OF RECORD CONCERNING ANY CHANGES, DISCREPANCIES &/OR MODIFICATIONS THAT MAY BE REQUIRED DUE TO THE EXISTING CONDITIONS AND SHALL NEED TO BE RESOLVED BEFORE PROCEEDING WITH THE WORK. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

8. PHOTOGRAPHS SHALL BE TAKEN OF OVERALL SITE COMPOUND AND STRUCTURE PRIOR TO THE CONSTRUCTION, DURING CONSTRUCTION AND AFTER CONSTRUCTION INCLUDING BUT NOT LIMITED TO ALL REINFORCED AREAS. A CLOSE-OUT REPORT WITH PHOTOS IS TO BE SUBMITTED TO THE ENGINEER OF RECORD WITHIN REASONABLE TIME AFTER COMPLETION OF WORK.

9. SCOPE OF MODIFICATIONS LISTED ARE STRUCTURAL RELATED MODIFICATIONS BASED ON PRIOR ANALYSIS RESULTS. EXISTING STRUCTURE IS ASSUMED TO BE IN GOOD CONDITION AND FREE FROM STRUCTURAL DEFECTS. AT MINIMUM TIA-222 RECOMMENDED INSPECTIONS AND ALL MAINTENANCE TYPE & DEFICIENCY REPAIR WORK IS ASSUMED COMPLETED. INSPECTION & MAINTENANCE OF NEW REINFORCEMENTS SHALL BE IMPLEMENTED SUCH AS TO AVOID ANY DETERIORATION OR CORROSION OF REINFORCEMENT

10. REFER TO OWNER SPECIFICATIONS FOR NEW MEMBERS PAINT REQUIREMENTS IF ANY, OTHERWISE PAINT NEW STEEL MEMBERS WITH A FINISH COAT OF ACRYLIC PAINT , INT'L ORANGE OR WHITE, TO MATCH EXISTING PAINT BANDS AT THAT ELEVATION & IN ACCORDANCE WITH FAA ADVISORY CIRCULAR AC 70/7460-JK.

FIELD INSTALLATION

11. ALL INSTALLATION PROCEDURES, SAFEGUARDS AND MEANS AND METHODS OF CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH TIA-1019-A CONSTRUCTION STANDARD, OSHA REQUIREMENTS AND NATE GUIDELINES. ALL ERECTION STRESSES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REVIEWED/PERFORMED BY A COMPETENT PROFESSIONAL EXPERIENCED IN SIMILAR WORK.

12. MINIMUM RECOMMENDED WEATHER CONDITION THAT SHOULD BE OBSERVED TO INSURE A SAFE WORKING CONDITION SHALL BE: WIND SPEED NOT TO EXCEED 10-15 MPH AT GROUND LEVEL, NO THUNDERSTORMS FORECASTED, AND WITH TOWER STEEL TEMPERATURE BETWEEN 20 F & 95 F. FOLLOW ALL APPLICABLE OSHA SAFETY GUIDELINES.

13. TOWER SHALL BE PROPERLY BRACED AND CARE SHALL BE TAKEN IN THE REMOVAL AND REPLACEMENT OF ANY TOWER MEMBER IN ACCORDANCE WITH RECOGNIZED INDUSTRY STANDARDS AND PROCEDURES. ONLY ONE MEMBER / BOLT AT A TIME SHALL BE REPLACED WITH DUE CARE.

14. ALL PRECAUTIONS AND EFFORTS SHALL BE TAKEN TO INSURE THE TOWER STABILITY DURING THE MODIFICATIONS WORK. BRACING FRAMES WITH CAPACITY MATCHING MEMBERS BEING WORKED ON SHALL BE REQUIRED.

15. ANY STRUCTURAL MEMBER THAT HAS DAMAGED GALVANIZED SURFACES SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT (ZRC PREFERRED).

16. IN AREAS TO BE MODIFIED, ANY MOUNTS, BRACKETS, CLAMPS, TRANS. LINES AND/OR MISCELLANEOUS HARDWARE INTERFERING WITH THE INSTALLATION OF THE MODIFICATIONS SHALL BE RE-WORKED OR TEMPORARILY MOVED AND THEN REPLACED AFTER THE COMPLETION OF THE WORK. CONTACT OWNER TO COORDINATE THIS ACTION AS REQUIRED.

17. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES. ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG FIT UNTIL THE SECTION IS FULLY COMPACTED, AND THEN TIGHTENED ADDITIONALLY IN ACCORDANCE WITH THE AISC "TURN-OF-THE-NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

18. BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG FIT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1/2 TURN BEYOND SNUG TIGHT.

19. UPON COMPLETION OF ALL WORK, THE SITE SHALL BE CLEANED OF ALL DEBRIS AS REQUIRED. ANY SURPLUS MATERIALS NOT REMOVED FROM THE SITE SHALL BE NEATLY STORED IN AN AREA DESIGNATED BY THE OWNER REPRESENTATIVE.

STEEL / FABRICATION

20. ALL STEEL FABRICATION AND INSTALLATION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL AND SPECIFICATIONS "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

21. DRAWINGS SHOW RELATED DETAILS BUT ARE NOT SHOP DRAWINGS. SHOP DRAWINGS SHALL BE PREPARED IN ACCORDANCE WITH AISC DETAILING REQUIREMENTS. DIMENSIONAL TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A7 REQUIREMENTS.

22. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (A.W.S.) STANDARDS AND SPECIFICATIONS, ANSI/AWS D1.1-LATEST EDITION.

23. ALL ELECTRODES SHALL BE LOW HYDROGEN, MATCHING FILLER METAL, IN ACCORDANCE WITH AWS D1.1, UNLESS NOTED OTHERWISE.

24. BASE MATERIAL SHALL BE CORRECTLY PREHEATED BEFORE WELDING AND POSTHEATED AFTER WELDING IN ACCORDANCE WITH THE AWS SPECIFICATIONS. ALL WELDS SHALL BE CHECKED WITH MAGNETIC PARTICLE PROCESS (MAGNFLUX) AND ALL SUSPICIOUS MATERIAL SHALL BE CHECKED BY ULTRASONIC.

25. THE FINISHED DIAMETER OF BOLT HOLES SHALL NOT BE MORE THAN 1/16" LARGER THAN THE NOMINAL BOLT DIAMETER UNLESS OTHERWISE NOTED.

26. MATERIAL MAY BE CUT BY SHEARING, SAWING, OR CUTTING WITH A ROUTER OR GAS CUT. MATERIAL GREATER THAN 1/2" THICKNESS SHALL NOT BE SHEARED.

27. CUT EDGES SHALL BE TRUE AND SMOOTH, AND FREE FROM EXCESSIVE BURRS AND RAGGED BREAKS. SHEARED EDGES OF THICK PLATES SHALL BE PLANED TO A DEPTH OF 1/4". RE-ENTRANT CUTS SHALL BE AVOIDED. IF USED, THEY SHALL BE FILLETED BY DRILLING PRIOR TO CUTTING.

TECH. SPEC. NOTES CONTINUED ON SHEET T02

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T-Mobile

NO.	DATE	REVISIONS	DRAWN	ENG'D.	APP'D.
0	07/01/16	ISSUED FOR CONSTRUCTION	REP	KMM	MM

STATE OF CONNECTICUT — KRISHNA MANDA — LICENSED PROFESSIONAL ENGINEER
JUL 01, 2016

AT&T / T-MOBILE

TITLE SHEET & TECH. SPEC. NOTES

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	T01	0

TECHNICAL SPECIFICATION NOTES CONTINUED

28. DIMENSIONAL TOLERANCES, AS INDICATED IN THE AISC CODE OF STANDARD PRACTICE SHALL BE CAREFULLY FOLLOWED DURING FABRICATION.

29. PRIOR TO GALVANIZING, ALL FABRICATED STEEL SHALL BE THOROUGHLY SHOP INSPECTED AND QUANTITIES COUNTED ACCORDING TO THE BEST QUALITY CONTROL AND INSPECTION METHODS.

30. ALL NEW BOLTS, WASHERS AND ANCO LOCKNUTS SHALL BE NEW DOMESTIC HIGH STRENGTH GALVANIZED BOLTS TYPE 'N' AND SHALL CONFORM TO BELOW NOTED SPECIFICATIONS.

31. WHERE NOTED, A490 BOLTS, WASHERS AND HEAVY ANCO LOCKNUTS SHALL BE NEW DOMESTIC HIGH STRENGTH BOLTS TYPE 'N' AND SHALL CONFORM TO ASTM A490 SPECIFICATIONS. NO HOT-DIP OR MECHANICAL GALVANIZING OF A490 BOLTS IS ALLOWED. PROTECTIVE COATING ON THE A490 BOLTS SHALL BE IN CONFORMANCE WITH ASTM F1136 - GRADE 3 FOR BOLTS AND GRADE 5 FOR NUTS. MAGNI-COAT COATING OF THE A490 BOLTS IS ACCEPTABLE. ALTERNATELY FIELD PAINT BOLTS WITH 2 COATS OF ZINC-RICH PAINT AFTER INSTALLATION.

32. ANY BOLT REMOVED FROM EXISTING TOWER STRUCTURE SHALL BE REPLACED WITH A NEW DOMESTIC ASTM A325 HIGH STRENGTH BOLT OF EQUAL DIAMETER SIZE UNLESS NOTED OTHERWISE.

33. ALL BOLTS SHALL BE TIGHTENED USING TURN-OF-THE-NUT METHOD.

34. ALL BOLT HOLES EDGE DISTANCES SHALL BE 1 1/2" UNLESS OTHERWISE NOTED.

35. ALL STEEL SHALL BE HOT DIPPED GALVANIZED PER ASTM A123 SPECIFICATIONS AFTER FABRICATION.

36. ALL STEEL HARDWARE SHALL BE HOT DIPPED GALVANIZED PER ASTM A153.

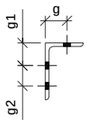
37. FIELD PUNCH / DRILL HOLES AS REQUIRED FOR ACCURATE FIT OF MODIFICATION MEMBER.

38. AFTER ANY FIELD HOLE PUNCHING/DRILLING, OR CUTTING HAS BEEN COMPLETED, OR FOR ANY DAMAGED STRUCTURAL MEMBER, TOUCH UP ALL BARE MATERIAL AND WELDED AREAS WITH TWO COATS OF ZRC OR SIMILAR MATERIAL TO RESTORE THE GALVANIZED PROTECTION ON THE MEMBERS.

39. NEW STEEL MATERIAL SHALL CONFORM TO THE FOLLOWING ASTM STEEL SPECIFICATIONS UNLESS NOTED OTHERWISE:

MATERIAL	ASTM SPECS	MIN. STRENGTH - KSI
ANGLES, GUSSET PLATES	A36	36.0 (YIELD)
BOLTS - 1/2" DIA. & GREATER	A490 TYPE N	150 (TENSILE)
BOLTS - 1/2" DIA. & GREATER	A325 TYPE N	105 (TENSILE) 1" DIA. & LESS
BOLTS - 1/2" DIA.	SAE J429 GRADE 5 TYPE X	120 (TENSILE)
U-BOLTS	A193 B7, A449 OR SAE J429 (GR. 5 - 1/2" DIA. & GR. 8 - 5/8" DIA.)	

TECH. SPEC. NOTES CONTINUED FROM SHEET T01



USUAL GAGES FOR ANGLES IN INCHES

LEG	8	7	6	5	4	3 1/2	3	2 1/2	2	1 3/4	1 1/2	1 3/8	1 1/4	1
g	4 1/2	4 1/2	4	3	2 1/2	2	1 3/4	1 3/8	1 1/8	1	7/8	7/8	3/4	5/8
g1	3	3	2 1/2	2										
g2	3	3	3	1 3/4										

SCHEDULE: ANGLE GAGES

MEMBER/ BOLT REPLACEMENT NOTES:
1. TOWER BAY TO BE ADEQUATELY SUPPORTED w/ TEMPORARY BRACING FRAME PRIOR TO REMOVING ANY MEMBERS/BOLTS.
2. EXISTING MEMBERS/BOLTS ARE TO BE REMOVED AND REPLACED ONE AT A TIME.
3. WIND SPEED SHOULD NOT TO EXCEED 10-15 MPH AT GROUND LEVEL AND NO THUNDERSTORMS FORECASTED IN ORDER TO ENSURE SAFE WORKING CONDITIONS.
4. TAKE ALL NECESSARY PRECAUTIONS TO RETAIN THE STRUCTURAL INTEGRITY AND STABILITY OF THE TOWER; EXERCISE ALL DUE CAUTION WHILE MODIFYING THE TOWER.
5. TOWER MODIFICATIONS ARE TO BE INSTALLED AND COMPLETED PRIOR TO INSTALLATION OF NEW ANTENNAS AND APPURTENANCES.

POST-MODIFICATION INSPECTION NOTES

GENERAL

THE POST-MODIFICATION INSPECTION (PMI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS PERFORMED IN ACCORDANCE WITH THE MODIFICATION DESIGN DRAWINGS BY THE ENGINEER OF RECORD (EOR).

ALL PMI'S SHALL BE CONDUCTED BY A QUALIFIED TOWER INSPECTION VENDOR (QTIV) THAT IS APPROVED TO PERFORM ELEVATED WORK AND HAS QUALIFIED RELATED EXPERIENCE.

TO ENSURE THAT THE REQUIREMENTS OF THE PMI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE PMI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS APPROVAL IS RECEIVED TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS.

GENERAL CONTRACTOR

THE GC IS REQUIRED TO, AT A MINIMUM:
- REVIEW THE REQUIREMENTS OF THE PMI CHECKLIST
- WORK WITH THE PMI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE PMI INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS.
- BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS.

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PMI CHECKLIST.

RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A PMI REPORT:
- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE PMI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND PMI INSPECTOR ON-SITE DURING THE PMI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL PMI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE PMI CAREFULLY TO ENDURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE PMI INSPECTOR IS ON SITE.

CORRECTION OF FAILING PMI'S

IF THE POST-MODIFICATION INSTALLATION WOULD FAIL THE PMI ("FAILED MI"), THE GC SHALL WORK TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT PMI.
- OR, WITH OWNER'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

REQUIRED PHOTOS

BETWEEN THE GC AND THE PMI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE PMI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
  - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION.
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
- FINAL IN-FIELD CONDITION

SPECIAL INSPECTION & PMI CHECKLIST

REQ'D	REPORT ITEM	BRIEF DESCRIPTION
	PRE-CONSTRUCTION	
X	MI CHECKLIST	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT
X	EOR APPROVED SHOP DRAWINGS	FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. THE CONTRACTOR SHALL PROVIDE APPROVED SHOP DRAWINGS TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR CERTIFIED WELD INSPECTION	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PREFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL CERT. REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DRAWINGS AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTER ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	NDE REPORT OF MONOPOLE BASE PLATE	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
	CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUM TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	POST INSTALLED ANCHOR ROD VERIFICATION	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH ACI318 AND MANUFACTURERS REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	BASE PLATE GROUT VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT VERIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH MEI SPECS FOR INCLUSION IN THE MI REPORT.
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH MANUF. INSTRUCTIONS.
N/A	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE AS PART OF PLUMB AND TENSION PROCEDURE FOR INCLUSION IN THE MI REPORT.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD DUE TO FIELD CONDITIONS.
	POST-CONSTRUCTION	
X	MI INSPECTOR REDLINE OF RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING	POST-INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH MANUF. REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
ADDITIONAL TESTING AND INSPECTIONS:		
NOTES: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT		

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AT&T FA #10034993 / T-MOBILE #CT11011D
10 WILLARD RD., NORWALK, CT 06851
LAT: 41-07-41.8 N - LON: 73-23-24.9 W

AT&T
T-Mobile

NO.	DATE	REVISIONS	DRAWN	ENG'D.	APP'D.
0	07/01/16	ISSUED FOR CONSTRUCTION	REP	KMM	MM

JUL 01, 2016
STATE OF CONNECTICUT
E. MARK MALOUF
LICENSED PROFESSIONAL ENGINEER

AT&T / T-MOBILE

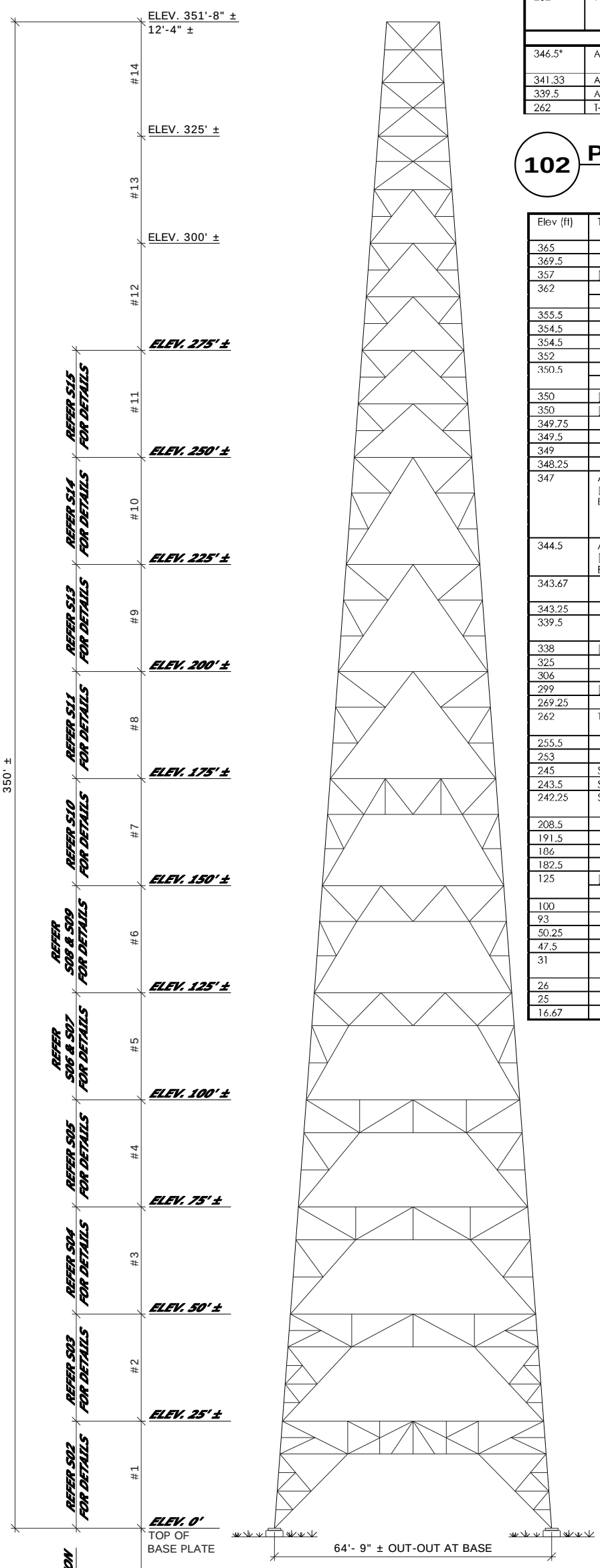
CONTINUED TECH. SPEC. NOTES & POST-MODIFICATION INSPECTION NOTES & CHECKLIST

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	T02	0

REFER SHEET T01 FOR TECH. SPEC. NOTES

NOTES:
THIS DRAWING IS NOT TO BE CONSIDERED A FABRICATION DRAWING. MATERIAL QUANTITIES AND APPROXIMATE FABRICATED LENGTHS ARE SHOWN FOR THE PURPOSE OF SOLICITING COMPETITIVE BIDS. THE SUCCESSFUL BIDDER IS EXPECTED TO FIELD VERIFY ALL DIMENSIONS AND QUANTITIES BEFORE FABRICATING THE STEEL. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR THE PROPER FIT AND CLEARANCE IN THE FIELD. NO BACK CHARGES WILL BE ACCEPTED FOR ANY LENGTH OR QUANTITY ERRORS IN THIS MATERIAL LIST.

TOWER HEIGHT & TYPE:	351.67' SELF-SUPPORTING TOWER
SITE NAME:	AT&T FA #10034993 / T-MOBILE #CT11011D
SITE LOCATION:	NORWALK, FAIRFIELD CO., CT
TOWER MANUF. / MODEL:	UNKNOWN
ORIGINAL DESIGN CRITERIA:	TIA/EIA-222- UNKNOWN
ANALYSIS CRITERIA:	ANSI/TIA/EIA 222-F- 85/73.61 MPH + 0"/0.50" ICE



101 ELEVATION: 351.67' SELF-SUPPORTING TOWER

SCALE: 1" = 30'-0"

Elev (ft)	Tenant	Ant #	Ants Qty	Appurtenance Model / Description	Mount Description
347	AT&T	-	3	OPA-65R-LCUU-H4 Panel Antennas	(3) Sector Mounts w/V-Stabilizer (Commscope MTC3615 AD A)
			3	RRUS-32 Boxes	
			3	RRUS-11 Boxes	
			1	DC6-48-60-18-8F Suppressors	
			1	DC6-48-60-0-8F Suppressor	
262	T-Mobile	-	3	AIR32 B66Ac/B2a Panel Antennas	(3) 10.5ft Sector Mounts (Sitepro1 #VFA10-U)
			3	LNX-6515DS-VTM Panel Antennas	
			3	RRUS-11 Boxes	
TO BE REMOVED (SEE BELOW)					
346.5*	AT&T	24	3	7770.00 Panel Antennas	(3) 10ft Sector Mounts onto Walkway & Platform with Support Mount Supports (Pipes)
		-	3	P65-16-XLH-RR Panel Antennas	
341.33	AT&T	28	1	FC12-PC6-10E	
339.5	AT&T	26	3	Raycap DC2-48-60-0-9E Boxes	
262	T-Mobile	18-19	3	AIR21 B4A B2P Panel Antennas	(3) 13ft Sector Mounts

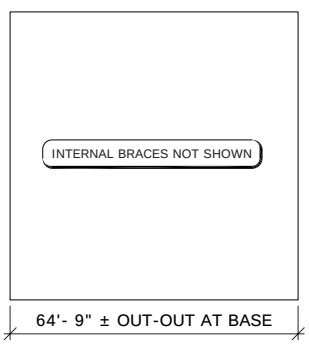
102 PROPOSED CHANGED CONDITION APPURT.

Elev (ft)	Tenant	Ant #	Ants Qty	Appurtenance Model / Description	Mount Description
365		40	1	12ft Whip Antenna + TMA	10ft Pipe Mount
369.5		38	1	Whip Antenna	15ft Pipe Mount w/ Guys
357	[Dead]	39	1	15ft Whip Antenna	4ft Pipe Mount
362		42	1	4ft Lightning Rod	14ft Mount
		41	1	Beacon / Strobe	
355.5		31	1	4ft Whip Antenna	8ft Pipe Mount
354.5		32	1	15ft Whip Antenna	8ft Pipe Mount
354.5		30	1	10ft 4-Element Dipole Antenna	8ft Pipe Mount
352			1	Top Stub Tower	
350.5		35			3ft Empty Sidearm Mount
					Top Platform w/ Rails
350	[Dead]				
350	[Dead]				
349.75		34	1	8ft Whip Antenna	Railing Mounted
349.5		36	1	21ft Whip Antenna	Railing Mounted
349		37			8ft Empty Pipe Mount
348.25		29	1	20ft 4-Element Dipole Antenna	6ft Pipe Mount
347	AT&T [Relocate to Elev. 347ft]	25,22	6	RRUS-11 Boxes	**[Relocated onto New Mounts]**
		24	3	7770.00 Panel Antennas	
			12	LGP21401 TMAs	
		23	3	AM-X-CD-16-65-00T-RET Panel Ants.	
			1*	DC6-48-60-18-8F Suppressors	
344.5	AT&T [Relocate to Elev. 344.5ft]	-	2	7020 RET Motors	**[Relocated onto New Mounts]**
343.67		27	1	3ft 3-Elem Yagi Antenna	8ft Pipe Mount on Sector Mount
343.25		33	3	TA-2335-DAB Panel Antennas	8ft Pipe Mount
339.5					4-Way Walkway Platform w/ Rails
338	[Dead]				
325					(4) Face Frames
306		21			(4) 14ft Empty Pipe Mounts
299	[Dead]				
269.25		20	2	OB Lights	
262	T-Mobile	18-19	3	AIR21 B2A B4P Panel Antennas	**[Relocated onto New Mounts]**
			3	ATMAA1412D-1A20 TMAs	
255.5		17	1	12in Square Panel Antenna	Pipe Mount
253		16			(2) 25ft Rest Platform w/ Rails
245	Sprint	15	3	ALU-RRH 4x45 Boxes	(3) 13ft Sector Mounts
243.5	Sprint	14	3	APXVSPP18-C-A20 Panel Antennas	
242.25	Sprint	13	3	RRH Boxes	
			3	800 Ext. Notch Filters	
208.5		12	1	7ft 5-Elem Yagi Antenna	5ft Pipe Mount
191.5		11			(4) Corner Rest Platforms
186		10	2	Beacon Ice Shield	Leg Mounted
182.5		9	2	Beacon / Strobe	
125	[Dead]				
		8			(2) 41ft Rest Platform w/ Rails
100		7			4ft Rest Platform w/ Rails
93		6	2	OB Lights	
50.25		5			4ft Rest Platform w/ Rails
47.5		4	1	3ft Dia. Dish (Az. 220°±)	4ft Sidearm Mount-NW Leg
31		1	1	4ft Dia. Dish (Az. 200°±)	10ft Pipe Mount/Standoff-S Face
26		2	1	GPS Antenna	Pipe Mount
25		3			(4) Corner Rest Platforms
16.67					(4) Face Frames

103 REMAINING CURRENT APPURT.

REFER S20 FOR SCHEMATIC TRANSMISSION LINE LAYOUT.

*NOTE:
REWORK ALL EXISTING APPURTENANCES OR Tx-LINES WHICH MAY INTERFERE WITH THE NEW STRENGTHENING MODIFICATIONS.



AT&T / T-MOBILE

TOWER MODIFICATION SCHEDULE

MEI PROJECT ID: CT04761S-16V0 | SHEET NUMBER: S01 | REV.: 0

STATE OF CONNECTICUT — JUL 01, 2016 — LICENSED PROFESSIONAL ENGINEER

ALL SCALES SHOWN ARE BASED ON DRAWING SIZE OF 11" x 17"

NO.	DATE	REVISIONS	DRAWN	REP	ENG'D	KMM	APP'D	MM
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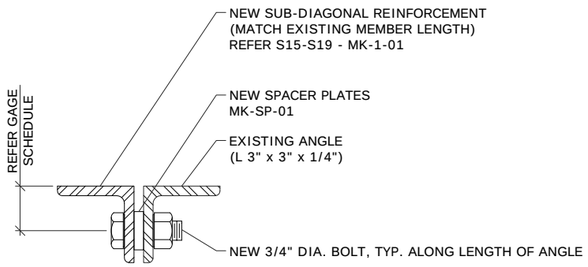
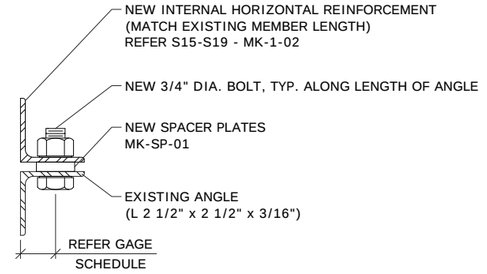
LEGEND:
TYPICAL THROUGHOUT DRAWING SET

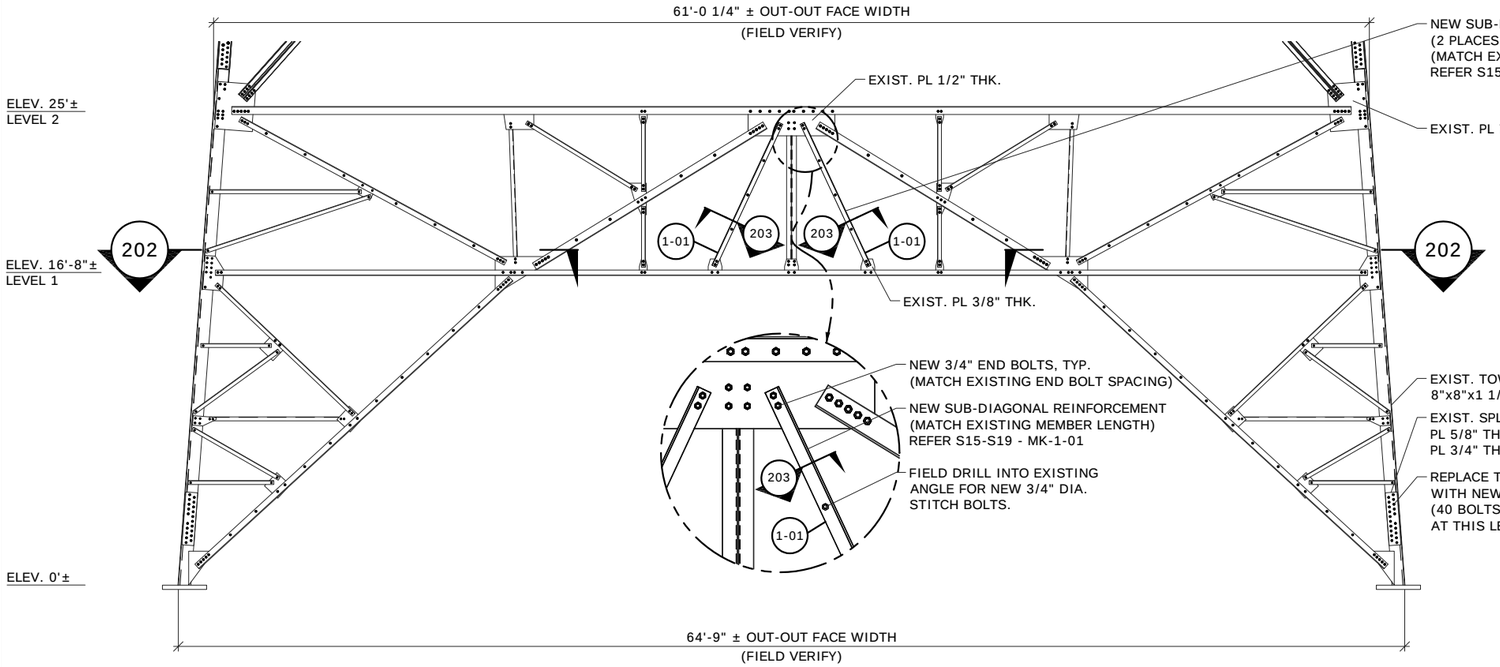
MK-1-01
- MARK
- TOWER SECTION #
- PIECE PART NUMBER

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW REINF. MEMBERS TO MATCH EXISTING MEMBERS LENGTH.



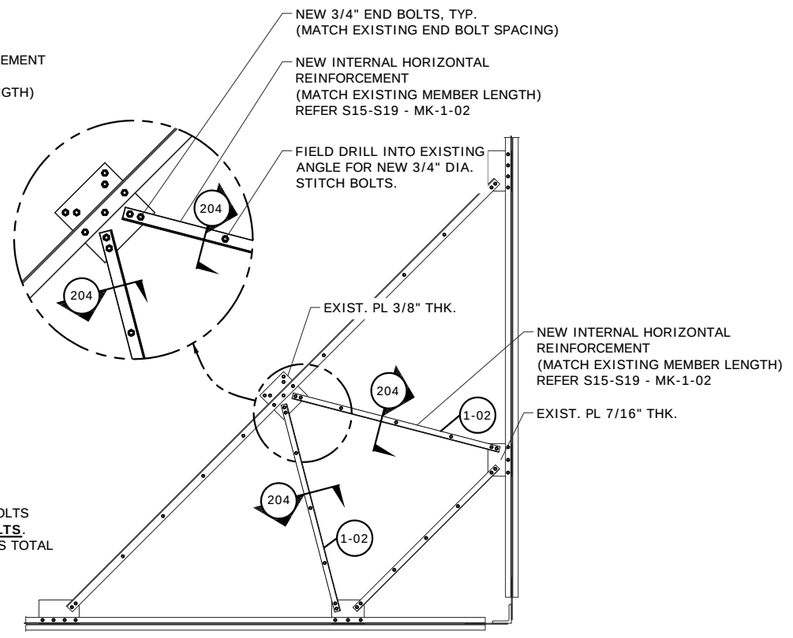


203 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



TYPICAL ALL FOUR FACES

204 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



TYPICAL ALL FOUR CORNERS
ELEVATION 16'-8" ±
REFER 201

201 ELEVATION: SECTION #1 REINFORCEMENTS
SCALE: 1/8" = 1'-0"

202 SECTION: INTERNAL BRACE REINFORCEMENT
SCALE: 3/16" = 1'-0"
(1 CORNER SHOWN - 4 CORNERS TOTAL)

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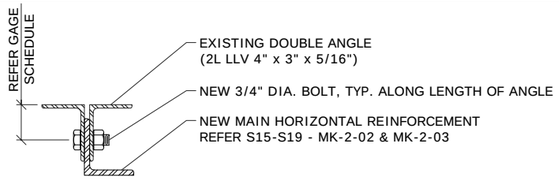
STATE OF CONNECTICUT
E. MARK MALOUF
LICENSED PROFESSIONAL ENGINEER
JUL 01, 2016

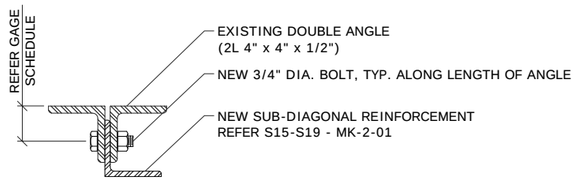
AT&T / T-MOBILE
SECTION #1 MODIFICATION SCHEDULE

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S02	0



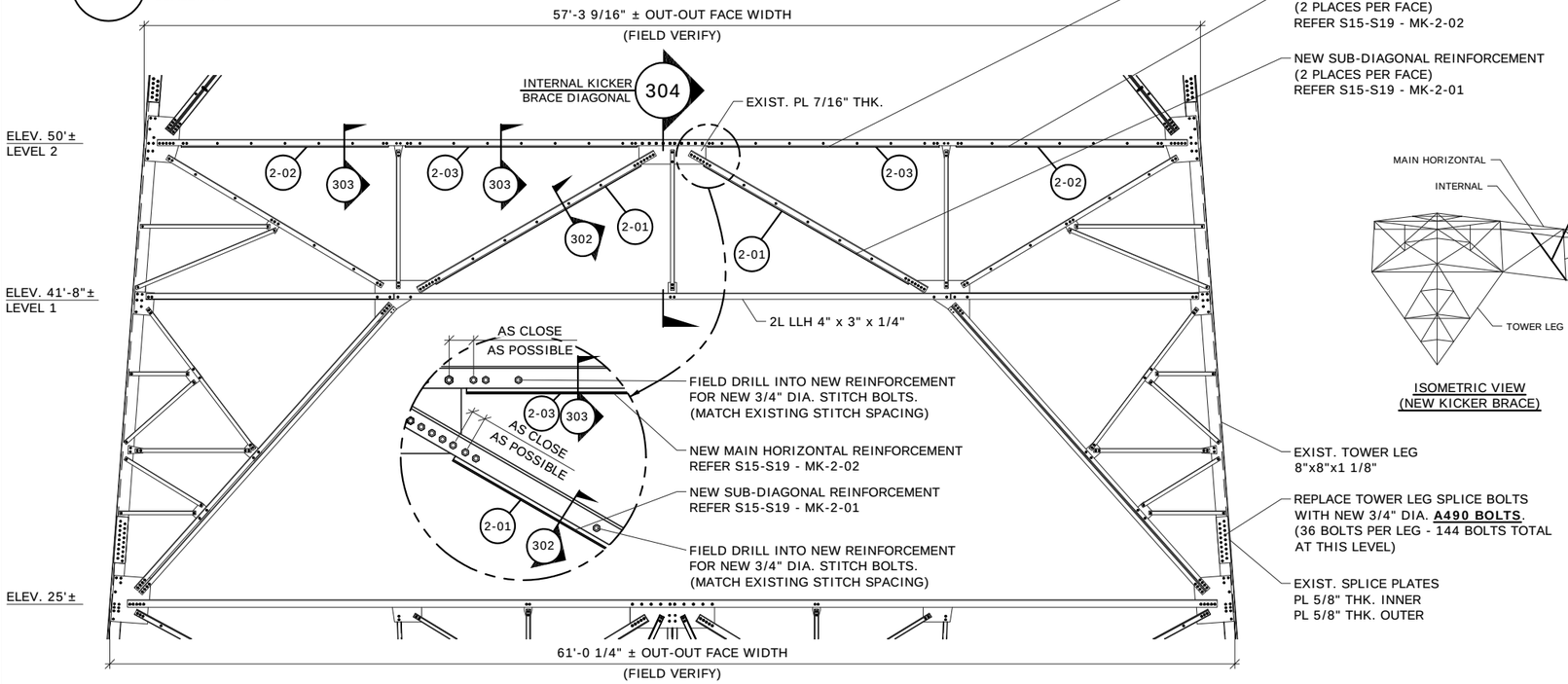
303 SECTION: TYPICAL REINFORCEMENT

SCALE: NTS



302 SECTION: TYPICAL REINFORCEMENT

SCALE: NTS



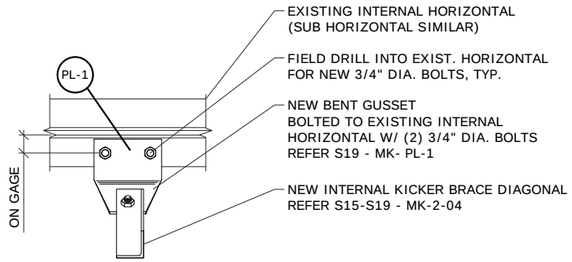
TYPICAL ALL FOUR FACES

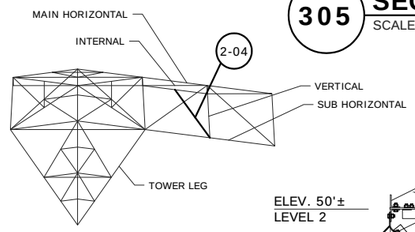
301 ELEVATION: SECTION #2 REINFORCEMENTS

SCALE: 1/8" = 1'-0"

NOTES:

1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)
4. FIELD DRILL AND MATCH EXISTING STITCH BOLT SPACING.

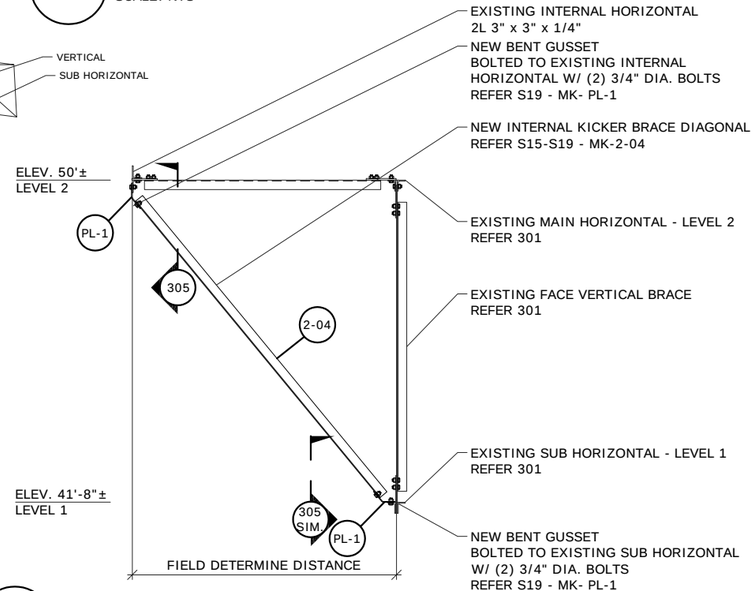




ISOMETRIC VIEW
(NEW KICKER BRACE)

305 SECTION: KICKER BRACE ANGLE

SCALE: NTS



304 SECTION: KICKER BRACE ANGLE

SCALE: 1/4" = 1'-0"

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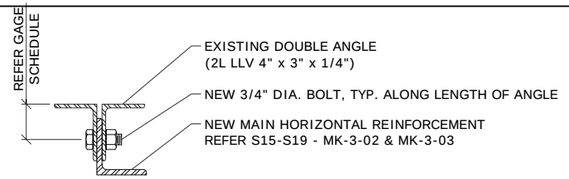
E. MARK MALOUF
LICENSED
PROFESSIONAL ENGINEER
JUL 01, 2016

AT&T / T-MOBILE

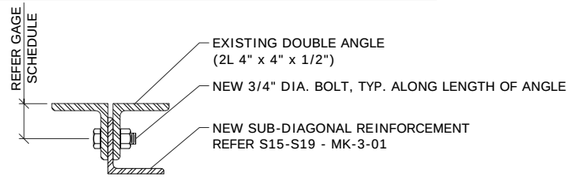
SECTION #2 MODIFICATION SCHEDULE

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	**S03**	0



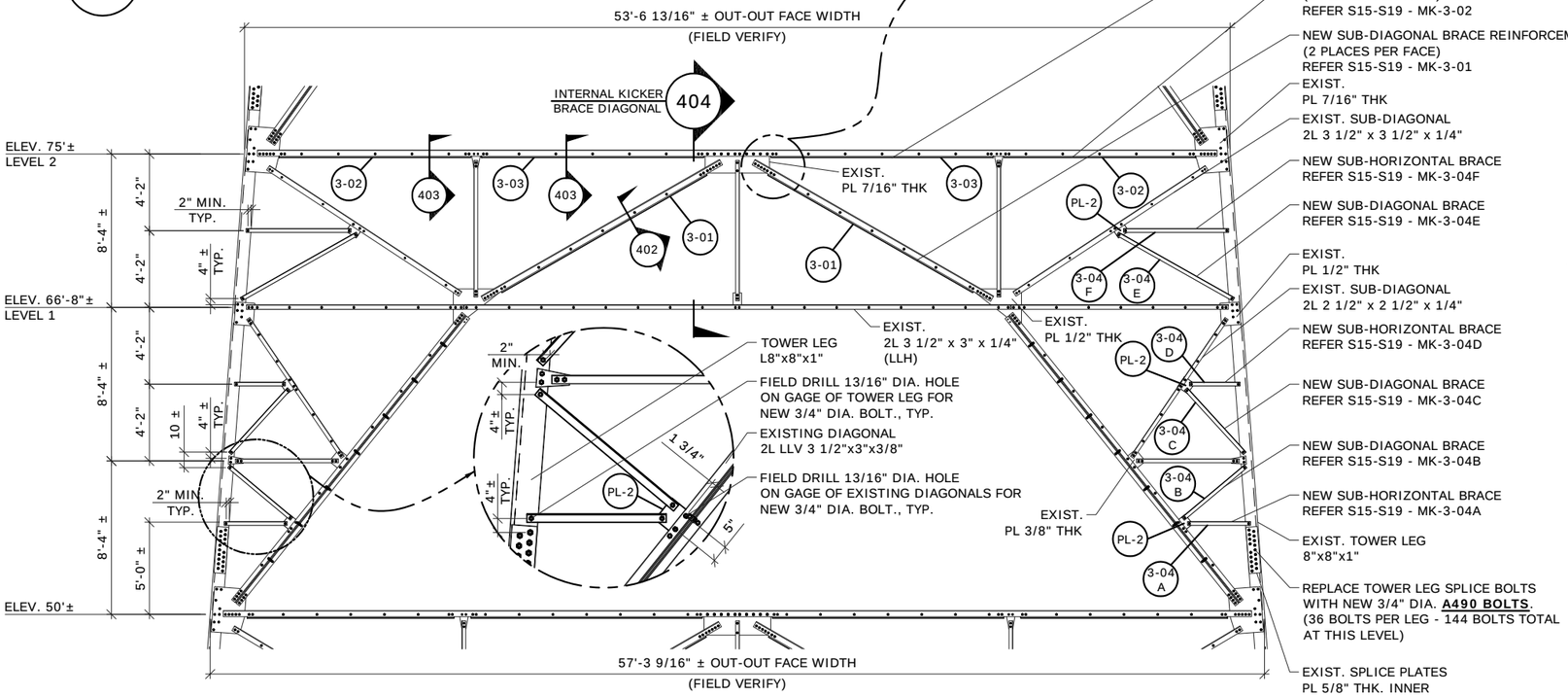
403 SECTION: TYPICAL REINFORCEMENT

SCALE: NTS



402 SECTION: TYPICAL REINFORCEMENT

SCALE: NTS

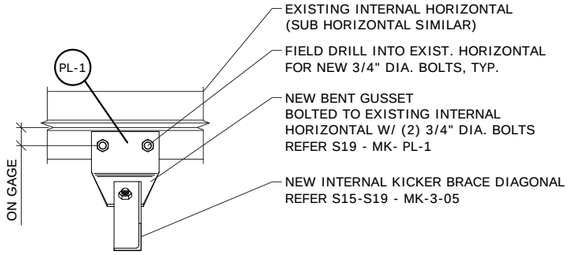


TYPICAL ALL FOUR FACES

401 ELEVATION: SECTION #3 REINFORCEMENTS

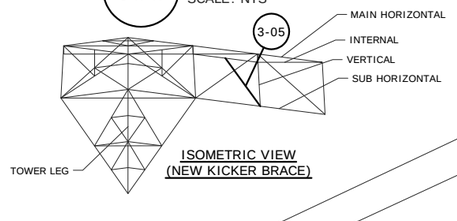
SCALE: 1/8" = 1'-0"

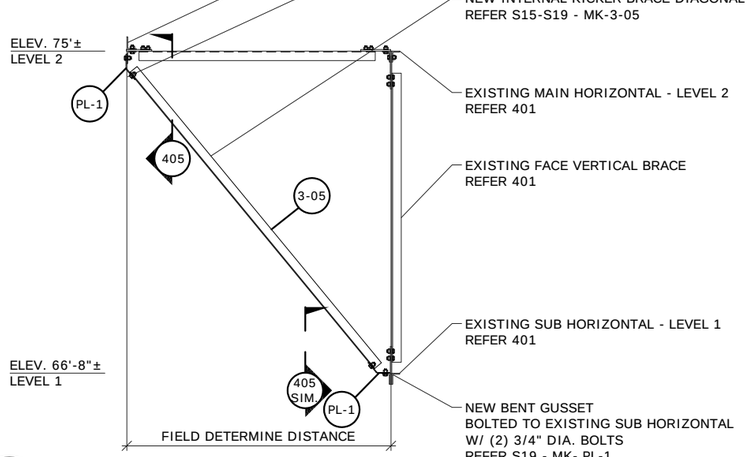
NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)
4. FIELD DRILL AND MATCH EXISTING STITCH BOLT SPACING.



405 SECTION: KICKER BRACE ANGLE

SCALE: NTS





404 SECTION: KICKER BRACE ANGLE

SCALE: 1/4" = 1'-0"

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JUL 01, 2016

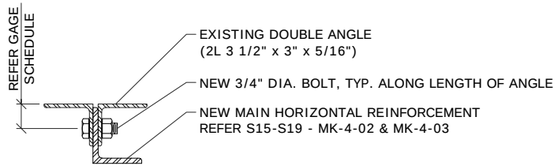
AT&T / T-MOBILE

SECTION #3 MODIFICATION SCHEDULE

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	**S04**	0

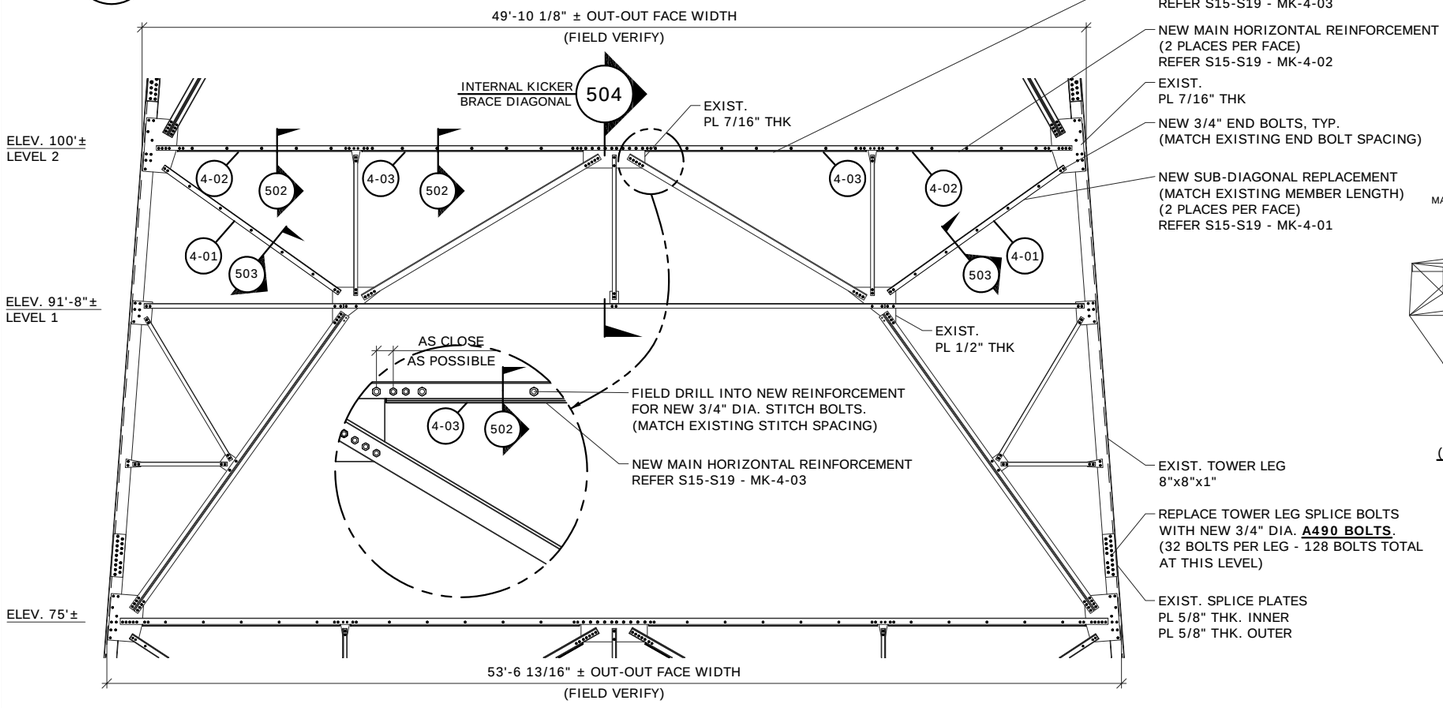
503 SECTION: TYPICAL REINFORCEMENT

SCALE: NTS



502 SECTION: TYPICAL REINFORCEMENT

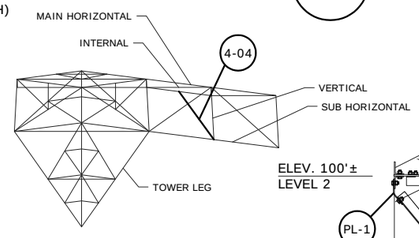
SCALE: NTS



TYPICAL ALL FOUR FACES

501 ELEVATION: SECTION #4 REINFORCEMENTS

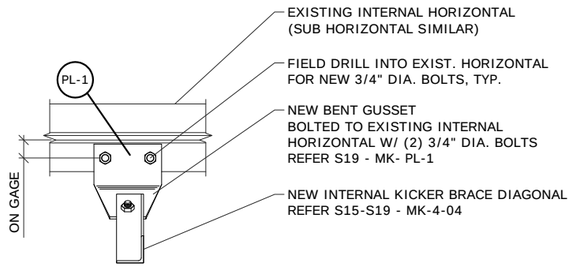
SCALE: 1/8" = 1'-0"



ISOMETRIC VIEW
(NEW KICKER BRACE)

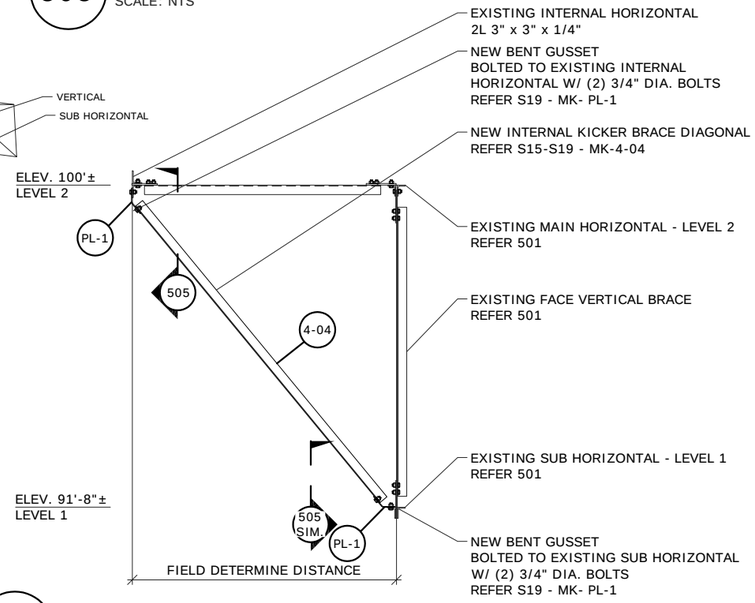
NOTES:

1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)
4. FIELD DRILL AND MATCH EXISTING STITCH BOLT SPACING.
5. NEW REPLACEMENT MEMBERS TO MATCH EXISTING MEMBERS LENGTH.



505 SECTION: KICKER BRACE ANGLE

SCALE: NTS



504 SECTION: KICKER BRACE ANGLE

SCALE: 1/4" = 1'-0"

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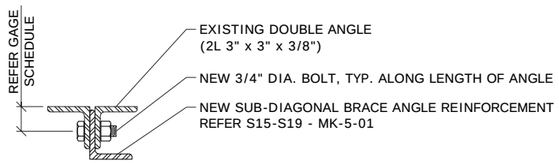
JUL 01, 2016

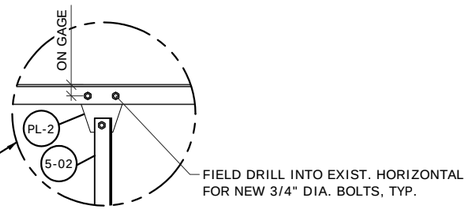
AT&T / T-MOBILE

SECTION #4 MODIFICATION SCHEDULE

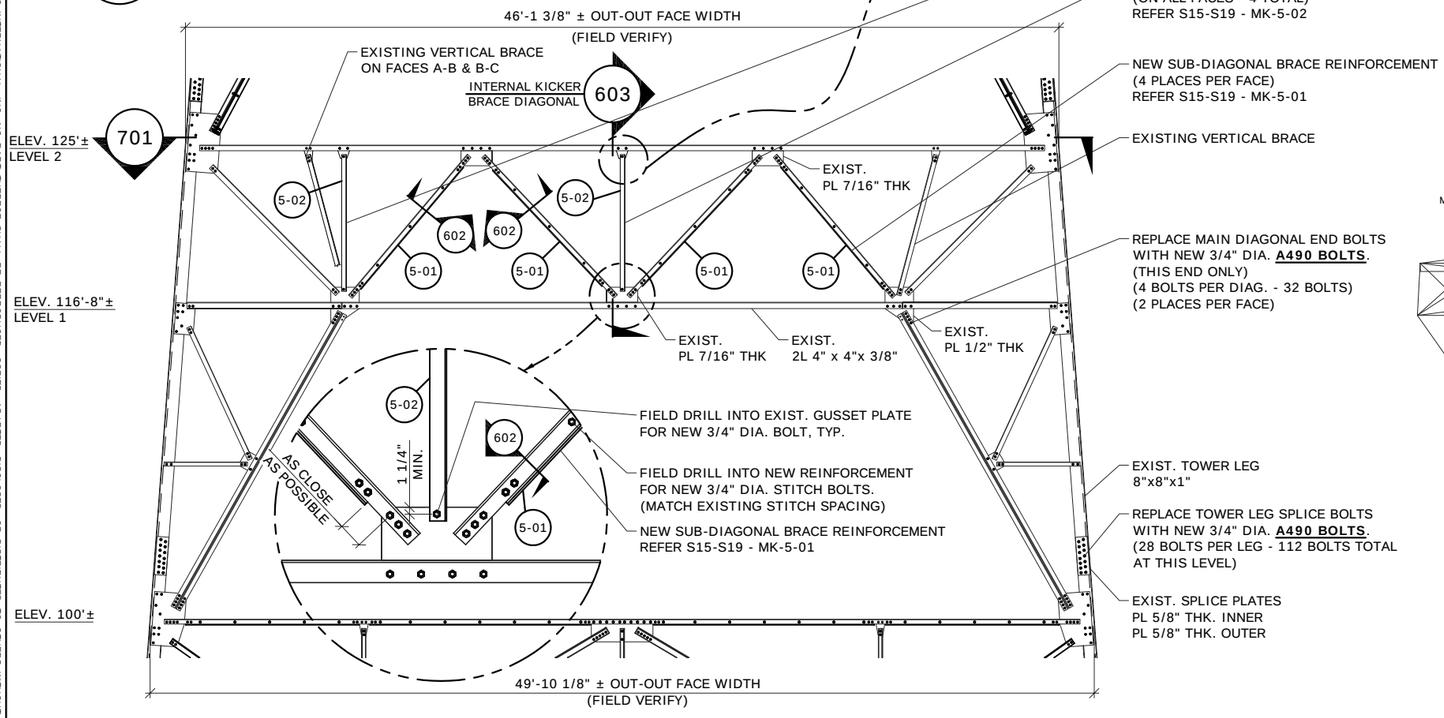
MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S05	0

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)
4. FIELD DRILL AND MATCH EXISTING STITCH BOLT SPACING.
5. NEW REPLACEMENT MEMBERS TO MATCH EXISTING MEMBERS LENGTH.



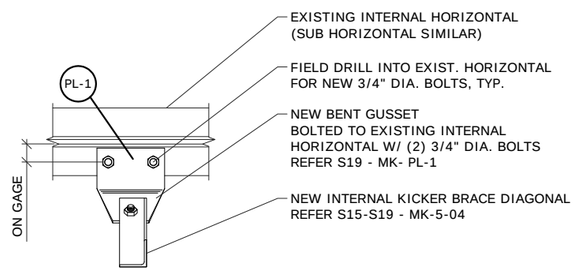


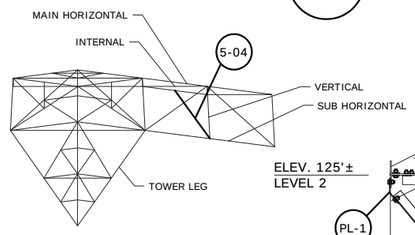
602 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



TYPICAL ALL FOUR FACES

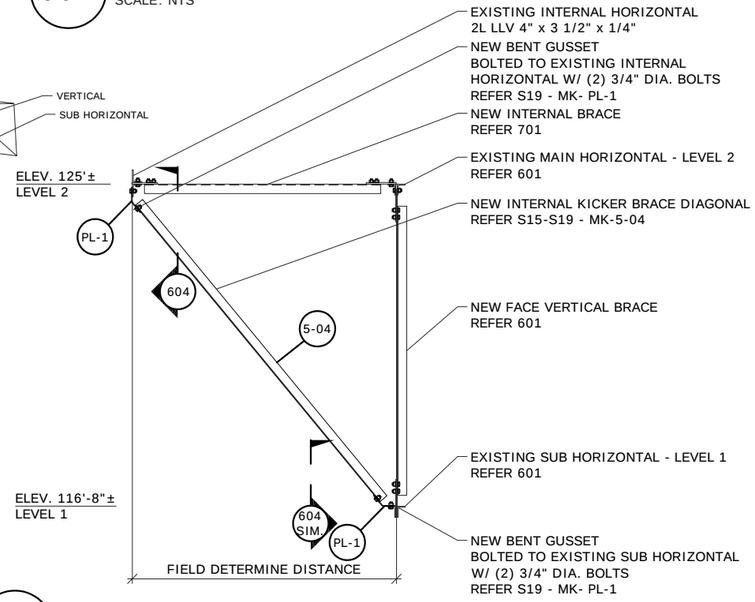
601 ELEVATION: SECTION #5 REINFORCEMENTS
SCALE: 1/8" = 1'-0"





ISOMETRIC VIEW
(NEW KICKER BRACE)

604 SECTION: KICKER BRACE ANGLE
SCALE: NTS



603 SECTION: KICKER BRACE ANGLE
SCALE: 1/4" = 1'-0"

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10 WILLARD RD., NORWALK, CT 06851
LAT: 41-07-41.8 N - LON: 73-23-24.9 W

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NO.	DATE	REVISIONS	REP	KMM	MM
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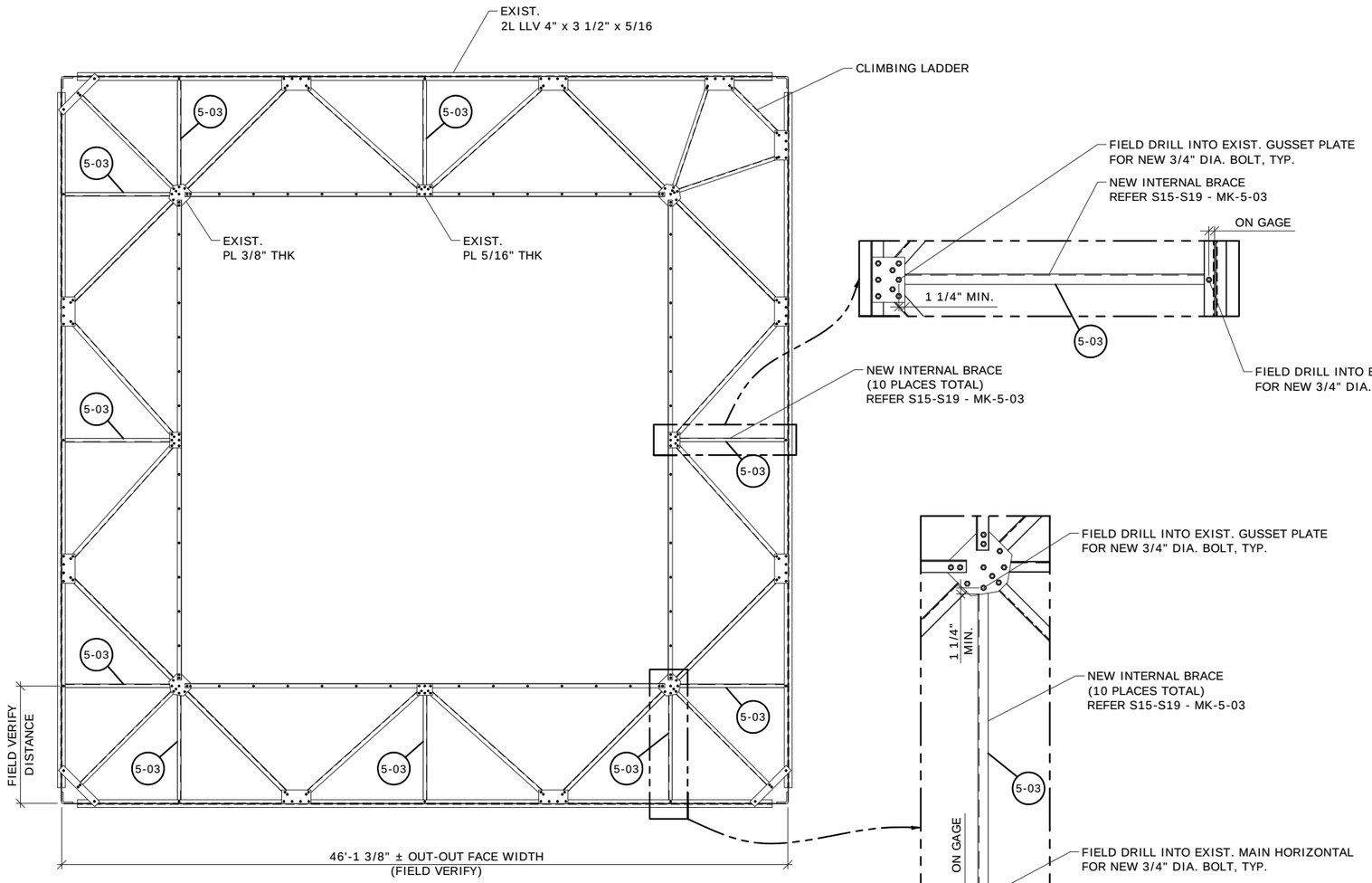
SECTION #5 MODIFICATION SCHEDULE

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S06	0

NOTE:
REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.



TYPICAL ALL FOUR FACES
(LEVEL 2)

701 PLAN: SECTION #5 REINFORCEMENTS

SCALE: 1/8" = 1'-0"

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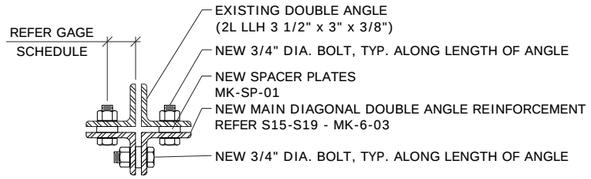
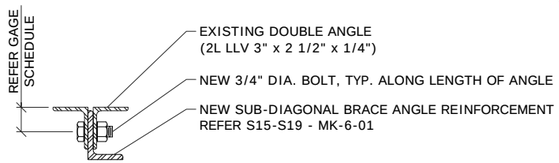
SECTION #5 MODIFICATION SCHEDULE CONTINUED

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S07	0

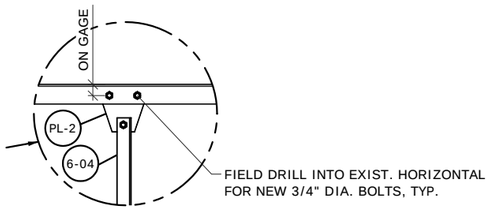


NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)
4. FIELD DRILL AND MATCH EXISTING STITCH BOLT SPACING.
5. NEW REPLACEMENT MEMBERS TO MATCH EXISTING MEMBERS LENGTH.

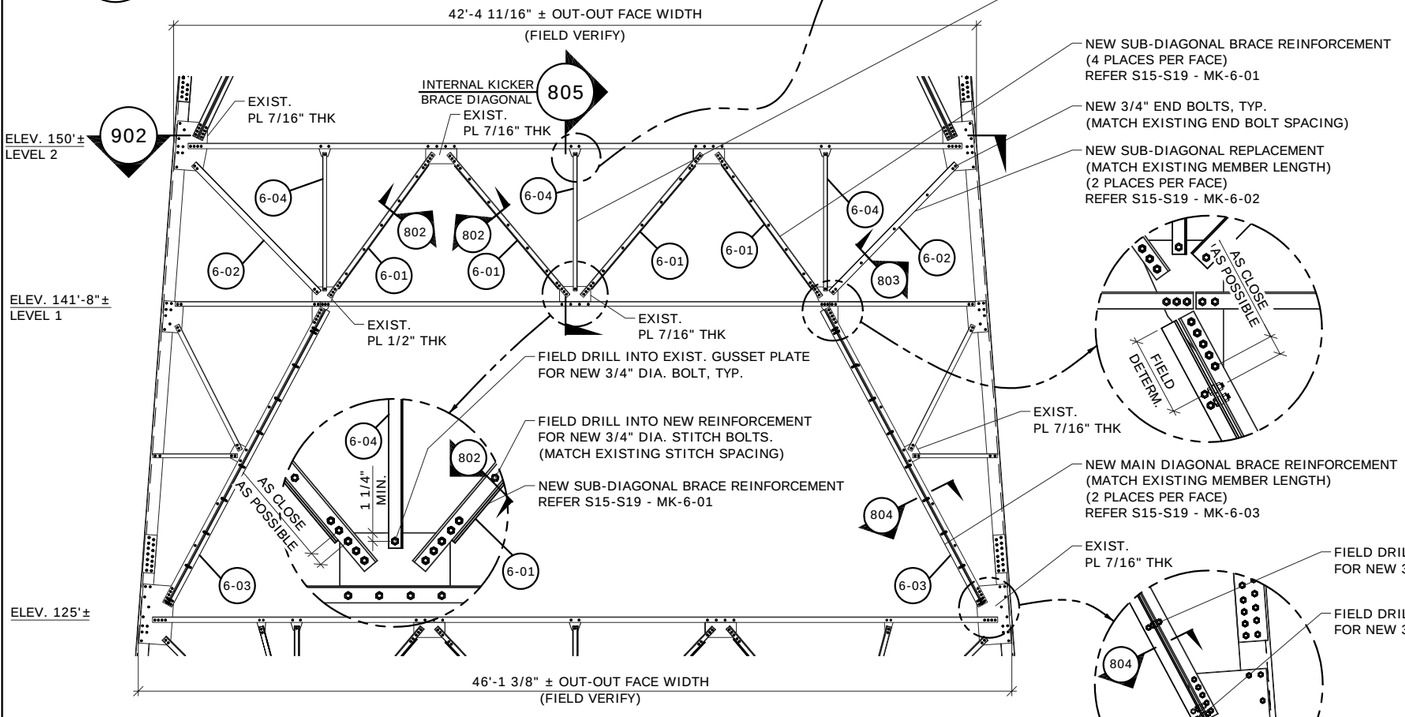
803 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



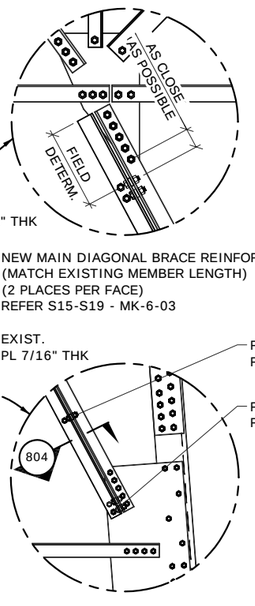
804 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



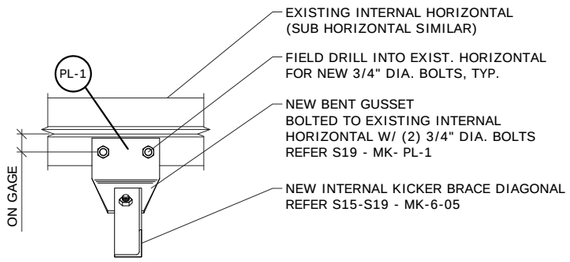
802 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS

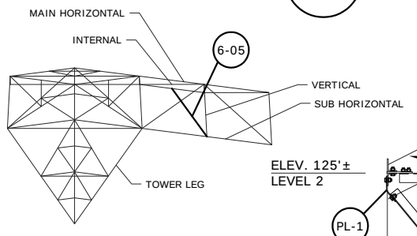


TYPICAL ALL FOUR FACES



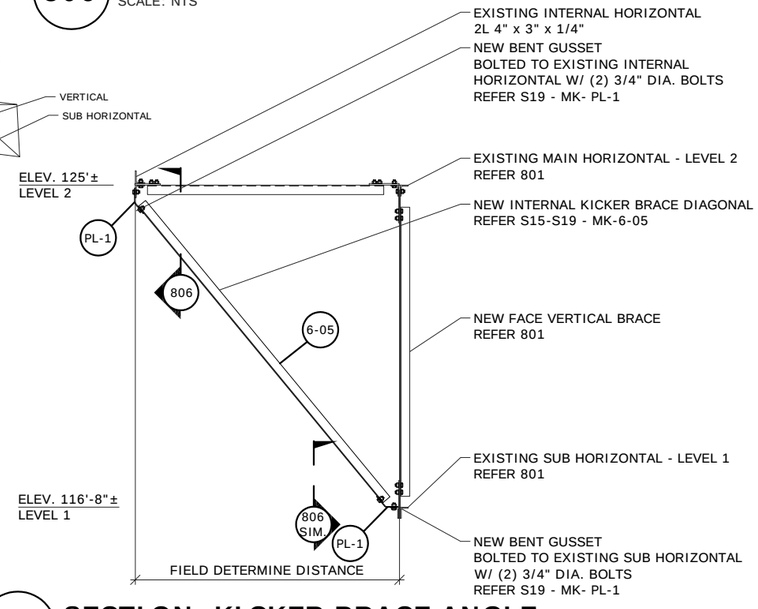
801 ELEVATION: SECTION #6 REINFORCEMENTS
SCALE: 1/8" = 1'-0"





ISOMETRIC VIEW
(NEW KICKER BRACE)

806 SECTION: KICKER BRACE ANGLE
SCALE: NTS



805 SECTION: KICKER BRACE ANGLE
SCALE: 1/4" = 1'-0"

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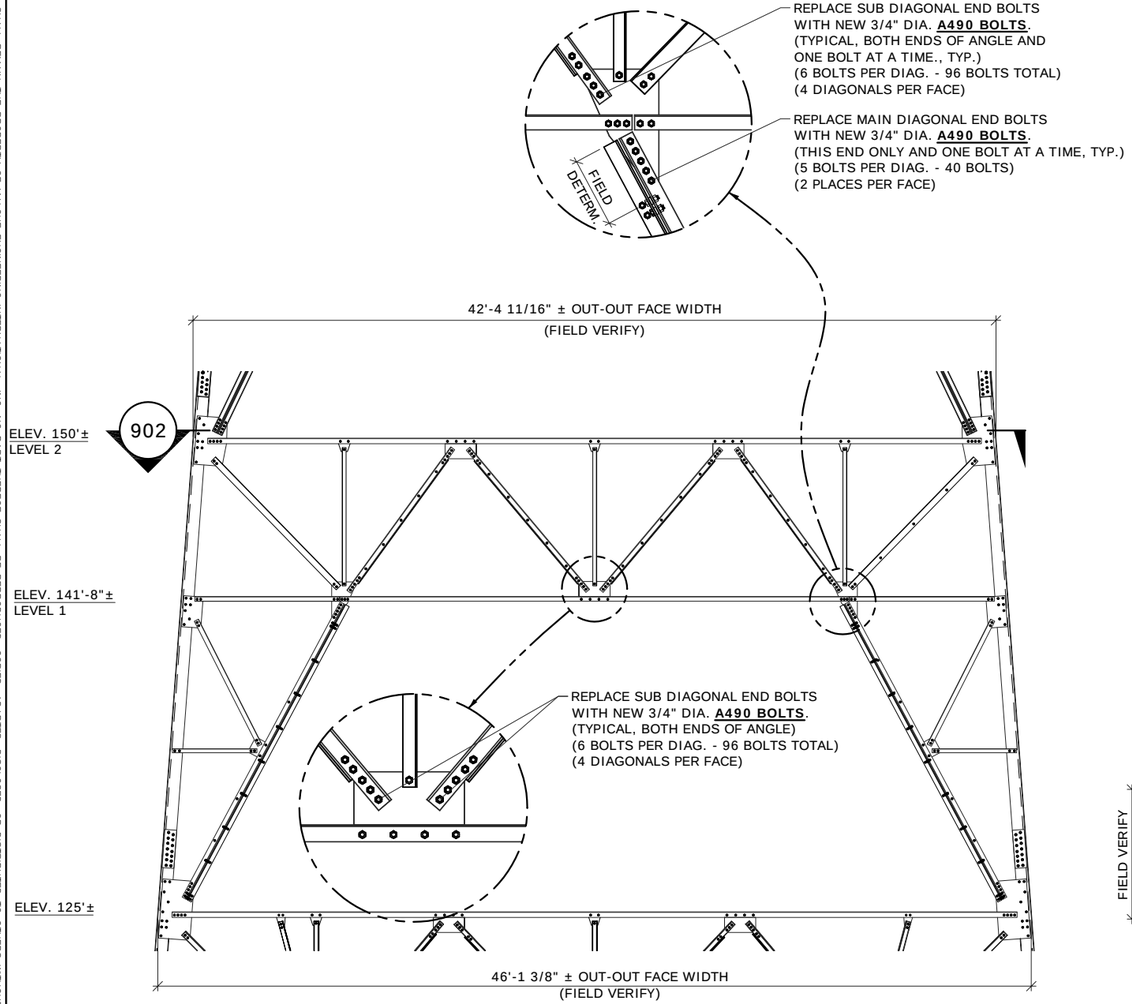
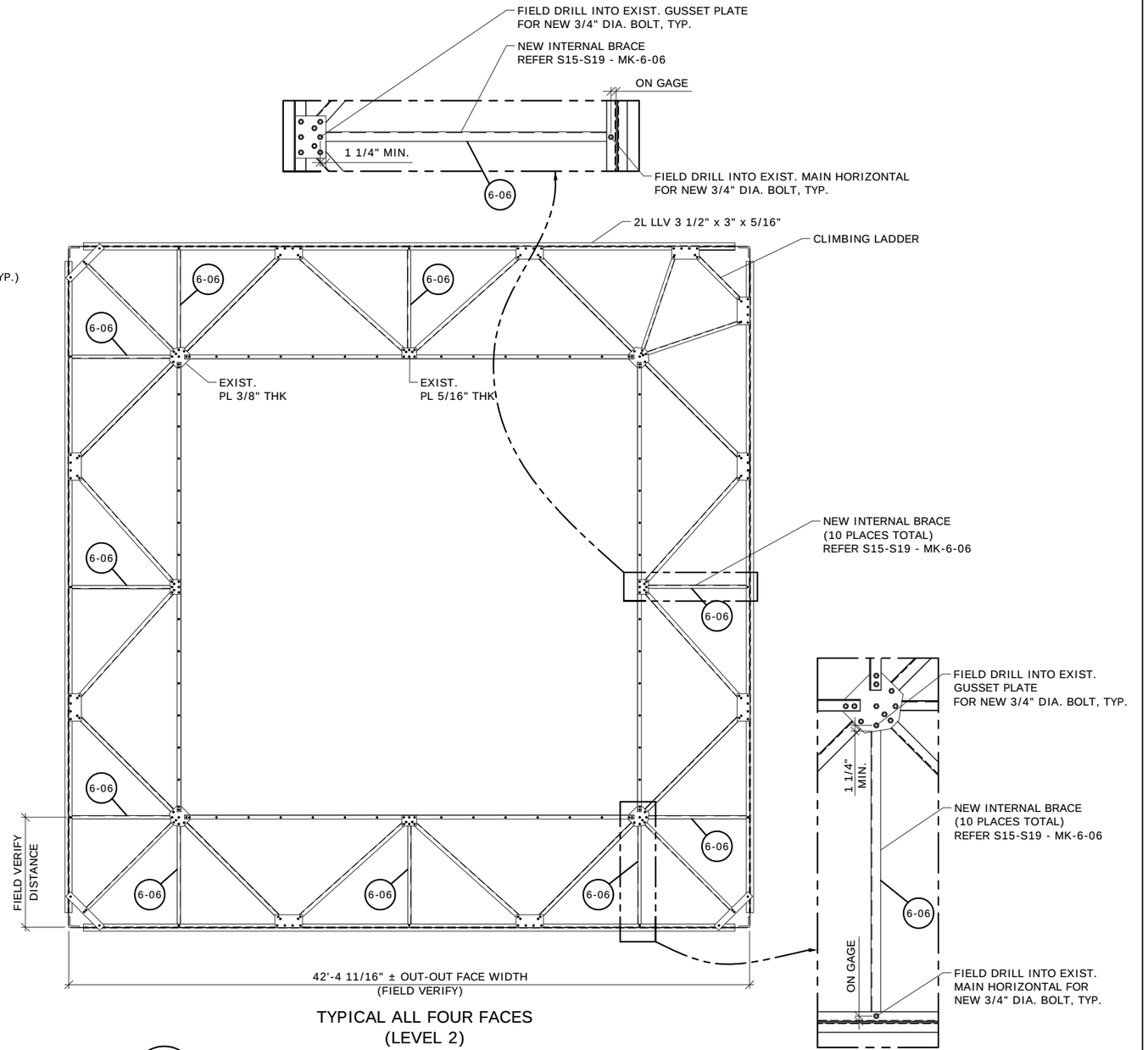
MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S08	0

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.



TYPICAL ALL FOUR FACES

901 ELEVATION: SECTION #6 BOLT REPLACEMENTS
SCALE: 1/8" = 1'-0"



TYPICAL ALL FOUR FACES (LEVEL 2)

902 PLAN: SECTION #6 REINFORCEMENTS
SCALE: 1/8" = 1'-0"

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SECTION #6 MODIFICATION SCHEDULE CONTINUED

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S09	0

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. REFER T02 FOR MEMBER/BOLT REPLACEMENT NOTES.
3. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)
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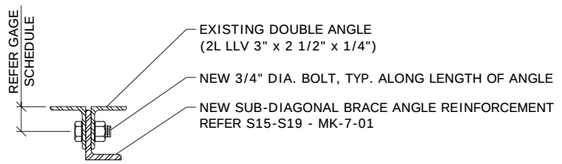
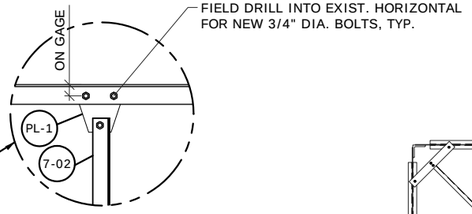
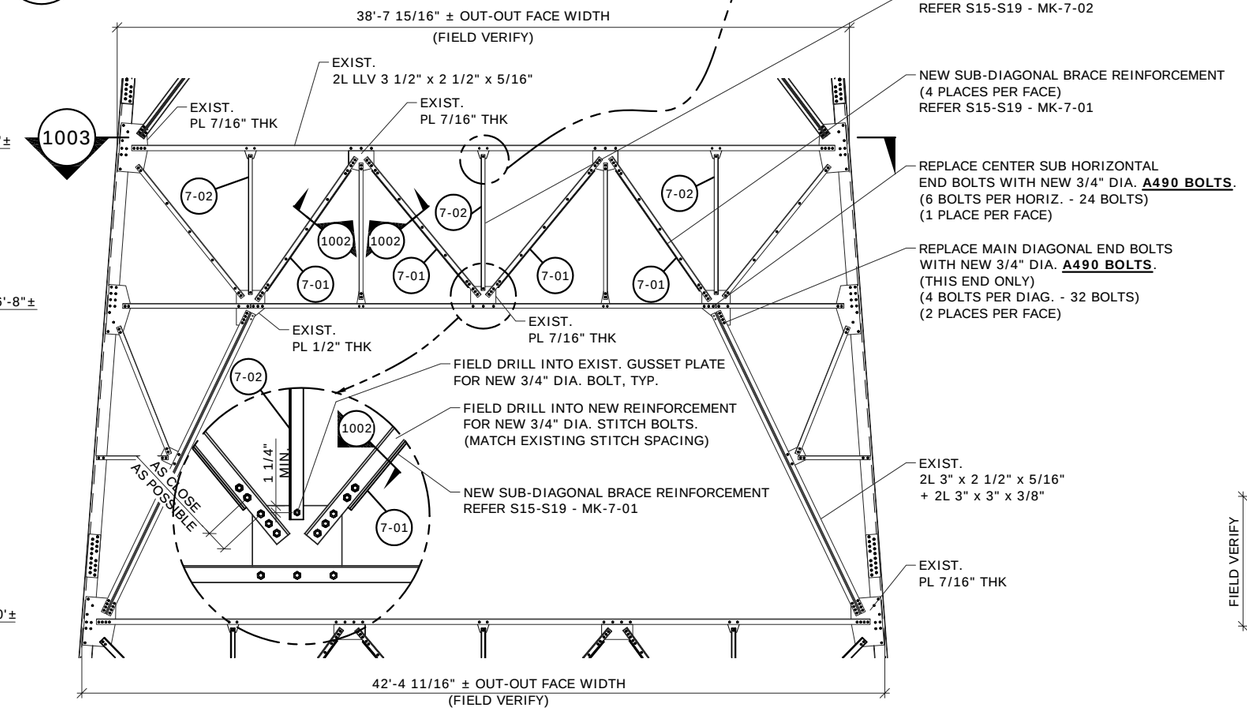
5. NEW REPLACEMENT MEMBERS TO MATCH EXISTING MEMBERS LENGTH.



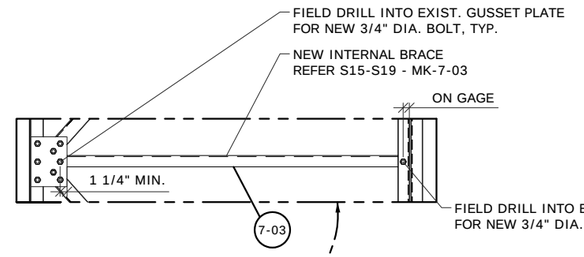


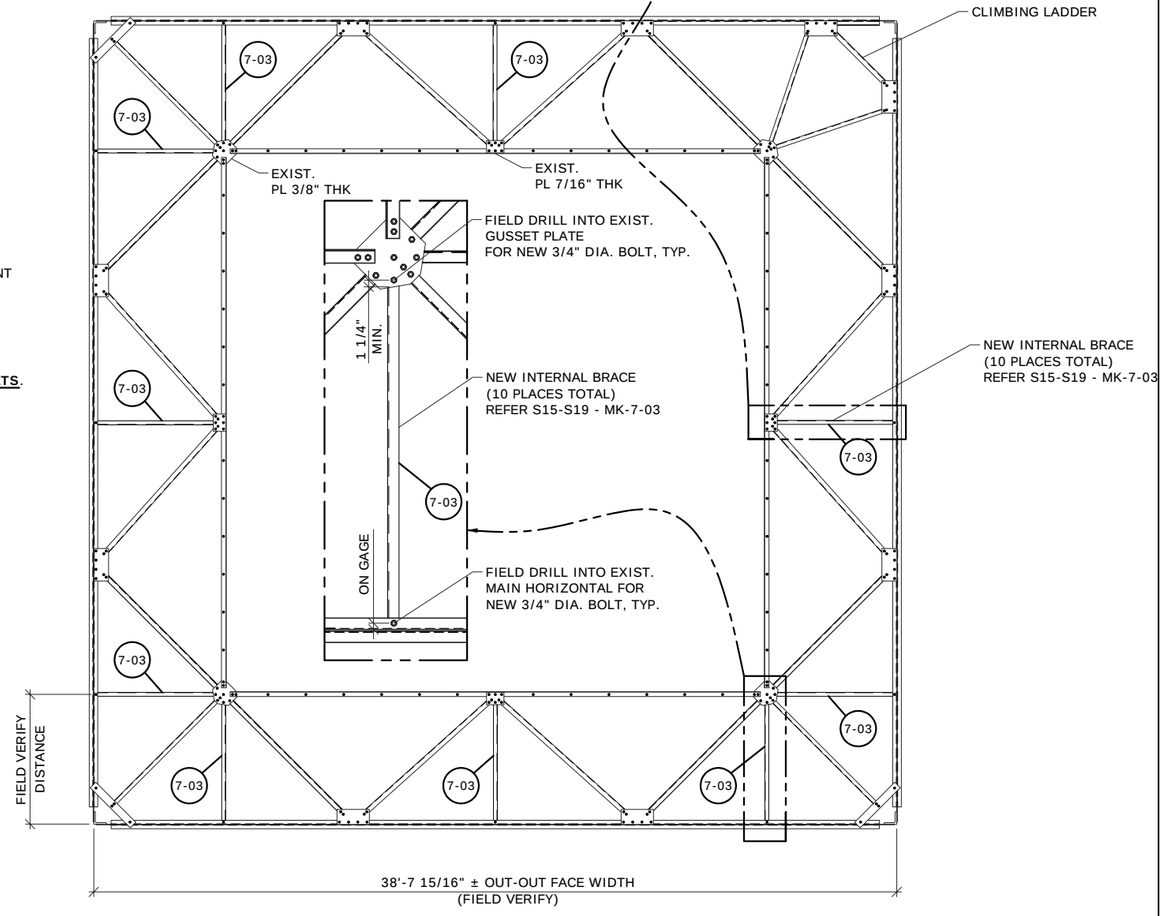
1002 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



TYPICAL ALL FOUR FACES

1001 ELEVATION: SECTION #7 REINFORCEMENTS
SCALE: 1/8" = 1'-0"





TYPICAL ALL FOUR FACES

1003 PLAN: SECTION #7 REINFORCEMENTS
SCALE: 1/8" = 1'-0"

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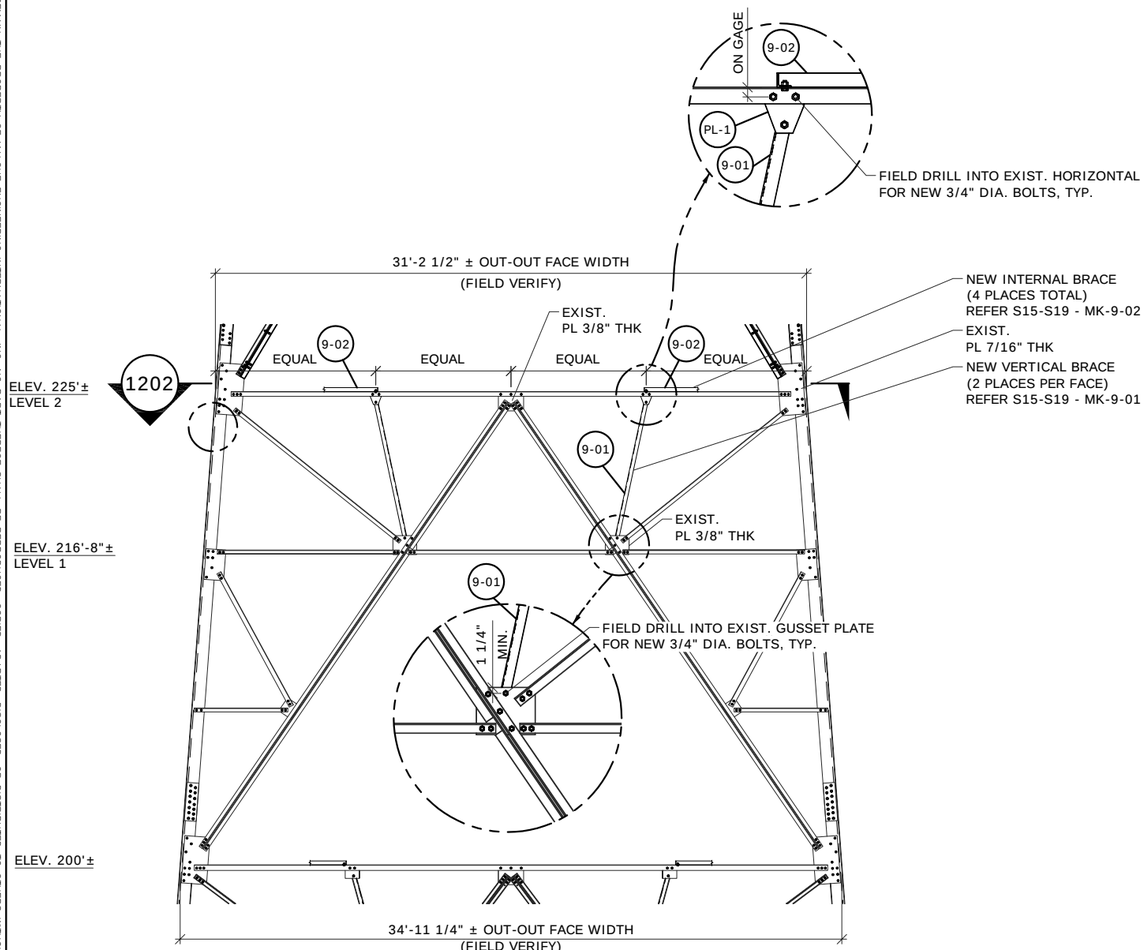
AT&T / T-MOBILE
SECTION #7 MODIFICATION SCHEDULE

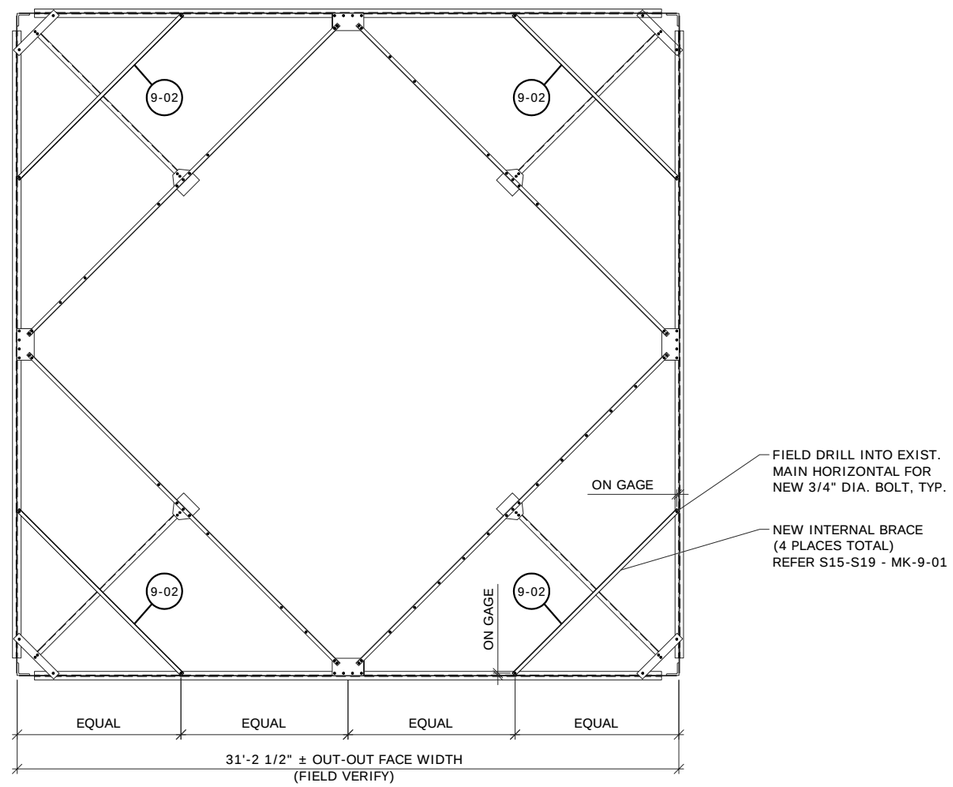
MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S10	0

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)



TYPICAL ALL FOUR FACES

1201 ELEVATION: SECTION #9 REINFORCEMENTS
SCALE: 1/8" = 1'-0"



TYPICAL ALL FOUR CORNERS
(LEVEL 2)

1202 PLAN: SECTION #9 REINFORCEMENTS
SCALE: NTS

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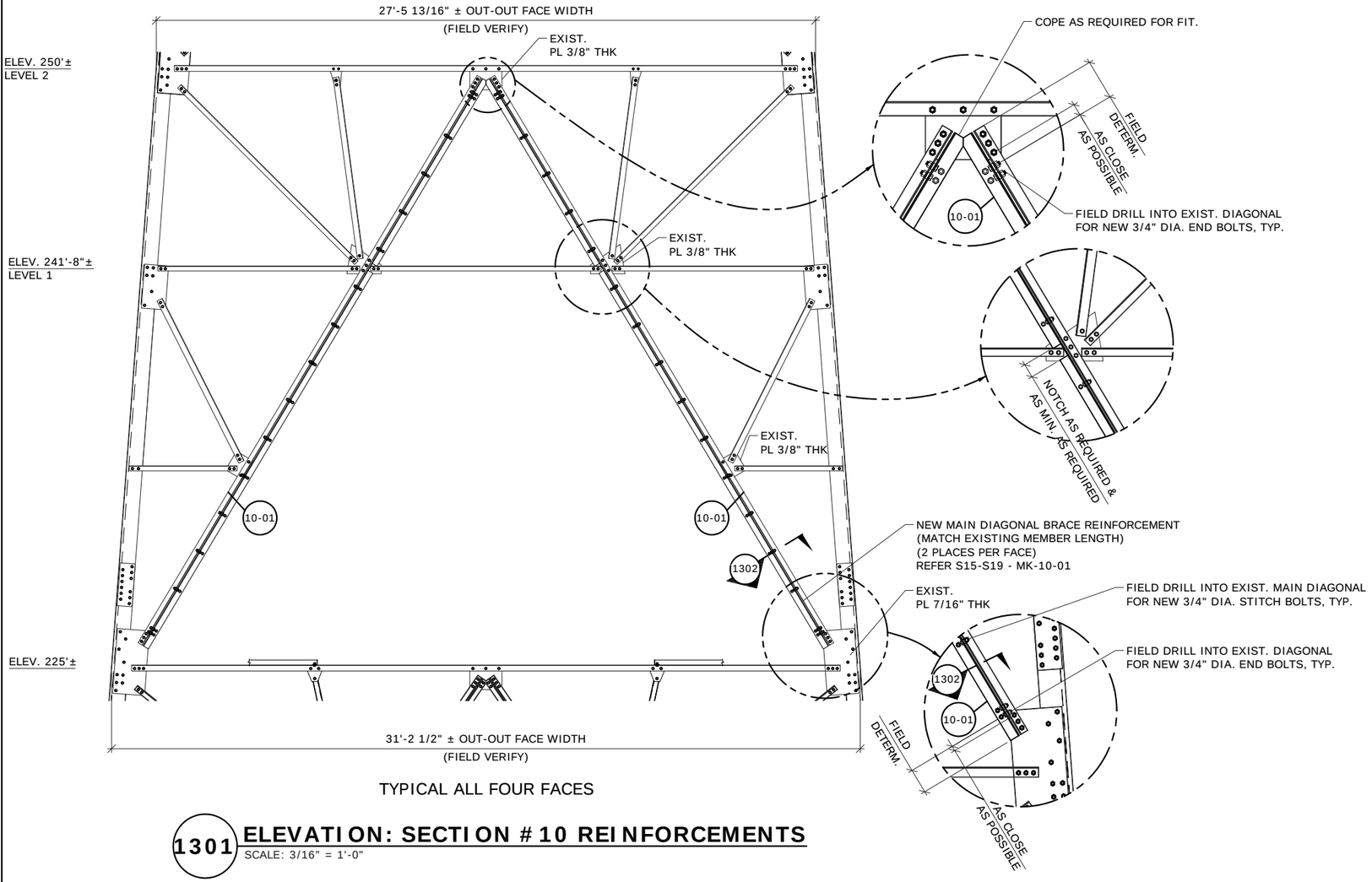
SECTION #9 MODIFICATION SCHEDULE

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S12	0

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)

1302 SECTION: TYPICAL REINFORCEMENT
SCALE: NTS



TYPICAL ALL FOUR FACES

1301 ELEVATION: SECTION #10 REINFORCEMENTS
SCALE: 3/16" = 1'-0"

FOR NEW MEMBER SIZES AND SCHEDULES.

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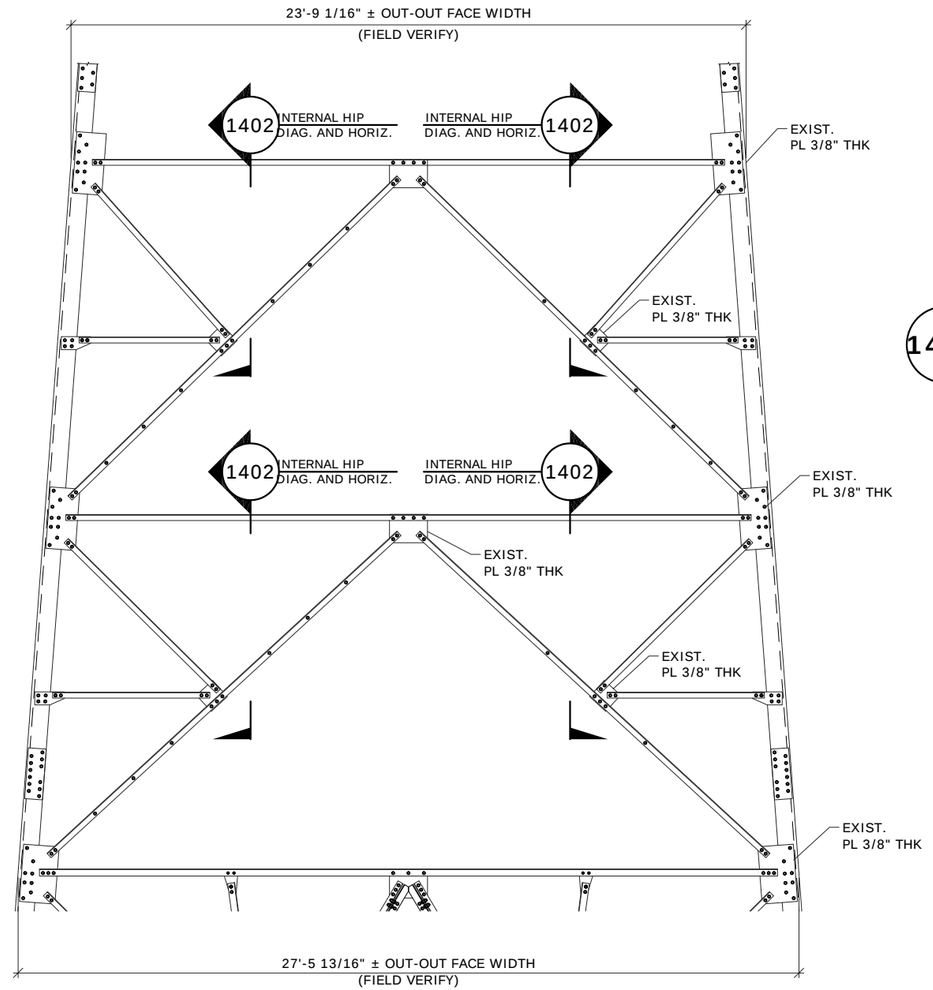
SECTION #10 MODIFICATION SCHEDULE

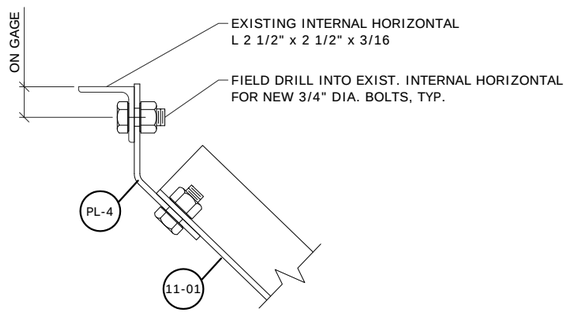
MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S13	0

NOTES:
1. REFER SHEET T01 FOR TECHNICAL SPECIFICATION NOTES.
2. NEW ANGLE REINFORCEMENTS TO BE AS CLOSE AS POSSIBLE TO JOINT AS SHOWN. (FIELD DETERMINE LENGTH REQUIRED.)

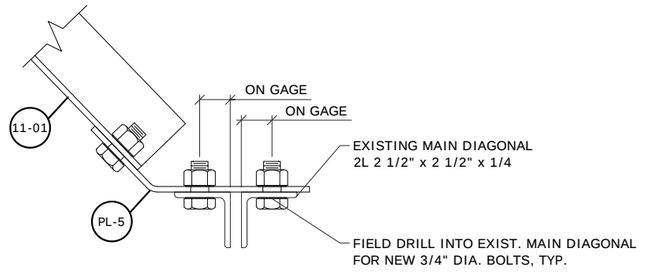


TYPICAL ALL FOUR FACES

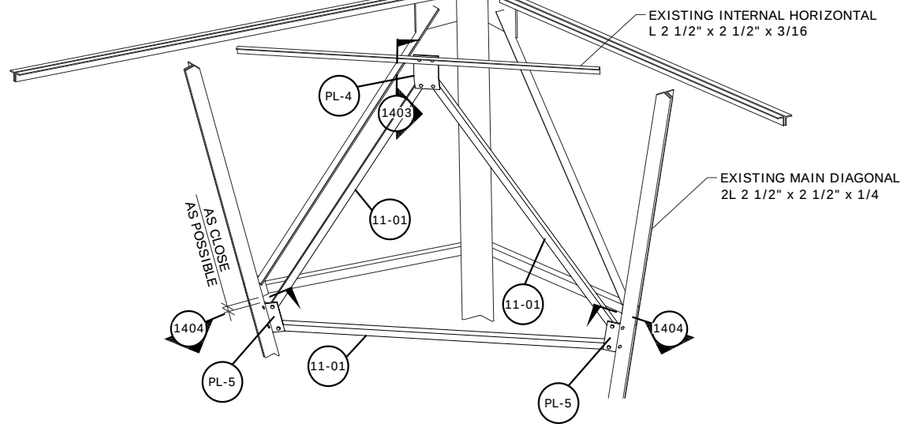
1401 ELEVATION: SECTION #11 REINFORCEMENTS
SCALE: 3/16" = 1'-0"



1403 SECTION: TYPICAL CONNECTION AT INTERNAL HORIZ.
SCALE: 3/16" = 1'-0"



1404 SECTION: TYPICAL CONNECTION AT MAIN DIAGONAL
SCALE: NTS



TYPICAL ALL FOUR CORNERS

1402 SECTION: SECTION #11 REINFORCEMENTS
SCALE: NTS

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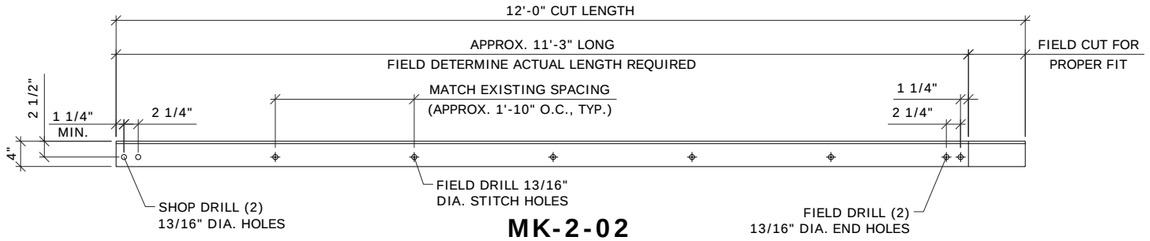
SECTION #11 MODIFICATION SCHEDULE

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S14	0

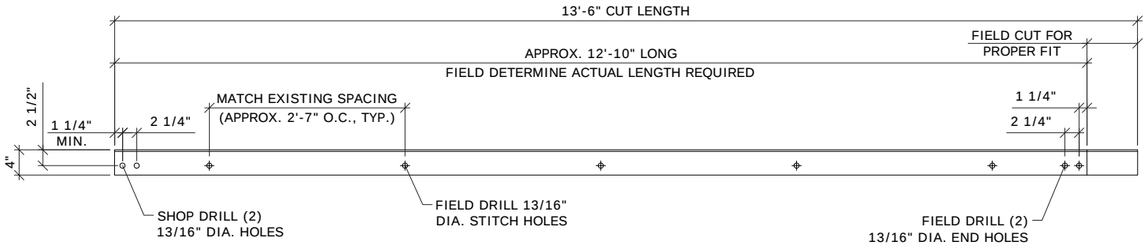
REFER SHEET T01 FOR TECH. SPEC. NOTES



MK-2-02

(LLV 4" x 3 1/2" x 3/8")

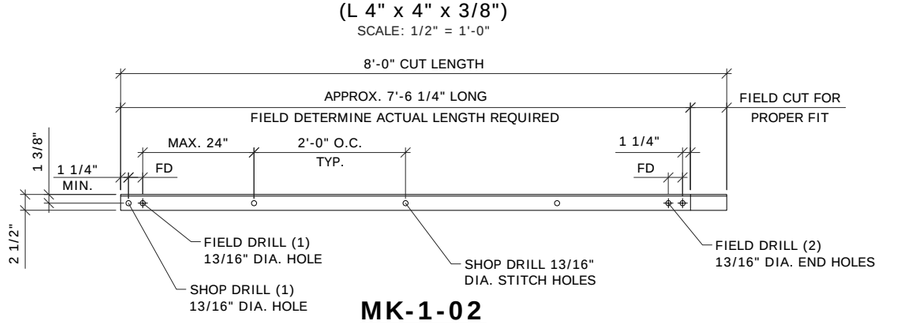
SCALE: 1/2" = 1'-0"



MK-2-01

(L 4" x 4" x 3/8")

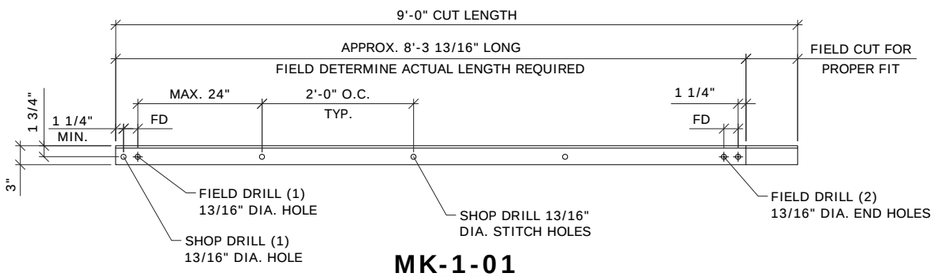
SCALE: 1/2" = 1'-0"



MK-1-02

(L 2 1/2" x 2 1/2" x 1/4")

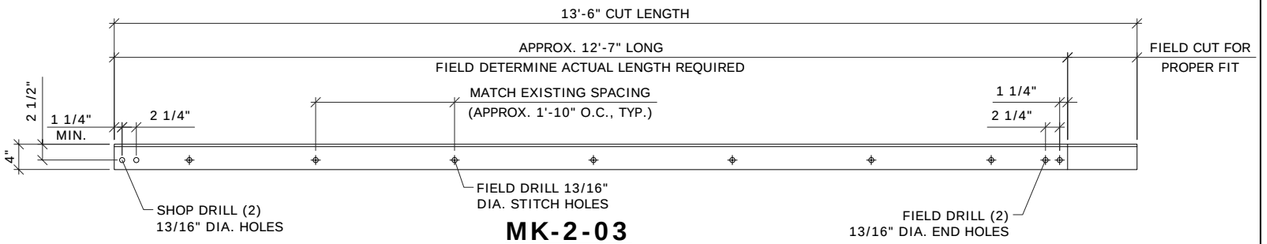
SCALE: 1/2" = 1'-0"



MK-1-01

(L 3" x 3" x 1/4")

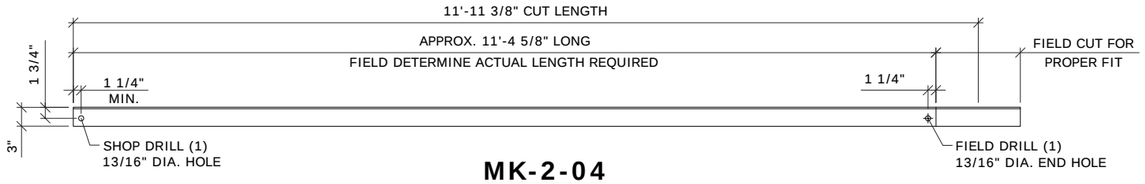
SCALE: 1/2" = 1'-0"



MK-2-03

(L 4" x 3 1/2" x 3/8")

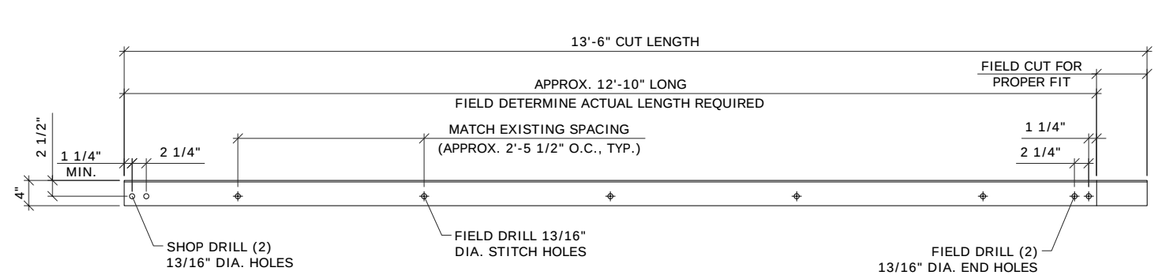
SCALE: 1/2" = 1'-0"



MK-2-04

(L 3" x 3" x 1/4")

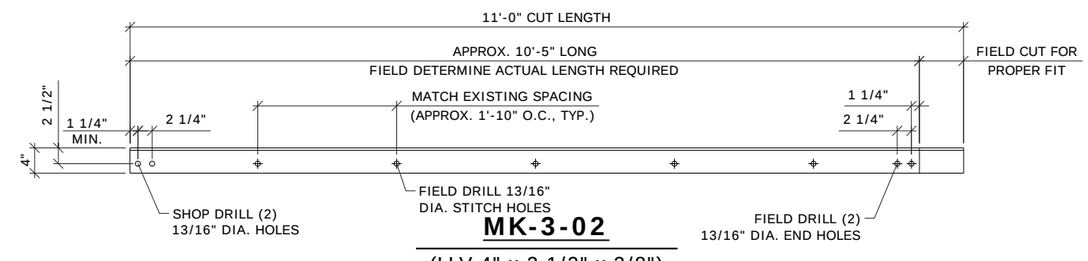
SCALE: 1/2" = 1'-0"



MK-3-01

(L 4" x 4" x 3/8")

SCALE: 1/2" = 1'-0"



MK-3-02

(LLV 4" x 3 1/2" x 3/8")

SCALE: 1/2" = 1'-0"

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351.67' SELF-SUPPORTING TOWER
AT&T FA #10034993 / T-MOBILE #CT11011D
10 WILLARD RD., NORWALK, CT 06851
LAT: 41-07-41.8 N - LON: 73-23-24.9 W

AT&T
T-Mobile

NO.	DATE	REVISIONS	DRAWN	ENG'D.	APP'D.
0	07/01/16	ISSUED FOR CONSTRUCTION	REP	KMM	MM

JUL 01, 2016
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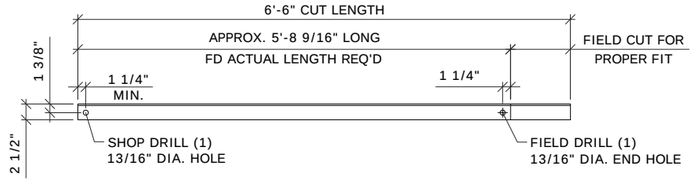
AT&T / T-MOBILE

NEW MEMBER AND PARTS DETAILS

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S15	0

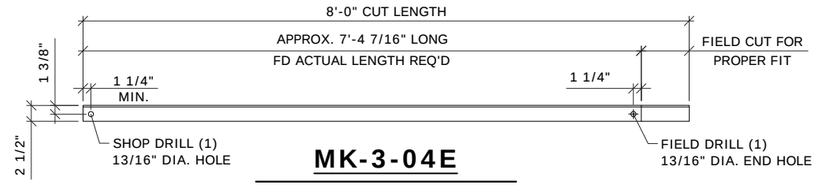
REFER SHEET T01 FOR TECH. SPEC. NOTES



MK-3-04F

(L 2 1/2" x 2 1/2" x 1/4")

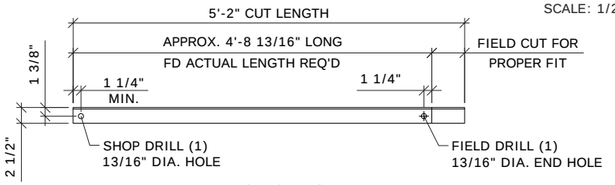
SCALE: 1/2" = 1'-0"



MK-3-04E

(L 2 1/2" x 2 1/2" x 1/4")

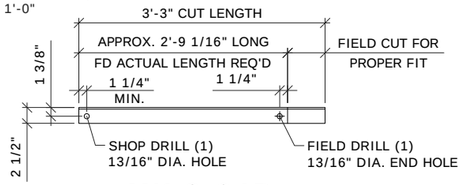
SCALE: 1/2" = 1'-0"



MK-3-04C

(L 2 1/2" x 2 1/2" x 1/4")

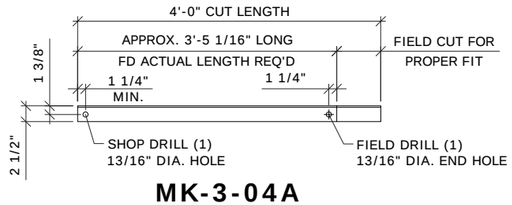
SCALE: 1/2" = 1'-0"



MK-3-04D

(L 2 1/2" x 2 1/2" x 1/4")

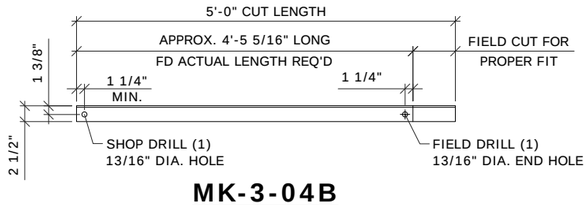
SCALE: 1/2" = 1'-0"



MK-3-04A

(L 2 1/2" x 2 1/2" x 1/4")

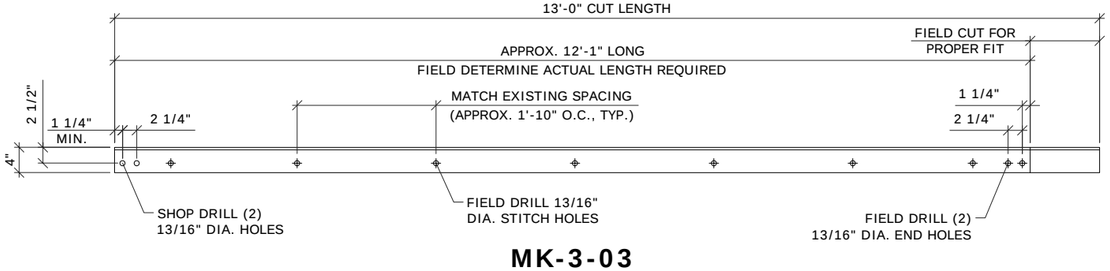
SCALE: 1/2" = 1'-0"



MK-3-04B

(L 2 1/2" x 2 1/2" x 1/4")

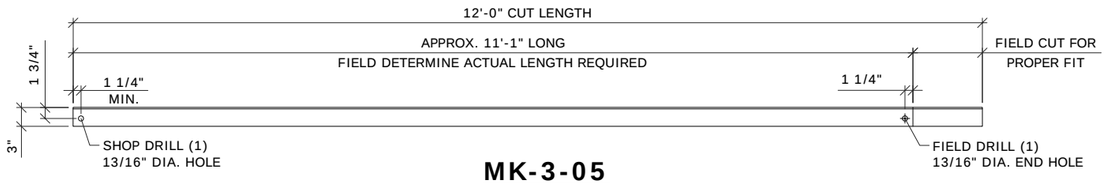
SCALE: 1/2" = 1'-0"



MK-3-03

(LLV 4" x 3 1/2" x 3/8")

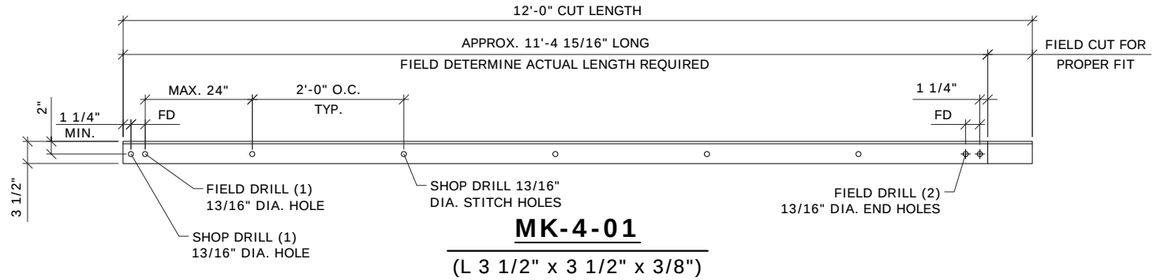
SCALE: 1/2" = 1'-0"



MK-3-05

(L 3" x 3" x 1/4")

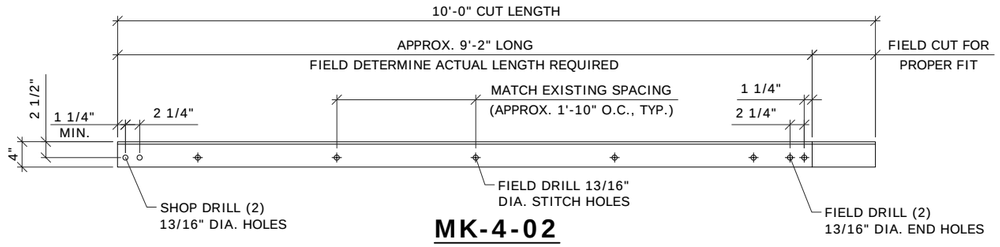
SCALE: 1/2" = 1'-0"



MK-4-01

(L 3 1/2" x 3 1/2" x 3/8")

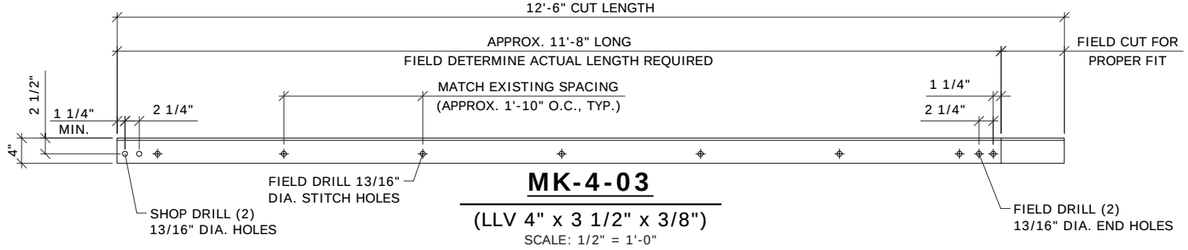
SCALE: 1/2" = 1'-0"



MK-4-02

(LLV 4" x 3 1/2" x 3/8")

SCALE: 1/2" = 1'-0"



MK-4-03

(LLV 4" x 3 1/2" x 3/8")

SCALE: 1/2" = 1'-0"

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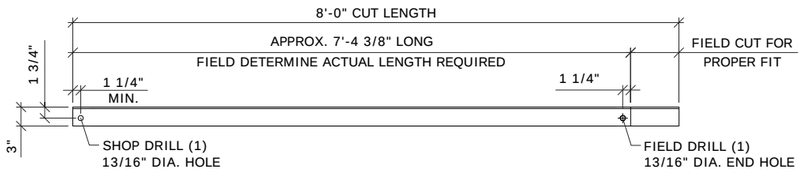
NEW MEMBER AND PARTS DETAILS CONTINUED

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S16	0

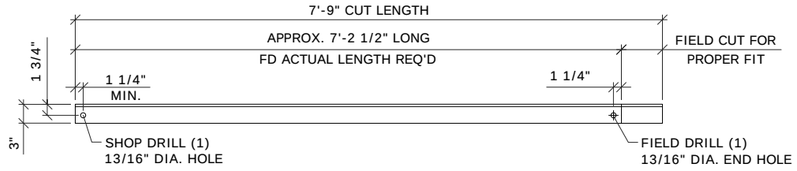
REFER SHEET T01 FOR TECH. SPEC. NOTES



MK-5-03

(L 3" x 3" x 1/4")

SCALE: 1/2" = 1'-0"



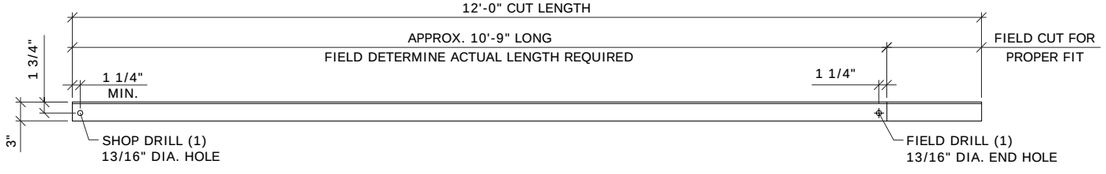
MK-5-02

(L 3" x 3" x 1/4")

MK-5-01

(LLV 3 1/2" x 3" x 3/8")

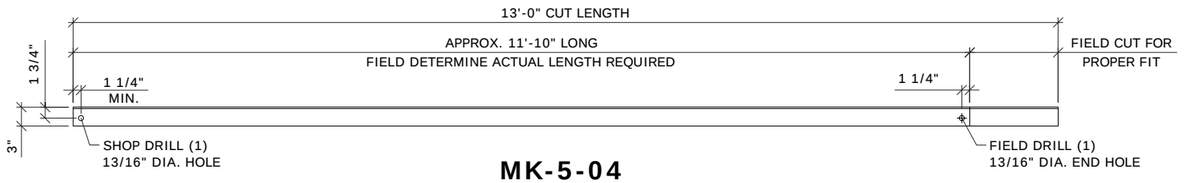
SCALE: 1/2" = 1'-0"



MK-4-04

(L 3" x 3" x 1/4")

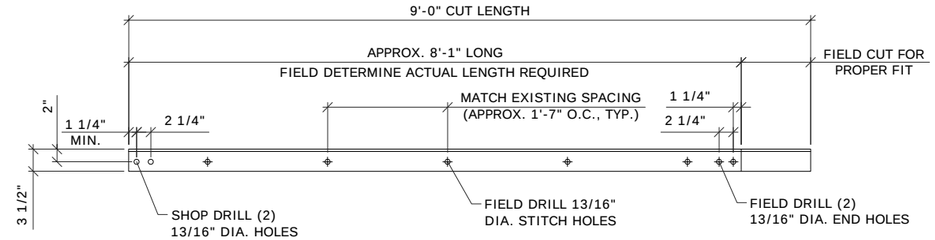
SCALE: 1/2" = 1'-0"



MK-5-04

(L 3" x 3" x 1/4")

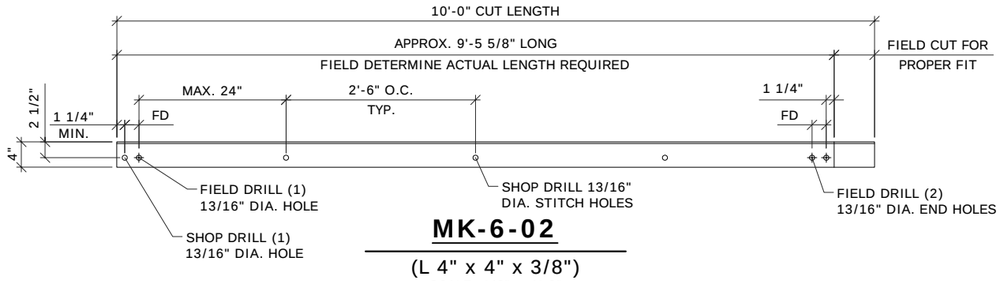
SCALE: 1/2" = 1'-0"



MK-6-01

(LLV 3 1/2" x 2 1/2" x 3/8")

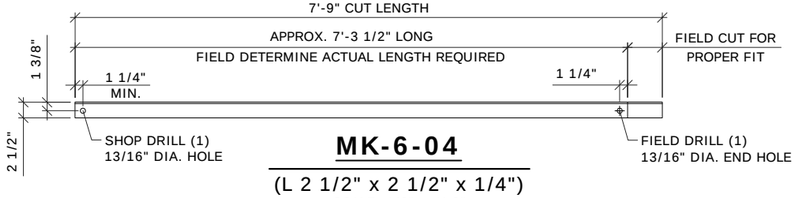
SCALE: 1/2" = 1'-0"



MK-6-02

(L 4" x 4" x 3/8")

SCALE: 1/2" = 1'-0"



MK-6-04

(L 2 1/2" x 2 1/2" x 1/4")

SCALE: 1/2" = 1'-0"

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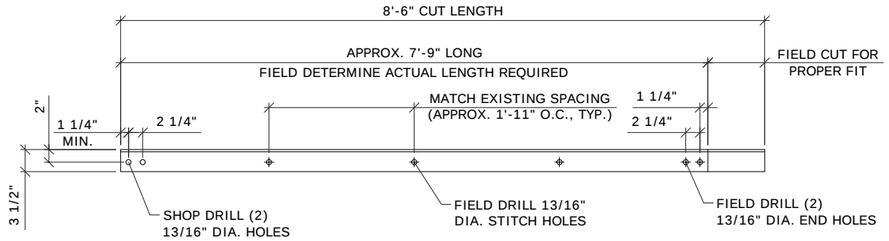
NEW MEMBER AND PARTS DETAILS CONTINUED

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S17	0

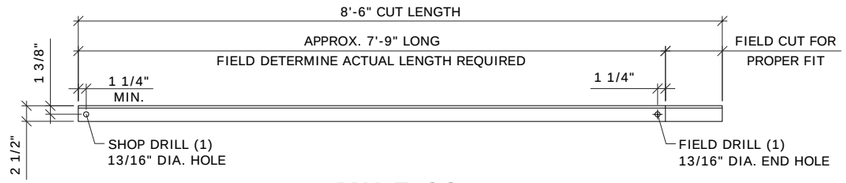
REFER SHEET T01 FOR TECH. SPEC. NOTES



MK-7-01

(LLV 3 1/2" x 2 1/2" x 3/8")

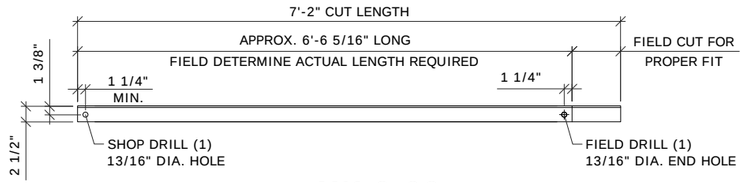
SCALE: 1/2" = 1'-0"



MK-7-02

(L 2 1/2" x 2 1/2" x 1/4")

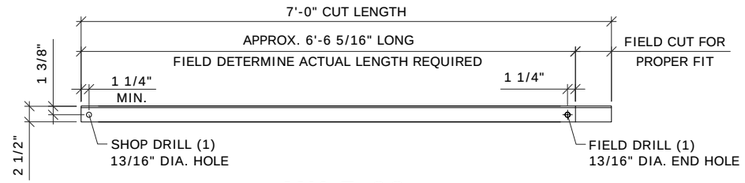
SCALE: 1/2" = 1'-0"



MK-6-06

(L 2 1/2" x 2 1/2" x 1/4")

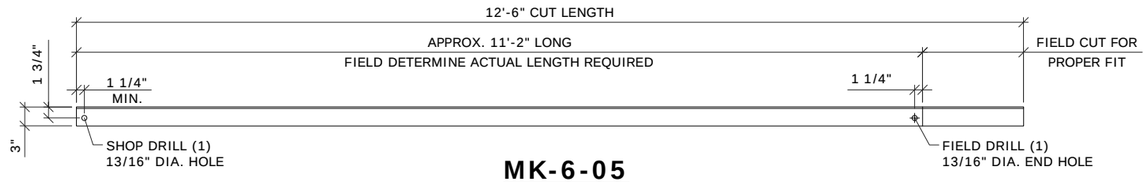
SCALE: 1/2" = 1'-0"



MK-7-03

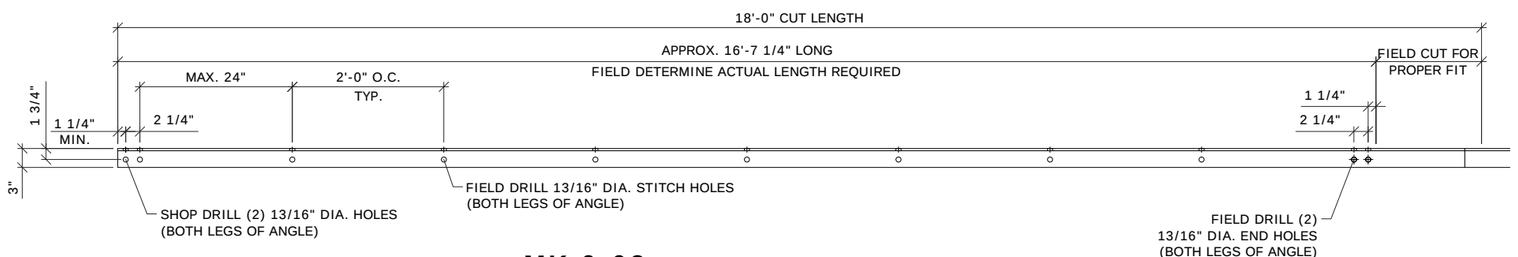
(L 2 1/2" x 2 1/2" x 1/4")

SCALE: 1/2" = 1'-0"



MK-6-05

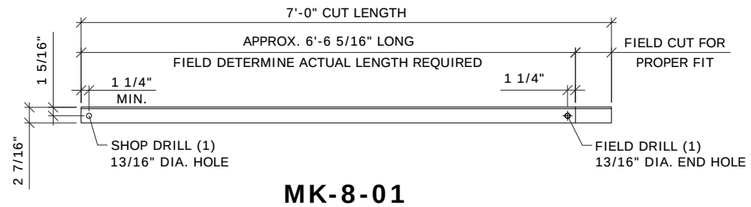
(L 3" x 3" x 1/4")



MK-6-03

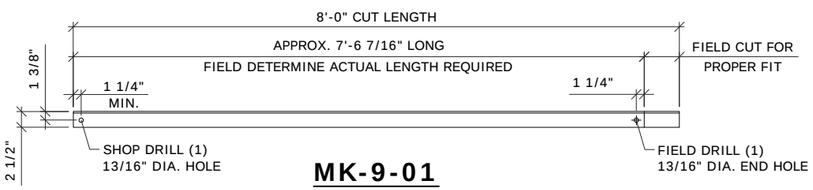
(SLV 3" x 3 1/2" x 3/8")

SCALE: 1/2" = 1'-0"



MK-8-01

(L 2 1/2" x 2 1/2" x 1/4")



MK-9-01

(L 2 1/2" x 2 1/2" x 1/4")

SCALE: 1/2" = 1'-0"

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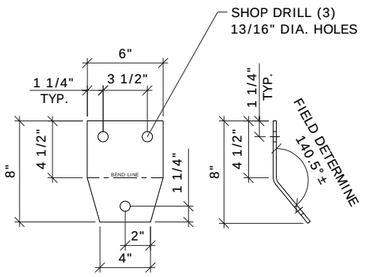
NEW MEMBER AND PARTS DETAILS CONTINUED

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S18	0

NOTE: BEND PLATE IN FIELD AS REQ'D

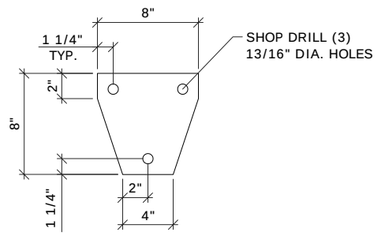


FRONT SIDE

MK-PL-1

(1/4" THICK)

SCALE: 1" = 1'-0"

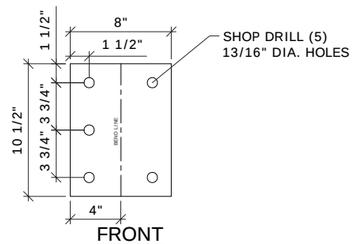


FRONT

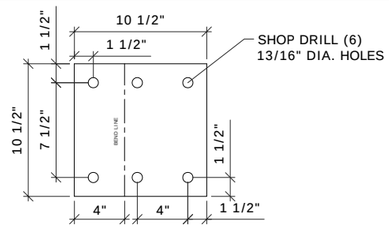
MK-PL-2

(3/8" THICK)

SCALE: 1" = 1'-0"

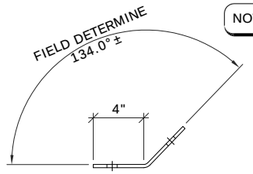


FRONT
SHOWN FLAT



FRONT
SHOWN FLAT

NOTE: BEND PLATES IN FIELD AS REQ'D

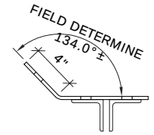


SIDE

MK-PL-4

(1/4" THICK)

SCALE: 1" = 1'-0"

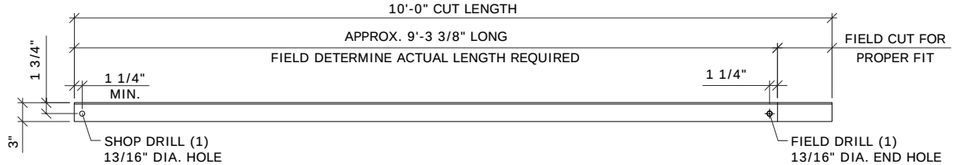


SIDE

MK-PL-5

(1/4" THICK)

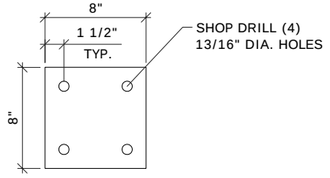
SCALE: 1" = 1'-0"



MK-11-01

(L 3" x 3" x 1/4")

SCALE: 1/2" = 1'-0"

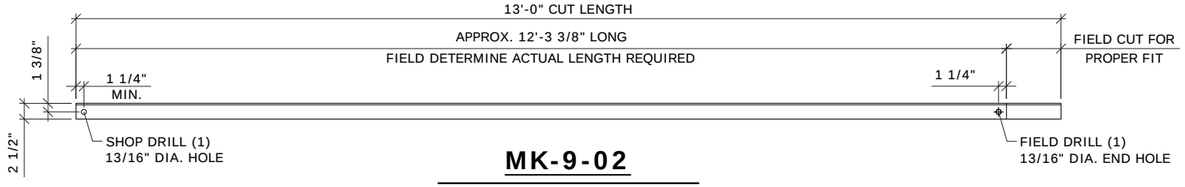


FRONT

MK-PL-3

(3/8" THICK)

SCALE: 1" = 1'-0"

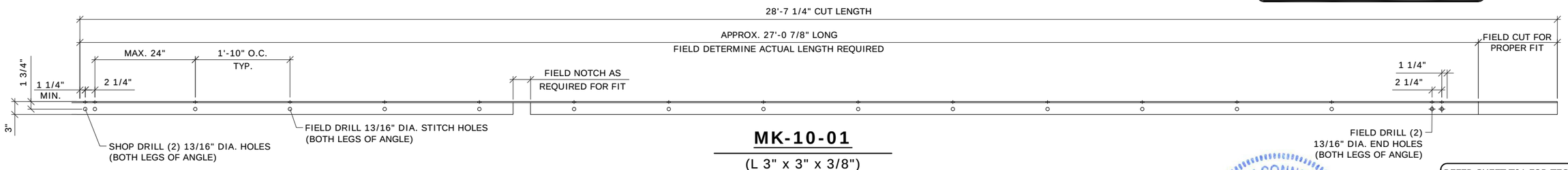


MK-9-02

(L 2 1/2" x 2 1/2" x 1/4")

SCALE: 1/2" = 1'-0"

(*) LENGTH APPROX. FOR BIDDING PURPOSES;
FIELD VERIFY / DETERMINE ACTUAL LENGTH.



MK-10-01

(L 3" x 3" x 3/8")

SCALE: 1/2" = 1'-0"

BILL OF MATERIALS

MRK	QTY	DESCRIPTION	CUT LENGTH	NOTE
1-01	8	L 3" x 3" x 3/8" ANGLE	9'-0"	(*)
1-02	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	8'-0"	(*)
2-01	8	L 4" x 4" x 3/8" ANGLE	13'-6"	(*)
2-02	8	LLV 4" x 3 1/2" x 3/8" ANGLE	12'-0"	(*)
2-03	8	LLV 4" x 3 1/2" x 3/8" ANGLE	13'-6"	(*)
2-04	4	L 3" x 3" x 1/4" ANGLE	12'-6"	(*)
3-01	8	L 4" x 4" x 3/8" ANGLE	13'-6"	(*)
3-02	8	LLV 4" x 3 1/2" x 3/8" ANGLE	11'-0"	(*)
3-03	8	LLV 4" x 3 1/2" x 3/8" ANGLE	13'-0"	(*)
3-04-A	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	4'-0"	(*)
3-04-B	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	5'-0"	(*)
3-04-C	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	5'-2"	(*)
3-04-D	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	3'-3"	(*)
3-04-E	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	8'-0"	(*)
3-04-F	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	6'-6"	(*)
3-05	4	L 3" x 3" x 1/4" ANGLE	12'-0"	(*)
4-01	16	2L 3 1/2" x 3 1/2" x 3/8" ANGLE	12'-0"	(*)
4-02	8	LLV 4" x 3 1/2" x 3/8" ANGLE	10'-0"	(*)
4-03	8	LLV 4" x 3 1/2" x 3/8" ANGLE	12'-6"	(*)
4-04	4	L 3" x 3" x 1/4" ANGLE	12'-0"	(*)
5-01	16	LLV 3 1/2" x 3" x 3/8" ANGLE	9'-0"	(*)
5-02	6	L 3" x 3" x 1/4" ANGLE	7'-9"	(*)
5-03	10	L 3" x 3" x 1/4" ANGLE	8'-0"	(*)
5-04	4	L 3" x 3" x 1/4" ANGLE	13'-0"	(*)
6-01	16	LLV 3 1/2" x 2 1/2" x 3/8" ANGLE	9'-0"	(*)
6-02	16	2L 4" x 4" x 3/8" ANGLE	10'-0"	(*)
6-03	16	SLV 2L 3" x 3 1/2" x 3/8" ANGLE	18'-0"	(*)
6-04	12	L 2 1/2" x 2 1/2" x 1/4" ANGLE	7'-9"	(*)
6-05	4	L 3" x 3" x 1/4" ANGLE	12'-6"	(*)
6-06	10	L 2 1/2" x 2 1/2" x 1/4" ANGLE	7'-2"	(*)
7-01	16	LLV 3 1/2" x 2 1/2" x 3/8" ANGLE	8'-6"	(*)
7-02	12	L 2 1/2" x 2 1/2" x 1/4" ANGLE	8'-6"	(*)
7-03	10	L 2 1/2" x 2 1/2" x 1/4" ANGLE	7'-0"	(*)
8-01	3	L 2 1/2" x 2 1/2" x 1/4" ANGLE	7'-0"	(*)
9-01	8	L 2 1/2" x 2 1/2" x 1/4" ANGLE	8'-0"	(*)
9-02	4	L 2 1/2" x 2 1/2" x 1/4" ANGLE	13'-0"	(*)
10-01	16	2L 3" x 3" x 3/8" ANGLE	28'-0"	(*)
11-01	12	L 3" x 3" x 1/4" ANGLE	10'-0"	(*)
PL-1	20	GUSSET PLATE	8" x 6" x 1/4" - BENT PL	
PL-2	38	GUSSET PLATE	8" x 8" x 1/4" - CHAMFERED	
PL-3	24	GUSSET PLATE	8" x 8" x 3/8"	
PL-4	8	GUSSET PLATE	10 1/2" x 8" x 1/4" - BENT PL	
PL-5	16	GUSSET PLATE	10 1/2" x 10 1/2" x 1/4" - BENT PL	
SP-1	FD	SPACER PLATE W/ 13/16" DIA. HOLE	FB 7/16 x 2" x 2"	

REFER SHEET T01 FOR TECH. SPEC. NOTES

MALOUF ENGINEERING INTERNATIONAL, INC.
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17950 PRESTON ROAD SUITE 720
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351.67' SELF-SUPPORTING TOWER
AT&T FA #10034993 / T-MOBILE #CT11011D
10 WILLARD RD., NORWALK, CT 06851
LAT: 41-07-41.8 N - LON: 73-23-24.9 W

AT&T
T-Mobile

NO.	DATE	REVISIONS	DRAWN	ENG'D.	APP'D.
0	07/01/16	ISSUED FOR CONSTRUCTION	REP	KMM	MM

JUL 01, 2016
STATE OF CONNECTICUT
E. MARK MALOUF
LICENSED PROFESSIONAL ENGINEER

AT&T / T-MOBILE

NEW MEMBER AND PARTS DETAILS CONTINUED & BILL OF MATERIALS

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S19	0

REFER SHEET T01 FOR TECH. SPEC. NOTES

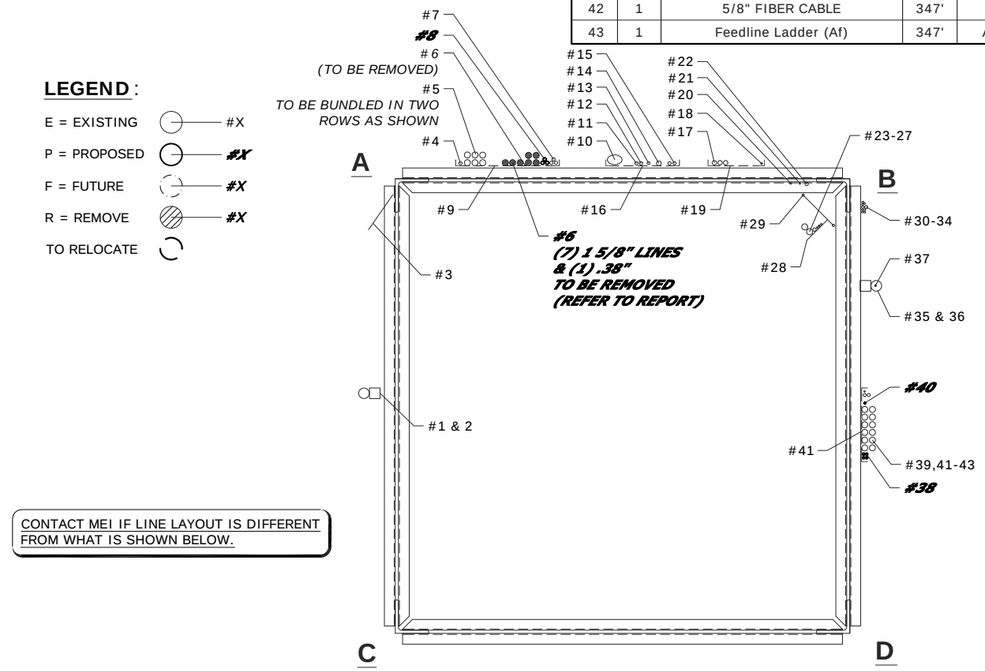
No.	QTY.	DESCRIPTION	ELEV.	TENANT
1	1	Conduit Shield	35'	E
2	1	Unused Coduit Supports	320'	E / WG "G"
3	1	Unused Waveguide Brackets	200'	E / WG "H"
4	1	7/8"	255'	E / #1
5	6	1 5/8"	262'	T-Mobile / E / #2-7
6	1 + 7	(1) 0.38" Cable + (7) 1 5/8" *(TO BE REMOVED)*	262'	T-Mobile / R / #8-15
7	3	1" Huber & Suhner Cable	262'	T-Mobile / E / #16 - 18
8	3	1" Huber & Suhner Cable	262'	T-Mobile / P
9	1	Feedline Ladder (Af)	265'	T-Mobile / E / WG "A"
10	1	EW 4.75" x 2.5"	343'	E / #19
11	1	7/8"	47'	E / #20
12	1	7/8"	348'	E / #21
13	1	0.95" Dead Cable	125'	E / #22
14	1	1 1/4" Dead Cable	299'	E / #23
15	2	7/8"	350'	E / #24, 25
16	1	Feedline Ladder (Af)	345'	E / WG "B"
17	3	HB114-1 1 1/4" Hybrid Cable	244'	Sprint / E / #26-28
18	1	LDF4-50A (1/2 FOAM)	26'	E / #29
19	1	Feedline Ladder (Af)	241'	Sprint / E / WG "C"
20	1	1/2"	343'	E / #30

21	1	1/2"	208'	E / #31
22	1	7/8"	349'	E / #32
23	2	1/2"	31'	E / #33, 34
24	1	1/2"	350'	E / #34
25	2	0.25" Dead Cables	350'	E / #35, 36
26	1	7/8"	349'	E / #37
27	2	1 5/8"	350'	E / #38, 39
28	1	Waveguide Brackets	348'	E / WG "D"
29	1	Climbing Ladder	350'	E
30	4	0.6" SO Cords	182'	E / #40-43
31	2	0.6" SO Cords	269'	E / #40,43
32	1	0.6" SO Cord	350'	E / #43
33	1	0.8" Dead SO Cord	350'	E / #44
34	1	3/4" Rigid Conduit Unused	338'	E / #45
35	1	Conduit Shield	35'	E
36	1	Unused Coduit Supports	320'	E / WG "E"
37	1	Grounding Cable	350'	E
38	4	3/4" DC Power Cable	347'	ATT / P
39	12	1 5/8"	347'	ATT / E / #49-60
40	1	5/8" Fiber Cable	347'	ATT / P
41	2	3/4" DC POWER CABLE	345'	ATT / E
42	1	5/8" FIBER CABLE	347'	ATT / E
43	1	Feedline Ladder (Af)	347'	ATT / E / WG "F"

LEGEND:

E = EXISTING — #X
P = PROPOSED — #X
F = FUTURE — #X
R = REMOVE — #X
TO RELOCATE

CONTACT MEI IF LINE LAYOUT IS DIFFERENT FROM WHAT IS SHOWN BELOW.



2001 PLAN: SCHEMATIC Tx-LINE LAYOUT

SCALE: NOT TO SCALE

N
APPROX.

NOTES:
1. Tx LINE LAYOUT IS SCHEMATIC ONLY, BASED UPON MEI MAPPING (SUB: HTS) DATED 11/30/15.
2. NEW BRACKET SUPPORT SPECIFICATION BY OTHERS.

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JUL 01, 2016
STATE OF CONNECTICUT — E. MARK MALOUF — LICENSED PROFESSIONAL ENGINEER

AT&T / T-MOBILE
SCHEMATIC TxLINE LAYOUT

MEI PROJECT ID	SHEET NUMBER	REV.
CT04761S-16V0	S20	0

Structural Analysis Report

AT&T – East Norwalk #CT2132 / FA #10034993
T-Mobile – Norwalk_Willard Rd Site #CT11011D
Owner: Frontier Tower - Norwalk Tower Site
Norwalk, Connecticut

July 01, 2016

MEI PROJECT ID: CT04761S-16V0

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MALOUF ENGINEERING INTL., INC.

STRUCTURAL CONSULTANTS

July 01, 2016

Mr. David Cooper
Empire Telecom / AT&T
Billerica, MA 01862

Mr. Kyle Richers
Transcend Wireless / T-Mobile
Mahwah, NJ 07430

STRUCTURAL ANALYSIS

Structure/Make/Model:	351.67 ft **Self-Supporting Tower**		Not Known / Not Known	
Client/Site Name/#:	**Empire Telecom / AT&T**		**East Norwalk #CT2132 / FA #10034993**	
	Transcend Wireless / T-Mobile		**Norwalk_Willard #CT11011D**	
Owner/Site Name/#:	Frontier Tower		Norwalk Tower	
MEI Project ID:	**CT04761S-16V0**			
Location:	10 Willard Rd Norwalk, CT 06851		Fairfield County FCC #1046320	
	LAT	41-07-41.8 N	LON	73-23-24.9 W

EXECUTIVE SUMMARY:

Malouf Engineering Int'l (MEI), as requested, has performed a structural analysis and modification design of the above mentioned structure to assess the impact of the changed condition as noted in Table 1.

Based on the stress analysis performed, the existing structure **is in conformance** with the Int'l Building Code (IBC) / ANSI/TIA **222-F** Standard for the loading considered under the criteria listed and referenced in the report sections **after proper installation of the recommended structural strengthening modifications outlined** – tower rated at 99.8% - Legs.

The addition of the proposed changed condition as noted in Table 1 is structurally acceptable after proper installation of the proposed strengthening modifications. Please refer to modification drawings for details.

MEI appreciates the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or other projects please contact us.

Respectfully submitted,

MALOUF ENGINEERING INT'L, INC.

Analysis performed by:

Krishna Manda, PE
Sr. Project Engineer

Reviewed & Approved by:

STATE OF CONNECTICUT
E. MARK MALOUF
No. 17715
LICENSED
PROFESSIONAL ENGINEER

E. Mark Malouf, PE
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07/01/2016

TABLE OF CONTENTS

1. INTRODUCTION & SCOPE

A structural analysis and modification design were performed by Malouf Engineering Int'l (MEI), as requested and authorized by Mr. David Cooper, Empire Telecom, on behalf of AT&T and Mr. Kyle Richers, Transcend Wireless, on behalf of T-Mobile, to determine the acceptance of the proposed changed conditions in conformance with the IBC / ANSI/TIA-222-F Standard, "*Structural Standards for Steel Antenna Towers and Antenna Supporting Structures*".

The scope of this independent analysis is to determine the overall stability and the adequacy of structural members, foundations, and member connections, as available and stated. This analysis considers the structure to have been properly installed and maintained with no structural defects. Installation procedures and related loading are not within the scope of this analysis and should be performed and evaluated by a competent person of the erection contractor.

The different report sections detail the applicable information used in this evaluation, relating to the tower data, the appurtenances configuration and the wind and ice loading considered.

2. SOURCE OF DATA

The following information has been used in this evaluation as source data that accurately represent the existing structure and the related appurtenances:

	Source	Information	Reference
STRUCTURE			
Tower	MEI Mapping	Mapping Report [Sub: HTS]	Dated 11/30/2015
	Frontier Comm. / Ms. Elissa McOmber	GPD Engineering Analysis	Dated 09/11/2015
		GPD Modification Design	Job #2012766.02 Dated 06/27/2012
Foundation	Frontier Comm. / Ms. Elissa McOmber	GPD Analysis Report – No geotech report available	Dated 09/11/2015
Material Grade	As per supplied documents (GPD Analysis included specific material grades for the different components) - Refer to Appendix		
CURRENT APPURTENANCES			
	MEI Mapping	Mapping Report [Sub: HTS]	Dated 11/30/2015
CHANGED CONDITION			
	Sprint / Ms. Michelle Hisert	E-mail Instructions	Dated 01/25/2016
	Frontier Wireless / Ms. Elissa McOmber	Frontier T-Mobile Collo App	Dated 05/04/2016
	Frontier Wireless / Ms. Elissa McOmber	Frontier AT&T Collo App - revised	Dated 06/30/2016

Background Information:

Based on available information, the following is known regarding this structure:

DESIGNER / FABRICATOR	Not Known / Not Known
ORIGINAL DESIGN CRITERIA	TIA/EIA 222-Unknown
PRIOR STRUCTURAL MODIFICATIONS	As per GPD modification design Job #2012766.02 dated 06/27/2012 – considered properly installed.

3. ANALYSIS CRITERIA

The structural analysis performed used the following criteria:

CODE / STANDARD	2003 Int'l Building Code with 2005 CT Amendments / ANSI/TIA-222-F-96 Standard	
LOADING CASES	*Full Wind*:	85 Mph (3-Sec Gust) - with No Radial Ice
	Iced Case:	73.61 Mph + 0.50" Radial Ice
	Service:	50 Mph

Appurtenances Configuration

The following appurtenances configuration is denoted by the *summation of Tables 1 & 2*:

Table 1: Proposed Changed Condition Appurtenances

Elev (ft)	Tenant	Ant #	Ants Qty	Appurtenance Model / Description	Mount Description	Line #	Lines Qty	Line size & Location
347	AT&T	-	3	OPA-65R-LCUU-H4 Panel Antennas	(3) Sector Mounts w/V-Stabilizer (Commscope MTC3615 AD A)	-	4	3/4" DC Power Cables
			3	RRUS-32 Boxes				
			3	RRUS-11 Boxes			1	5/8" Fiber Cable-(FZ)
			1	DC6-48-60-18-8F Suppressors				
			1	DC6-48-60-0-8F Suppressor				
262	T-Mobile	-	3	AIR32 B66Aa/B2a Panel Antennas	(3) 10.5ft Sector Mounts (Sitepro1 #VFA10-U)	-	3	1" (6x12) Hybrid Cables-(FZ)
			3	LNX-6515DS-VTM Panel Antennas				
			3	RRUS-11 Boxes				
To Be Removed (See Below)								
346.5*	AT&T	24	3	7770.00 Panel Antennas	(3) 10ft Sector Mounts onto Walkway & Platform with Support Mount Supports (Pipes)			
		-	3	P65-16-XLH-RR Panel Antennas				
341.33	AT&T	28	1	FC12-PC6-10E				
339.5	AT&T	26	3	Raycap DC2-48-60-0-9E Boxes				
262	T-Mobile	18-19	3	AIR21 B4A B2P Panel Antennas	(3) 13ft Sector Mounts	11	1	0.38" Cable
						8-10, 12-14	6	1-5/8"-(FZ)
260	T-Mobile [Dead]					15	1	1-5/8"-(FZ)

Table 2: Remaining Current Appurtenances

Elev (ft)	Tenant	Ant #	Ants Qty	Appurtenance Model / Description	Mount Description	Line #	Lines Qty	Line size & Location
365		40	1	12ft Whip Antenna + TMA	10ft Pipe Mount	25	1	7/8"-(FZ)
369.5		38	1	Whip Antenna	15ft Pipe Mount w/ Guys	34	1	1/2"-(FZ)
357	[Dead]	39	1	15ft Whip Antenna	4ft Pipe Mount	-	-	-
362		42	1	4ft Lightning Rod	14ft Mount	-	1	Grounding
		41	1	Beacon / Strobe		43	1	0.6" SO Cord
355.5		31	1	4ft Whip Antenna	8ft Pipe Mount	38	1	1-5/8"-(FZ)
354.5		32	1	15ft Whip Antenna	8ft Pipe Mount	39	1	1-5/8"-(FZ)
354.5		30	1	10ft 4-Element Dipole Antenna	8ft Pipe Mount	24	1	7/8"-(FZ)
352			1	Top Stub Tower				
350.5		35			3ft Empty Sidearm Mount			
					Top Platform w/ Rails			
350	[Dead]					35-36	2	0.25" Cables
350	[Dead]					44	1	0.8" SO Cord
349.75		34	1	8ft Whip Antenna	Railing Mounted	32	1	7/8"-(FZ)
349.5		36	1	21ft Whip Antenna	Railing Mounted	37	1	7/8"-(FZ)
349		37			8ft Empty Pipe Mount			
348.25		29	1	20ft 4-Element Dipole Antenna	6ft Pipe Mount	21	1	7/8"-(FZ)

(Appurtenances continue on next page.)

Table 2: Remaining Current Appurtenances – Cont'd

Elev (ft)	Tenant	Ant #	Ants Qty	Appurtenance Model / Description	Mount Description	Line #	Lines Qty	Line size & Location
347	AT&T [Relocate to Elev. 347ft]	25,22	6	RRUS-11 Boxes	**[Relocated onto New Mounts]**	49-60	12	1-5/8"
		24	3	7770.00 Panel Antennas		46-47	2	3/4" DC Power
			12	LGP21401 TMAs		48	1	5/8" Fiber-(FZ)
		23	3	AM-X-CD-16-65-00T-RET Panel Ants.				
			1*	DC6-48-60-18-8F Suppressors				
344.5	AT&T [Relocate to Elev. 344.5ft]	-	2	7020 RET Motors	**[Relocated onto New Mounts]**			
343.67		27	1	3ft 3-Elem Yagi Antenna	8ft Pipe Mount on Sector Mount	30	1	1/2"-(FZ)
343.25		33	3	TA-2335-DAB Panel Antennas	8ft Pipe Mount	19	1	EW4.75"x2.5"-(FZ)
339.5					4-Way Walkway Platform w/ Rails			
338	[Dead]					45	1	3/4" R.C.
325					(4) Face Frames			
306		21			(4) 14ft Empty Pipe Mounts			
299	[Dead]					23	1	1-1/4"-(FZ)
269.25		20	2	OB Lights		40	1	0.6" SO Cord
262	T-Mobile	18-19	3	AIR21 B2A B4P Panel Antennas	**[Relocated onto New Mounts]**	2-7	6	1-5/8"
			3	ATMAA1412D-1A20 TMAs		16-18	3	1" (3x6) Hybrid Cables-(FZ)
255.5		17	1	12in Square Panel Antenna	Pipe Mount	1	1	7/8"-(FZ)
253		16			(2) 25ft Rest Platform w/ Rails			
245	Sprint	15	3	ALU-RRH 4x45 Boxes	(3) 13ft Sector Mounts	26-28	3	HB114-1 1-1/4" Hybrid Cables-(FZ)
243.5	Sprint	14	3	APXVSPP18-C-A20 Panel Antennas				
242.25	Sprint	13	3	RRH Boxes				
			3	800 Ext. Notch Filters				
208.5		12	1	7ft 5-Elem Yagi Antenna	5ft Pipe Mount	31	1	1/2"-(FZ)
191.5		11			(4) Corner Rest Platforms			
186		10	2	Beacon Ice Shield	Leg Mounted			
182.5		9	2	Beacon / Strobe		41-42	2	0.6" SO Cords
125	[Dead]					22	1	0.95"-(FZ)
		8			(2) 41ft Rest Platform w/ Rails			
100		7			4ft Rest Platform w/ Rails			
93		6	2	OB Lights		40		[Shared]
50.25		5			4ft Rest Platform w/ Rails			
47.5		4	1	3ft Dia. Dish (Az. 220°±)	4ft Sidearm Mount-NW Leg	20	1	7/8"-(FZ)
31		1	1	4ft Dia. Dish (Az. 200°±)	10ft Pipe Mount/Standoff-S Face	33	1	1/2"-(FZ)
26		2	1	GPS Antenna	Pipe Mount	29	1	1/2"-(FZ)
25		3			(4) Corner Rest Platforms			
16.67					(4) Face Frames			

Notes:

1. * items was not present at the time of the inspection – considered existing as per PDQ listing.
2. All elevations are measured from tower base.
3. Please note appurtenances not listed above are to be removed/not present as per data supplied.
4. (I) = Internal; (E) = External; (FZ) = Within Face Zone; (OFZ) = Outside Face Zone - as per TIA-222.
5. The above appurtenances represent MEI's understanding of the appurtenances configuration. If different than above, the analysis is invalid. Please contact MEI if any discrepancies are found.

4. ANALYSIS PROCEDURE

The subject structure is analyzed for feasibility of the installation of the proposed changed condition previously noted. The data records furnished were reviewed and a computer stress analysis was performed in accordance with the TIA-222 Standard provisions and with the agreed scope of work terms and the results of this analysis are reported.

Analysis Programs

The two computer programs used to model the structure are rigorous Finite Element Analysis programs, the first is tnxTower (ver. 7.0.5) (formerly RISATower), a commercially available program by Tower Numerics Inc. and the second is STAAD*Pro v8i* FEA program, a structural finite element program by Bentley Systems, Carlsbad, CA. The structure members are modeled using beam/truss members. The structural parameters and geometry of the members are included in the model. The dead and temperature loads and the wind loads are internally calculated by the programs for the different loading directions and then applied as external loads on the structure. This analysis comprised of the two different analytical models with combination of the above noted 2 software programs in order to evaluate the different portions of the tower accounting for the geometrical limitation in the tnxTower software.

Assumptions

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

- This existing tower is considered, for the purpose of this analysis, to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its member capacities ('as-new' condition).
- The tower member sizes and configuration are considered accurate as obtained or supplied. The material grade is as per data supplied and/or as assumed and as stated.
- The appurtenances configuration is as obtained and/or as stated in the report. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
- Some assumptions are made regarding antennas and mounts sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type & industry practice.
- Mounts/Platforms are considered adequate to support the loading. No actual analysis of the platform/mount themselves are performed, with the analysis being limited to analyzing the structure.
- The soil parameters are as per data supplied or as assumed and stated in the calculations. Refer to the Appendix.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are considered to be as per data supplied/available, and to have been properly installed and to be fully effective.

If any of the above assumptions are not valid or have been made in error, this analysis results may be invalided, MEI should be contacted to review any contradictory information to determine its effect.

5. ANALYSIS RESULTS

The structure will require structural strengthening as follows: (Refer to the attached drawings for details.)

STRUCTURAL STRENGTHENING REQUIRED	
1	Elev. 250 to 275ft: Add Internal hip braces reinforcing diagonals.
2	Elev. 225 to 250ft: Reinforce diagonals as detailed.
3	Elev. 200 to 250ft: Add sub braces and internals reinforcing horizontals.
4	Elev. 175 to 200ft: Add internals reinforcing horizontals.
5	Elev. 150 to 175ft: Add sub braces and internals reinforcing horizontals. Reinforce Sub diagonals as detailed. Replace end bolts of Sub horizontal and the diagonals.
6	Elev. 125 to 150ft: Add sub braces and internals reinforcing horizontals. Reinforce diagonals and replace end bolts. Reinforce sub diagonals and replace end bolts. Replace sub diagonals 2 with bigger size members. Add internal kicker reinforcing sub horizontals as detailed.
7	Elev. 100 to 125ft: Add sub braces and internals reinforcing horizontals. Replace diagonal end bolts. Reinforce sub diagonals. Add internal kicker reinforcing sub horizontals as detailed. Replace leg splice bolts at Elev. 103.5ft±.
8	Elev. 75 to 100ft: Reinforce horizontals as detailed. Replace sub diagonals 2 with bigger size members. Add internal kicker reinforcing sub horizontals as detailed. Replace leg splice bolts at Elev. 78.5ft±.
9	Elev. 50 to 75ft: Reinforce horizontals as detailed. Add sub members reinforcing Leg. Reinforce sub diagonals. Add internal kicker reinforcing sub horizontals as detailed. Replace leg splice bolts at Elev. 53.5ft±.
10	Elev. 25 to 50ft: Reinforce horizontals as detailed. Reinforce sub diagonals. Add internal kicker reinforcing sub horizontals as detailed. Replace leg splice bolts at Elev. 28.5ft±.
11	Elev. 0 to 25ft: Reinforce inner vertical and hip sub internal as detailed. Replace leg splice bolts at Elev. 3.5ft±.
12	Re-locate and bundle existing coaxes as shown in the schematic Tx-Line Layout.
13	Provide temporary bracing as required for stability of structure during reinforcement / replacement of members / bolts. Replace one member of bolt each at a time.
14	Perform Maintenance work as required to bring the structure into good operational condition.
15	*Field determination/verification before any fabrication and installation is recommended*.

Prior to implementation of the changed conditions and modifications, the data designated on the design documents requiring field verification shall be validated. Rigging and temporary supports required for the erection/modification shall be determined, documented, furnished and installed by the erector/contractor accounting for the loads imposed on the structure due to the proposed construction method.

Table 3: Stress Analysis Results – AFTER PROPER INSTALLATION OF MODS

Component Type	Maximum Stress Ratio	Controlling Elev. (ft) / Component	Pass/Fail	Comment
LEGS	**99.8%**	**50 – 25**	**Pass**	
	99.8%	**25 – 0**	**Pass**	
DIAGONALS	94.4%	150 – 125	**Pass**	
HORIZONTALS	97.0%	150 – 125	**Pass**	Bolts Control
SECONDARY HORIZONTALS	13.2%	351.67 - 337.5	**Pass**	
BRACINGS	98.8%	50 – 25	**Pass**	
FOUNDATION	84.1%	Uplift	**Pass**	Geotechnical report not available. Based on soil parameters in supplied calcs in prev. SA.

Table 4: Serviceability Requirements

	Maximum Value	TIA Requirement (10dB)	Pass/Fail	Comment
TWIST/SWAY	0.0137 Deg.	1.7125 Deg.	**Pass**	4ft Dish Elev. 31.00ft
	0.0216 Deg.	2.35 Deg.	**Pass**	3ft Dish Elev. 47.50ft
	0.0423 Deg.	4 Deg. from Vert. or Horiz. Axis	**Pass**	
HORIZONTAL DISPLACEMENT	1.124 In./ 2.66% of Ht.	3.0% of Height	**Pass**	

Notes:

1. Please note that the analysis results noted above are based on the combined analytical models using the 2 noted FEA programs.
2. The Maximum Stress Ratio is the percentage that the maximum load in the member is relative to the allowable load as determined by Code requirements.
3. Refer to the Appendix 1 for more details on the member loads.
4. A maximum stress ratio between 100% and 105% may be considered as *Acceptable* according to industry standard practice.

6. FINDINGS & RECOMMENDATIONS

- Based on the stress analysis results, the subject structure is **rated at 99.8%** of its support capacity (controlling component: Legs) with the proposed changed condition considered after strengthening. Please refer to Table 3 and to Appendix 1 for more details of the analysis results.
- Based on the stress analysis performed, the existing structure **is in conformance** with the IBC / ANSI/TIA **222-F** Standard for the loading considered under the criteria listed and referenced in the report sections **after proper installation of the recommended structural strengthening modifications outlined**.
- Please note that no geotechnical data is available. However based on soil parameters included in supplied data, the foundation is considered acceptable.
- ***The addition of the proposed changed condition as noted in Table 1 is structurally acceptable after proper installation of the proposed strengthening modifications.*** Please refer to modification drawings for details.
- This structure would be near its maximum support capacity for the appurtenances and loading criteria considered, after its modification. Therefore, no changes to the configuration considered should be made without performing a new proper evaluation.

Rigging and temporary supports required for the erection/modification shall be determined, documented, furnished and installed by the erector/contractor accounting for the loads imposed on the structure due to the proposed construction method.

7. REPORT DISCLAIMER

The engineering services rendered by **M**alouf **E**ngineering **I**nternational, Inc. *('MEI') in connection with this Structural Analysis are limited to a computer analysis of the tower structure, size and capacity of its members. MEI does not analyze the fabrication, including welding and connection capacities, except as included in this Report.*

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct guy tensions, as applicable.
3. Correct bolt tightness or slip jacking of sleeved connections.
4. No significant deterioration or damage to any structural component.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-art" engineering and analysis procedures and formulae. MALOUF ENGINEERING INTERNATIONAL, INC. assumes no obligation to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will MALOUF ENGINEERING INTERNATIONAL, INC. have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of MALOUF ENGINEERING INTERNATIONAL, INC., if any, pursuant to this Report shall be limited to the total funds actually received by MALOUF ENGINEERING INTERNATIONAL, INC. for preparation of this Report.

Customer has requested MALOUF ENGINEERING INTERNATIONAL, INC. to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested MALOUF ENGINEERING INTERNATIONAL, INC. to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of MALOUF ENGINEERING INTERNATIONAL, INC., Customer has informed MALOUF ENGINEERING INTERNATIONAL, INC. that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by MALOUF ENGINEERING INTERNATIONAL, INC. and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice. MALOUF ENGINEERING INTERNATIONAL, INC. shall have the right to rely upon the accuracy of the information supplied by the customer and shall not be held responsible for the Customer's misrepresentation or omission of relevant fact whether intentional or otherwise.

Customer hereby agrees and acknowledges that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than MALOUF ENGINEERING INTERNATIONAL, INC. in connection with the implementation of services including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor and that Customer and rigger, erector, or subcontractor will provide MALOUF ENGINEERING INTERNATIONAL, INC. with a Certificate of Insurance naming MALOUF ENGINEERING INTERNATIONAL, INC. as additional insured.

APPENDIX 1 - ANALYSIS PRINTOUT & GRAPHICS

AFTER NOTED MODIFICATIONS

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L2 1/2x2 1/2x1/4x3/8	B	L2 1/2x2 1/2x3/16

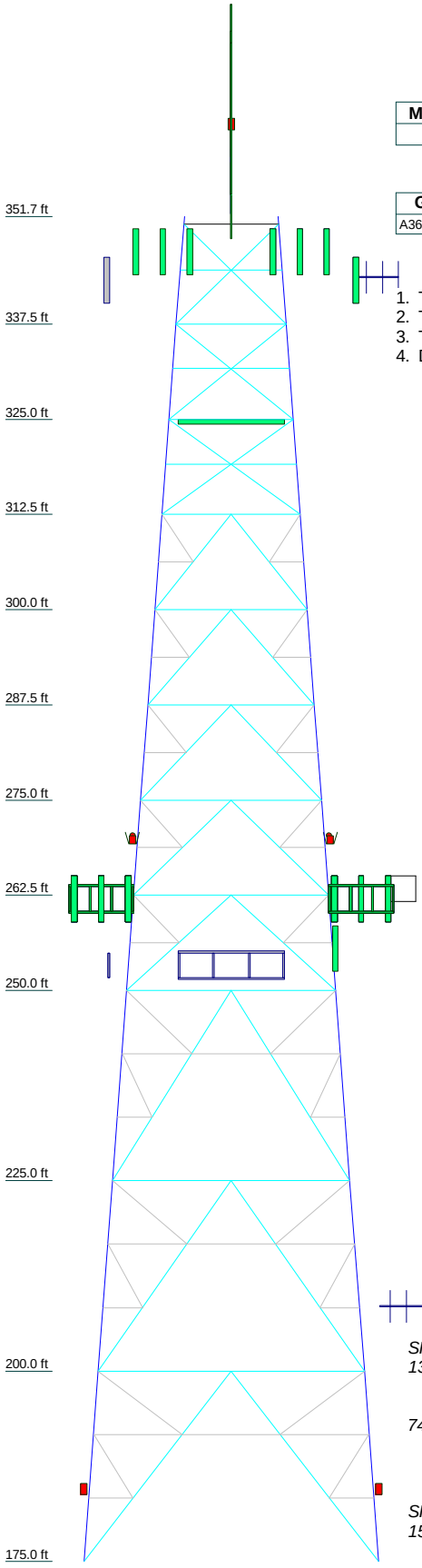
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi	A500-46	46 ksi	62 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.

Section	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	L8x8x1 1/8		L8x8x7/8		L8x8x3/4		L6x6x7/8				L6x6x5/8
Leg Grade	A500-46					A36					
Diagonals	2L2.5x3.5x5/16 + 2L3x3.5x3/8		2L2.5x3x5/16 + 2L3x3x3/8		2L2 1/2x2 1/2x1/4x3/8		2L2 1/2x2 1/2x5/16x3/8	A	L3 1/2x4x5/16	L3 1/2x3 1/2x5/16	
Diagonal Grade					A36						
Top Girts					N.A.						C8x11.5
Horizontals	2L3 1/2x2 1/2x1/4x3/8		2L3x2 1/2x1/4x3/8			2L2 1/2x2 1/2x1/4x3/8				C7x9.8	N.A.
Sec. Horizontals									L3x2 1/2x1/4		L3x3x1/4
Red. Horizontals		2L1 3/4x1 3/4x3/16			L2 1/2x2 1/2x3/16		L2 1/2x2 1/2x1/4	B		N.A.	
Red. Diagonals		2L2x2x3/16			L2 1/2x2 1/2x3/16		L2 1/2x2 1/2x1/4	L2 1/2x2x3/16		N.A.	
Red. Sub-Horizs		2L2 1/2x3x1/4x3/8				N.A.					
Red. Hips		N.A.			L3x3x1/4				N.A.		
Inner Bracing	2L3x2 1/2x1/4x3/8	L3x3x1/4	2L2 1/2x2 1/2x1/4x3/8		2L2 1/2x2 1/2x3/16x3/8	2L2 1/2x2 1/2x1/4x3/8		2L2x2 1/2x1/4x3/8		N.A.	
Face Width (ft)	38.6645	34.938	31.2115	27.485	25.6217	23.7584	21.8952	20.0319	18.1687	16.3054	14.4422
# Panels @ (ft)		3 @ 25					7 @ 12.5				1 @ 13.17
Weight (K)	100.9	21.9	19.7	17.7	6.3	6.5	5.7	5.5	4.8	5.0	3.8	3.9



MAX. CORNER REACTIONS AT BASE:
DOWN: 281 K
SHEAR: 56 K

UPLIFT: -197 K
SHEAR: 45 K

AXIAL 223 K
SHEAR 138 K *MOMENT 11968 kip-ft*
TORQUE 330 kip-ft
74 mph WIND - 0.5000 in ICE

AXIAL 167 K
SHEAR 152 K *MOMENT 13072 kip-ft*
TORQUE 361 kip-ft
REACTIONS - 85 mph WIND

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FAX: (972) 783 2583

Job: ***350ft SST / NORWALK TOWER SITE***			
Project: ***CT04761S-16V0-RUN-I (MODIFICATION ANALYSIS)***			
Client: EMPIRE TELECOM / AT&T / T-MOBILE	Drawn by: KM	App'd:	
Code: TIA/EIA-222-F	Date: 06/30/16	Scale: NTS	
Path: C:\MEI\Projects\2016\QZ\CT04761S\CT04761S-16V0_EMPI_Norwalk Tower\2-Working Data\Tnx\TopTower\RUN-I\CT04761S-16V0-RUN-I-TT.eri		Dwg No. E-1	

175ft

150ft

125ft

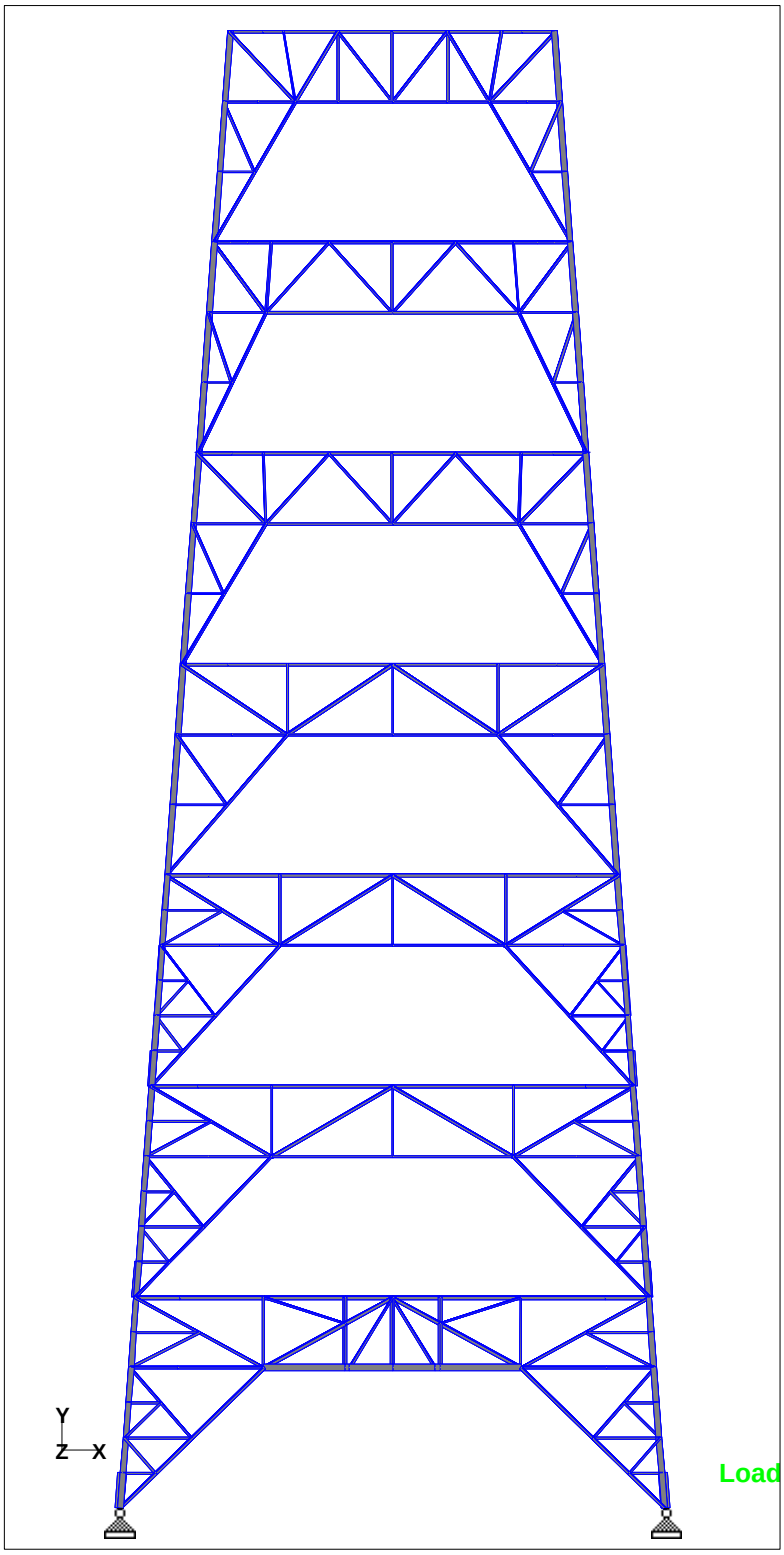
100ft

75ft

50ft

25ft

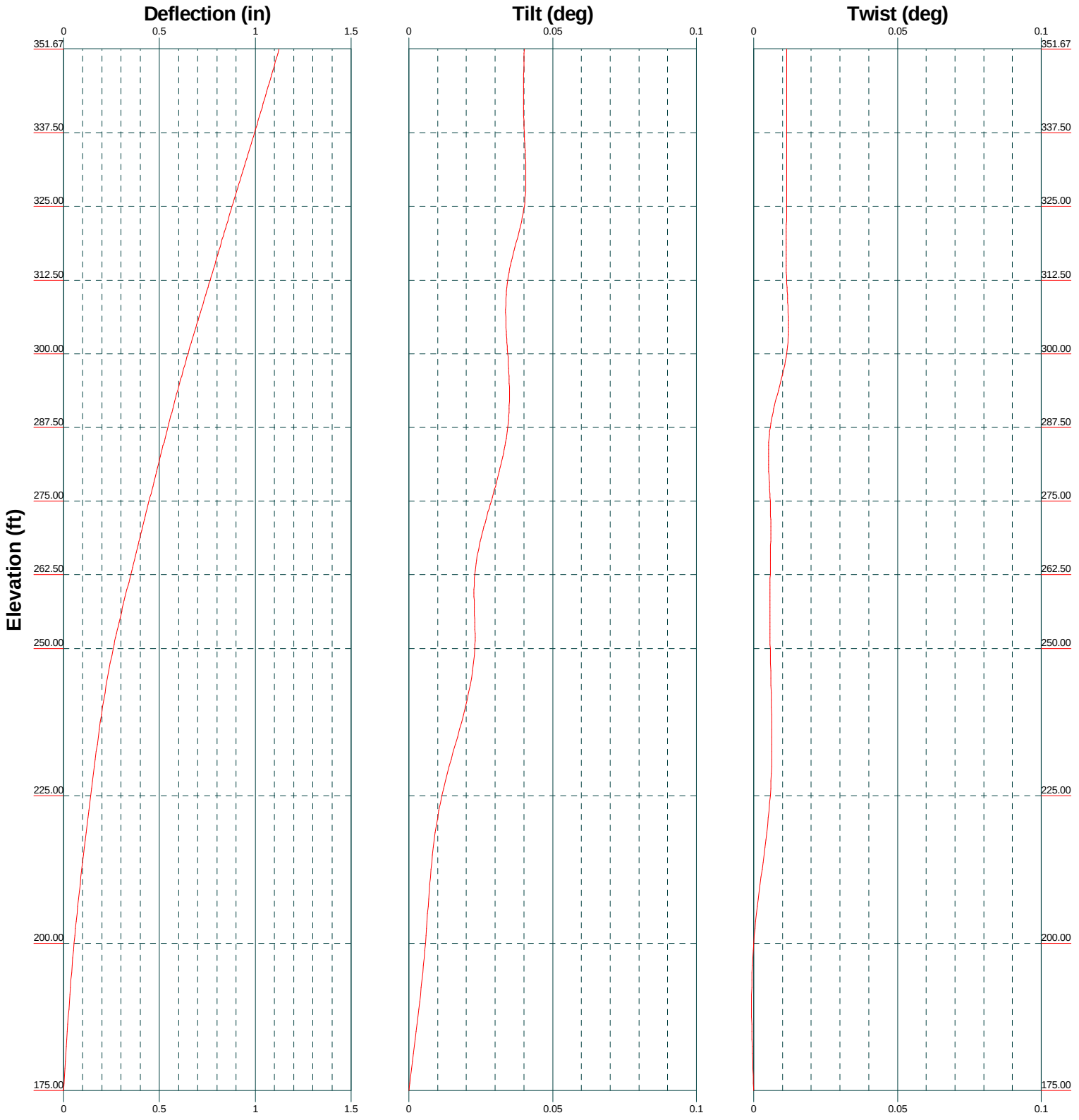
0ft



TowerElevation

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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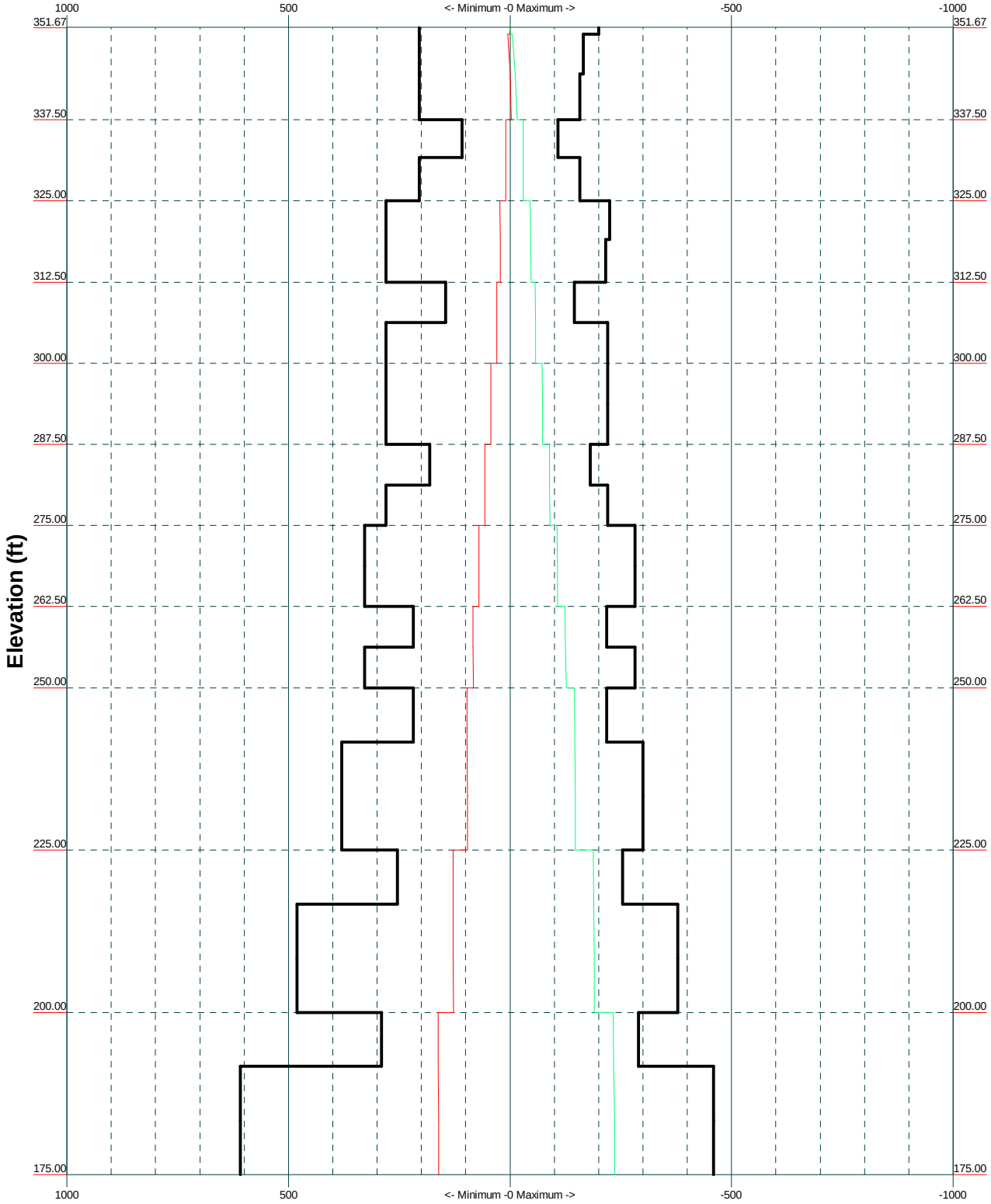
Client: EMPIRE TELECOM / AT&T / T-MOBILE		Drawn by: KM	App'd:
Code: TIA/EIA-222-F		Date: 06/30/16	Scale: NTS
Path: C:\MEI\Projects\2016\02\CT04761S\CT04761S-16V0_EMPI_Norwalk Tower\2-Working Data\Tnx\TopTower\RUN-I\CT04761S-16V0-RUN-I TT.eri			Dwg No. E-5

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Leg Capacity ——— **Leg Compression (K)**



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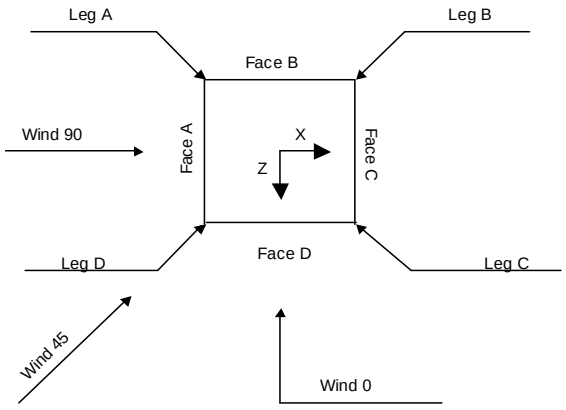
Job: ***350ft SST / NORWALK TOWER SITE***			
Project: ***CT04761S-16V0-RUN-I (MODIFICATION ANALYSIS)***			
Client: EMPIRE TELECOM / AT&T / T-MOBILE	Drawn by: KM	App'd:	
Code: TIA/EIA-222-F	Date: 06/30/16	Scale: NTS	
Path: C:\MEIProjects\2016\QZ\CT04761S\CT04761S-16V0_EMPI_Norwalk Tower\2-Working Data\Tnx\TopTower\RUN-I\CT04761S-16V0-RUN-I TT.eri		Dwg No. E-3	

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 351.67 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 12.33 ft at the top and 64.75 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Square Tower

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Placement*	*#*	*Weight*
	ft		*plf*
Conduit Shield (E)	35.00 - 12.00	1	18.50
Unused Coduit Supports (E / WG "G")	320.00 - 37.00	1	9.56
Unused Waveguide Brackets (E / WG "H")	200.00 - 27.00	1	1.25
7/8 (E / #1)	255.50 - 6.00	1	0.54
1 5/8 (Rework - Bundle / T-Mobile / E / #2-7)	262.00 - 6.00	6	1.04
1" (3x6) Hybrid Cables (T-Mobile / E / #16 - 18)	262.00 - 6.00	3	0.78
1" (6x12) Hybrid Cables (T-Mobile / P)	262.00 - 6.00	3	0.85
Feedline Ladder (Af) (T-Mobile / E / WG "A")	265.00 - 8.50	1	8.40
EW 4.75" x 2.5" (E / #19)	343.25 - 6.00	1	1.85

Description	Placement	#	Weight
	ft		plf
7/8 (E / #20)	47.50 - 6.00	1	0.54
7/8 (E / #21)	348.25 - 6.00	1	0.54
0.95" Dead Cable (E / #22)	125.00 - 6.00	1	0.49
1 1/4 Dead Cable (E / #23)	299.00 - 6.00	1	0.66
7/8 (E / #24, 25)	350.00 - 6.00	2	0.54
Feedline Ladder (Af) (E / WG "B")	345.00 - 8.50	1	8.50
HB114-1 1 1/4" Hybrid Cable (Sprint / E / #26-28)	244.00 - 0.00	3	1.08
LDF4-50A (1/2 FOAM) (E / #29)	26.00 - 0.00	1	0.15
Feedline Ladder (Af) (Sprint / E / WG "C")	241.00 - 2.00	1	8.45
1/2 (E / #30)	343.67 - 6.00	1	0.25
1/2 (E / #31)	208.50 - 6.00	1	0.25
7/8 (E / #32)	349.75 - 6.00	1	0.54
1/2 (E / #33, 34)	31.00 - 6.00	2	0.25
1/2 (E / #34)	350.00 - 6.00	1	0.25
0.25" Dead Cables (E / #35, 36)	350.00 - 6.00	2	0.26
7/8 (E / #37)	349.50 - 6.00	1	0.54
1 5/8 (E / #38, 39)	350.00 - 6.00	2	1.04
Waveguide Brackets (E / WG "D")	348.00 - 15.00	1	1.15
Climbing Ladder (E)	350.00 - 0.50	1	9.50
Safety Rail (E)	350.00 - 0.00	1	2.75
0.6" SO Cords (E / #40-43)	182.50 - 0.00	4	0.35
0.6" SO Cords (E / #40,43)	269.25 - 182.50	2	0.35
0.6" SO Cord (E / #43)	350.00 - 269.25	1	0.35
0.8" Dead SO Cord (E / #44)	350.00 - 14.00	1	0.40
3/4" Rigid Conduit Unused (E / #45)	338.00 - 0.00	1	1.13
Conduit Shield (E)	35.00 - 12.00	1	18.50
Unused Coduit Supports (E / WG "E")	320.00 - 37.00	1	9.56
Grounding Cable (E)	350.00 - 0.00	1	0.25
3/4" DC Power Cable (ATT / P / E / #46,47)	347.00 - 6.00	6	0.80
1 5/8 (ATT / E / #49-60)	347.00 - 6.00	12	1.04
5/8" Fiber Cable (ATT / P / E / #48)	347.00 - 6.00	2	0.50
Feedline Ladder (Af) (ATT / E / WG "F")	345.00 - 14.50	1	13.50

Discrete Tower Loads

Description	Placement	Weight
	ft	*K*
4ft Lightning Rod	364.00	0.01
(E / #42)		0.01
Beacon / Strobe	363.00	0.04
(E / #41)		0.07
14ft Mount	355.00	0.17
(E / #41 / 42)		0.25
12ft Whip Antenna	371.00	0.02
(E / #40)		0.04
TMA	353.00	0.03
(E / #40)		0.04
10ft Pipe Mount	360.00	0.05
(E / #40)		0.07
15ft Whip Antenna	364.50	0.03
(E / #39)		0.05
4ft Pipe Mount	356.25	0.02
(E / #39)		0.03
Top Stub Tower	352.00	0.66
(E)		0.86
Whip	369.50	0.02
(E / #38)		0.05
15ft Pipe Mount w/ Guys	355.50	0.13
(E / #38)		0.17
8ft Empty Pipe Mount	349.00	0.04
(E / #37)		0.05
21ft Whip Antenna	349.50	0.03
(E / #36)		0.07
3ft Empty Side Arm Mount	350.50	0.17
(E/ #35)		0.24
8ft Whip Antenna	349.75	0.02
(E / #34)		0.03
TA-2335-DAB Panel w/ Pipe Mount	343.25	0.06 0.11
(E / #33)		
TA-2335-DAB Panel w/ Pipe Mount	343.25	0.06 0.11
(E / #33)		
TA-2335-DAB Panel w/ Pipe Mount	343.25	0.06 0.11
(E / #33)		
15ft Whip Antenna	354.50	0.03
(E / #32)		0.05
8ft Pipe Mount	351.00	0.04
(E / #32)		0.05
4ft Whip Antenna	355.50	0.01
(E / #31)		0.02
8ft Pipe Mount	351.00	0.04
(E / #31)		0.05
10ft 4-Element Dipole	354.50	0.03
(E / #30)		0.04
8ft Pipe Mount	351.00	0.04
(E / #30)		0.05
20ft 4-Element Dipole	348.25	0.04
(E / #29)		0.09
6ft Pipe Mount	351.00	0.04
(E / #29)		0.05
Top Platform w/ Rails	350.50	17.00
(E)		21.25
3ft 3-Elem Yagi	343.67	0.02
(Unknown / E / #27)		0.03
8ft Pipe Mount on Sector Mount	341.00	0.02 0.03
(Unknown / E / #27)		
Raycap DC6-48-60-18-8F SUPRESSOR	347.00	0.02 0.04
(ATT / P)		
Raycap DC6-48-60-18-8F SUPRESSOR	347.00	0.02 0.04
(ATT / P)		
Raycap DC6-48-60-0-8F SUPRESSOR	347.00	0.02 0.04
(ATT / P)		
RRUS-11	347.00	0.05
(Relocate / ATT / E / #25)		0.07
RRUS-11	347.00	0.05
(Relocate / ATT / E / #25)		0.07
RRUS-11	347.00	0.05
(Relocate / ATT / E / #25)		0.07
7770.00 Panels w/ Pipe Mount	347.00	0.04 0.09
(Relocate / ATT / E / #24)		
7770.00 Panels w/ Pipe Mount	347.00	0.04 0.09
(Relocate / ATT / E / #24)		
7770.00 Panels w/ Pipe Mount	347.00	0.04 0.09
(Relocate / ATT / E / #24)		
(4) LGP21401 TMA'S	347.00	0.02
(Relocate / ATT / E / #24)		0.03
(4) LGP21401 TMA'S	347.00	0.02
(Relocate / ATT / E / #24)		0.03
(4) LGP21401 TMA'S	347.00	0.02
(Relocate / ATT / E / #24)		0.03
7020 RET Motor	344.50	0.00
(Relocate / ATT / E)		0.00
7020 RET Motor	344.50	0.00
(Relocate / ATT / E)		0.00
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT	347.00	0.07 0.14
(Relocate / ATT / E / #23)		
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT	347.00	0.07 0.14
(Relocate / ATT / E / #23)		
AM-X-CD-16-65-00T-RET w/ PIPE MOUNT	347.00	0.07 0.14
(Relocate / ATT / E / #23)		
RRUS-11	347.00	0.05
(Relocate / ATT / E / #22)		0.07
RRUS-11	347.00	0.05

Description	Placement	Weight
	ft	K
(Relocate / ATT / E / #22)		0.07
RRUS-11	347.00	0.05
(Relocate / ATT / E / #22)		0.07
OPA-65R-LCUU-H4 w/ Pipe Mounts	347.00	0.08 0.13
(ATT / P)		
OPA-65R-LCUU-H4 w/ Pipe Mounts	347.00	0.08 0.13
(ATT / P)		
OPA-65R-LCUU-H4 w/ Pipe Mounts	347.00	0.08 0.13
(ATT / P)		
RRUS-11	347.00	0.05
(ATT / P)		0.07
RRUS-11	347.00	0.05
(ATT / P)		0.07
RRUS-11	347.00	0.05
(ATT / P)		0.07
RRUS-32	347.00	0.08
(ATT / P)		0.10
RRUS-32	347.00	0.08
(ATT / P)		0.10
RRUS-32	347.00	0.08
(ATT / P)		0.10
Sector Mount w V-Stabilizer (Commscope MTC3615 AD A)	347.00	0.72 0.95
(ATT / P)		
Sector Mount w V-Stabilizer (Commscope MTC3615 AD A)	347.00	0.72 0.95
(ATT / P)		
Sector Mount w V-Stabilizer (Commscope MTC3615 AD A)	347.00	0.72 0.95
(ATT / P)		
4-Way Walkway Platform w/ Rails	339.00	10.25 13.32
(E)		
Corner Ladder	350.00 - 339.00	0.45
(E)		0.59
4-Way Face Frame	325.00	3.00
(E)		3.90
(4) 14ft Empty Pipe Mounts	306.00	0.06
(E / #21)		0.09
OB Light	269.25	0.01
(E / #20)		0.01
OB Light	269.25	0.01
(E / #20)		0.01
AIR21 B2A B4P w/ pipe Mount	262.00	0.13 0.18
(Relocate / T-Mobile / E / #19)		
AIR21 B2A B4P w/ pipe Mount	262.00	0.13 0.18
(Relocate / T-Mobile / E / #19)		
AIR21 B2A B4P w/ pipe Mount	262.00	0.13 0.18

Description	Placement	Weight
	ft	K
(Relocate / T-Mobile / E / #19)		
ATMAA1412D-1A20	262.00	0.01
TMA'S		0.02
(Relocate / T-Mobile / E / #19)		
ATMAA1412D-1A20	262.00	0.01
TMA'S		0.02
(Relocate / T-Mobile / E / #19)		
ATMAA1412D-1A20	262.00	0.01
TMA'S		0.02
(Relocate / T-Mobile / E / #19)		
LNX-6515DS-VTM w/ Pipe Mnt.	262.00	0.08 0.17
(T-Mobile / P)		
LNX-6515DS-VTM w/ Pipe Mnt.	262.00	0.08 0.17
(T-Mobile / P)		
LNX-6515DS-VTM w/ Pipe Mnt.	262.00	0.08 0.17
(T-Mobile / P)		
RRUS-11	262.00	0.05
(T-Mobile / P)		0.07
RRUS-11	262.00	0.05
(T-Mobile / P)		0.07
RRUS-11	262.00	0.05
(T-Mobile / P)		0.07
AIR32 B66Aa/B2a Panel w/ Pipe Mount	262.00	0.15 0.22
(T-Mobile / P)		
AIR32 B66Aa/B2a Panel w/ Pipe Mount	262.00	0.15 0.22
(T-Mobile / P)		
AIR32 B66Aa/B2a Panel w/ Pipe Mount	262.00	0.15 0.22
(T-Mobile / P)		
10.5ft Sector Mount (Sitepro1 #VFA10-U)	262.00	0.35 0.48
(T-Mobile / P)		
10.5ft Sector Mount (Sitepro1 #VFA10-U)	262.00	0.35 0.48
(T-Mobile / P)		
10.5ft Sector Mount (Sitepro1 #VFA10-U)	262.00	0.35 0.48
(T-Mobile / P)		
12" Square Panel w/ Pipe Mount	255.50	0.01 0.02
(E / #17)		
25ft Rest Platform w/ Rails	251.50	2.65
(E / #16)		3.58
25ft Rest Platform w/ Rails	251.50	2.65
(E / #16)		3.58
ALU-RRH 4x45	245.00	0.06
(Sprint / E / #15)		0.08
ALU-RRH 4x45	245.00	0.06
(Sprint / E / #15)		0.08
ALU-RRH 4x45	245.00	0.06

Description	Placement	Weight
	ft	K
(Sprint / E / #15)		0.08
APXVSPP18-C-A20 w / Pipe	243.50	0.09
Mount		0.16
(Sprint / E / #14)		
APXVSPP18-C-A20 w / Pipe	243.50	0.09
Mount		0.16
(Sprint / E / #14)		
APXVSPP18-C-A20 w / Pipe	243.50	0.09
Mount		0.16
(Sprint / E / #14)		
RRH	242.25	0.05
(Sprint / E / #13)		0.07
RRH	242.25	0.05
(Sprint / E / #13)		0.07
RRH	242.25	0.05
(Sprint / E / #13)		0.07
800 Ext. Notch Filter	242.25	0.01
(Sprint / E / #13)		0.02
800 Ext. Notch Filter	242.25	0.01
(Sprint / E / #13)		0.02
800 Ext. Notch Filter	242.25	0.01
(Sprint / E / #13)		0.02
13ft Sector Mount	244.25 - 241.50	0.57
(Sprint / E / #13-15)		0.78
13ft Sector Mount	244.25 - 241.50	0.57
(Sprint / E / #13-15)		0.78
13ft Sector Mount	244.25 - 241.50	0.57
(Sprint / E / #13-15)		0.78
7ft 5-Elem Yagi	208.50	0.01
(E / #12)		0.02
5ft Pipe Mount	204.50	0.03
(E / #12)		0.03
Corner Rest Platform	191.50	0.75
(E / #11)		1.01
Corner Rest Platform	191.50	0.75
(E / #11)		1.01
Corner Rest Platform	191.50	0.75
(E / #11)		1.01

Description	Placement	Weight
	ft	K
Corner Rest Platform	191.50	0.75
(E / #11)		1.01
Beacon Ice Shield	186.00	0.10
(E / #10)		0.14
Beacon Ice Shield	186.00	0.10
(E / #10)		0.14
Beacon / Strobe	182.50	0.14
(E / #9)		0.18
Beacon / Strobe	182.50	0.14
(E / #9)		0.18
41ft Rest Platform w/ Rails	125.00	3.75
(E / #8)		5.50
41ft Rest Platform w/ Rails	125.00	3.75
(E / #8)		5.50
4ft Rest Platform w/ Rails	100.00	0.45
(E / #7)		0.61
OB Light	93.00	0.01
(E / #6)		0.01
OB Light	93.00	0.01
(E / #6)		0.01
4ft Rest Platform w/ Rails	50.25	0.45
(E / #5)		0.61
4ft Side Arm	46.50	0.55
(E / #4)		0.78
Corner Rest Platform	26.00	0.75
(E / #3)		1.01
Corner Rest Platform	26.00	0.75
(E / #3)		1.01
Corner Rest Platform	26.00	0.75
(E / #3)		1.01
Corner Rest Platform	26.00	0.75
(E / #3)		1.01
GPS w/ Pipe Mount	26.00	0.01
(E / #2)		0.01
10ft Pipe Mount w/ Standoff	34.00 - 24.00	0.12
(E / #1)		0.16
Face Frame w/ Knee Braces	25.00 - 16.67	8.50
(E)		11.05

Dishes

Description	Elevation	Weight
	ft	K
3ft Dish	47.50	0.09
(E / #4)		0.13
4ft Dish	31.00	0.10
(E / #1)		0.17

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 45 deg - No Ice
4	Dead+Wind 90 deg - No Ice
5	Dead+Wind 135 deg - No Ice
6	Dead+Wind 180 deg - No Ice
7	Dead+Wind 225 deg - No Ice
8	Dead+Wind 270 deg - No Ice
9	Dead+Wind 315 deg - No Ice
10	Dead+Ice+Temp
11	Dead+Wind 0 deg+Ice+Temp
12	Dead+Wind 45 deg+Ice+Temp
13	Dead+Wind 90 deg+Ice+Temp
14	Dead+Wind 135 deg+Ice+Temp
15	Dead+Wind 180 deg+Ice+Temp
16	Dead+Wind 225 deg+Ice+Temp
17	Dead+Wind 270 deg+Ice+Temp
18	Dead+Wind 315 deg+Ice+Temp
19	Dead+Wind 0 deg - Service
20	Dead+Wind 45 deg - Service
21	Dead+Wind 90 deg - Service
22	Dead+Wind 135 deg - Service
23	Dead+Wind 180 deg - Service
24	Dead+Wind 225 deg - Service
25	Dead+Wind 270 deg - Service
26	Dead+Wind 315 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	351.67 - 337.5	1.124	20	0.0405	0.0123
T2	337.5 - 325	0.996	20	0.0401	0.0118
T3	325 - 312.5	0.879	20	0.0386	0.0112
T4	312.5 - 300	0.765	20	0.0367	0.0106
T5	300 - 287.5	0.649	20	0.0346	0.0095
T6	287.5 - 275	0.544	20	0.0317	0.0085
T7	275 - 262.5	0.446	20	0.0281	0.0074
T8	262.5 - 250	0.350	20	0.0249	0.0062
T9	250 - 225	0.259	20	0.0214	0.0048
T10	225 - 200	0.141	24	0.0140	0.0031
T11	200 - 175	0.055	24	0.0075	0.0015

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
371.00	12ft Whip Antenna	20	1.124	0.0405	0.0123	593012
369.50	Whip	20	1.124	0.0405	0.0123	593012
364.50	15ft Whip Antenna	20	1.124	0.0405	0.0123	593012
364.00	4ft Lightning Rod	20	1.124	0.0405	0.0123	593012
363.00	Beacon / Strobe	20	1.124	0.0405	0.0123	593012

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
360.00	10ft Pipe Mount	20	1.124	0.0405	0.0123	593012
356.25	4ft Pipe Mount	20	1.124	0.0405	0.0123	593012
355.50	15ft Pipe Mount w/ Guys	20	1.124	0.0405	0.0123	593012
355.00	14ft Mount	20	1.124	0.0405	0.0123	593012
354.50	15ft Whip Antenna	20	1.124	0.0405	0.0123	593012
353.00	TMA	20	1.124	0.0405	0.0123	593012
352.00	Top Stub Tower	20	1.124	0.0405	0.0123	593012
351.00	8ft Pipe Mount	20	1.118	0.0405	0.0123	593012
350.50	3ft Empty Side Arm Mount	20	1.114	0.0405	0.0123	593012
350.00	Corner Ladder	20	1.109	0.0405	0.0123	593012
349.75	8ft Whip Antenna	20	1.107	0.0405	0.0123	593012
349.50	21ft Whip Antenna	20	1.105	0.0405	0.0122	593012
349.00	8ft Empty Pipe Mount	20	1.101	0.0405	0.0122	593012
348.25	20ft 4-Element Dipole	20	1.094	0.0405	0.0122	593012
347.00	Raycap DC6-48-60-18-8F SUPRESSOR	20	1.083	0.0405	0.0122	593012
344.50	7020 RET Motor	20	1.060	0.0404	0.0121	413536
343.67	3ft 3-Elem Yagi	20	1.053	0.0404	0.0121	370631
343.25	TA-2335-DAB Panel w/ Pipe Mount	20	1.049	0.0404	0.0120	352146
341.00	8ft Pipe Mount on Sector Mount	20	1.028	0.0403	0.0120	279765
339.00	4-Way Walkway Platform w/ Rails	20	1.010	0.0402	0.0119	252125
325.00	4-Way Face Frame	20	0.879	0.0386	0.0112	289020
306.00	(4) 14ft Empty Pipe Mounts	20	0.704	0.0357	0.0101	456081
269.25	OB Light	20	0.402	0.0267	0.0069	Inf
262.00	AIR21 B2A B4P w/ pipe Mount	20	0.346	0.0248	0.0061	Inf
255.50	12" Square Panel w/ Pipe Mount	20	0.297	0.0230	0.0054	104374
251.50	25ft Rest Platform w/ Rails	20	0.268	0.0218	0.0049	66965
245.00	ALU-RRH 4x45	20	0.229	0.0199	0.0043	70477
244.25	13ft Sector Mount	20	0.225	0.0197	0.0043	73393
243.50	APXVSPP18-C-A20 w / Pipe Mount	20	0.221	0.0194	0.0042	76562
242.88	13ft Sector Mount	20	0.218	0.0193	0.0042	79420
242.25	RRH	20	0.214	0.0191	0.0041	82499
241.50	13ft Sector Mount	20	0.211	0.0188	0.0041	86524
208.50	7ft 5-Elem Yagi	24	0.082	0.0097	0.0021	214047
204.50	5ft Pipe Mount	24	0.068	0.0087	0.0018	168553
191.50	Corner Rest Platform	24	0.033	0.0051	0.0010	206072
186.00	Beacon Ice Shield	24	0.021	0.0034	0.0007	309108
182.50	Beacon / Strobe	24	0.014	0.0023	0.0004	453360

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	351.67 - 337.5	3.168	3	0.1119	0.0356
T2	337.5 - 325	2.812	3	0.1111	0.0342
T3	325 - 312.5	2.485	3	0.1070	0.0325
T4	312.5 - 300	2.166	3	0.1017	0.0307
T5	300 - 287.5	1.843	3	0.0960	0.0275
T6	287.5 - 275	1.547	3	0.0879	0.0245
T7	275 - 262.5	1.271	3	0.0780	0.0215
T8	262.5 - 250	1.000	3	0.0692	0.0178
T9	250 - 225	0.741	3	0.0594	0.0137
T10	225 - 200	0.409	7	0.0391	0.0090
T11	200 - 175	0.156	7	0.0209	0.0044

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T1	351.67 - 337.5	Leg	L6x6x5/8	3	-16.17	157.06	10.3	Pass
		Diagonal	L3 1/2x3 1/2x5/16	14	-7.33	18.21	40.2	Pass
		Secondary Horizontal	L3x3x1/4	18	-1.85	13.98	13.2	Pass
		Top Girt	C8x11.5	6	-0.10	40.98	0.3	Pass
							0.6 (b)	
T2	337.5 - 325	Leg	L6x6x5/8	23	-30.09	157.88	19.1	Pass
							27.6 (b)	
		Diagonal	L3 1/2x3 1/2x5/16	34	-9.13	16.91	54.0	Pass
		Horizontal	C7x9.8	26	1.83	77.88	2.3	Pass
							5.0 (b)	
		Secondary Horizontal	L3x2 1/2x1/4	37	-0.44	7.46	5.9	Pass
T3	325 - 312.5	Leg	L6x6x7/8	43	-47.37	215.85	21.9	Pass
		Diagonal	L3 1/2x4x5/16	59	-10.01	17.74	56.4	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	46	2.47	56.32	4.4	Pass
							7.0 (b)	
		Secondary Horizontal	L3x2 1/2x1/4	63	-0.69	6.18	11.2	Pass
		Inner Bracing	2L2x2 1/2x1/4x3/8	53	0.01	46.01	0.4	Pass
T4	312.5 - 300	Leg	L6x6x7/8	68	-58.11	220.41	26.4	Pass
							40.0 (b)	
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	88	-13.34	19.03	70.1	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	84	-8.30	28.17	29.5	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	82	-0.87	13.70	6.4	Pass
		Redund Diag 1 Bracing	L2 1/2x2x3/16	83	-0.72	4.14	17.4	Pass
		Inner Bracing	2L2x2 1/2x1/4x3/8	99	-0.03	4.69	0.6	Pass
T5	300 - 287.5	Leg	L6x6x7/8	105	-73.69	220.41	33.4	Pass
		Diagonal	2L2 1/2x2 1/2x5/16x3/8	125	-14.11	22.07	63.9	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	121	-9.20	23.54	39.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x1/4	119	-1.11	16.73	6.6	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x1/4	120	-0.86	7.41	11.6	Pass
		Inner Bracing	2L2 1/2x2 1/2x1/4x3/8	139	-0.01	3.64	0.7	Pass
T6	287.5 - 275	Leg	L6x6x7/8	142	-90.05	220.41	40.9	Pass
							49.6 (b)	
		Diagonal	2L2 1/2x2 1/2x5/16x3/8	162	-14.63	20.47	71.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	158	-9.96	20.25	49.2	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x1/4	156	-1.35	14.53	9.3	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x1/4	161	-0.99	6.82	14.5	Pass
		Inner Bracing	2L2 1/2x2 1/2x1/4x3/8	176	-0.01	3.04	0.8	Pass
T7	275 - 262.5	Leg	L8x8x3/4	179	-107.10	281.86	38.0	Pass
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	201	-15.41	27.06	57.0	Pass
							65.4 (b)	
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	197	-10.87	17.61	61.8	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	193	-1.61	9.72	16.6	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	194	-1.13	4.84	23.3	Pass
		Redund Hip 1 Bracing	L3x3x1/4	195	0.00	0.00	0.2	Pass
		Redund Hip Diagonal 1 Bracing	2L2 1/2x2 1/2x1/4x3/8	196	0.08	51.41	0.4	Pass
		Inner Bracing	2L2 1/2x2 1/2x3/16x3/8	218	-0.06	4.00	1.6	Pass
T8	262.5 - 250	Leg	L8x8x3/4	224	-127.20	281.86	45.1	Pass
							58.4 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2 1/2x1/4x3/8	246	-17.37	25.49	68.1 73.7 (b)	Pass
		Horizontal	2L2 1/2x2 1/2x1/4x3/8	242	-12.70	15.63	81.3	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	238	-1.91	8.29	23.1	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	239	-1.29	4.60	28.0	Pass
		Redund Hip 1 Bracing	L3x3x1/4	240	0.00	0.00	0.3	Pass
		Redund Hip Diagonal 1 Bracing	2L2 1/2x2 1/2x1/4x3/8	250	0.08	51.41	0.4	Pass
		Inner Bracing	2L2 1/2x2 1/2x3/16x3/8	263	-0.07	3.44	2.0	Pass
T9	250 - 225	Leg	L8x8x7/8	269	-147.68	299.73	49.3 67.9 (b)	Pass
		Diagonal	2L2.5x3x5/16 + 2L3x3x3/8	303	-31.05	51.66	60.1 87.9 (b)	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	297	-16.05	21.76	73.8	Pass
		Redund Horz 1 Bracing	2L1 3/4x1 3/4x3/16	290	-2.22	17.06	13.0	Pass
		Redund Horz 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	300	-2.22	24.96	8.9	Pass
		Redund Diag 1 Bracing	2L2x2x3/16	292	-2.24	10.47	21.4	Pass
		Redund Diag 2 Bracing	2L2 1/2x2x3/16x3/8	293	-1.45	10.68	13.6	Pass
		Redund Hip 2 Bracing	L3 1/2x3 1/2x5/16	295	0.00	0.00	0.3	Pass
		Redund Hip Diagonal 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	296	0.11	51.41	0.4	Pass
		Redund Sub Horz Bracing	2L2 1/2x2 1/2x1/4x3/8	282	0.00	0.00	0.3	Pass
		Inner Bracing	2L2 1/2x2 1/2x1/4x3/8	331	-0.01	7.73	1.0	Pass
T10	225 - 200	Leg	L8x8x1 1/8	334	-190.47	378.30	50.3 75.0 (b)	Pass
		Diagonal	2L2.5x3x5/16 + 2L3x3x3/8	368	-33.49	47.92	69.9 71.1 (b)	Pass
		Horizontal	2L3x2 1/2x1/4x3/8	362	-18.75	46.83	40.0 53.1 (b)	Pass
		Redund Horz 1 Bracing	2L1 3/4x1 3/4x3/16	355	-2.86	16.02	17.9	Pass
		Redund Horz 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	356	-2.86	19.18	14.9	Pass
		Redund Diag 1 Bracing	2L2x2x3/16	357	-2.62	9.62	27.3	Pass
		Redund Diag 2 Bracing	2L2 1/2x2x3/16x3/8	367	-1.77	9.12	19.4	Pass
		Redund Hip 2 Bracing	L4x4x3/8	360	0.00	0.00	0.4	Pass
		Redund Hip Diagonal 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	361	0.11	51.41	0.5	Pass
		Redund Sub Horz Bracing	2L2 1/2x2 1/2x1/4x3/8	347	0.00	0.00	0.3	Pass
		Inner Bracing	L3x3x1/4	393	-0.15	4.30	3.5	Pass
T11	200 - 175	Leg	L8x8x1 1/8	399	-236.57	458.83	51.6 81.5 (b)	Pass
		Diagonal	2L2.5x3.5x5/16 + 2L3x3.5x3/8	433	-37.37	65.12	57.4 63.5 (b)	Pass
		Horizontal	2L3 1/2x2 1/2x1/4x3/8	427	-22.25	48.17	46.2 63.0 (b)	Pass
		Redund Horz 1 Bracing	2L1 3/4x1 3/4x3/16	420	-3.56	14.87	23.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
		Redund Horz 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	430	-3.56	15.20	23.4	Pass
		Redund Diag 1 Bracing	2L2x2x3/16	431	-3.01	8.86	34.0	Pass
		Redund Diag 2 Bracing	2L2 1/2x2x3/16x3/8	423	-2.11	7.82	27.0	Pass
		Redund Hip 2 Bracing	L4x4x3/8	425	0.00	0.00	0.4	Pass
		Redund Hip Diagonal 2 Bracing	2L2 1/2x2 1/2x1/4x3/8	426	0.11	51.41	0.6	Pass
		Redund Sub Horz Bracing	2L2 1/2x3x1/4x3/8	412	0.00	0.00	0.3	Pass
		Inner Bracing	2L3x2 1/2x1/4x3/8	461	-0.02	7.98	1.3	Pass

*Elev. 175-351.67ft – Modelled in TnxTower.

Section No.	Elevation ft	Component Type	Member Size	P kips	Pallow kips	% Member	% Bolt	Pass Fail
T12	175 - 150	*Legs - A	ST L808018	247.95	463.77	53.46	93.98	Pass
		*Diagonals - B / Bolt Replacement One End Only	2L2.5x3x5/16 + 2L3x3x3/8	58.55	90.13	64.96	69.04	Pass
		*Horizontals - O / Added Redundant Braces	LD L35255 SP 0.4375	37.16	57.66	64.44	65.73	Pass
		*Red Horiz 1 - C (LLV)	ST L25203	1.31	11.89	11.01	9.27	Pass
		*Red Diag 1 - D	ST L30303	1.43	7.21	19.84	10.12	Pass
		*Red Horiz 2 - E	LD L25254 SP 0.375	1.69	47.73	3.54	5.98	Pass
		*Red Diag 2 - L	LD L30306 SP 0.4375	26.13	33.69	77.56	46.22	Pass
		*Red Sub Diagonal - M / New Reinforcement	2L3x2.5x1/4 + L3.5x2.5x3/8	38.99	52.82	73.82	45.98	Pass
		*Red Vertical - N	ST L30304	0.02	10.06	0.2	0.14	Pass
		*Red Sub Horizontal - F / Bolt Replacement	LD L30304 SP 0.4375	31.79	41.27	77.03	44.98	Pass
		*Hip Horizontal 2 - G	LD L40304 SP 0.375	3.8	79.1	4.8	13.44	Pass
		*Hip Diagonal 2 - K	LD L25254 SP 0.375	6.74	15.07	44.73	23.84	Pass
		*Hip Horz 2 Sub Braces - H (LLV)	ST L30254	0.23	15.77	1.46	1.63	Pass
		*Level 1 Internal Sub Diagonals - J	ST L30304	2.36	11.68	20.2	16.7	Pass
		*Level 1 Internal Horizontal - I	LD L40304 SP 0.375	5.46	63.46	8.6	19.32	Pass
		*Level 2 Internal Corner Diagonals - Q	ST L30304	2.33	8.53	27.32	16.49	Pass
		*Level 2 Internal Middle Diagonals - S	ST L30304	2.33	8.35	27.89	16.49	Pass
		*Level 2 Internal Corner Diagonals Sub Braces - P	ST L30254	1.74	10.81	16.09	12.31	Pass
		*Level 2 Internal Horizontal - R	LD L40304 SP 0.375	2.02	41.54	4.86	7.15	Pass
T13	150 - 125	*Legs - A	ST L808018	259.27	463.41	55.95	82.51	Pass
		*Diagonals - B / Reinforcement / Bolt Replacement	2L3x3.5x3/8 + 2L3x3.5x3/8	82.83	87.72	94.43	83.72	Pass
		*Horizontals - K / Added Redundant Braces	LD L35305 SP 0.4375	54.82	71.23	76.96	96.97	Pass
		*Red Horiz 1 - C (LLV)	ST L25204	1.38	19.58	7.05	9.76	Pass
		*Red Diag 1 - D	ST L30303	1.94	7.68	25.28	13.73	Pass
		*Red Horiz 2 - E	SD L25203 SP 0.375	4.48	14.92	30.03	15.85	Pass
		*Red Diag 2 - I / Replace Existing	LD L35356 SP 0.4375	53.39	63.14	84.55	94.44	Pass
		*Red Sub Diagonal - J / New Reinf. - Replace Bolts	2L3x2.5x1/4 + L3.5x2.5x3/8	43.65	49.13	88.85	41.18	Pass
		*Red Sub Horizontal - F / Add Kicker Internal	LD L40406 SP 0.5	39.91	49.24	81.05	70.59	Pass
		*Hip Horizontal 2 - G	SD L30254 SP 0.375	0	20.73	0	0	Pass
		*Hip Diagonal 2 - H	LD L25254 SP 0.375	0.01	14.5	0.07	0.04	Pass
		*Internal Corner Diagonals - M (LLH)	ST L35304	1.74	9.22	18.88	12.31	Pass
		*Internal Middle Diagonals - N (LLV)	ST L35304	1.54	8.38	18.38	10.9	Pass
		*Internal Corner Diagonals Sub Braces - L (LLV)	ST L30254	4.79	9.24	51.84	33.89	Pass

		*Internal Horizontal - O (LLV)	LD L40304 SP 0.375	3.81	35.21	10.82	13.48	Pass
T14	125 - 100	*Legs - A / Replace Bolts @ 103.5ft Approx.	ST L808016	332.37	441.54	75.28	49.36	Pass
		*Diagonals - B / Bolt Replacement One End Only	2L3x3.5x3/8 + 2L3x3.5x3/8	75.27	81.66	92.17	53.26	Pass
		*Horizontals - K / Added Redundant Braces	LD L40355 SP 0.4375	56.08	82.34	68.1	79.36	Pass
		*Red Horiz 1 - C (LLV)	ST L25203	1.45	11.47	12.64	10.26	Pass
		*Red Diag 1 - D	ST L30303	1.61	7.12	22.61	11.39	Pass
		*Red Horiz 2 - E	LD L25254 SP 0.4375	1.82	23.65	7.7	6.44	Pass
		*Red Diag 2 - I	LD L35356 SP 0.4375	47.03	56.47	83.28	83.19	Pass
		*Red Sub Diagonal - J / New Reinforcement	2L3x3x3/8 + L3.5x3x3/8	44.83	90.68	49.44	52.86	Pass
		*Red Sub Horizontal - F / Add Kicker Internal	LD L40406 SP 0.5	43.49	50.34	86.39	51.28	Pass
		*Hip Horizontal 2 - G	SD L30254 SP 0.375	0.01	13.18	0.08	0.04	Pass
		*Hip Diagonal 2 - H	LD L25254 SP 0.375	0	13.37	0	0	Pass
		*Internal Corner Diagonals - M	ST L35354	2.9	9.36	30.99	20.52	Pass
		*Internal Middle Diagonals - N	ST L35354	2.58	9.7	26.6	18.25	Pass
		*Internal Corner Diagonals Sub Braces - L	ST L35354	6.15	15.14	40.62	43.51	Pass
		*Internal Horizontal - O	LD L40354 SP 0.375	5.07	33.49	15.14	17.94	Pass
T15	100 - 75	*Legs - A / Replace Bolts @ 78.5ft Approx.	ST L808016	435.06	441.54	98.53	56.54	Pass
		*Diagonals - B	2L3x3.5x3/8 + 2L3x3.5x3/8	57.93	135.49	42.76	81.97	Pass
		*Horizontals - Q / New Reinforcement	2L3.5x3x5/16 + L4x3.5x3/8	46.91	86.87	54	82.98	Pass
		*Red Horiz 1 - C	ST L25253	1.4	8.31	16.84	9.91	Pass
		*Red Diag 1 - D	LD L25253 SP 0.375	1.15	13.66	8.42	4.07	Pass
		*Red Horiz 2 - E	LD L25254 SP 0.5	1.65	35.56	4.64	5.84	Pass
		*Red Diag 2 - M / Replace Existing Member	LD L35356 SP 0.4375	24.16	33.71	71.66	42.73	Pass
		*Red Sub Diagonal - O	LD L40408 SP 0.4375	58.23	67.11	86.77	41.2	Pass
		*Red Sub Horizontal - F / Add Kicker Internal	SD L35304 SP 0.5	15.85	22.16	71.52	56.07	Pass
		*Red Vertical Outside - N	ST L25254	0.04	5.75	0.7	0.28	Pass
		*Red Vertical Center - P	ST L25254	0	5.75	0	0	Pass
		*Hip Horizontal 1 - CC	ST L30303	0.06	6.3	0.95	0.42	Pass
		*Hip Horizontal 2 - G	LD L35254 SP 0.375	0.04	43.87	0.09	0.14	Pass
		*Hip Diagonal 2 - J	LD L25254 SP 0.375	0.01	29.28	0.03	0.04	Pass
		*Hip SubDiagonal 2 - K	ST L25253	0	5.88	0	0	Pass
		*Hip SubVertical 2 - L	ST L25253	0	15.2	0	0	Pass
		*Hip SubInternal 2 - I	ST L30303	0	6.3	0	0	Pass
		*Hip SubInternal 2 - H	ST L25253	0	7.19	0	0	Pass
		*Internal Corner Horizontal 1 - V	ST L30303	0.06	9.03	0.66	0.42	Pass
		*Internal Corner Diagonal 1 - U	ST L25253	0.05	7.8	0.64	0.35	Pass
		*Internal Corner Horizontal 2 - T	LD L30254 SP 0.375	3.99	35.55	11.22	14.12	Pass

		*Internal Corner Diagonal 2 - S	SD L30254 SP 0.375	2.33	38.79	6.01	8.24	Pass
		*Internal Corner Diagonal 2 - W	ST L30303	3.45	6.94	49.71	24.41	Pass
		*Internal Corner Horizontal 3 - R	LD L35254 SP 0.4375	5.71	47.83	11.94	20.2	Pass
		*Internal Corner Diagonal 3 - X	LD L30304 SP 0.375	4.88	41.7	11.7	17.26	Pass
T16	75 - 50	*Legs - A / Add Redundants / Replace Bolts	ST L808016	492.56	554.88	88.77	56.9	Pass
		*Diagonals - B	2L3x3.5x3/8 + 2L3x3.5x3/8	58.94	125.89	46.82	83.4	Pass
		*Horizontals - Q / New Reinforcement	2L4x3x1/4 + L4x3.5x3/8	48.71	67.75	71.9	68.93	Pass
		*Red Horiz 1 - C	ST L25253	1.04	7.73	13.45	7.36	Pass
		*Red Diag 1 - D	LD L25254 SP 0.375	4.78	34.23	13.96	16.91	Pass
		*Red Horiz 2 - E	LD L30254 SP 0.5	1.69	45.67	3.7	5.98	Pass
		*Red Diag 2 - M	LD L35356 SP 0.4375	26	62.7	41.47	66.23	Pass
		*Red Sub Diagonal - O / New Reinforcement	2L4x4x1/2 + L4x4x3/8	60.13	145.13	41.43	42.54	Pass
		*Red Sub Horizontal - F / Add Kicker Internal	SD L35304 SP 0.5	16.76	19.46	86.13	59.29	Pass
		*Red Vertical Outside - N	ST L25254	0.05	5.75	0.87	0.35	Pass
		*Red Vertical Center - P	ST L25254	0	5.75	0	0	Pass
		*Hip Horizontal 1 - CC	ST L30303	0.09	5.49	1.64	0.64	Pass
		*Hip Horizontal 2 - G	LD L35254 SP 0.375	0.05	41.07	0.12	0.18	Pass
		*Hip Diagonal 2 - J	LD L25254	0.03	26.52	0.11	0.11	Pass
		*Hip SubDiagonal 2 - K	ST L25253	0.01	5.3	0.19	0.07	Pass
		*Hip SubVertical 2 - L	ST L25253	0	15.2	0	0	Pass
		*Hip SubInternal 2 - I	ST L30303	0	5.49	0	0	Pass
		*Hip SubInternal 2 - H	ST L25253	0	6.27	0	0	Pass
		*Internal Corner Horizontal 1 - V	ST L30303	0.05	10.88	0.46	0.35	Pass
		*Internal Corner Diagonal 1 - U	ST L25253	0.05	6.43	0.78	0.35	Pass
		*Internal Corner Horizontal 2 - T	LD L30254 SP 0.375	4.74	32.85	14.43	16.77	Pass
		*Internal Corner Diagonal 2 - S	SD L30254 SP 0.375	2.8	35.95	7.79	9.91	Pass
		*Internal Corner Diagonal 2 - W	ST L30303	4.35	6.01	72.4	30.78	Pass
		*Internal Corner Horizontal 3 - R	LD L40356 SP 0.375	5.61	94.65	5.93	19.85	Pass
		*Internal Corner Diagonal 3 - X	LD L30304 SP 0.375	6.18	38.17	16.19	21.86	Pass
T17	50 - 25	*Legs - A / Replace Bolts @ 28.5ft Approx.	ST L808016	553.55	554.53	99.82	63.94	Pass
		*Diagonals - B	2L3x4x3/8 + 2L3x4x3/8	62.11	114.38	54.3	87.89	Pass
		*Horizontals - X / New Reinforcement	2L4x3x5/16 + L4x3.5x3/8	52.34	70.17	74.59	74.06	Pass
		*Red Horiz 1 - E	ST L25254	1.15	8.83	13.03	8.14	Pass
		*Red Diag 1 - G	LD L25253 SP 0.4375	4.9	32.7	14.98	17.33	Pass
		*Red Horiz 2 - M	LD L25254 SP 0.5	2.89	29.79	9.7	10.22	Pass
		*Red Diag 2 - T	LD L35356 SP 0.4375	28.64	81.84	35	50.66	Pass
		*Red Sub Horiz 1 - C	ST L25254	2.49	22.05	11.29	17.62	Pass

		*Red Sub Diag 1 - D	ST L25254	2.67	13.64	19.58	27.2	Pass
		*Red Sub Diag 2 - F	ST L25254	4.75	11.78	40.31	48.4	Pass
		*Red Sub Horiz 2 - H	ST L25254	4.45	22.04	20.19	45.34	Pass
		*Red Sub Diag 3 - R	ST L25254	1.97	5.12	38.44	20.07	Pass
		*Red Sub Horiz 3 - S	ST L25254	2.59	7.15	36.21	26.39	Pass
		*Red Sub Diagonal - V / New Reinforcement	2L4x4x1/2 + L4x4x3/8	63.63	134.69	47.24	45.02	Pass
		*Red Sub Horizontal - N / Add Kicker Internal	SD L40304 SP 0.5	18.77	19.01	98.76	66.4	Pass
		*Red Vertical Outside - U	ST L25254	0.05	5.75	0.87	0.35	Pass
		*Red Vertical Center - W	ST L25254	0	5.75	0	0	Pass
		*Hip Horizontal 1 - I	ST L40406	0.08	22.14	0.36	0.57	Pass
		*Hip Horizontal 2 - J	LD L35255 SP 0.375	0.07	46.51	0.15	0.25	Pass
		*Hip Diagonal 2 - O	LD L25254 SP 0.375	0.01	24.08	0.04	0.04	Pass
		*Hip SubDiagonal 2 - Q	ST L25253	0	4.79	0	0	Pass
		*Hip SubVertical 2 - P	ST L25253	0	15.2	0	0	Pass
		*Hip SubInternal 2 - K	ST L30304	0	6.29	0	0	Pass
		*Hip SubInternal 2 - L	ST L25253	0	5.51	0	0	Pass
		*Internal Corner Horizontal 1 - C1	ST L30304	0.05	10.97	0.46	0.35	Pass
		*Internal Corner Diagonal 1 - B1	ST L30304	0.04	13.11	0.31	0.28	Pass
		*Internal Corner Horizontal 2 - A1	LD L30254 SP 0.375	4.72	28.97	16.29	16.7	Pass
		*Internal Corner Diagonal 2 - Z	LD L25254 SP 0.375	2.82	30.37	9.29	9.98	Pass
		*Internal Corner Diagonal 2 - D1	LD L25253 SP 0.375	4.31	13.8	31.24	15.25	Pass
		*Internal Corner Horizontal 3 - Y	LD L35255 SP 0.4375	5.39	50.26	10.72	19.07	Pass
		*Internal Corner Diagonal 3 - E1	LD L30304 SP 0.4375	6.1	35.17	17.34	21.58	Pass
T18	25 - 0	*Legs - A / Replace Splice Bolts @ 3.5ft Approx.	ST L808018	616.7	617.85	99.81	64.11	Pass
		*Diagonals - B	SD L60406 SP 0.5	62.27	90.57	68.75	75.53	Pass
		*Horizontals - L1	LD L50356 SP 0.4375	55.32	84.24	65.67	78.28	Pass
		*Red Horiz 1 - E	ST L25254	1.42	8.82	16.1	10.05	Pass
		*Red Diag 1 - G	LD L25254 SP 0.5	4.79	41.53	11.53	16.95	Pass
		*Red Horiz 2 - O	LD L35256 SP 0.4375	5.5	58.56	9.39	19.46	Pass
		*Red Diag 2 - T	LD L35356 SP 0.4375	28.82	79.14	36.42	33.99	Pass
		*Red Sub Horiz 1 - C	ST L25254	2.77	20.9	13.26	28.22	Pass
		*Red Sub Diag 1 - D	ST L25254	3.1	13.01	23.82	31.58	Pass
		*Red Sub Diag 2 - F	ST L25254	4.51	11.15	40.44	45.95	Pass
		*Red Sub Horiz 2 - H	ST L25254	4.3	20.9	20.58	43.81	Pass
		*Red Sub Diag 3 - R	ST L25254	1.77	4.71	37.56	18.03	Pass
		*Red Sub Horiz 3 - S	ST L25254	2.28	6.37	35.79	23.23	Pass
		*Red Sub Diagonal - V	LD L50506 SP 0.4375	55.39	138.34	40.04	28.79	Pass

		*Red Sub Horizontal - Q	ST C9X13	25.17	28.94	86.97	11.13	Pass
		*Red Vertical Outside - U	ST L25254	5.34	5.72	93.32	37.78	Pass
		*Red Vertical Center - Z	LD L30254 SP 0.5	0.02	38.47	0.05	0.07	Pass
		*Red Vertical Inner 1 - X	LD L25254 SP 0.375	13.75	45.44	30.26	48.64	Pass
		*Red Vertical Inner 2 - Y / Reinforcement DBL L	LD L30304 SP 0.5	17.19	32.84	52.35	60.81	Pass
		*Red Vertical Sub Diagonal - W	LD L25254 SP 0.5	16.73	18.18	92.02	59.19	Pass
		*Hip Horizontal 1 - I	ST L40406	0.11	19.72	0.56	0.78	Pass
		*Hip Diagonal 1 - J	LD L25254 SP 0.5	0.11	12.8	0.86	0.39	Pass
		*Hip Horizontal 2 - L	LD L35354 SP 0.4375	2.51	41	6.12	8.88	Pass
		*Hip Diagonal 2 - A1	LD L25254 SP 0.375	1.66	22.01	7.54	5.87	Pass
		*Hip SubDiagonal 2 - C1	ST L25253	0	4.32	0	0	Pass
		*Hip SubVertical 2 - B1	ST L25253	0	15.15	0	0	Pass
		*Hip SubInternal 2-1 - KK	LD L25253 SP 0.4375	3.23	21.47	15.05	11.43	Pass
		*Hip SubInternal 2-2 - K / Reinforcement DBL L	LD L25253 SP 0.4375	5.69	19.58	29.06	20.13	Pass
		*Internal-1 Sub Braces - N	ST L30304	1.79	7.93	22.56	12.66	Pass
		*Internal-1 Inner Horiz - M	LD L60355 SP 0.375	7.51	75.84	9.9	26.57	Pass
		*Internal-2 Corner Horizontal 1 - H1	LD L25253 SP 0.4375	0.1	24.02	0.42	0.35	Pass
		*Internal-2 Corner Diagonal 1 - G1	ST L25254	0.06	6.26	0.96	0.42	Pass
		*Internal-2 Corner Horizontal 2 - F1	LD L30254 SP 0.375	3.44	25.61	13.43	12.17	Pass
		*Internal-2 Corner Diagonal 2-1 - E1	LD L25254 SP 0.375	1.92	26.74	7.18	6.79	Pass
		*Internal-2 Corner Diagonal 2-2 - I1	LD L25253 SP 0.4375	2.65	12.19	21.74	9.37	Pass
		*Internal-2 Corner Horizontal 3 - D1	LD L35255 SP 0.4375	4.28	45.82	9.34	15.14	Pass
		*Internal-2 Corner Diagonal 3 - K2	LD L30254 SP 0.5	3.71	42.61	8.71	13.12	Pass
		*Internal-2 Corner Diagonal 3 - Sub1 - J1	ST L30304	0.16	11.32	1.41	1.13	Pass
		*Internal-2 Corner Diagonal 3 - Sub2 - K1	LD L30304 SP 0.5	0.01	47.08	0.02	0.04	Pass
T12	175-150	*Reinforcement / Redundant Vertical / RV12	ST L25254	0.11	5.56	1.98	1.12	Pass
		*Reinforcement / Internal / RI12	ST L25254	0.83	9.7	8.56	8.46	Pass
T13	150-125	*Reinforcement / Redundant Vertical / RV13	ST L25254	0.19	5.72	3.32	1.94	Pass
		*Reinforcement / Internal / RI13	ST L25254	1.22	8.51	14.33	12.43	Pass
		*Reinforcement / Internal Kicker / RK13	ST L30304	0.01	5.63	0.18	0.07	Pass
T14	100-125	*Reinforcement / Redundant Vertical / RV14	ST L30304	0.17	10.1	1.68	1.2	Pass
		*Reinforcement / Internal / RI14	ST L30304	1.07	11.6	9.22	7.57	Pass
		*Reinforcement / Internal Kicker / RK14	ST L30304	0.01	5.03	0.2	0.07	Pass
T15	75-100	*Reinforcement / Internal Kicker / RK15	ST L30304	0.01	6.06	0.17	0.07	Pass
T16	50-75	*Reinforcement / Internal Kicker / RK16	ST L30304	0.01	5.73	0.17	0.07	Pass
		*Reinforcement / Red Sub Horiz 1 - C16	ST L25254	2.02	23.25	8.69	14.29	Pass
		*Reinforcement / Red Sub Diag 1 - D16	ST L25254	2.46	14.32	17.18	17.41	Pass

		*Reinforcement / Red Sub Diag 2 - F16	ST L25254	4.54	12.46	36.45	32.12	Pass
		*Reinforcement / Red Sub Horiz 2 - H16	ST L25254	3.94	23.25	16.95	27.88	Pass
		*Reinforcement / Red Sub Diag 3 - R16	ST L25254	1.74	5.63	30.9	12.31	Pass
		*Reinforcement / Red Sub Horiz 3 - S16	ST L25254	2	8.13	24.59	14.15	Pass
T17	25-50	*Reinforcement / Internal Kicker / RK17	ST L30304	0.01	5.42	0.18	0.07	Pass
T9	250-225	Red Horiz 1 - C	ST L25203	2.22	10.97	20.23	15.71	Pass
		Red Diag 1 - D	ST L30303	2.24	7.49	29.89	15.85	Pass
T10	225-200	Red Horiz 1 - C	ST L25204	2.84	11.18	25.4	20.09	Pass
		Red Diag 1 - D	ST L30303	2.6	6.9	37.71	18.4	Pass
T11	200-175	Red Horiz 1 - C	ST L25253	3.52	10.2	34.5	24.91	Pass
		Red Diag 1 - D	ST L30304	2.98	8.26	36.07	21.08	Pass

*Elev. 0-175ft – Tower modelled in Staad. Tower Members were considered as truss members and Loads are from Staad Analysis.

Job Information

	Engineer	Checked	Approved
Name:	KM	HML	MM
Date:	9-Jun-16	27-Jun-16	30-Jun-16

Comments

TIA/EIA-222-F 85MPH + 0" ICE / 74MPH + 0.5" ICE
0 to 175ft of Tower Modelled

Structure Type	SPACE FRAME

Number of Nodes	804	Highest Node	820
Number of Elements	2008	Highest Beam	2024

Number of Basic Load Cases	-2
Number of Combination Load Cases	0

Included in this printout are data for:

All	The Whole Structure

Included in this printout are results for load cases:

Type	L/C	Name
Primary	1	DEAD ONLY
Primary	2	DEAD+WIND 0 DEG - NO ICE
Primary	3	DEAD+WIND 45 DEG - NO ICE
Primary	4	DEAD+WIND 90 DEG - NO ICE
Primary	5	DEAD+WIND 135 DEG - NO ICE
Primary	6	DEAD+WIND 180 DEG - NO ICE
Primary	7	DEAD+WIND 225 DEG - NO ICE
Primary	8	DEAD+WIND 270 DEG - NO ICE
Primary	9	DEAD+WIND 315 DEG - NO ICE
Primary	10	DEAD+ICE+TEMP
Primary	11	DEAD+WIND 0 DEG+ICE+TEMP
Primary	12	DEAD+WIND 45 DEG+ICE+TEMP
Primary	13	DEAD+WIND 90 DEG+ICE+TEMP
Primary	14	DEAD+WIND 135 DEG+ICE+TEMP
Primary	15	DEAD+WIND 180 DEG+ICE+TEMP
Primary	16	DEAD+WIND 225 DEG+ICE+TEMP
Primary	17	DEAD+WIND 270 DEG+ICE+TEMP
Primary	18	DEAD+WIND 315 DEG+ICE+TEMP
Primary	19	DEAD+WIND 0 DEG - SERVICE
Primary	20	DEAD+WIND 45 DEG - SERVICE
Primary	21	DEAD+WIND 90 DEG - SERVICE
Primary	22	DEAD+WIND 135 DEG - SERVICE
Primary	23	DEAD+WIND 180 DEG - SERVICE
Primary	24	DEAD+WIND 225 DEG - SERVICE

Job Information Cont...

Type	L/C	Name
Primary	25	DEAD+WIND 270 DEG - SERVICE
Primary	26	DEAD+WIND 315 DEG - SERVICE

Supports

Node	X (lbf/ft)	Y (lbf/ft)	Z (lbf/ft)	rX (kip-ft/deg)	rY (kip-ft/deg)	rZ (kip-ft/deg)
224	Fixed	Fixed	Fixed	-	-	-
227	Fixed	Fixed	Fixed	-	-	-
230	Fixed	Fixed	Fixed	-	-	-
233	Fixed	Fixed	Fixed	-	-	-

Node Displacement Summary

	Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
Max X	476	4:DEAD+WINI	**6.069**	-0.907	0.093	6.137	-0.000	-0.001	-0.003
Min X	478	8:DEAD+WINI	**-6.054**	-0.894	0.099	6.120	-0.000	0.001	0.003
Max Y	423	3:DEAD+WINI	2.718	**0.706**	-2.764	3.940	-0.003	-0.000	-0.003
Min Y	476	12:DEAD+WIN	4.406	**-1.265**	-4.346	6.317	-0.003	-0.000	-0.003
Max Z	474	6:DEAD+WINI	-0.056	-0.885	**6.012**	6.077	0.003	-0.001	-0.000
Min Z	476	2:DEAD+WINI	-0.051	-0.907	**-6.034**	6.102	-0.003	0.001	-0.000
Max rX	798	5:DEAD+WINI	0.827	-0.692	0.975	1.454	**0.014**	0.015	-0.004
Min rX	798	9:DEAD+WINI	-0.874	0.400	-0.996	1.384	**-0.010**	-0.010	0.003
Max rY	798	5:DEAD+WINI	0.827	-0.692	0.975	1.454	0.014	**0.015**	-0.004
Min rY	795	7:DEAD+WINI	-0.869	-0.684	0.945	1.455	0.014	**-0.015**	0.004
Max rZ	462	8:DEAD+WINI	-4.064	0.304	-0.104	4.077	-0.000	0.001	**0.005**
Min rZ	467	4:DEAD+WINI	4.062	0.314	-0.096	4.076	-0.000	-0.001	**-0.005**
Max Rst	476	9:DEAD+WINI	-4.916	-0.331	-4.951	**6.985**	-0.003	0.001	0.002

Reactions

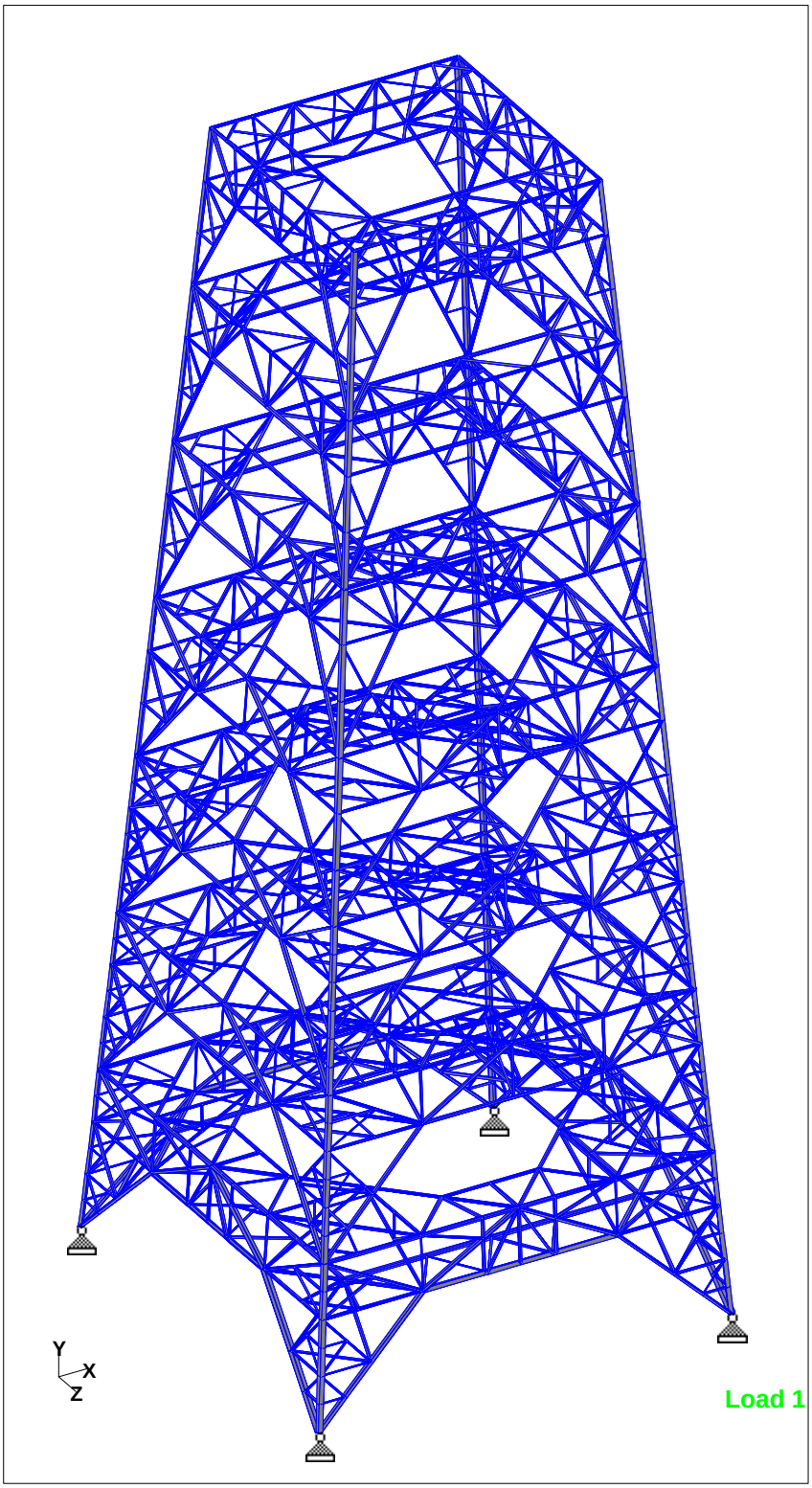
		Horizontal	Vertical	Horizontal	Moment		
Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (lb˙ft)	MY (lb˙ft)	MZ (lb˙ft)
224	1:DEAD ONLY	9.913	106.932	-9.992	0.000	0.000	0.000
	2:DEAD+WINI	-24.273	-254.884	55.596	0.000	0.000	0.000
	3:DEAD+WINI	-69.661	-472.422	70.308	0.000	0.000	0.000
	4:DEAD+WINI	-55.178	-254.383	24.451	0.000	0.000	0.000
	5:DEAD+WINI	-14.960	107.189	-34.968	0.000	0.000	0.000
	6:DEAD+WINI	44.030	468.655	-75.589	0.000	0.000	0.000
	7:DEAD+WINI	89.521	686.225	-90.217	0.000	0.000	0.000
	8:DEAD+WINI	74.962	468.289	-44.501	0.000	0.000	0.000
	9:DEAD+WINI	34.722	106.530	15.025	0.000	0.000	0.000
	10:DEAD+ICE·	12.899	138.614	-13.010	0.000	0.000	0.000
	11:DEAD+WIN	-17.910	-187.424	46.030	0.000	0.000	0.000
	12:DEAD+WIN	-59.682	-388.156	60.250	0.000	0.000	0.000
	13:DEAD+WIN	-45.660	-186.957	18.061	0.000	0.000	0.000
	14:DEAD+WIN	-9.983	138.859	-35.988	0.000	0.000	0.000
	15:DEAD+WIN	43.655	464.584	-72.057	0.000	0.000	0.000
	16:DEAD+WIN	85.507	665.340	-86.211	0.000	0.000	0.000
	17:DEAD+WIN	71.427	464.219	-44.131	0.000	0.000	0.000
	18:DEAD+WIN	35.725	138.255	9.996	0.000	0.000	0.000
	19:DEAD+WIN	-1.922	-18.310	12.720	0.000	0.000	0.000
	20:DEAD+WIN	-17.608	-93.490	17.779	0.000	0.000	0.000
	21:DEAD+WIN	-12.623	-18.126	1.931	0.000	0.000	0.000
	22:DEAD+WIN	1.314	107.018	-18.625	0.000	0.000	0.000
	23:DEAD+WIN	21.724	232.139	-32.706	0.000	0.000	0.000
	24:DEAD+WIN	37.446	307.337	-37.740	0.000	0.000	0.000
	25:DEAD+WIN	32.436	232.008	-21.938	0.000	0.000	0.000
	26:DEAD+WIN	18.486	106.797	-1.348	0.000	0.000	0.000
227	1:DEAD ONLY	-9.869	108.639	-10.192	0.000	0.000	0.000
	2:DEAD+WINI	23.006	-254.748	56.980	0.000	0.000	0.000
	3:DEAD+WINI	-35.694	106.619	16.096	0.000	0.000	0.000
	4:DEAD+WINI	-74.922	469.680	-44.721	0.000	0.000	0.000
	5:DEAD+WINI	-88.416	689.037	-91.732	0.000	0.000	0.000
	6:DEAD+WINI	-42.812	472.102	-77.330	0.000	0.000	0.000
	7:DEAD+WINI	16.003	110.520	-36.423	0.000	0.000	0.000
	8:DEAD+WINI	55.132	-252.268	24.319	0.000	0.000	0.000
	9:DEAD+WINI	68.624	-471.779	71.425	0.000	0.000	0.000
	10:DEAD+ICE·	-12.839	141.805	-13.374	0.000	0.000	0.000
	11:DEAD+WIN	16.806	-185.814	47.106	0.000	0.000	0.000
	12:DEAD+WIN	-36.593	139.977	10.790	0.000	0.000	0.000
	13:DEAD+WIN	-71.379	467.269	-44.527	0.000	0.000	0.000
	14:DEAD+WIN	-84.505	669.759	-87.789	0.000	0.000	0.000
	15:DEAD+WIN	-42.536	469.484	-73.831	0.000	0.000	0.000
	16:DEAD+WIN	10.952	143.524	-37.495	0.000	0.000	0.000
	17:DEAD+WIN	45.661	-183.558	17.764	0.000	0.000	0.000
	18:DEAD+WIN	58.778	-386.154	61.100	0.000	0.000	0.000

Reactions Cont...

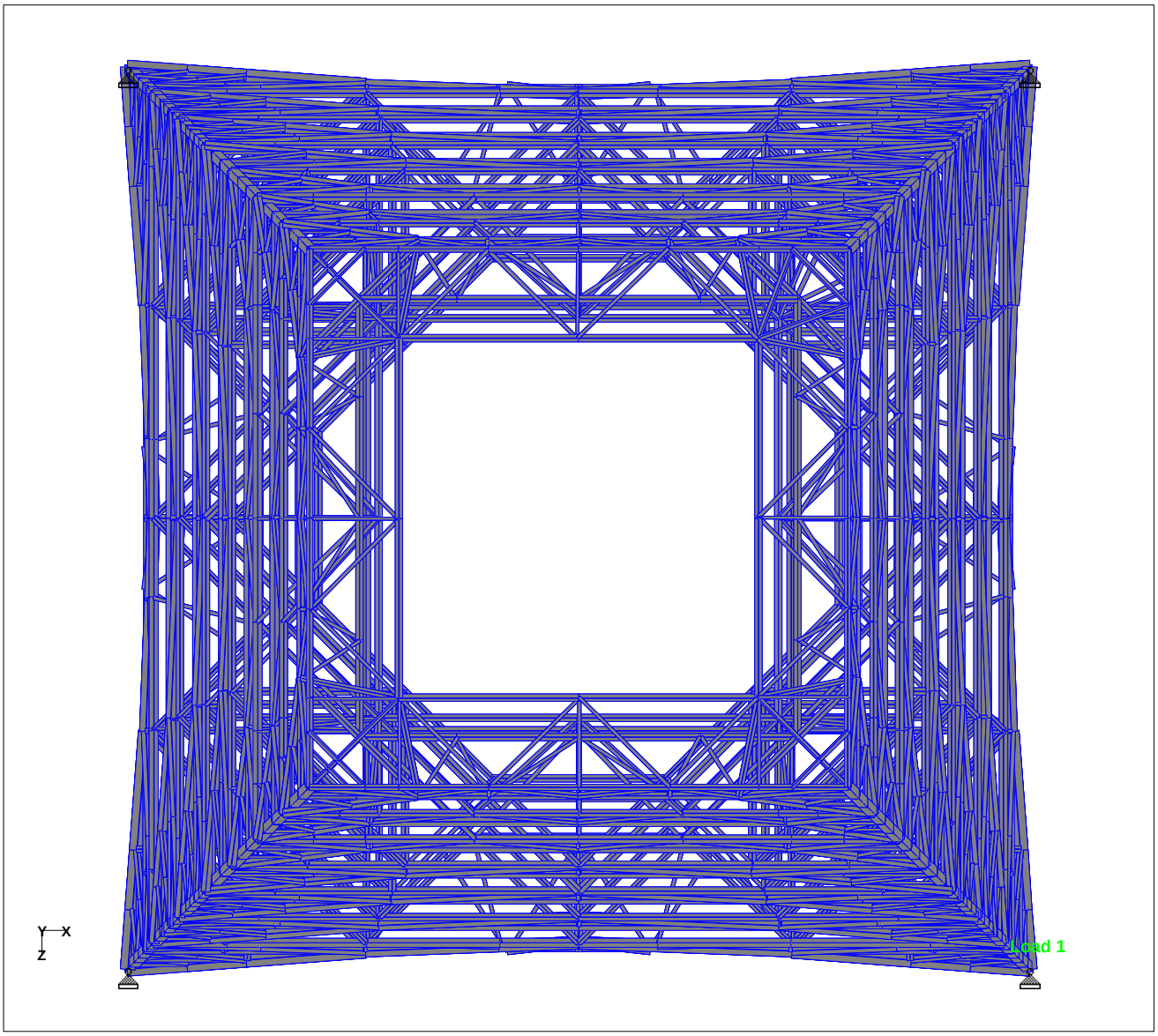
		Horizontal	Vertical	Horizontal	Moment		
Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (lb-ft)	MY (lb-ft)	MZ (lb-ft)
	19:DEAD+WIN	1.507	-17.139	13.070	0.000	0.000	0.000
	20:DEAD+WIN	-18.795	107.947	-1.109	0.000	0.000	0.000
	21:DEAD+WIN	-32.390	233.594	-22.141	0.000	0.000	0.000
	22:DEAD+WIN	-37.037	309.433	-38.396	0.000	0.000	0.000
	23:DEAD+WIN	-21.268	234.442	-33.441	0.000	0.000	0.000
	24:DEAD+WIN	-0.926	109.286	-19.257	0.000	0.000	0.000
	25:DEAD+WIN	12.637	-16.273	1.751	0.000	0.000	0.000
	26:DEAD+WIN	17.277	-92.154	18.037	0.000	0.000	0.000
230	1:DEAD ONLY	-10.315	112.947	10.235	0.000	0.000	0.000
	2:DEAD+WIND	-43.188	476.785	77.449	0.000	0.000	0.000
	3:DEAD+WIND	-90.717	695.536	90.209	0.000	0.000	0.000
	4:DEAD+WIND	-77.689	476.267	42.704	0.000	0.000	0.000
	5:DEAD+WIND	-38.110	112.686	-17.666	0.000	0.000	0.000
	6:DEAD+WIND	22.542	-250.790	-56.934	0.000	0.000	0.000
	7:DEAD+WIND	70.097	-469.588	-69.688	0.000	0.000	0.000
	8:DEAD+WIND	57.072	-250.423	-22.247	0.000	0.000	0.000
	9:DEAD+WIND	17.461	113.357	38.218	0.000	0.000	0.000
	10:DEAD+ICE-	-13.544	148.586	13.434	0.000	0.000	0.000
	11:DEAD+WIN	-43.172	476.446	73.936	0.000	0.000	0.000
	12:DEAD+WIN	-86.906	678.293	86.368	0.000	0.000	0.000
	13:DEAD+WIN	-74.213	475.964	42.674	0.000	0.000	0.000
	14:DEAD+WIN	-39.110	148.336	-12.232	0.000	0.000	0.000
	15:DEAD+WIN	16.071	-179.201	-47.036	0.000	0.000	0.000
	16:DEAD+WIN	59.825	-381.082	-59.462	0.000	0.000	0.000
	17:DEAD+WIN	47.134	-178.832	-15.816	0.000	0.000	0.000
	18:DEAD+WIN	12.005	148.953	39.164	0.000	0.000	0.000
	19:DEAD+WIN	-21.694	238.889	33.512	0.000	0.000	0.000
	20:DEAD+WIN	-38.124	314.487	37.891	0.000	0.000	0.000
	21:DEAD+WIN	-33.642	238.699	21.474	0.000	0.000	0.000
	22:DEAD+WIN	-19.925	112.859	0.590	0.000	0.000	0.000
	23:DEAD+WIN	1.058	-12.958	-13.025	0.000	0.000	0.000
	24:DEAD+WIN	17.498	-88.579	-17.406	0.000	0.000	0.000
	25:DEAD+WIN	13.018	-12.827	-1.008	0.000	0.000	0.000
	26:DEAD+WIN	-0.712	113.085	19.909	0.000	0.000	0.000
233	1:DEAD ONLY	10.271	110.123	9.948	0.000	0.000	0.000
	2:DEAD+WIND	44.458	471.490	75.481	0.000	0.000	0.000
	3:DEAD+WIND	-16.385	108.907	36.551	0.000	0.000	0.000
	4:DEAD+WIND	-57.067	-252.922	-22.607	0.000	0.000	0.000
	5:DEAD+WIND	-71.199	-470.270	-68.658	0.000	0.000	0.000
	6:DEAD+WIND	-23.933	-251.326	-55.605	0.000	0.000	0.000
	7:DEAD+WIND	36.946	111.485	-16.577	0.000	0.000	0.000
	8:DEAD+WIND	77.609	473.044	42.432	0.000	0.000	0.000
	9:DEAD+WIND	91.729	690.532	88.586	0.000	0.000	0.000
	10:DEAD+ICE-	13.484	143.873	12.950	0.000	0.000	0.000

Reactions Cont...

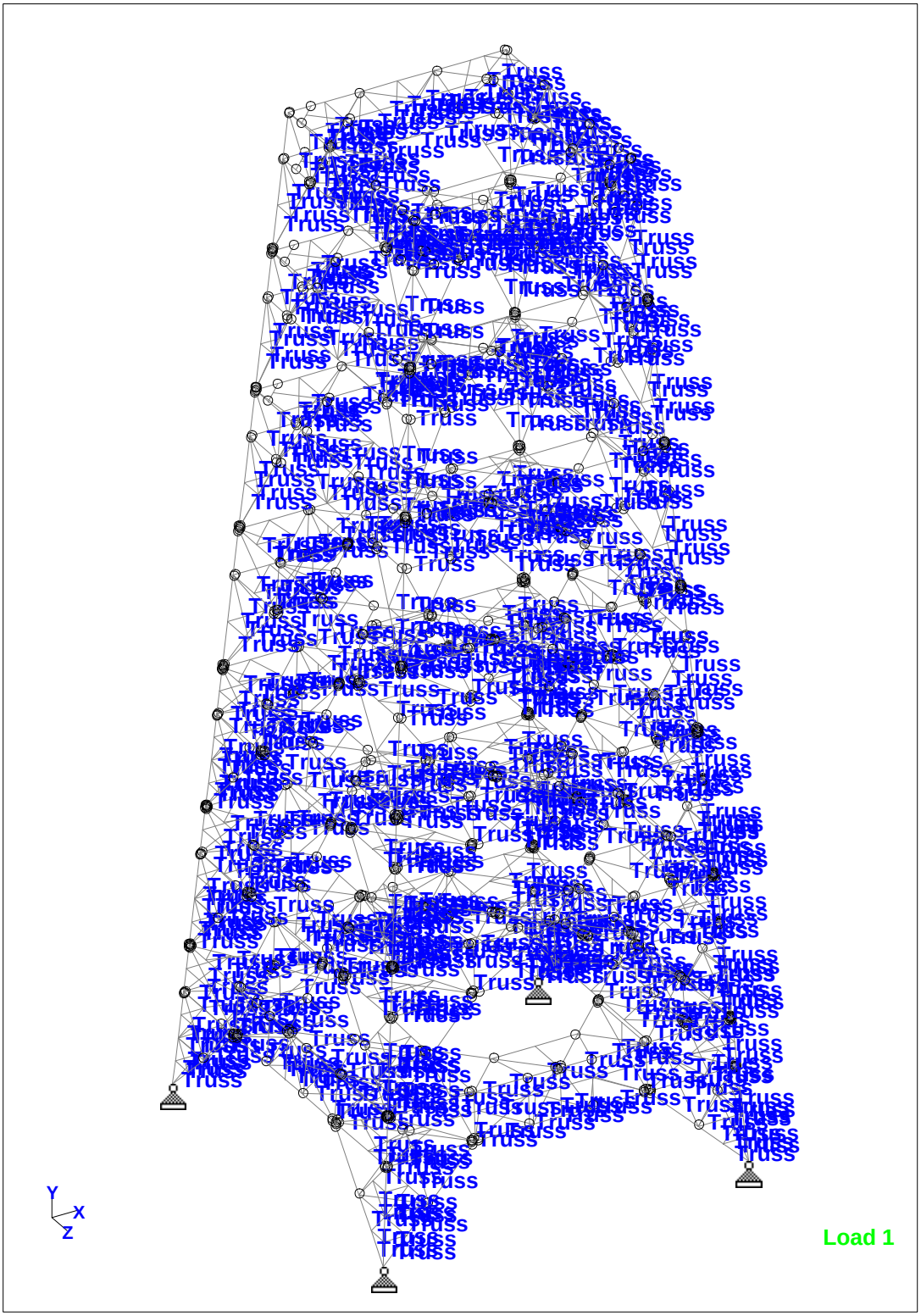
		Horizontal	Vertical	Horizontal	Moment		
Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (lb-ft)	MY (lb-ft)	MZ (lb-ft)
	11:DEAD+WIN	44.310	469.669	71.955	0.000	0.000	0.000
	12:DEAD+WIN	-11.052	142.763	37.430	0.000	0.000	0.000
	13:DEAD+WIN	-47.166	-183.398	-16.372	0.000	0.000	0.000
	14:DEAD+WIN	-60.866	-384.077	-58.771	0.000	0.000	0.000
	15:DEAD+WIN	-17.353	-181.990	-46.073	0.000	0.000	0.000
	16:DEAD+WIN	38.037	145.096	-11.470	0.000	0.000	0.000
	17:DEAD+WIN	74.136	471.049	42.217	0.000	0.000	0.000
	18:DEAD+WIN	87.825	671.823	84.689	0.000	0.000	0.000
	19:DEAD+WIN	22.102	235.201	32.641	0.000	0.000	0.000
	20:DEAD+WIN	1.056	109.697	19.142	0.000	0.000	0.000
	21:DEAD+WIN	-13.043	-15.526	-1.316	0.000	0.000	0.000
	22:DEAD+WIN	-17.910	-90.669	-17.240	0.000	0.000	0.000
	23:DEAD+WIN	-1.567	-14.982	-12.750	0.000	0.000	0.000
	24:DEAD+WIN	19.493	110.596	0.779	0.000	0.000	0.000
	25:DEAD+WIN	33.586	235.733	21.189	0.000	0.000	0.000
	26:DEAD+WIN	38.446	310.913	37.143	0.000	0.000	0.000



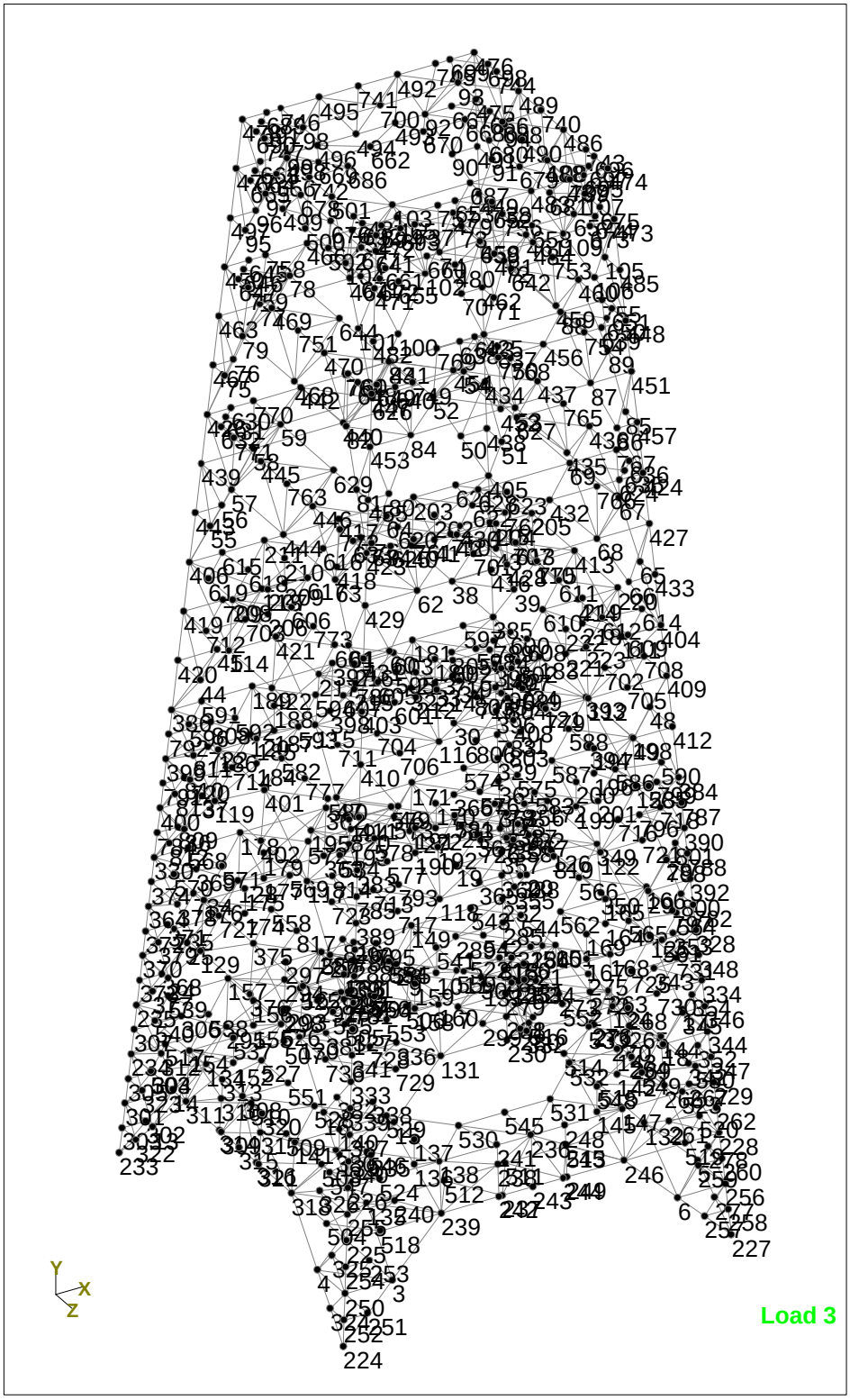
Whole Structure (ISOMETRIC VIEW)



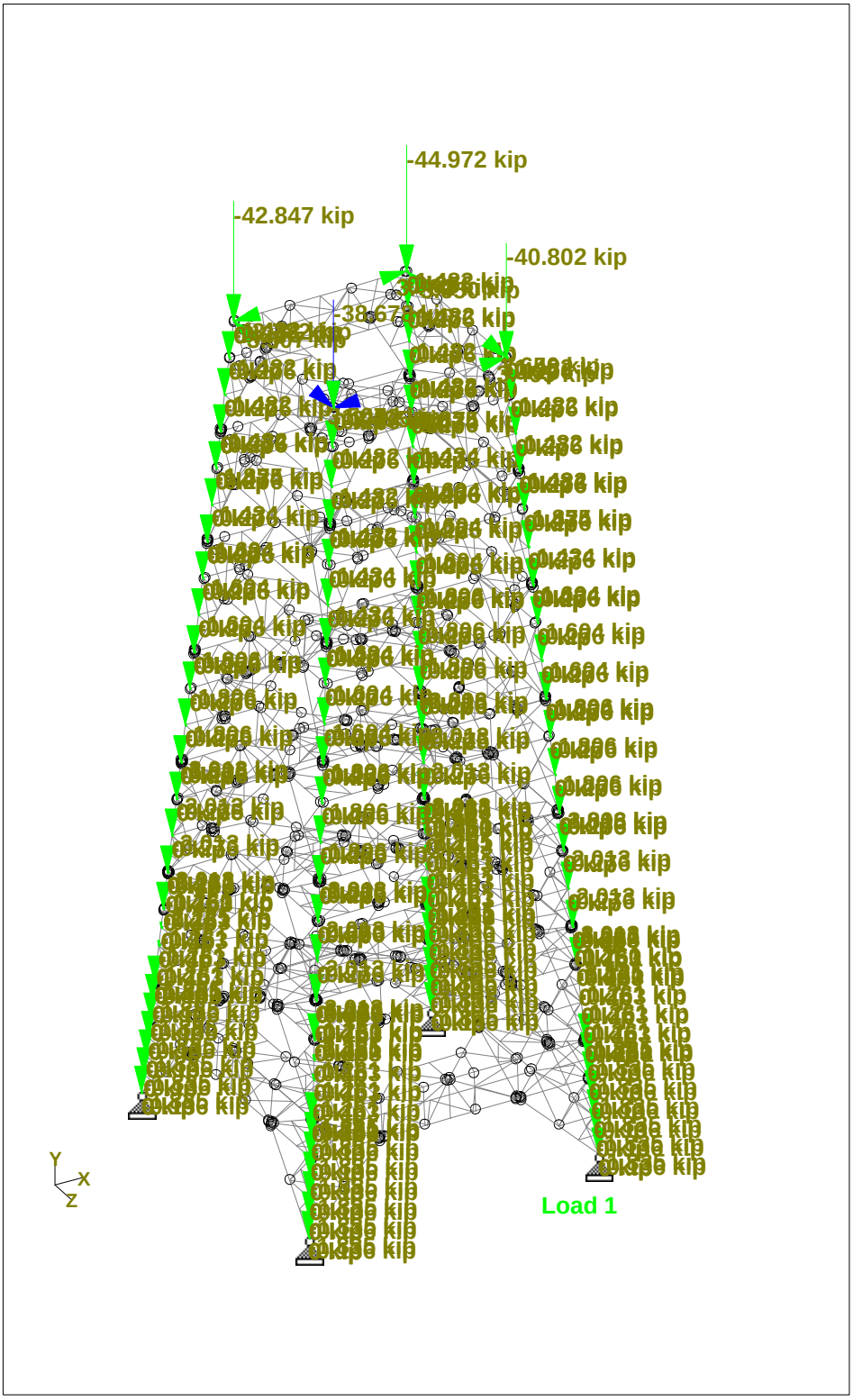
Whole Structure (PLAN VIEW)



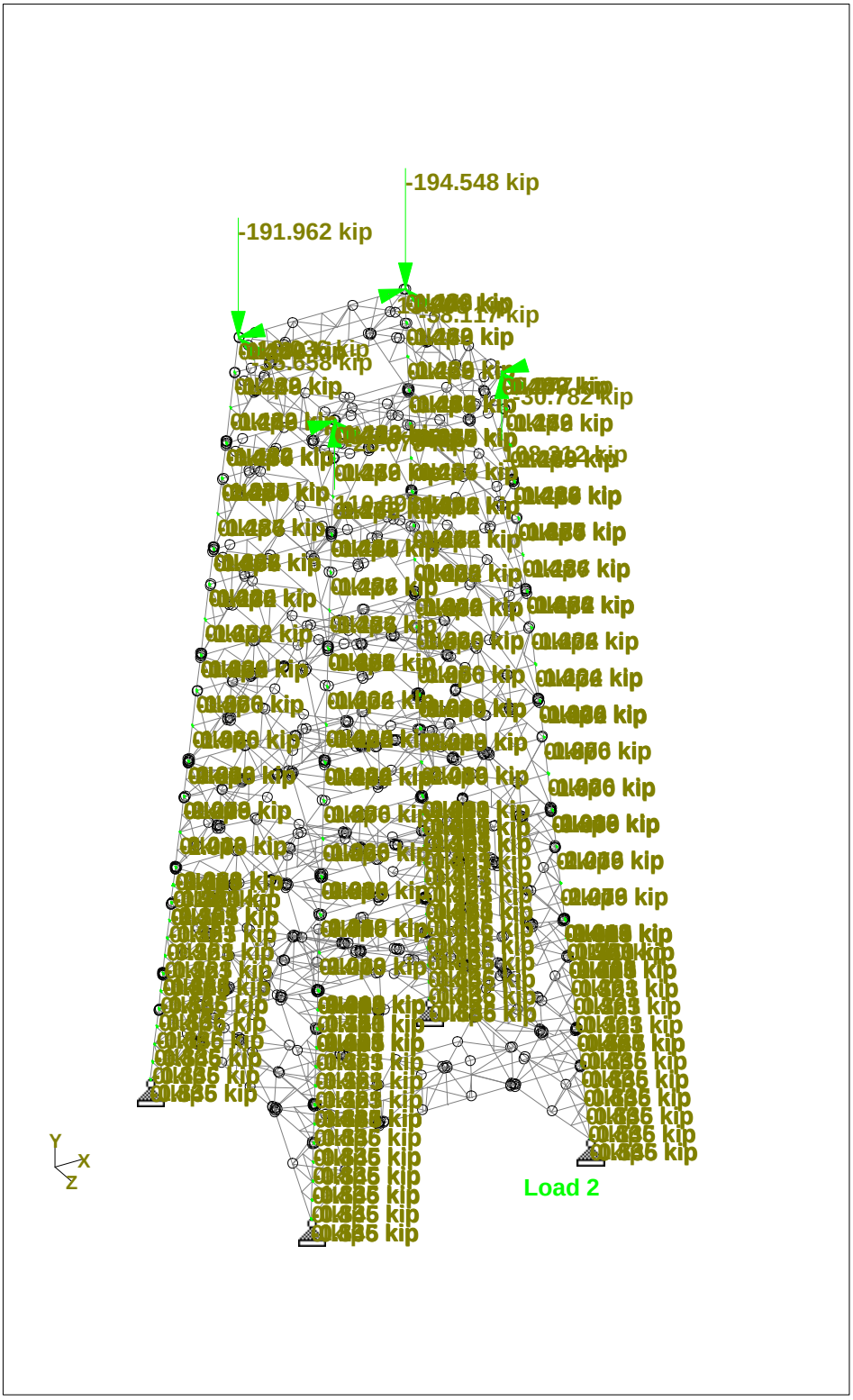
Whole Structure - Truss Members / Releases



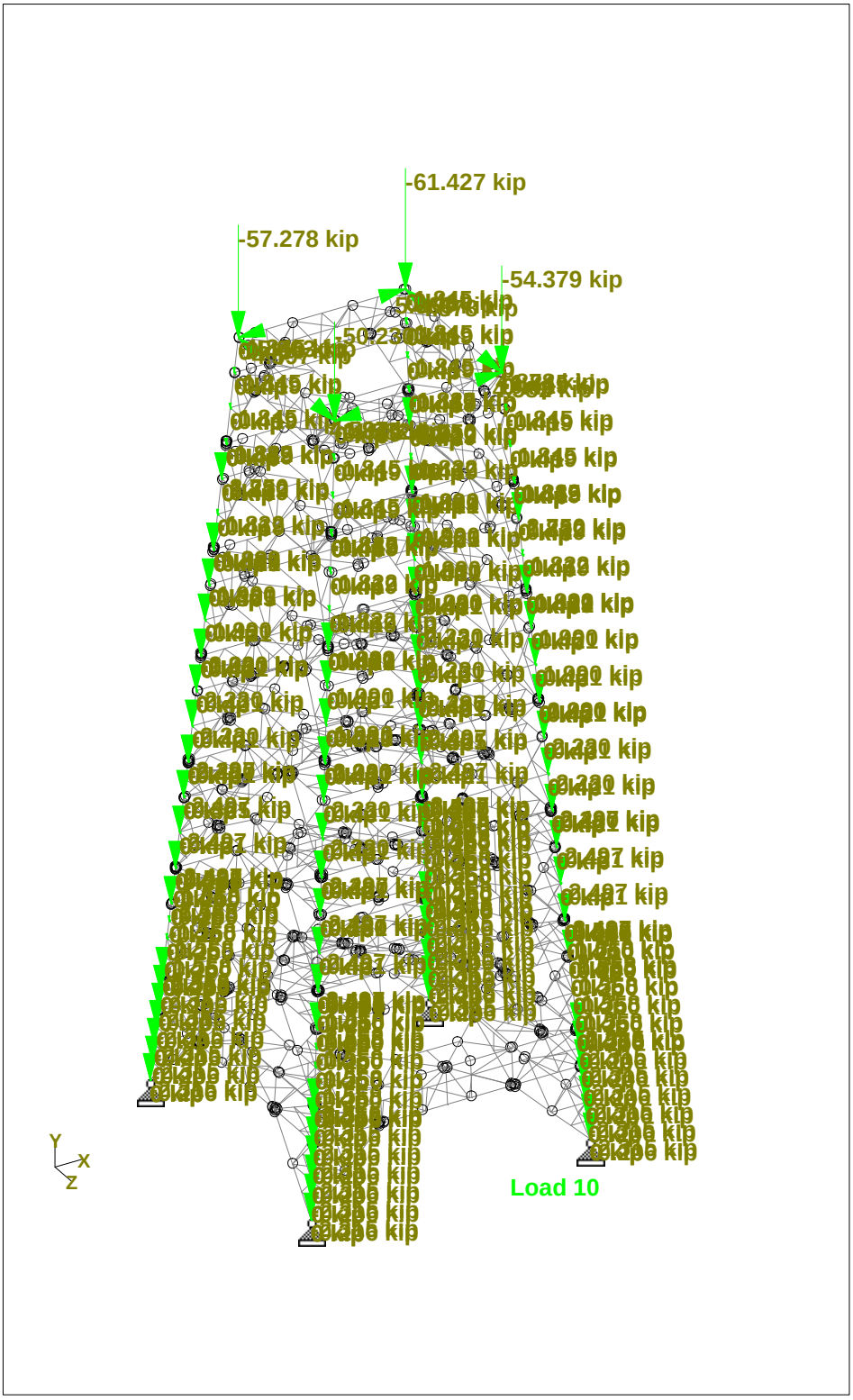
Whole Structure (Node Numbers)



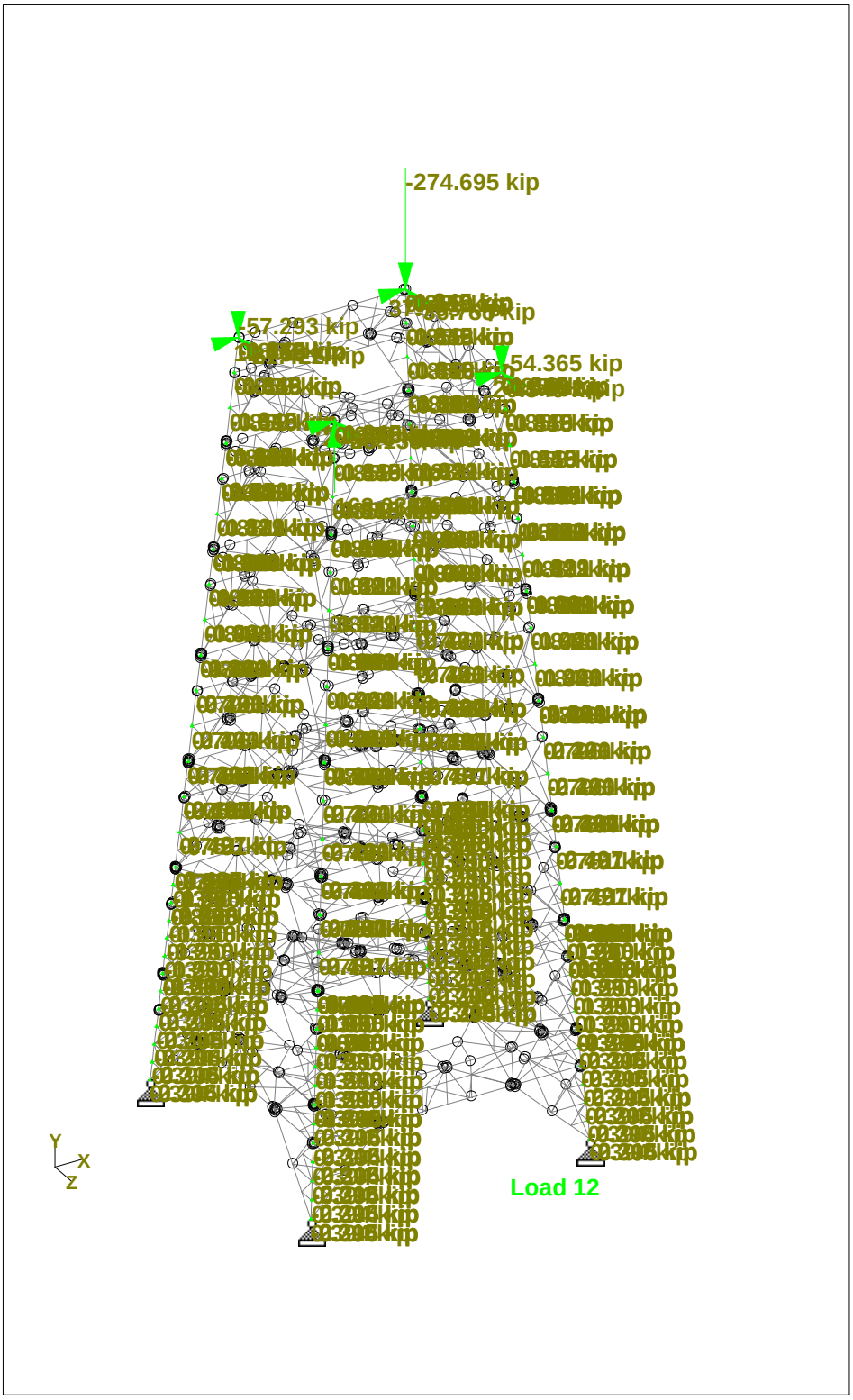
Whole Structure Loads 0.133698kip:1in 1 DEAD ONLY



Whole Structure Loads 0.578378kip:1in 2 DEAD+WIND 0 DEG - NO ICE

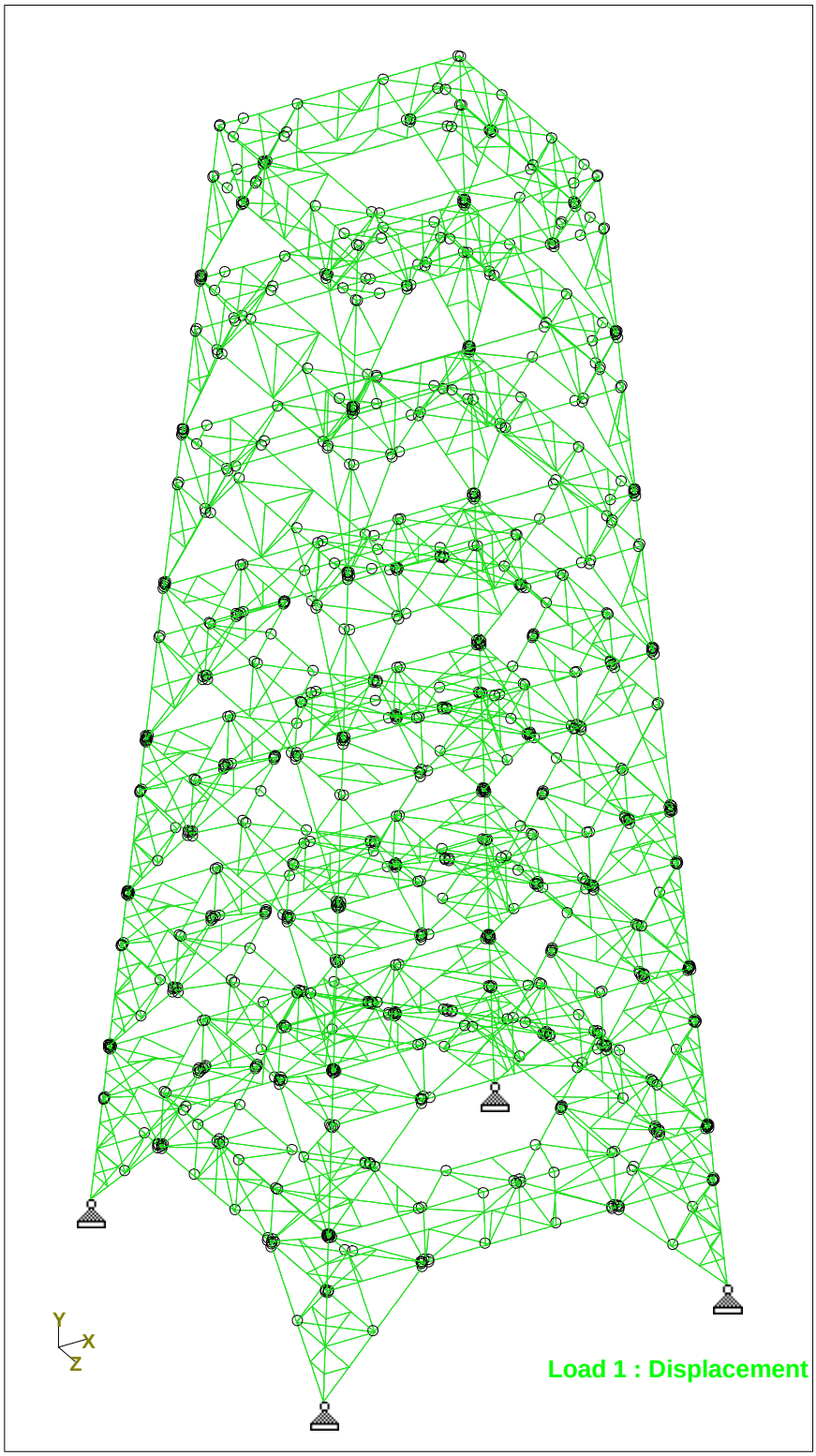


Whole Structure Loads 0.182618kip:1in 10 DEAD+ICE+TEMP

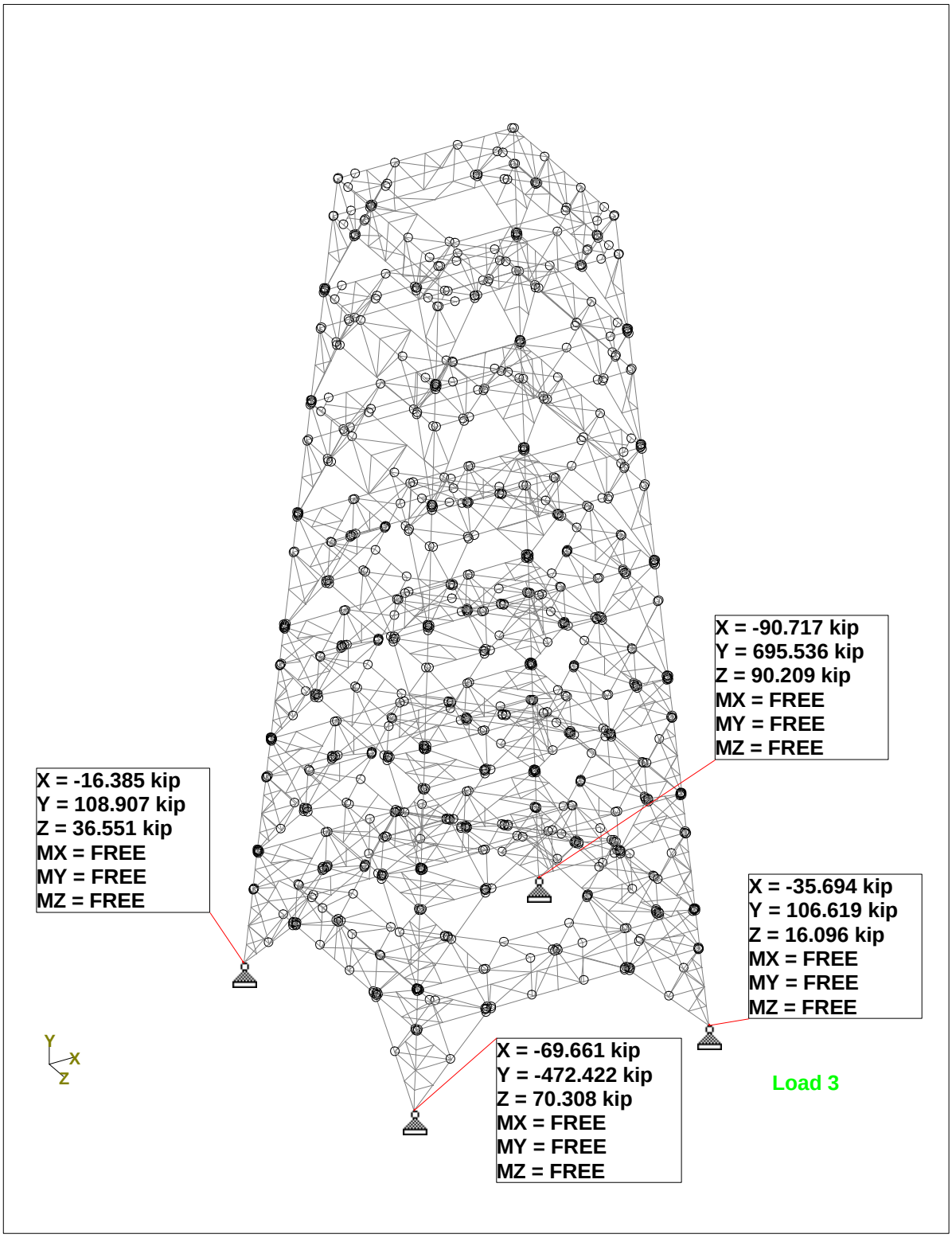


Whole Structure Loads 0.816649kip:1in 12 DEAD+WIND 45 DEG+ICE+TEMP

Whole Structure Loads 0.28754kip:1in 21 DEAD+WIND 90 DEG - SERVICE



Whole Structure Displacements 1in:1in 1 DEAD ONLY



Maximum Stress Ratios

FOUNDATION DESIGN PRINTOUT

```
 Version: FDN2-D72/AP
 ********************************************************
 *               FOUNDATION ANALYSIS PROGRAM            *
 *                 Spread Footing Analysis              *
 *         (c) 1999, Malouf Engineering Intl., Inc.     *
 ********************************************************
 ------------------------------------------------------------------------------
 MEI JOB NUMBER = CT-04761S-16V0
 DESCRIPTION    = 350' S.S.TOWER / FOUNDATION
 SITE NAME      = NORWALK SITE, FAIRFIELD CO., CT
 CLIENT NAME    = EMPIRE TELECOM
 TIME/DATE/FILE = 13:42:22 / 06-30-2016 / CT04761S.dat
------------------------------------------------------------------------------

 ======================
  INPUT DATA
 ======================
 *LOADS*
 COMPRESSION FORCE (1 PEDESTAL) =   695.600 KIPS
 UPLIFT FORCE (1 PEDESTAL)      =   472.500 KIPS
 SHEAR FORCE (1 PEDESTAL)       =   127.940 KIPS
 MOMENT                         =      .000 KIP-FT
 ECCENTRICTY OF AXIAL LOADS     =      .000 FT

 *FOOTING DIMENSIONS AND PROPERTIES*
 DEPTH OF FOOTING               =    14.000 FT
 FOOTING DIMENSIONS (L X B)     =    20.000 x 20.000 FT
 THICKNESS OF FOOTING           =     3.000 FT (FOOTING HAS NO TOE)
 NUMBER OF PEDESTALS / TYPE     =         1 / SQUARE
 PEDESTAL WIDTH                 =     6.500 FT
 EXTENSION ABOVE GRADE          =      .500 FT
 CONCRETE DENSITY               =      .150 KCF
 GROUNDWATER LEVEL BELOW BOTTOM OF FOUNDATION

 *FACTOR OF SAFETY VALUES*
 F.O.S. BEARING PRESSURE        =     2.000
 F.O.S. CONCRETE WEIGHT         =     1.250 / 1.500
 F.O.S. SOIL WEIGHT             =     2.000 / 1.500
 F.O.S. UPLIFT                  =     2.000

 *SOIL PROPERTIES*
 ULTIMATE BEARING CAPACITY      =    12.000 KSF
 SOIL DENSITY                   =      .100 KCF
 INTERNAL ANGLE OF FRICTION     =    30.000 DEG
 SOIL COHESION (FOR UPLIFT)     =      .000 KSF (PAD PERIMETER)
 PASSIVE PRESSURE               =      .300 KCF (Kp= 3.00)
 DEPTH NEGLECTED FOR PASSIVE PR.=     4.000 FT
 BASE SOIL/CONCRETE FRICTION    =      .150

 *** COMMENTS ***
 -FOUNDATION DRAWING NOT MADE AVAILABLE. SOIL STABILITY CHECK ONLY
 -FOUNDATION DETAILS AS PER GPD FOUNDATION CALCULATIONS
 -GEOTECHNICAL REPORT NOT MADE AVAILABLE. SOIL PARAMETERS
  AS PER GPD FOUNDATION CALCULATIONS

 ======================
  RESULTS
 ======================
 VOL./WT. OF SOIL ABOVE    =   3935.3 FT3 /  393.525 KIPS
 VOL./WT. OF SOIL WEDGE    =    698.6 FT3 /   69.859 KIPS  (FOR OVERTURNING)
                           =   3259.0 FT3 /  325.898 KIPS  (FOR UPLIFT)
 VOL./WT. OF PEDESTAL(S)   =    485.9 FT3 /   72.881 KIPS
 VOL./WT. OF FOOTING       =   1200.0 FT3 /  180.000 KIPS

 TOTAL RESISTING MOMENT    =  15158.5 KIP-FT
 TOTAL OVERTURNING MOMENT  =   1855.1 KIP-FT
 F.O.S. OVERTURNING        =  8.171 >  1.500 (OK)    R=  .184

 SOIL PRESSURES (KSF)      =    4.921 GROSS / 1.575 IN-SITU / 2.138 PMIN
 FRICTION RESISTANCE(ALLW) =     .000 KIPS (SKF=  .000KSF)
 TOTAL DOWNLOAD CAPACITY   =    6.000 KSF  >     3.346 KSF  (OK)    R=  .558
 SOIL SHEAR CAPACITY       =   153.00 (PASSIVE) + 129.63 (FRICTION)
                           =    282.6 KIPS >     127.9 KIPS (OK)    R=  .453
 UPLIFT CAPACITY           =    562.0 KIPS >     472.5 KIPS (OK)    R=  .841
 PUNCHING CHECK (WIDE BEAM)=     93.1 PSI  >      74.4 PSI  (OK)    R=  .799
                (2-WAY)    =    186.2 PSI  >      40.9 PSI  (OK)    R=  .220
```

APPENDIX 2 – SOURCE / CHANGED CONDITION

AT&T Loading Changes

Tower / Radio Information - Call Sign information needs to be tied to a specific antenna(s). Adjust letters as needed.

A	Call Sign	KNKA259
	Class of Station	CL
	Emission Type	cellular
	Transmit Frequency	880-890, 891.5-894
	Output Power (watts)	63
	Transmitter ERP (dBm)	48
	Receive Frequency	835-845, 846.5-849

D	Call Sign	KNLB297
	Class of Station	WS
	Emission Type	LTE 2300
	Transmit Frequency	2345-2350
	Output Power (watts)	631 per sector
	Transmitter ERP (dBm)	58
	Receive Frequency	2345-2350

A	Call Sign	WPSL626
	Class of Station	CW-PCS
	Emission Type	GSM / UMTS
	Transmit Frequency	1930-1940
	Output Power (watts)	502 per sector
	Transmitter ERP (dBm)	54
	Receive Frequency	1850-1860

D	Call Sign	KNLB312
	Class of Station	WS
	Emission Type	LTE2300
	Transmit Frequency	2350-2355
	Output Power (watts)	631 per sector
	Transmitter ERP (dBm)	58
	Receive Frequency	2305-2310

A	Call Sign	KNLG502
	Class of Station	CW-PCS
	Emission Type	GSM / UMTS
	Transmit Frequency	1965-1790
	Output Power (watts)	502 per sector
	Transmitter ERP (dBm)	54
	Receive Frequency	1885-1890

D	Call Sign	KNLB204
	Class of Station	WS
	Emission Type	LTE2300
	Transmit Frequency	2310-2315
	Output Power (watts)	631 per sector
	Transmitter ERP (dBm)	58
	Receive Frequency	2355-2360

B	Call Sign	WPWV368
	Class of Station	WZ 700 MHz
	Emission Type	LTE ('C)
	Transmit Frequency	740-746
	Output Power (watts)	631 per sector
	Transmitter ERP (dBm)	58
	Receive Frequency	710-716

B	Call Sign	WQJU459
	Class of Station	WY 700 MHz
	Emission Type	LTE (B)
	Transmit Frequency	734-740
	Output Power (watts)	631 per sector
	Transmitter ERP (dBm)	58
	Receive Frequency	704-710

Coax / Waveguide / Cable Information

Type:	andrew	
Size:	1 5/8"	
Length:	347'	
# of runs:	12	
Type:	DC Trunk line	for squids
Size:	3/4"	
Length:	347'	
# of runs:	6	
Type:	Fiber trunk	for squids
Size:	5/8"	
Length:	347'	
# of runs:	2	
Type:		
Size:		
Length:		
# of runs:		

	Antenna & Ancillary Equipment Information		Check one					Heights - Above Ground Level (feet)			
@	Make	Model	Existing	Proposed	Size / Dimensions	Weight	Azimuth	RAD Center	Attachment	Tip	Notes: (including removals, ice shields, etc.)
B	KMW	AM-X-CD-16-65-00T-RET	x		72" x 11.8" x 5.9"	48.5 lbs	116	347'	347'	349'	
B	KMW	AM-X-CD-16-65-00T-RET	x		72" x 11.8" x 5.9"	48.5 lbs	234	347'	347'	349'	
B	KMW	AM-X-CD-16-65-00T-RET	x		72" x 11.8" x 5.9"	48.5 lbs	346	347'	347'	349'	
B	Powerwave	P65-16-XLH-RR	x		72"x12"x6"	64 lbs ea	116	347'	347'	350'	Removed
B	Powerwave	P65-16-XLH-RR	x		72"x12"x6"	64 lbs ea	234	347'	347'	350'	Removed
B	Powerwave	P65-16-XLH-RR	x		72"x12"x6"	64 lbs ea	346	347'	347'	350'	Removed
A	Powerwave	7770	x		55"x11"x5"	35 lbs	116	347'	347'	349'	
A	Powerwave	7770	x		55"x11"x5"	35 lbs	234	347'	347'	349'	
A	Powerwave	7770	x		55"x11"x5"	35 lbs	346	347'	347'	349'	
A	Powerwave	7770	x		55"x11"x5"	35 lbs	116	347'	347'	349'	to be removed
A	Powerwave	7770	x		55"x11"x5"	35 lbs	234	347'	347'	349'	to be removed
A	Powerwave	7770	x		55"x11"x5"	35 lbs	346	347'	347'	349'	to be removed
	Powerwave	LGP 21401	x		6"x8"x2"	7.7 lbs ea		347'	347'		12 total 4 per sector (TMA)
	Powerwave	7020	x		2.2"x1"x6"	.5 lbs ea			347'		2 (in total) RET Motor attached to bottom of antenna
D	CCI	OPA-65R-LCUU-H4		x	48" x 14.4" x 7.3"	57 lbs	116	347'	347'	349'	
D	CCI	OPA-65R-LCUU-H4		x	48" x 14.4" x 7.3"	57 lbs	234	347'	347'	349'	
D	CCI	OPA-65R-LCUU-H4		x	48" x 14.4" x 7.3"	57 lbs	346	347'	347'	349'	
	Ericsson	RRUS-11	x		17" x 17" x 6"	50 lbs ea	116/234/346	347'	347'		6 radio heads 2 per sector
	Ericsson	RRUS-32		x	17" x 17" x 6"	71 lbs ea	116/234/346	347'	347'		3 radio heads 1 per sector
	RAYCAP	DC6-48-60-18-8F	x		8.3" diameter X 26" Tall	25lbs	116		347'		fiber and DC junction box
	RAYCAP	DC6-48-60-18-8F		x	8.3" diameter X 26" Tall	25lbs	234		347'		fiber and DC junction box
	Commscope	MTC3615 AD A		x	12.5 ' T-arm	2293lbs			347'		mounting hardware to replace existing
	Ericsson	RRUS-11		x	17" x 17" x 6"	50 lbs ea	116/234/346	347'	347'		3 radio heads 1 per sector
	RAYCAP	DC6-48-60-18-8F		x	8.3" diameter X 26" Tall	25lbs	346		347'		fiber and DC junction box
	Raycap	FC12-PC6-10E	x		16" x 16" x 7"	6 lbs			347'		to be removed
	Raycap	DC2-48-60-0-9E	x		10" x 11" x 6"	3.5 lbs			347'		3 to be removed

AT&T confirmed (6/9/16) new mounts will be used

T-Mobile Loading Changes

Tower / Radio Information - Call Sign information needs to be tied to a specific antenna(s). Adjust letters as needed.

A	Call Sign	WQPZ969	**A** Call Sign	WQGB373
	Class of Station	AW-AWS	Class of Station	AW-AWS
	Emission Type	LTE/UMTS	Emission Type	LTE/UMTS
	Transmit Frequency	1745-1755 MHZ	Transmit Frequency	1740-1745 MHz
	Output Power (watts)	40W	Output Power (watts)	40W
	Transmitter ERP (dBm)	2X 59.5 dBm	Transmitter ERP (dBm)	59.5 dBm
	Receive Frequency	2145-2155 MHz	Receive Frequency	2140-2145 MHz
B	Call Sign	WQJQ696	Call Sign	
	Class of Station	WY	Class of Station	
	Emission Type	LTE/UMTS	Emission Type	
	Transmit Frequency	728-734 MHz	Transmit Frequency	
	Output Power (watts)	300W	Output Power (watts)	
	Transmitter ERP (dBm)	2 x 62.5 dBm	Transmitter ERP (dBm)	
	Receive Frequency	698-704 MHz	Receive Frequency	
C	Call Sign	KNLF202	Call Sign	
	Class of Station	CW-PCS	Class of Station	
	Emission Type	UMTS/GSM	Emission Type	
	Transmit Frequency	1930-1945 MHz	Transmit Frequency	
	Output Power (watts)	40W	Output Power (watts)	
	Transmitter ERP (dBm)	2 x 62.5 dBm	Transmitter ERP (dBm)	
	Receive Frequency	1850-1865 MHz	Receive Frequency	

Please attach frequency coordination data (PCN)

Coax / Waveguide / Cable Information

Type:	Coax
Size:	1 5/8"
Length:	262'
# of runs:	6
Type:	Huber Shuhner Cables
Size:	1"
Length:	262'
# of runs:	3 - to be removed
Type:	Hybrid (6x12)
Size:	1"
Length:	262"
# of runs:	3
Type:	Hybrid (3x6)
Size:	1"
Length:	262"
# of runs:	3

	Antenna & Ancillary Equipment Information		**Check one**					**Heights** - Above Ground Level (feet)			**Notes:** (including removals, ice shields, etc.)
#	Make	Model	Existing	Proposed	Size / Dimensions	Weight	Azimuth	RAD Center	Attachment	Tip	
C	Ericsson	AIR21 B2A/B4P	X		56" X 12" X 8"	70 lbs	0	262'	262'	264.3'	
A	Ericsson	AIR 21 B4A/B2P	X		56" X 12" X 8"	83 lbs	0	262'	262'	264.3'	to be removed
B	Commscope	LNX-6515DS-VTM		X	96" X 11.9" X 7.1"	83 lbs	0	262'	262'	266'	
	RFS	aws-atmaa1412d-1a20	X		12" X 10" X 4"	13 lbs			262'		TMA
C	Ericsson	AIR21 B2A/B4P	X		56" X 12" X 8"	70 lbs	120	262'	262'	264.3'	
A	Ericsson	AIR21 B4A/B2P	X		56" X 12" X 8"	83 lbs	120	262'	262'	264.3'	to be removed
B	Commscope	LNX-6515DS-VTM		X	96" X 11.9" X 7.1"	83 lbs	120	262'	262'	266'	
	RFS	aws-atmaa1412d-1a20	X		12" X 10" X 4"	13 lbs			262'		TMA
C	Ericsson	AIR 21 B2A/B4P	X		56" X 12" X 8"	70 lbs	240	262'	262'	264.3'	
A	Ericsson	AIR21 B4A/B2P	X		56" X 12" X 8"	83 lbs	240	262'	262'	264.3'	to be removed
B	Commscope	LNX-6515DS-VTM		X	96" X 11.9" X 7.1"	83 lbs	240	262'	262'	266'	
	RFS	aws-atmaa1412d-1a20	X		12" X 10" X 4"	13 lbs			252'		TMA
A	Ericsson	AIR 32 B66Aa/B2a		X	56.6" X 12.9" X 8.7"	132.2 lbs	0	262'	262'	264.3'	
A	Ericsson	AIR 32 B66Aa/B2a		X	56.6" X 12.9" X 8.7"	132.2 lbs	120	262'	262'	264.3'	
A	Ericsson	AIR 32 B66Aa/B2a		X	56.6" X 12.9" X 8.7"	132.2 lbs	240	262'	262'	264.3'	
	Ericsson	RRUs 11		X	20" X 17" X 7"	50.7 lbs	0		262'		Proposed RRU
	Ericsson	RRUs 11		X	20" X 17" X 7"	50.7 lbs	120		262'		Proposed RRU
	Ericsson	RRUs 11		X	20" X 17" X 7"	50.7 lbs	240		262'		Proposed RRU

From: Hisert, Michelle [CNO] [mailto:Michelle.Hisert@sprint.com]
Sent: Monday, January 25, 2016 3:36 PM
To: Dave Cooper; McOmber, Elissa; krichers@transcendwireless.com
Cc: 'Richard Pretorius'; Monell, Gillian; 'Liz Adkins'; 'Mark Malouf'
Subject: RE: AT&T / T-Mobile / Sprint - Frontier's Norwalk Tower - Mapping & SA - 01/05/2016
Importance: High

Dave,

I have been advised to inform you that Sprint will not be adding the additional equipment at this time. I am revising the PDQ to reflect just the removal of the legacy equipment.

Thank you

Michelle Hisert
Real Estate Manager III
Upstate NY, Buffalo, Rochester and Southern Connecticut
Sprint, Regional Site Development
O: 518-862-6903 / M: 518-844-5434
michelle.hisert@sprint.com

EBI Consulting
environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CT2132

Norwalk East - Willard Rd
Willard Road
Norwalk, CT 06851

June 20, 2016

EBI Project Number: 6216002852

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	7.40 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

June 20, 2016

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

Emissions Analysis for Site: **CT2132 – Norwalk East - Willard Rd**

EBI Consulting was directed to analyze the proposed AT&T facility located at **Willard Road, Norwalk, 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 public 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 public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). 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 done for the proposed AT&T Wireless antenna facility located at **Willard Road, Norwalk, 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.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Kathrein 7770, CCI OPA-65R-LCUU-H4 and the KMW AM-X-CD-16-65-00T-RET** 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.

10) The antenna mounting height centerlines of the proposed antennas are **347 feet** above ground level (AGL) for **Sector A**, **347 feet** above ground level (AGL) for **Sector B** and **347 feet** above ground level (AGL) for Sector C.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Kathrein 7770	Make / Model:	Kathrein 7770	Make / Model:	Kathrein 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**347 feet**	Height (AGL):	**347 feet**	Height (AGL):	**347 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**0.09 %**	Antenna B1 MPE%	**0.09 %**	Antenna C1 MPE%	**0.09 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI OPA-65R-LCUU-H4	Make / Model:	CCI OPA-65R-LCUU-H4	Make / Model:	CCI OPA-65R-LCUU-H4
Gain:	11.15 / 14.65 dBd	Gain:	11.15 / 14.65 dBd	Gain:	11.15 / 14.65 dBd
Height (AGL):	**347 feet**	Height (AGL):	**347 feet**	Height (AGL):	**347 feet**
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	4,282.81	ERP (W):	4,282.81	ERP (W):	4,282.81
Antenna A2 MPE%	**0.15 %**	Antenna B2 MPE%	**0.15 %**	Antenna C2 MPE%	**0.15 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	**347 feet**	Height (AGL):	**347 feet**	Height (AGL):	**347 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,614.85	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A3 MPE%	**0.30 %**	Antenna B3 MPE%	**0.30 %**	Antenna C3 MPE%	**0.30 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**0.53 %**
PageNet	0.05 %
SNET TMRS	0.06 %
Sky Tel	0.11 %
RAM Mobile Data	0.01 %
Page Net 900 MHz	0.97 %
Sprint	0.25 %
Clearwire	0.06 %
T-Mobile	0.01 %
MediaFLO	3.87 %
XM Sat Radio	0.02 %
American Mobile Com.	0.01 %
GNARC	0.01 %
WSHU-AM	1.00 %
MetroPCS	0.44 %
Site Total MPE %:	**7.40 %**

AT&T Sector A Total:	0.53 %
AT&T Sector B Total:	0.53 %
AT&T Sector C Total:	0.53 %
Site Total:	7.40 %

Highest Calculated Sector Values:

AT&T _ Max Values Per Sector	# 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	2	414.12	347	0.26	850 MHz	567	0.05 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	347	0.41	1900 MHz (PCS)	1000	0.04 %
AT&T 850 MHz GSM	2	390.95	347	0.24	850 MHz	567	0.04 %
AT&T 2300 MHz (WCS) LTE	2	1,750.46	347	1.08	2300 MHz (WCS)	1000	0.11 %
AT&T 700 MHz LTE	2	1,297.63	347	0.80	700 MHz	467	0.17 %
AT&T 1900 MHz (PCS) LTE	2	2,009.79	347	1.24	1900 MHz (PCS)	1000	0.12 %
						Total:	0.53 %

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	0.53 %
Sector B:	0.53 %
Sector C:	0.53 %
AT&T Maximum Total (per sector):	0.53 %
Site Total:	7.40 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.40 %** of the allowable FCC established general public 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.