JENNIFER ILIADES
978-944-1804
CENTERLINE COMMUNICATIONS, LLC
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

0.0 LBS **LTR** **1 OF 1**

SHIP TO:
TOWN OF STONINGTON
(860) 535-5050
ROBERT SIMMONS, FIRST SELECTMAN
152 ELM STREET
STONINGTON CT 06378

CT 063 0-02

UPS 2ND DAY AIR **2**

TRACKING #: 1Z 9Y4 503 02 1329 4773

BILLING: P/P

Reference No.1: CT2177 - CSC to Robert Simmons

XOL 18.03.09 NV45 99.0A 04/2018

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z9Y45030213294773
Service:	UPS 2nd Day Air®
Shipped/Billed On:	06/13/2018
Delivered On:	06/15/2018 1:40 P.M.
Delivered To:	STONINGTON, CT, US
Received By:	BELL
Left At:	Office

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 06/22/2018 4:04 P.M. ET

JENNIFER ILIADES
978-944-1804
CENTERLINE COMMUNICATIONS, LLC
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

0.0 LBS **LTR** **1 OF 1**

SHIP TO:
TOWN OF STONINGTON
(860) 535-5095
JASON VINCENT, DIRECTOR OF PLANNING
152 ELM STREET
STONINGTON CT 06378

CT 063 0-02

UPS 2ND DAY AIR **2**

TRACKING #: 1Z 9Y4 503 02 1225 1785

BILLING: P/P

Reference No.1: CT2177 - CSC to Jason Vincent

XOL 18.03.09 NV45 99.0A 04/2018

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z9Y45030212251785
Service:	UPS 2nd Day Air®
Shipped/Billed On:	06/13/2018
Delivered On:	06/15/2018 1:41 P.M.
Delivered To:	STONINGTON, CT, US
Received By:	SADOWSKI
Left At:	Office

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 06/22/2018 4:04 P.M. ET

JENNIFER ILIADES
978-944-1804
CENTERLINE COMMUNICATIONS, LLC
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

0.0 LBS **LTR** **1 OF 1**

SHIP TO:
TOWN OF STONINGTON
(860) 535-5095
CANDACE PALMER, ZONING ENF. OFFICER
152 ELM STREET
STONINGTON CT 06378

CT 063 0-02

UPS 2ND DAY AIR **2**

TRACKING #: 1Z 9Y4 503 02 0261 0790

BILLING: P/P

Reference No.1: CT2177 - CSC to Candace Palmer

XOL 18.03.09 NV45 99.0A 04/2018

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z9Y45030202610790
Service:	UPS 2nd Day Air®
Shipped/Billed On:	06/13/2018
Delivered On:	06/15/2018 1:41 P.M.
Delivered To:	STONINGTON, CT, US
Received By:	SADOWSKI
Left At:	Office

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 06/22/2018 4:03 P.M. ET

JENNIFER ILIADES
978-944-1804
CENTERLINE COMMUNICATIONS, LLC
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

0.0 LBS LTR **1 OF 1**

SHIP TO:
DEBBIE CASSELLA
732-404-9360 235
SBA COMMUNICATIONS CORPORATION
SUITE 303
1480 ROUTE 9 NORTH
WOODBRIDGE NJ 07095

NJ 089 9-02

UPS 2ND DAY AIR **2**
TRACKING #: 1Z 9Y4 503 02 2239 6011

BILLING: P/P

Reference No.1: CT2177 - CSC to SBA

XOL 18.03.09 NV45 99.0A 04/2018

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z9Y45030222396011
Service:	UPS 2nd Day Air®
Shipped/Billed On:	06/13/2018
Delivered On:	06/15/2018 1:10 P.M.
Delivered To:	WOODBRIDGE, NJ, US
Received By:	GIRGENTI
Left At:	Office

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 06/22/2018 4:03 P.M. ET

JENNIFER ILIADES
978-944-1804
CENTERLINE COMMUNICATIONS, LLC
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

0.0 LBS LTR 1 OF 1

SHIP TO:
EDWARD PLANETA
PLANETA PROPERTIES
4343 CORSO VENETIA BLVD.
VENICE FL 34293

FL 335 0-03

UPS 2ND DAY AIR **2**
TRACKING #: 1Z 9Y4 503 02 2905 6401

BILLING: P/P

Reference No.1: CT2177 - CSC to Planeta Propeties

XOL 18.03.09 NV45 99.0A 04/2018

Proof of Delivery

Close Window

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number:	1Z9Y45030229056401
Service:	UPS 2nd Day Air®
Shipped/Billed On:	06/13/2018
Delivered On:	06/18/2018 3:17 P.M.
Delivered To:	VENICE, FL, US
Received By:	DRIVER RELEASE
Left At:	Front Door

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

Tracking results provided by UPS: 06/22/2018 4:05 P.M. ET

June 13, 2018

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

Regarding: Notice of Exempt Modification – AT&T Site CT2177
Address: 7 Broadway Avenue Extension, Stonington, CT 06355

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing 155-foot water tank at the above-referenced address, latitude 41.3495750, longitude -71.9637500. Said water tank facility is operated by MCM Acquisition 2017, LLC c/o SBA Communications Corporation.

AT&T desires to modify its existing telecommunications facility by swapping (6) antennas, adding (1) surge arrestor and accompanying feedlines, adding (3) combiners, swapping (3) TMA and adding (3) remote radio heads. The centerline height of the existing antennas is and will remain at 140 feet.

Please accept this letter 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 Robert Simmons, First Selectman of the Town of Stonington, Jason Vincent, Director of Planning of the Town of Stonington, Candace Palmer, Zoning/Inland Wetland Enforcement Officer of the Town of Stonington, MCM Acquisition 2017, LLC c/o SBA Communications Corporation as tower owner and Planeta Properties, as property owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require an extension of the site boundary.

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

4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*

5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated April 17, 2018 by Hudson Design Group LLC enclosed herewith.*

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

Sincerely,

Jennifer Iliades
Site Acquisition Consultant
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
jiliades@clinellc.com

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

cc: Robert Simmons, First Selectman, Town of Stonington
Jason Vincent, Director of Planning, Town of Stonington
Candace Palmer, Zoning/Inland Wetland Enforcement Officer, Town of Stonington
MCM Acquisition 2017, LLC c/o SBA Communications Corporation, Tower Operator
Planeta Properties, Property Owner

EXHIBIT 1

Town of Stonington, CT
Property Listing Report

Map Block Lot 174-22-1 b

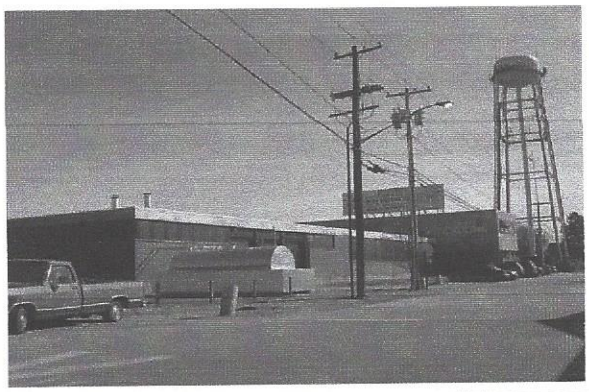
Account 00664600

Property Information

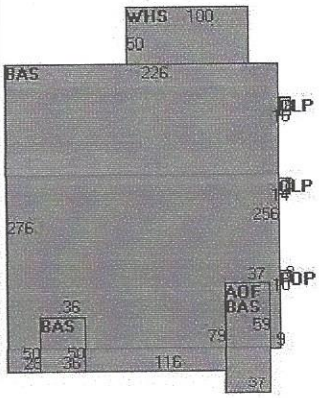
Property Location	7 BROADWAY AVE EXT
Owner	PLANETA PROPERTIES
Co-Owner	C/O EDWARD PLANETA
Mailing Address	4343 CORSO VENETIA BLVD VENICE FL 34293-705
Land Use	4000 INDUSTRIAL M-96
Land Class	I
Survey Map #	NA
School District	

Fire District	Mystic
Census Tract	7053
Neighborhood	3500
Zoning Code	M-1
Acreage	4.3
Utilities	
Lot Setting/Desc	Suburban Level
Trash Day	M TH
Polling Place (District)	Mystic Fire Department 4

Photo



Sketch



Primary Construction Details

Year Built	1950
Stories	1
Building Style	Industrial
Building Use	Ind/Comm
Building Condition	Ave/Good
Floors	Concr Abv Grad
Total Rooms	0

Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Bath Style	NA
Kitchen Style	NA
Roof Style	Flat
Roof Cover	Tar & Gravel

Exterior Walls	Brick/Masonry
Interior Walls	Minim/Masonry
Heating Type	Steam
Heating Fuel	Oil
AC Type	None
Gross Bldg Area	71993
Total Living Area	69923

Report Created On 6/13/2018

Town of Stonington, CT
Property Listing Report

Map Block Lot 174-22-1

Account 00664600

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	2529700	1770800
Extras	49900	35000
Outbuildings	259000	181200
Land	740300	518200
Total	3578900	2505200

Outbuilding and Extra Items

Type	Description
CELL EQ SHELTER GD	360.00 S.F.
CELL STEEL PLATFORM	160.00 S.F.
CELL STEEL PLATFORM	140.00 S.F.
CELL STEEL PLATFORM	68.00 S.F.
CELL TOWER	
ELEVATED TANK	75000.00 GALS
FENCE-8' CHAIN	218.00 L.F.
FENCE-6' CHAIN	288.00 L.F.
SHED FRAME	42.00 S.F.
SPRINKLERS-WET	64683.00 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	62973	62973
Loading Platform, Finished	240	0
Office, (Average)	3700	3700
Porch, Open	80	0
Warehouse	5000	3250
Total Area	71993	69923

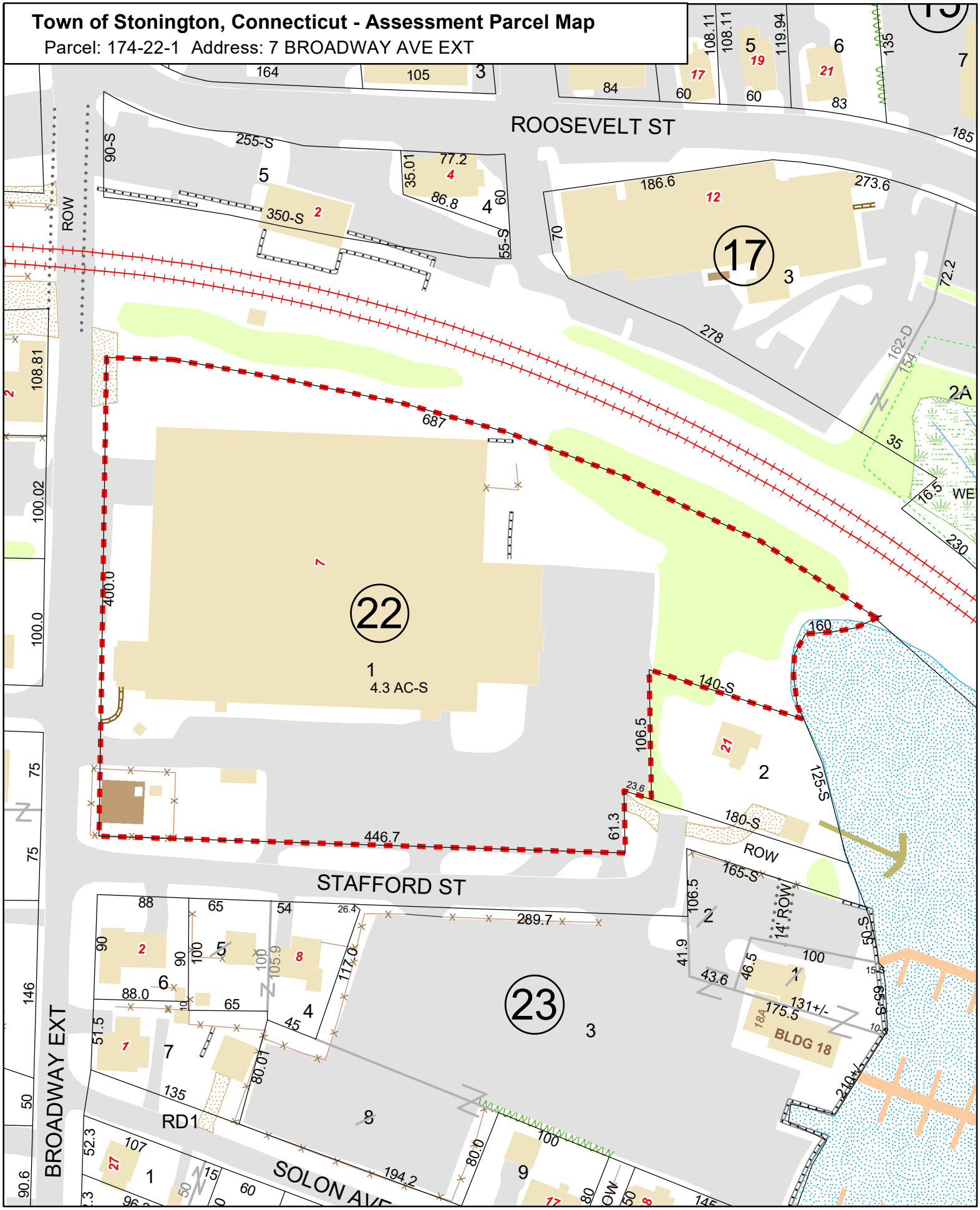
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
PLANETA PROPERTIES	409/ 933	10/20/1997	0
PLANETA EDWARD J	221/ 680	12/29/1978	

Report Created On 6/13/2018

Town of Stonington, Connecticut - Assessment Parcel Map

Parcel: 174-22-1 Address: 7 BROADWAY AVE EXT



Approximate Scale:

1 inch = 100 feet

0 60 120 180 240 Feet

Revised To: October 2017 **Map Produced: May 2018**

EXHIBIT 2

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (LTE 3C–4C 2018 UPGRADE):
SITE ADDRESS:	7 BROADWAY AVENUE EXTENSION MYSTIC, CT 06355
LATITUDE:	41.349575° N 41° 20' 58.47" N
LONGITUDE:	71.963750° W 71° 57' 49.50" W
TYPE OF SITE:	WATERTANK / OUTDOOR EQUIPMENT
TOWER HEIGHT:	156'±
RAD CENTER:	140'±
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

SITE NUMBER: CT2177

SITE NAME: SITE CT-305

PROJECT: LTE 3C-4C 2018 UPGRADE

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I–91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. MERGE ONTO CT–9 S VIA EXIT 22S ON THE LEFT TOWARD MIDDLETOWN/OLD SAYBROOK. MERGE ONTO I–95 N VIA THE EXIT ON THE LEFT TOWARD NEW LONDON/PROVIDENCE. TAKE THE ALLYN STREET EXIT, EXIT 89. TAKE THE RAMP TOWARD MYSTIC. TURN RIGHT ONTO ALLYN ST. TURN LEFT ONTO NEW LONDON RD/US–1. CONTINUE TO FOLLOW US–1. TURN RIGHT ONTO BROADWAY AVE/US–1. CONTINUE TO FOLLOW BROADWAY AVE. BROADWAY AVE BECOMES BROADWAY AVE EXT. 7 BROADWAY AVE EXT IS ON THE LEFT.

GENERAL NOTES

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

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1–800–922–4455
OR CALL 811

UNDERGROUND SERVICE ALERT

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28551
LICENSED
PROFESSIONAL ENGINEER

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE #1
RAYNHAM, MA 02767

SITE NUMBER: CT2177
SITE NAME: SITE CT-305
7 BROADWAY AVENUE EXTENSION
MYSTIC, CT 06355
NEW LONDON COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	04/30/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	12/19/17	ISSUED FOR REVIEW	SG	AT	DJC
A	11/16/17	ISSUED FOR REVIEW	AN	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

AT&T

TITLE SHEET
LTE 3C–4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	T–1	1

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.
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 TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE COMMUNICATIONS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH LTE SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS

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

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95 RYAN DRIVE #1
RAYNHAM, MA 02767

SITE NUMBER: CT2177
SITE NAME: SITE CT-305
7 BROADWAY AVENUE EXTENSION
MYSTIC, CT 06355
NEW LONDON COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	04/30/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
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A	11/16/17	ISSUED FOR REVIEW	AN	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 23557 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
LTE 3C-4C 2018 UPGRADE

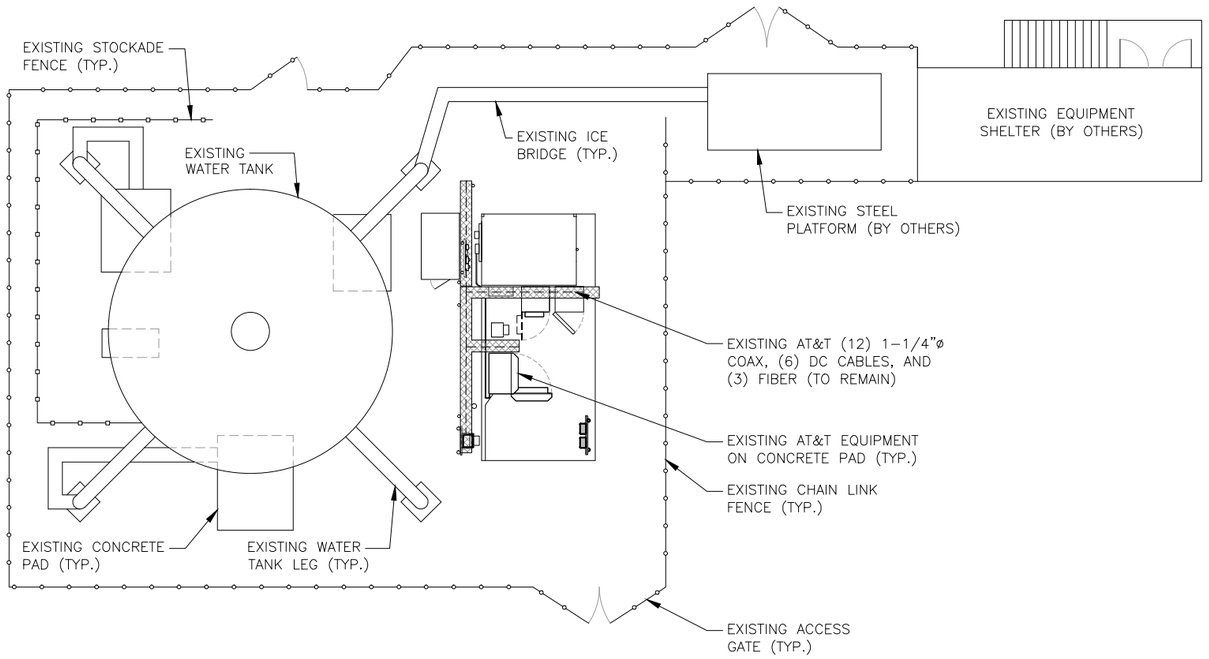
SITE NUMBER	DRAWING NUMBER	REV
CT2177	GN-1	1

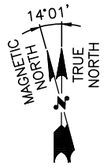
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: APRIL 17, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

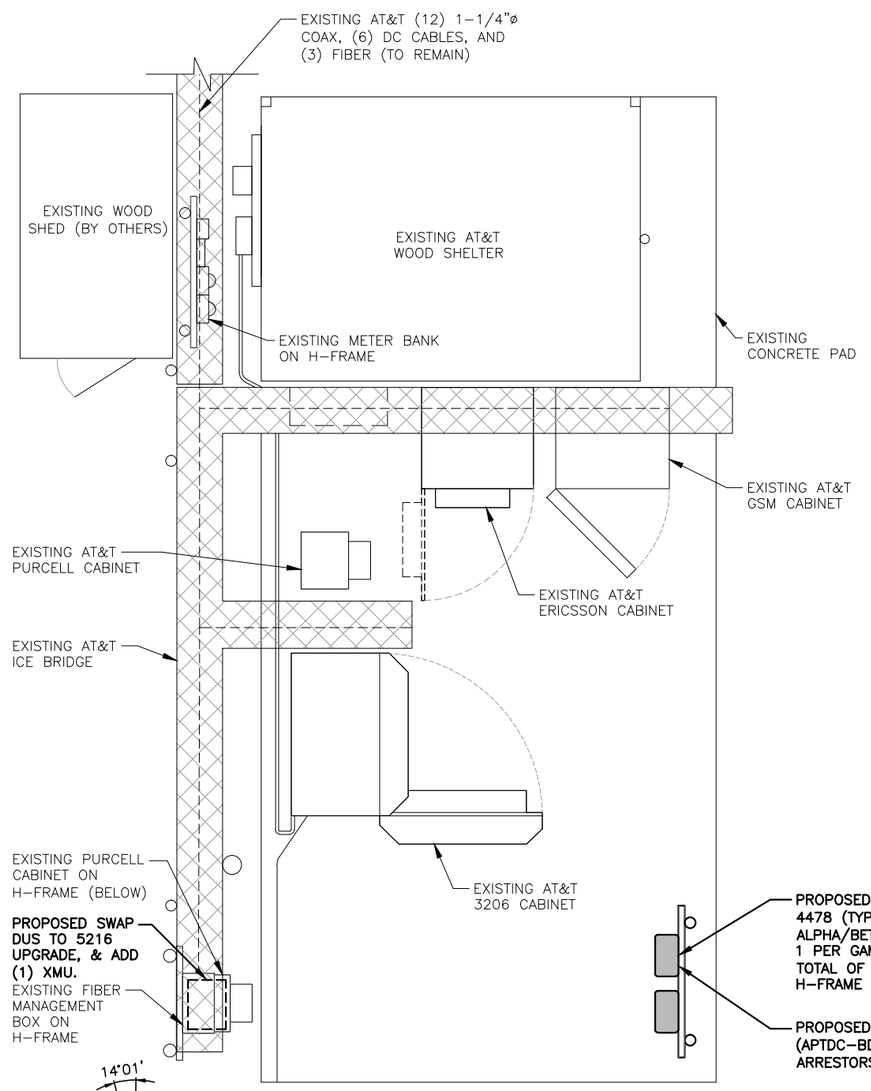
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

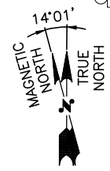




COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

POWER PLANT NOTE:
INSTALL (5) 30 AMP BREAKERS IN EXISTING OUTDOOR POWER PLANT.

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STATE OF CONNECTICUT · DEREK J. CREASEY · NO. 28355 · LICENSED PROFESSIONAL ENGINEER

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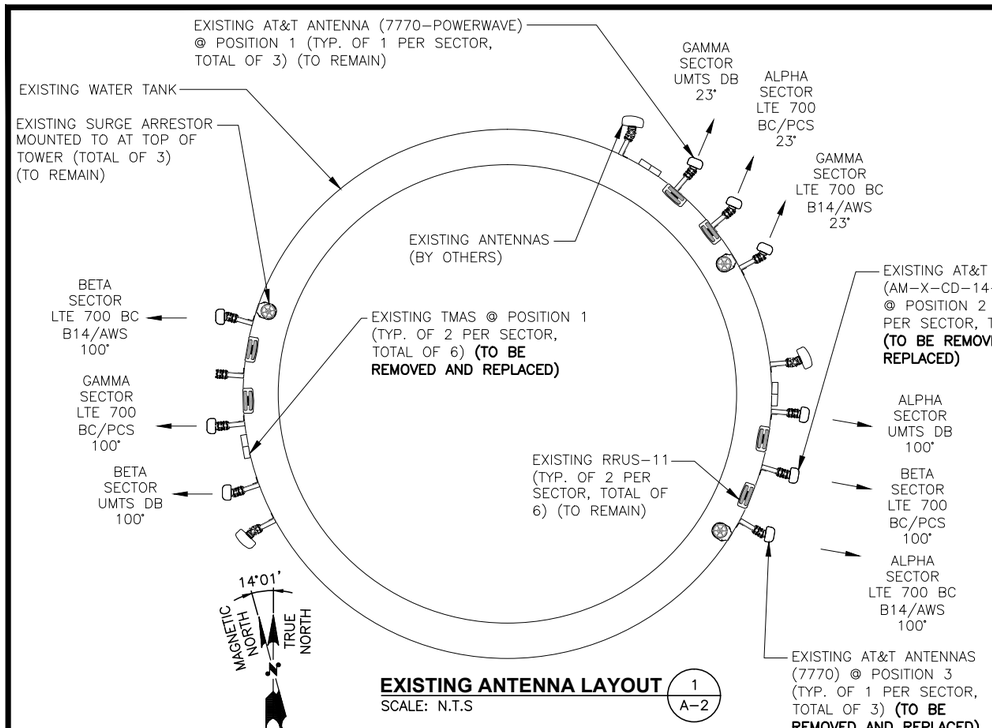
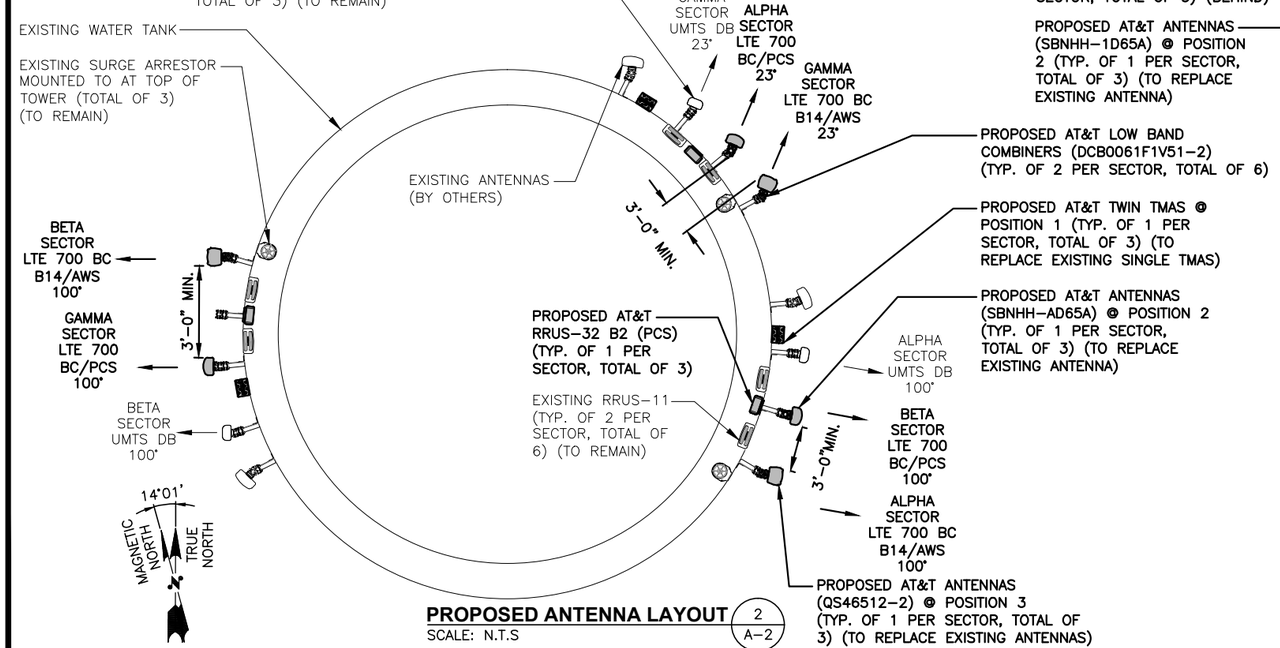
COMPOUND & EQUIPMENT PLAN
LTE 3C-4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	A-1	1



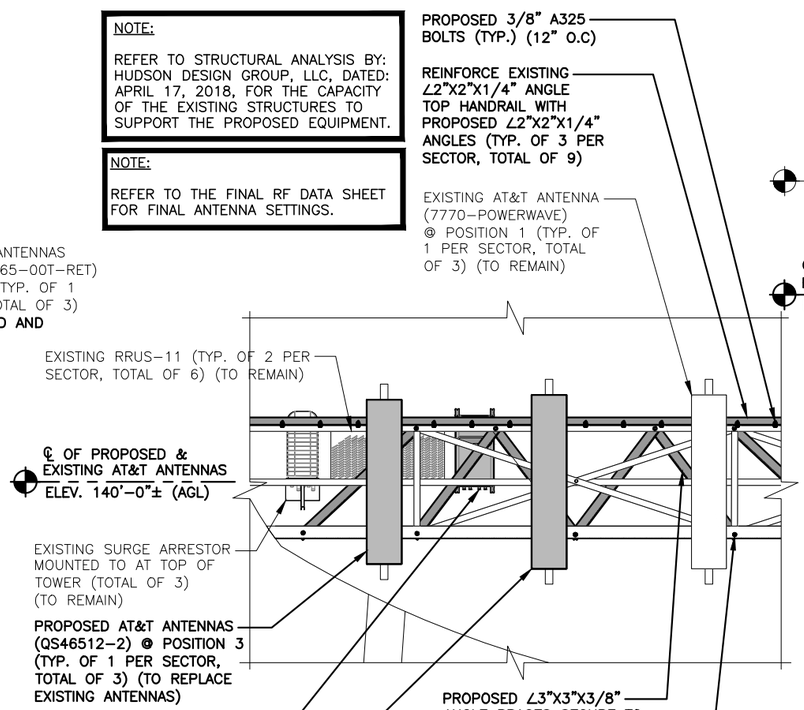
EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

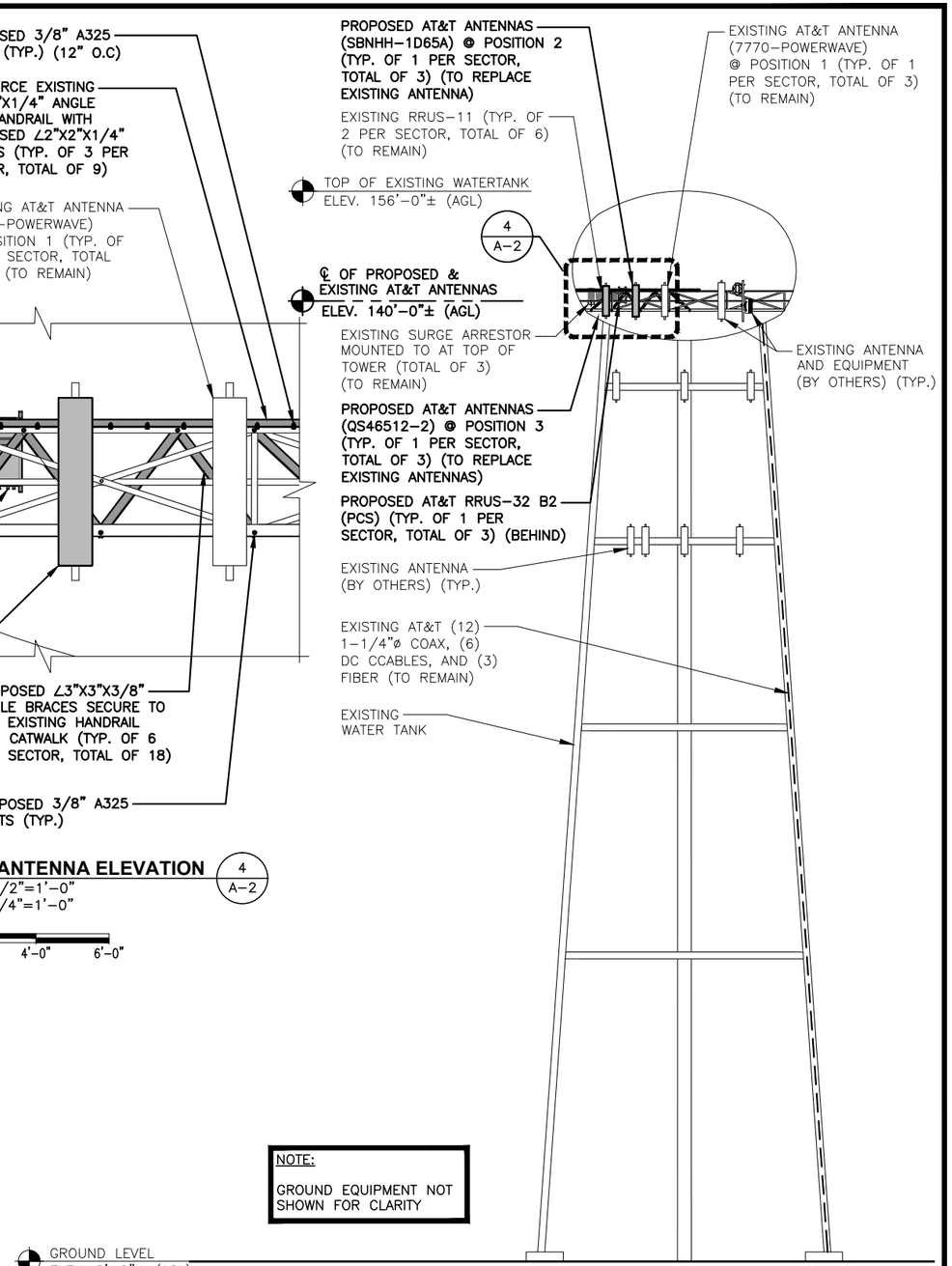
NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: APRIL 17, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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



ENLARGED ANTENNA ELEVATION (4 / A-2)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"



ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

AT&T
ANTENNA LAYOUTS & ELEVATION
LTE 3C-4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	A-2	1

NOTE:

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NOTE:

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

FINAL ANTENNA SCHEDULE

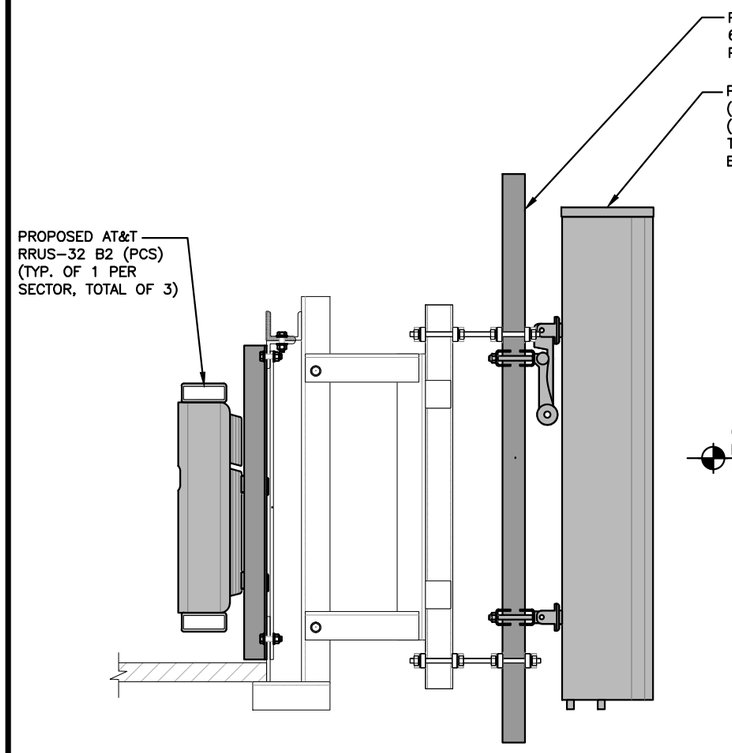
SECTOR	BAND	ANTENNA		SIZE (INCHES) (L X W X D)	RAD CENTER	AZIMUTH	LOW BAND COMBINERS		TMA'S		RRU'S		SIZE (INCHES) (L X W X D)	DC JUMPERS	FIBER JUMPERS	COAX LINES
ALPHA	UMTS DB	EXISTING	7770	55X11X5	140'–0"±	100°	–	–	PROPOSED	(1) TT19–08BP111001	–	–	–	–	–	(2) 1–1/4"
	LTE 700 BC/PCS	PROPOSED	SBNHH–1D65A	55x11.9x7.1	140'–0"±	23°	–	–	–	–	EXISTING PROPOSED	RRUS–11 (700) RRUS–32 B2 (PCS)	– 27.2X12.1X7.0	– *2	– **1	
	LTE 700 BC B14/AWS	PROPOSED	QS46512–2	52X12X10.8	140'–0"±	100°	PROPOSED	(1) DBC0061F1V51–2	EXISTING	–	EXISTING	RRUS–11 (AWS)	–	–	–	(2) 1–1/4"
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
BETA	UMTS DB	EXISTING	7770	55X11X5	140'–0"±	270°	–	–	–	(1) TT19–08BP111001	–	–	–	–	–	(2) 1–1/4"
	LTE 700 BC/PCS	PROPOSED	SBNHH–1D65A	55x11.9x7.1	140'–0"±	100°	–	–	–	–	EXISTING PROPOSED	RRUS–11 (700) RRUS–32 B2 (PCS)	– 27.2X12.1X7.0	– *2	– **1	
	LTE 700 BC B14/AWS	PROPOSED	QS46512–2	52X12X10.8	140'–0"±	270°	PROPOSED	(1) DBC0061F1V51–2	EXISTING	–	EXISTING	RRUS–11 (AWS)	–	–	–	(2) 1–1/4"
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
GAMMA	UMTS DB	EXISTING	7770	55X11X5	140'–0"±	23°	–	–	–	(1) TT19–08BP111001	–	–	–	–	–	(2) 1–1/4"
	LTE 700 BC/PCS	PROPOSED	SBNHH–1D65A	55x11.9x7.1	140'–0"±	270°	–	–	–	–	EXISTING PROPOSED	RRUS–11 (700) RRUS–32 B2 (PCS)	– 27.2X12.1X7.0	– *2	– **1	
	LTE 700 BC B14/AWS	PROPOSED	QS46512–2	52X12X10.8	140'–0"±	23°	PROPOSED	(1) DBC0061F1V51–2	EXISTING	–	EXISTING	RRUS–11 (AWS)	–	–	–	(2) 1–1/4"
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	

FINAL ANTENNA CONFIGURATION TABLE

5 / A–3

*DC JUMPER NOTE:
COAX JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6).

**FIBER JUMPER NOTE:
FIBER JUMPERS (1) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 3).

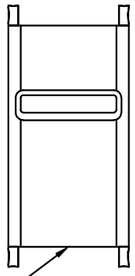


℄ OF PROPOSED & EXISTING AT&T ANTENNAS
ELEV. 140'–0"± (AGL)

RRU CHART

QUANTITY	MODEL	L	W	D
6 (E)	RRUS–11	19.7"	17.0"	7.2"
3 (P)	RRUS–32	27.2"	12.1"	7.0"
2 (P)	B14–4478	15.0"	13.2"	7.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

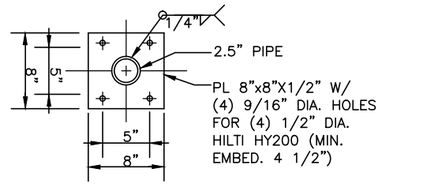


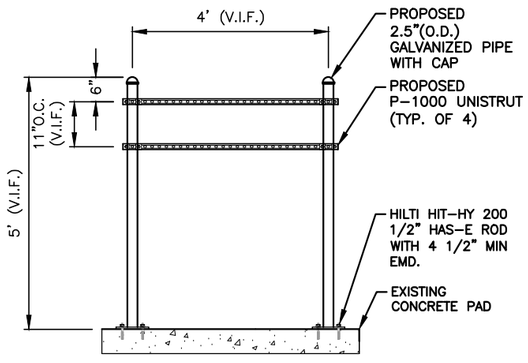
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

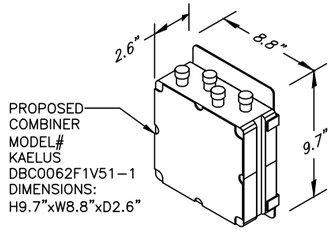
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER







NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED ANTENNA & RRU MOUNTING DETAIL @ POSITION 3 — 1 / A–3
22x34 SCALE: 1–1/2"=1'–0"
11x17 SCALE: 3/4"=1'–0"

0 0'–4" 0'–8" 1'–4" 2'–0"

PROPOSED RRUS DETAIL — 2 / A–3
SCALE: N.T.S

H-FRAME DETAIL — 3 / A–3
22x34 SCALE: N.T.S

PROPOSED COMBINER DETAIL — 4 / A–3
SCALE: N.T.S

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STATE OF CONNECTICUT DEREK J. CREASEY 18,235 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
LTE 3C–4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	A–3	1

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-70 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

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

NOTES:

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

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE #1
RAYNHAM, MA 02767

SITE NUMBER: CT2177
SITE NAME: SITE CT-305
7 BROADWAY AVENUE EXTENSION
MYSTIC, CT 06355
NEW LONDON COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	04/30/18	ISSUED FOR CONSTRUCTION	EB	AT	DJC
0	12/19/17	ISSUED FOR REVIEW	SG	AT	DJC
A	11/16/17	ISSUED FOR REVIEW	AN	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 23557 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
LTE 3C-4C 2018 UPGRADE

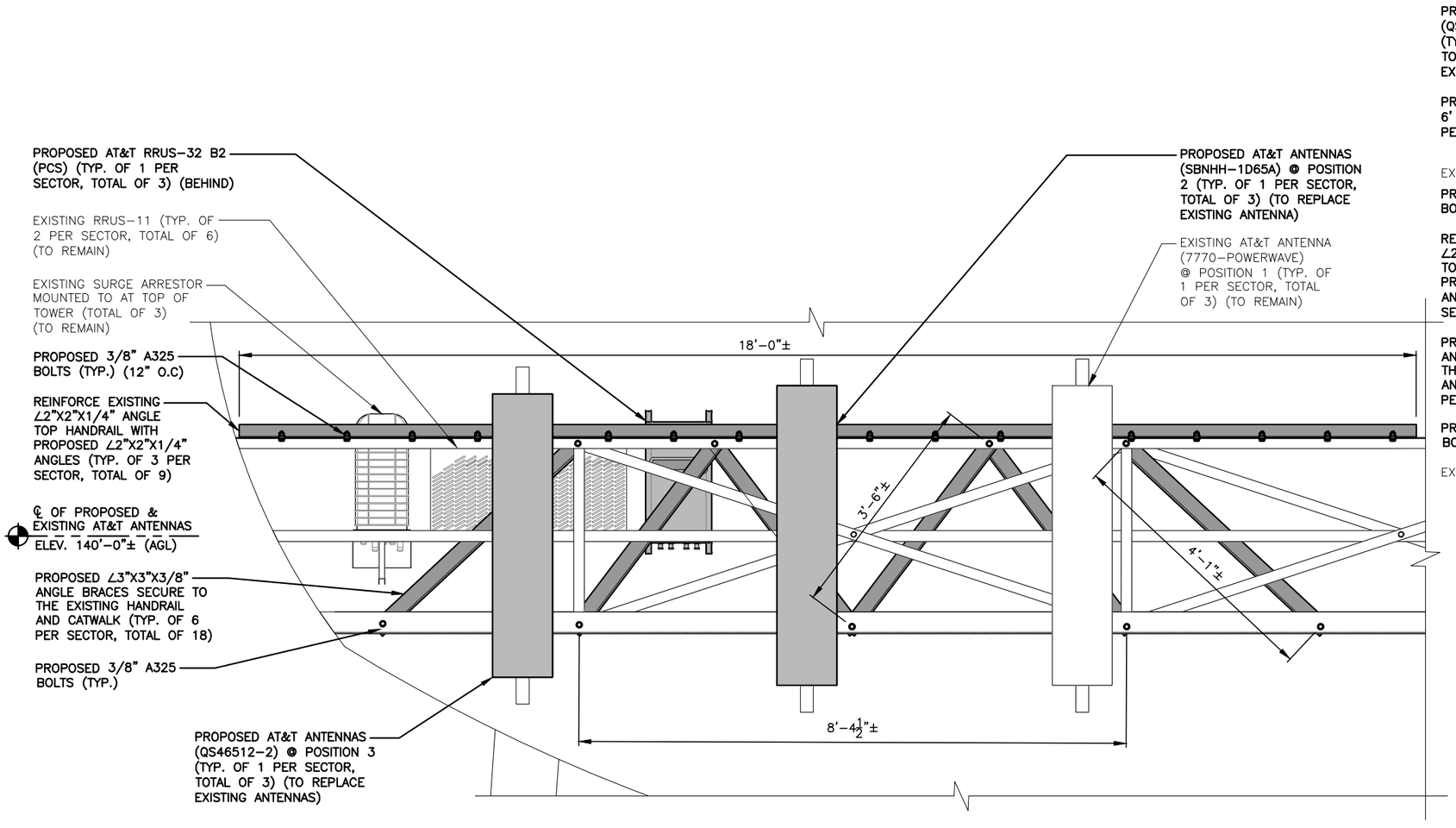
SITE NUMBER	DRAWING NUMBER	REV
CT2177	SN-1	1

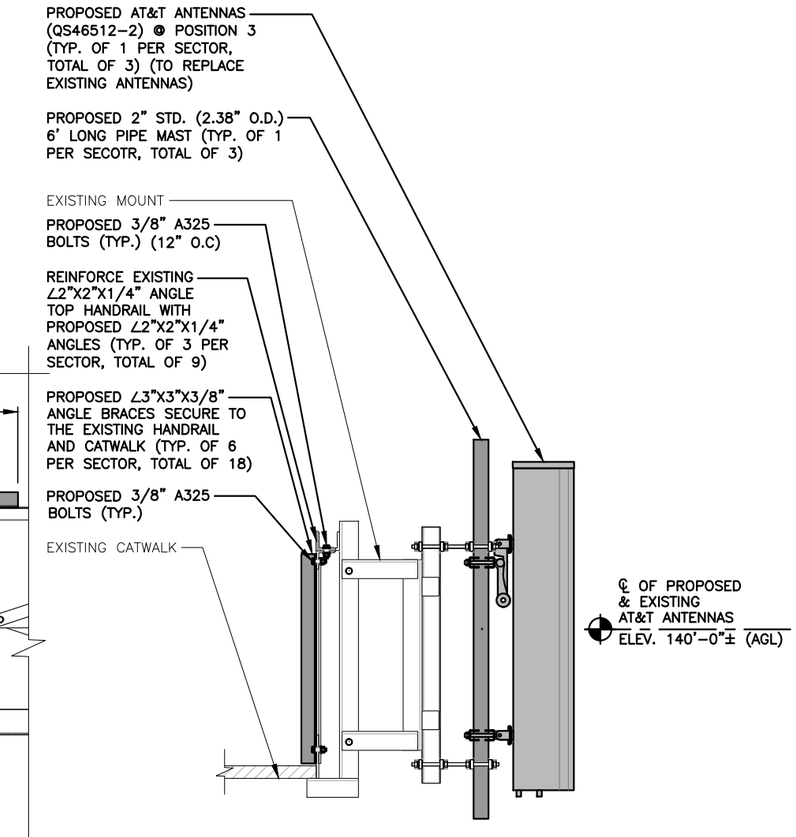
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: APRIL 17, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

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





PROPOSED STRUCTURE REINFORCEMENT ELEVATION (1 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"

PROPOSED STRUCTURE REINFORCEMENT DETAIL (2 / S-1)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"
0 0'-6" 1'-0" 2'-0" 3'-0"

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0	12/19/17	ISSUED FOR REVIEW	SG	AT	DJC
A	11/16/17	ISSUED FOR REVIEW	AN	AT	DJC

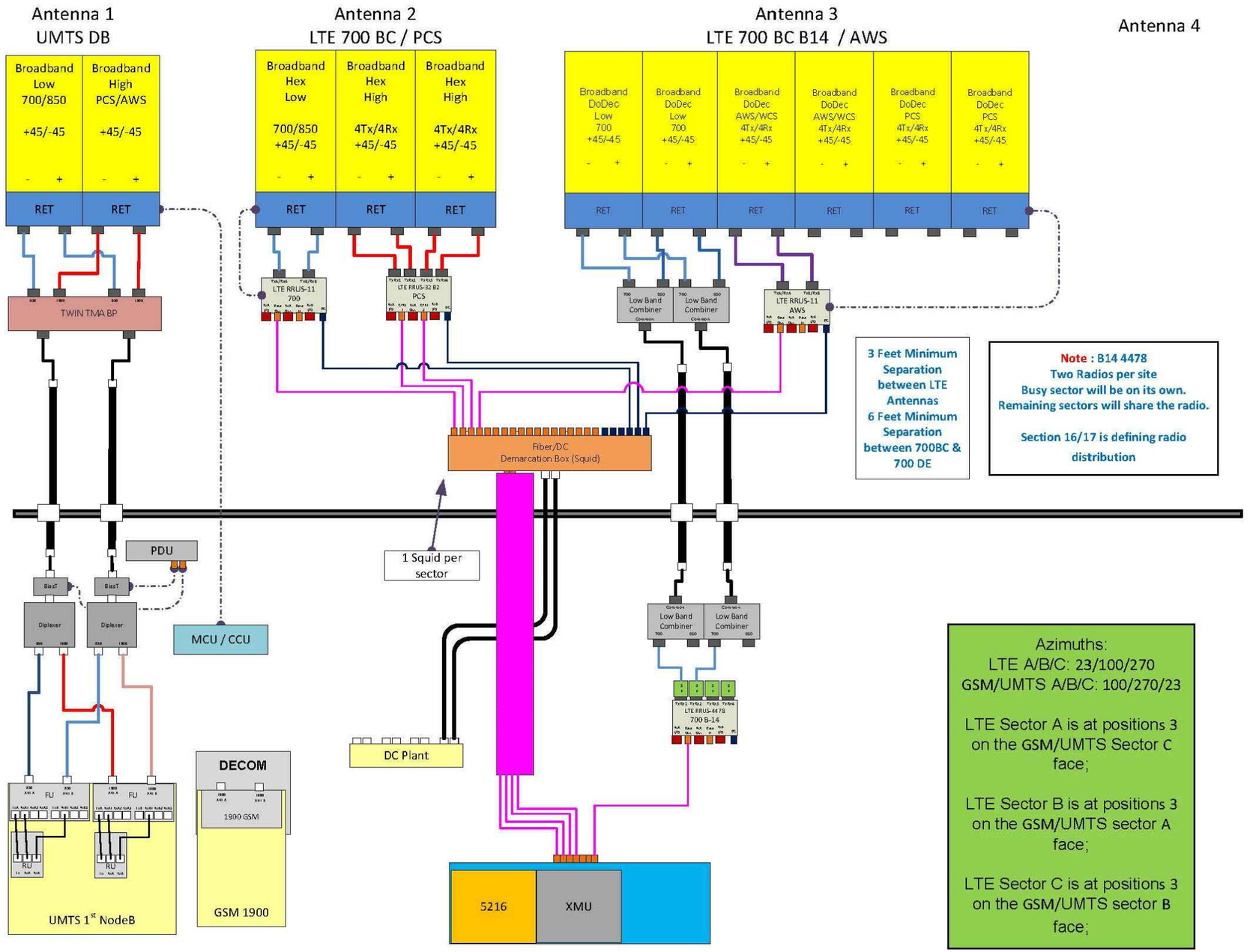
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

STATE OF CONNECTICUT — DEREK J. CREASEY — 18,255 — LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL DETAILS
LTE 3C-4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	S-1	1



RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

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

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

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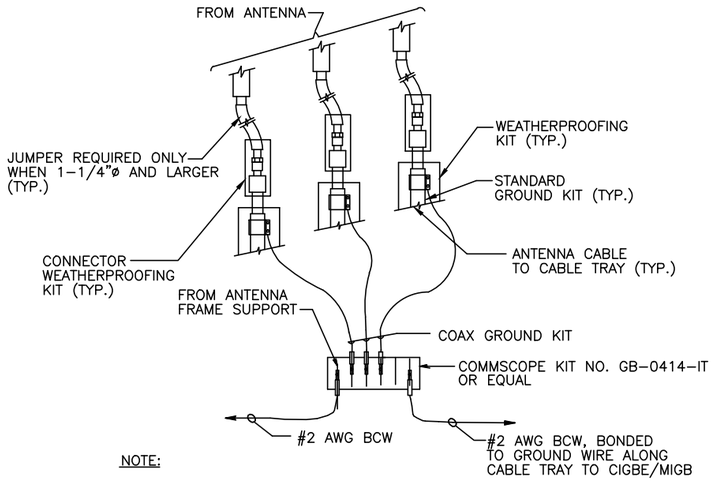
0	12/19/17	ISSUED FOR REVIEW	SG	AT	DJC
A	11/16/17	ISSUED FOR REVIEW	AN	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 25854 · LICENSED PROFESSIONAL ENGINEER

AT&T
RF PLUMBING DIAGRAM
LTE 3C–4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	RF–1	1



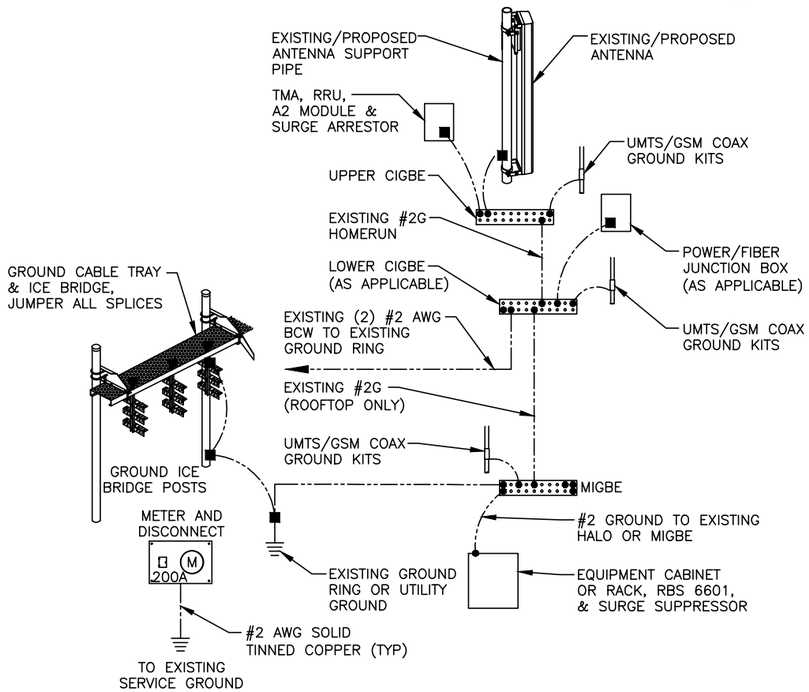
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

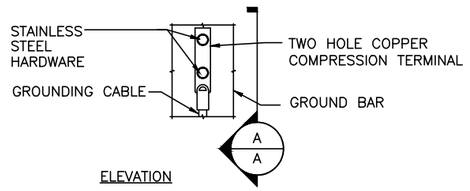
1 / G–1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G–1



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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G–1

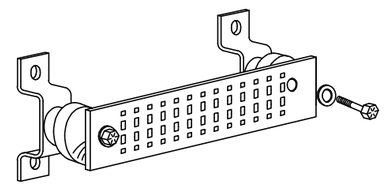
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
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

4 / G–1

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A	11/16/17	ISSUED FOR REVIEW	AN	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: AN

STATE OF CONNECTICUT · DEREK J. CREASEY · No. 25554 · LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
LTE 3C–4C 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT2177	G–1	1

EXHIBIT 3

STRUCTURAL ANALYSIS REPORT

For

CT2177 (3C/4C)

SITE CT-305

7 Broadway Avenue Extension
Mystic, CT 06355

Antennas Mounted on Water Tank Catwalk Handrail Equipment on Concrete Slab on Grade

Prepared for:

CENTERLINE at&t

Dated: April 17, 2018

Prepared by:

HDG HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
www.hudsondesigngroupllc.com

HUDSON Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the structure supporting the proposed AT&T equipment located in the areas depicted in the latest HDG construction drawings.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's proposed equipment.

An on-site visual survey of the above site was conducted on April 4, 2018.

CONCLUSION SUMMARY:

Water tank plans were not available and could not be obtained for our use. A limited visual survey of the structure was completed in or near the areas of the proposed work.

Based on our evaluation, we have determined that the existing structure **IS NOT CAPABLE** of supporting the proposed equipment loading. HDG recommends the following modifications:

- **Reinforce the existing L2x2x1/4 angle top handrail with new L2x2x1/4 angles (typ. of 3 per sector, total of 9).**
- **Install new L3x3x3/8 angle braces, secure to the existing handrail (typ. of 6 per sector, total of 18).**

APPURTENACE/EQUIPMENT CONFIGURATION:

(3) 7770 Antennas (55.0"x11.0"x5.0" – Wt. = 35 lbs. /each)

(6) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)

(3) Surge Arrestors (10.3"x10.3" x6.2" – Wt. = 16 lbs. /each)

(3) SBNHH-1D65A Antennas (55.6"x11.9"x7.1" – Wt. = 34 lbs. /each)

(3) QS46512-2 Antennas (52.0"x12.0"x10.8" – Wt. = 75 lbs. /each)

(3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)

(3) TT19-08BP111-001 TMA's (9.9"x6.7"x5.4" - Wt. = 16 lbs. /each)

**Proposed Loading Shown in Bold.*

HUDSON
Design Group LLC

DESIGN CRITERIA:

1. International Building Code 2012 with 2005 Connecticut Supplement with 2016 Amendments; ASCE 7-10 Minimum Design Loads for Buildings and Other Structures.

   Wind Analysis:

Ultimate Wind Speed (V_{ult}):	135 mph	(CTSBC 2016 Appendix N)
Nominal Wind Speed (V_{asd}):	105 mph	(CTSBC 2016 Appendix N)
Category:	D	

2. EIA/TIA -222- G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

City/Town:	Mystic
County:	New London
Wind Load:	120 mph
Nominal Ice Thickness:	3/4 inch

3. Approximate height above grade to the center of the Antennas:

   140'-0"+/-

HUDSON Design Group LLC

ANTENNA SUPPORT RECOMMENDATIONS:

The new antennas are proposed to be mounted on new pipe masts installed on existing steel frames secured to the existing catwalk handrail.

RRH SUPPORT RECOMMENDATIONS:

The new RRH's are proposed to be mounted on new unistrut components secured to the existing catwalk handrail.

Limitations and assumptions:

1. Reference the latest HDG construction drawings for all the equipment locations details.
2. Mount all equipment per manufacturer's specifications.
3. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
5. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
6. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.

HUDSON
Design Group LLC

FIELD PHOTOS:

Photo 1: Sample photo illustrating the existing antennas and RRH's.

Photo 2: Sample photo illustrating the existing equipment cabinets.

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 4/17/2018
Project Name: SITE CT-305
Project Number: CT2177
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01 (z/z_g)^{2/\alpha}$

z=	140 (ft)
z_g=	700 (ft)
α=	11.5

K_z= 1.519

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt} =1.0)

Category=	1

K_h=	#DIV/0!
K_e=	0 (from Table 2-4)
K_t=	0 (from Table 2-5)
f=	0 (from Table 2-5)
z=	140
H=	0 (Ht. of the crest above surrounding terrain)
K_{zt}=	1.00

Date: 4/17/2018
Project Name: SITE CT-305
Project Number: CT2177
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	156	Gh=	0.85
2.6.7.2 Guyed Masts		Gh=	0.85
2.6.7.3 Pole Structures		Gh=	1.1
2.6.9 Appurtenances		Gh=	1.0

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh=	1.35	**Gh=**	**1.35**

2.6.9.2 Design Wind Force on Appurtenances

$F = q_z * Gh * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$

		K_z=	1.519
		K_{zt}=	1.0
q_z=	**53.21**	K_d=	0.95
$q_{z\ (ice)}$=	**9.24**	V_{max}=	120
		$V_{max\ (ice)}$=	50
		I=	1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 4/17/2018
Project Name: SITE CT-305
Project Number: CT2177
Designed By: JN Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance, and the section length considered to have uniform wind load).

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **0.75 in**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (3/4" Ice)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	**396**	**80**
SBNHH-1D65A Antenna	55.6	11.9	7.1	4.59	4.67	1.30	**428**	**86**
QS46512-2 Antenna	52.0	12.0	10.8	4.33	4.33	1.28	**399**	**80**
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	**200**	**41**
RRUS-32 B2 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**197**	**41**
TT19-08BP111-001 TMA	9.9	6.7	5.4	0.46	1.48	1.20	**40**	**10**
Squid Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**81**	**17**

Date: 4/17/2018
Project Name: SITE CT-305
Project Number: CT2177
Designed By: JN **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice (in): 0.75
* Density of ice used = 56 PCF

7770 Antenna
Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		45 lbs
Weight of object:	35 lbs	
Combined weight of ice and object:		80 lbs

SBNHH-1D65A Antenna
Weight of ice based on total radial SF area:

Height (in):	55.6	
Width (in):	11.9	
Depth (in):	7.1	
Total weight of ice on object:		55 lbs
Weight of object:	34 lbs	
Combined weight of ice and object:		89 lbs

QS46512-2 Antenna
Weight of ice based on total radial SF area:

Height (in):	52.0	
Width (in):	12.0	
Depth (in):	10.8	
Total weight of ice on object:		64 lbs
Weight of object:	75 lbs	
Combined weight of ice and object:		139 lbs

RRUS-11 RRH
Weight of ice based on total radial SF area:

Height (in):	19.7	
Width (in):	17.0	
Depth (in):	7.2	
Total weight of ice on object:		29 lbs
Weight of object:	51 lbs	
Combined weight of ice and object:		80 lbs

RRUS-32 B2 RRH
Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		29 lbs
Weight of object:	60 lbs	
Combined weight of ice and object:		89 lbs

TT19-08BP111-001 TMA
Weight of ice based on total radial SF area:

Height (in):	9.9	
Width (in):	6.7	
Depth (in):	5.4	
Total weight of ice on object:		8 lbs
Weight of object:	16 lbs	
Combined weight of ice and object:		24 lbs

Surge Arrestor
Weight of ice based on total radial SF area:

Height (in):	10.3	
Width (in):	10.3	
Depth (in):	6.2	
Total weight of ice on object:		11 lbs
Weight of object:	16 lbs	
Combined weight of ice and object:		27 lbs

PL2x1/4
Weight of ice based on total radial SF area:

Height (in):	2.0	
Width (in):	0.25	
Depth (in):	12.0	
Total weight of ice on object:		1 lbs

L2x2x1/4
Weight of ice based on total radial SF area:

Height (in):	2.0	
Width (in):	2.0	
Depth (in):	12.0	
Total weight of ice on object:		3 lbs

L3x3x1/4
Weight of ice based on total radial SF area:

Height (in):	3.0	
Width (in):	3.0	
Depth (in):	12.0	
Total weight of ice on object:		4 lbs

L4x4x1/4
Weight of ice based on total radial SF area:

Height (in):	4.0	
Width (in):	4.0	
Depth (in):	12.0	
Total weight of ice on object:		5 lbs

L5x3x1/4
Weight of ice based on total radial SF area:

Height (in):	5.0	
Width (in):	3.0	
Depth (in):	12.0	
Total weight of ice on object:		5 lbs

L6x4x3/8
Weight of ice based on total radial SF area:

Height (in):	6.0	
Width (in):	4.0	
Depth (in):	12.0	
Total weight of ice on object:		7 lbs

Unistrut
Weight of ice based on total radial SF area:

Height (in):	1.6	
Width (in):	1.6	
Depth (in):	12.0	
Total weight of ice on object:		2 lbs

2" pipe
Per foot weight of ice:

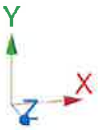
diameter (in):	2.375	
Per foot weight of ice on object:		2 lbs/ft

3" pipe
Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		3 lbs/ft

HUDSON
Design Group LLC

Antenna Mount Calculations
(Existing Conditions)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X
Z

Hewlett-Packard Company

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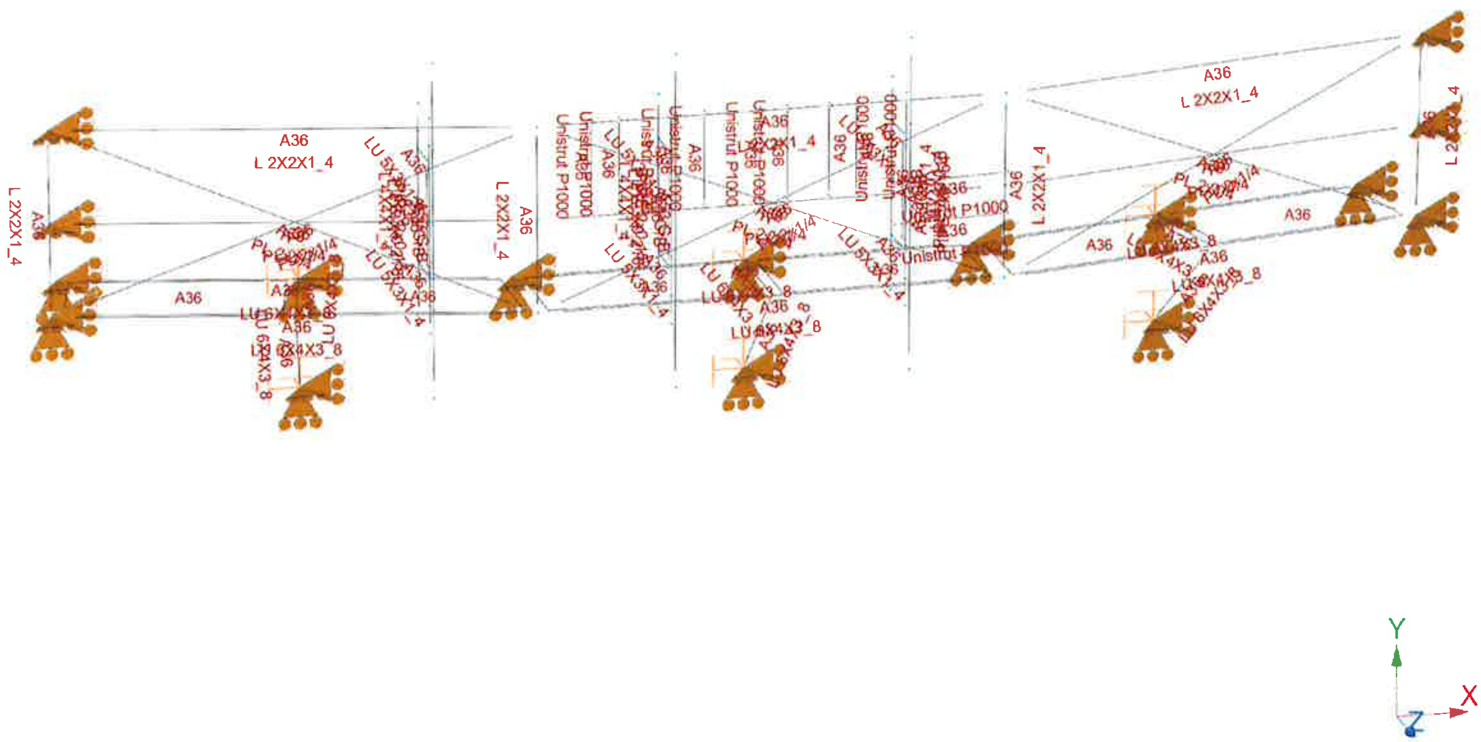
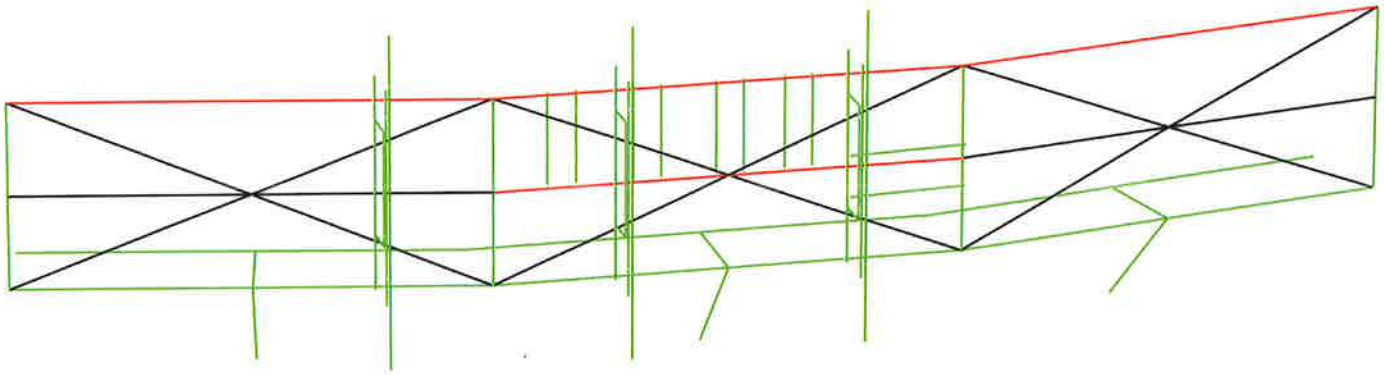
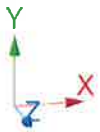
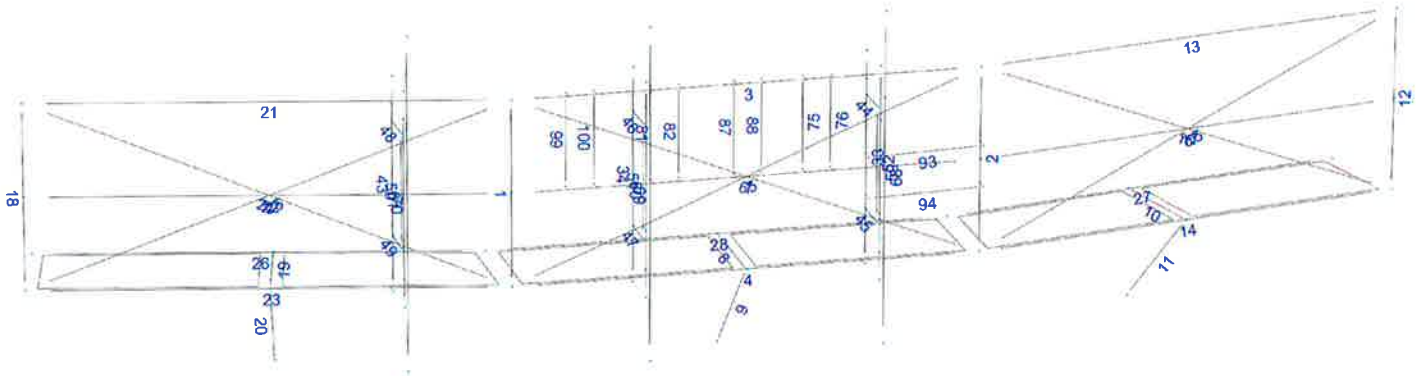


Design status

- Not designed
- Error on design
- Design O.K.
- With warnings



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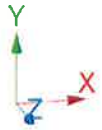
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Load data

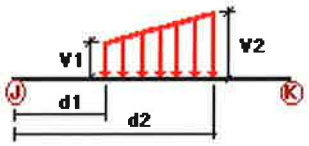
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

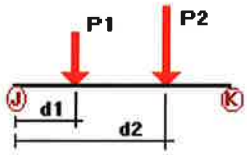
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Di	1	y	-0.003	0.00	0.00	No	0.00	No
	2	y	-0.003	0.00	0.00	No	0.00	No
	3	y	-0.003	0.00	0.00	No	0.00	No
	4	y	-0.007	0.00	0.00	No	0.00	No
	5	y	-0.001	0.00	0.00	No	0.00	No
	6	y	-0.001	0.00	0.00	No	0.00	No
	7	y	-0.001	0.00	0.00	No	0.00	No
	8	y	-0.007	0.00	0.00	No	0.00	No
	9	y	-0.007	0.00	0.00	No	0.00	No
	10	y	-0.007	0.00	0.00	No	0.00	No
	11	y	-0.007	0.00	0.00	No	0.00	No
	12	y	-0.003	0.00	0.00	No	0.00	No
	13	y	-0.003	0.00	0.00	No	0.00	No
	14	y	-0.007	0.00	0.00	No	0.00	No
	15	y	-0.001	0.00	0.00	No	0.00	No
	16	y	-0.001	0.00	0.00	No	0.00	No
	17	y	-0.001	0.00	0.00	No	0.00	No
	18	y	-0.003	0.00	0.00	No	0.00	No
	19	y	-0.007	0.00	0.00	No	0.00	No
	20	y	-0.007	0.00	0.00	No	0.00	No
	21	y	-0.003	0.00	0.00	No	0.00	No
	22	y	-0.001	0.00	0.00	No	0.00	No
	23	y	-0.007	0.00	0.00	No	0.00	No
	24	y	-0.001	0.00	0.00	No	0.00	No
	25	y	-0.001	0.00	0.00	No	0.00	No

26	y	-0.007	0.00	0.00	No	0.00	No
27	y	-0.007	0.00	0.00	No	0.00	No
28	y	-0.007	0.00	0.00	No	0.00	No
33	y	-0.005	0.00	0.00	No	0.00	No
34	y	-0.005	0.00	0.00	No	0.00	No
43	y	-0.005	0.00	0.00	No	0.00	No
44	y	-0.005	0.00	0.00	No	0.00	No
45	y	-0.005	0.00	0.00	No	0.00	No
46	y	-0.005	0.00	0.00	No	0.00	No
47	y	-0.005	0.00	0.00	No	0.00	No
48	y	-0.005	0.00	0.00	No	0.00	No
49	y	-0.005	0.00	0.00	No	0.00	No
50	y	-0.005	0.00	0.00	No	0.00	No
51	y	-0.005	0.00	0.00	No	0.00	No
52	y	-0.005	0.00	0.00	No	0.00	No
59	y	-0.003	0.00	0.00	No	0.00	No
60	y	-0.003	0.00	0.00	No	0.00	No
61	y	-0.003	0.00	0.00	No	0.00	No
68	y	-0.002	0.00	0.00	No	0.00	No
69	y	-0.002	0.00	0.00	No	0.00	No
70	y	-0.002	0.00	0.00	No	0.00	No
75	y	-0.002	0.00	0.00	No	0.00	No
76	y	-0.002	0.00	0.00	No	0.00	No
81	y	-0.002	0.00	0.00	No	0.00	No
82	y	-0.002	0.00	0.00	No	0.00	No
87	y	-0.002	0.00	0.00	No	0.00	No
88	y	-0.002	0.00	0.00	No	0.00	No
93	y	-0.002	0.00	0.00	No	0.00	No
94	y	-0.002	0.00	0.00	No	0.00	No
99	y	-0.002	0.00	0.00	No	0.00	No
100	y	-0.002	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	68	y	-0.018	1.00	No
		y	-0.018	5.00	No
	69	y	-0.017	1.00	No
		y	-0.017	5.00	No
	70	y	-0.038	1.00	No
		y	-0.038	5.00	No
	75	y	-0.026	50.00	Yes
	76	y	-0.026	50.00	Yes
	81	y	-0.026	50.00	Yes
	82	y	-0.026	50.00	Yes
	87	y	-0.03	50.00	Yes
	88	y	-0.03	50.00	Yes
	93	y	-0.008	50.00	Yes
	94	y	-0.008	50.00	Yes

	99	y	-0.008	50.00	Yes
	100	y	-0.008	50.00	Yes
Wo	68	z	-0.198	1.00	No
		z	-0.198	5.00	No
	69	z	-0.214	1.00	No
		z	-0.214	5.00	No
	70	z	-0.20	1.00	No
		z	-0.20	5.00	No
	75	z	-0.10	50.00	Yes
	76	z	-0.10	50.00	Yes
	81	z	-0.10	50.00	Yes
	82	z	-0.10	50.00	Yes
	87	z	-0.099	50.00	Yes
	88	z	-0.099	50.00	Yes
	93	z	-0.02	50.00	Yes
	94	z	-0.02	50.00	Yes
	99	z	-0.041	50.00	Yes
	100	z	-0.041	50.00	Yes
Wi	68	z	-0.04	1.00	No
		z	-0.04	5.00	No
	69	z	-0.043	1.00	No
		z	-0.043	5.00	No
	70	z	-0.04	1.00	No
		z	-0.04	5.00	No
	75	z	-0.021	50.00	Yes
	76	z	-0.021	50.00	Yes
	81	z	-0.021	50.00	Yes
	82	z	-0.021	50.00	Yes
	87	z	-0.021	50.00	Yes
	88	z	-0.021	50.00	Yes
	93	z	-0.005	50.00	Yes
	94	z	-0.005	50.00	Yes
	99	z	-0.009	50.00	Yes
	100	z	-0.009	50.00	Yes
Di	68	y	-0.023	1.00	No
		y	-0.023	5.00	No
	69	y	-0.028	1.00	No
		y	-0.028	5.00	No
	70	y	-0.032	1.00	No
		y	-0.032	5.00	No
	75	y	-0.015	50.00	Yes
	76	y	-0.015	50.00	Yes
	81	y	-0.015	50.00	Yes
	82	y	-0.015	50.00	Yes
	87	y	-0.015	50.00	Yes
	88	y	-0.015	50.00	Yes
	93	y	-0.004	50.00	Yes
	94	y	-0.004	50.00	Yes
	99	y	-0.006	50.00	Yes
	100	y	-0.006	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

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Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 2X2X1_4	1	LC1 at 0.00%	0.42	OK	
			LC2 at 0.00%	**0.43**	**OK**	Eq. H2-1
			LC3 at 0.00%	0.04	OK	
			LC4 at 0.00%	0.03	OK	
			LC5 at 0.00%	0.03	OK	
		2	LC1 at 100.00%	0.43	OK	
			LC2 at 100.00%	**0.46**	**OK**	Eq. H2-1
			LC3 at 0.00%	0.06	OK	
			LC4 at 100.00%	0.06	OK	
			LC5 at 100.00%	0.04	OK	
		3	LC1 at 47.73%	3.85	N.G.	
			LC2 at 47.73%	**3.92**	**N.G.**	Eq. H2-1
			LC3 at 74.43%	0.26	With warnings	
			LC4 at 0.00%	0.13	With warnings	
			LC5 at 0.00%	0.10	With warnings	
		12	LC1 at 0.00%	0.07	OK	
			LC2 at 0.00%	0.07	OK	Eq. H3-8
			LC3 at 100.00%	**0.09**	**OK**	Eq. H2-1
			LC4 at 100.00%	0.06	OK	
			LC5 at 100.00%	0.04	OK	
		13	LC1 at 0.00%	2.30	N.G.	
			LC2 at 0.00%	**2.34**	**N.G.**	Eq. H2-1
			LC3 at 100.00%	0.15	With warnings	
			LC4 at 0.00%	0.07	With warnings	
			LC5 at 0.00%	0.05	With warnings	
		18	LC1 at 100.00%	0.03	OK	
			LC2 at 100.00%	0.03	OK	
			LC3 at 100.00%	**0.09**	**OK**	Eq. H2-1
			LC4 at 100.00%	0.06	OK	
			LC5 at 100.00%	0.04	OK	
		21	LC1 at 0.00%	4.16	N.G.	
			LC2 at 0.00%	**4.25**	**N.G.**	Eq. H2-1
			LC3 at 25.00%	0.16	With warnings	
			LC4 at 0.00%	0.14	With warnings	
			LC5 at 0.00%	0.11	With warnings	
	L 4X4X1_4	33	LC1 at 13.54%	0.75	OK	
			LC2 at 13.54%	**0.76**	**OK**	Eq. H3-8

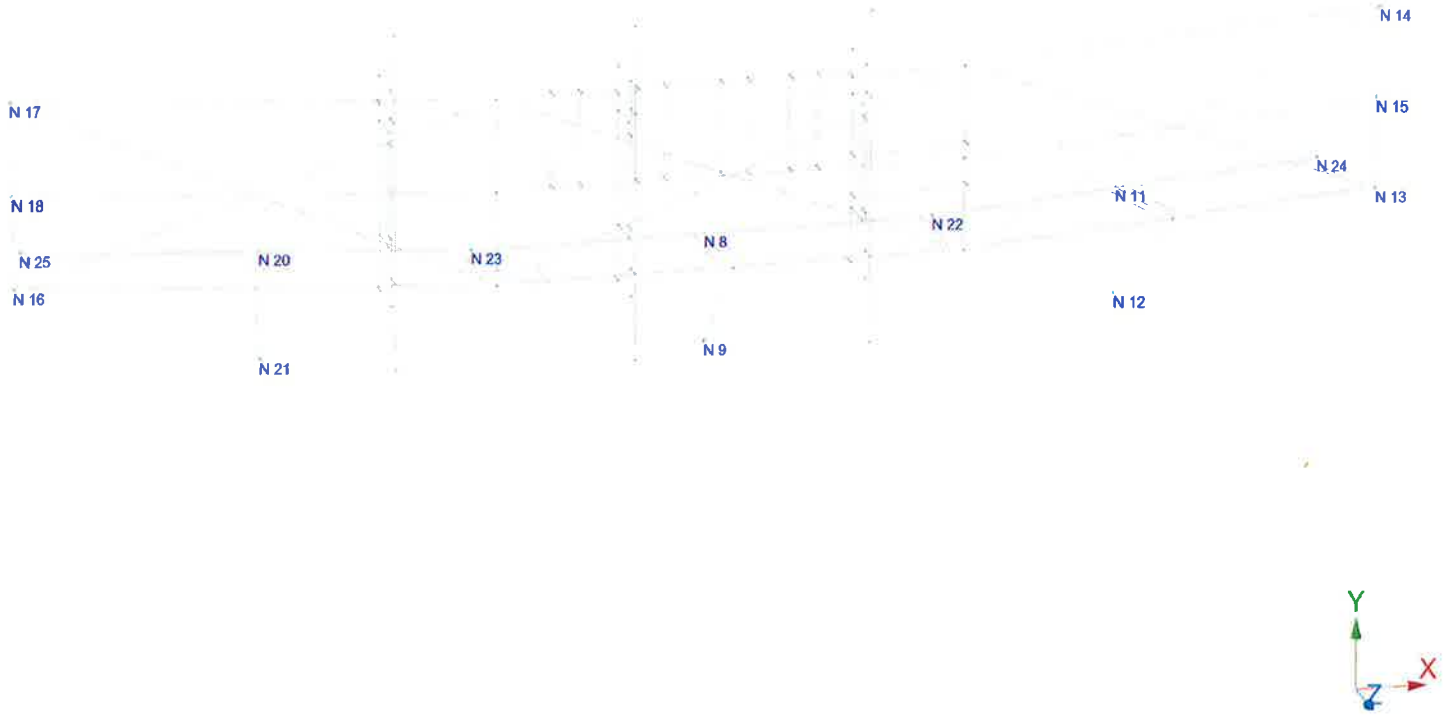
		LC3 at 68.75%	0.08	OK	
		LC4 at 13.54%	0.03	OK	
		LC5 at 13.54%	0.03	OK	
	34	LC1 at 75.00%	**0.52**	**OK**	Eq. H3-8
		LC2 at 75.00%	0.51	OK	
		LC3 at 100.00%	0.08	OK	
		LC4 at 100.00%	0.04	OK	
		LC5 at 100.00%	0.03	OK	
	43	LC1 at 14.06%	**0.31**	**OK**	Eq. H3-8
		LC2 at 14.06%	0.31	OK	
		LC3 at 75.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	50	LC1 at 91.67%	**0.09**	**OK**	Eq. H3-8
		LC2 at 91.67%	0.09	OK	
		LC3 at 91.67%	0.03	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	51	LC1 at 100.00%	**0.07**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.07	OK	
		LC3 at 91.67%	0.02	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	52	LC1 at 0.00%	0.29	OK	
		LC2 at 0.00%	**0.29**	**OK**	Eq. H3-8
		LC3 at 91.67%	0.03	OK	
		LC4 at 100.00%	0.01	OK	
		LC5 at 100.00%	0.01	OK	
LU 5X3X1_4	44	LC1 at 100.00%	0.11	OK	
		LC2 at 100.00%	**0.12**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.04	OK	
		LC4 at 0.00%	0.02	OK	
		LC5 at 0.00%	0.02	OK	
	45	LC1 at 100.00%	**0.17**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.17	OK	
		LC3 at 100.00%	0.03	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	46	LC1 at 0.00%	0.10	OK	
		LC2 at 0.00%	**0.11**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.04	OK	
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.03	OK	
	47	LC1 at 0.00%	**0.09**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.09	OK	
		LC3 at 0.00%	0.02	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	48	LC1 at 100.00%	0.06	OK	
		LC2 at 100.00%	**0.06**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.03	OK	
		LC4 at 0.00%	0.03	OK	
		LC5 at 0.00%	0.02	OK	

	49	LC1 at 100.00%	**0.15**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.14	OK	
		LC3 at 100.00%	0.06	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
LU 6X4X3_8	**4**	LC1 at 62.50%	**0.46**	**OK**	Eq. H3-8
		LC2 at 62.50%	0.43	OK	
		LC3 at 50.00%	0.20	OK	
		LC4 at 49.22%	0.15	OK	
		LC5 at 49.22%	0.11	OK	
	8	LC1 at 100.00%	**0.06**	**OK**	Eq. H3-8
		LC2 at 100.00%	0.05	OK	
		LC3 at 100.00%	0.05	OK	
		LC4 at 100.00%	0.04	OK	
		LC5 at 100.00%	0.03	OK	
	9	LC1 at 0.00%	0.10	OK	
		LC2 at 0.00%	**0.10**	**OK**	Eq. H2-1
		LC3 at 100.00%	0.04	OK	
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.03	OK	
	10	LC1 at 98.44%	**0.04**	**OK**	Eq. H3-8
		LC2 at 98.44%	0.03	OK	
		LC3 at 98.44%	0.03	OK	
		LC4 at 98.44%	0.02	OK	
		LC5 at 98.44%	0.02	OK	
	11	LC1 at 0.00%	**0.05**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.05	OK	
		LC3 at 0.00%	0.03	OK	
		LC4 at 0.00%	0.02	OK	
		LC5 at 0.00%	0.01	OK	
	14	LC1 at 0.00%	**0.11**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.10	OK	
		LC3 at 50.00%	0.06	OK	
		LC4 at 50.00%	0.04	OK	
		LC5 at 50.00%	0.03	OK	
	19	LC1 at 98.44%	**0.03**	**OK**	Eq. H3-8
		LC2 at 98.44%	0.03	OK	
		LC3 at 100.00%	0.02	OK	
		LC4 at 100.00%	0.01	OK	
		LC5 at 100.00%	0.01	OK	
	20	LC1 at 0.00%	0.04	OK	
		LC2 at 0.00%	0.06	OK	
		LC3 at 0.00%	**0.08**	**OK**	Eq. H2-1
		LC4 at 0.00%	0.06	OK	
		LC5 at 0.00%	0.05	OK	
	23	LC1 at 75.00%	0.10	OK	Eq. H2-1
		LC2 at 50.00%	0.12	OK	
		LC3 at 50.00%	**0.16**	**OK**	Eq. H2-1
		LC4 at 50.00%	0.13	OK	
		LC5 at 50.00%	0.09	OK	
	26	LC1 at 0.00%	**0.05**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.05	OK	
		LC3 at 0.00%	0.02	OK	
		LC4 at 48.44%	0.02	OK	

		LC5 at 48.44%	0.01	OK	
	27	LC1 at 100.00%	**0.04**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.04	OK	
		LC3 at 100.00%	0.02	OK	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.01	OK	
	28	LC1 at 100.00%	**0.06**	**OK**	Eq. H3-8
		LC2 at 100.00%	0.06	OK	
		LC3 at 100.00%	0.03	OK	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.01	OK	
PIPE 2x0.154	68	LC1 at 25.00%	**0.13**	**OK**	Eq. H1-1b
		LC2 at 25.00%	0.13	OK	
		LC3 at 25.00%	0.02	OK	
		LC4 at 27.08%	0.00	OK	
		LC5 at 27.08%	0.00	OK	
	69	LC1 at 25.00%	**0.14**	**OK**	Eq. H1-1b
		LC2 at 25.00%	0.14	OK	
		LC3 at 25.00%	0.02	OK	
		LC4 at 27.08%	0.00	OK	
		LC5 at 27.08%	0.00	OK	
	70	LC1 at 25.00%	**0.13**	**OK**	Eq. H1-1b
		LC2 at 25.00%	0.13	OK	
		LC3 at 25.00%	0.02	OK	
		LC4 at 27.08%	0.01	OK	
		LC5 at 27.08%	0.00	OK	
PIPE 3x0.216	59	LC1 at 70.00%	**0.05**	**OK**	Eq. H1-1b
		LC2 at 70.00%	0.05	OK	
		LC3 at 68.75%	0.01	OK	
		LC4 at 26.25%	0.00	OK	
		LC5 at 26.25%	0.00	OK	
	60	LC1 at 70.00%	**0.05**	**OK**	Eq. H1-1b
		LC2 at 70.00%	0.05	OK	
		LC3 at 68.75%	0.01	OK	
		LC4 at 26.25%	0.00	OK	
		LC5 at 26.25%	0.00	OK	
	61	LC1 at 70.00%	**0.05**	**OK**	Eq. H1-1b
		LC2 at 70.00%	0.05	OK	
		LC3 at 68.75%	0.01	OK	
		LC4 at 68.75%	0.01	OK	
		LC5 at 68.75%	0.00	OK	
PL 2x1/4	5	LC1 at 0.00%	0.81	With warnings	
		LC2 at 0.00%	**0.82**	**With warnings**	Eq. H3-6
		LC3 at 0.00%	0.08	With warnings	Eq. H1-2
		LC4 at 0.00%	0.05	With warnings	
		LC5 at 0.00%	0.04	With warnings	
	6	LC1 at 50.00%	0.84	With warnings	
		LC2 at 50.00%	**0.85**	**With warnings**	Eq. H3-6
		LC3 at 100.00%	0.06	With warnings	
		LC4 at 50.00%	0.05	With warnings	
		LC5 at 50.00%	0.04	With warnings	
	7	LC1 at 0.00%	1.15	N.G.	
		LC2 at 0.00%	**1.17**	**N.G.**	Eq. H3-6

		LC3 at 0.00%	0.06	With warnings	
		LC4 at 47.50%	0.07	With warnings	
		LC5 at 47.50%	0.05	With warnings	
	15	LC1 at 50.00%	0.11	With warnings	
		LC2 at 50.00%	**0.11**	**With warnings**	Eq. H1-1b
		LC3 at 0.00%	0.05	With warnings	
		LC4 at 0.00%	0.03	With warnings	
		LC5 at 0.00%	0.02	With warnings	
	16	LC1 at 0.00%	0.38	With warnings	
		LC2 at 0.00%	**0.39**	**With warnings**	Eq. H1-1b
		LC3 at 100.00%	0.08	With warnings	Sec. E1
		LC4 at 100.00%	0.05	With warnings	
		LC5 at 100.00%	0.04	With warnings	
	17	LC1 at 100.00%	0.21	With warnings	
		LC2 at 100.00%	**0.22**	**With warnings**	Eq. H1-1b
		LC3 at 0.00%	0.03	With warnings	
		LC4 at 100.00%	0.02	With warnings	
		LC5 at 100.00%	0.01	With warnings	
	22	LC1 at 0.00%	0.19	With warnings	
		LC2 at 0.00%	**0.20**	**With warnings**	Eq. H1-1b
		LC3 at 100.00%	0.03	With warnings	
		LC4 at 100.00%	0.02	With warnings	
		LC5 at 100.00%	0.01	With warnings	
	24	LC1 at 100.00%	**0.11**	**With warnings**	Eq. H1-1b
		LC2 at 100.00%	0.10	With warnings	
		LC3 at 0.00%	0.08	With warnings	Eq. Sec. D2
		LC4 at 0.00%	0.07	With warnings	
		LC5 at 0.00%	0.05	With warnings	
	25	LC1 at 15.63%	0.08	With warnings	Eq. H1-1b
		LC2 at 34.38%	**0.09**	**With warnings**	Eq. H1-1b
		LC3 at 100.00%	0.08	With warnings	Sec. E1
		LC4 at 100.00%	0.05	With warnings	
		LC5 at 100.00%	0.04	With warnings	
Unistrut P1000	75	LC1 at 0.00%	0.26	OK	
		LC2 at 0.00%	**0.26**	**OK**	Sec. C5.1
		LC3 at 0.00%	0.04	OK	
		LC4 at 0.00%	0.03	OK	
		LC5 at 0.00%	0.02	OK	
	76	LC1 at 0.00%	0.76	OK	
		LC2 at 0.00%	**0.77**	**OK**	Sec. C5.2
		LC3 at 0.00%	0.09	OK	
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.03	OK	
	81	LC1 at 0.00%	0.89	OK	
		LC2 at 0.00%	**0.90**	**OK**	Sec. C5.1
		LC3 at 0.00%	0.08	OK	
		LC4 at 100.00%	0.05	OK	
		LC5 at 100.00%	0.04	OK	
	82	LC1 at 0.00%	0.42	OK	
		LC2 at 0.00%	**0.43**	**OK**	Sec. C5.1
		LC3 at 0.00%	0.04	OK	
		LC4 at 0.00%	0.05	OK	
		LC5 at 0.00%	0.04	OK	

87	LC1 at 50.00%	**0.26**	**OK**	Sec. C5.2
	LC2 at 50.00%	0.26	OK	
	LC3 at 50.00%	0.05	OK	
	LC4 at 100.00%	0.03	OK	
	LC5 at 100.00%	0.03	OK	
88	LC1 at 50.00%	**0.24**	**OK**	Sec. C5.2
	LC2 at 50.00%	0.24	OK	
	LC3 at 50.00%	0.05	OK	
	LC4 at 100.00%	0.02	OK	
	LC5 at 100.00%	0.02	OK	
93	LC1 at 0.00%	**0.44**	**OK**	Sec. C5.2
	LC2 at 0.00%	0.44	OK	
	LC3 at 0.00%	0.06	OK	
	LC4 at 50.00%	0.02	OK	
	LC5 at 50.00%	0.01	OK	
94	LC1 at 0.00%	0.41	OK	
	LC2 at 0.00%	**0.41**	**OK**	Sec. C5.2
	LC3 at 0.00%	0.06	OK	
	LC4 at 100.00%	0.02	OK	
	LC5 at 100.00%	0.02	OK	
99	LC1 at 0.00%	**0.42**	**OK**	Sec. C5.1
	LC2 at 0.00%	0.41	OK	
	LC3 at 0.00%	0.04	OK	
	LC4 at 100.00%	0.03	OK	
	LC5 at 100.00%	0.02	OK	
100	LC1 at 0.00%	0.69	OK	
	LC2 at 0.00%	**0.69**	**OK**	Sec. C5.1
	LC3 at 0.00%	0.07	OK	
	LC4 at 100.00%	0.04	OK	
	LC5 at 100.00%	0.03	OK	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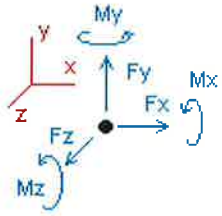
Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip] FX	FY	FZ	Moments [Kip*ft] MX	MY	MZ
Condition **LC1=1.2DL+1.6Wo**						
8	-0.05208	0.37260	1.12693	-0.24156	0.21413	-0.00782
9	0.38374	0.63071	0.41078	-0.16762	0.25947	-0.23240
11	-0.12563	0.17663	0.05954	-0.07381	-0.04898	0.03944
12	-0.06247	0.29564	0.35925	0.02817	-0.09624	0.08206
13	-0.00512	0.41719	0.03551	0.00000	0.00000	0.00000
14	-2.33384	0.00000	0.44291	0.00000	0.00000	0.00000
15	-0.00271	0.00000	0.00261	0.00000	0.00000	0.00000
16	0.07104	0.11414	0.08108	0.00000	0.00000	0.00000
17	4.53218	0.00000	0.98306	0.00000	0.00000	0.00000
18	-0.22060	0.00000	-0.04780	0.00000	0.00000	0.00000
20	0.08505	0.15577	-0.20950	-0.05071	0.06390	-0.04068
21	-0.13129	0.06649	0.05235	-0.00675	-0.08108	0.07281
22	-0.16504	0.25132	-0.09436	0.00000	0.00000	0.00000
23	-0.29328	0.33001	-0.02108	0.00000	0.00000	0.00000
24	-0.06454	0.03076	0.00231	0.00000	0.00000	0.00000
25	0.07124	0.03067	0.01573	0.00000	0.00000	0.00000
FEM: 149	0.02021	0.01448	-0.01687	0.00000	0.00000	0.00000
FEM: 153	-0.04856	0.02459	0.00508	0.00000	0.00000	0.00000
FEM: 160	-0.39117	-0.04575	0.15122	0.00000	0.00000	0.00000
FEM: 169	-0.37760	-0.06901	-0.13771	0.00000	0.00000	0.00000
FEM: 173	-0.77465	-0.04594	-0.31042	0.00000	0.00000	0.00000
FEM: 180	-0.13890	-0.03230	0.22374	0.00000	0.00000	0.00000
FEM: 187	-0.02050	0.02416	0.07141	0.00000	0.00000	0.00000
FEM: 188	0.04451	0.01319	-0.07536	0.00000	0.00000	0.00000
SUM	0.00000	2.75537	3.11040	-0.51227	0.31120	-0.08659
Condition **LC2=0.9DL+1.6Wo**						
8	-0.05800	0.31729	1.14044	-0.21252	0.20298	-0.00743
9	0.41993	0.42664	0.18250	-0.16813	0.28311	-0.25354
11	-0.11653	0.13869	0.07979	-0.06178	-0.05598	0.03358
12	-0.06596	0.24385	0.30702	0.02945	-0.09103	0.07700
13	0.00505	0.37720	0.02497	0.00000	0.00000	0.00000
14	-2.44660	0.00000	0.46649	0.00000	0.00000	0.00000
15	0.00270	0.00000	0.00080	0.00000	0.00000	0.00000
16	0.10703	0.09689	0.09491	0.00000	0.00000	0.00000
17	4.68262	0.00000	1.01893	0.00000	0.00000	0.00000
18	-0.22603	0.00000	-0.04959	0.00000	0.00000	0.00000

20	0.07236	0.13640	-0.21245	-0.04340	0.04258	-0.03658
21	-0.16868	-0.09718	-0.10666	0.00380	-0.13186	0.12173
22	-0.17315	0.21767	-0.02611	0.00000	0.00000	0.00000
23	-0.30045	0.29780	0.11143	0.00000	0.00000	0.00000
24	-0.05184	0.02310	0.00582	0.00000	0.00000	0.00000
25	0.06349	0.02299	0.02515	0.00000	0.00000	0.00000
FEM: 149	0.04208	0.01133	-0.00209	0.00000	0.00000	0.00000
FEM: 153	-0.03879	0.01880	0.00674	0.00000	0.00000	0.00000
FEM: 160	-0.40097	-0.04452	0.17536	0.00000	0.00000	0.00000
FEM: 169	-0.41863	-0.06911	-0.09653	0.00000	0.00000	0.00000
FEM: 173	-0.77307	-0.04776	-0.26101	0.00000	0.00000	0.00000
FEM: 180	-0.16072	-0.03170	0.21604	0.00000	0.00000	0.00000
FEM: 187	-0.03229	0.01830	0.07322	0.00000	0.00000	0.00000
FEM: 188	0.03643	0.00986	-0.06475	0.00000	0.00000	0.00000
SUM	0.00000	2.06653	3.11040	-0.45259	0.24979	-0.06524

Condition **LC3=1.2DL+Wi+Di**

8	0.09653	0.25509	0.00230	-0.13621	0.09072	0.00242
9	-0.01505	0.95784	1.00013	-0.03883	-0.00397	0.00342
11	-0.06382	0.20044	-0.06960	-0.06400	0.01774	0.03005
12	-0.00139	0.28410	0.30060	0.00155	-0.04476	0.04069
13	-0.02496	0.28445	0.04222	0.00000	0.00000	0.00000
14	0.32408	0.00000	-0.07531	0.00000	0.00000	0.00000
15	-0.02750	0.00000	0.00848	0.00000	0.00000	0.00000
16	-0.06088	0.38579	-0.02083	0.00000	0.00000	0.00000
17	-0.80864	0.00000	-0.19305	0.00000	0.00000	0.00000
18	0.02325	0.00000	0.00723	0.00000	0.00000	0.00000
20	0.11415	0.12963	-0.02968	-0.04118	0.10125	-0.02266
21	0.08847	0.63231	0.61072	-0.04101	0.15846	-0.15447
22	0.00983	0.17281	-0.30659	0.00000	0.00000	0.00000
23	0.06769	0.16149	-0.33563	0.00000	0.00000	0.00000
24	-0.06749	0.03945	-0.01461	0.00000	0.00000	0.00000
25	0.06597	0.03951	-0.01444	0.00000	0.00000	0.00000
FEM: 149	-0.06972	0.01297	-0.05127	0.00000	0.00000	0.00000
FEM: 153	-0.03995	0.03067	0.01846	0.00000	0.00000	0.00000
FEM: 160	0.12817	-0.00257	0.03912	0.00000	0.00000	0.00000
FEM: 169	0.18551	0.01187	-0.23485	0.00000	0.00000	0.00000
FEM: 173	-0.07066	0.01076	-0.30387	0.00000	0.00000	0.00000
FEM: 180	0.04962	-0.00314	0.07962	0.00000	0.00000	0.00000
FEM: 187	0.05172	0.03088	-0.00104	0.00000	0.00000	0.00000
FEM: 188	0.04506	0.01320	-0.05812	0.00000	0.00000	0.00000
SUM	0.00000	3.64756	0.40000	-0.31969	0.31943	-0.10055

Condition **LC4=1.2DL**

8	0.08435	0.17849	-0.11861	-0.08861	0.04996	0.00099
9	-0.04230	0.70873	0.76045	-0.01707	-0.02348	0.02093
11	-0.02751	0.15312	-0.09134	-0.04860	0.02735	0.02357
12	0.00782	0.20518	0.21050	-0.00293	-0.02510	0.02364
13	-0.00905	0.18811	0.03486	0.00000	0.00000	0.00000
14	0.46055	0.00000	-0.09814	0.00000	0.00000	0.00000
15	0.02210	0.00000	-0.00235	0.00000	0.00000	0.00000
16	-0.06143	0.32513	-0.01665	0.00000	0.00000	0.00000
17	-1.14173	0.00000	-0.26136	0.00000	0.00000	0.00000
18	0.01432	0.00000	0.00548	0.00000	0.00000	0.00000
20	0.09046	0.10192	-0.01901	-0.03468	0.07167	-0.01785
21	0.07501	0.49471	0.47799	-0.03231	0.12787	-0.12448
22	0.04135	0.13069	-0.22342	0.00000	0.00000	0.00000

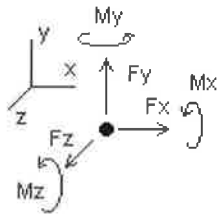
23	0.07818	0.12047	-0.26715	0.00000	0.00000	0.00000
24	-0.04754	0.03062	-0.01661	0.00000	0.00000	0.00000
25	0.04863	0.03068	-0.01432	0.00000	0.00000	0.00000
FEM: 149	-0.05153	0.01310	-0.04167	0.00000	0.00000	0.00000
FEM: 153	-0.03027	0.02325	0.01821	0.00000	0.00000	0.00000
FEM: 160	0.11155	-0.00125	0.02067	0.00000	0.00000	0.00000
FEM: 169	0.19218	0.00883	-0.15763	0.00000	0.00000	0.00000
FEM: 173	0.02199	0.00847	-0.17892	0.00000	0.00000	0.00000
FEM: 180	0.08092	-0.00166	0.03319	0.00000	0.00000	0.00000
FEM: 187	0.05223	0.02343	-0.01131	0.00000	0.00000	0.00000
FEM: 188	0.02972	0.01335	-0.04284	0.00000	0.00000	0.00000
SUM	0.00000	2.75537	0.00000	-0.22420	0.22827	-0.07320

Condition **LC5=0.9DL**

8	0.06326	0.13387	-0.08896	-0.06646	0.03747	0.00074
9	-0.03172	0.53155	0.57034	-0.01281	-0.01761	0.01570
11	-0.02063	0.11484	-0.06851	-0.03645	0.02051	0.01768
12	0.00586	0.15388	0.15787	-0.00220	-0.01882	0.01773
13	-0.00679	0.14108	0.02614	0.00000	0.00000	0.00000
14	0.34542	0.00000	-0.07360	0.00000	0.00000	0.00000
15	0.01658	0.00000	-0.00176	0.00000	0.00000	0.00000
16	-0.04607	0.24385	-0.01249	0.00000	0.00000	0.00000
17	-0.85630	0.00000	-0.19602	0.00000	0.00000	0.00000
18	0.01074	0.00000	0.00411	0.00000	0.00000	0.00000
20	0.06784	0.07644	-0.01425	-0.02601	0.05375	-0.01339
21	0.05626	0.37103	0.35849	-0.02423	0.09590	-0.09336
22	0.03101	0.09802	-0.16757	0.00000	0.00000	0.00000
23	0.05863	0.09035	-0.20036	0.00000	0.00000	0.00000
24	-0.03565	0.02297	-0.01246	0.00000	0.00000	0.00000
25	0.03647	0.02301	-0.01074	0.00000	0.00000	0.00000
FEM: 149	-0.03865	0.00983	-0.03126	0.00000	0.00000	0.00000
FEM: 153	-0.02271	0.01744	0.01366	0.00000	0.00000	0.00000
FEM: 160	0.08366	-0.00094	0.01550	0.00000	0.00000	0.00000
FEM: 169	0.14413	0.00663	-0.11822	0.00000	0.00000	0.00000
FEM: 173	0.01649	0.00635	-0.13419	0.00000	0.00000	0.00000
FEM: 180	0.06069	-0.00125	0.02489	0.00000	0.00000	0.00000
FEM: 187	0.03917	0.01757	-0.00848	0.00000	0.00000	0.00000
FEM: 188	0.02229	0.01001	-0.03213	0.00000	0.00000	0.00000
SUM	0.00000	2.06653	0.00000	-0.16815	0.17121	-0.05490

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

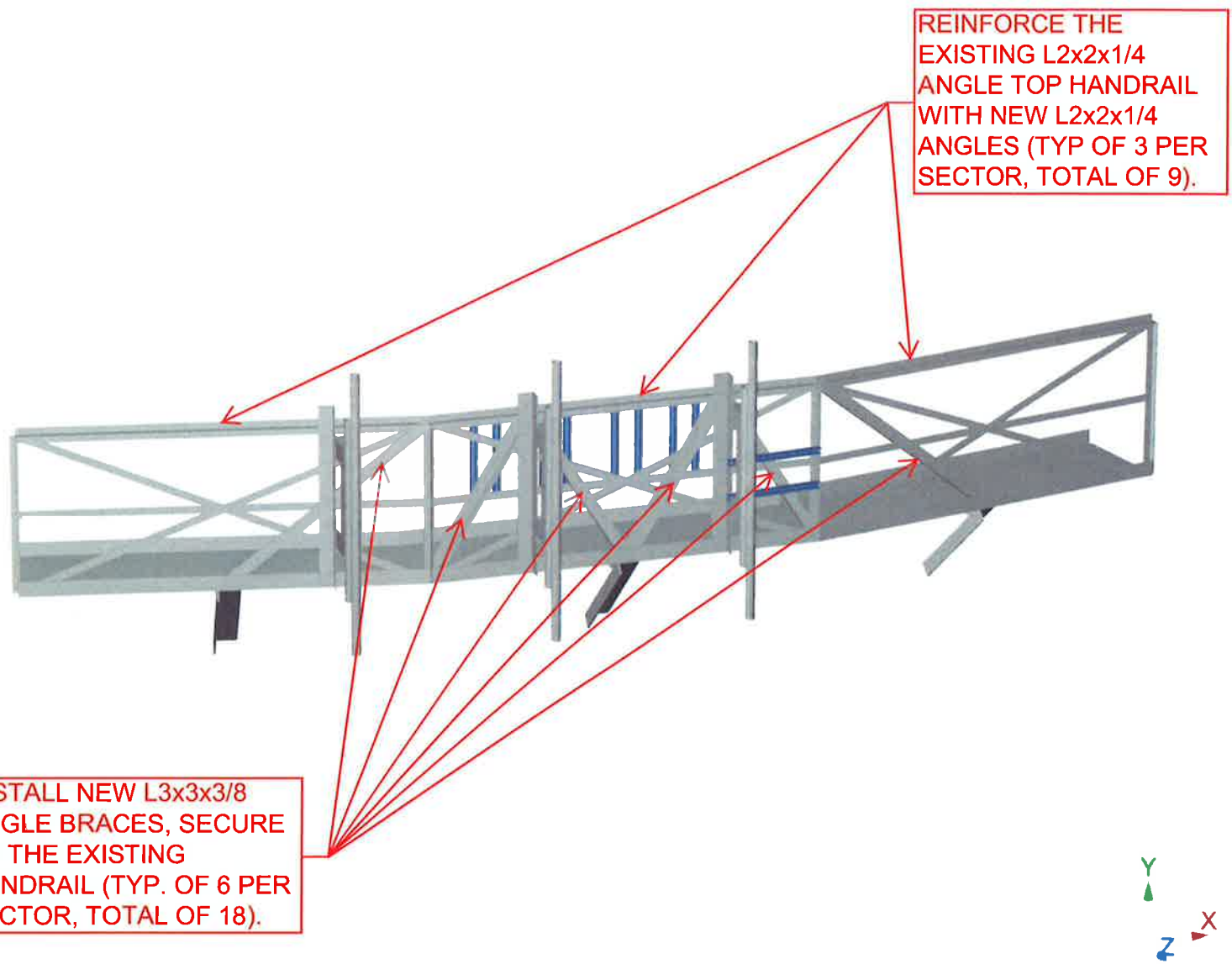
Envelope of nodal reactions for :

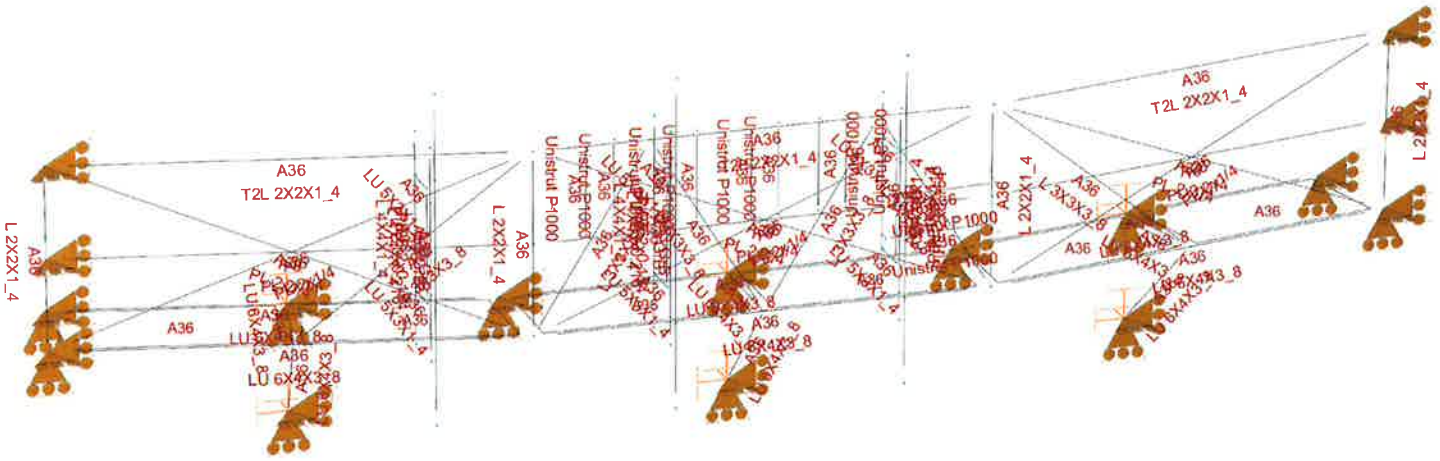
LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Node		Forces						Moments					
		Fx [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
8	Max	0.097	LC3	0.373	LC1	1.140	LC2	-0.06646	LC5	0.21413	LC1	0.00242	LC3
	Min	-0.058	LC2	0.134	LC5	-0.119	LC4	-0.24156	LC1	0.03747	LC5	-0.00782	LC1
9	Max	0.420	LC2	0.958	LC3	1.000	LC3	-0.01281	LC5	0.28311	LC2	0.02093	LC4
	Min	-0.042	LC4	0.427	LC2	0.182	LC2	-0.16813	LC2	-0.02348	LC4	-0.25354	LC2
11	Max	-0.021	LC5	0.200	LC3	0.080	LC2	-0.03645	LC5	0.02735	LC4	0.03944	LC1
	Min	-0.126	LC1	0.115	LC5	-0.091	LC4	-0.07381	LC1	-0.05598	LC2	0.01768	LC5
12	Max	0.008	LC4	0.296	LC1	0.359	LC1	0.02945	LC2	-0.01882	LC5	0.08206	LC1
	Min	-0.066	LC2	0.154	LC5	0.158	LC5	-0.00293	LC4	-0.09624	LC1	0.01773	LC5
13	Max	0.005	LC2	0.417	LC1	0.042	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.025	LC3	0.141	LC5	0.025	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
14	Max	0.461	LC4	0.000	LC1	0.466	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-2.447	LC2	0.000	LC1	-0.098	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
15	Max	0.022	LC4	0.000	LC1	0.008	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.028	LC3	0.000	LC1	-0.002	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
16	Max	0.107	LC2	0.386	LC3	0.095	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.061	LC4	0.097	LC2	-0.021	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
17	Max	4.683	LC2	0.000	LC1	1.019	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.142	LC4	0.000	LC1	-0.261	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
18	Max	0.023	LC3	0.000	LC1	0.007	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.226	LC2	0.000	LC1	-0.050	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
20	Max	0.114	LC3	0.156	LC1	-0.014	LC5	-0.02601	LC5	0.10125	LC3	-0.01339	LC5
	Min	0.068	LC5	0.076	LC5	-0.212	LC2	-0.05071	LC1	0.04258	LC2	-0.04068	LC1
21	Max	0.088	LC3	0.632	LC3	0.611	LC3	0.00380	LC2	0.15846	LC3	0.12173	LC2
	Min	-0.169	LC2	-0.097	LC2	-0.107	LC2	-0.04101	LC3	-0.13186	LC2	-0.15447	LC3
22	Max	0.041	LC4	0.251	LC1	-0.026	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.173	LC2	0.098	LC5	-0.307	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
23	Max	0.078	LC4	0.330	LC1	0.111	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.300	LC2	0.090	LC5	-0.336	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
24	Max	-0.036	LC5	0.039	LC3	0.006	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.067	LC3	0.023	LC5	-0.017	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
25	Max	0.071	LC1	0.040	LC3	0.025	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.036	LC5	0.023	LC2	-0.014	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1

HUDSON
Design Group LLC

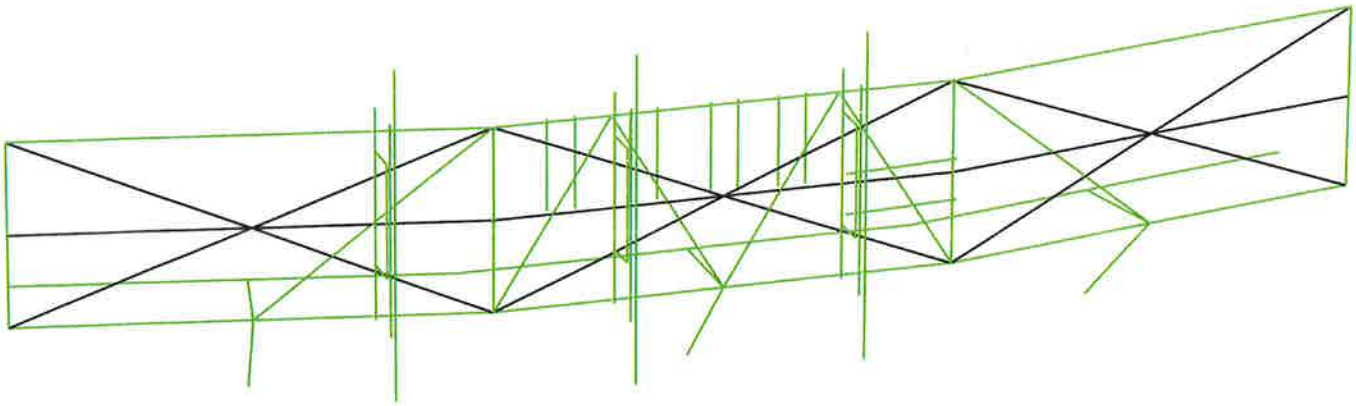
Antenna Mount Calculations
(Proposed Conditions)

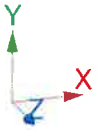

REINFORCE THE EXISTING L2x2x1/4 ANGLE TOP HANDRAIL WITH NEW L2x2x1/4 ANGLES (TYP OF 3 PER SECTOR, TOTAL OF 9).
INSTALL NEW L3x3x3/8 ANGLE BRACES, SECURE TO THE EXISTING HANDRAIL (TYP. OF 6 PER SECTOR, TOTAL OF 18).
Y
X
Z


A36
T2L 2X2X1_4
L 2X2X1_4
Unistrut P1000
L 3X3X3_8
LU 6X4X3_8
Y
X
Z

Design status

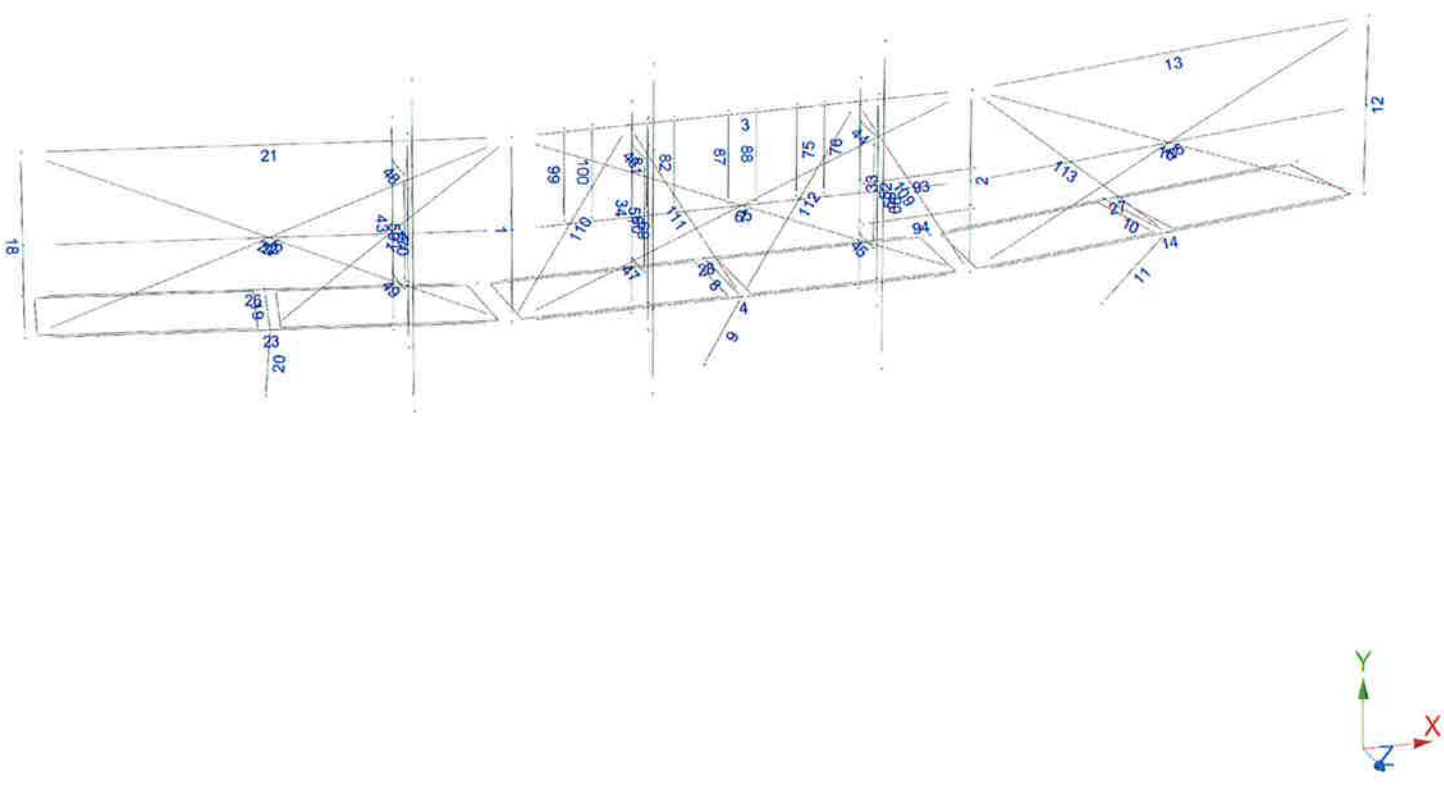
- Not designed
- Error on design
- Design O.K.
- With warnings





Hewlett-Packard Company

Current Date: 4/18/2018 9:31 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2177\CT2177 (LTE 3C-4C) (MOD).etz\



Bentley Hewlett-Packard Company

Current Date: 4/18/2018 9:31 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2177\CT2177 (LTE 3C-4C) (MOD).et

Steel Code Check

Report: Summary - For all selected load conditions

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 2X2X1_4	**1**	LC1 at 0.00%	**0.10**	**OK**	Sec. F1
			LC2 at 0.00%	0.10	OK	
			LC3 at 100.00%	0.04	OK	
			LC4 at 100.00%	0.02	OK	
			LC5 at 100.00%	0.02	OK	
		2	LC1 at 100.00%	0.25	OK	
			LC2 at 100.00%	**0.26**	**OK**	Sec. F1
			LC3 at 100.00%	0.02	OK	
			LC4 at 100.00%	0.03	OK	
			LC5 at 100.00%	0.02	OK	
		12	LC1 at 100.00%	0.05	OK	
			LC2 at 100.00%	0.03	OK	
			LC3 at 100.00%	**0.07**	**OK**	Eq. H2-1
			LC4 at 100.00%	0.05	OK	
			LC5 at 100.00%	0.04	OK	
		18	LC1 at 100.00%	0.04	OK	
			LC2 at 100.00%	0.03	OK	
			LC3 at 100.00%	**0.06**	**OK**	Eq. H2-1
			LC4 at 100.00%	0.04	OK	
			LC5 at 100.00%	0.03	OK	
	L 3X3X3_8	**109**	LC1 at 0.00%	0.26	OK	
			LC2 at 0.00%	**0.27**	**OK**	Eq. H2-1
			LC3 at 0.00%	0.02	OK	
			LC4 at 0.00%	0.02	OK	
			LC5 at 0.00%	0.01	OK	
		110	LC1 at 0.00%	0.21	OK	
			LC2 at 0.00%	**0.21**	**OK**	Eq. H2-1
			LC3 at 0.00%	0.03	OK	
			LC4 at 100.00%	0.01	OK	
			LC5 at 100.00%	0.01	OK	
		111	LC1 at 100.00%	0.60	OK	
			LC2 at 100.00%	**0.60**	**OK**	Sec. F1
			LC3 at 100.00%	0.06	OK	
			LC4 at 100.00%	0.04	OK	
			LC5 at 100.00%	0.03	OK	
		112	LC1 at 0.00%	0.52	OK	
			LC2 at 0.00%	**0.52**	**OK**	Sec. F1

		LC3 at 0.00%	0.06	OK	
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.03	OK	
	113	LC1 at 0.00%	0.20	OK	
		LC2 at 0.00%	**0.20**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.02	OK	
		LC4 at 0.00%	0.02	OK	
		LC5 at 0.00%	0.01	OK	
	114	LC1 at 66.67%	**0.08**	**OK**	Eq. H2-1
		LC2 at 91.67%	0.07	OK	
		LC3 at 0.00%	0.05	OK	
		LC4 at 100.00%	0.04	OK	
		LC5 at 100.00%	0.03	OK	
L 4X4X1_4	33	LC1 at 68.75%	0.27	OK	Eq. H3-8
		LC2 at 13.54%	**0.27**	**OK**	Eq. H3-8
		LC3 at 68.75%	0.05	OK	
		LC4 at 75.00%	0.02	OK	
		LC5 at 75.00%	0.02	OK	
	34	LC1 at 14.06%	0.45	OK	
		LC2 at 14.06%	**0.45**	**OK**	Eq. H3-8
		LC3 at 14.06%	0.05	OK	
		LC4 at 75.00%	0.02	OK	
		LC5 at 75.00%	0.01	OK	
	43	LC1 at 14.06%	0.40	OK	
		LC2 at 14.06%	**0.40**	**OK**	Eq. H3-8
		LC3 at 14.06%	0.05	OK	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.02	OK	
	50	LC1 at 91.67%	**0.12**	**OK**	Eq. H3-8
		LC2 at 91.67%	0.11	OK	
		LC3 at 91.67%	0.03	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	51	LC1 at 0.00%	**0.10**	**OK**	Eq. H3-8
		LC2 at 0.00%	0.10	OK	
		LC3 at 91.67%	0.03	OK	
		LC4 at 91.67%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	52	LC1 at 91.67%	**0.07**	**OK**	Eq. H3-8
		LC2 at 91.67%	0.07	OK	
		LC3 at 91.67%	0.02	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 91.67%	0.01	OK	
LU 5X3X1_4	44	LC1 at 100.00%	0.05	OK	
		LC2 at 100.00%	**0.06**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.01	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	45	LC1 at 100.00%	**0.09**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.08	OK	
		LC3 at 100.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	

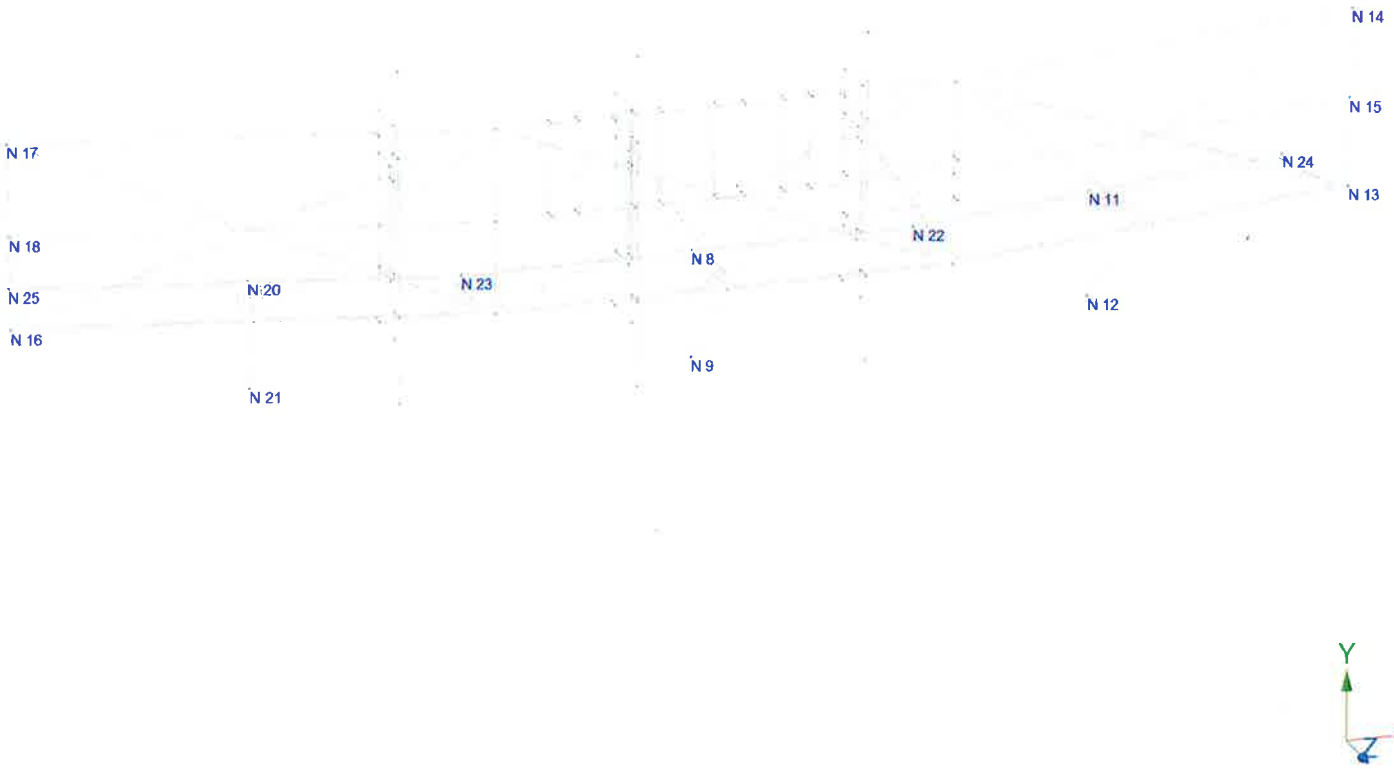
	46	LC1 at 100.00%	0.08	OK	
		LC2 at 100.00%	**0.08**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.02	OK	
		LC4 at 0.00%	0.01	OK	
		LC5 at 0.00%	0.01	OK	
	47	LC1 at 100.00%	**0.12**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.11	OK	
		LC3 at 100.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	48	LC1 at 100.00%	0.07	OK	
		LC2 at 100.00%	**0.07**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.03	OK	Eq. H2-1
		LC4 at 0.00%	0.03	OK	
		LC5 at 0.00%	0.02	OK	
	49	LC1 at 100.00%	**0.14**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.14	OK	
		LC3 at 100.00%	0.06	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
LU 6X4X3_8	**4**	LC1 at 62.50%	**0.08**	**OK**	Eq. H3-8
		LC2 at 62.50%	0.08	OK	
		LC3 at 50.00%	0.04	OK	
		LC4 at 49.22%	0.03	OK	
		LC5 at 49.22%	0.02	OK	
	8	LC1 at 0.00%	**0.27**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.26	OK	
		LC3 at 100.00%	0.07	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	9	LC1 at 0.00%	0.22	OK	
		LC2 at 0.00%	**0.22**	**OK**	Eq. H2-1
		LC3 at 100.00%	0.06	OK	
		LC4 at 100.00%	0.04	OK	
		LC5 at 100.00%	0.03	OK	
	10	LC1 at 98.44%	**0.03**	**OK**	Eq. H3-8
		LC2 at 98.44%	0.02	OK	
		LC3 at 98.44%	0.03	OK	
		LC4 at 98.44%	0.02	OK	
		LC5 at 98.44%	0.02	OK	
	11	LC1 at 100.00%	**0.04**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.04	OK	
		LC3 at 100.00%	0.02	OK	
		LC4 at 100.00%	0.01	OK	
		LC5 at 100.00%	0.01	OK	
	14	LC1 at 0.00%	0.08	OK	
		LC2 at 0.00%	**0.08**	**OK**	Eq. H2-1
		LC3 at 51.56%	0.03	OK	Eq. H3-8
		LC4 at 51.56%	0.02	OK	
		LC5 at 51.56%	0.02	OK	
	19	LC1 at 98.44%	**0.04**	**OK**	Eq. H3-8
		LC2 at 98.44%	0.03	OK	
		LC3 at 98.44%	0.02	OK	
		LC4 at 98.44%	0.02	OK	

		LC5 at 98.44%	0.01	OK	
	20	LC1 at 0.00%	0.03	OK	
		LC2 at 0.00%	0.03	OK	
		LC3 at 0.00%	**0.05**	**OK**	Eq. H2-1
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.03	OK	
	23	LC1 at 50.00%	**0.09**	**OK**	Eq. H3-8
		LC2 at 50.00%	0.07	OK	
		LC3 at 50.00%	0.09	OK	
		LC4 at 50.00%	0.06	OK	
		LC5 at 50.00%	0.05	OK	
	26	LC1 at 0.00%	**0.03**	**OK**	Eq. H2-1
		LC2 at 0.00%	0.02	OK	
		LC3 at 48.44%	0.02	OK	Eq. H3-8
		LC4 at 48.44%	0.02	OK	
		LC5 at 48.44%	0.01	OK	
	27	LC1 at 100.00%	**0.02**	**OK**	Eq. H2-1
		LC2 at 100.00%	0.02	OK	
		LC3 at 51.56%	0.02	OK	Eq. H3-8
		LC4 at 51.56%	0.02	OK	
		LC5 at 51.56%	0.01	OK	
	28	LC1 at 100.00%	**0.03**	**OK**	Eq. H3-8
		LC2 at 100.00%	0.03	OK	
		LC3 at 100.00%	0.02	OK	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.01	OK	
PIPE 2x0.154	68	LC1 at 25.00%	**0.13**	**OK**	Eq. H1-1b
		LC2 at 25.00%	0.13	OK	
		LC3 at 25.00%	0.02	OK	
		LC4 at 72.92%	0.00	OK	
		LC5 at 72.92%	0.00	OK	
	69	LC1 at 25.00%	**0.14**	**OK**	Eq. H1-1b
		LC2 at 25.00%	0.14	OK	
		LC3 at 25.00%	0.02	OK	
		LC4 at 27.08%	0.00	OK	
		LC5 at 27.08%	0.00	OK	
	70	LC1 at 25.00%	**0.13**	**OK**	Eq. H1-1b
		LC2 at 25.00%	0.13	OK	
		LC3 at 25.00%	0.02	OK	
		LC4 at 27.08%	0.01	OK	
		LC5 at 27.08%	0.00	OK	
PIPE 3x0.216	59	LC1 at 70.00%	**0.05**	**OK**	Eq. H1-1b
		LC2 at 70.00%	0.05	OK	
		LC3 at 68.75%	0.01	OK	
		LC4 at 68.75%	0.00	OK	
		LC5 at 68.75%	0.00	OK	
	60	LC1 at 70.00%	**0.05**	**OK**	Eq. H1-1b
		LC2 at 70.00%	0.05	OK	
		LC3 at 68.75%	0.01	OK	
		LC4 at 68.75%	0.00	OK	
		LC5 at 68.75%	0.00	OK	
	61	LC1 at 70.00%	**0.05**	**OK**	Eq. H1-1b
		LC2 at 70.00%	0.05	OK	

		LC3 at 68.75%	0.01	OK	
		LC4 at 68.75%	0.01	OK	
		LC5 at 68.75%	0.00	OK	
PL 2x1/4	**5**	LC1 at 40.00%	0.24	With warnings	
		LC2 at 40.00%	**0.25**	**With warnings**	Eq. H1-1b
		LC3 at 80.00%	0.03	With warnings	Sec. E1
		LC4 at 40.00%	0.03	With warnings	
		LC5 at 40.00%	0.02	With warnings	
	6	LC1 at 50.00%	0.24	With warnings	
		LC2 at 50.00%	**0.25**	**With warnings**	Eq. H1-1b
		LC3 at 0.00%	0.03	With warnings	
		LC4 at 50.00%	0.03	With warnings	
		LC5 at 50.00%	0.02	With warnings	
	7	LC1 at 62.50%	**0.54**	**With warnings**	Eq. H3-6
		LC2 at 62.50%	0.54	With warnings	
		LC3 at 62.50%	0.13	With warnings	
		LC4 at 62.50%	0.07	With warnings	
		LC5 at 62.50%	0.05	With warnings	
	15	LC1 at 100.00%	0.03	With warnings	
		LC2 at 100.00%	**0.03**	**With warnings**	Eq. H1-1b
		LC3 at 16.67%	0.02	With warnings	Eq. H1-1b
		LC4 at 47.92%	0.01	With warnings	
		LC5 at 47.92%	0.01	With warnings	
	16	LC1 at 100.00%	0.05	With warnings	
		LC2 at 100.00%	0.04	With warnings	
		LC3 at 100.00%	**0.08**	**With warnings**	Sec. E1
		LC4 at 100.00%	0.05	With warnings	
		LC5 at 100.00%	0.04	With warnings	
	17	LC1 at 0.00%	**0.02**	**With warnings**	Eq. H1-1b
		LC2 at 75.00%	0.02	With warnings	Eq. H1-1b
		LC3 at 0.00%	0.02	With warnings	
		LC4 at 0.00%	0.01	With warnings	
		LC5 at 0.00%	0.01	With warnings	
	22	LC1 at 100.00%	**0.04**	**With warnings**	Eq. H1-1b
		LC2 at 100.00%	0.03	With warnings	
		LC3 at 100.00%	0.02	With warnings	
		LC4 at 100.00%	0.02	With warnings	
		LC5 at 100.00%	0.01	With warnings	
	24	LC1 at 100.00%	**0.04**	**With warnings**	Eq. H1-1b
		LC2 at 100.00%	0.04	With warnings	
		LC3 at 16.67%	0.02	With warnings	Eq. H1-1b
		LC4 at 14.58%	0.02	With warnings	
		LC5 at 14.58%	0.01	With warnings	
	25	LC1 at 100.00%	0.05	With warnings	
		LC2 at 100.00%	0.04	With warnings	Eq. H1-2
		LC3 at 100.00%	**0.08**	**With warnings**	Sec. E1
		LC4 at 100.00%	0.05	With warnings	
		LC5 at 100.00%	0.04	With warnings	
T2L 2X2X1_4	**3**	LC1 at 24.43%	0.88	OK	
		LC2 at 24.43%	**0.89**	**OK**	Eq. H2-1
		LC3 at 48.30%	0.05	OK	
		LC4 at 0.00%	0.08	OK	
		LC5 at 0.00%	0.06	OK	

	13	LC1 at 0.00%	0.26	OK	
		LC2 at 0.00%	**0.26**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.04	OK	
		LC4 at 0.00%	0.04	OK	
		LC5 at 0.00%	0.03	OK	
	21	LC1 at 0.00%	0.59	OK	
		LC2 at 0.00%	**0.61**	**OK**	Eq. H2-1
		LC3 at 0.00%	0.07	OK	
		LC4 at 0.00%	0.11	OK	
		LC5 at 0.00%	0.08	OK	
Unistrut P1000	**75**	LC1 at 50.00%	**0.21**	**OK**	Sec. C5.2
		LC2 at 50.00%	0.20	OK	
		LC3 at 50.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	76	LC1 at 0.00%	**0.20**	**OK**	Sec. C5.1
		LC2 at 0.00%	0.20	OK	
		LC3 at 0.00%	0.03	OK	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.02	OK	
	81	LC1 at 0.00%	**0.24**	**OK**	Sec. C5.1
		LC2 at 0.00%	0.24	OK	
		LC3 at 0.00%	0.04	OK	
		LC4 at 100.00%	0.02	OK	
		LC5 at 100.00%	0.01	OK	
	82	LC1 at 50.00%	**0.20**	**OK**	Sec. C5.2
		LC2 at 50.00%	0.20	OK	
		LC3 at 50.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	87	LC1 at 50.00%	**0.24**	**OK**	Sec. C5.2
		LC2 at 50.00%	0.23	OK	
		LC3 at 50.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	88	LC1 at 50.00%	**0.24**	**OK**	Sec. C5.2
		LC2 at 50.00%	0.23	OK	
		LC3 at 50.00%	0.05	OK	
		LC4 at 100.00%	0.03	OK	
		LC5 at 100.00%	0.02	OK	
	93	LC1 at 100.00%	0.12	OK	
		LC2 at 100.00%	**0.12**	**OK**	Sec. C5.2
		LC3 at 0.00%	0.02	OK	
		LC4 at 50.00%	0.01	OK	
		LC5 at 50.00%	0.01	OK	
	94	LC1 at 0.00%	**0.12**	**OK**	Sec. C5.2
		LC2 at 0.00%	0.12	OK	
		LC3 at 0.00%	0.03	OK	
		LC4 at 50.00%	0.01	OK	
		LC5 at 50.00%	0.01	OK	
	99	LC1 at 0.00%	**0.09**	**OK**	Sec. C5.1
		LC2 at 0.00%	0.08	OK	
		LC3 at 0.00%	0.03	OK	
		LC4 at 0.00%	0.01	OK	

	LC5 at 0.00%	0.01	OK	
100	LC1 at 0.00%	**0.10**	**OK**	Sec. C5.1
	LC2 at 0.00%	0.09	OK	
	LC3 at 0.00%	0.03	OK	
	LC4 at 0.00%	0.01	OK	
	LC5 at 0.00%	0.01	OK	


N 14
N 15
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N 22
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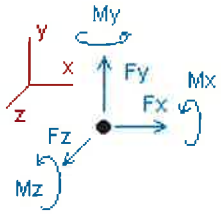
Bentley Hewlett-Packard Company

Current Date: 4/18/2018 9:31 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2177\CT2177 (LTE 3C-4C) (MOD).et

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2DL+1.6Wo**						
8	0.00034	0.80832	1.37151	-0.48107	0.29478	0.02032
9	0.27859	-0.36746	-0.97196	-0.33271	0.17197	-0.15465
11	-0.38628	0.16622	-0.60276	-0.06280	-0.00809	0.02713
12	0.21766	1.08105	1.16931	-0.00471	-0.02488	0.02385
13	-0.31486	0.12447	0.08972	0.00000	0.00000	0.00000
14	-1.22270	0.00000	0.24964	0.00000	0.00000	0.00000
15	-0.01215	0.00000	0.00621	0.00000	0.00000	0.00000
16	0.09086	0.09686	0.05387	0.00000	0.00000	0.00000
17	3.10735	0.00000	0.69992	0.00000	0.00000	0.00000
18	0.01548	0.00000	0.00489	0.00000	0.00000	0.00000
20	0.16516	0.18002	-0.18271	-0.08006	0.06270	-0.02700
21	-0.03735	0.54971	0.53027	-0.03852	0.05962	-0.06341
22	-0.54819	0.16719	-0.23876	0.00000	0.00000	0.00000
23	-0.02522	0.17998	-0.10065	0.00000	0.00000	0.00000
24	-0.10216	0.03065	0.06398	0.00000	0.00000	0.00000
25	0.06583	0.03061	0.01067	0.00000	0.00000	0.00000
FEM: 163	-0.00025	0.01372	-0.02734	0.00000	0.00000	0.00000
FEM: 167	-0.03247	0.02334	0.00667	0.00000	0.00000	0.00000
FEM: 174	-0.08177	-0.01184	-0.11635	0.00000	0.00000	0.00000
FEM: 183	0.03974	-0.01103	0.62986	0.00000	0.00000	0.00000
FEM: 187	-0.72365	-0.00587	0.54374	0.00000	0.00000	0.00000
FEM: 194	-0.33929	-0.00983	-0.18797	0.00000	0.00000	0.00000
FEM: 201	-0.03781	0.02370	0.03324	0.00000	0.00000	0.00000
FEM: 202	-0.11687	0.01329	0.07538	0.00000	0.00000	0.00000
SUM	0.00000	3.08310	3.11040	-0.99988	0.55609	-0.17375
Condition **LC2=0.9DL+1.6Wo**						
8	-0.01627	0.76891	1.57682	-0.46442	0.28381	0.01991
9	0.28231	-0.65606	-1.28694	-0.32758	0.17179	-0.15446
11	-0.38150	0.12939	-0.55291	-0.05215	-0.01796	0.02150
12	0.20434	1.01810	1.10987	-0.00028	-0.02535	0.02331
13	-0.30062	0.09459	0.07747	0.00000	0.00000	0.00000
14	-1.28956	0.00000	0.26422	0.00000	0.00000	0.00000
15	-0.00855	0.00000	0.00473	0.00000	0.00000	0.00000
16	0.07245	0.07215	0.04601	0.00000	0.00000	0.00000
17	3.27486	0.00000	0.73922	0.00000	0.00000	0.00000
18	0.01200	0.00000	0.00350	0.00000	0.00000	0.00000

20	0.13391	0.14741	-0.09306	-0.06910	0.05228	-0.02198
21	-0.01955	0.39358	0.37100	-0.03263	0.04589	-0.04950
22	-0.55628	0.13967	-0.22459	0.00000	0.00000	0.00000
23	-0.03621	0.15322	-0.08552	0.00000	0.00000	0.00000
24	-0.08934	0.02300	0.06642	0.00000	0.00000	0.00000
25	0.05077	0.02297	0.00930	0.00000	0.00000	0.00000
FEM: 163	-0.00050	0.01031	-0.02666	0.00000	0.00000	0.00000
FEM: 167	-0.01848	0.01753	0.01443	0.00000	0.00000	0.00000
FEM: 174	-0.10760	-0.01269	-0.08371	0.00000	0.00000	0.00000
FEM: 183	0.05146	-0.01591	0.66401	0.00000	0.00000	0.00000
FEM: 187	-0.74120	-0.01089	0.58232	0.00000	0.00000	0.00000
FEM: 194	-0.34327	-0.01075	-0.18681	0.00000	0.00000	0.00000
FEM: 201	-0.05355	0.01785	0.03943	0.00000	0.00000	0.00000
FEM: 202	-0.11965	0.00996	0.08186	0.00000	0.00000	0.00000
SUM	0.00000	2.31232	3.11040	-0.94616	0.51046	-0.16122

Condition **LC3=1.2DL+Wi+Di**

8	0.09267	0.27602	-0.77924	-0.13353	0.08917	0.00483
9	0.01631	1.30354	1.35210	-0.06478	0.02182	-0.01973
11	-0.06121	0.18992	-0.29554	-0.05361	0.04311	0.02698
12	0.08726	0.41840	0.41094	-0.02152	-0.00044	0.00513
13	-0.10777	0.15452	0.06396	0.00000	0.00000	0.00000
14	0.15654	0.00000	-0.03599	0.00000	0.00000	0.00000
15	-0.01221	0.00000	0.00559	0.00000	0.00000	0.00000
16	0.11063	0.16689	0.04276	0.00000	0.00000	0.00000
17	-0.50669	0.00000	-0.12172	0.00000	0.00000	0.00000
18	-0.02016	0.00000	-0.00213	0.00000	0.00000	0.00000
20	0.16989	0.17366	-0.41519	-0.05797	0.06030	-0.02424
21	-0.09106	0.78418	0.79628	-0.03122	0.06719	-0.06861
22	-0.01233	0.13362	-0.08305	0.00000	0.00000	0.00000
23	0.06108	0.13222	-0.05842	0.00000	0.00000	0.00000
24	-0.07349	0.03941	-0.00251	0.00000	0.00000	0.00000
25	0.08065	0.03938	0.00961	0.00000	0.00000	0.00000
FEM: 163	0.00108	0.01361	-0.00198	0.00000	0.00000	0.00000
FEM: 167	-0.06199	0.03054	-0.03249	0.00000	0.00000	0.00000
FEM: 174	0.14903	0.00643	-0.14900	0.00000	0.00000	0.00000
FEM: 183	-0.04533	0.03034	-0.09494	0.00000	0.00000	0.00000
FEM: 187	0.02569	0.03160	-0.12155	0.00000	0.00000	0.00000
FEM: 194	-0.03698	0.00705	-0.03475	0.00000	0.00000	0.00000
FEM: 201	0.07219	0.03075	-0.03152	0.00000	0.00000	0.00000
FEM: 202	0.00621	0.01320	-0.02122	0.00000	0.00000	0.00000
SUM	0.00000	3.97528	0.40000	-0.36263	0.28115	-0.07566

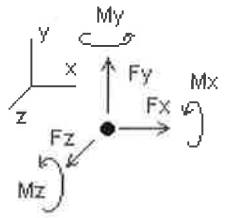
Condition **LC4=1.2DL**

8	0.07745	0.15680	-0.80426	-0.06601	0.04461	0.00169
9	-0.01146	1.12765	1.22819	-0.02147	0.00295	-0.00273
11	-0.01922	0.14781	-0.20644	-0.04301	0.04004	0.02264
12	0.05498	0.26018	0.24692	-0.01774	0.00168	0.00235
13	-0.05762	0.11942	0.04921	0.00000	0.00000	0.00000
14	0.25865	0.00000	-0.05649	0.00000	0.00000	0.00000
15	0.02311	0.00000	-0.00236	0.00000	0.00000	0.00000
16	0.08051	0.13559	0.03477	0.00000	0.00000	0.00000
17	-0.71245	0.00000	-0.16650	0.00000	0.00000	0.00000
18	-0.05971	0.00000	-0.01076	0.00000	0.00000	0.00000
20	0.13096	0.13229	-0.33930	-0.04467	0.04334	-0.02019
21	-0.07200	0.60449	0.61603	-0.02302	0.05099	-0.05191
22	0.03584	0.11045	-0.05689	0.00000	0.00000	0.00000

23	0.05851	0.10715	-0.04840	0.00000	0.00000	0.00000
24	-0.05140	0.03061	-0.00949	0.00000	0.00000	0.00000
25	0.06090	0.03059	0.00582	0.00000	0.00000	0.00000
FEM: 163	0.00410	0.01364	-0.00165	0.00000	0.00000	0.00000
FEM: 167	-0.05032	0.02325	-0.02471	0.00000	0.00000	0.00000
FEM: 174	0.11341	0.00341	-0.10955	0.00000	0.00000	0.00000
FEM: 183	-0.03049	0.01954	-0.13652	0.00000	0.00000	0.00000
FEM: 187	0.07588	0.01987	-0.14647	0.00000	0.00000	0.00000
FEM: 194	0.01687	0.00362	-0.01013	0.00000	0.00000	0.00000
FEM: 201	0.06307	0.02339	-0.02560	0.00000	0.00000	0.00000
FEM: 202	0.01044	0.01334	-0.02542	0.00000	0.00000	0.00000
SUM	0.00000	3.08310	0.00000	-0.21590	0.18360	-0.04815
Condition **LC5=0.9DL**						
8	0.05809	0.11760	-0.60319	-0.04951	0.03346	0.00127
9	-0.00860	0.84574	0.92115	-0.01610	0.00221	-0.00205
11	-0.01442	0.11086	-0.15483	-0.03226	0.03003	0.01698
12	0.04124	0.19513	0.18519	-0.01330	0.00126	0.00176
13	-0.04322	0.08957	0.03691	0.00000	0.00000	0.00000
14	0.19398	0.00000	-0.04237	0.00000	0.00000	0.00000
15	0.01733	0.00000	-0.00177	0.00000	0.00000	0.00000
16	0.06039	0.10170	0.02608	0.00000	0.00000	0.00000
17	-0.53434	0.00000	-0.12488	0.00000	0.00000	0.00000
18	-0.04479	0.00000	-0.00807	0.00000	0.00000	0.00000
20	0.09822	0.09922	-0.25448	-0.03350	0.03251	-0.01514
21	-0.05400	0.45337	0.46202	-0.01726	0.03824	-0.03893
22	0.02688	0.08284	-0.04267	0.00000	0.00000	0.00000
23	0.04388	0.08036	-0.03630	0.00000	0.00000	0.00000
24	-0.03855	0.02295	-0.00712	0.00000	0.00000	0.00000
25	0.04568	0.02294	0.00436	0.00000	0.00000	0.00000
FEM: 163	0.00307	0.01023	-0.00124	0.00000	0.00000	0.00000
FEM: 167	-0.03774	0.01744	-0.01853	0.00000	0.00000	0.00000
FEM: 174	0.08506	0.00256	-0.08216	0.00000	0.00000	0.00000
FEM: 183	-0.02287	0.01465	-0.10239	0.00000	0.00000	0.00000
FEM: 187	0.05691	0.01491	-0.10985	0.00000	0.00000	0.00000
FEM: 194	0.01265	0.00271	-0.00760	0.00000	0.00000	0.00000
FEM: 201	0.04731	0.01754	-0.01920	0.00000	0.00000	0.00000
FEM: 202	0.00783	0.01000	-0.01906	0.00000	0.00000	0.00000
SUM	0.00000	2.31232	0.00000	-0.16193	0.13770	-0.03611

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Node		Forces						Moments					
		Fx [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
8	Max	0.093	LC3	0.808	LC1	1.577	LC2	-0.04951	LC5	0.29478	LC1	0.02032	LC1
	Min	-0.016	LC2	0.118	LC5	-0.804	LC4	-0.48107	LC1	0.03346	LC5	0.00127	LC5
9	Max	0.282	LC2	1.304	LC3	1.352	LC3	-0.01610	LC5	0.17197	LC1	-0.00205	LC5
	Min	-0.011	LC4	-0.656	LC2	-1.287	LC2	-0.33271	LC1	0.00221	LC5	-0.15465	LC1
11	Max	-0.014	LC5	0.190	LC3	-0.155	LC5	-0.03226	LC5	0.04311	LC3	0.02713	LC1
	Min	-0.386	LC1	0.111	LC5	-0.603	LC1	-0.06280	LC1	-0.01796	LC2	0.01698	LC5
12	Max	0.218	LC1	1.081	LC1	1.169	LC1	-0.00028	LC2	0.00168	LC4	0.02385	LC1
	Min	0.041	LC5	0.195	LC5	0.185	LC5	-0.02152	LC3	-0.02535	LC2	0.00176	LC5
13	Max	-0.043	LC5	0.155	LC3	0.090	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.315	LC1	0.090	LC5	0.037	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
14	Max	0.259	LC4	0.000	LC1	0.264	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.290	LC2	0.000	LC1	-0.056	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
15	Max	0.023	LC4	0.000	LC1	0.006	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.012	LC3	0.000	LC1	-0.002	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
16	Max	0.111	LC3	0.167	LC3	0.054	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.060	LC5	0.072	LC2	0.026	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
17	Max	3.275	LC2	0.000	LC1	0.739	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.712	LC4	0.000	LC1	-0.167	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
18	Max	0.015	LC1	0.000	LC1	0.005	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.060	LC4	0.000	LC1	-0.011	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
20	Max	0.170	LC3	0.180	LC1	-0.093	LC2	-0.03350	LC5	0.06270	LC1	-0.01514	LC5
	Min	0.098	LC5	0.099	LC5	-0.415	LC3	-0.08006	LC1	0.03251	LC5	-0.02700	LC1
21	Max	-0.020	LC2	0.784	LC3	0.796	LC3	-0.01726	LC5	0.06719	LC3	-0.03893	LC5
	Min	-0.091	LC3	0.394	LC2	0.371	LC2	-0.03852	LC1	0.03824	LC5	-0.06861	LC3
22	Max	0.036	LC4	0.167	LC1	-0.043	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.556	LC2	0.083	LC5	-0.239	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
23	Max	0.061	LC3	0.180	LC1	-0.036	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.036	LC2	0.080	LC5	-0.101	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
24	Max	-0.039	LC5	0.039	LC3	0.066	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.102	LC1	0.023	LC5	-0.009	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
25	Max	0.081	LC3	0.039	LC3	0.011	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.046	LC5	0.023	LC5	0.004	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1

EXHIBIT 4

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2177

FA#: 10035098

Site CT-305
7 Broadway Avenue Extension
Mystic, CT 06355

June 6, 2018

Centerline Communications Project Number: 950012-107

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**16.10 %**

June 6, 2018

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

Emissions Analysis for Site: **CT2177 – Site CT-305**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **7 Broadway Avenue Extension, Mystic, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **7 Broadway Avenue Extension, Mystic, 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 water tank. For this report the sample point is the top of a 6-foot person standing at the base of the water tank.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	40
LTE	700 MHz (Band 14)	4	40
LTE	2100 MHz (AWS)	4	30

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	140
A	2	Commscope SBNHH-1D65A	140
A	3	Quintel QS46512-2	140
B	1	Powerwave 7770	140
B	2	Commscope SBNHH-1D65A	140
B	3	Quintel QS46512-2	140
C	1	Powerwave 7770	140
C	2	Commscope SBNHH-1D65A	140
C	3	Quintel QS46512-2	140

Table 2: Antenna Data

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

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna A2	Commscope SBNHH-1D65A	700 MHz / 1900 MHz (PCS)	10.85 / 14.55	6	200	4,394.17	1.10
Antenna A3	Quintel QS46512-2	700 MHz / 2100 MHz (AWS)	10.55 / 13.85	8	280	4,727.95	1.36
						Sector A Composite MPE%	**3.02**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna B2	Commscope SBNHH-1D65A	700 MHz / 1900 MHz (PCS)	10.85 / 14.55	6	200	4,394.17	1.10
Antenna B3	Quintel QS46512-2	700 MHz / 2100 MHz (AWS)	10.55 / 13.85	8	280	4,727.95	1.36
						Sector B Composite MPE%	**3.02**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.56
Antenna C2	Commscope SBNHH-1D65A	700 MHz / 1900 MHz (PCS)	10.85 / 14.55	6	200	4,394.17	1.10
Antenna C3	Quintel QS46512-2	700 MHz / 2100 MHz (AWS)	10.55 / 13.85	8	280	4,727.95	1.36
						Sector C Composite MPE%	**3.02**

Table 3: AT&T Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**3.02 %**
American Messaging	0.03 %
Town of Stonington	0.00 %
Sprint	3.10 %
T-Mobile	3.30 %
Verizon Wireless	6.65 %
Site Total MPE %:	**16.10 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.02 %
AT&T Sector B Total:	3.02 %
AT&T Sector C Total:	3.02 %
Site Total:	16.10 %

Table 5: Site MPE Summary

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

AT&T _ Frequency Band / Technology Max Power 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 – Antenna 1	2	414.12	140	1.66	850 MHz	567	0.29%
AT&T 1900 MHz (PCS) UMTS– Antenna 1	2	656.33	140	2.63	1900 MHz (PCS)	1000	0.26%
AT&T 700 MHz LTE– Antenna 2	2	486.47	140	1.95	700 MHz	467	0.42%
AT&T 1900 MHz (PCS) LTE– Antenna 2	4	855.31	140	6.85	1900 MHz (PCS)	1000	0.68%
AT&T 700 MHz LTE (Band 14) – Antenna 3	4	454.00	140	3.64	700 MHz	467	0.78%
AT&T 2100 MHz (AWS) LTE– Antenna 3	4	727.98	140	5.83	2100 MHz (AWS)	1000	0.58%
						Total:	**3.02%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	3.02 %
Sector B:	3.02 %
Sector C:	3.02 %
AT&T Maximum Total (per sector):	3.02 %
Site Total:	16.10 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.10 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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