QC Development
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Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

April 26, 2019

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2490
886 Main Street, East Hartford, CT 06108
N 41.76944444
W 72.64277778

Dear Ms. Bachman:

AT&T currently maintains six (6) antennas at the rooftop level (112' and 120' AGL) of the 11-story apartment building at 886 Main Street, East Hartford, CT. The property is owned by Hartford East Associates. AT&T now intends to add three (3) Kathrien 800-10965 antennas on the existing antenna mount frames. AT&T will also remove (6) Ericsson RRUS-11 and (6) RRUS-12 Remote Radio Units (RRU) and replace them with (3) Ericsson B5/B12 4449 and (3) B2/B66A 8843 RRUs.

This facility was approved by the Connecticut Siting Council in Petition # 324 on August 9, 1994 and AT&T's shared use of the facility was approved on September 19, 2014 (TS-CING-043-140822). These approvals included no conditions that could feasibly be violated by this proposed modification, including total facility height and mounting restrictions. This modification therefore complies with the aforementioned approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 Ms. Marcia LeClerc, Mayor of the Town of East Hartford, and the East Hartford Development & Planning

Department as well as the property owner.

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

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

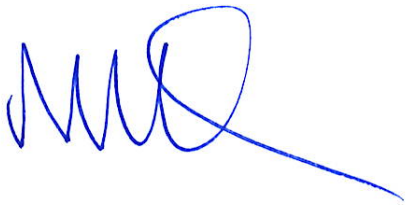
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, 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).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,



Mark Roberts
QC Development
Consultant for AT&T

Attachments

cc: Mayor Marcia LeClerc - Elected Official
Jeffrey Cormier – Town Planner
Hartford East Associates - Property Owner

Power Density

Existing Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							5.85%
AT&T UMTS	2	500	107	0.0353	850	0.5667	0.62%
AT&T UMTS	2	500	107	0.0353	1900	1.0000	0.35%
AT&T LTE	2	1476	107	0.1041	700	0.4667	2.23%
AT&T LTE	1	1000	107	0.0353	850	0.5667	0.62%
AT&T LTE	2	2421	107	0.1707	1900	1.0000	1.71%
AT&T LTE	1	1285	107	0.0453	2300	1.0000	0.45%
Site Total							11.84%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

Proposed Loading on Tower

Carrier	# of Channels	ERP/Ch (W)	Antenna Centerline Height (ft)	Power Density (mW/cm^2)	Freq. Band (MHz**)	Limit S (mW /cm^2)	%MPE
Other Carriers*							5.85%
AT&T LTE	1	1476	107	0.0520	700	0.4667	1.12%
AT&T LTE	1	1000	107	0.0353	850	0.5667	0.62%
AT&T 5G	1	1000	107	0.0353	850	0.5667	0.62%
AT&T LTE	2	3664	107	0.2583	1900	1.0000	2.58%
AT&T LTE	1	3837	107	0.1353	2100	1.0000	1.35%
AT&T LTE	1	1285	107	0.0453	2300	1.0000	0.45%
Site Total							12.60%

*Per CSC Records (available upon request, includes calculation formulas)

** If a range of frequencies are used, such as 880-894, enter the lowest value, i.e. 880

SITE NAME: EAST HARTFORD MAIN STREET
SITE NO.: CT2490
886 MAIN STREET
EAST HARTFORD, CT 06108
FA CODE: 10553970
PACE ID: MRCTB034897, MRCTB034982, MRCTB034914, MRCTB034918
PROJECT: LTE 5C, 5G NR UPGRADE

VICINITY MAP N.T.S.

SITE COORDINATES:
LATITUDE: 41° 46' 09.99" N
LONGITUDE: 72° 38' 34.00" W
*BASED ON PROVIDED RFDS

ELEVATION DATA:
GRADE ELEVATION AT BUILDING = 38'± A.M.S.L.
*BASED ON GOOGLE EARTH PRO

SITE INFORMATION

- ADD (3) NEW 6' 800-10965 OCTO ANTENNAS
- SWAP (3) EXISTING RRUS-11S FOR (3) B5/B12-449 RRUS UP TOP
- SWAP (3) EXISTING RRUS-12S FOR (3) B2/B66A-8843 RRUS UP TOP
- SWAP BB FOR RBS 6630 & ADD 5G RBS 6630

PROJECT DESCRIPTION

SITE NAME:
EAST HARTFORD MAIN STREET

SITE NUMBER:
CT2490

PROPERTY OWNER:
TOWN OF EAST HARTFORD
740 MAIN STREET
EAST HARTFORD, CT 06108

APPLICANT/LESSEE:
AT&T MOBILITY
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

PROJECT INFORMATION

THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

A.D.A. COMPLIANCE:
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	ROOF PLAN
C-2	NORTH ELEVATION & EQUIPMENT PLANS
C-3	EXISTING & PROPOSED ANTENNA LAYOUTS
C-4	CONSTRUCTION DETAILS I
C-5	PLUMBING DIAGRAM
E-1	GROUNDING NOTES & DETAILS

SHEET INDEX

at&t
500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

CT2490
EAST HARTFORD
MAIN STREET

CONSTRUCTION DRAWINGS

D	04/24/19	ISSUED AS FINAL
B	04/24/19	REVISED PER COMMENTS
A	02/17/19	ISSUED FOR REVIEW

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710

STATE OF CONNECTICUT
JIANS YU
LICENSED
No. 23222
PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	BJR
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093840

SITE ADDRESS:
886 MAIN STREET
EAST HARTFORD, CT
06108
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   PROJECT MANAGEMENT – SAI COMMUNICATIONS, INC.
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 PROJECT MANAGEMENT.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR 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.
4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE CONTRACTOR 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 CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
9. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
10. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. CONTRACTOR 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. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
14. CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
15. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
16. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH LAND LORD. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
17. 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.
18. CONTRACTOR, SUBCONTRACTORS AND ANY SITE SPECIFIC PART/ PRODUCT/ CONCEALMENT MANUFACTURER TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO MANUFACTURING, FABRICATION OR CONSTRUCTION.

SITE WORK GENERAL NOTES:

1. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:
   A) FALL PROTECTION
   B) CONFINED SPACE
   C) ELECTRICAL SAFETY
   D) TRENCHING & EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
11. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
12. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"Ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION & TOPSOIL EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
3. AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
4. COMPACTED SUBBASE SHALL BE UNIFORM & LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING 1" SIEVE.
5. AS AN ALTERNATIVE TO ITEMS 2 AND 3 PROOFROLL THE SUBGRADE SOILS WITH 5 PASSES OF A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). ANY SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL, AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

1. HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
   CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, AT&T ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
2. COORDINATION OF WORK:
   CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
3. CABLE LADDER RACK:
   CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
3. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
4. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
5. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
6. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
7. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
8. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
9. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
10. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
11. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL.) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
13. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
14. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
15. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
16. ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
17. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
18. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
19. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
20. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
21. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
22. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
23. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
24. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
25. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
26. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
27. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
28. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
29. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
30. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
31. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
32. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

at&t
500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

CT2490
EAST HARTFORD
MAIN STREET

CONSTRUCTION DRAWINGS

0	04/24/19	ISSUED AS FINAL
B	04/24/19	REVISED PER COMMENTS
A	02/17/19	ISSUED FOR REVIEW

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Dewberry Engineers Inc.
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SUITE 301
PARSIPPANY, NJ 07054
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FAX: 973.739.9710

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER

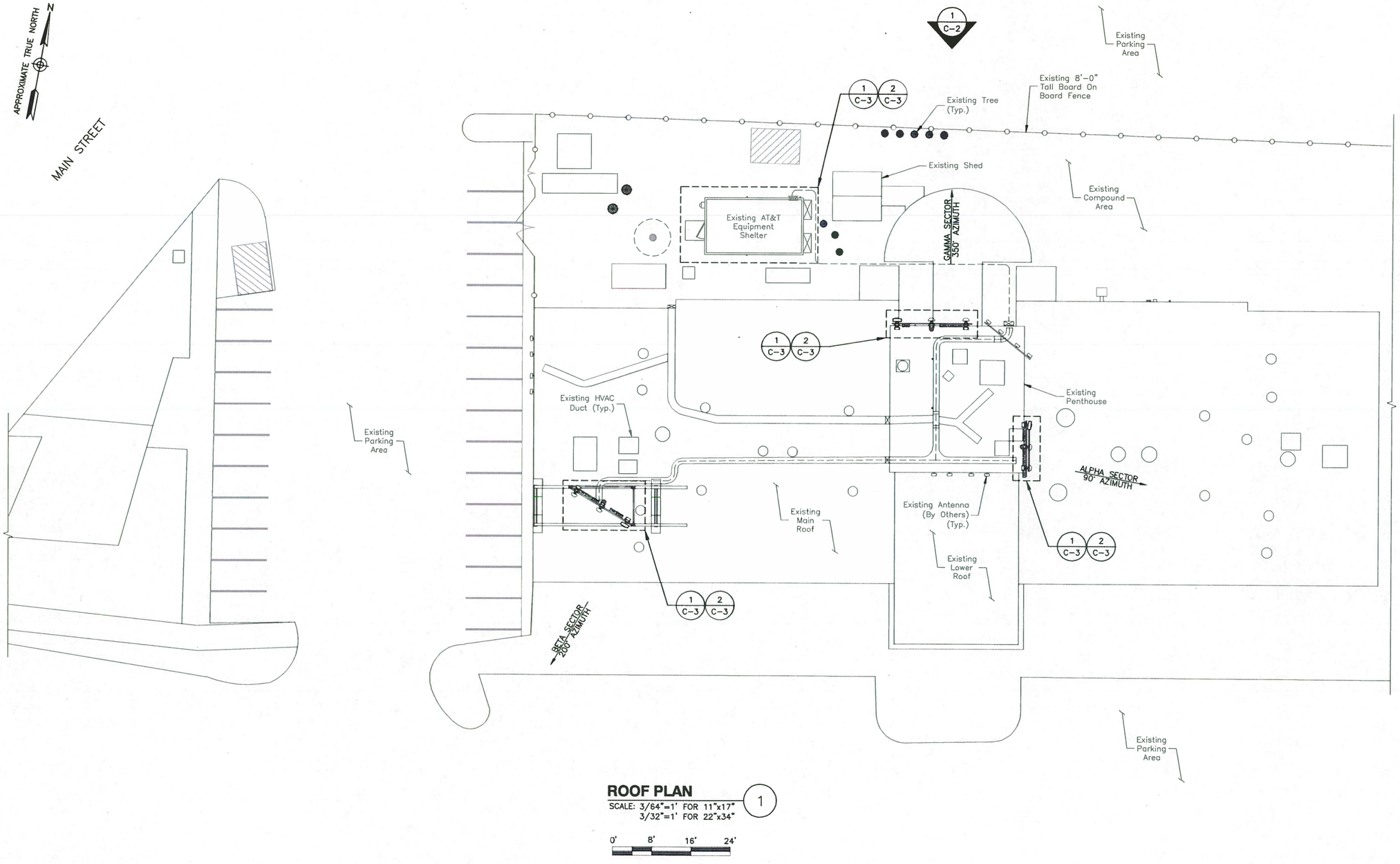
JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	BJR
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093840

SITE ADDRESS:
886 MAIN STREET
EAST HARTFORD, CT
06108
HARTFORD COUNTY

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
G-1



ROOF PLAN

1

SCALE: 3/64"=1' FOR 11"x17"
3/32"=1' FOR 22"x34"

0' 8' 16' 24'

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. NOT ALL EXISTING & PROPOSED INFORMATION SHOWN FOR CLARITY.
3. ROOF PLAN BASED ON SITE VISIT BY CONDUCTED BY DEWBERRY ENGINEERS INC. ON 12/10/18 AND EXISTING DRAWINGS BY HUDSON DESIGN GROUP LLC DATED 11/08/16.
4. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, TMA'S, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY DEWBERRY ENGINEERS INC. DATED TBD.
5. CONTRACTOR TO VERIFY THE ANTENNA FRAMES MATCH THE EXISTING CONSTRUCTION DRAWINGS BY HUDSON DESIGN GROUP LLC DATED 11/08/16.

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STATE OF CONNECTICUT
JUNG H. CHOI
No. 23222
LICENSED PROFESSIONAL ENGINEER

CONNECTICUT LICENSE NO. 0023222

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REVIEWED BY:	BSH
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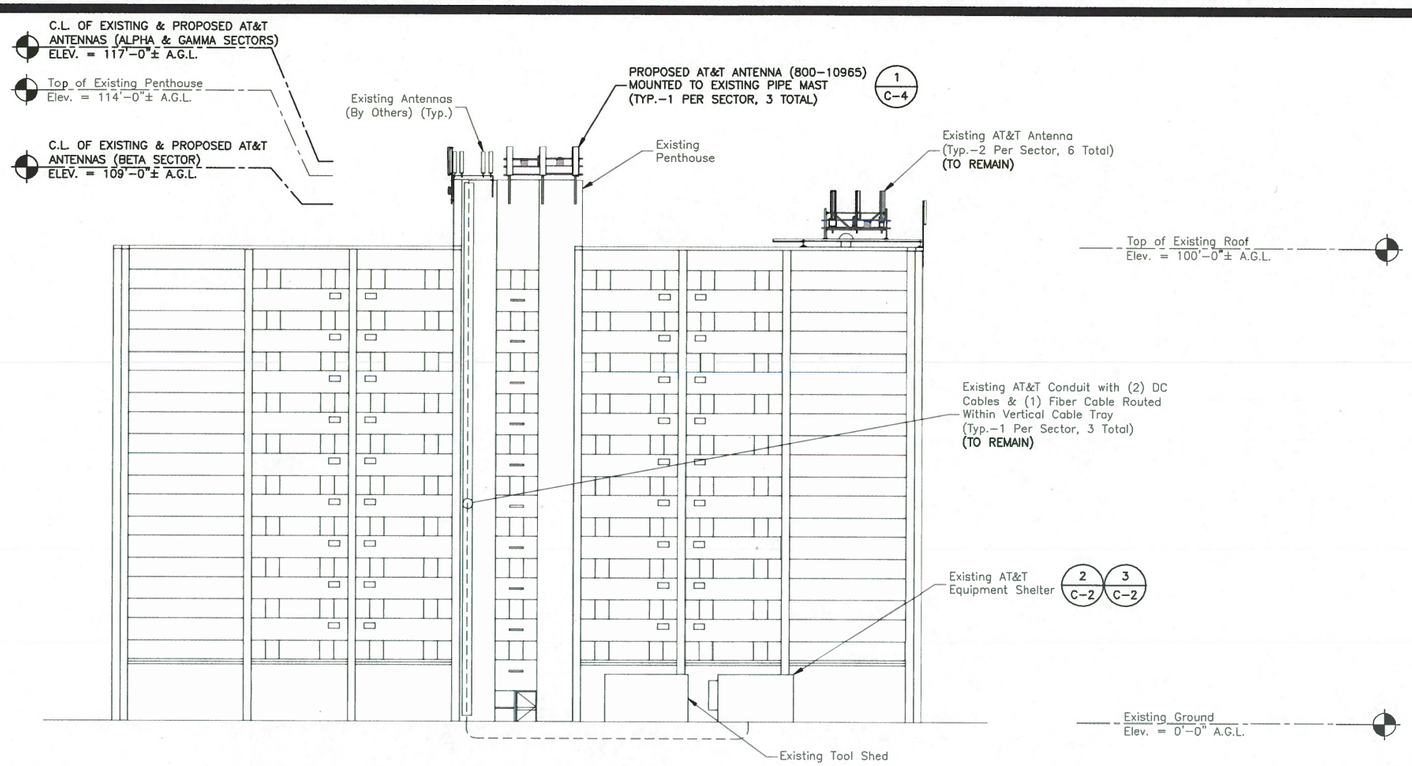
HARTFORD COUNTY

SHEET TITLE

ROOF PLAN

SHEET NUMBER

C-1



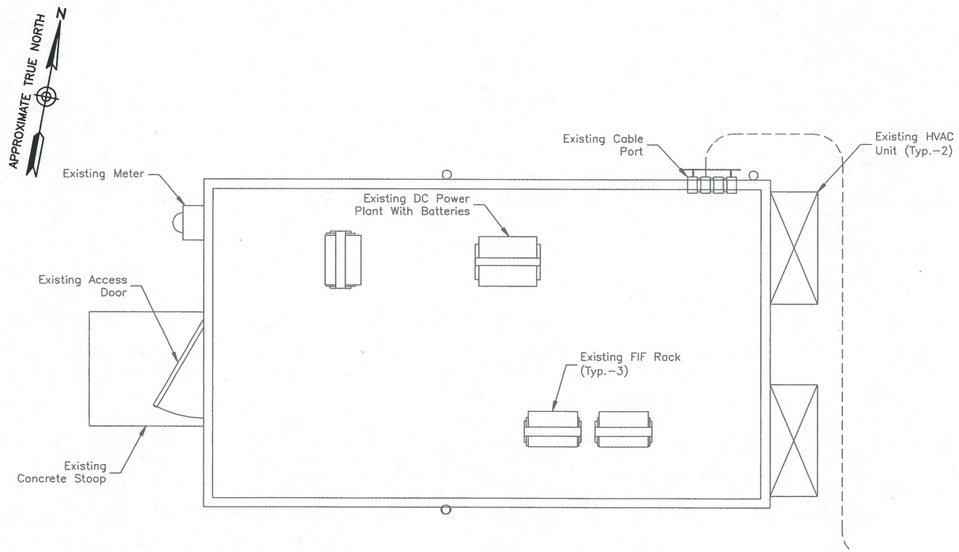
NORTH ELEVATION 1

SCALE: 1"=20' FOR 11"x17"
1"=10' FOR 22"x34"

0' 10' 20'

NOTES:

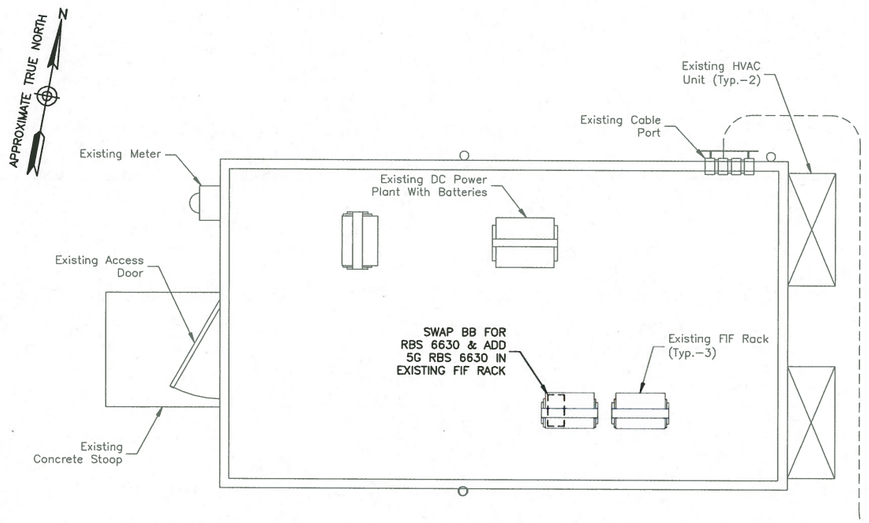
1. NOT ALL EXISTING & PROPOSED INFORMATION SHOWN FOR CLARITY.
2. ELEVATION BASED ON SITE VISIT BY CONDUCTED BY DEWBERRY ENGINEERS INC. ON 12/10/18 AND EXISTING DRAWINGS BY HUDSON DESIGN GROUP LLC DATED 11/08/16.
3. ALL PROPOSED EQUIPMENT, INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, TMA'S, RRU'S, ETC., SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS BY DEWBERRY ENGINEERS INC. DATED TBD.
4. CONTRACTOR TO VERIFY THE ANTENNA FRAMES MATCH THE EXISTING CONSTRUCTION DRAWINGS BY HUDSON DESIGN GROUP LLC DATED 11/08/16.



EXISTING EQUIPMENT PLAN 2

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'



PROPOSED EQUIPMENT PLAN 3

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'

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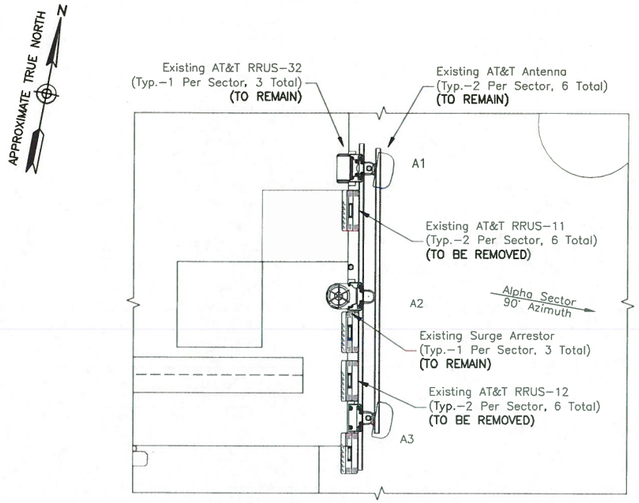
06108
HARTFORD COUNTY

SHEET TITLE

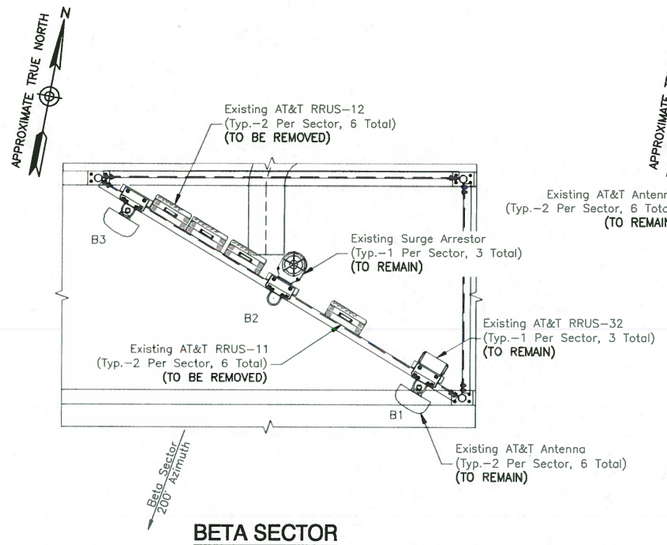
NORTH ELEVATION &
EQUIPMENT PLANS

SHEET NUMBER

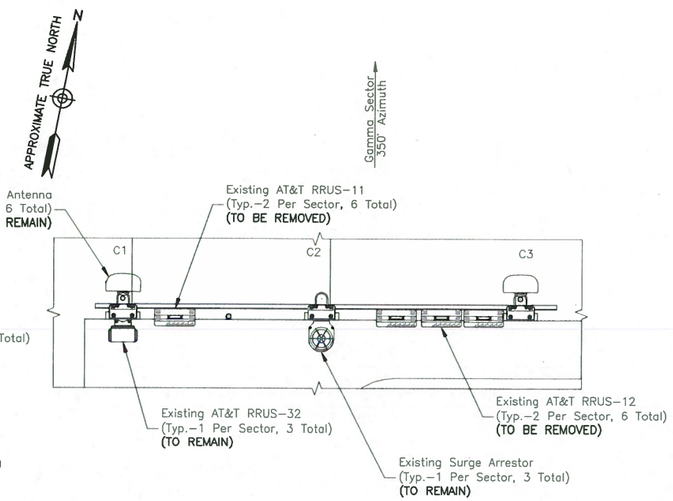
C-2



ALPHA SECTOR



BETA SECTOR

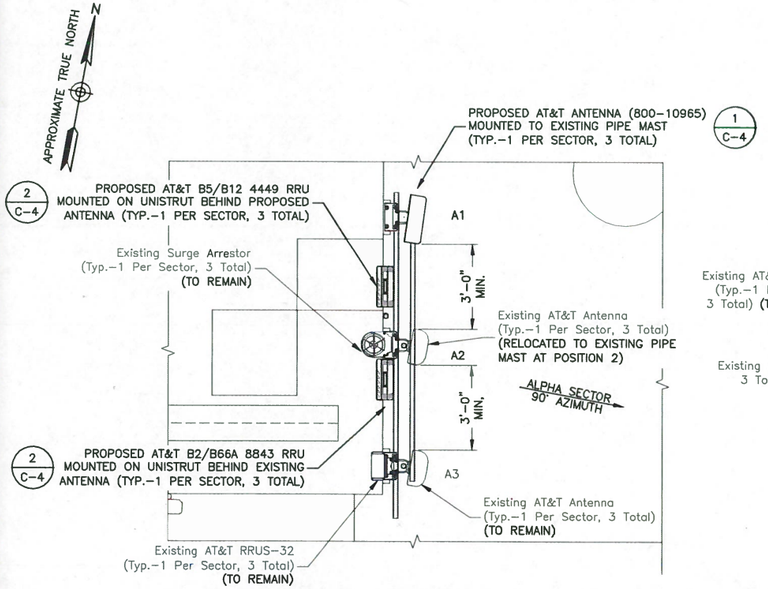


GAMMA SECTOR

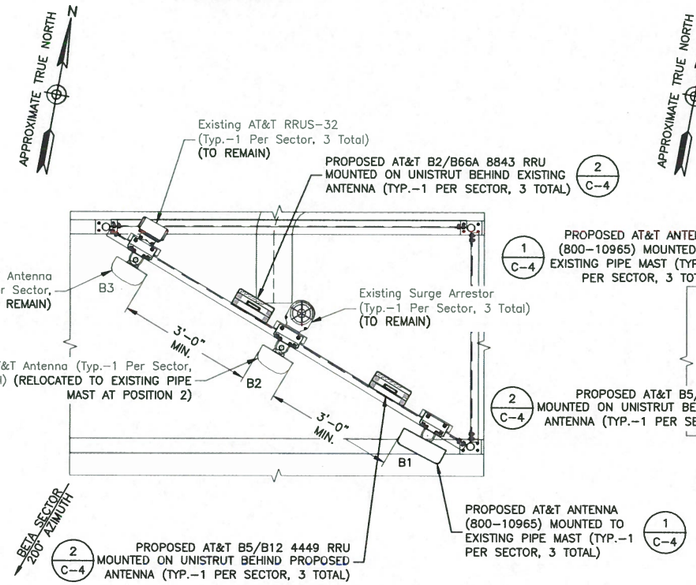
EXISTING ANTENNA PLAN 1

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'



ALPHA SECTOR



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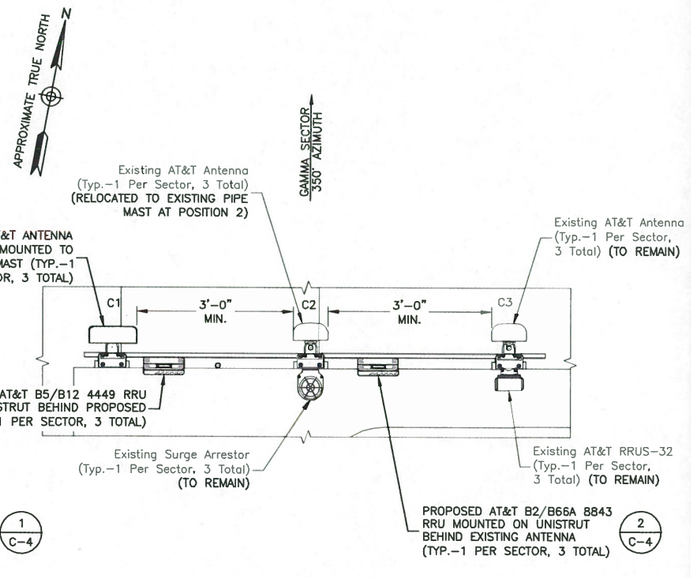

GAMMA SECTOR

PROPOSED ANTENNA PLAN 2

SCALE: 3/16"=1' FOR 11"x17"
3/8"=1' FOR 22"x34"

0' 2' 4' 6'

NOTES:

1. MAINTAIN A MINIMUM 3'-0" SEPARATION BETWEEN ALL EXISTING & PROPOSED ANTENNAS.
2. CONTRACTOR TO VERIFY THE ANTENNA FRAMES MATCH THE EXISTING CONSTRUCTION DRAWINGS BY HUDSON DESIGN GROUP LLC DATED 11/08/16.

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JIANG YU
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LICENSED
PROFESSIONAL ENGINEER

JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

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PROJECT NUMBER:	50055106
JOB NUMBER:	50093840
SITE ADDRESS:	

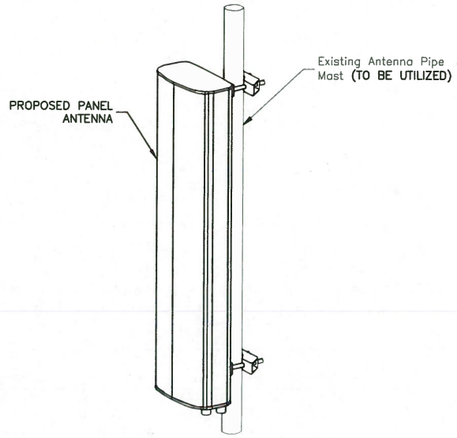
886 MAIN STREET
EAST HARTFORD, CT
06108
HARTFORD COUNTY

SHEET TITLE

EXISTING & PROPOSED ANTENNA LAYOUTS

SHEET NUMBER

C-3

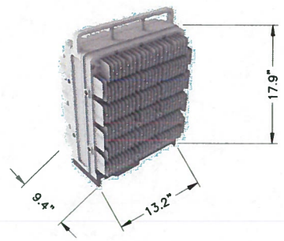


NOTES:

1. MOUNT ANTENNA PER MANUFACTURER'S RECOMMENDATIONS.
2. WEIGHT INCLUDES MOUNTING BRACKETS.

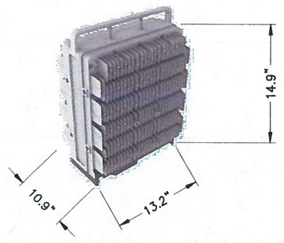
ANTENNA SPECIFICATIONS	
MANUFACTURER	KATHREIN
MODEL NUMBER	800-10965
DIMENSIONS (HxWxD)	78.7" x 20.0" x 6.9"
WEIGHT	108.6 LBS

ANTENNA DETAIL 1
SCALE: N.T.S.



SPECIFICATIONS:
HEIGHT: 17.9"
WIDTH: 13.2"
DEPTH: 9.4"
WEIGHT: 70.4 LBS

ERICSSON RRUS B5/B12 4449



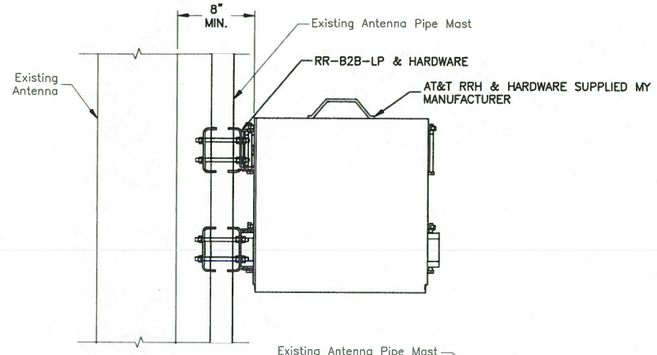
SPECIFICATIONS:
HEIGHT: 14.9"
WIDTH: 13.2"
DEPTH: 10.9"
WEIGHT: 72.0 LBS

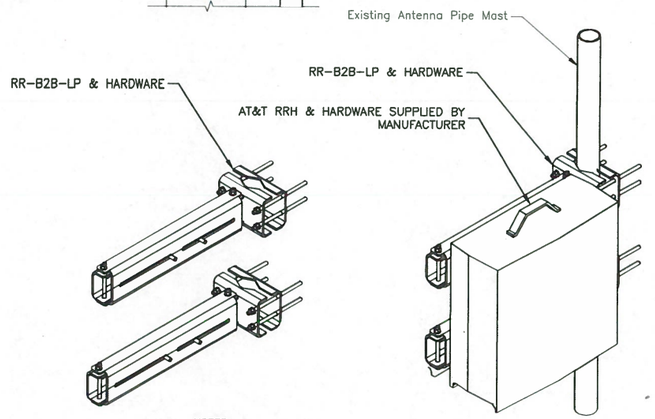
ERICSSON RRUS B2/B66A 8843

RRU NOTES:

1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND AT&T STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

REMOTE RADIO UNIT DETAILS 2
SCALE: N.T.S.





NOTES:

1. 8" MIN. BETWEEN BACK OF ANTENNA & RRH UNIT.
2. CONTRACTOR TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS TO ENSURE THAT ALL RRH UNITS RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH UNITS IN THE RAIN.

RRH DUAL BRACKET MOUNT DETAIL 3
SCALE: N.T.S.

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	ANTENNA CENTERLINE	AZIMUTH	TMA/DIPLEXER	RRU	FEEDER	RAYCAP
A1	PROPOSED	LTE 700 BC/850/AWS	KATHREIN 800-10965	117'-0"	90°	-	(P) ERICSSON RRUS B5/B12 4449	FIBER	(E) (1) RAYCAP DC6-48-60-18-8C
A2	EXISTING	LTE PCS	CCI OPA-65R-LCUU-H6	117'-0"	90°	-	(P) ERICSSON RRUS B2/B66A 8843	FIBER	
A3	EXISTING	LTE WCS	CCI OPA-65R-LCUU-H6	117'-0"	90°	-	(E) ERICSSON RRUS 32	FIBER	
B1	PROPOSED	LTE 700 BC/850/AWS	KATHREIN 800-10965	109'-0"	200°	-	(P) ERICSSON RRUS B5/B12 4449	FIBER	(E) (1) RAYCAP DC6-48-60-18-8C
B2	EXISTING	LTE PCS	CCI OPA-65R-LCUU-H6	109'-0"	200°	-	(P) ERICSSON RRUS B2/B66A 8843	FIBER	
B3	EXISTING	LTE WCS	CCI OPA-65R-LCUU-H6	109'-0"	200°	-	(E) ERICSSON RRUS 32	FIBER	
C1	PROPOSED	LTE 700 BC/850/AWS	KATHREIN 800-10965	117'-0"	350°	-	(P) ERICSSON RRUS B5/B12 4449	FIBER	(E) (1) RAYCAP DC6-48-60-18-8C
C2	EXISTING	LTE PCS	CCI OPA-65R-LCUU-H6	117'-0"	350°	-	(P) ERICSSON RRUS B2/B66A 8843	FIBER	
C3	EXISTING	LTE WCS	CCI OPA-65R-LCUU-H6	117'-0"	350°	-	(E) ERICSSON RRUS 32	FIBER	

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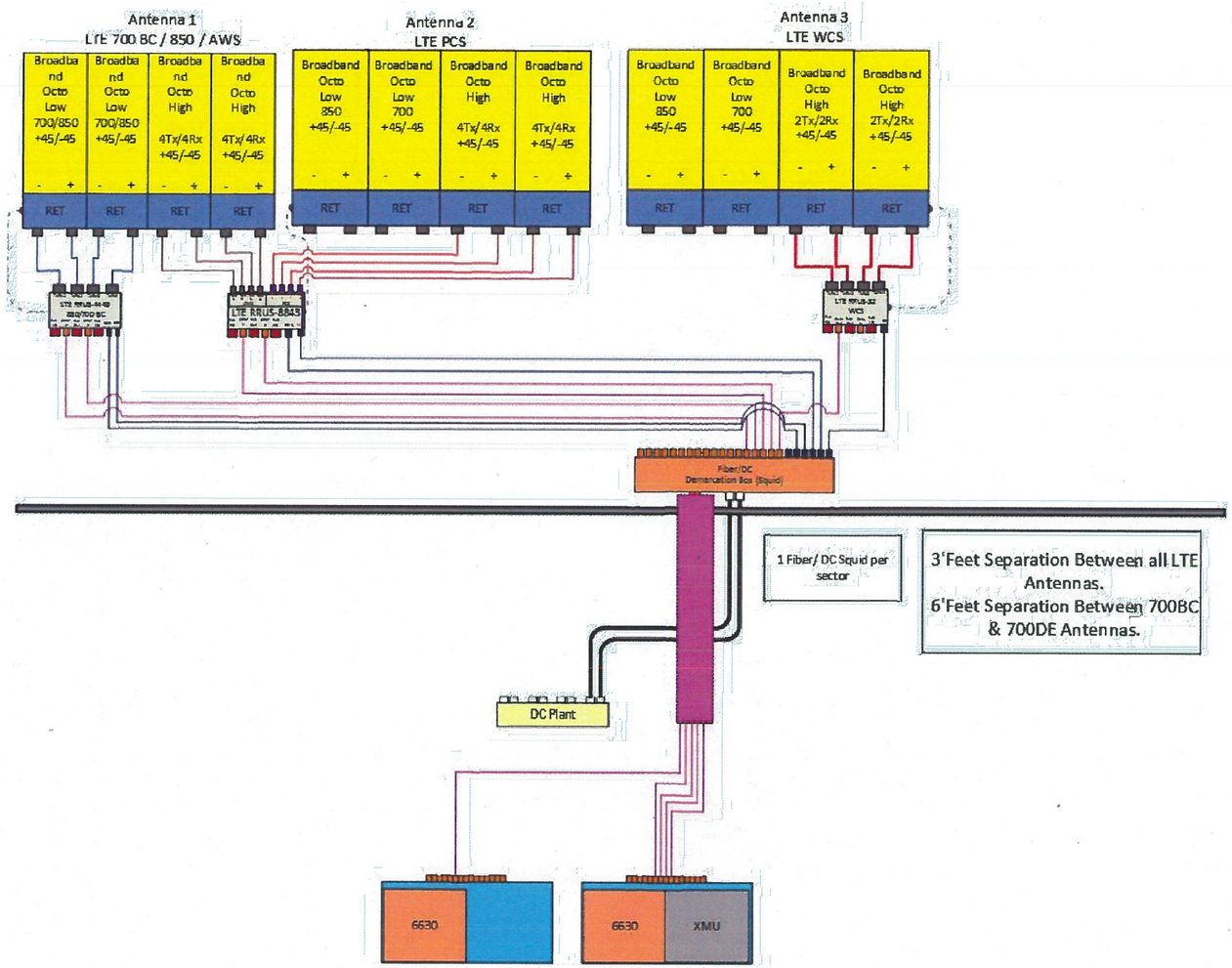
SHEET TITLE
CONSTRUCTION DETAILS I

SHEET NUMBER
C-4



PLUMBING DIAGRAM
SCALE: N.T.S.

1

NOTE:

1. PLUMBING DIAGRAM BASED ON RFDS V2.00 DATED 09/19/2018. CONFIRM FINAL PLUMBING DIAGRAM WITH THE LATEST RFDS.

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HARTFORD COUNTY

SHEET TITLE

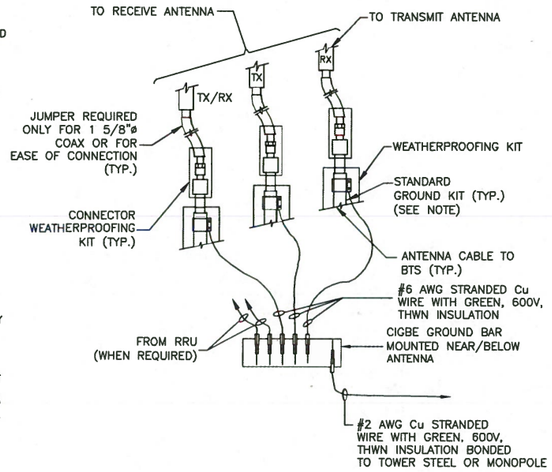
PLUMBING DIAGRAM

SHEET NUMBER

C-5

GROUNDING NOTES:

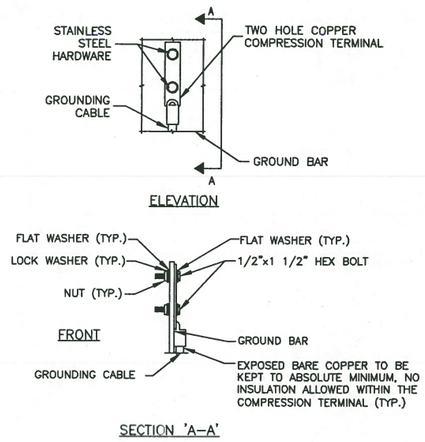
1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE ENGINEER 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. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
3. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY THE ENGINEER IN WRITING.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
6. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
7. 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 TRANSMISSION EQUIPMENT.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
11. EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
12. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
13. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM SAI MARKET REPRESENTATIVE.
14. EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
15. ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
16. ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTORS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT AND STRUCTURAL STEEL.
17. COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
18. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
19. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
20. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
21. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
22. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT WITH LISTED BONDING FITTINGS.



NOTE:

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

CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE) — 1

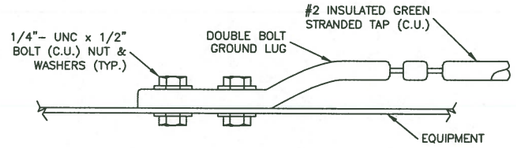


NOTES:

1. DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

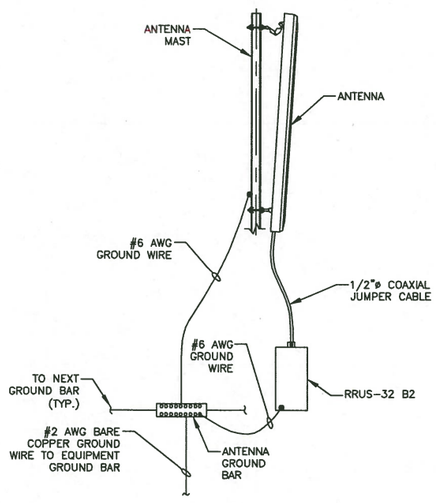
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

SCALE: N.T.S.



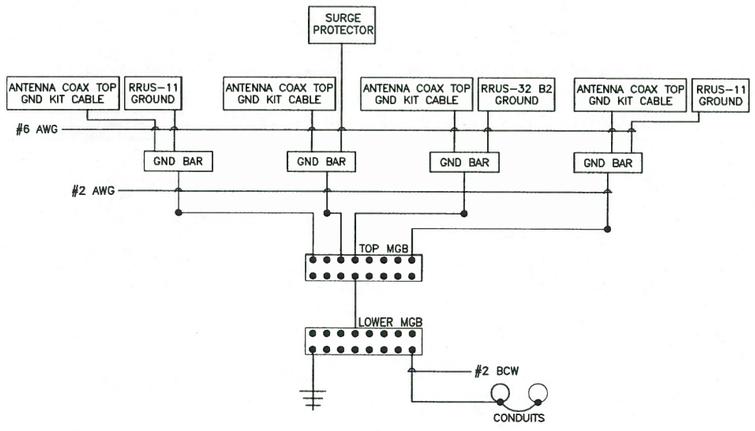
CONNECTION TO EQUIPMENT DETAIL — 3

SCALE: N.T.S.



TYPICAL ANTENNA GROUNDING DETAIL — 4

SCALE: N.T.S



NOTES:

1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE.
3. SCHEMATIC GROUNDING DIAGRAM IS TYPICAL FOR EACH SECTOR.
4. GROUND ALL EQUIPMENT PER MANUFACTURER RECOMMENDATIONS.

SCHEMATIC GROUNDING DIAGRAM — 5

SCALE: N.T.S.

at&t

500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

SAI

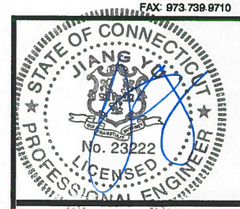
12 INDUSTRIAL WAY
SALEM, NH 03079

CT2490
EAST HARTFORD
MAIN STREET

CONSTRUCTION DRAWINGS

0	04/24/19	ISSUED AS FINAL
B	04/24/19	REVISED PER COMMENTS
A	02/17/19	ISSUED FOR REVIEW

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710



JIANG YU, P.E.
CONNECTICUT LICENSE NO. 0023222

DRAWN BY:	BJR
REVIEWED BY:	BSH
CHECKED BY:	GHN
PROJECT NUMBER:	50055106
JOB NUMBER:	50093840
SITE ADDRESS:	

886 MAIN STREET
EAST HARTFORD, CT
06108
HARTFORD COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

Dewberry

Dewberry Engineers Inc.
600 Parsippany Road, Suite 301
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973.739.9710 fax
www.dewberry.com

Structural Analysis Report and Design Calculations For a Wireless Telecommunications facility

Site ID #: CT2490
Site Address: 886 Main Street
Hartford, CT 06108

Prepared for:
SAI Communications, Inc.
12 Industrial Way
Salem, NH 03079

February 25, 2019

Prepared by:
Dewberry Engineers Inc.
600 Parsippany Road
Parsippany, NJ 07054
Dewberry Project Number: 50093840

Analysis Condition	Utilization	Pass/Fail
Existing Mount (Alpha)	12% (Strength)	Pass
Existing Mount (Beta)		Pass
Existing Mount (Gamma)	12% (Strength)	Pass

Prepared by:

Phil DaRold, P.E.
Structural Engineer

Reviewed by:

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED PROFESSIONAL ENGINEER

Jiang J. Yu, P.E.
Connecticut Professional Engineer
License No.: 23222

TABLE OF CONTENTS

1.0 INTRODUCTION AND PROJECT SUMMARY

The objective of this report is to assess the structural integrity of the installation of new antennas and associated equipment on existing cantilevered pipe mounts in the Alpha and Gamma Sectors, and on an existing ballast platform in the Beta Sector.

The existing structure is 100 ft tall building located in East Hartford, CT. There are currently existing antennas and support equipment mounted to cantilevered pipe mounts in the Alpha and Gamma Sectors, and to a ballast steel frame in the Beta Sector. The proposed Alpha and Gamma equipment will be attached at an approximate antenna centerline of 120 ft A.G.L. and the proposed Beta equipment will be attached at an approximate antenna centerline of 109 ft A.G.L. The telecommunication upgrade is proposed by AT&T and managed by SAI Communications, Inc.

The installation of all antennas, equipment, cables and accessories are to be performed in accordance with construction drawings prepared by Dewberry Engineers Inc.

2.0 EXISTING AND PROPOSED ANTENNAS & EQUIPMENT

Currently, each sector contains the following equipment:

- Two (2) CCI OPA-65R-LCUU-H6 panel antennas measuring 72.3”H x 14.4”W x 7.3”D weighing 56.9 lbs each **to remain**
- Two (2) RRUS-11’s **to be removed**
- Two (2) RRUS-12’s **to be removed**
- One (1) RRUS-32 measuring 27.2”H x 12.1” W x 7.0”D weighing 53 lbs each **to remain**
- One (1) Raycap DC^-48-60-18-8C measuring 26.0”Hx 9.0”D weighing 31.8 lbs **to remain**

The following equipment is proposed at each sector:

- One (1) Kathrein 800-10965 panel antenna measuring 78.7”H x 20.0”W x 6.9”D weighing 108.6 lbs
- One (1) RRUS B2/B12 4449 measuring 17.9”H x 13.2”W x 9.4”D weighing 70.4 lbs
- One (1) RRUS B2/B66A 8843 measuring 14.9”H x 13.2”W x 10.9”D weighing 72.0 lbs

Table 1: Appurtenance Loading at Rooftop		
Elev.	Status	Appurtenance Description
109’	Final	(2) CCI OPA-65R-LCUU-H6
109’	Final	**(1) Kathrein 800-10965**
109’	Final	(1) RRUS-32
109’	Final	(1) Raycap DC^-48-60-18-8C
109’	Final	**(1) RRUS B2/B12 4449**
109’	Final	**(1) RRUS B2/B66A 8843**
120’	Final	(4) CCI OPA-65R-LCUU-H6
120’	Final	**(2) Kathrein 800-10965**
120’	Final	(2) RRUS-32
120’	Final	(2) Raycap DC^-48-60-18-8C
120’	Final	**(2) RRUS B2/B12 4449**
120’	Final	**(2) RRUS B2/B66A 8843**

3.0 CODES, STANDARDS, AND REFERENCES

The structure was analyzed and the proposed installation designed per the provisions of the following Codes and standards:

- *International Building Code (IBC) 2015, International Council*
- *2018 Connecticut State Building Code – Amendments to IBC 2015*
- *TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas*
- *Steel Construction Manual 14th Edition, American Institute of Steel Construction*
- *ASCE 7-16 Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers*
- *Construction Drawings by Hudson Design Group , dated November 8th, 2016*
- *Structural Analysis by Hudson Design Group, dated February 14, 2014*
- *Radio Frequency Data Sheet (RFDS) by AT&T, dated September 19th, 2018*

4.0 LOADING AND PERFORMANCE CRITERIA

The following Code-specified strength limit state load combinations were considered in the analysis of the antenna mounts *(TIA-222-H and AT&T Directive)*:

1. $1.2D + 1.0W$
2. $1.2D + 1.0D_i + 1.0W_i$
3. $1.4D$
4. $1.2D + 1.5L_m + 1.0W_m$
5. $1.2D + 1.5L_v$

The following Code-specified serviceability load combination was considered in the deflection of the antenna mounts *(TIA-222-H)*:

6. $1.0D + 1.0W_{service}$

The following load combination was considered for the stability of the Beta Sector Ballast Mount *(ASCE 7-16)*:

1. $1.0D + 0.6W$

Where:

D = Dead Load
D_i = Ice Dead Load
W = Wind Load
W_i = Ice Wind Load
$W_{service}$ = Service Wind Load
W_m = Design maintenance load
L_m = Design maintenance load (500 lbs per AT&T directive)
L_v = Design maintenance load (250 lbs per AT&T directive)

The following site-specific design parameters were considered in this analysis per the provisions of *TIA-222-H:*

- Class: II
- Exposure: B
- Design Wind Speed: 118 mph — *ATC Wind Speed*
- Design Ice Wind Speed: 50 mph — *Annex B*
- Design Ice Thickness: 1.5 in — *Annex B*
- Gust Effect Factor: 0.85 — *Section 2.6.9.1*
- Wind Direction Probability Factor: 0.95 — *Table 2-2*
- Serviceability Wind Speed: 60 mph — *Sect. 2.8.3*
- Maintenance Wind Speed: 30 mph — *Section 16.3*

As per TIA-222-H, wind load shall be analyzed at intervals of 30°; however, based on pre-analysis, wind applied to the front and side directions are worst case scenario and need only be considered.

5.0 CALCULATIONS

Calculations for this analysis and the design of the installation are included in the Appendices of this report.

6.0 CONCLUSIONS, COMMENTARY, AND RECOMMENDATIONS

The analysis concludes that the proposed antenna frames and equipment platform are **adequate** for the proposed installation with the most unfavorable loading condition.

The existing cantilever pipe mounts used to support the proposed and existing equipment at the Alpha and Gamma sectors are loaded to **12%** of their strength capacity. The existing steel ballast frame used to support the proposed and existing equipment at the Beta sector passes stability checks, based on a **minimum Factor of Safety of 1.5**. Based on engineering judgement, the overall stability of the Beta sector governs the design of the ballast frame, not the strength of the steel members.

Existing roof structure appears to be in fair condition at the locations of the proposed equipment.

Dewberry Engineers Inc. reserves the right to add to or modify this report if more information becomes available. The conclusions reached by Dewberry Engineers Inc. in this report are only applicable to the previously mentioned existing structural elements supporting the proposed wireless telecommunications installation. The results of this report are based on the assumption that existing structural elements have been installed per the original design documents, have been well maintained and are uncompromised. This report does not imply that a thorough inspection of the existing structure has been performed. Any deviation of the support condition, loading, location, placement, equipment configuration, etc., will require Dewberry Engineers Inc. to generate an additional structural analysis.

APPENDIX A

ALPHA GAMMA SECTOR DESIGN LOADS

Overview

The Alpha and Gamma Sector antenna frames are composed of three cantilevered pipes, anchored into the existing penthouse wall. The pipes are attached with horizontal unistrut members, which support antenna equipment. Since the unistrut is not a structural member, only the cantilevered pipes shall be checked, with the equipment loads from the unistrut being applied to the cantilevered pipe.

Design Criteria

1. International Building Code (IBC) 2015, International Code Council
2. 2018 Connecticut State Building Code - Amendments to IBC 2015
3. TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas
4. Steel Construction Manual 14th Edition, American Institute of Steel Construction
5. ASCE 7-16 Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers
6. Construction Drawings by Hudson Design Group, dated November 8th, 2016
7. Radio Frequency Data Sheet (RFDS) by AT&T, dated September 19th, 2018

Equipment Dead Loads

	Description	Dimensions (in)			Weight (lb)
		W	D	H	
Antennas/RRHs	**Kathrein 800-10965**	**20.00**	**6.90**	**78.70**	**108.60**
	CCI OPA-65R-LCUU-H6	14.40	7.30	72.30	56.90
	Ericsson RRUS B2/B12 4449	**13.20**	**9.40**	**17.90**	**70.40**
	Ericsson RRUS B2/B66A 8843	**13.20**	**10.90**	**14.90**	**72.00**
	Ericsson RRUS-32	12.10	7.00	27.20	53.00
	Raycap DC6-48-60-18-8C	9.00		26.00	31.80

***Bold = Proposed**

Structural Members

Member	Dimensions (in)						Weight (lb/ft)
	d	b_f	t_f	t_w	I.D.	O.D.	
4" XS Pipe					3.83	4.50	15.00

Live Loads

L_M = 0 lb — TIA-222-H, Section 16.3

L_V = 0 lb — TIA-222-H, Section 16.3

ALPHA GAMMA SECTOR DESIGN LOADS

Wind Load Design Criteria (Per TIA-222-H)

Notation	Value	Description	Reference
V_{max} =	118.00	Design Wind Speed	ASCE 7-16, Appendix A-7
V_i =	50.00	Design Ice Wind Speed	TIA-222-H, Annex B-9
K_d =	0.95	Wind Direction Probability Factor	TIA-222-H, Table 2-2
Class	II	Risk Category	TIA-222-H, Table 2-1
I =	1.00	Importance Factor (Without Ice)	TIA-222-H, Table 2-3
$I_{ice\ thick}$ =	1.00	Importance Factor (Ice Thickness)	TIA-222-H, Table 2-3
z = h =	120.00	A.G.L. Elevation (ft)	Max. Center of Appurtenance
Exp. Cat.	B	Exposure Category	TIA-222-H, Section 2.6.5.1.2
z_g =	1200.00	Nominal Height of Atmospheric Boundary Layer	TIA-222-H, Table 2-4
a =	7.00	3-Second Gust Wind Speed Power Law Exponent	TIA-222-H, Table 2-4
$K_{z\ (min)}$ =	0.70	Minimum Value for K_z	TIA-222-H, Table 2-4
K_c =	0.90	Terrain Constant	TIA-222-H, Table 2-4
K_t =	N/A	Topographic Constant	TIA-222-H, Table 2-5
K_z =	1.04	Velocity Pressure Coefficient	TIA-222-H, Section 2.6.5.2
Topo. Cat.	1.00	Topographic Category	TIA-222-H, Section 2.6.5.2
e =	2.72	Natural Logarithmic Base	TIA-222-H, Section 2.6.2
f =	N/A	Height Attenuation Factor	TIA-222-H, Table 2-5
H =	N/A	Height of Crest Above Surrounding Terrain (ft)	TIA-222-H, Section 2.6.6.2.1
K_h =	N/A	$e^{((f*z)/H)}$ Height Reduction Factor	TIA-222-H, Section 2.6.6.2.1
K_{zt} =	1.00	$= [1+((K_c*K_t)/K_h)]^2$ Topographic Factor	TIA-222-H, Section 2.6.6.2.1
K_{iz} =	1.14	$= (z/33)^{0.10} \leq 1.4$ Height Escalation Factor	TIA-222-H, Section 2.6.10
G_h =	1.0	Gust Effect Factor	TIA-222-H, Section 2.6.9.1
K_a =	0.9	Shielding Factor	TIA-222-H, Section 16.6
t_i =	1.50	Design Ice Thickness (in)	TIA-222-H, Annex B-9
t_{iz} =	3.41	$2\ t_i(I_{ice\ thick})K_{iz}(K_{zt})^{0.35}$ Thickness of Radial Glaze Ice	TIA-222-H, Section 2.6.10
$q_{z\ design}$ =	31.73	$= 0.00256(K_z)(K_{zt})(K_d)(K_a)(V_{max}^2)(I)$	TIA-222-H, Section 2.6.11.6
$q_{z\ ice}$ =	5.70	$= 0.00256(K_z)(K_{zt})(K_d)(K_a)(V_i^2)$	TIA-222-H, Section 2.6.11.6

ALPHA GAMMA SECTOR DESIGN LOADS

Wind Service Load and Maintenance Load Design Criteria (Per TIA-222-H)

Notation	Value	Description	Reference
$V_{service}$ =	60.00	Design Service Wind Speed	TIA-222-H, Section 2.8.3
$V_{maintenance}$ =	30.00	Design Maintenance Wind Speed	TIA-222-H, Section 16.3
K_d =	0.95	Wind Direction Probability Factor	TIA-222-H, Table 2-2
Class	II	Risk Category	TIA-222-H, Table 2-1
I =	1.00	Importance Factor (Without Ice)	TIA-222-H, Table 2-3
z = h =	120.00	A.G.L. Elevation (ft)	Max. Center of Appurtenance
Exp. Cat.	B	Exposure Category	TIA-222-H, Section 2.6.5.1.2
z_g =	1200.00	Nominal Height of Atmospheric Boundary Layer	TIA-222-H, Table 2-4
a =	7.00	3-Second Gust Wind Speed Power Law Exponent	TIA-222-H, Table 2-4
$K_{z\,(min)}$ =	0.70	Minimum Value for K_z	TIA-222-H, Table 2-4
K_c =	0.90	Terrain Constant	TIA-222-H, Table 2-4
K_t =	N/A	Topographic Constant	TIA-222-H, Table 2-5
K_z =	1.04	Velocity Pressure Coefficient	TIA-222-H, Section 2.6.5.2
Topo. Cat.	1.00	Topographic Category	TIA-222-H, Section 2.6.5.2
e =	2.72	Natural Logarithmic Base	TIA-222-H, Section 2.6.2
f =	N/A	Height Attenuation Factor	TIA-222-H, Table 2-5
H =	N/A	Height of Crest Above Surrounding Terrain (ft)	TIA-222-H, Section 2.6.6.2.1
K_h =	N/A	$e^{((f*z)/H)}$ Height Reduction Factor	TIA-222-H, Section 2.6.6.2.1
K_{zt} =	1.00	$= [1+((K_c*K_t)/K_h)]^2$ Topographic Factor	TIA-222-H, Section 2.6.6.2.1
G_h =	1.0	Gust Effect Factor	TIA-222-H, Section 2.6.9.1
K_a =	0.9	Shielding Factor	TIA-222-H, Section 16.6
$q_{z\ service}$ =	8.20	$= 0.00256(K_z)(K_{zt})(K_d)(K_a)(V_{service}^2)(I)$	TIA-222-H, Section 2.6.11.6
$q_{z\ maintenance}$ =	2.05	$= 0.00256(K_z)(K_{zt})(K_d)(K_a)(V_{maintenance}^2)(I)$	TIA-222-H, Section 2.6.11.6

ALPHA GAMMA SECTOR DESIGN LOADS

Force Coefficients for Appurtenances, Without Ice (TIA-222-H)

	Equipment	Dimensions (ft)			Area $(A_a)_n$ *(Normal) (sf)*	Area $(A_a)_t$ *(Tangent) (sf)*	Aspect Ratio *(Normal)*	Aspect Ratio *(Tangent)*	C *Table 2-9*	C_{an} *(Normal) Table 2-9*	C_{at} *(Tangent) Table 2-9*
		Width *(Normal)*	Length *(tangent)*	Height *(Or Span)*							
Antennas/RRHs	Kathrein 800-10965	1.67	0.58	6.56	10.93	3.77	3.94	11.41		1.26	1.55
	CCI OPA-65R-LCUU-H6	1.20	0.61	6.03	7.23	3.67	5.02	9.90		1.31	1.50
	Ericsson RRUS B2/B12 4449	1.10	0.78	1.49	1.64	1.17	1.36	1.90		1.20	1.20
	Ericsson RRUS B2/B66A 8843	1.10	0.91	1.24	1.37	1.13	1.13	1.37		1.20	1.20
	Ericsson RRUS-32	1.01	0.58	2.27	2.29	1.32	2.25	3.89		1.20	1.26
	Raycap DC6-48-60-18-8C	0.75	0.75	2.17	1.63	1.63	2.89	2.89		1.22	1.22

Force Coefficients for Appurtenances, With Ice (TIA-222-H)

	Equipment	Dimensions (ft)			Area $(A_a)_n$ *(Normal) (sf)*	Area $(A_a)_t$ *(Tangent) (sf)*	Aspect Ratio *(Normal)*	Aspect Ratio *(Tangent)*	C *Table 2-9*	C_{an} *(Normal) Table 2-9*	C_{at} *(Tangent) Table 2-9*
		Width *(Normal)*	Length *(tangent)*	Height *(Or Span)*							
Antennas/RRHs	Kathrein 800-10965	1.92	0.83	6.81	13.05	5.62	3.55	8.25		1.25	1.44
	CCI OPA-65R-LCUU-H6	1.45	0.86	6.28	9.10	5.39	4.33	7.31		1.28	1.41
	Ericsson RRUS B2/B12 4449	1.35	1.03	1.74	2.35	1.80	1.29	1.69		1.20	1.20
	Ericsson RRUS B2/B66A 8843	1.35	1.16	1.49	2.01	1.73	1.10	1.29		1.20	1.20
	Ericsson RRUS-32	1.26	0.83	2.52	3.17	2.10	2.00	3.02		1.20	1.22
	Raycap DC6-48-60-18-8C	1.00	1.00	2.42	2.42	2.42	2.42	2.42		1.20	1.20

ALPHA GAMMA SECTOR DESIGN LOADS

Equipment Wind Loads (TIA-222-H)

$F_A = q_{z\ design} G_h (EPA)_A$ TIA-222-H, Section 2.6.11.2, Applies to Strength, Service & Maintenance Conditions

$(EPA)_A = C_a A_a$

$F_A = q_{z\ ice} G_h (EPA)_{A\ ice}$ Ice Condition

$(EPA)_{A\ ice} = C_a A_{a\ ice}$

		No Ice (sf)		Ice (sf)		Strength (lbs)		Ice (lbs)		Service (lbs)		Maintenance (lbs)	
	Equipment	$(EPA)_A$ *(Normal)*	$(EPA)_A$ *(Tangent)*	$(EPA)_A$ *(Normal)*	$(EPA)_A$ *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*
Antennas/RRHs	Kathrein 800-10965	13.81	5.83	16.27	8.10	438.29	185.08	92.68	46.13	113.32	33.23	28.33	11.96
	CCI OPA-65R-LCUU-H6	9.49	5.49	11.66	7.60	300.98	174.07	66.41	43.27	77.82	31.25	19.45	11.25
	Ericsson RRUS B2/B12 4449	1.97	1.40	2.82	2.16	62.47	44.49	16.07	12.30	16.15	7.99	4.04	2.88
	Ericsson RRUS B2/B66A 8843	1.64	1.35	2.42	2.07	52.00	42.94	13.77	11.81	13.45	7.71	3.36	2.78
	Ericsson RRUS-32	2.74	1.67	3.80	2.55	87.02	52.93	21.65	14.54	22.50	9.50	5.62	3.42
	Raycap DC6-48-60-18-8C	1.98	1.98	2.90	2.90	62.76	62.76	16.52	16.52	16.23	11.27	4.06	4.06

The proposed antenna frame layout consists of two RRH's, which each RRH mounted to unistrut spanning in between antennas. For simplicity, the loads of one RRH and surge arrestor will be applied to the pipe STAAD model

Structure Wind Loads (TIA-222-H)

Wind loads on structural elements will be applied linearly: $\omega_{wind} = q_{z\ design} C_a G_h d$, with d being the structure depth or diameter. A conservative Ca value of 1.2 will be used for pipesThis same equation will be used for the service condition, with the service wind load being used, and ice condition, with the ice wind load and ice structure depth/diameter being used.

Member	d (ft)	d_{ice} (ft)	C_a	ω_{wind} (lb/ft)	$\omega_{wind\ ice}$ (lb/ft)	$\omega_{wind\ ser}$ (lb/ft)	$\omega_{wind\ ser}$ (lb/ft)
4" XS Pipe	0.38	0.63	1.2	14.28	4.27	3.69	0.92

ALPHA GAMMA SECTOR DESIGN LOADS

Ice Dead Loads

Equipment	Volume (cf)	$Volume_{w/\ ice}$ (cf)	$Volume_{ice}$ (cf)	W_{ice} (lb)
Kathrein 800-10965	6.29	10.77	4.48	250.91
CCI OPA-65R-LCUU-H6	4.40	7.81	3.41	191.04
Ericsson RRUS B2/B12 4449	1.29	2.43	1.14	64.08
Ericsson RRUS B2/B66A 8843	1.24	2.33	1.09	61.15
Ericsson RRUS-32	1.33	2.64	1.31	73.12
Raycap DC6-48-60-18-8C	0.96	1.90	0.94	52.69

Structural Member	Perimeter (lf)	$Perimeter_{w/\ ice}$ (lf)	$Area_{ice}$ (sf)	W_{ice} (lb/ft)
4" XS Pipe	4.60	5.27	0.67	37.33

Load Combinations (TIA-222-H)

1. $1.2D + 1.0W_o$ — Strength Limit State
2. $1.2D + 1.0D_i + 1.0W_i$ — Strength Limit State
3. $1.4D$ — Strength Limit State
4. $1.0D + 1.0W_s$ — Service Limit State

⚠ This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

Hazards by Location

Search Information

Address: 886 Main St, East Hartford, CT 06108, USA

Coordinates: 41.7671061, -72.67293810000001

Timestamp: 2019-02-11T20:11:41.973Z

Hazard Type: Wind

Map Results

Text Results

ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	84 mph
MRI 50-Year	90 mph
MRI 100-Year	97 mph
Risk Category I	108 mph
Risk Category II	118 mph
Risk Category III	127 mph
Risk Category IV	⚠ 131 mph

You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

ASCE 7-10

MRI 10-Year	77 mph
MRI 25-Year	87 mph
MRI 50-Year	93 mph
MRI 100-Year	100 mph
Risk Category I	112 mph
Risk Category II	123 mph

Risk Category III-IV ⚠ 132 mph

If the structure under consideration is a healthcare facility, you are in a wind-borne debris region. If other occupancy, use the Risk Category II basic wind speed contours to determine if you are in a wind-borne debris region.

ASCE 7-05

ASCE 7-05 Wind Speed 99 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

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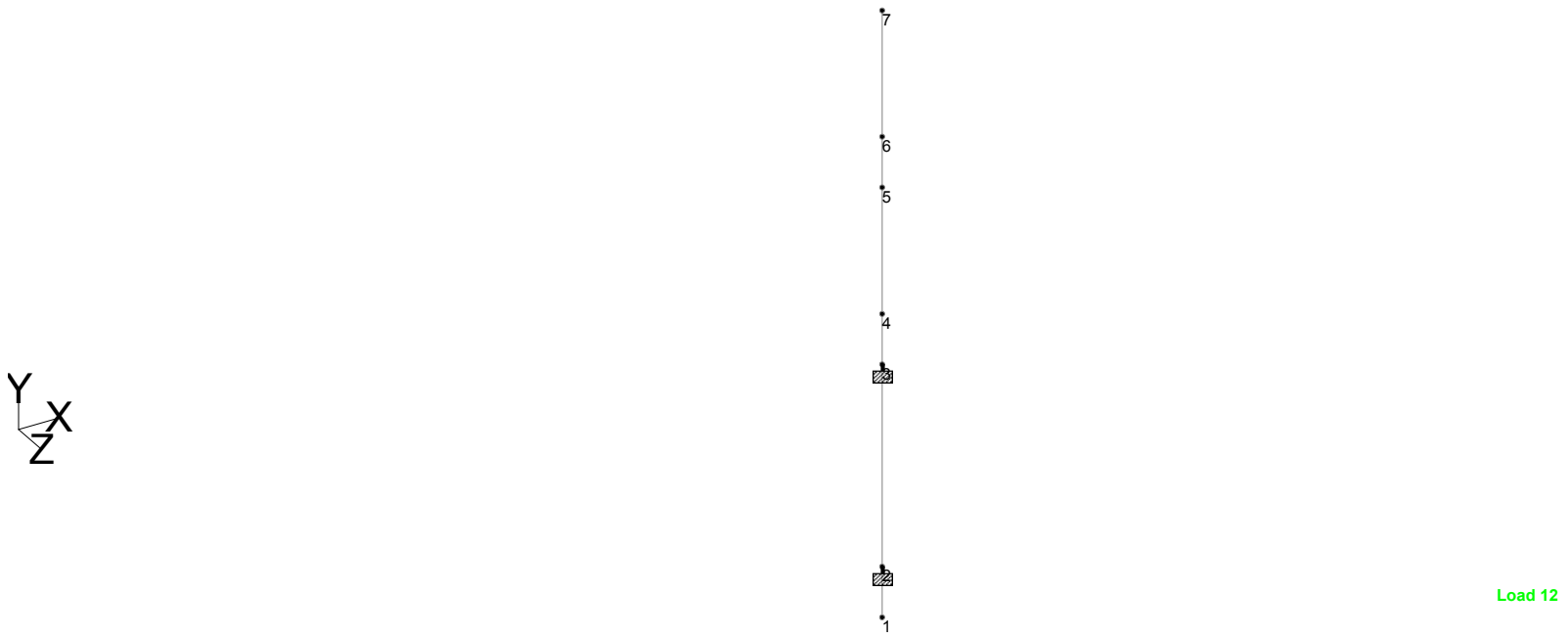
Y
X
Z
Load 12

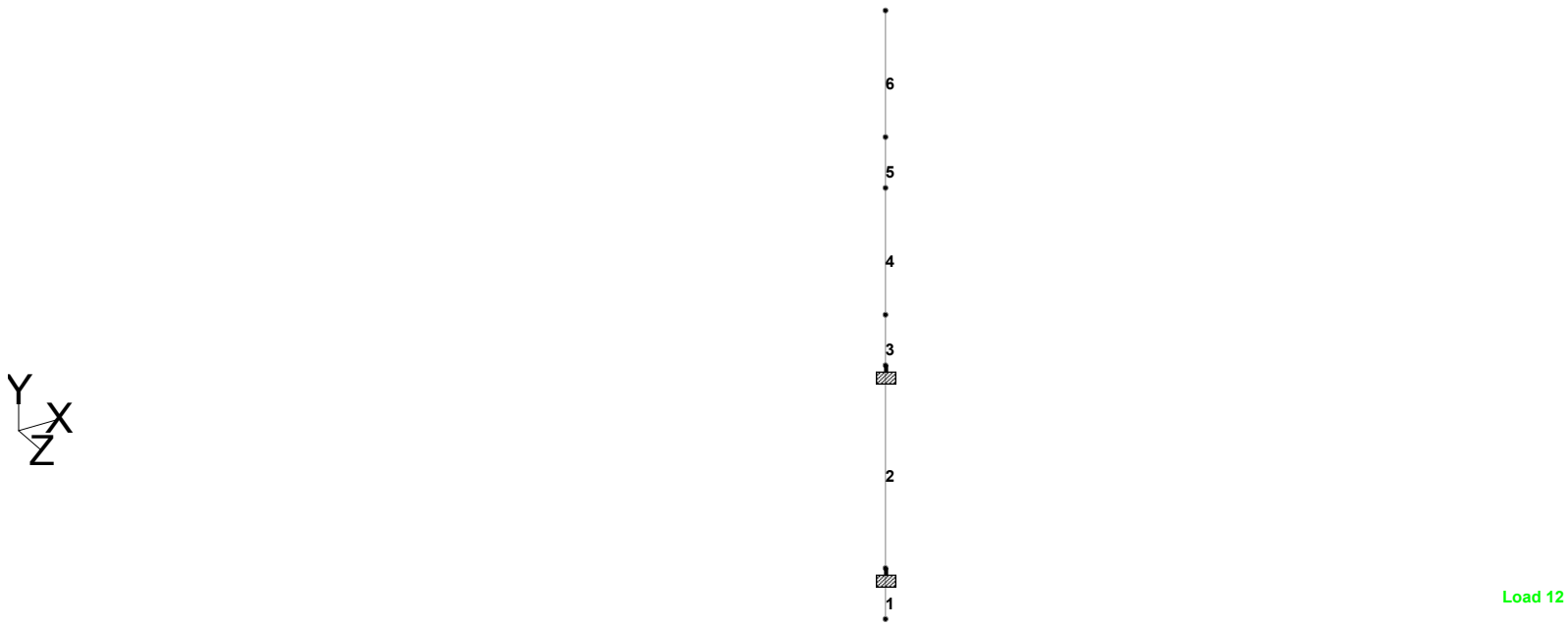
Nodes



Nodes

Node	X (ft)	Y (ft)	Z (ft)
1	0.000	0.000	0.000
2	0.000	1.000	0.000
3	0.000	5.000	0.000
4	0.000	6.000	0.000
5	0.000	8.500	0.000
6	0.000	9.500	0.000
7	0.000	12.000	0.000

Members



Beams

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
1	1	2	1.000	1	0
2	2	3	4.000	1	0
3	3	4	1.000	1	0
4	4	5	2.500	1	0
5	5	6	1.000	1	0
6	6	7	2.500	1	0

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	10E -6
3	ALUMINUM	10E+3	0.330	0.000	13E -6
4	CONCRETE	3.15E+3	0.170	0.000	5E -6

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
1	PIPX40	4.140	9.120	9.120	18.236	STEEL

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip-ft/deg)	rY (kip-ft/deg)	rZ (kip-ft/deg)
2	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
3	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Releases

There is no data of this type.

Primary Load Cases

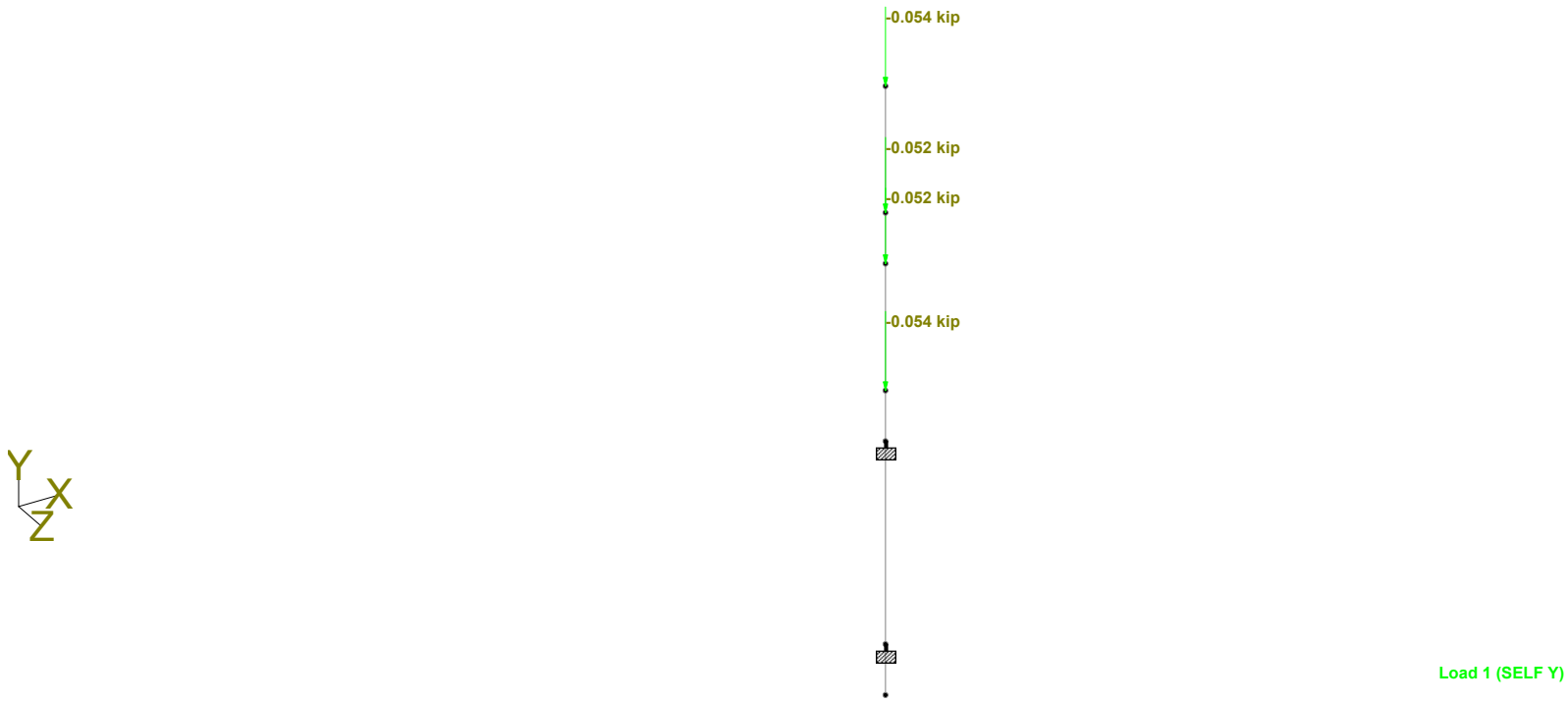
Number	Name	Type
1	DL	Dead
2	DI	Dead
3	LM	Live
4	LV	Live
5	W(X)O	Wind
6	W(Z)O	Wind
7	W(X)I	Wind
8	W(Z)I	Wind
9	W(X)S	Wind
10	W(Z)S	Wind
11	W(X)M	Wind
12	W(Z)M	Wind

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
13	1.2D + 1.0W(X)O	1	DL	1.20
		5	W(X)O	1.00
14	1.2D + 1.0W(Z)O	1	DL	1.20
		6	W(Z)O	1.00
15	1.2D + 1.0DI + 1.0W(X)I	1	DL	1.20
		2	DI	1.00
		7	W(X)I	1.00
16	1.2D + 1.0DI + 1.0W(Z)I	1	DL	1.20
		2	DI	1.00
		8	W(Z)I	1.00
17	1.4D	1	DL	1.40
18	1.0D + 1.0W(X)S	1	DL	1.00

Combination Load Cases Cont...

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
		9	W(X)S	1.00
19	1.0D + 1.0W(Z)S	1	DL	1.00
		10	W(Z)S	1.00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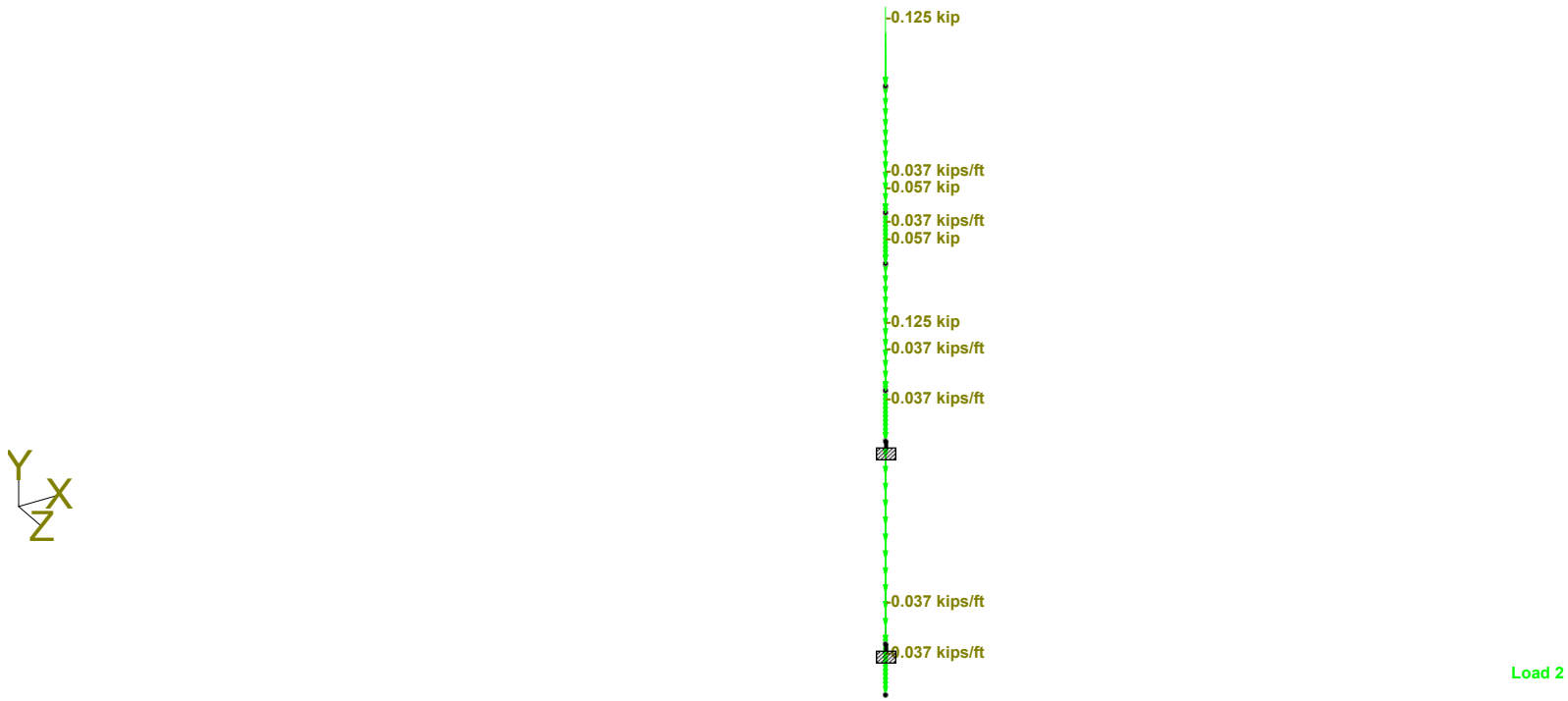
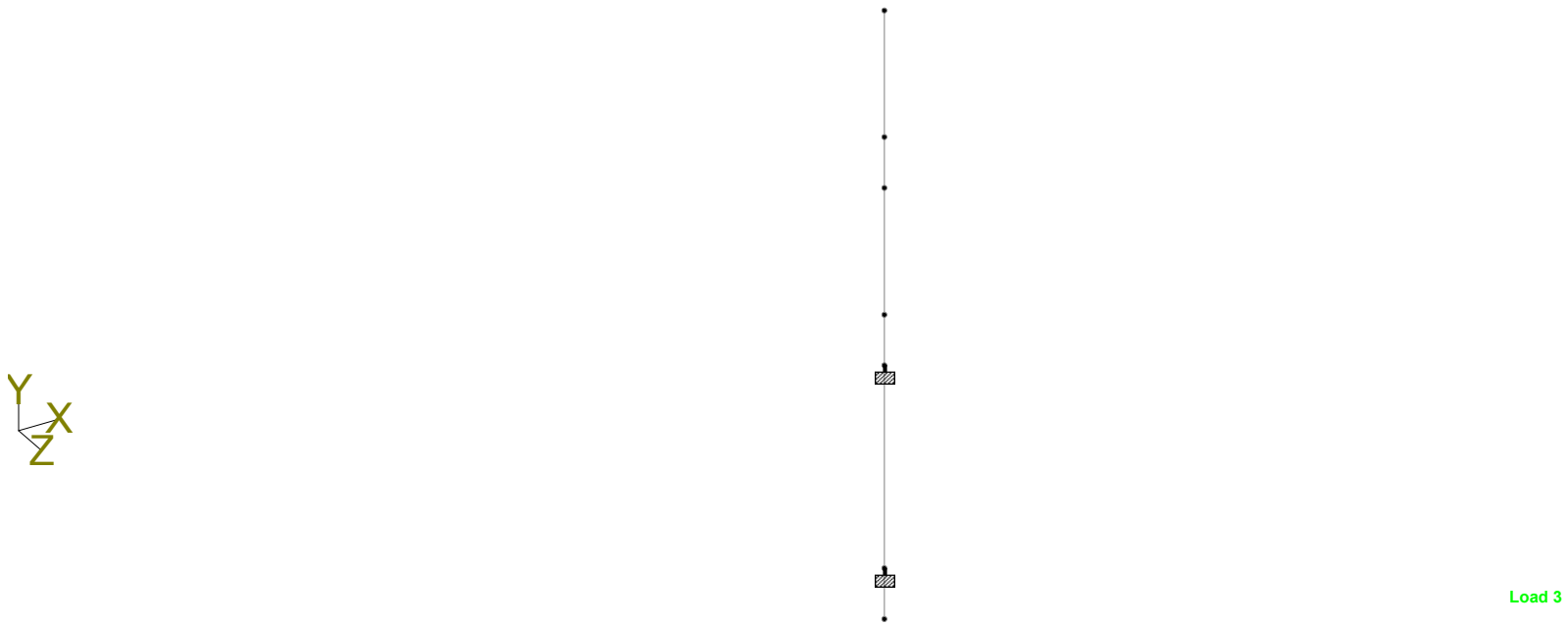
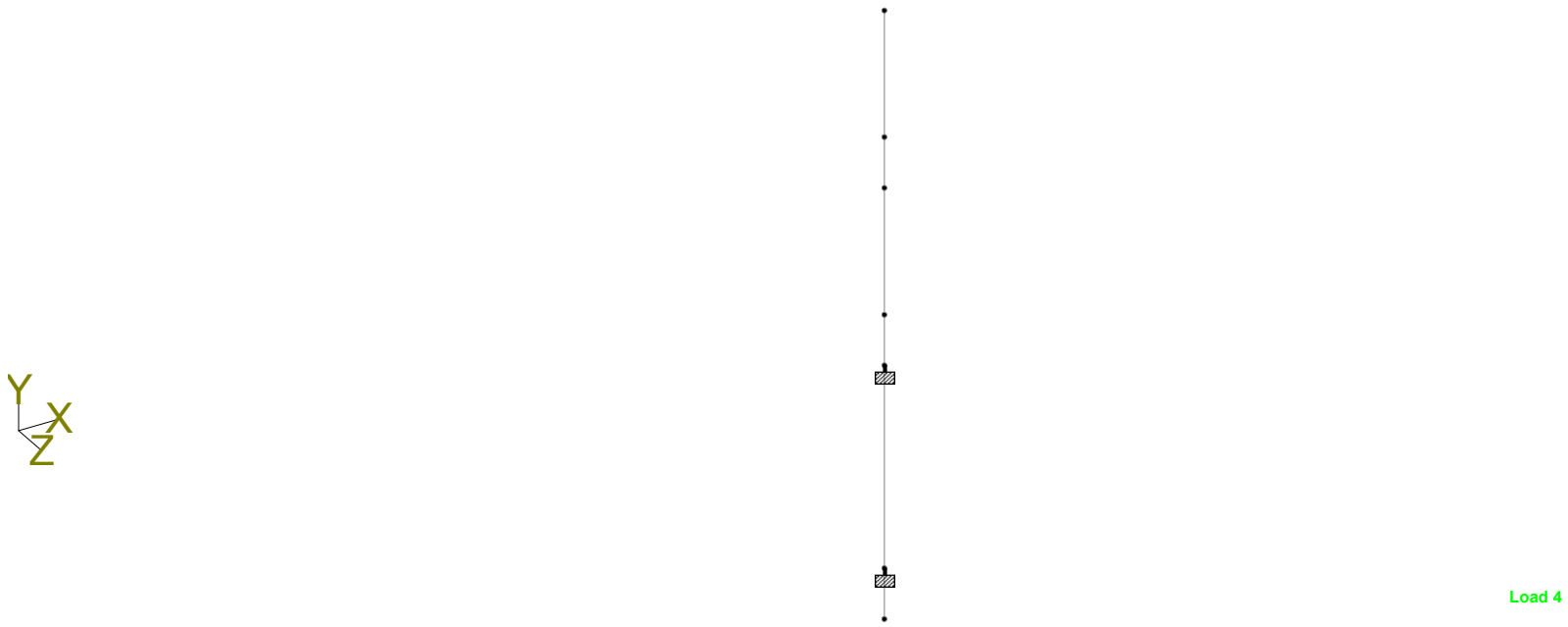
-0.052 kip
-0.052 kip
-0.054 kip
Y
X
Z
Load 1 (SELF Y)

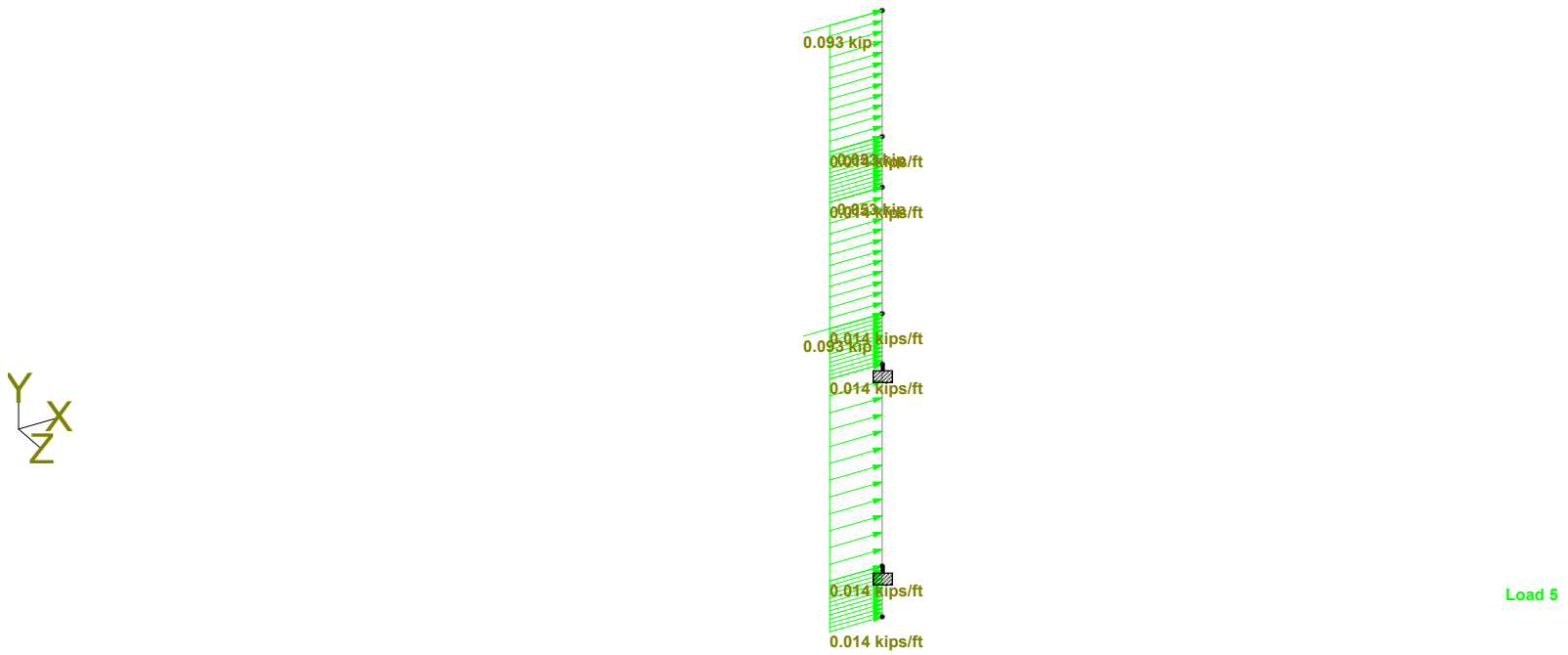

0.125 kip
0.037 kips/ft
0.057 kip
0.037 kips/ft
0.057 kip
0.125 kip
0.037 kips/ft
0.037 kips/ft
0.037 kips/ft
0.037 kips/ft
Y
X
Z
Load 2

Software licensed to Dewberry	Job No **50093840**	Sheet No A-19	Rev
	Part Alpha & Gamma Sectors		
Job Title CT2490 - East Hampton Main Street	Ref		
	By PD	Date 12-Feb-19	Chd JY
Client AT&T	File Alpha & Gamma Sector.s	Date/Time 25-Feb-2019 13:32	

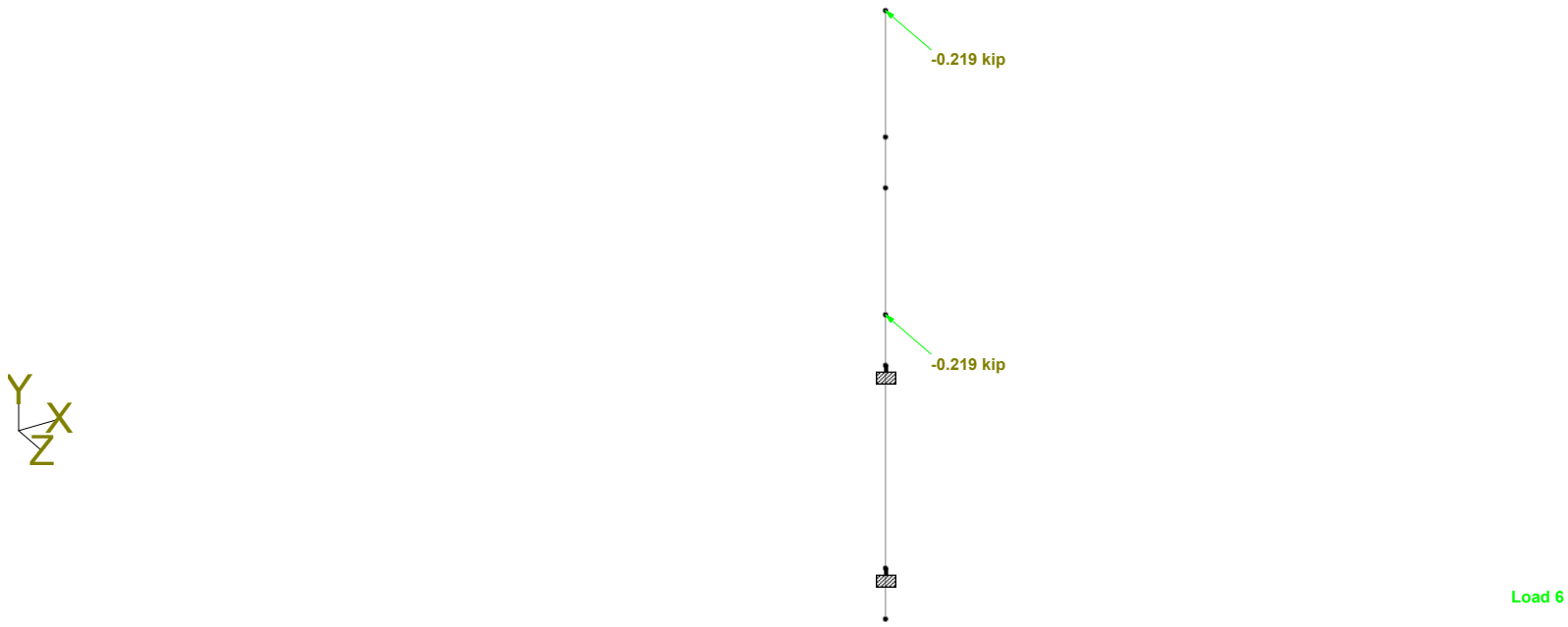


Software licensed to Dewberry	Job No **50093840**	Sheet No A-20	Rev
	Part Alpha & Gamma Sectors		
Job Title CT2490 - East Hampton Main Street	Ref		
	By PD	Date 12-Feb-19	Chd JY
Client AT&T	File Alpha & Gamma Sector.s	Date/Time 25-Feb-2019 13:32	



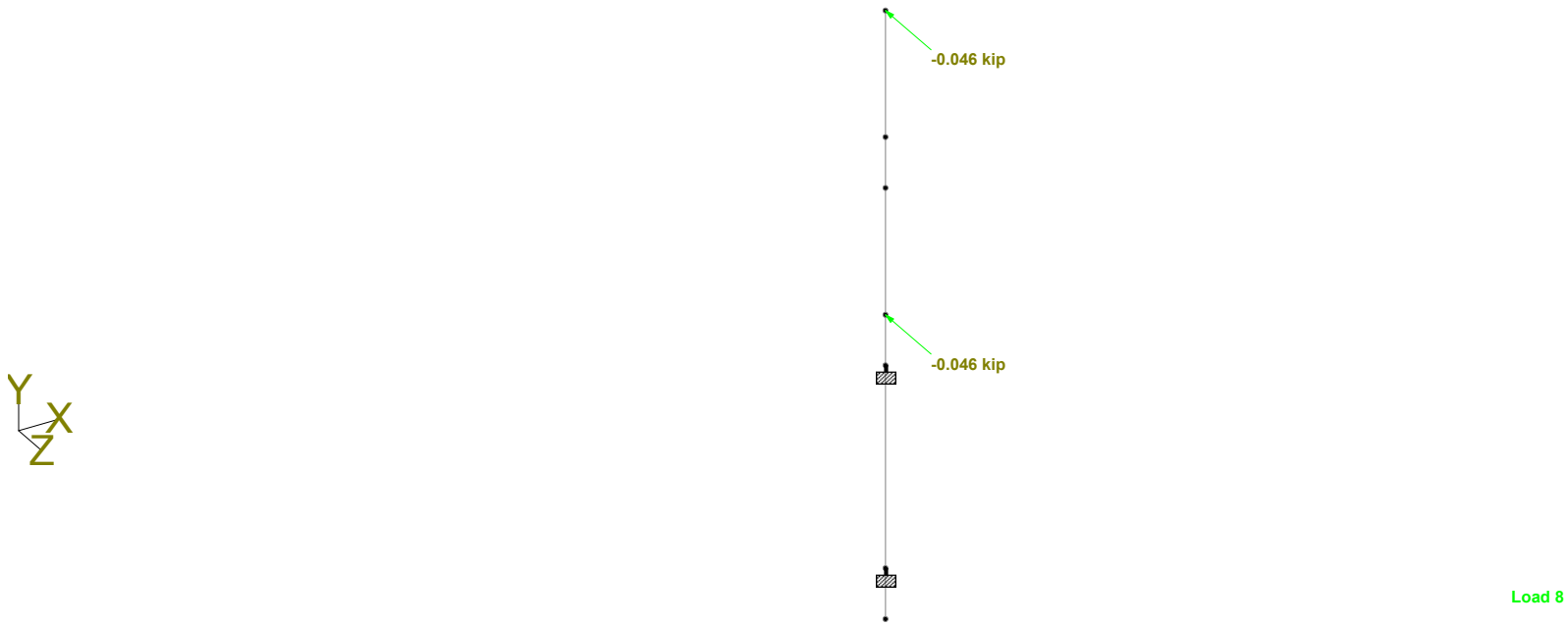

0.093 kip
0.014 kips/ft
0.014 kips/ft
0.014 kips/ft
0.093 kip
0.014 kips/ft
0.014 kips/ft
0.014 kips/ft
Y
X
Z
Load 5

Software licensed to Dewberry	Job No 50093840	Sheet No A-22	Rev
	Part Alpha & Gamma Sectors		
Job Title CT2490 - East Hampton Main Street	Ref		
	By PD	Date 12-Feb-19	Chd JY
Client AT&T	File Alpha & Gamma Sector.s	Date/Time 25-Feb-2019 13:32	




0.023 kip
0.004 kips/ft
0.004 kips/ft
0.004 kips/ft
0.023 kip
0.004 kips/ft
0.004 kips/ft
0.004 kips/ft
Y
X
Z

Load 7


-0.046 kip
-0.046 kip
Y
X
Z
Load 8


0.017 kip
0.004 kips/ft
0.004 kips/ft
0.004 kips/ft
0.004 kips/ft
0.004 kips/ft
0.004 kips/ft
Y
X
Z

Load 9

Software licensed to Dewberry	Job No 50093840	Sheet No A-26	Rev
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Job Title CT2490 - East Hampton Main Street	Ref		
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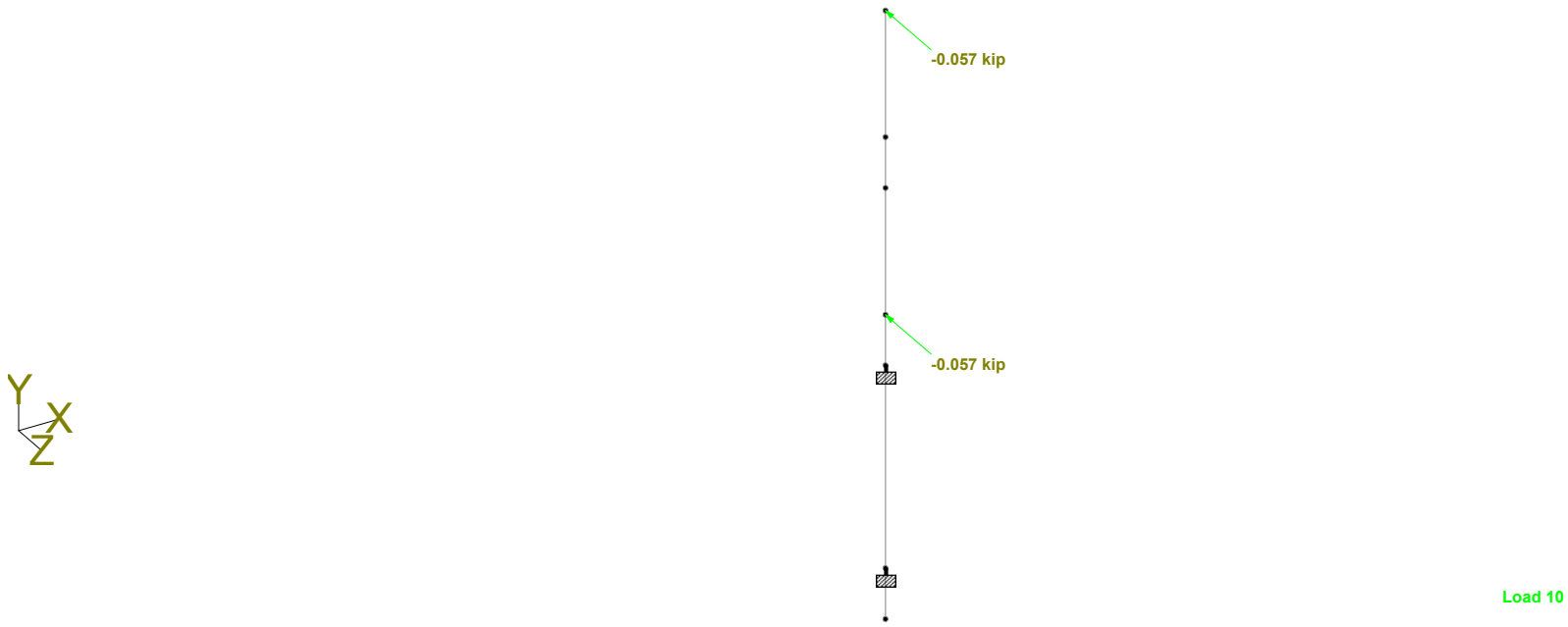
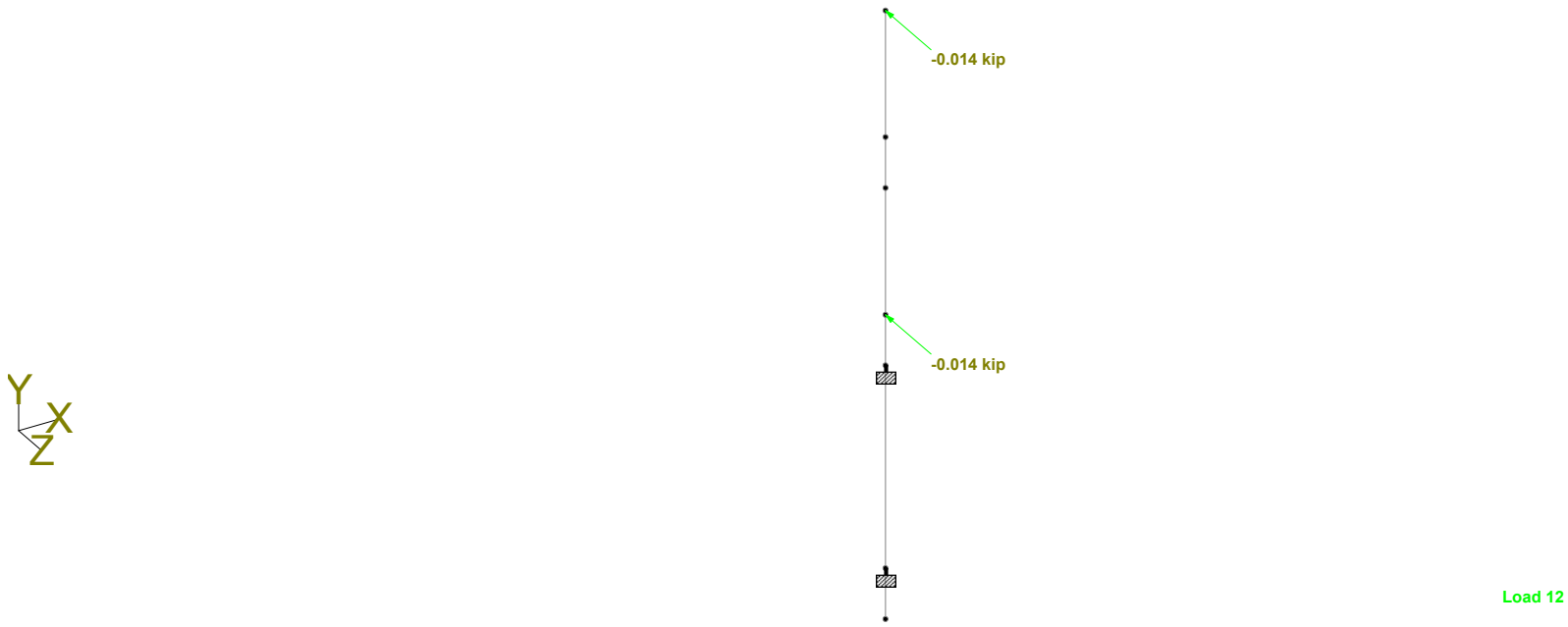
Client AT&T	File Alpha & Gamma Sector.s	Date/Time 25-Feb-2019 13:32	

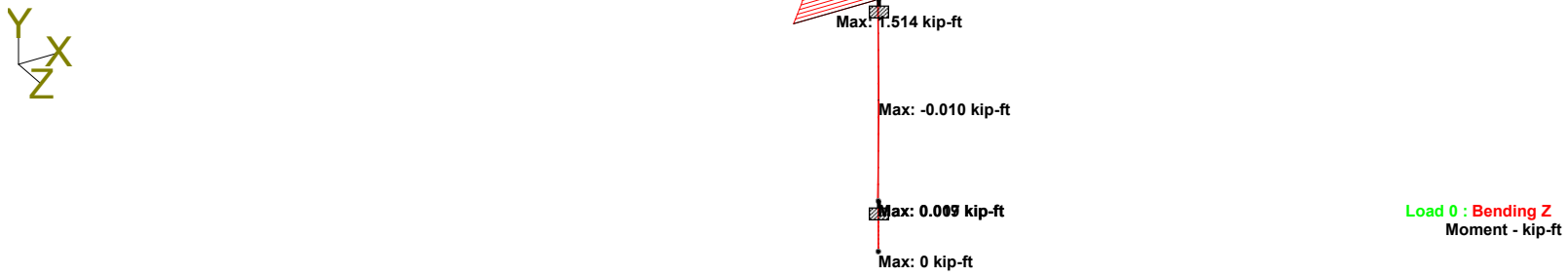



0.006 kip
0.001 kips/ft
0.001 kips/ft
0.001 kips/ft
0.006 kip
0.001 kips/ft
0.001 kips/ft
0.001 kips/ft
Y
X
Z
Load 11

Software licensed to Dewberry	Job No 50093840	Sheet No A-28	Rev
	Part Alpha & Gamma Sectors		
Job Title CT2490 - East Hampton Main Street	Ref		
	By PD	Date 12-Feb-19	Chd JY
Client AT&T	File Alpha & Gamma Sector.s	Date/Time 25-Feb-2019 13:32	

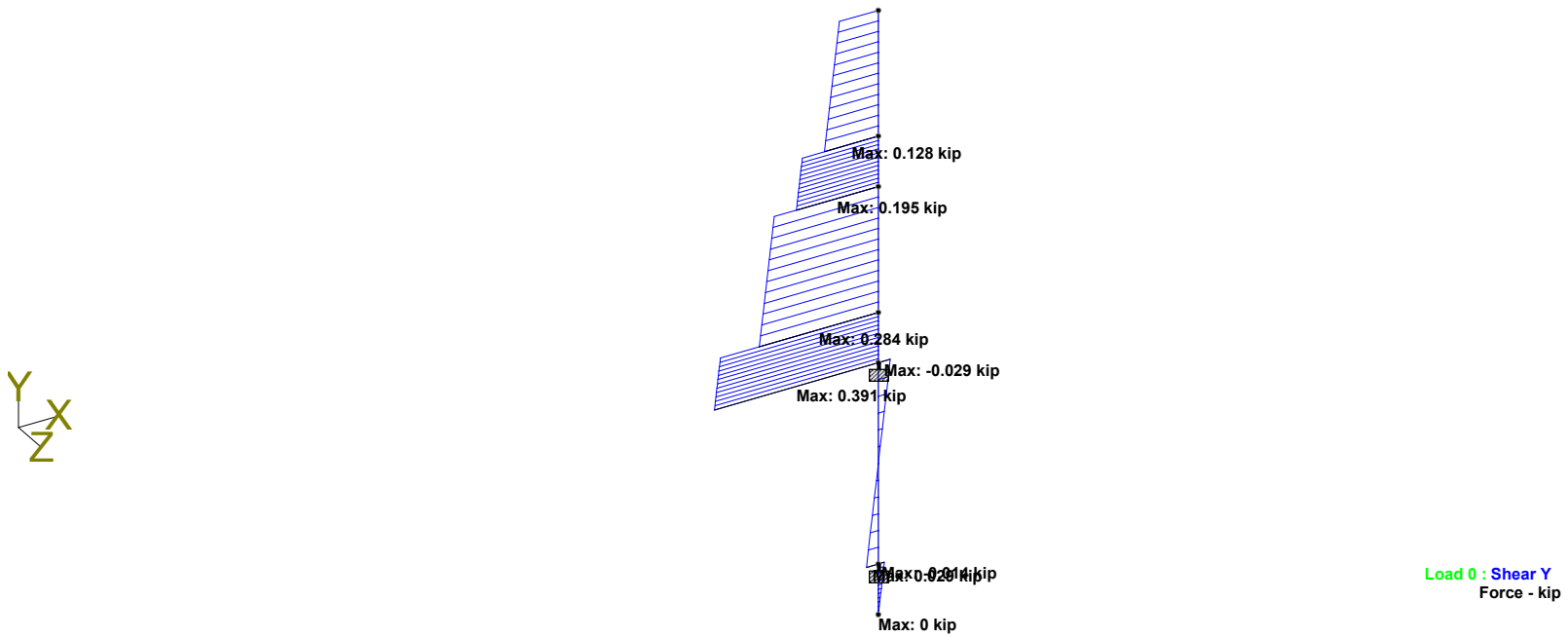


Envelope X-Direction Bending



Envelope Z-Direction Bending

Envelope X-Direction Shear



Envelope Z-Direction Shear

Beam Combined Axial and Bending Stresses Summary

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (kip/in^2)	d (ft)	Corner	Stress (kip/in^2)	d (ft)	Corner
1	1:DL	1.000	0.000	0.000		-0.003	1.000	
	2:DI	1.000				-0.009	1.000	
	3:LM	1.000						
	4:LV	1.000						
	5:W(X)O	1.000	0.021	1.000		-0.021	1.000	
	6:W(Z)O	1.000						
	7:W(X)I	1.000	0.006	1.000		-0.006	1.000	
	8:W(Z)I	1.000						
	9:W(X)S	1.000	0.005	1.000		-0.005	1.000	
	10:W(Z)S	1.000						
	11:W(X)M	1.000	0.001	1.000		-0.001	1.000	
	12:W(Z)M	1.000						
	13:1.2D + 1.0W	1.000	0.017	1.000		-0.025	1.000	
	14:1.2D + 1.0W	1.000	0.000	0.000		-0.004	1.000	
	15:1.2D + 1.0D	1.000	0.000	0.000		-0.019	1.000	
	16:1.2D + 1.0D	1.000	0.000	0.000		-0.013	1.000	
	17:1.4D	1.000	0.000	0.000		-0.005	1.000	
	18:1.0D + 1.0W	1.000	0.002	1.000		-0.009	1.000	
	19:1.0D + 1.0W	1.000	0.000	0.000		-0.003	1.000	
2	1:DL	4.000	0.007	0.000		-0.007	4.000	
	2:DI	4.000	0.018	0.000		-0.018	4.000	
	3:LM	4.000						
	4:LV	4.000						
	5:W(X)O	4.000	0.056	0.000		-0.056	0.000	
	6:W(Z)O	4.000						
	7:W(X)I	4.000	0.017	0.000		-0.017	0.000	
	8:W(Z)I	4.000						
	9:W(X)S	4.000	0.015	0.000		-0.015	0.000	
	10:W(Z)S	4.000						

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (kip/in^2)	d (ft)	Corner	Stress (kip/in^2)	d (ft)	Corner
	11:W(X)M	4.000	0.004	0.000		-0.004	0.000	
	12:W(Z)M	4.000						
	13:1.2D + 1.0W	4.000	0.065	0.000		-0.065	4.000	
	14:1.2D + 1.0W	4.000	0.008	0.000		-0.008	4.000	
	15:1.2D + 1.0D	4.000	0.043	0.000		-0.043	4.000	
	16:1.2D + 1.0D	4.000	0.026	0.000		-0.026	4.000	
	17:1.4D	4.000	0.010	0.000		-0.010	4.000	
	18:1.0D + 1.0W	4.000	0.021	0.000		-0.021	4.000	
	19:1.0D + 1.0W	4.000	0.007	0.000		-0.007	4.000	
3	1:DL	1.000	0.075	0.000				
	2:DI	1.000	0.151	0.000				
	3:LM	1.000						
	4:LV	1.000						
	5:W(X)O	1.000	4.481	0.000		-4.481	0.000	
	6:W(Z)O	1.000	5.190	0.000		-5.190	0.000	
	7:W(X)I	1.000	1.200	0.000		-1.200	0.000	
	8:W(Z)I	1.000	1.098	0.000		-1.098	0.000	
	9:W(X)S	1.000	0.886	0.000		-0.886	0.000	
	10:W(Z)S	1.000	1.342	0.000		-1.342	0.000	
	11:W(X)M	1.000	0.289	0.000		-0.289	0.000	
	12:W(Z)M	1.000	0.335	0.000		-0.335	0.000	
	13:1.2D + 1.0W	1.000	4.571	0.000		-4.391	0.000	
	14:1.2D + 1.0W	1.000	5.280	0.000		-5.100	0.000	
	15:1.2D + 1.0D	1.000	1.442	0.000		-0.959	0.000	
	16:1.2D + 1.0D	1.000	1.339	0.000		-0.856	0.000	
	17:1.4D	1.000	0.105	0.000				
	18:1.0D + 1.0W	1.000	0.961	0.000		-0.811	0.000	
	19:1.0D + 1.0W	1.000	1.417	0.000		-1.267	0.000	
4	1:DL	2.500	0.059	0.000				

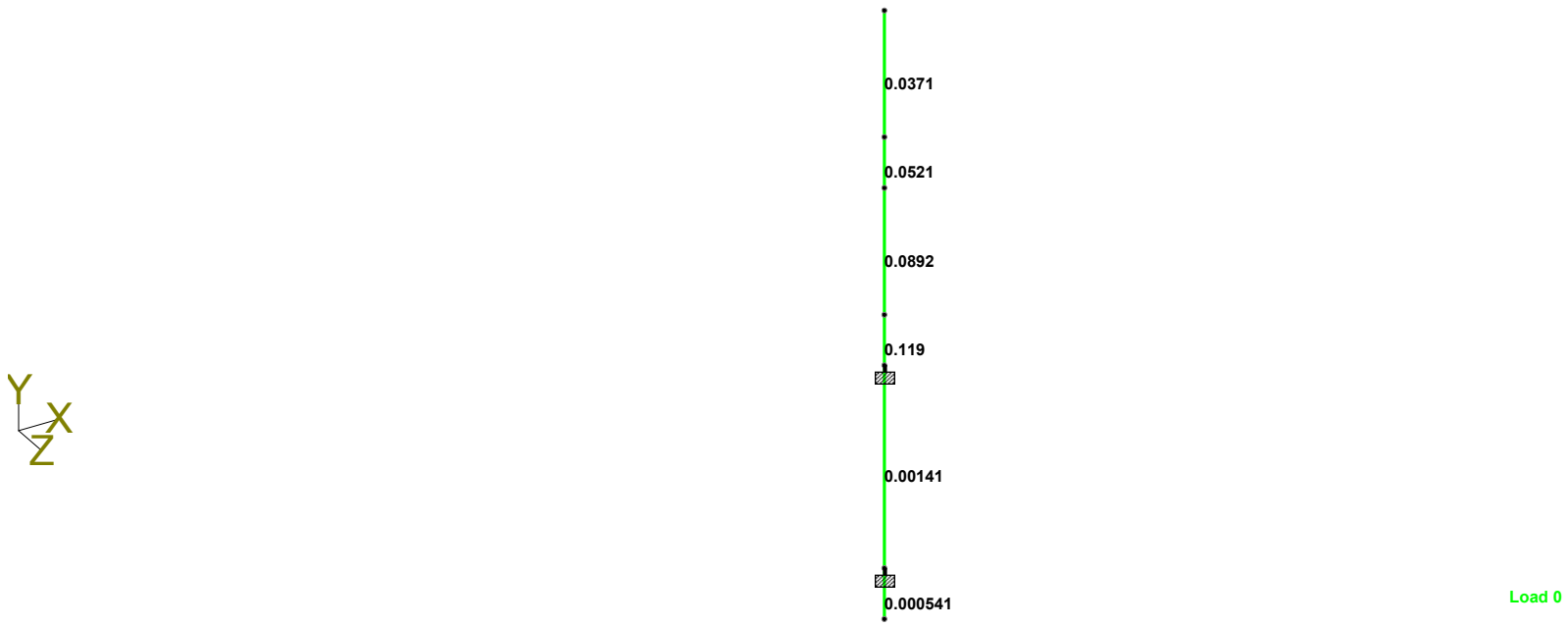
Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (kip/in^2)	d (ft)	Corner	Stress (kip/in^2)	d (ft)	Corner
	2:DI	2.500	0.112	0.000				
	3:LM	2.500						
	4:LV	2.500						
	5:W(X)O	2.500	3.345	0.000		-3.345	0.000	
	6:W(Z)O	2.500	3.893	0.000		-3.893	0.000	
	7:W(X)I	2.500	0.896	0.000		-0.896	0.000	
	8:W(Z)I	2.500	0.823	0.000		-0.823	0.000	
	9:W(X)S	2.500	0.661	0.000		-0.661	0.000	
	10:W(Z)S	2.500	1.006	0.000		-1.006	0.000	
	11:W(X)M	2.500	0.216	0.000		-0.216	0.000	
	12:W(Z)M	2.500	0.252	0.000		-0.252	0.000	
	13:1.2D + 1.0W	2.500	3.415	0.000		-3.275	0.000	
	14:1.2D + 1.0W	2.500	3.963	0.000		-3.822	0.000	
	15:1.2D + 1.0D	2.500	1.078	0.000		-0.713	0.000	
	16:1.2D + 1.0D	2.500	1.005	0.000		-0.641	0.000	
	17:1.4D	2.500	0.082	0.000				
	18:1.0D + 1.0W	2.500	0.719	0.000		-0.602	0.000	
	19:1.0D + 1.0W	2.500	1.065	0.000		-0.948	0.000	
5	1:DL	1.000	0.038	0.000				
	2:DI	1.000	0.076	0.000				
	3:LM	1.000						
	4:LV	1.000						
	5:W(X)O	1.000	1.375	0.000		-1.375	0.000	
	6:W(Z)O	1.000	2.271	0.000		-2.271	0.000	
	7:W(X)I	1.000	0.359	0.000		-0.359	0.000	
	8:W(Z)I	1.000	0.480	0.000		-0.480	0.000	
	9:W(X)S	1.000	0.267	0.000		-0.267	0.000	
	10:W(Z)S	1.000	0.587	0.000		-0.587	0.000	
	11:W(X)M	1.000	0.089	0.000		-0.089	0.000	

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (kip/in^2)	d (ft)	Corner	Stress (kip/in^2)	d (ft)	Corner
	12:W(Z)M	1.000	0.147	0.000		-0.147	0.000	
	13:1.2D + 1.0W	1.000	1.420	0.000		-1.329	0.000	
	14:1.2D + 1.0W	1.000	2.316	0.000		-2.226	0.000	
	15:1.2D + 1.0D	1.000	0.480	0.000		-0.239	0.000	
	16:1.2D + 1.0D	1.000	0.601	0.000		-0.360	0.000	
	17:1.4D	1.000	0.053	0.000				
	18:1.0D + 1.0W	1.000	0.305	0.000		-0.230	0.000	
	19:1.0D + 1.0W	1.000	0.625	0.000		-0.550	0.000	
6	1:DL	2.500	0.022	0.000				
	2:DI	2.500	0.053	0.000				
	3:LM	2.500						
	4:LV	2.500						
	5:W(X)O	2.500	0.817	0.000		-0.817	0.000	
	6:W(Z)O	2.500	1.622	0.000		-1.622	0.000	
	7:W(X)I	2.500	0.210	0.000		-0.210	0.000	
	8:W(Z)I	2.500	0.343	0.000		-0.343	0.000	
	9:W(X)S	2.500	0.157	0.000		-0.157	0.000	
	10:W(Z)S	2.500	0.419	0.000		-0.419	0.000	
	11:W(X)M	2.500	0.053	0.000		-0.053	0.000	
	12:W(Z)M	2.500	0.105	0.000		-0.105	0.000	
	13:1.2D + 1.0W	2.500	0.843	0.000		-0.791	0.000	
	14:1.2D + 1.0W	2.500	1.648	0.000		-1.596	0.000	
	15:1.2D + 1.0D	2.500	0.289	0.000		-0.131	0.000	
	16:1.2D + 1.0D	2.500	0.422	0.000		-0.264	0.000	
	17:1.4D	2.500	0.030	0.000				
	18:1.0D + 1.0W	2.500	0.179	0.000		-0.136	0.000	
	19:1.0D + 1.0W	2.500	0.441	0.000		-0.398	0.000	

Utilization Ratio



Failed Members

There is no data of this type.

X-Direction Displacement

1.5% Cantilever = (7ft)(12 in/ft)(0.0015) = 1.26 in
0.026 in < 1.26 in --> OK

Load 18 : Displacement
Displacement - in

Z-Direction Displacement

1.5% Cantilever = (7ft)(12 in/ft)(0.0015) = 1.26 in
0.044 in < 1.26 in --> OK

Load 19 : Displacement
Displacement - in

Node Displacements

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
1	1:DL	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6:W(Z)O	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	7:W(X)I	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	8:W(Z)I	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	9:W(X)S	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	10:W(Z)S	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	11:W(X)M	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	12:W(Z)M	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	13:1.2D + 1.0W	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	14:1.2D + 1.0W	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	15:1.2D + 1.0D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	16:1.2D + 1.0D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	17:1.4D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	19:1.0D + 1.0W	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
2	1:DL	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6:W(Z)O	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	7:W(X)I	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	8:W(Z)I	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	9:W(X)S	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	10:W(Z)S	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	11:W(X)M	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Node Displacements Cont...

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
	12:W(Z)M	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	13:1.2D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	14:1.2D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	15:1.2D + 1.0D	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	16:1.2D + 1.0D	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	17:1.4D	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	19:1.0D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3	1:DL	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6:W(Z)O	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	7:W(X)I	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	8:W(Z)I	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	9:W(X)S	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	10:W(Z)S	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	11:W(X)M	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	12:W(Z)M	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	13:1.2D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	14:1.2D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	15:1.2D + 1.0D	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	16:1.2D + 1.0D	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	17:1.4D	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	19:1.0D + 1.0W	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	1:DL	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Node Displacements Cont...

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.005	0.000	0.000	0.005	0.000	0.000	-0.001
	6:W(Z)O	0.000	0.000	-0.005	0.005	-0.001	0.000	0.000
	7:W(X)I	0.001	0.000	0.000	0.001	0.000	0.000	-0.000
	8:W(Z)I	0.000	0.000	-0.001	0.001	-0.000	0.000	0.000
	9:W(X)S	0.001	0.000	0.000	0.001	0.000	0.000	-0.000
	10:W(Z)S	0.000	0.000	-0.001	0.001	-0.000	0.000	0.000
	11:W(X)M	0.000	0.000	0.000	0.000	0.000	0.000	-0.000
	12:W(Z)M	0.000	0.000	-0.000	0.000	-0.000	0.000	0.000
	13:1.2D + 1.0W	0.005	-0.000	0.000	0.005	0.000	0.000	-0.001
	14:1.2D + 1.0W	0.000	-0.000	-0.005	0.005	-0.001	0.000	0.000
	15:1.2D + 1.0D	0.001	-0.000	0.000	0.001	0.000	0.000	-0.000
	16:1.2D + 1.0D	0.000	-0.000	-0.001	0.001	-0.000	0.000	0.000
	17:1.4D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.001	-0.000	0.000	0.001	0.000	0.000	-0.000
	19:1.0D + 1.0W	0.000	-0.000	-0.001	0.001	-0.000	0.000	0.000
5	1:DL	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.045	0.000	0.000	0.045	0.000	0.000	-0.002
	6:W(Z)O	0.000	0.000	-0.054	0.054	-0.002	0.000	0.000
	7:W(X)I	0.012	0.000	0.000	0.012	0.000	0.000	-0.000
	8:W(Z)I	0.000	0.000	-0.011	0.011	-0.000	0.000	0.000
	9:W(X)S	0.009	0.000	0.000	0.009	0.000	0.000	-0.000
	10:W(Z)S	0.000	0.000	-0.014	0.014	-0.001	0.000	0.000
	11:W(X)M	0.003	0.000	0.000	0.003	0.000	0.000	-0.000
	12:W(Z)M	0.000	0.000	-0.003	0.003	-0.000	0.000	0.000
	13:1.2D + 1.0W	0.045	-0.000	0.000	0.045	0.000	0.000	-0.002
	14:1.2D + 1.0W	0.000	-0.000	-0.054	0.054	-0.002	0.000	0.000

Node Displacements Cont...

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
	15:1.2D + 1.0D	0.012	-0.000	0.000	0.012	0.000	0.000	-0.000
	16:1.2D + 1.0D	0.000	-0.000	-0.011	0.011	-0.000	0.000	0.000
	17:1.4D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.009	-0.000	0.000	0.009	0.000	0.000	-0.000
	19:1.0D + 1.0W	0.000	-0.000	-0.014	0.014	-0.001	0.000	0.000
6	1:DL	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.068	0.000	0.000	0.068	0.000	0.000	-0.002
	6:W(Z)O	0.000	0.000	-0.083	0.083	-0.003	0.000	0.000
	7:W(X)I	0.018	0.000	0.000	0.018	0.000	0.000	-0.001
	8:W(Z)I	0.000	0.000	-0.018	0.018	-0.001	0.000	0.000
	9:W(X)S	0.013	0.000	0.000	0.013	0.000	0.000	-0.000
	10:W(Z)S	0.000	0.000	-0.022	0.022	-0.001	0.000	0.000
	11:W(X)M	0.004	0.000	0.000	0.004	0.000	0.000	-0.000
	12:W(Z)M	0.000	0.000	-0.005	0.005	-0.000	0.000	0.000
	13:1.2D + 1.0W	0.068	-0.000	0.000	0.068	0.000	0.000	-0.002
	14:1.2D + 1.0W	0.000	-0.000	-0.083	0.083	-0.003	0.000	0.000
	15:1.2D + 1.0D	0.018	-0.000	0.000	0.018	0.000	0.000	-0.001
	16:1.2D + 1.0D	0.000	-0.000	-0.018	0.018	-0.001	0.000	0.000
	17:1.4D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.013	-0.000	0.000	0.013	0.000	0.000	-0.000
	19:1.0D + 1.0W	0.000	-0.000	-0.022	0.022	-0.001	0.000	0.000
7	1:DL	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	2:DI	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	0.131	0.000	0.000	0.131	0.000	0.000	-0.002
	6:W(Z)O	0.000	0.000	-0.169	0.169	-0.003	0.000	0.000

Node Displacements Cont...

Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
	7:W(X)I	0.035	0.000	0.000	0.035	0.000	0.000	-0.001
	8:W(Z)I	0.000	0.000	-0.036	0.036	-0.001	0.000	0.000
	9:W(X)S	0.026	0.000	0.000	0.026	0.000	0.000	-0.000
	10:W(Z)S	0.000	0.000	-0.044	0.044	-0.001	0.000	0.000
	11:W(X)M	0.008	0.000	0.000	0.008	0.000	0.000	-0.000
	12:W(Z)M	0.000	0.000	-0.011	0.011	-0.000	0.000	0.000
	13:1.2D + 1.0W	0.131	-0.000	0.000	0.131	0.000	0.000	-0.002
	14:1.2D + 1.0W	0.000	-0.000	-0.169	0.169	-0.003	0.000	0.000
	15:1.2D + 1.0D	0.035	-0.000	0.000	0.035	0.000	0.000	-0.001
	16:1.2D + 1.0D	0.000	-0.000	-0.036	0.036	-0.001	0.000	0.000
	17:1.4D	0.000	-0.000	0.000	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	0.026	-0.000	0.000	0.026	0.000	0.000	-0.000
	19:1.0D + 1.0W	0.000	-0.000	-0.044	0.044	-0.001	0.000	0.000

Reactions

		Horizontal	Vertical	Horizontal	Moment		
Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (kip-ft)	MY (kip-ft)	MZ (kip-ft)
2	1:DL	0.000	0.042	0.000	0.000	0.000	0.000
	2:DI	0.000	0.112	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	-0.043	0.000	0.000	0.000	0.000	0.012
	6:W(Z)O	0.000	0.000	0.000	0.000	0.000	0.000
	7:W(X)I	-0.013	0.000	0.000	0.000	0.000	0.004
	8:W(Z)I	0.000	0.000	0.000	0.000	0.000	0.000
	9:W(X)S	-0.011	0.000	0.000	0.000	0.000	0.003
	10:W(Z)S	0.000	0.000	0.000	0.000	0.000	0.000
	11:W(X)M	-0.003	0.000	0.000	0.000	0.000	0.001
	12:W(Z)M	0.000	0.000	0.000	0.000	0.000	0.000
	13:1.2D + 1.0W	-0.043	0.051	0.000	0.000	0.000	0.012
	14:1.2D + 1.0W	0.000	0.051	0.000	0.000	0.000	0.000
	15:1.2D + 1.0D	-0.013	0.163	0.000	0.000	0.000	0.004
	16:1.2D + 1.0D	0.000	0.163	0.000	0.000	0.000	0.000
	17:1.4D	0.000	0.059	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	-0.011	0.042	0.000	0.000	0.000	0.003
	19:1.0D + 1.0W	0.000	0.042	0.000	0.000	0.000	0.000
3	1:DL	0.000	0.339	0.000	0.000	0.000	0.000
	2:DI	0.000	0.701	0.000	0.000	0.000	0.000
	3:LM	0.000	0.000	0.000	0.000	0.000	0.000
	4:LV	0.000	0.000	0.000	0.000	0.000	0.000
	5:W(X)O	-0.419	0.000	0.000	0.000	0.000	1.495
	6:W(Z)O	0.000	0.000	0.438	1.753	0.000	0.000
	7:W(X)I	-0.114	0.000	0.000	0.000	0.000	0.400
	8:W(Z)I	0.000	0.000	0.093	0.371	0.000	0.000
	9:W(X)S	-0.085	0.000	0.000	0.000	0.000	0.294
	10:W(Z)S	0.000	0.000	0.113	0.453	0.000	0.000

Reactions Cont...

Node	L/C	Horizontal FX (kip)	Vertical FY (kip)	Horizontal FZ (kip)	Moment MX (kip-ft)	MY (kip-ft)	MZ (kip-ft)
	11:W(X)M	-0.027	0.000	0.000	0.000	0.000	0.097
	12:W(Z)M	0.000	0.000	0.028	0.113	0.000	0.000
	13:1.2D + 1.0W	-0.419	0.407	0.000	0.000	0.000	1.495
	14:1.2D + 1.0W	0.000	0.407	0.438	1.753	0.000	0.000
	15:1.2D + 1.0D	-0.114	1.107	0.000	0.000	0.000	0.400
	16:1.2D + 1.0D	0.000	1.107	0.093	0.371	0.000	0.000
	17:1.4D	0.000	0.475	0.000	0.000	0.000	0.000
	18:1.0D + 1.0W	-0.085	0.339	0.000	0.000	0.000	0.294
	19:1.0D + 1.0W	0.000	0.339	0.113	0.453	0.000	0.000

Check for Twisting of Brackets

Governs for Z-Axis Bending

Governs for Combined Shear at U-Bolt

ALPHA GAMMA SECTOR REACTION CHECK

Design Criteria

1. TMS 402-11/ACI 530-11/ASCE 5-11 Building Code Requirements for Masonry Structures
2. ACI -318-11 Building Code Requirements for Structural Concrete
3. AISC 360-10 Specifications for Structural Steel Buildings

References

Refer to construction drawings by Hudson Design Group, dated November 8, 2016 for pipe mount connection details

Thru Bolt Check

M_z =	1.50	kip-ft	Max Z-Axis Bending at Z-Bracket, See Appendix A-49
d =	1.50	in	Bending arm, 1/2 L3x3x1/4 Angle Depth
T =	11.96	kip	Tension at Thru Bolts
$T_{thru\ bolt}$ =	5.98	kip	Tension in 3/4" Thru Bolt
$f_{y\ thru\ bolt}$ =	13.54	ksi	Tensile Stress in Thru Bolt --> **OK BY INSPECTION**

* Twisting of Brackets will govern for shear in thru bolts

M_x =	1.753	kip-ft	Max Twisting at Z-Bracket, See Appendix A-49
d =	8	in	Assumed Spacing of thru bolts (conservative)
$V_{thru\ bolt}$ =	2.63	kip	Shear at 3/4" Thru Bolt
$f_{v\ thru\ bolt}$ =	5.95	ksi	Shear Stress in Thru Bolt --> **OK BY INSPECTION**

U-Bolt Check

M_z =	1.50	kip-ft			Max Z-Axis Bending at Z-Bracket, See Appendix A-49
d =	1.50	in			Bending arm, 1/2 L3x3x1/4 Angle Depth
T =	11.96	kip			Tension at U-Bolts
$T_{U\text{-}bolt}$ =	5.98	kip			Tension in 1/2" U-Bolt
$f_{y\ U\text{-}bolt}$ =	30.46	ksi			Tensile Stress in TU-Bolt
F_{nt}/Ω =	45.00	ksi			Allowable Tensile Stress (Assume A325) AISC Part 16, Chapter J
	30.46	ksi	<	45.00 ksi	**OK!**

F_x =	0.114	kip	Max Lateral Shear at U-Bolt, See Appendix A-49
F_y =	1.107	kip	Max Vertical Shear at U-Bolt, See Appendix A-49
V =	1.113	kip	Combined Shear at 1/2" U-Bolt
$f_{v\ U\text{-}bolt}$ =	2.83	ksi	Shear Stress in U-Bolt --> **OK BY INSPECTION**

Penthouse Wall Global Check

Based on Engineering Judgement, the loads produced by the antenna mounting pipes is negligible on the penthouse CMU and steel stud walls

APPENDIX B

BETA SECTOR DESIGN LOADS

Design Criteria

1. ASCE 7-16, ASD Load Combo 1.0D + 0.6W for stability check, with a Factor of Safety of 1.5.

$q_{z\ design}$ = 31.73 psf x 0.6 = 19.04 psf

References

1. Construction Drawings by Hudson Design Group dated November 8th, 2016
2. Structural Analysis by Hudson Design Group dated February 14, 2014

Assumptions

1. The total weight of the proposed equipment is less than the total weight of the equipment the ballast frame was originally designed for. Therefore, the strength and serviceability of the steel members, and the bearing check on the existing bearing walls need not be investigated, only the global stability of the ballast frame.
2. Only wind pressure applied normal to the short and long sides of the ballast frame governs for sliding and overturning.
3. Per Structural Analysis by Hudson Design Group dated February 14, 2014, there are (22) CMU blocks along each longitudinal beam. Assume CMU blocks are 35 lb each and aligned along they're short face (8"). Contractor shall V.I.F.

Equipment Dead Loads

	Description	Dimensions (in)			Weight (lb)
		W	D	H	
Antennas/RRHs	**Kathrein 800-10965**	**20.00**	**6.90**	**78.70**	**108.60**
	CCI OPA-65R-LCUU-H6	14.40	7.30	72.30	56.90
	Ericsson RRUS B2/B12 4449	**13.20**	**9.40**	**17.90**	**70.40**
	Ericsson RRUS B2/B66A 8843	**13.20**	**10.90**	**14.90**	**72.00**
	Ericsson RRUS-32	12.10	7.00	27.20	53.00
	Raycap DC6-48-60-18-8C	9.00		26.00	31.80

***Bold = Proposed**

Structural Members

Member	Dimensions (in)						Weight (lb/ft)
	d	b_f	t_f	t_w	I.D.	O.D.	
W12x19	12.20	4.01	0.350	0.235			19.00
W6x25	6.38	6.08	0.455	0.320			25.00
L3x3x3/8	3.00	3.00	0.375	0.375			7.20
3" STD Pipe					3.07	3.50	7.58
4"x8"x16" CMU							52.50

Wind Pressure

For wind pressure and equipment wind loads, see Appendix A. Refer to construction drawings by Dewberry Engineers Inc. for proposed antenna layout. The proposed layout will consist of three (3) antennas, three (3) RRU's and one (1) surge arrestor. For simplicity, the wind loads for wind pressure applied normal to the equipment will be applied to the ballast frame STAAD model, despite the antenna faces being rotated roughly 30 degrees from the direction of wind (conservative). Due to the configuration of the antennas and RRU's, one (1) RRU and the surge arrestor will be shielded from the wind. Three (3) antennas and two (2) RRU's will draw wind loads in the sliding and overturning analysis.

BETA SECTOR DESIGN LOADS

Equipment Wind Loads (ASCE 7-16)

***Loads shown below are taken from Appendix A and multplied by 0.6**

$F_A = q_{z\ design} G_h (EPA)_A$ TIA-222-H, Section 2.6.11.2, Applies to Strength, Service & Maintenance Conditions

$(EPA)_A = C_a A_a$

$F_A = q_{z\ ice} G_h (EPA)_{A\ ice}$ Ice Condition

$(EPA)_{A\ ice} = C_a A_{a\ ice}$

		No Ice (sf)		Ice (sf)		Strength (lbs)		Ice (lbs)		Service (lbs)		Maintenance (lbs)	
	Equipment	$(EPA)_A$ *(Normal)*	$(EPA)_A$ *(Tangent)*	$(EPA)_A$ *(Normal)*	$(EPA)_A$ *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*	F_A *(Normal)*	F_A *(Tangent)*
Antennas/RRHs	Kathrein 800-10965	13.81	5.83			**262.98**	111.05						
	CCI OPA-65R-LCUU-H6	9.49	5.49			**180.59**	104.44						
	Ericsson RRUS B2/B12 4449	1.97	1.40			**37.48**	26.69						
	Ericsson RRUS B2/B66A 8843	1.64	1.35			**31.20**	25.77						
	Ericsson RRUS-32	2.74	1.67			52.21	31.76						
	Raycap DC6-48-60-18-8C	1.98	1.98			37.66	37.66						

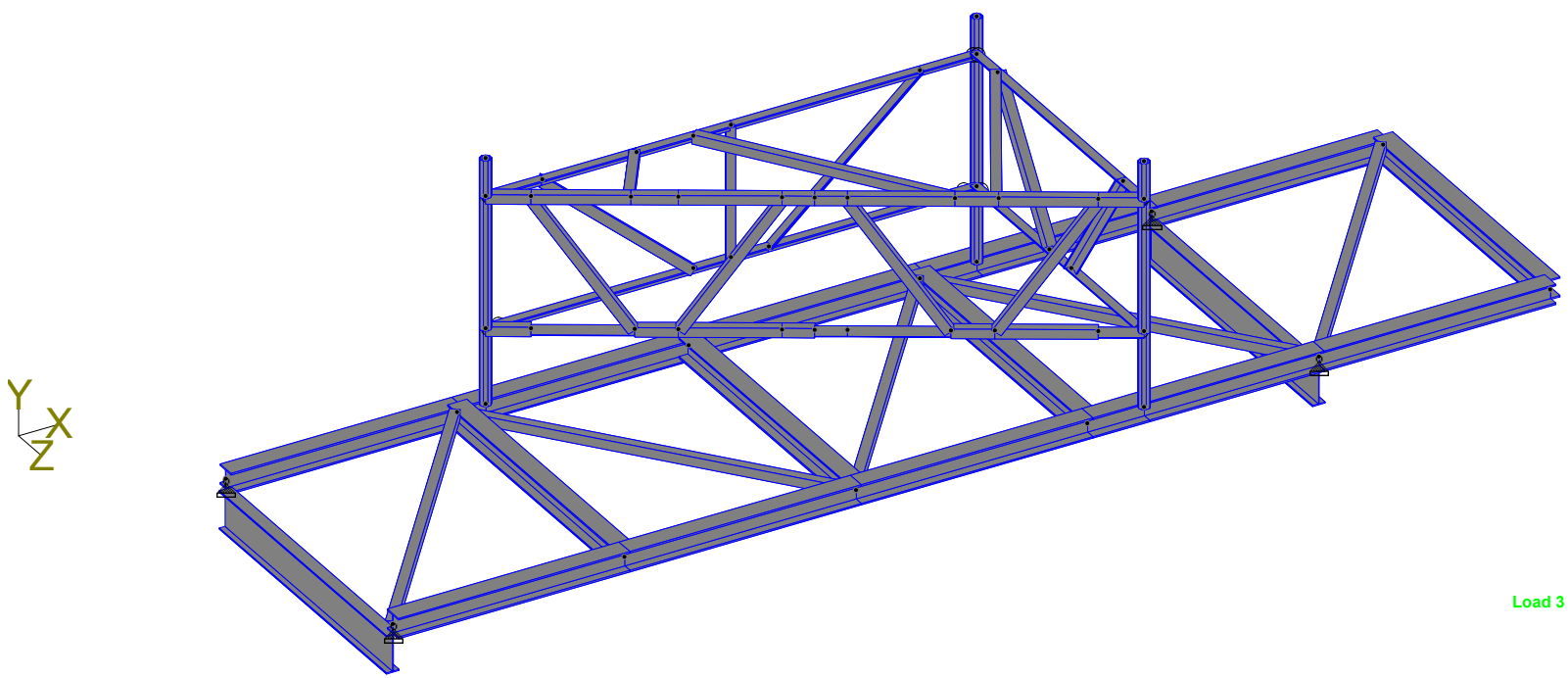
***BOLD = Applied to Beta Sector STAAD Model**

Structure Wind Loads (ASCE 7-16)

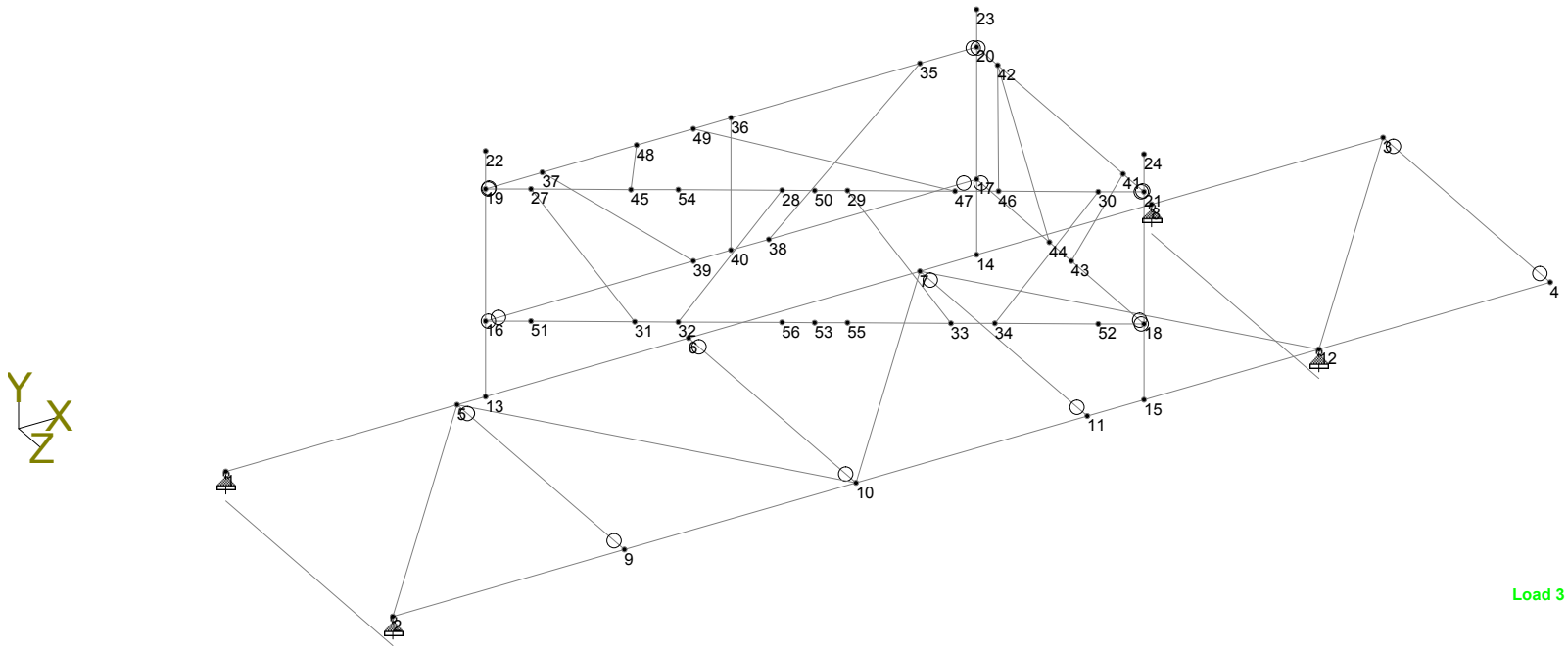
Wind loads on structural elements will be applied linearly: $\omega_{wind} = q_{z\ design} C_a G_h d$, with d being the structure depth or diameter. A conservative Ca value of 1.2 will be used for pipes and 2.0 for W-Shapes and Angles. See Appendix A for $q_{z\ design}$ and G_h.

Member	d (ft)	d_{ice} (ft)	C_a	ω_{wind} (lb/ft)	$\omega_{wind\ ice}$ (lb/ft)	$\omega_{wind\ ser}$ (lb/ft)	$\omega_{wind\ ser}$ (lb/ft)
W12x19	1.02		2.0	**38.71**			
W6x25	0.53		2.0	**20.24**			
L3x3x3/8	0.25		2.0	**9.52**			
3" STD Pipe	0.29		1.2	**6.66**			

***BOLD = Applied to Beta Sector STAAD Model**


Y
X
Z
Load 3

Nodes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31
32
56
53
55
33
34
52
18
6
12
5
13
11
15
10
9
2
Y
X
Z
Load 3

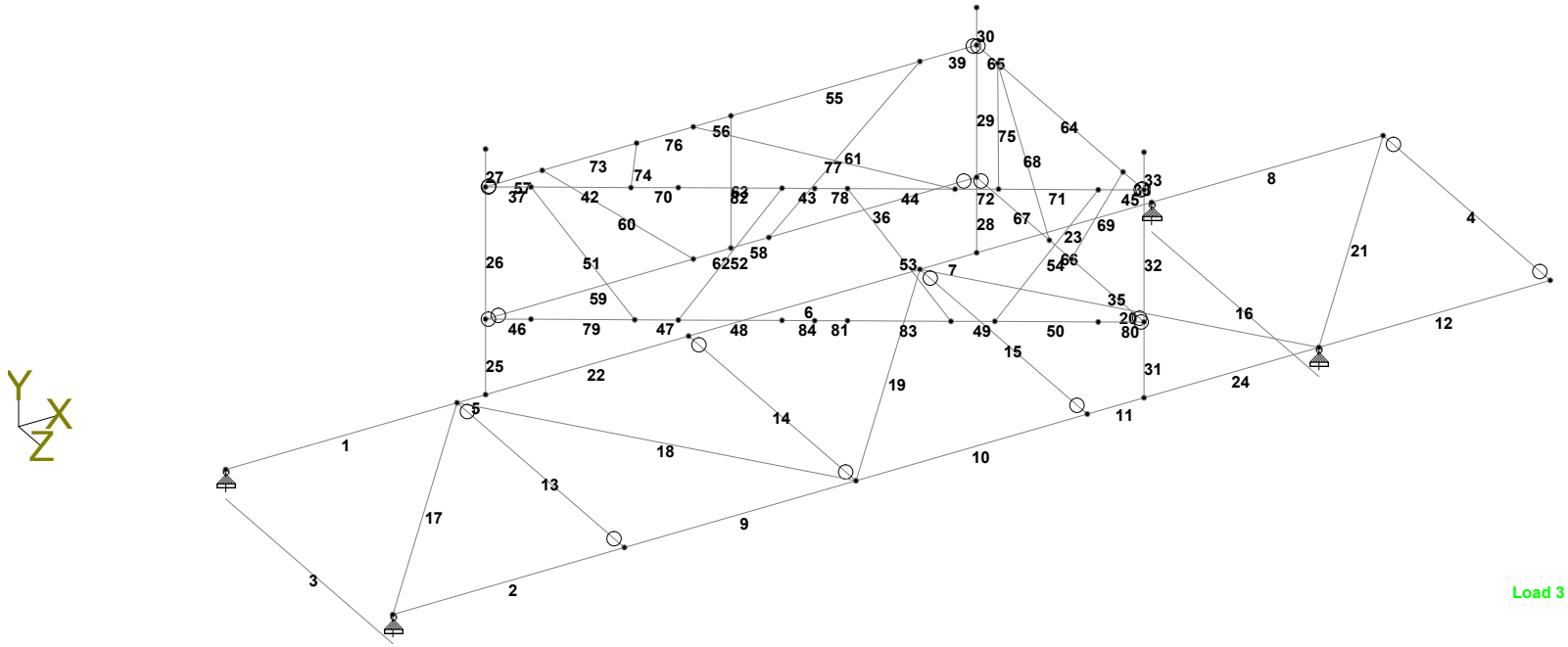
Nodes

Node	X (ft)	Y (ft)	Z (ft)
1	0.000	0.000	0.000
2	0.000	0.000	7.667
3	30.625	0.000	0.000
4	30.625	0.000	7.667
5	6.125	0.000	0.000
6	12.250	0.000	0.000
7	18.375	0.000	0.000
8	24.500	0.000	0.000
9	6.125	0.000	7.667
10	12.250	0.000	7.667
11	18.375	0.000	7.667
12	24.500	0.000	7.667
13	6.875	0.000	0.000
14	19.875	0.000	0.000
15	19.875	0.000	7.667
16	6.875	2.000	0.000
17	19.875	2.000	0.000
18	19.875	2.000	7.667
19	6.875	5.500	0.000
20	19.875	5.500	0.000
21	19.875	5.500	7.667
22	6.875	6.500	0.000
23	19.875	6.500	0.000
24	19.875	6.500	7.667
27	7.776	5.500	0.531
28	12.729	5.500	3.452
29	14.021	5.500	4.214
30	18.974	5.500	7.135
31	9.822	2.000	1.738
32	10.683	2.000	2.246

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
33	16.067	2.000	5.421
34	16.928	2.000	5.929
35	18.375	5.500	0.000
36	13.375	5.500	0.000
37	8.375	5.500	0.000
38	14.375	2.000	0.000
39	12.375	2.000	0.000
40	13.375	2.000	0.000
41	19.875	5.500	6.708
42	19.875	5.500	0.958
43	19.875	2.000	4.333
44	19.875	2.000	3.333
45	9.746	5.500	1.693
46	17.004	5.500	5.973
47	16.142	5.500	5.465
48	10.875	5.500	0.000
49	12.375	5.500	0.000
50	13.375	5.500	3.833
51	7.776	2.000	0.531
52	18.974	2.000	7.135
53	13.375	2.000	3.833
54	10.683	5.500	2.246
55	14.021	2.000	4.214
56	12.729	2.000	3.453

Members



Beams

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
1	1	5	6.125	1	0
2	2	9	6.125	1	0
3	1	2	7.667	2	0
4	3	4	7.667	1	0
5	5	13	0.750	1	0
6	6	7	6.125	1	0
7	7	14	1.500	1	0
8	8	3	6.125	1	0
9	9	10	6.125	1	0
10	10	11	6.125	1	0
11	11	15	1.500	1	0
12	12	4	6.125	1	0
13	5	9	7.667	1	0
14	6	10	7.667	1	0
15	7	11	7.667	1	0
16	8	12	7.667	2	0
17	2	5	9.813	3	45
18	5	10	9.813	3	45
19	10	7	9.813	3	45
20	7	12	9.813	3	45
21	12	3	9.813	3	45
22	13	6	5.375	1	0
23	14	8	4.625	1	0
24	15	12	4.625	1	0
25	13	16	2.000	4	0
26	16	19	3.500	4	0
27	19	22	1.000	4	0
28	14	17	2.000	4	0
29	17	20	3.500	4	0
30	20	23	1.000	4	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
31	15	18	2.000	4	0
32	18	21	3.500	4	0
33	21	24	1.000	4	0
35	18	43	3.333	3	45
36	17	38	5.500	3	45
37	19	27	1.046	3	45
38	21	41	0.958	3	45
39	20	35	1.500	3	45
42	27	45	2.287	3	45
43	28	50	0.750	3	45
44	29	47	2.463	3	45
45	30	21	1.046	3	45
46	16	51	1.046	3	45
47	31	32	1.000	3	45
48	32	56	2.376	3	45
49	33	34	1.000	3	45
50	34	52	2.375	3	45
51	27	31	4.230	3	45
52	32	28	4.230	3	45
53	29	33	4.230	3	45
54	34	30	4.230	3	45
55	35	36	5.000	3	45
56	36	49	1.000	3	45
57	37	19	1.500	3	45
58	38	40	1.000	3	45
59	39	16	5.500	3	45
60	37	39	5.315	3	45
61	35	38	5.315	3	45
62	40	39	1.000	3	45
63	36	40	3.500	3	45

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
64	41	42	5.750	3	45
65	42	20	0.958	3	45
66	43	44	1.000	3	45
67	44	17	3.333	3	45
68	42	44	4.230	3	45
69	41	43	4.230	3	45
70	45	54	1.088	3	45
71	46	30	2.287	3	45
72	47	46	1.000	3	45
73	48	37	2.500	3	45
74	45	48	2.035	3	45
75	46	42	5.779	3	45
76	49	48	1.500	3	45
77	49	47	6.638	3	45
78	50	29	0.750	3	45
79	51	31	2.375	3	0
80	52	18	1.046	3	0
81	53	55	0.750	3	0
82	54	28	2.375	3	45
83	55	33	2.375	3	0
84	56	53	0.749	3	45

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	10E -6
3	ALUMINUM	10E+3	0.330	0.000	13E -6
4	CONCRETE	3.15E+3	0.170	0.000	5E -6

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
1	W6X25	7.340	17.100	53.400	0.447	STEEL
2	W12X19	5.570	3.800	130.000	0.166	STEEL
3	L30306	2.109	2.794	0.726	0.102	STEEL
4	PIPS30	2.080	2.850	2.850	5.689	STEEL

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip^-ft/deg)	rY (kip^-ft/deg)	rZ (kip^-ft/deg)
1	Fixed	Fixed	Fixed	-	-	-
2	Fixed	Fixed	Fixed	-	-	-
8	Fixed	Fixed	Fixed	-	-	-
12	Fixed	Fixed	Fixed	-	-	-

Releases

Beam ends not shown in this table are fixed in all directions.

Beam	Node	x	y	z	rx	ry	rz
4	3	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
4	4	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
13	5	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
13	9	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
14	6	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
14	10	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
15	7	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
15	11	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
35	18	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
36	17	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
37	19	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
38	21	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
39	20	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
45	21	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
46	16	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
57	19	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
59	16	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
65	20	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
67	17	Fixed	Fixed	Fixed	Pin	Fixed	Fixed
80	18	Fixed	Fixed	Fixed	Pin	Fixed	Fixed

Primary Load Cases

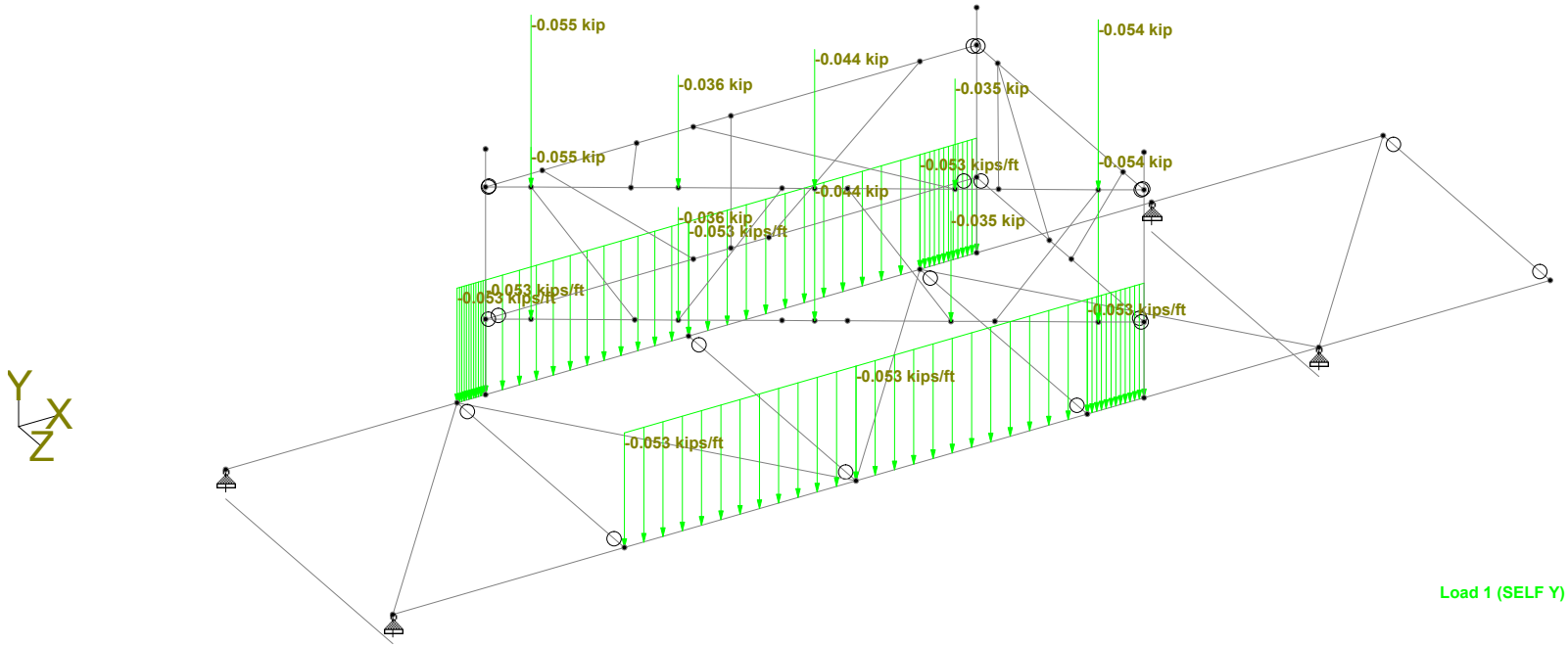
Number	Name	Type
1	DL	Dead
2	WIND(Z)	Wind
3	WIND(X)	Wind

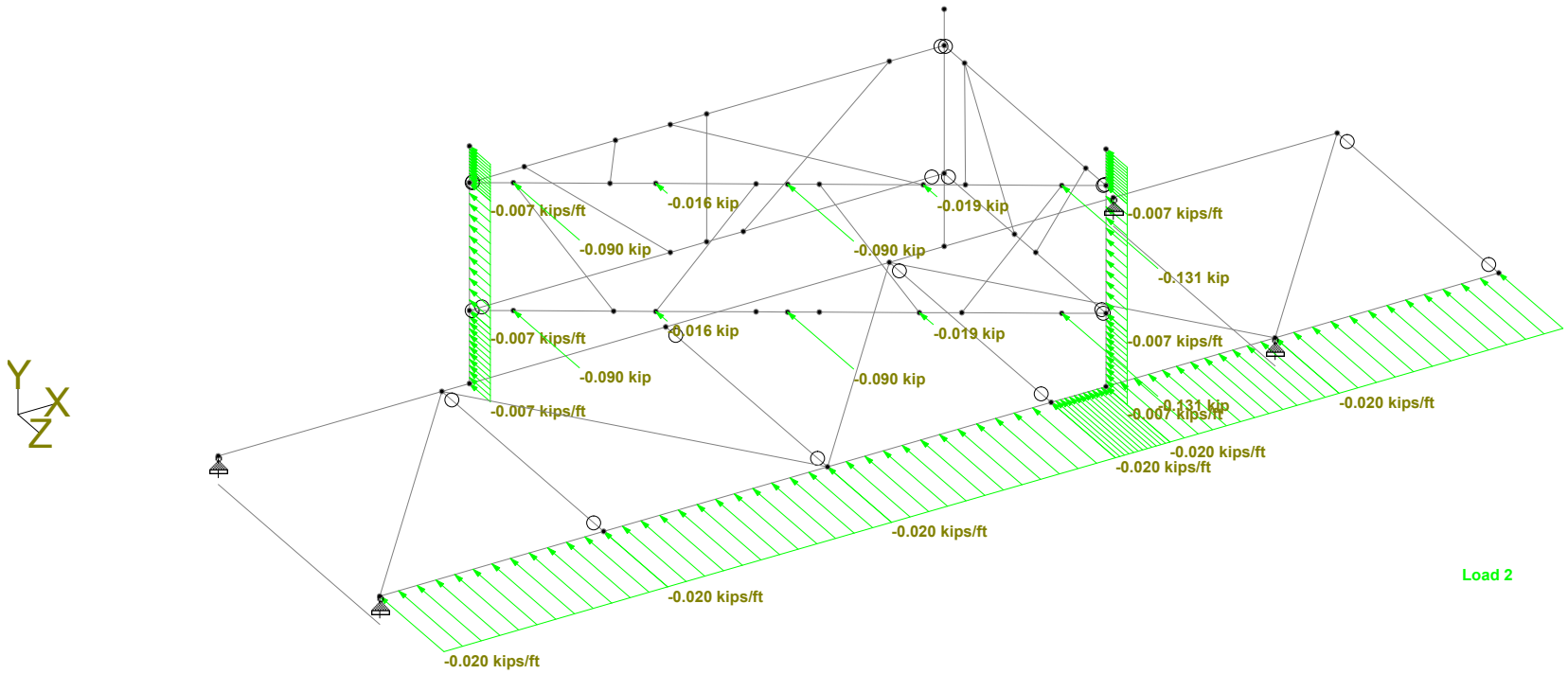
Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
4	1.0D + 1.5W(z)	1	DL	1.00
		2	WIND(Z)	1.50
5	1.0D + 1.5W(x)	1	DL	1.00
		3	WIND(X)	1.50

1.5 F.S.

Software licensed to Dewberry	Job No 50093840	Sheet No B-14	Rev
	Part Beta Sector		
Job Title CT2490 - East Hampton Main Street	Ref		
	By PD	Date 22-Feb-19	Chd JY
Client AT&T	File Beta Sector.std	Date/Time 25-Feb-2019 15:01	




Y
X
Z
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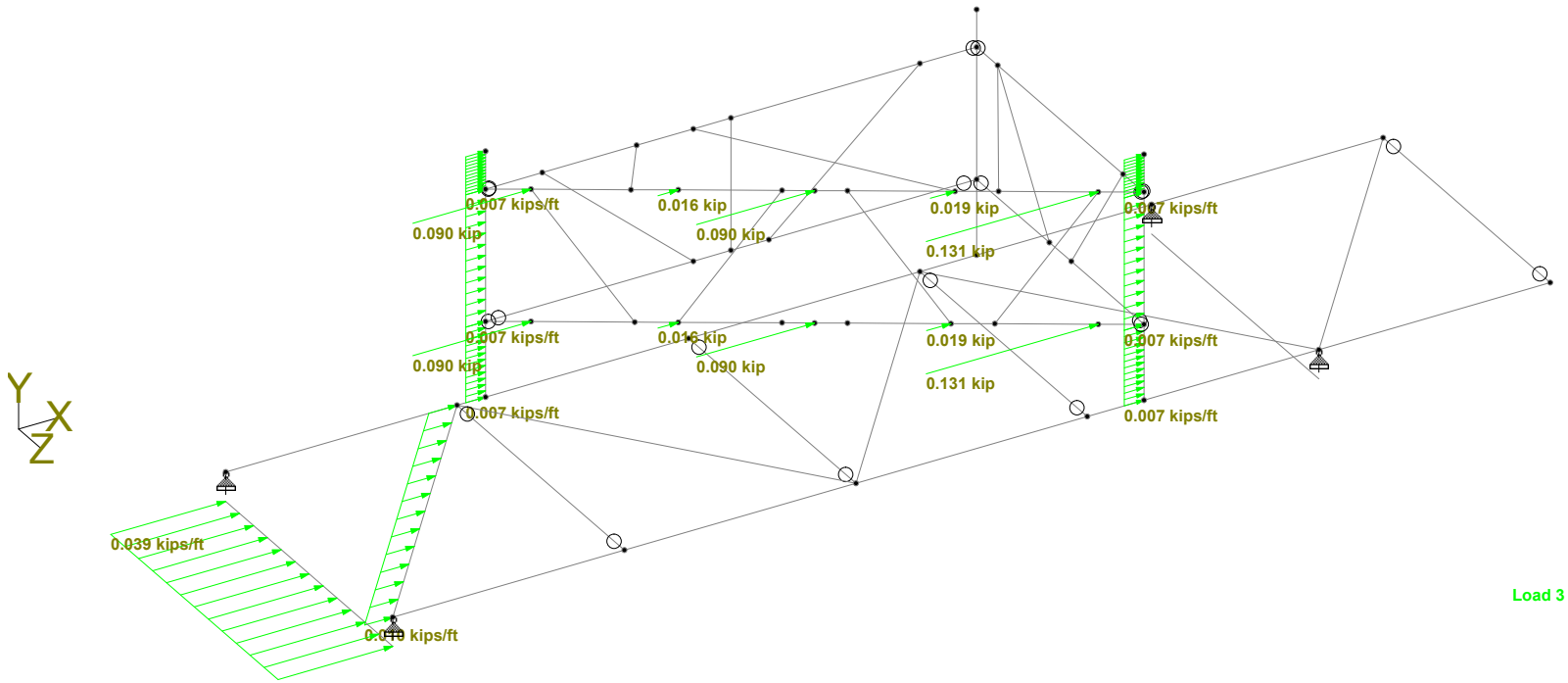
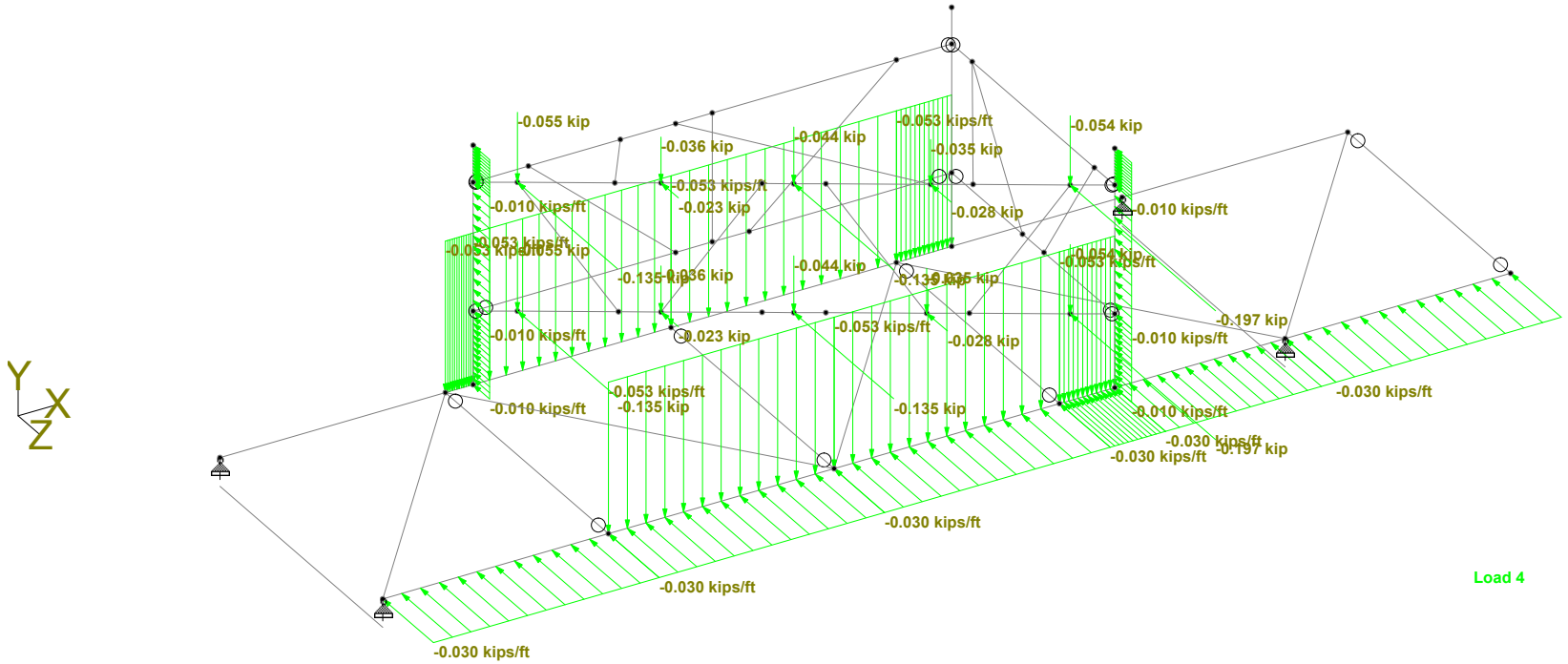
-0.016 kip
-0.019 kip
-0.090 kip
-0.131 kip
-0.020 kips/ft
Load 2


0.007 kips/ft
0.016 kip
0.019 kip
0.007 kips/ft
0.090 kip
0.090 kip
0.131 kip
0.007 kips/ft
0.016 kip
0.019 kip
0.007 kips/ft
0.090 kip
0.090 kip
0.131 kip
0.007 kips/ft
0.007 kips/ft
0.039 kips/ft
Y
X
Z
Load 3


-0.055 kip
-0.036 kip
-0.044 kip
-0.053 kips/ft
-0.035 kip
-0.054 kip
-0.053 kips/ft
-0.010 kips/ft
-0.023 kip
-0.028 kip
-0.010 kips/ft
-0.053 kips/ft
-0.053 kips/ft
-0.055 kip
-0.135 kip
-0.036 kip
-0.044 kip
-0.135 kip
-0.035 kip
-0.054 kip
-0.053 kips/ft
-0.197 kip
-0.010 kips/ft
-0.023 kip
-0.053 kips/ft
-0.028 kip
-0.010 kips/ft
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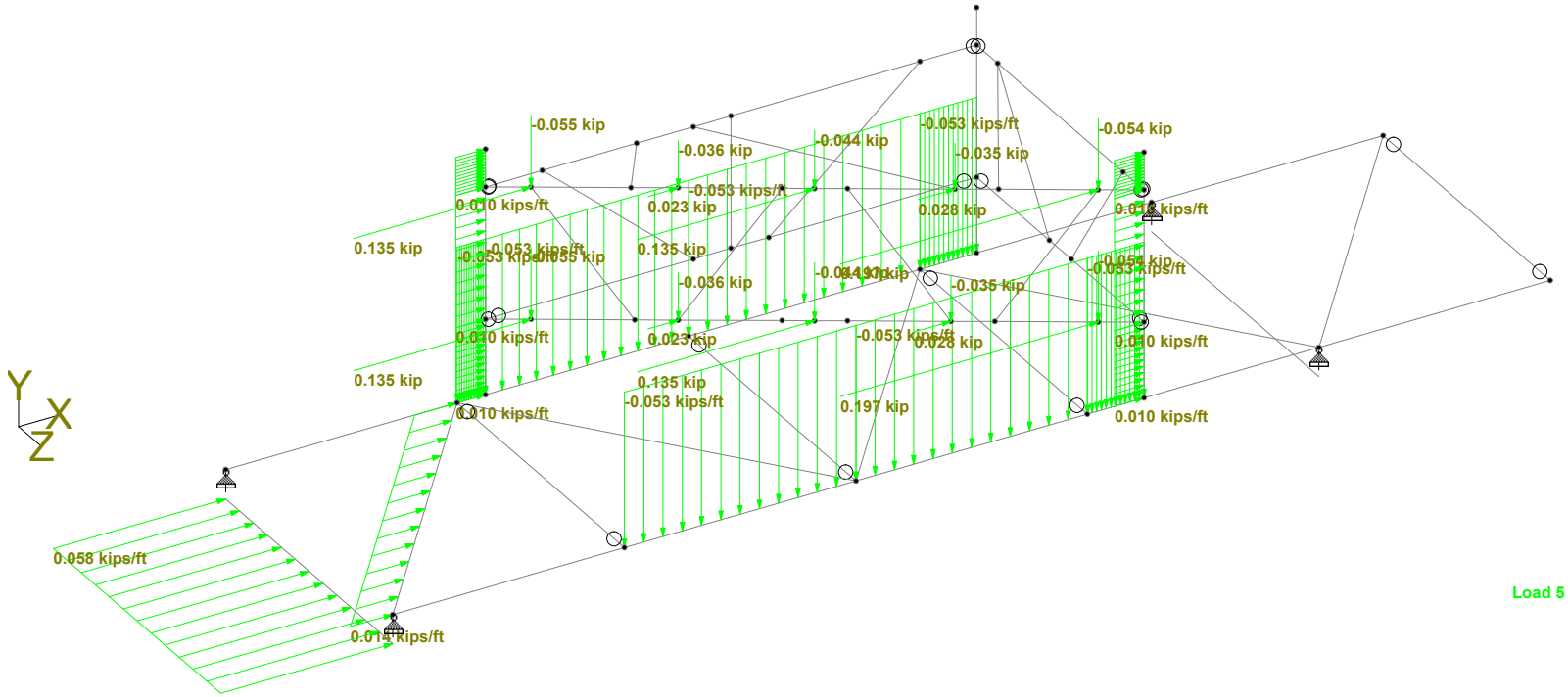
-0.135 kip
-0.135 kip
-0.010 kips/ft
-0.030 kips/ft
-0.010 kips/ft
-0.030 kips/ft
-0.030 kips/ft
-0.197 kip
-0.030 kips/ft
-0.030 kips/ft
-0.030 kips/ft
Y
X
Z
Load 4


-0.055 kip
-0.036 kip
-0.044 kip
-0.053 kips/ft
-0.035 kip
-0.054 kip
-0.053 kips/ft
0.010 kips/ft
0.023 kip
0.028 kip
0.010 kips/ft
0.135 kip
-0.053 kips/ft
-0.055 kip
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-0.053 kips/ft
-0.036 kip
-0.035 kip
0.010 kips/ft
0.023 kip
-0.053 kips/ft
0.028 kip
0.010 kips/ft
0.135 kip
0.135 kip
-0.053 kips/ft
0.197 kip
0.010 kips/ft
Y
X
Z
0.058 kips/ft
0.014 kips/ft
Load 5

Reactions

Node	L/C	Horizontal FX (kip)	Vertical FY (kip)	Horizontal FZ (kip)	Moment MX (kip-ft)	MY (kip-ft)	MZ (kip-ft)
1	1:DL	1.075	1.442	-0.146	0.000	0.000	0.000
	2:WIND(Z)	0.224	0.058	-0.030	0.000	0.000	0.000
	3:WIND(X)	-0.403	-0.095	-0.037	0.000	0.000	0.000
	4:1.0D + 1.5W(	1.411	1.529	-0.191	0.000	0.000	0.000
	5:1.0D + 1.5W(	0.470	1.299	-0.202	0.000	0.000	0.000
2	1:DL	-0.077	0.933	0.265	0.000	0.000	0.000
	2:WIND(Z)	-0.395	-0.058	0.540	0.000	0.000	0.000
	3:WIND(X)	-0.269	-0.013	0.016	0.000	0.000	0.000
	4:1.0D + 1.5W(	-0.669	0.846	1.076	0.000	0.000	0.000
	5:1.0D + 1.5W(	-0.481	0.914	0.290	0.000	0.000	0.000
8	1:DL	-0.693	1.671	-0.197	0.000	0.000	0.000
	2:WIND(Z)	-0.406	0.317	0.083	0.000	0.000	0.000
	3:WIND(X)	-0.212	0.095	0.011	0.000	0.000	0.000
	4:1.0D + 1.5W(	-1.303	2.147	-0.074	0.000	0.000	0.000
	5:1.0D + 1.5W(	-1.011	1.814	-0.181	0.000	0.000	0.000
12	1:DL	-0.304	1.816	0.078	0.000	0.000	0.000
	2:WIND(Z)	0.577	-0.317	0.807	0.000	0.000	0.000
	3:WIND(X)	-0.286	0.013	0.010	0.000	0.000	0.000
	4:1.0D + 1.5W(	0.561	1.340	1.288	0.000	0.000	0.000
	5:1.0D + 1.5W(	-0.733	1.835	0.093	0.000	0.000	0.000

Z-Direction Wind Controls for Sliding and Overturning

Per Construction Drawings by Hudson Design Group dated 11/08/2016, ballast is adhered to roof paver

Coef. of Friction = 0.8

Total Weight = 5.862 kip
Total Sliding Force = 2.099 kip

(0.8)*(5.862 kip) = 4.69 kip > 2.099 kip --> Sliding OK

No Uplift at any Reaction
--> Overturning OK

APPENDIX C

C-1

CT2490
EAST HARTFORD - 886 MAIN

886 MAIN STREET
EAST HARTFORD, CT 06108

SITE TYPE: ROOFTOP

DESIGN ACCEPTED & APPROVED

PROPERTY OWNER: **DATE:**

SHEET INDEX

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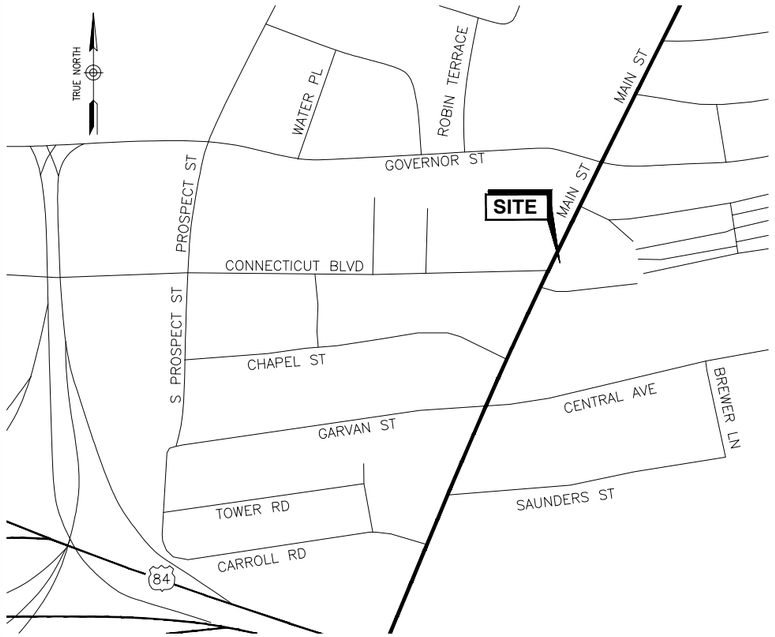
PROJECT INFORMATION:

PROPERTY OWNER:	TOWN OF EAST HARTFORD 740 MAIN STREET EAST HARTFORD, CT 06108
UNDER A 99 YEAR LEASE TO:	HARTFORD EAST ELDERLY APARTMENTS LIMITED PARTNERSHIP 1704 BROAD STREET CRANSTON, RI 02905
APPLICANT:	NEW CINGULAR WIRELESS PCS, LLC 550 COCHITUATE RD. SUITE 13 & 14 – 2ND FLOOR FRAMINGHAM, MA 01701
SITE ADDRESS:	886 MAIN STREET EAST HARTFORD, CT 06108
COUNTY:	HARTFORD
ZONING CLASSIFICATION:	B–5
ZONING JURISDICTION:	TOWN OF EAST HARTFORD
TAX ID PARCEL NUMBER:	MAP 13, LOT 332
ARCHITECT / ENGINEER:	HUDSON DESIGN GROUP LLC 1600 OSGOOD STREET BUILDING 20 NORTH, SUITE 2–101 N. ANDOVER, MA 01845
POWER COMPANY:	CONNECTICUT LIGHT & POWER 410 SHELDON STREET HARTFORD, CT 06106 (800) 286–2000
TELEPHONE COMPANY:	AT&T (866)–774–3125

VICINITY MAP



DRIVING DIRECTIONS

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I–91 N VIA THE RAMP ON THE LEFT TOWARD HATFORD 7.8 MILES. MERGE ONTO US–5 N/CT–15 N VIA EXIT 29 TOWARD I–84 E/E. HARTFORD/BOSTON. TAKE THE US–5 N/MAIN ST EXIT, EXIT 90. TURN LEFT ONTO MAIN ST/US–5. 886 MAIN ST IS ON THE RIGHT.

PROJECT DESCRIPTION

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS EQUIPMENT AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
2. THIS FACILITY WILL CONSUME NO UNRECOVERABLE ENERGY.
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.
6. AT&T MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAGE OF ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

3 WORKING DAYS

CALL BEFORE YOU DIG

800-922-4455 OR DIAL 811

UNDERGROUND SERVICE ALERT

APPROVALS:

SAI CM: _____

AT&T CM: _____

SAI RF: _____

AT&T RF: _____

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)–557–5553
FAX: (978)–336–5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 25851
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

REVISIONS		
8	11/08/16	ISSUED FOR CONSTRUCTION
7	09/08/16	ISSUED FOR CONSTRUCTION
6	08/16/16	ISSUED FOR REVIEW
REV. #	DATE	DESCRIPTION

PROJECT NO.	DESIGNED BY: AT	SCALE:
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
TITLE SHEET

SHEET NO:
T-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 THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT 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 FOOTIING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR – SAI
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 UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY 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: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 & 2013 CT AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTNING 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, 14TH EDITION;

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

ANTENNA TOWER 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	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		

C-2

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)-557-5553
FAX: (978)-336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
NO. 25651
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

REVISIONS		
8	11/08/16	ISSUED FOR CONSTRUCTION
7	09/08/16	ISSUED FOR CONSTRUCTION
6	08/16/16	ISSUED FOR REVIEW
REV. #	DATE	DESCRIPTION

PROJECT NO.	DESIGNED BY: AT	SCALE:
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
GENERAL NOTES

SHEET NO:
GN-1

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS[1]
REQUIRED	MATERIAL SPECIFICATIONS REPORT[2]
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
REQUIRED	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
REQUIRED	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
REQUIRED	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE 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[5]
N/A	POST INSTALLED ANCHOR ROD 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. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

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.

IF PROJECT OWNER DOES NOT AUTHORIZE SPECIAL INSPECTIONS, THE PROJECT OWNER TAKES FULL RESPONSIBILITY AND OWNERSHIP OF ALL MATERIALS AND CONSTRUCTION.

C-3

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)-557-5553
FAX: (978)-336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
NO. 27358
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

REVISIONS		
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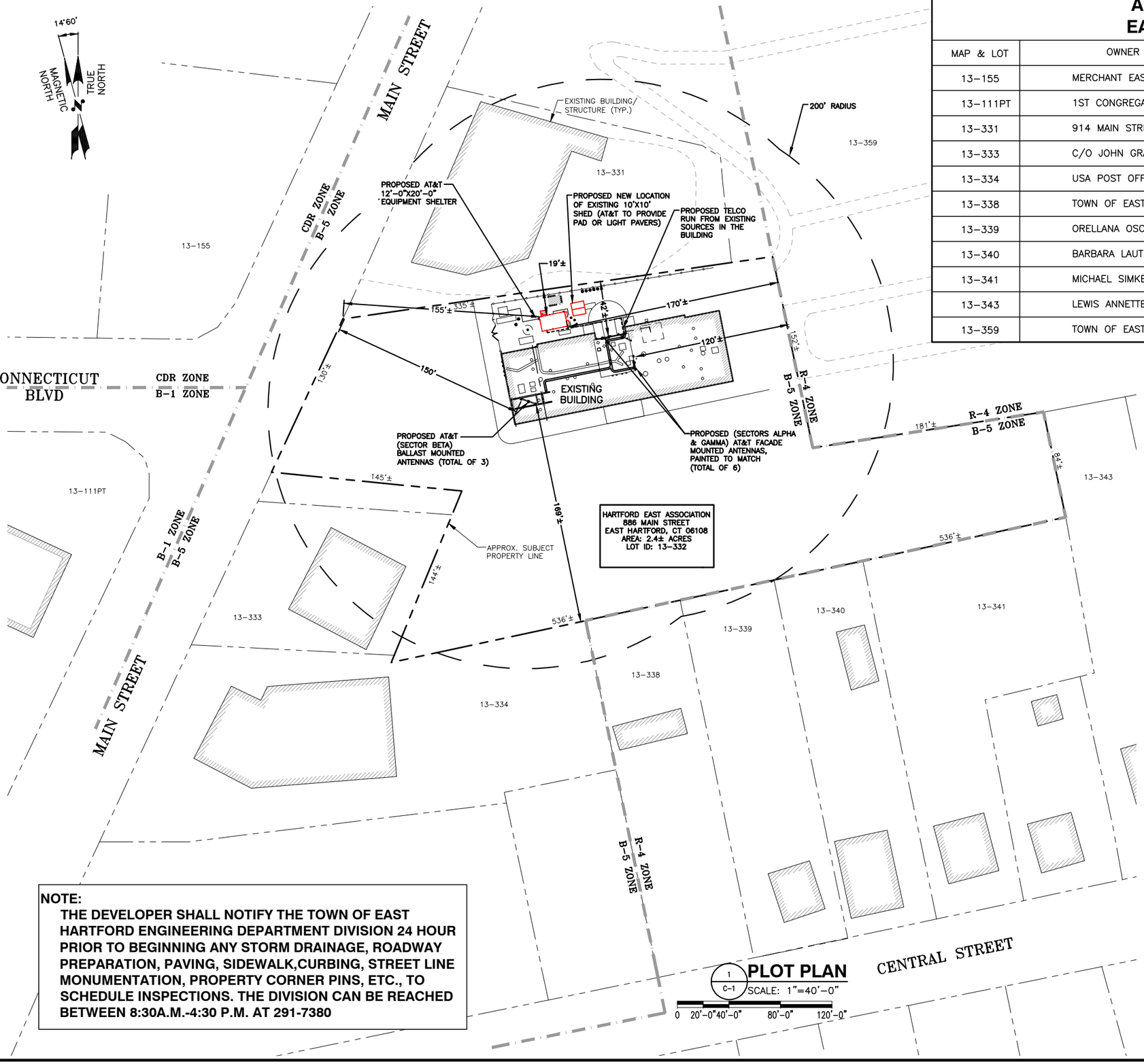
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
SPECIAL INSPECTION

SHEET NO:
GN-2



ABUTTER'S LIST
EAST HARTFORD

MAP & LOT	OWNER NAME	MAILING ADDRESS
13-155	MERCHANT EAST HARTFORD I LLC.	ONE HARTFIELD BOULEVARD EAST WINDSOR, CT 06088
13-111PT	1ST CONGREGATIONAL CHURCH	831 MAIN STREET EST HARTFORD, CT 06108
13-331	914 MAIN STREET LLC.	906 MAIN STREET EAST HARTFORD, CT 06108
13-333	C/O JOHN GRAMEGNA	235 EAST RIVER DRIVE UNIT 204 EAST HARTFORD, CT 06108
13-334	USA POST OFFICE	846 MAIN STREET EAST HARTFORD, CT 06108
13-338	TOWN OF EAST HARTFORD	740 MAIN STREET EAST HARTFORD, CT 06108
13-339	ORELLANA OSCAR	46 CENTRAL AVENUE EAST HARTFORD, CT 06108
13-340	BARBARA LAUTZENHEISER	17 HUNTINGRIDGE DRIVE SOUTH GLASTONBURY, CT 06073
13-341	MICHAEL SIMKEWICZ	58 CENTRAL AVENUE EAST HARTFORD, CT 06108
13-343	LEWIS ANNETTE J.	70 CENTRAL AVENUE EAST HARTFORD, CT 06108
13-359	TOWN OF EAST HARTFORD	749 MAIN STREET

NOTES:

PLAN BASED ON TOWN OF EAST HARTFORD GIS INFORMATION & AERIAL PHOTOGRAPHY.
A FIELD SURVEY WAS NOT PERFORMED BY HUDSON DESIGN GROUP, LLC.

LEGEND

- PROPERTY LINE–SUBJECT PARCEL
- PROPERTY LINE–ABUTTERS
- ZONING DISTRICT BOUNDARY LINE
- 200 FEET RADIUS
- (E) SUBJECT BUILDING
- XXX–XXX–XXX ASSESSORS MAP–BLOCK–LOT NO.

ZONING INFORMATION

JURISDICTION: TOWN OF EAST HARTFORD, CT – HARTFORD COUNTY

ZONING DISTRICT TYPE: B–5 – BUSINESS

DIMENSION REQUIREMENTS:	REQUIRED	PROPOSED
EQUIPMENT SHELTER SETBACKS		
FRONT YARD SETBACK:	20	155'±
SIDE YARD SETBACK:	20	19'±
REAR YARD SETBACK:	30	170'±
ANTENNAS SETBACKS		
MAX. HEIGHT	10' ABOVE ROOF HEIGHT	12'
FRONT YARD SETBACK:	20	150'±
SIDE YARD SETBACK:	20	42'±
REAR YARD SETBACK:	30	120'±

(ALL MEASUREMENTS ARE IN FEET ± UNLESS OTHERWISE NOTED)
(SETBACKS TO PROPOSED EQUIPMENT UNLESS OTHERWISE NOTED)

NOTE:
THE DEVELOPER SHALL NOTIFY THE TOWN OF EAST HARTFORD ENGINEERING DEPARTMENT DIVISION 24 HOUR PRIOR TO BEGINNING ANY STORM DRAINAGE, ROADWAY PREPARATION, PAVING, SIDEWALK,CURBING, STREET LINE MONUMENTATION, PROPERTY CORNER PINS, ETC., TO SCHEDULE INSPECTIONS. THE DIVISION CAN BE REACHED BETWEEN 8:30A.M.-4:30 P.M. AT 291-7380

C-4

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
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STATE OF CONNECTICUT
DEREK J. CREASER
No. 28554
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

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CT2490	DRAWN BY: SB	AS SHOWN
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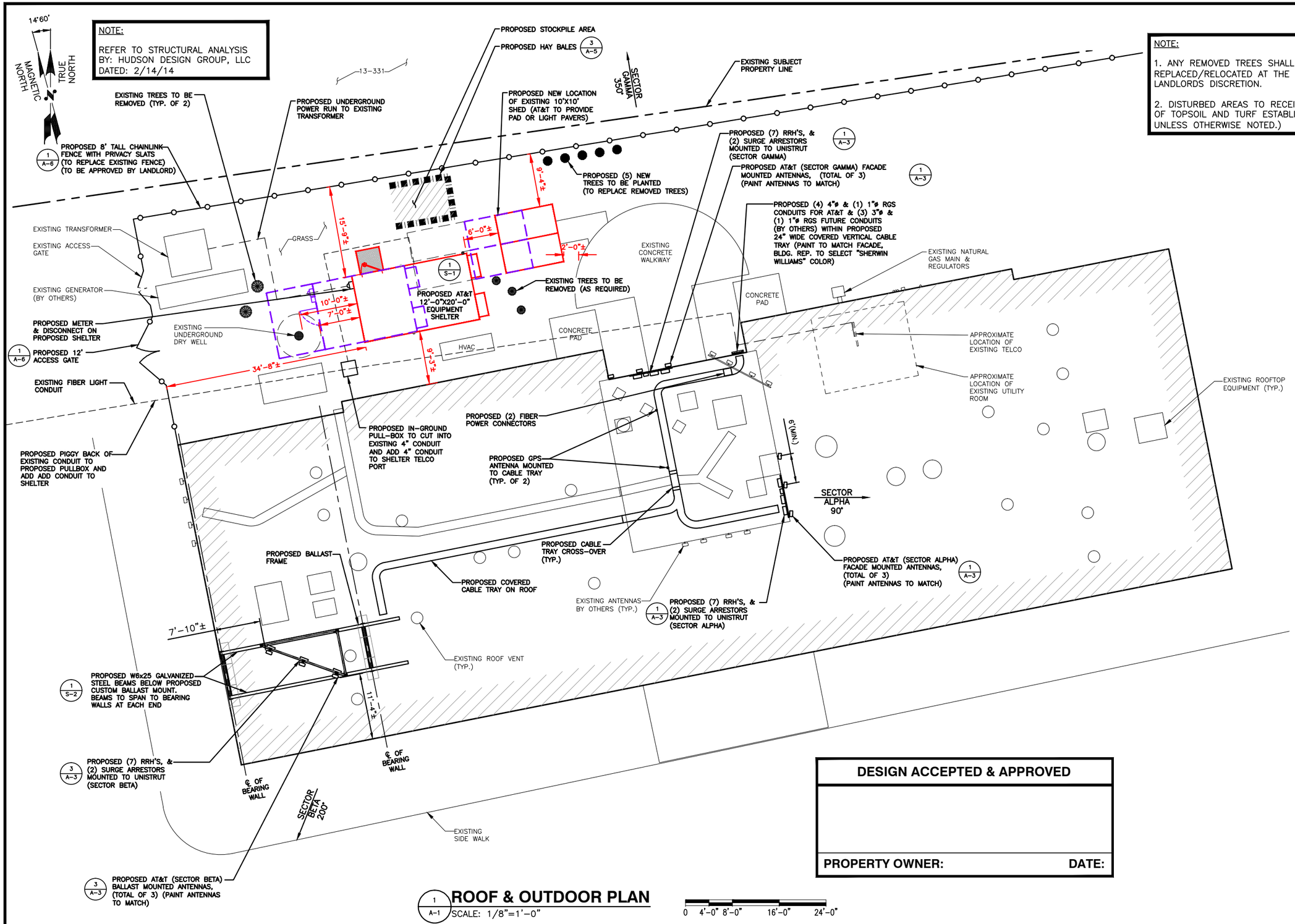
SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
SITE PLAN

SHEET NO:
C-1



NOTE:

1. ANY REMOVED TREES SHALL BE REPLACED/RELOCATED AT THE LANDLORDS DISCRETION.

2. DISTURBED AREAS TO RECEIVE 6" OF TOPSOIL AND TURF ESTABLISHMENT UNLESS OTHERWISE NOTED.)

DESIGN ACCEPTED & APPROVED

PROPERTY OWNER: **DATE:**

1 A-1 ROOF & OUTDOOR PLAN

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

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

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)-557-5553
FAX: (978)-336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28554
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

REVISIONS		
8	11/08/16	ISSUED FOR CONSTRUCTION
7	09/08/16	ISSUED FOR CONSTRUCTION
6	08/16/16	ISSUED FOR REVIEW
REV. #	DATE	DESCRIPTION

PROJECT NO.	DESIGNED BY: AT	SCALE:
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

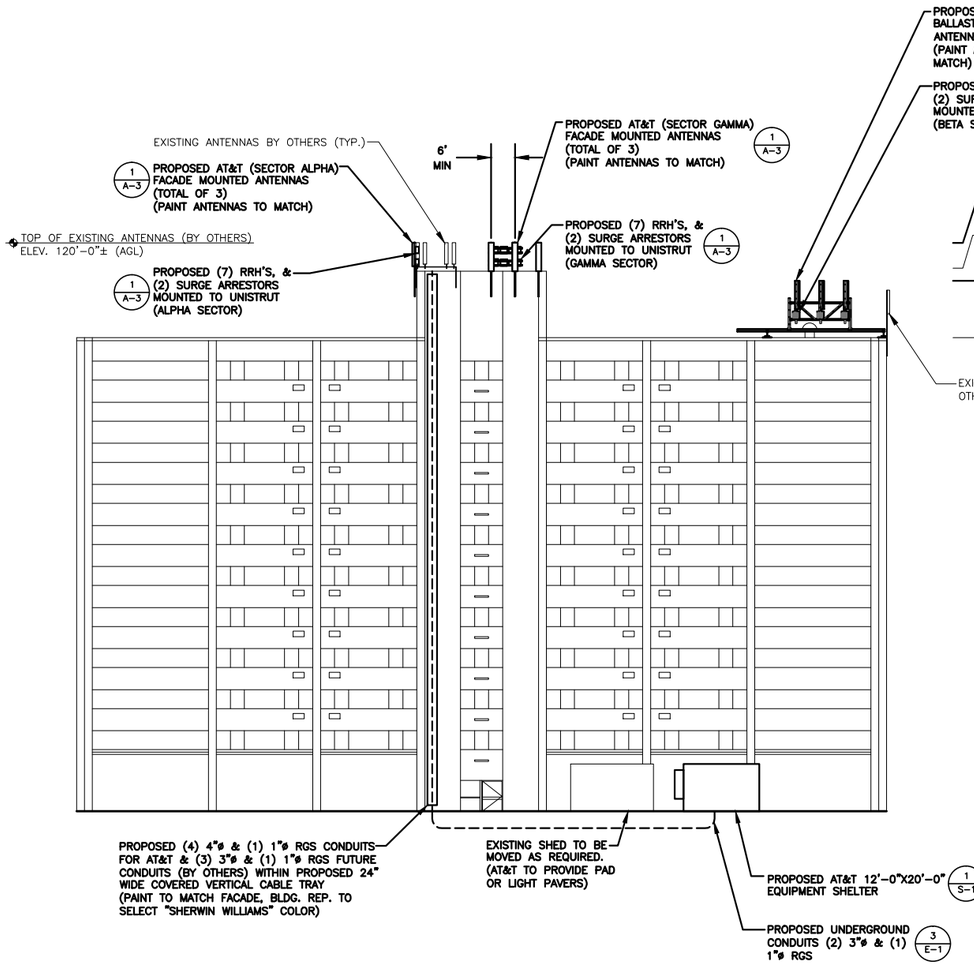
SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
ROOF & OUTDOOR PLAN

SHEET NO:
A-1

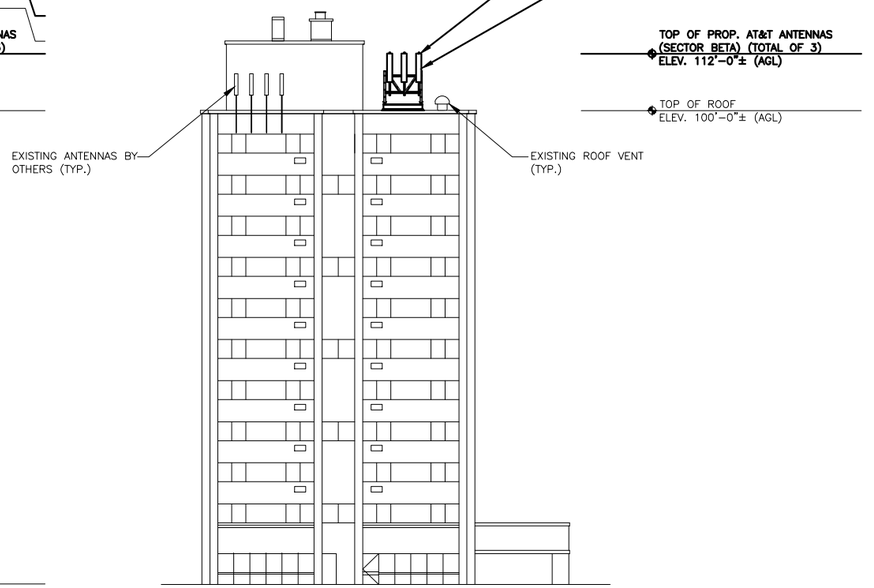
C-5

RF TABLE						
SECTOR	SECTOR NAME	ANTENNA MAKE & MODEL	ANTENNA COUNT	AZIMUTH	RAD CENTER	# OF CABLES
1	ALPHA	CCI – OPA65R–LCUUH6	3 PROPOSED	90°*	117'±	(8) DC POWER, (2) FIBER & (1) RET CABLE
2	BETA	CCI – OPA65R–LCUUH6	3 PROPOSED	200°*	109'±	(8) DC POWER, (2) FIBER & (1) RET CABLE
3	GAMMA	CCI – OPA65R–LCUUH6	3 PROPOSED	350°*	117'±	(8) DC POWER, (2) FIBER & (1) RET CABLE



1/A-2 **NORTH ELEVATION**
SCALE: 1/16"=1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"



2/A-2 **WEST ELEVATION**
SCALE: 1/16"=1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"

NOTE:

ALL VERTICAL CABLE COVERS TO BE PAINTED OFF SITE. ALL APPLICABLE PROCEDURES TO BE USED WHILE PAINTING TO ASSURE OPTIMUM ADHESION. PAINT SYSTEM SHALL BE SHERWIN WILLIAMS PRODUCT DESIGNED FOR "DIRECT TO METAL" APPLICATION, THIS IS A TWO PART PROCESS WHICH INCLUDES AN ETCHING PRIMER. FINAL COLOR TO BE APPROVED BY THE LANDLORD.

C-6

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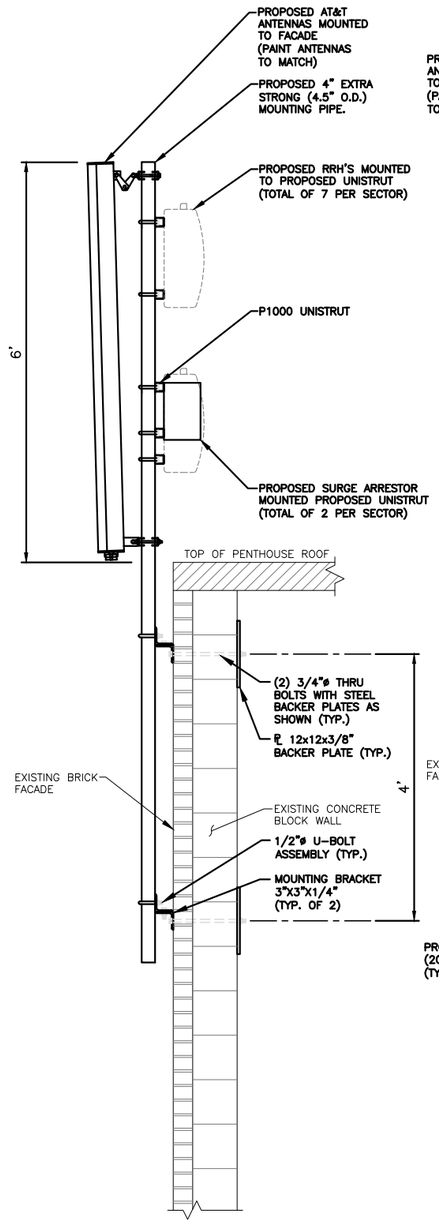
SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
ELEVATIONS

SHEET NO:
A-2

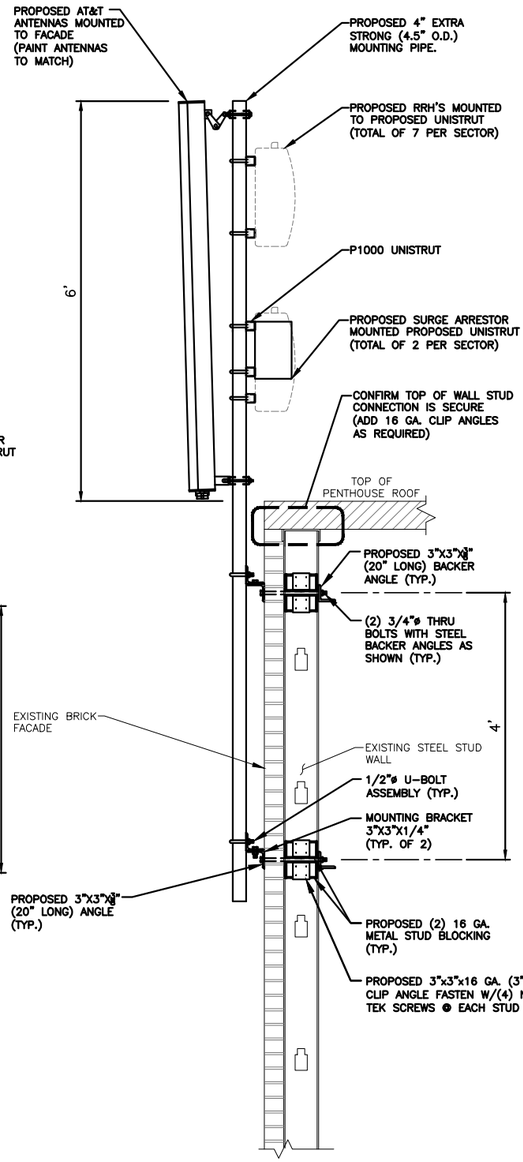
NOTE:

REFER TO STRUCTURAL ANALYSIS
BY: HUDSON DESIGN GROUP, LLC
DATED: 2/14/14



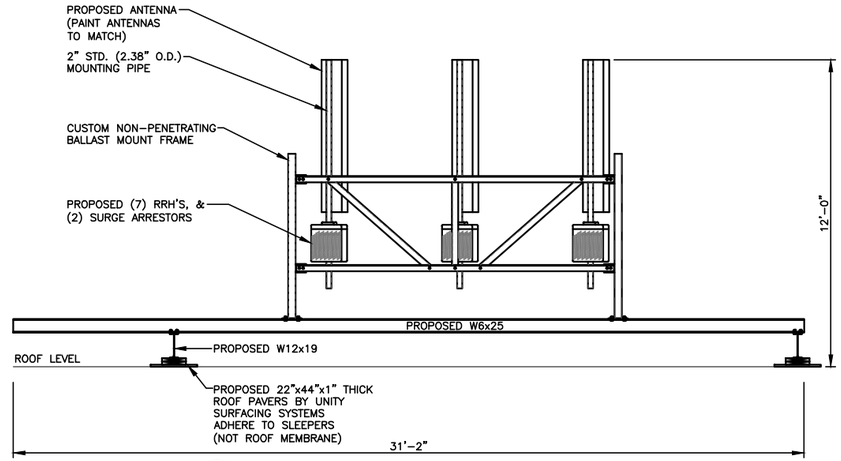
ANTENNA FACADE MOUNTING DETAIL (BETA & GAMMA SECTOR)

1 / A-3 SCALE: N.T.S.



ANTENNA FACADE MOUNTING DETAIL (POSITION 3 GAMMA SECTOR)

2 / A-3 SCALE: N.T.S.

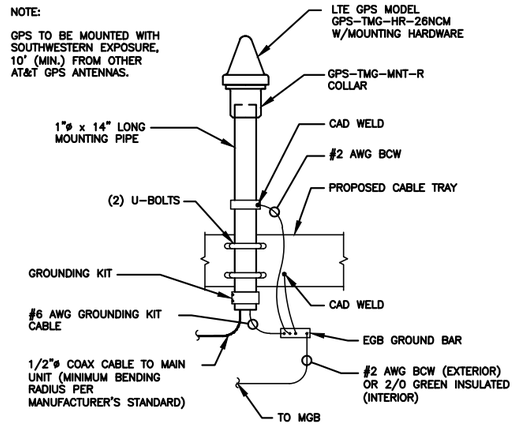


BALLAST MOUNT DETAIL BETA SECTOR

4 / A-3 SCALE: N.T.S.

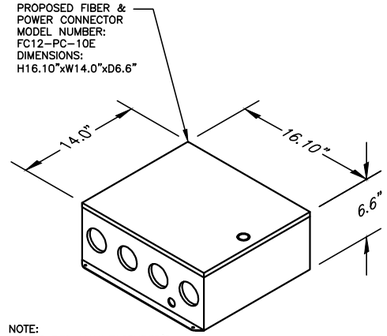
NOTE:

GPS TO BE MOUNTED WITH SOUTHWESTERN EXPOSURE, 10' (MIN.) FROM OTHER AT&T GPS ANTENNAS.



GPS MOUNTING DETAIL

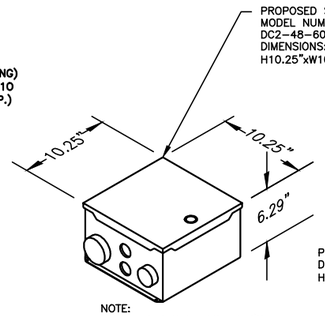
3 / A-3 SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

FIBER & POWER CONNECTOR DETAIL

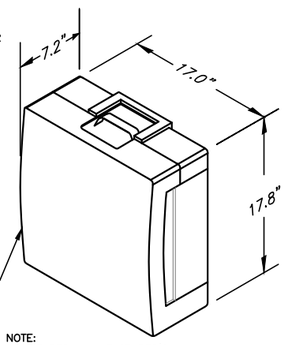
5 / A-3 SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

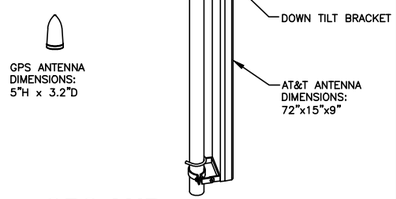
6 / A-3 SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRH DETAIL

7 / A-3 SCALE: N.T.S.



GPS AND ANTENNA DETAIL

8 / A-3 SCALE: N.T.S.

C-7

at&t

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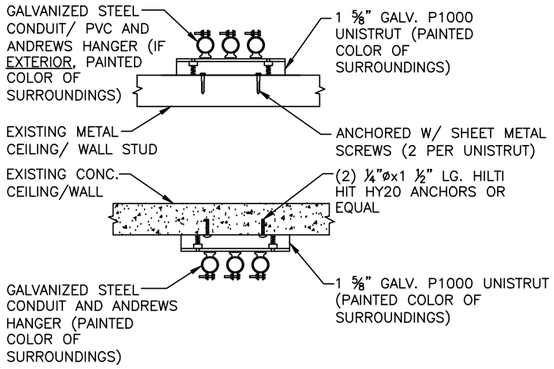
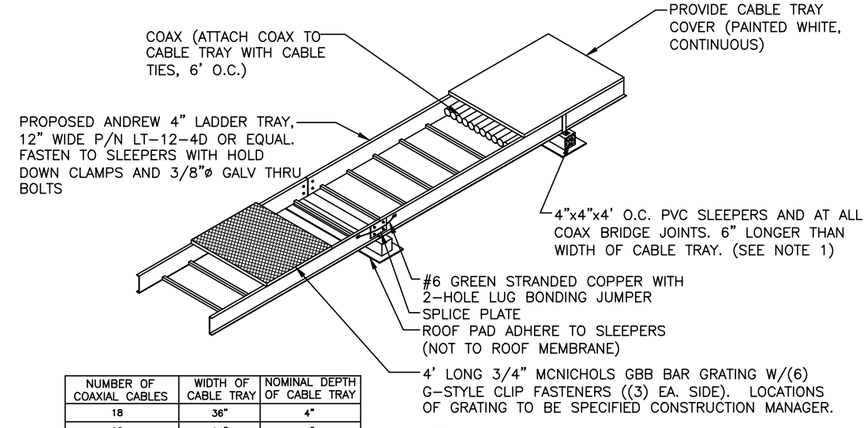
DETAILS

SHEET NO:

A-3



1 A-4 **CONDUIT RUN DETAIL**
SCALE: N.T.S.



NUMBER OF COAXIAL CABLES	WIDTH OF CABLE TRAY	NOMINAL DEPTH OF CABLE TRAY
18	36"	4"
12	24"	4"
6	12"	4"

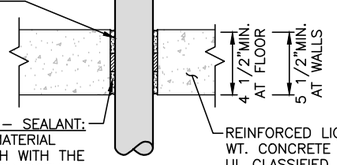
NOTE:
1. PVC SLEEPERS FILLED WITH CONCRETE EVERY 8'-0".

WORST CASE:
10' LONG COAX TRAY WEIGHT = 1.29 LB/FT x 10FT x 12 CABLES = 154.8 LB + (2) CONCRETE FILLED PVC SLEEPERS @ 25 LBS EACH = 50 LB.
TOTAL = 204.8 LB APPROX.

2 A-4 **CABLE TRAY DETAIL**
SCALE: N.T.S.

PACKING MATERIAL: MIN 1-1/2 in. THICKNESS OF MIN 6 pcf MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

ONE 2"ø (OR SMALLER) SCHEDULE 40 PVC PIPE TO BE CENTERED WITHIN FIRESTOP SYSTEM. A NOM. ANNULAR SPACE OF 5/16" IS REQUIRED WITHIN THE FIRESTOP SYSTEM PIPE SHALL BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL/FLOOR ASSEMBLY



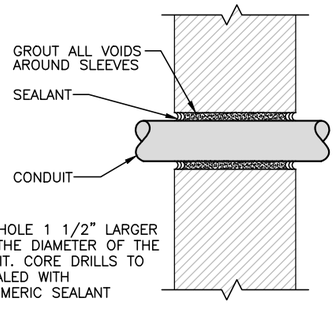
FILL, VOID OR CAVITY MATERIAL – SEALANT: MIN 2 in. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS, FLUSH WITH THE TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL.

REINFORCED LIGHT WT. CONCRETE OR UL CLASSIFIED CMU.

SPECIFIED TECHNOLOGIES INC:
SPECSEAL SERIES SSS SEALANT OR SPECSEAL LCI SEALANT.

UL SYSTEM NUMBER: C-AJ-2057
F RATING – 2 HR.

PVC CONDUIT PENETRATION DETAIL IN CONCRETE OR MASONRY



NOTE:
CORE HOLE 1 1/2" LARGER THAN THE DIAMETER OF THE CONDUIT. CORE DRILLS TO BE SEALED WITH ELASTOMERIC SEALANT

PIPE AND CONDUIT PENETRATION DETAIL IN NON-RATED PARTITION

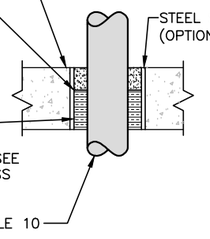
FLOOR OR WALL	MIN FLOOR OR WALL THKNS. (in.)	MAX DIAM OF STEEL PIPE OR CONDUIT (in.)	MIN ANNULAR SPACE (in.)	MAX ANNULAR SPACE (in.)	MIN FILL MTL THKNS (in.)	MIN FORMING MTL THKNS (in.)	F RATING (HOURS)	T RATING (HOURS)
FLOOR	3-3/4	1-1/2	3/8	2-1/8	1	2-3/4	2	0
FLOOR	3-3/4	6	3/8	3/4	1	2-3/4	2	0
FLOOR	3-3/4	6	3/8	1	2	1-3/4	2	0
FLOOR	4-1/2	1-1/2	3/8	2-1/8	1	3-1/2	3	3/4
FLOOR	4-1/2	1-1/2	3/8	2-1/8	1	3-1/2	3	3/4
FLOOR	4-1/2	6	3/8	3/4	1	3-1/2	3	0
FLOOR	4-1/2	6	3/8	1	2	2-1/2	3	0
WALL	5-1/2	1-1/2	3/8	2-1/8	1	3-1/2	3	3/4
WALL	5-1/2	6	3/8	3/4	1	3-1/2	3	0
WALL	6-1/2	1-1/2	3/8	2-1/8	2	2-1/2	3	1
WALL	6-1/2	6	3/8	1	2	2-1/2	3	0

CONCRETE FLOOR OR WALL ASSEMBLY, MINIMUM 3-3/4 in. THICKNESS FLOOR/ MINIMUM 6-1/2 in. WALL

TYPE AS OR TYPE SS:
MINIMUM THICKNESS OF SEALANT AS SPECIFIED IN THE TABLE ABOVE, APPLIED WITHIN THE OPENING, FLUSH WITH THE TOP SURFACE OF THE FLOOR OR BOTH SURFACES OF THE WALL.

FORMING MATERIAL:
MINERAL WOOL BATT INSULATION (MINIMUM 4.0 pcf) FIRMLY PACKED INTO THE OPENING AS A PERMANENT FORM; SEE TABLE FOR MINIMUM REQUIRED THICKNESS

METALLIC PIPE:
STEEL PIPE: 6"ø (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
CONDUIT: 4"ø (OR SMALLER) ELECTRICAL METALLIC TUBING (EMT)
OR 6"ø RIGID STEEL CONDUIT.



UL SYSTEM NUMBER: C-AJ-1020
F RATING – 3 HR. (FOR PIPES GREATER THAN 4")
F RATING – 2 HR. (FOR PIPES LESS THAN 4")

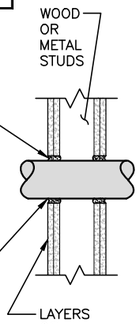
PIPE AND CONDUIT PENETRATION DETAIL IN CONCRETE OR MASONRY

WALL HR	MAX DIAM OF THROUGH PENETRANT in.	T RATING HR
1	2	1
1	1-1/4	1
2	2	1
2	1-1/4	1 1/2

THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

THROUGH PENETRANTS: ONE 2"ø NONMETALLIC PIPE, CONDUIT OR RACEWAY TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. A NOM ANNULAR SPACE OF 5/16 in. IS REQUIRED WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR RACEWAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY.

FILL, VOID OR CAVITY MATERIAL – SEALANT: MIN 5/8 in. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/4 in. THICK CROWN IS FORMED AROUND THE PENETRATING ITEM AND LAPPING 1 in. BEYOND THE PERIPHERY OF THE OPENING.



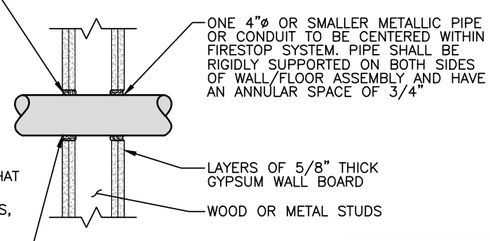
SPECIFIED TECHNOLOGIES INC:
SPECSEAL SERIES SSS SEALANT, SPECSEAL LCI SEALANT.

UL SYSTEM NUMBER: W-L-2093
F RATING – 1 & 2 HR.

PVC CONDUIT PENETRATION DETAIL IN GYPSUM WALLBOARD

PACKING MATERIAL: MIN. 1 in. THICKNESS OF MIN. 3.5 pcf FIBERGLASS INSULATION SHALL BE WRAPPED AROUND THE THROUGH-PENETRANT AND SECURED TOGETHER BY MEANS OF NO. 24 AWG STEEL TIE WIRE. PACKING MATERIAL SHALL BE CENTERED AT MID-DEPTH OF OPENING AND RECESSED FROM BOTH SURFACES OF WALL ASSEMBLY REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

FILL, VOID OR CAVITY MATERIAL – CAULK OR PUTTY: IN 2 HR FIRE RATED ASSEMBLIES MIN 3/4 IN. THICKNESS FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH BOTH SURFACES OF WALL. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/4 in. CROWN IS FORMED AROUND THE PENETRATING ITEM. IN 1 HR FIRE RATED ASSEMBLIES, MIN 5/8 in. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS ON BOTH SURFACES OF WALL. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 3/8 in. CROWN IS FORMED AROUND THE PENETRATING ITEM AND LAPPING 1 in. BEYOND THE PERIPHERY OF THE OPENING.



SPECIFIED TECHNOLOGIES INC:
SPECSEAL SERIES SSS SEALANT, SPECSEAL LCI SEALANT OR SPECSEAL PUTTY.

UL SYSTEM NUMBER: W-L-1029
F RATING – 1 & 2 HR.

PIPE AND CONDUIT PENETRATION DETAIL IN GYPSUM WALLBOARD

ALL CORES THROUGH ELECTRIC ROOMS TO BE FIRE-STOPPED.

USE FULL CONDUIT RUNS THROUGH PENETRATIONS

NOTE:

CABLES IN VERTICAL RUNS. CABLES INSTALLED IN VERTICAL RUNS AND PENETRATING MORE THAN ONE FLOOR, OR CABLES INSTALLED IN VERTICAL RUNS IN A SHAFT, SHALL BE TYPE CMR. FLOOR PENETRATIONS REQUIRING TYPE CMR SHALL CONTAIN ONLY CABLES SUITABLE FOR RISER OR PLENUM USE. LISTED RISER COMMUNICATIONS RACEWAYS AND LISTED PLENUM COMMUNICATIONS RACEWAYS SHALL BE PERMITTED TO BE INSTALLED IN VERTICAL RISER RUNS IN A SHAFT FROM FLOOR TO FLOOR. **ONLY TYPE CMR CABLES SHALL BE PERMITTED TO BE INSTALLED IN THESE RISERS. ONLY CMP CABLES SHALL BE PERMITTED TO BE INSTALLED IN PLENUMS.**

METAL RACEWAYS OR FIREPROOF SHAFTS. LISTED COMMUNICATIONS CABLES SHALL BE ENCASED IN A METAL RACEWAY OR LOCATED IN A FIREPROOF SHAFT HAVING FIRESTOPS AT EACH FLOOR.

3 A-4 **PENETRATION DETAILS**
SCALE: N.T.S.

C-8

at&t
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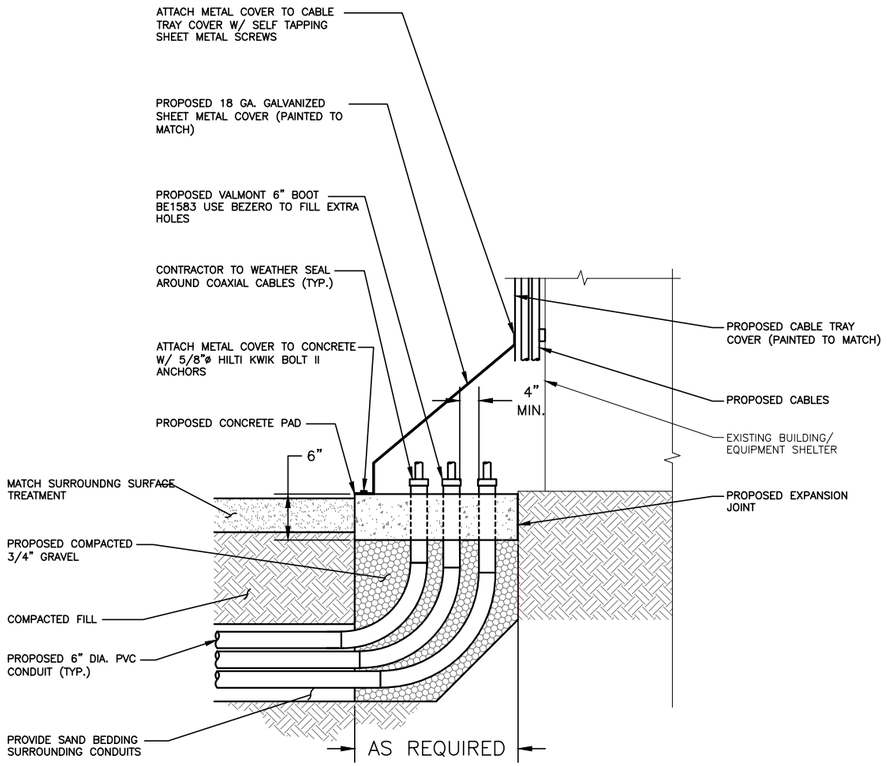
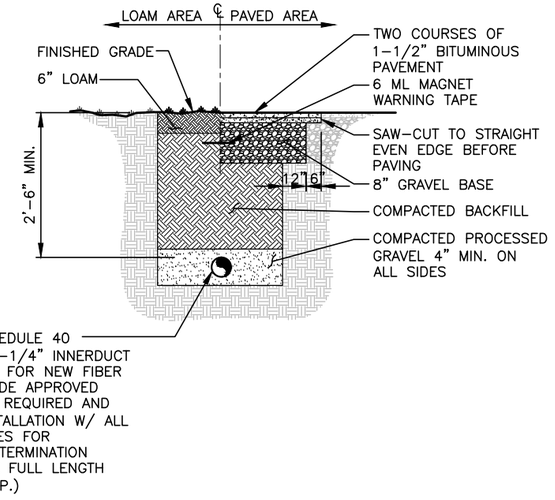


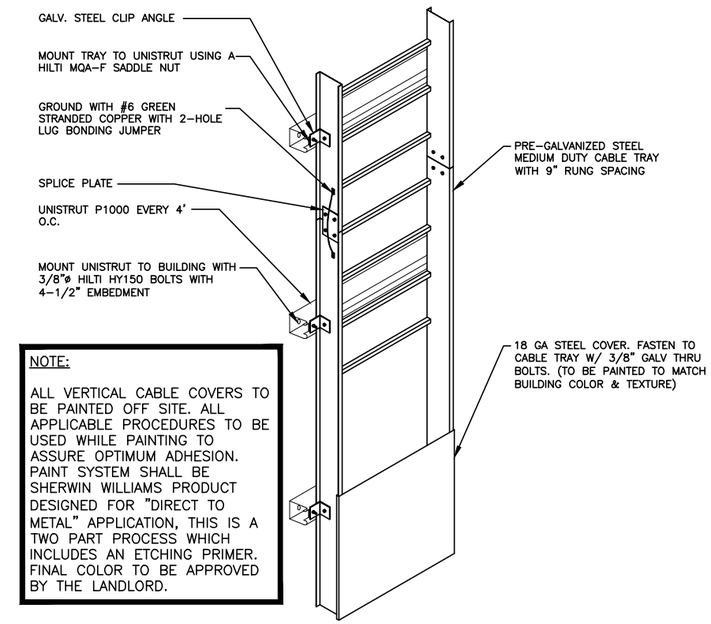
1 / A-5 **CABLE TRANSITION @ BUILDING**

SCALE: N.T.S.



3 / A-5 **BURIED CONDUIT DETAIL**

SCALE: N.T.S.



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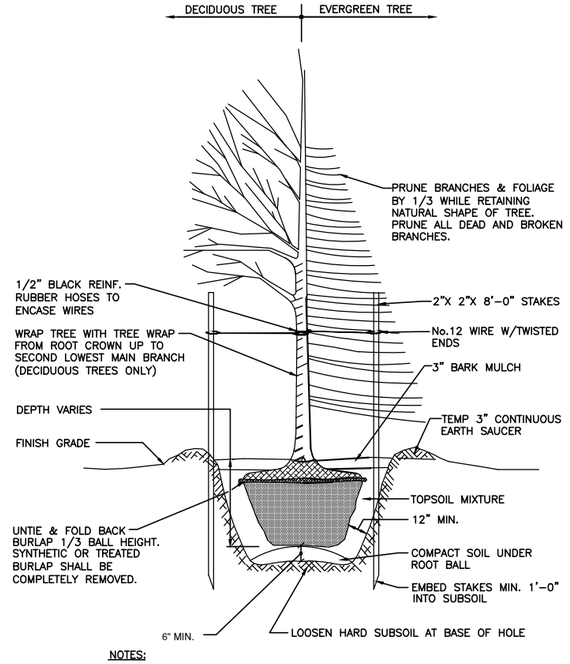
3 / A-5 **VERTICAL CABLE TRAY DETAIL**

SCALE: N.T.S.



NOTES:

1. LANDSCAPE TREES SHALL BE A MINIMUM OF 6'-0" IN HEIGHT WHEN PLANTED.
2. SPECIES PROPOSED THUJA OCCIDENTALIS PYRAMIDAL (PYRAMIDAL ARBORVITAE)

4 / A-5 **PLANTING DETAIL**

SCALE: N.T.S.

C-9

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EROSION CONTROL

CONSTRUCTION SEQUENCE

1) NOTIFY THE TOWN INLAND WETLANDS AGENT AT LEAST ONE WEEK PRIOR TO THE PRE-CONSTRUCTION MEETING.
2) COMPLETE A "CALL BEFORE YOU DIG" PRIOR TO ANY ON SITE ACTIVITY. RECALL EVERY 30 DAYS.
3) CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
4) INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
5) WOOD CHIPS GENERATED FROM CLEARING ACTIVITIES MAY BE USED AS A TEMPORARY STABILIZATION MEASURE IN ADDITION TO SILT FENCING & HAY BALES.
6) INSTALL HAY BALES TO "BACK UP" SILTATION FENCE ALONG ALL DOWNGRADIENT WETLANDS BOUNDARIES.
7) ESTABLISH ROADWAY CENTERLINE WITH GRADE STAKES AND OFF SETS.
8) STOCKPILE EXCAVATED SOILS A MINIMUM OF 75 FEET FROM ANY WETLAND AREA.
9) CONSTRUCT CLOSED DRAINAGE SYSTEM. PROTECT CULVERT INLETS WITH SEDIMENTATION BARRIERS.
10) ROUGH GRADE DITCH STARTING FROM THE DOWNGRADIENT LOCATION
11) INSTALL STONE LINING AND LEVEL SPREADERS AT CULVERT OUTLETS
12) STABILIZE GRADED SLOPES.
13) CONSTRUCT ROADWAYS AND PERFORM SITE GRADING, PLACING HAY BALES AND SILTATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
14) EXCAVATE FOR ANY SUBSURFACE UTILITIES.
15) STOCKPILE EXCAVATED SOILS A MINIMUM OF 75 FEET FROM ANY WETLAND AREA.
16) ESTABLISH SEDIMENT AND EROSION CONTROLS AROUND STOCKPILE SOILS.
17) INSTALL UTILITY SERVICES
18) INSTALL STORM DRAINAGE STARTING AT THE MOST DOWNGRADIENT LOCATION.
19) INSTALL ALL RIP RAP AT OUTLETS FOR STORM DRAINAGE.
20) INSTALL HAY BALE PROTECTION TO STORM DRAINAGE INLETS.
21) INSTALL ROAD
22) BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION. NO AREA SHALL BE LEFT UNSTABILIZED FOR A TIME PERIOD OF MORE THAN 30 DAYS.
23) DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
24) BEGIN EXCAVATION FOR AND CONSTRUCTION OF TOWERS AND PLATFORMS.
25) FINISH PAVING ALL ROADWAYS, DRIVES, AND PARKING AREAS.
26) COMPLETE PERMANENT SEEDING AND LANDSCAPING.
27) NO FLOW SHALL BE DIVERTED TO ANY WETLANDS UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED IN REGRADED AREAS.
28) AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

IMPACT OF STORMWATER DURING CONSTRUCTION ACTIVITY

ALL SEDIMENT CONTROLS, INCLUDING SILTATION FENCES AND HAY BALES MUST BE INSPECTED WEEKLY OR IMMEDIATELY AFTER A STORMWATER RUNOFF GENERATING EVENT. ALL SEDIMENT CONTROLS MUST BE MAINTAINED IN AN EFFECTIVE CONDITION.

IN THE EVENT THAT STORMWATER IS FLOWING IN THE EXISTING/PROPOSED DRAINAGE SWALE, THE FOLLOWING MUST BE NOTED:

1) BY INSTALLING THE STORM DRAINAGE STARTING AT THE MOST DOWNGRADIENT LOCATION, AND BY CONSTRUCTION THE DITCH STARTING AT THE MOST DOWNGRADIENT LOCATION, STORMWATER FLOW WILL NOT BE IMPOUNDED DURING THE CONSTRUCTION ACTIVITY.
2) ADDITIONAL MEASURES MUST BE TAKEN DURING TIMES OF RAIN OR FLOW. THESE INCLUDE THE CESSATION OF ALL CONSTRUCTION ACTIVITY IN THE DRAINAGE SWALES AT TIMES OF "HEAVY RAIN" OR "SIGNIFICANT FLOW" WHICH HAVE THE POTENTIAL TO CAUSE SOIL SCOURING. IN THE ABSENCE OF AN ON SITE AGREEMENT WITH THE TOWN INLAND WETLANDS AGENT.

CONSTRUCTION SPECIFICATIONS - SILT FENCE

1) THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2) THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3) WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4) FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.
5) WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6) FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7) MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BULGES IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE - SILT FENCE

1) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2) IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3) SEDIMENT SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACHED APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4) SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

EROSION CONTROL MEASURES:

THE CONTRACTOR (TO BE NAMED PRIOR TO ANY WORK BEING PERFORMED) IS ASSIGNED THE RESPONSIBILITY FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN. THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, NOTIFYING THE PLANNING AND ZONING OFFICE OF ANY TRANSFER OF THIS RESPONSIBILITY, AND FOR CONVEYING A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN IF THE TITLE TO THE LAND IS TRANSFERRED.

1) DISTURBED AREAS SHALL BE KEPT TO THE MINIMUM AREA NECESSARY TO CONSTRUCT THE ROADWAYS AND ASSOCIATED DRAINAGE FACILITIES.
2) HAY BALE BARRIERS AND SEDIMENT TRAPS SHALL BE INSTALLED AS REQUIRED. BARRIERS AND TRAPS ARE TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
3) BALED HAY AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE FROM NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY. NO SALT HAY SHALL BE USED.
4) FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
5) STOCKPILED MATERIALS SHALL BE PLACED ONLY IN NON RESTRICTED WETLAND AREAS ON PLANS. STOCKPILES SHALL BE PROTECTED BY SILTATION FENCE AND SEEDED TO PREVENT EROSION. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFF SITE.
6) ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4 INCHES OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA. SLOPES 2:1 OR GRATED TO BE STABILISED WITH TURF REINFORCEMENT MAT TYPE P300P NORTH AMERICAN GREEN (1-800-772-2040), OR ENGINEER APPROVED EQUAL.
7) APPLICATION OF GRASS SEED, FERTILIZERS AND MULCH SHALL BE ACCOMPLISHED BY BROADCAST SEEDING OR HYDROSEEDING AT THE RATES OUTLINED BELOW:

LIMESTONE: 75-100 LBS./1,000 SQUARE FEET.
FERTILIZER: RATE RECOMMENDED BY MANUFACTURER.
MULCH: HAY MULCH APPROXIMATELY 3 TONS/ACRE UNLESS EROSION CONTROL MATTING IS USED.

SEED MIX (SLOPES LESS THAN 4:1)	LBS./ACRE
CREEPING RED FESCUE	20
TALL FESCUE	20
RED TOP	2
	42

SLOPE MIX (SLOPES GREATER TAN 4:1)	LBS./ACRE
CREEPING RED FESCUE	20
TALL FESCUE	20
BIRDSFOOT TREEFOIL	8
	48

8) AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED.
9) PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
10) ALL CATCH BASIN INLETS WILL BE PROTECTED WITH LOW POINT SEDIMENTION BARRIER.
11) ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEANED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
12) ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA.
13) NO DISCHARGE SHALL BE DIRECTED TOWARDS ANY PROPOSED DITCHES, SWALES, OR PONDS UNTIL THEY HAVE BEEN PROPERLY STABILIZED.

CONSTRUCTION SPECIFICATIONS - STRAW OR HAY BALES

1) BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ADJOINING.
2) EACH BALE SHALL BE EMBEDDED IN THE GROUND A MINIMUM OF 4 INCHES.
3) BALES SHALL BE ANCHORED IN PLACE BY AT LEAST TWO STAKES DRIVEN THROUGH THE BALE. THE STAKES SHALL BE DRIVEN AT LEAST 18 INCHES INTO THE GROUND.
4) BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL AND PROMPTLY REPAIRED FOR REPLACED AS NECESSARY.
5) BALES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED OF PROPERLY.

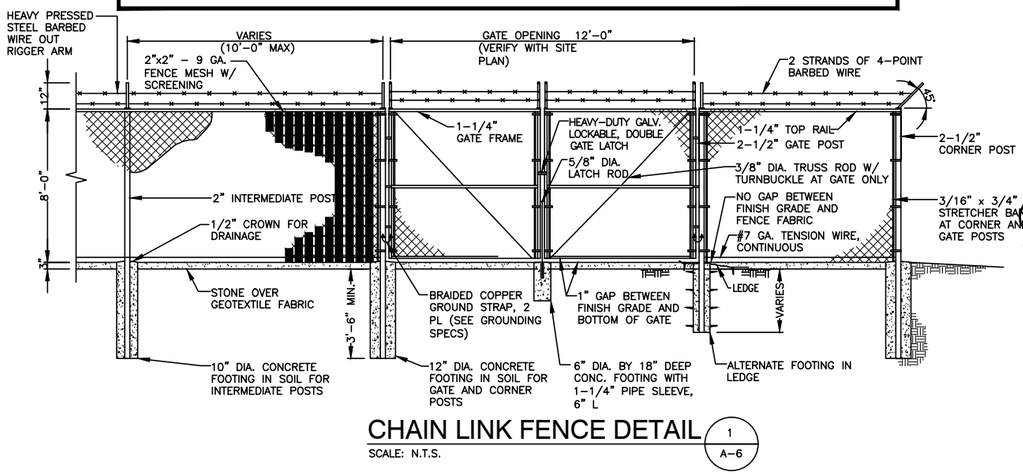
MAINTENANCE - STRAW OR HAY BALES

1) STRAW OR HAY BALES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL,
2) CLOSE ATTENTION SHALL BE PAID TO THE REPAIR OF DAMAGED BALES, UNDERCUTTING BENEATH THE BALES, AND FLOW AROUND THE END OF THE BALES.
3) NECESSARY REPAIRS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY.
4) SEDIMENT DEPOSITS SHOULD BE CHECKED AFTER EACH RAINFALL. THE DEPOSITS SHOULD BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE TABLE.
5) SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE BARRIER HAS BEEN DISMANTLED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED USING THE APPROPRIATE VEGETATIVE BMP.

FENCE NOTES

1. ALTERNATE FOOTINGS FOR ALL FENCE POSTS IN LEDGE: IF LEDGE IS ENCOUNTERED AT GRADE, OR AT A DEPTH SHALLOWER THAN 3'-6", CORE DRILL AN 8" DIA HOLE 18" INTO THE LEDGE. CENTER POST IN THE HOLE AND FILL WITH CONCRETE OR GROUT. IF LEDGE IS BELOW FINISH GRADE, COAT BACKFILLED SECTION OF POST WITH COAL TAR, AND BACKFILL WITH WELL-DRAINING GRAVEL.

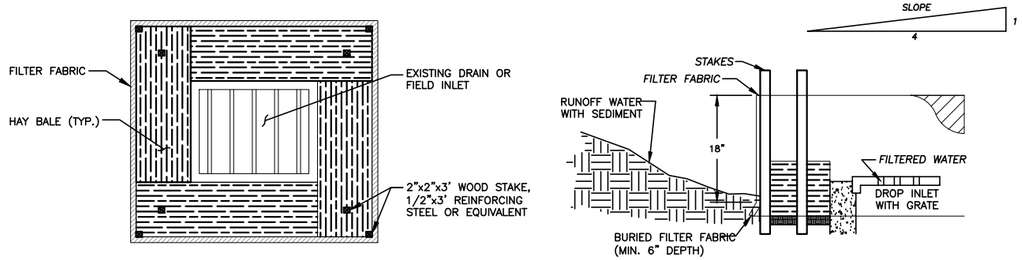
2. ATTACH EACH GATE WITH 1-1/2 PAIR OF NON-LIFT-OFF TYPE, MALLEABLE IRON OR FORGING, PIN-TYPE HINGES. ASSEMBLIES SHALL ALLOW FOR 180° OF GATE TRAVEL.



CHAIN LINK FENCE DETAIL

1 / A-6

SCALE: N.T.S.



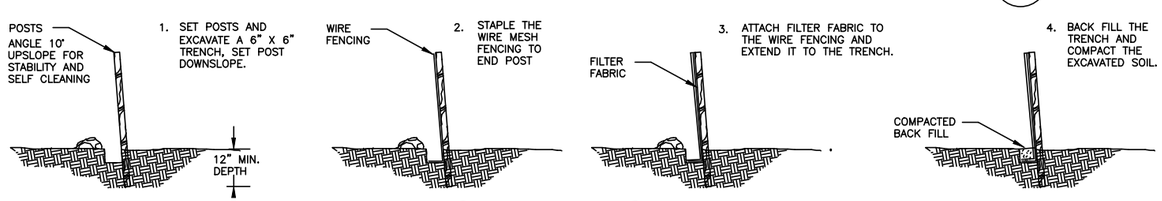
PLAN VIEW

ELEVATION

INLET PROTECTION (TYPE 3)

2 / A-6

SCALE: N.T.S.



SEDIMENTATION CONTROL BARRIER

3 / A-6

SCALE: N.T.S.

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)-557-5553
FAX: (978)-336-5586

STATE OF CONNECTICUT · DEREK J. CREASER · No. 25857 · LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER — DATE

C-10

REVISIONS		
8	11/08/16	ISSUED FOR CONSTRUCTION
7	09/08/16	ISSUED FOR CONSTRUCTION
6	08/16/16	ISSUED FOR REVIEW
REV. #	DATE	DESCRIPTION

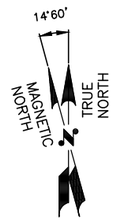
PROJECT NO.	DESIGNED BY: AT	SCALE:
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

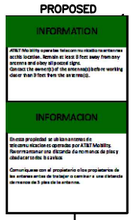
SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

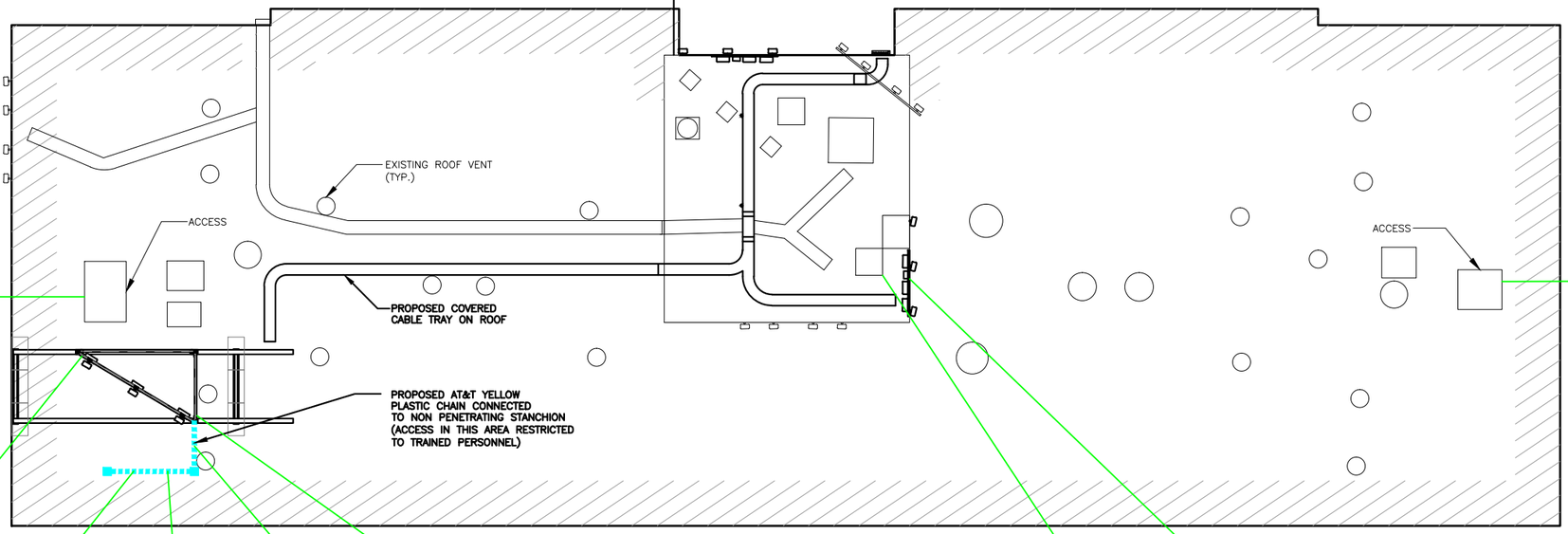
SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

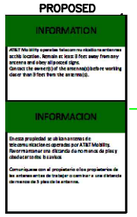
SHEET TITLE:
EROSION CONTROL DETAILS & NOTES

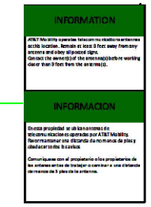
SHEET NO:
A-6

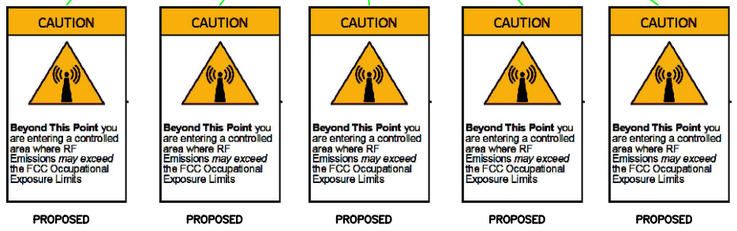




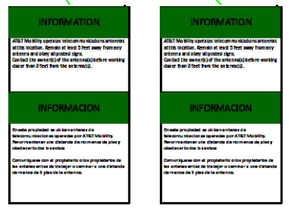








1 A-7 **RF BARRIER PLAN**
SCALE: 1/8"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"



ACTIONS FOR COMPLIANCE

ALL SITE ACCESS LOCATIONS
INFORMATION SIGN 1 REQUIRED.

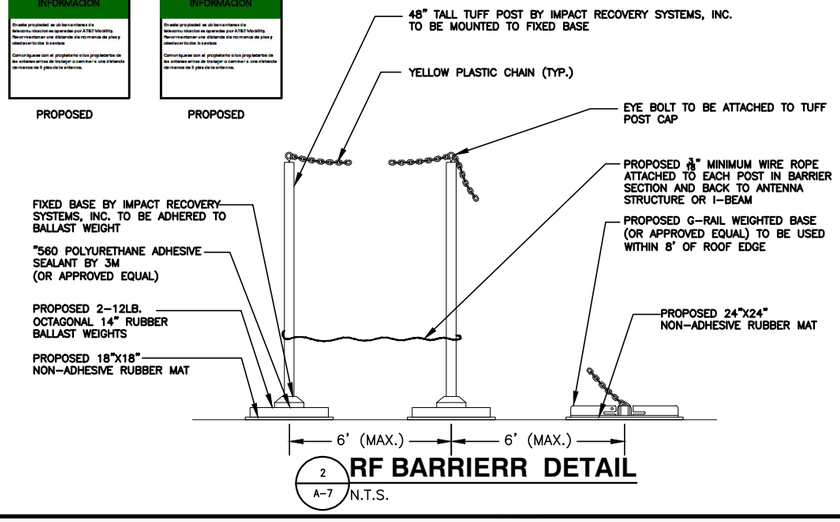
AT&T MOBILITY, LLC PROPOSED ALPHA SECTOR LOCATION
INFORMATION 1 SIGN REQUIRED.

AT&T MOBILITY, LLC PROPOSED BETA SECTOR LOCATION
YELLOW CAUTION 2 SIGN REQUIRED (AT BOTH SIDES OF THE SECTOR).
INSTALL A BARRIER 4 FT X 13 FT, AS DEPICTED IN THE SITE SCALE MAP.
INSTALL 3 TOTAL CAUTION 2 SIGN(S) ON THE PROPOSED BARRIER CHAIN SEGMENTS.

AT&T MOBILITY, LLC PROPOSED GAMMA SECTOR LOCATION
INFORMATION 1 SIGN REQUIRED.

NOTE: SIGNAGE ON THE BARRIERS SHOULD BE PLACED IN THE MIDDLE OF EACH BARRIER SEGMENT NO MORE THAN 8' APART FROM EACH OTHER.

NOTE: BARRIERS WERE ONLY RECOMMENDED IN AREAS PREDICTED TO EXCEED THE GENERAL PUBLIC MPE LIMIT GREATER THAN 6' FROM THE UNPROTECTED ROOF EDGE. ALL OTHER PREDICTED TO EXCEED AREAS ARE WITHIN 6' OF THE UNPROTECTED ROOF EDGE.
- 4 FT SEGMENT: (1) CAUTION 2 SIGN(S)
- 13 FT SEGMENT: (2) CAUTION 2 SIGN(S)



2 A-7 **RF BARRIERR DETAIL**
N.T.S.

C-11

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
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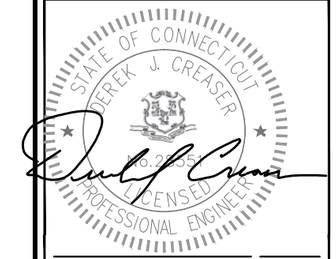

LICENSED ENGINEER DATE

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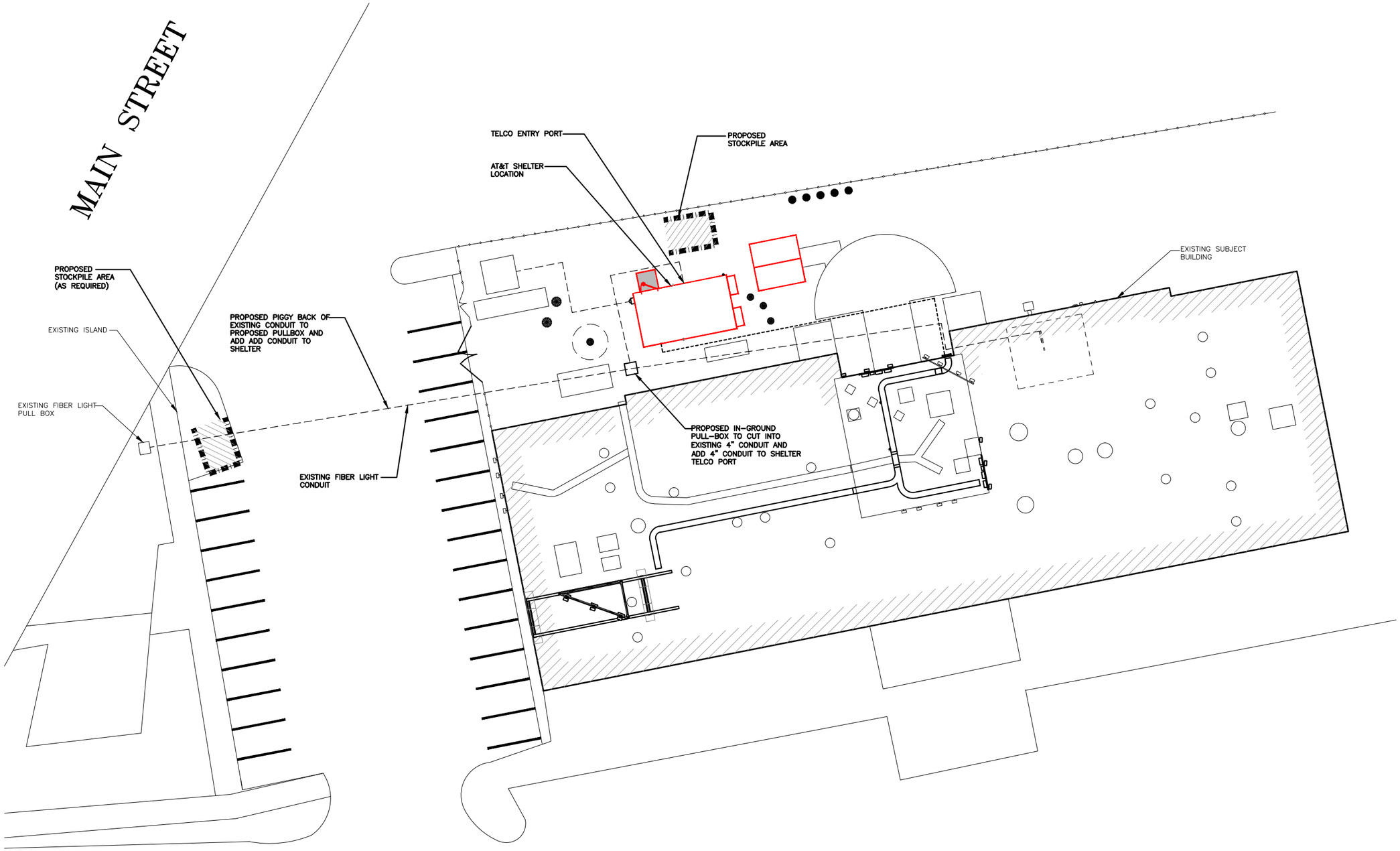
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
RF-BARRIER PLAN

SHEET NO:
A-7



NOTE:

1. ANY REMOVED TREES SHALL BE REPLACED/RELOCATED AT THE LANDLORDS DISCRETION.

2. DISTURBED AREAS TO RECEIVE 6" OF TOPSOIL AND TURF ESTABLISHMENT UNLESS OTHERWISE NOTED.)

FIBER ROUTING PLAN (1 / A-8)

22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

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

C-12

at&t

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 28584
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

REVISIONS

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CT2490
EAST HARTFORD - 886 MAIN

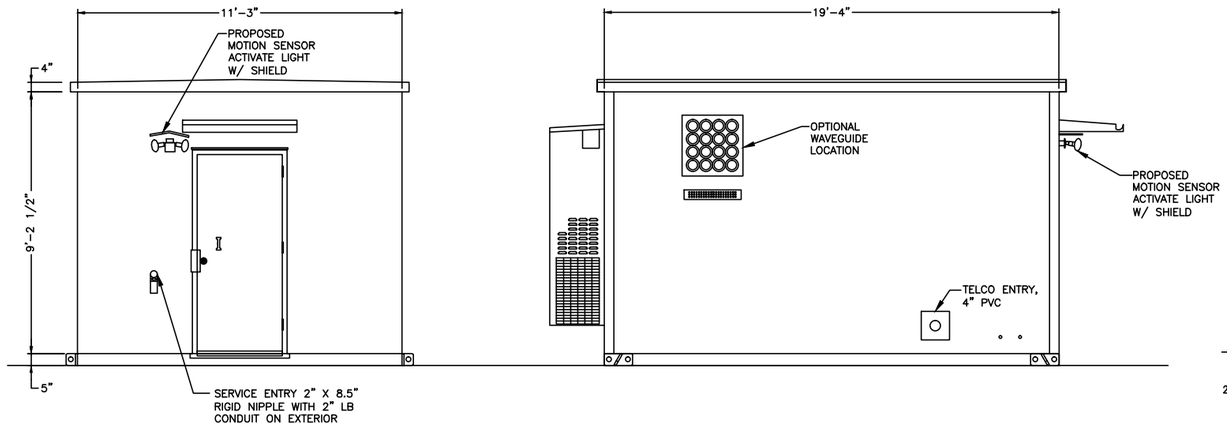
SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
FIBER ROUTING PLAN

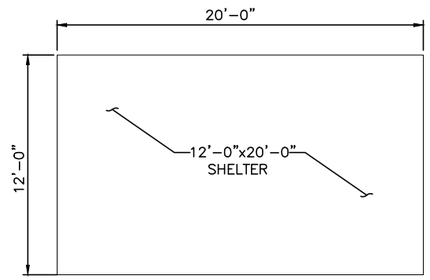
SHEET NO:
A-8

FOUNDATION NOTES & CONCRETE SPECIFICATIONS

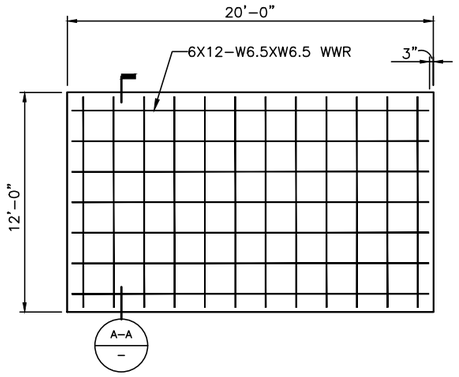
1. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
2. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
3. CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c)=3000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)
4. BAR REINFORCING TO BE ASTM A615 GRADE 60.
5. WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A82.
6. COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.
7. ALL REINFORCING TO HAVE 2" MINIMUM CONCRETE COVER.
8. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 BUILDING CODE, AND IBC 2009.
9. SLAB TO BE LEVEL ±1/4".
10. SLAB FOUNDATION DESIGNED ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
11. SLAB FOUNDATION DESIGN ASSUMING MAXIMUM SOIL PLASTICITY OF 27.
12. CONTRACTOR TO VERIFY FINAL SHELTER DIMENSIONS PRIOR TO CONSTRUCTION OF FOUNDATION.
13. GRADE SHALL SLOPE AWAY FROM THE CONCRETE PAD TO ALLOW FOR PROPER WATER RUN OFF.
14. ANCHOR SHELTER TO FOUNDATION PER SHELTER MANUFACTURER'S RECOMMENDATIONS.



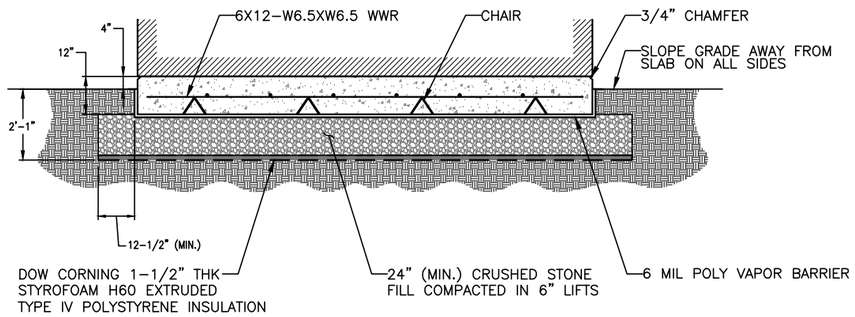
TYPICAL SHELTER DETAILS (1 / S-1)
SCALE: 1/2"=1'-0'



SHELTER PLAN (2 / S-1)
SCALE: NOT TO SCALE



SHELTER FOUNDATION PLAN (3 / S-1)
SCALE: NOT TO SCALE



SECTION A-A

SHELTER FOUNDATION DETAIL (4 / S-1)
SCALE: 1/2"=1'-0'

0 0'-4" 0'-8" 1'-4" 2'-0"

C-13

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500 ENTERPRISE DRIVE
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SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)-557-5553
FAX: (978)-336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28554
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER | DATE

REVISIONS

REV. #	DATE	DESCRIPTION
8	11/08/16	ISSUED FOR CONSTRUCTION
7	09/08/16	ISSUED FOR CONSTRUCTION
6	08/16/16	ISSUED FOR REVIEW

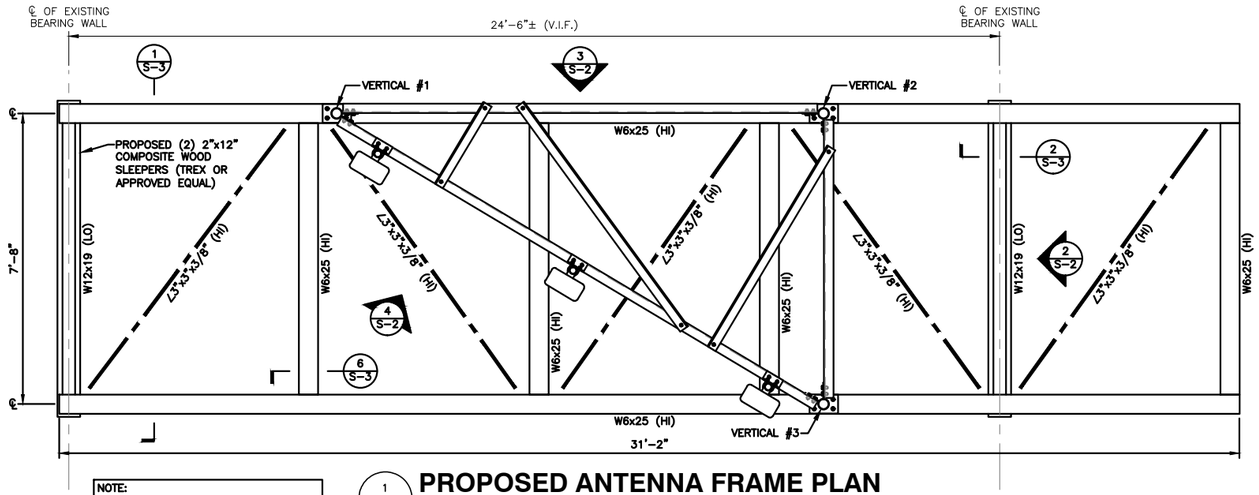
PROJECT NO.	DESIGNED BY: AT	SCALE:
CT2490	DRAWN BY: SB	AS SHOWN
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
STRUCTURAL DETAILS

SHEET NO:
S-1



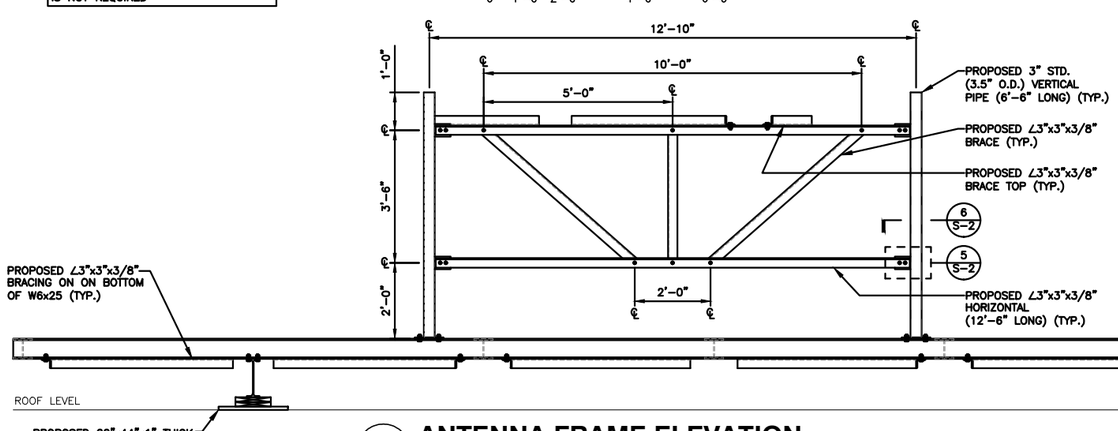
NOTE:

TOTAL WEIGHT OF PROPOSED ANTENNA MOUNTING FRAME EXCEEDS REQUIRED BALLAST REQUIRED. ADDITIONAL BALLAST IS NOT REQUIRED

1 S-2 PROPOSED ANTENNA FRAME PLAN

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

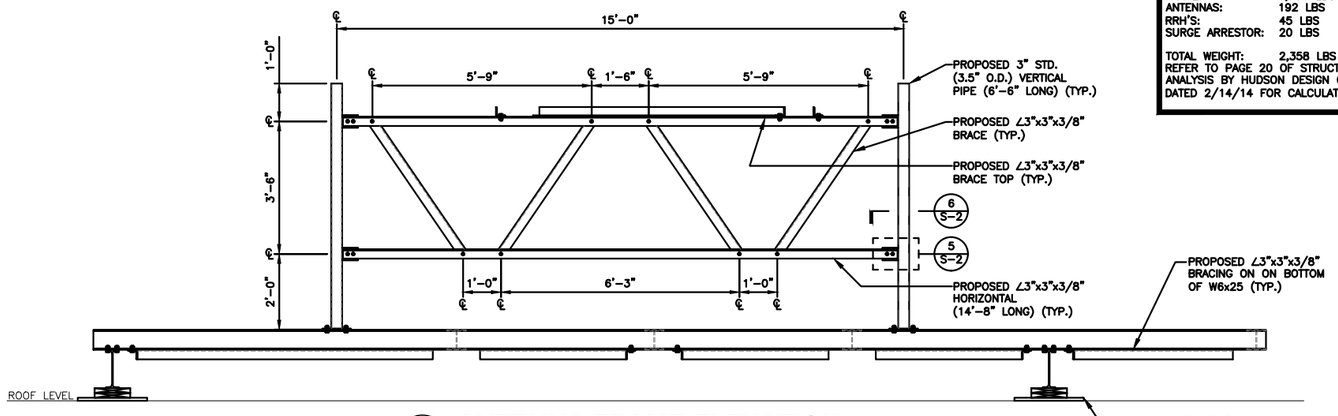
0 1'-0" 2'-0" 4'-0" 6'-0"



3 S-2 ANTENNA FRAME ELEVATION

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

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



4 S-2 ANTENNA FRAME ELEVATION

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

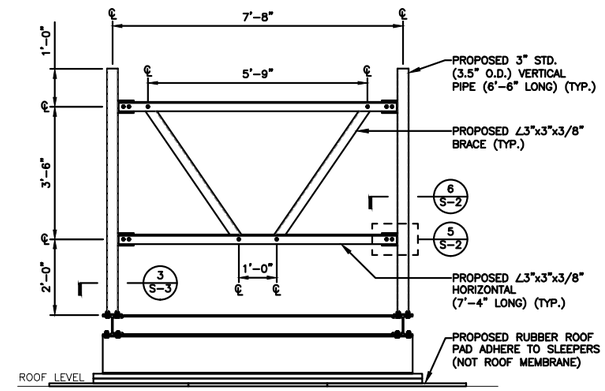
0 1'-0" 2'-0" 4'-0" 6'-0"

TOTAL ANTENNA FRAME HOLD DOWN FORCE REQUIRED: 2,308.33 LBS.

TOTAL EQUIPMENT WEIGHTS

FRAME:	1,701 LBS
ANTENNAS:	192 LBS
RRH'S:	45 LBS
SURGE ARRESTOR:	20 LBS
TOTAL WEIGHT:	2,358 LBS

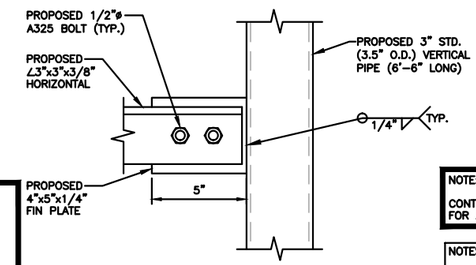
REFER TO PAGE 20 OF STRUCTURAL ANALYSIS BY HUDSON DESIGN GROUP DATED 2/14/14 FOR CALCULATIONS



2 S-2 ANTENNA FRAME ELEVATION

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

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



5 S-2 CONNECTION DETAIL

SCALE: 3"=1'-0"

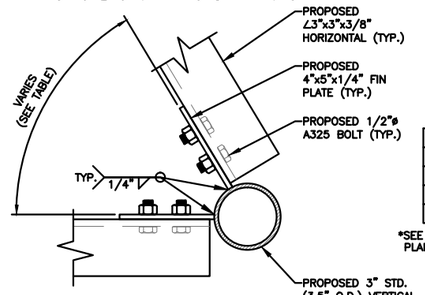
0 0'-2" 0'-4" 0'-8" 1'-0"

NOTE:

CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION

NOTES:

1. PROPOSED ANTENNAS & APPURTENANCES NOT SHOWN FOR CLARITY
2. CONTRACTOR TO VERIFY DEPTH OF ROOF INSULATION/ROOF MEMBRANE PRIOR TO CONSTRUCTION



FIN PLATE	
VERTICAL	ANGLE
1	31°
2	90°
3	59°

*SEE PROPOSED ANTENNA FRAME PLAN FOR VERTICAL LOCATIONS

6 S-2 FIN PLATE DETAIL

SCALE: 3"=1'-0"

0 0'-2" 0'-4" 0'-8" 1'-0"

C-14

at&t

500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI

27 NORTHWESTERN DR
SALEM, NH 03079

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STRUCTURAL DETAILS

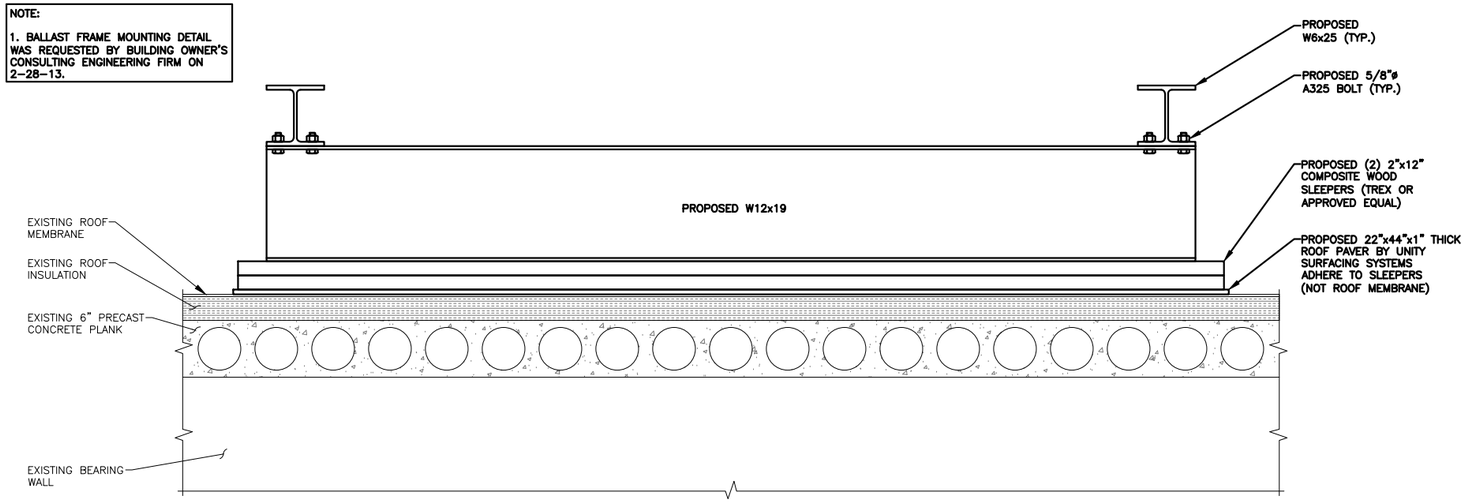
SHEET NO:

S-2

C-15

NOTE:

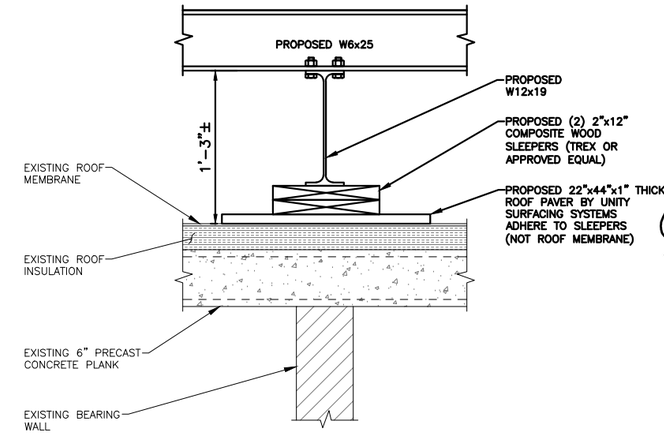
1. BALLAST FRAME MOUNTING DETAIL WAS REQUESTED BY BUILDING OWNER'S CONSULTING ENGINEERING FIRM ON 2-28-13.



1 / S-3 **ANTENNA FRAME SECTION**

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

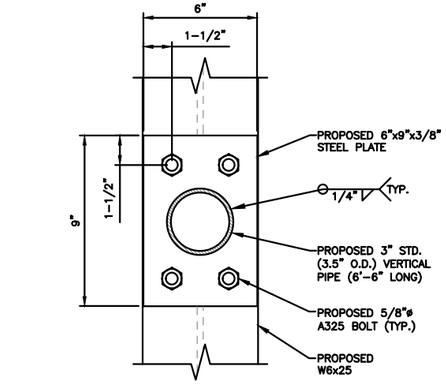
0 0'-4" 0'-8" 1'-4" 2'-0"



2 / S-3 **ANTENNA FRAME SECTION**

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

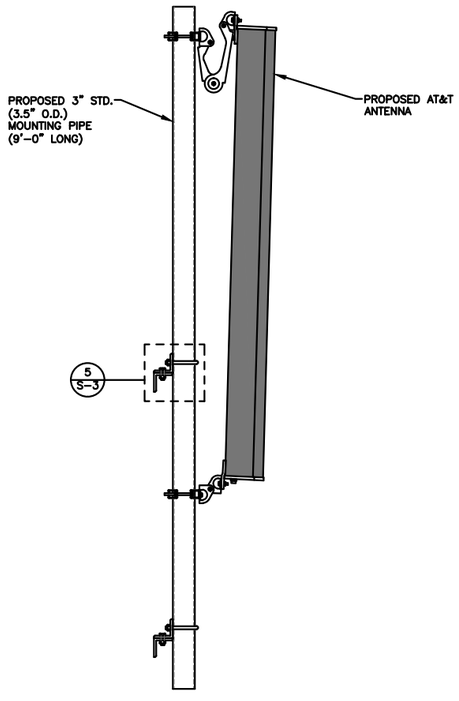
0 0'-4" 0'-8" 1'-4" 2'-0"



3 / S-3 **BOTTOM PLATE DETAIL**

SCALE: 3"=1'-0"

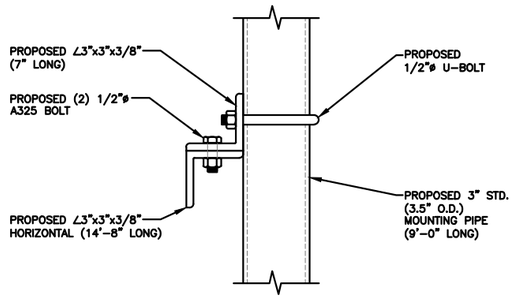
0 0'-2" 0'-4" 0'-8" 1'-0"



4 / S-3 **ANTENNA MOUNTING DETAIL**

SCALE: 1"=1'-0"

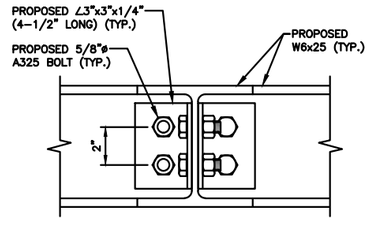
0 0'-6" 1'-0" 2'-0" 3'-0"



5 / S-3 **CONNECTION DETAIL**

SCALE: 3"=1'-0"

0 0'-2" 0'-4" 0'-8" 1'-0"



6 / S-3 **W6x25 CONNECTION DETAIL**

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

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

at&t

500 ENTERPRISE DRIVE
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SHEET NO:

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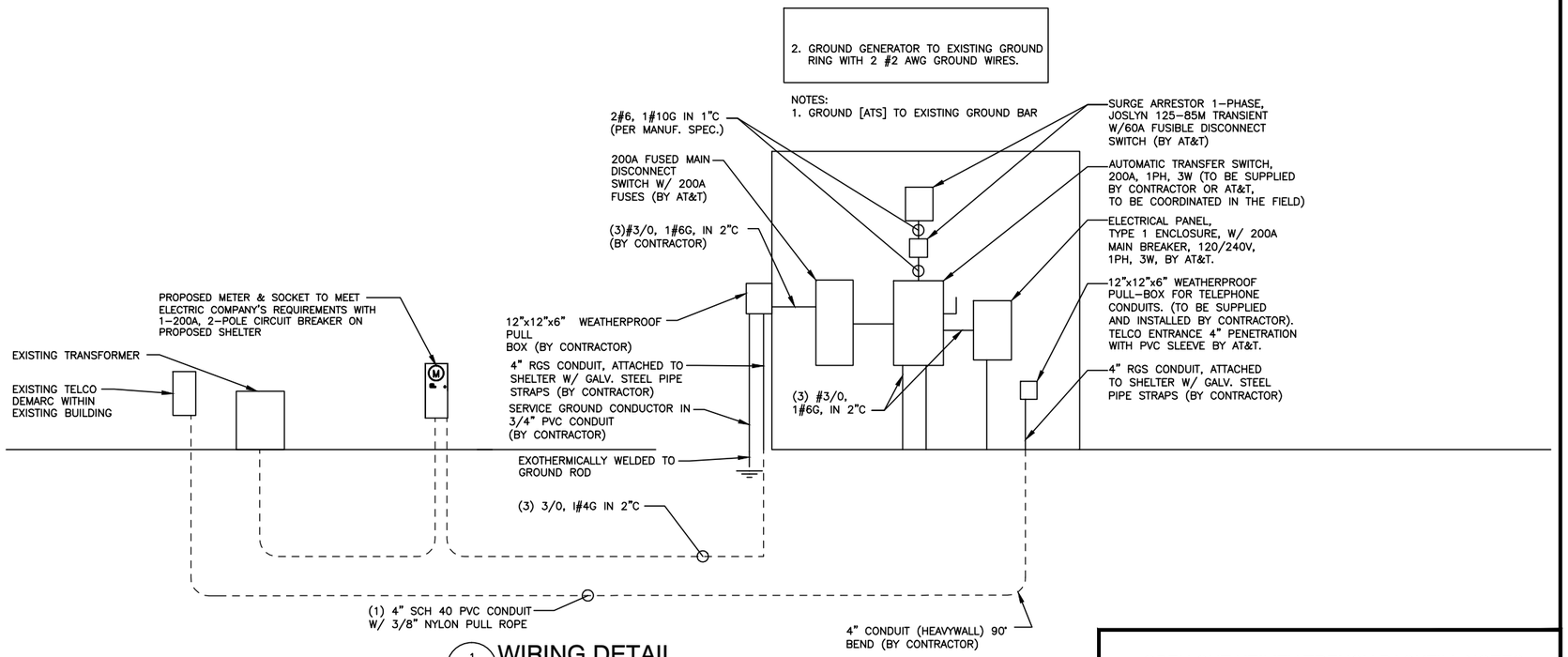
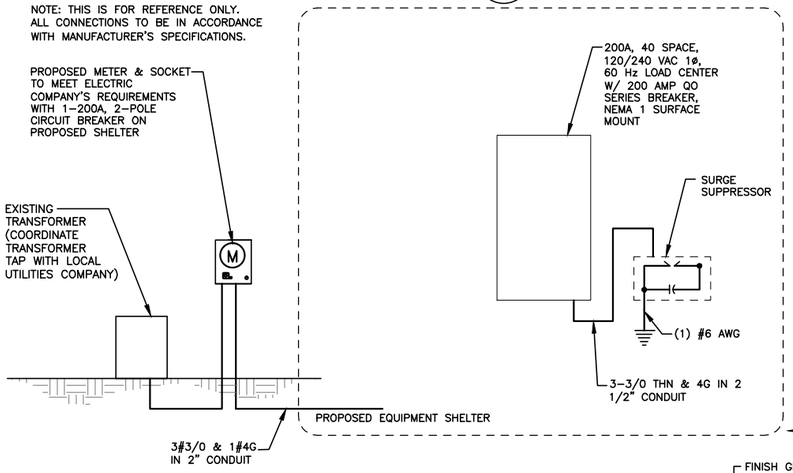


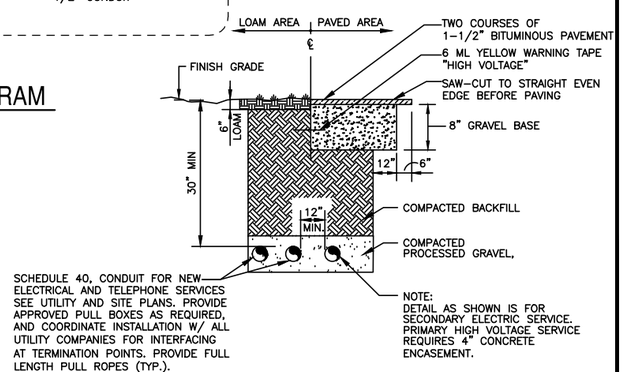
WIRING DETAIL

1 / E-1 SCALE: N.T.S.



TYPICAL ONE-LINE DIAGRAM

2 / E-1 SCALE: N.T.S.



BURIED CONDUIT DETAIL

3 / E-1 SCALE: N.T.S.

OPEN CUT UTILITY TRENCH BACKFILL NOTES

SURFACING:

1. ALL A.C.P SHALL BE SAW CUT TO PROVIDE A STRAIGHT, CLEAN EDGE PRIOR TO PAVING.
2. THE CUT LINE SHALL BE ONE CONTINUOUS STRAIGHT LINE FROM THE OUTER EXCAVATION LIMITS OF MANHOLE, VALVE BOX, ETC. T MANHOLE, VALVE BOX, ETC.
3. PAVE WITH AN 0.35 FT. MINIMUM COMPACTED DEPTH HMA CLASS OR MATCH EXISTING, WHICHEVER IS GREATER.
4. LIFTS FOR HMA CLASS SHALL BE AN 0.15 FT. MINIMUM AND 0.35 FT. MAXIMUM FOR NON-SURFACE LIFTS (0.25' MAXIMUM FOR SURFACE LIFT); THE TEMPERATURE SHALL BE 250 DEGREE MINIMUM, 350 DEGREE MAXIMUM, COMPACTED TO THE SATISFACTION OF THE ENGINEER.
5. ALL JOINTS SHALL BE TACKED, SEALED AND SANDED.
6. WHEN SURFACING EXISTS ON BOTH SIDES OF THE TRENCH, NEW A.C.P. WILL BE A MINIMUM OF 40" WIDE.
7. TRENCH SHALL BE PLATED UNTIL PAVED.

TOP COURSE:

1. 0.20 FT. MINIMUM DEPTH (5/8" MINUS) C.S.T.C.
2. COMPACTED TO 95% OF MAXIMUM DENSITY. SEE TRENCH ZONE.
3. EQUIVALENT DEPTH OF A.T.B. MAY BE SUBSTITUTED.

BASE COURSE:

1. 0.80 FT. MINIMUM DEPTH (1-1/4" MINUS) C.S.B.C.
2. COMPACTED TO 95% OF MAXIMUM DENSITY. SEE TRENCH ZONE.
3. EQUIVALENT DEPTH OF A.T.B. MAY BE SUBSTITUTED.

TRENCH ZONE:

1. GRANULAR BACKFILL AS APPROVED BY LOCAL AGENCY. SPECIFICATIONS FOR GRANULAR BACKFILL. COMPACTED TO 95% OF MAXIMUM DENSITY IN THE TRENCH ZONE USING METHOD C COMPACTION AS PER SECTION 2-03.3 (14)C.
2. NATIVE MATERIAL MAY BE USED IF APPROVED PRIOR TO CONSTRUCTION BY COUNTY.
3. TRENCH ZONE WIDTH -- SEE BELOW.

PIPE ZONE:

1. PIPE ZONE MATERIAL AS SPECIFIED BY UTILITY OWNER.
2. 1.0 FT. MAX. FROM TOP OF THE PIPE.

CONDITIONS:

1. A COPY OF THE PERMIT AND REQUIREMENTS SHALL BE ON THE JOB SITE AT ALL TIMES.
2. THE PERMIT HOLDER SHALL BE RESPONSIBLE FOR ALL RESTORATION AND MAINTENANCE OF DITCHES, SHOULDERS, DRIVEWAYS, LANDSCAPING, ECT.
3. ALL PAVEMENT CUTS, AT A MIN. BE TEMP PATCHED @ THE END OF EACH DAY W/PERM PATCH TO BE DONE ON THE 1ST SUITABLE DAY.
4. WORK SHALL BE DONE IN A TIMELY MANNER TO MINIMIZE THE IMPACT TO THE PUBLIC.

ELECTRICAL LEGEND

	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
T	DRY TYPE TRANSFORMER
M	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
F	FUSIBLE DISCONNECT SWITCH, MOUNTED 54"A.F.F.
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
J	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	HOME RUNS, MINIMUM 2#10 + 1#10G IN 3/4" CONDUIT U.O.N.
A.F.F.	ABOVE FINISHED FLOOR
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
G	GROUND
	GROUND
MGB	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	COAXIAL CABLE
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHNINSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250.
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
21. BOND ANTENNA EGB'S AND MGB TO GROUND RING.
22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
23. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
24. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2" 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.

C-16

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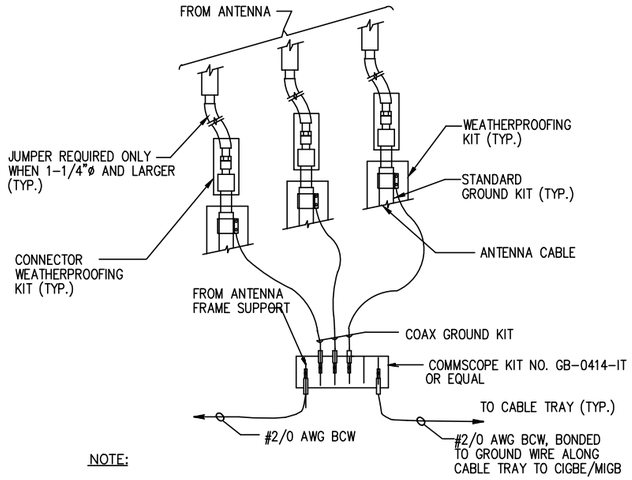
SHEET TITLE:
ELECTRICAL ONE LINE DIAGRAM & DETAILS

SHEET NO:
E-1

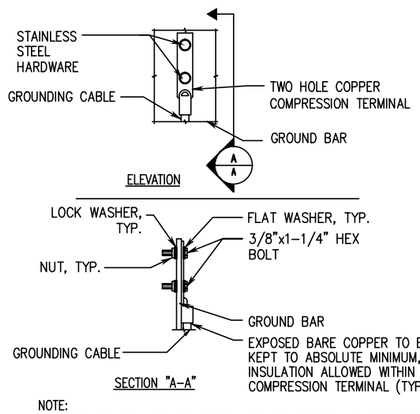


NOTE:

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

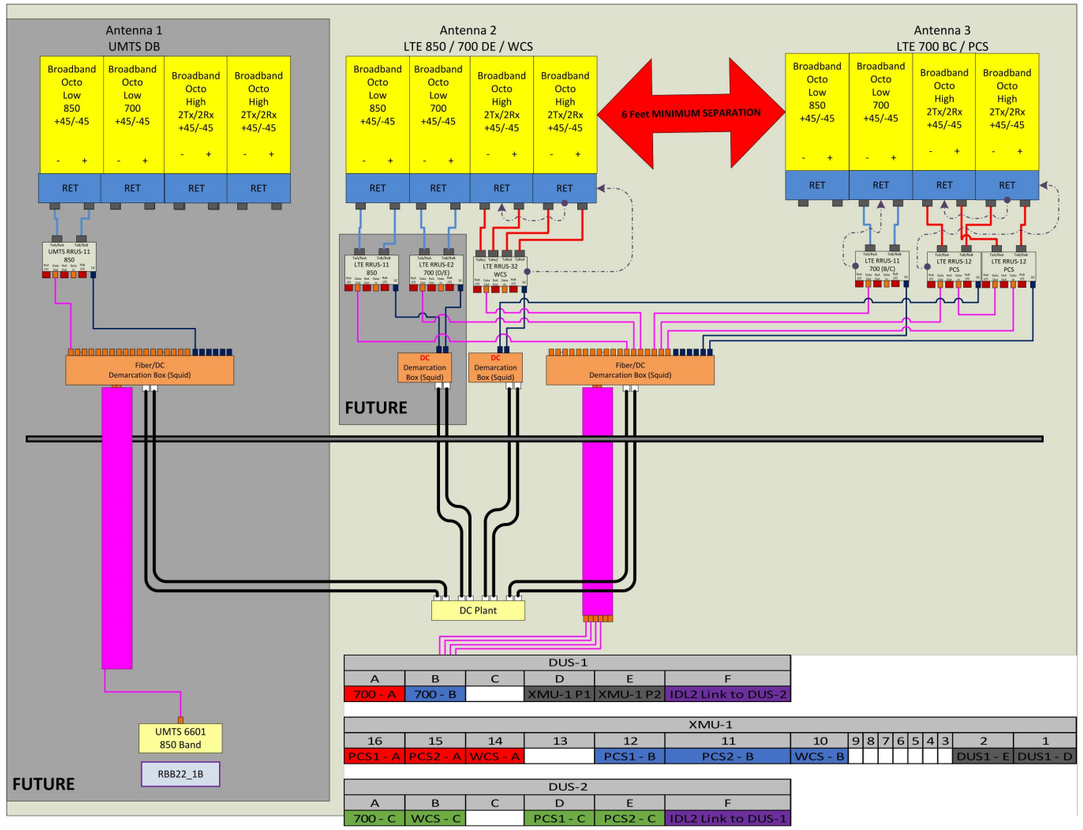
1 / G-1 N.T.S.



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

TYPICAL GROUND BAR CONNECTION DETAIL

3 / G-1 N.T.S.



DUS-1					
A	B	C	D	E	F
700 - A	700 - B		XMU-1 P1	XMU-1 P2	IDL2 Link to DUS-2

XMU-1												
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PCS1 - A	PCS2 - A	WCS - A		PCS1 - B	PCS2 - B	WCS - B								DUS1 - E	DUS1 - D

DUS-2					
A	B	C	D	E	F
700 - C	WCS - C		PCS1 - C	PCS2 - C	IDL2 Link to DUS-1

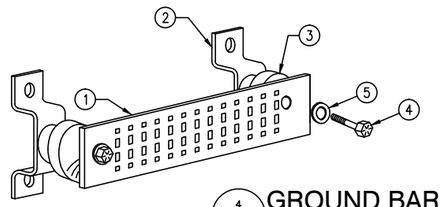
NOTE:

CONTRACTOR TO CONFIRM ALL PARTS & INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

PLUMBING DIAGRAM

2 / G-1 N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2	———	WALL MTG. BRKT.
3	2	———	INSULATORS
4	4	———	5/8"-11x1" H.H.C.S.
5	4	———	5/8 LOCKWASHER



GROUND BAR - DETAIL

4 / G-1 N.T.S.

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)

C-17

at&t
500 ENTERPRISE DRIVE
ROCKY HILL, CT 06067

SAI
27 NORTHWESTERN DR
SALEM, NH 03079

Hudson Design Group LLC
1600 OSGOOD STREET
BLD 20 N, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978)-557-5553
FAX: (978)-336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28557
LICENSED PROFESSIONAL ENGINEER

LICENSED ENGINEER DATE

REVISIONS

REV. #	DATE	DESCRIPTION
8	11/08/16	ISSUED FOR CONSTRUCTION
7	09/08/16	ISSUED FOR CONSTRUCTION
6	08/16/16	ISSUED FOR REVIEW

PROJECT NO.	DESIGNED BY:	SCALE:
CT2490	AT	AS SHOWN
	DRAWN BY: SB	
	CHECK'D BY: DPH	

SITE NAME:
CT2490
EAST HARTFORD - 886 MAIN

SITE ADDRESS:
886 MAIN ST
EAST HARTFORD, CT 06108

SHEET TITLE:
PLUMBING DIAGRAM & GROUNDING DETAILS

SHEET NO:
G-1

Revised
STRUCTURAL ANALYSIS REPORT

For

CT 2490
EAST HARTFORD – 886 MAIN
886 Main Street
East Hartford, Connecticut 06108

Equipment Shelter on the Ground; Antennas Mounted on the Facade and on the Roof

Prepared for:

SAI

at&t

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

Dated: February 14, 2014 (Rev. 2)
December 10, 2012 (Rev. 1)
July 29, 2012

STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER
2-14-2014

Prepared by:

Hudson Design Group LLC

1600 Osgood Street Building 20 North, Suite 3090
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's drawings.

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

This office conducted an on-site visual survey of the above areas on June 14, 2012. Attendees included Jose Xavier (HDG-Sr. Project Manager).

CONCLUSION SUMMARY:

Limited Building plans were available 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, in general, structural designs to support the proposed AT&T Equipment within or near the Proposed Location can be completed and components installed with **NO STRUCTURAL UPGRADES REQUIRED** to the existing structure. Reference the attached HDG's drawings for all equipment locations.

However, HDG recommends locating the proposed roof top ballast mount on steel beams spanning over bearing walls to adequately distribute the proposed load as shown in the attached sketch. If field conditions differ from what is assumed in this report, then the engineer of record is to be notified as soon as possible.

APPURTENACE/EQUIPMENT CONFIGURATION:

(9) OPA-65R-LCUU-H6 Antennas (72"x15"x9" - Wt. = 64 lbs. /each) (Three per sector)

(3) Surge Suppressor (Wt. = 20 lbs. / each) (One per sector)

(6) A2 Module (16.4"x15.2"x3.4" – W. = 22 lbs. /each) (Two per sector)

(9) RRH (RRUS-11) (19.7"x17"x7.2" – Wt. = 50 lbs. /each) (Three per sector)

(6) RRH (RRUS-12) (20.4"x18.5"x7.5" – Wt. = 58 lbs. /each) (Two per sector)

(3) RRH (RRUS-E2) (20.4"x18.5"x7.5" – Wt. = 58 lbs. /each) (One per sector)

(3) RRH (RRUS-32) (29.9"x13.3"x9.5" – Wt. = 77 lbs. /each) (One per sector)

(1) 11.5 FT x 20 FT Equipment Shelter (Designed by others)

Referenced documents are attached.

Hudson Design Group LLC

DESIGN CRITERIA:

1. International Building Code with 2005 Connecticut Supplement with 2009 Amendments

   Wind Analysis:

Basic Wind Speed:	95 MPH	(includes 3-second gust)
Exposure:	C	

   Roof:

Ground Snow, Pg: 30 psf	
Importance Factor, I: 1.0	(Category II)
Exposure Factor, Ce: 0.9	(Exposure B- Fully Exposed)
Thermal Factor, Ct: 1.0	
Calculated Flat Roof Snow Load: 30 psf	(Pf=0.7*Ce*Ct*I*Pg)

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

County:	Hartford
Wind Load:	80 mph
Ice Thickness:	1 Inch

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

117'-"+/-	(Alpha and Gamma sectors)
109'-0"+/-	(Beta sector)

Hudson Design Group LLC

EXISTING ROOF CONSTRUCTION:

The existing roof construction appears to consist of a roofing membrane over rigid insulation, on hollow precast concrete slabs supported by a system of bearing walls. (Building plans were not available at the time of our site visit).

EQUIPMENT SHELTER SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed 11.5' x 20' equipment shelter (designed by others) be located at ground level and supported by a concrete slab.

RRH's / SURGE SUPPRESSOR SUPPORT RECOMMENDATIONS:

- The new AT&T Alpha and Gamma sectors' RRH's and surge suppressors are proposed to be mounted on unistrut components, secured to the new antenna mounting pipes.
- The new AT&T Beta sector's RRH's and surge suppressors are proposed to be mounted on unistrut components secured to the non-penetrating roof top sled mounts.

ANTENNA SUPPORT RECOMMENDATIONS:

- The new AT&T Alpha and Gamma sectors' antennas are proposed to be mounted on steel pipes and mounting brackets secured to the building façade using thru-bolts and backer plates.
- T The new AT&T Beta sector's antennas are proposed to be mounted on steel pipes, supported by the non-penetrating roof top sled mounts.

OTHER SUPPORT RECOMMENDATIONS:

- HDG recommends installing the new sled mount on steel beams spanning over bearing walls to adequately distribute the proposed load.
- Secure the sled mount to the new steel beams.

<u>Limitations and Assumptions:</u>

1. Reference the latest HDG construction drawings for all the equipment locations.
2. All detail requirements will be designed and furnished in the construction drawings.
3. Mount all equipment per manufacturer's specifications.
4. 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

LOCATION OF PROPOSED EQUIPMENT:

Photo 1: Sample photo illustrating the area where the equipment shelter is proposed to be located.

Photo 2: Sample photo illustrating the sector B antennas are proposed to be located.

Hudson Design Group LLC

Photo 3: Sample photo illustrating the existing penthouse where the new sector C antennas are proposed to be located.

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Alpha and Gamma Sectors' Calculations

Site Name:	East Hartford - 886 Main		
Site No.	CT2490		
Done by:	EC	Checked by:	MSC
Date:	2/14/2014		

References:

* Structural Standards for Steel Antenna Towers and Antenna Supporting Structures (TIA/EIA-222-F).

Material Reference Notes:

2.3.1 Wind and Ice Loads

The total design wind load shall include the sum of he horizontal forces applied to the structure in the direction of the wind and the design wind load on guys and discrete appurtenances.

Ice loading, depending on tower height, elevation, and exposure, may be a significant load on the structure in most parts of the United States. If the structure is to be located where ice accumulation is expected, consideration shall be given to an ice load when specifying the requirements for the structure.

2.3.2 Horizontal Force Applied to each Section of the Structure

$$F=q_z*G_H\,[C_F*A_E+\sum(C_A*A_A)]$$ (Not to exceed $2*q_z*G_H*A_G$)

where A_G = Gross area of one tower face (ft^2)

2.3.3 Velocity Pressure (q_z) and Exposure Coefficient (K_Z)

$q_z=.00256*K_Z*V^2$ V=Basic Wind Speed for the Structure Location (mph)

$K_Z=(z/33)^{2/7}$ z=Ht. above avg. ground level to midpoint of section (ft.)

$1.00 \le K_Z \le 2.58$ A_E=effective projected area of structural components in one face

2.3.4 Gust Response Factors (G_H)

2.3.4.1 For latticed structures , gust response factor (G_H) shall be calculated from the equation:

$G_H=0.65+0.60/(h/33)^{1/7}$ (h in (ft.)) $1.0 < G_H < 1.25$

2.3.4.2 For Tubular pole structures, the gust response factor (G_H) shall be 1.69

2.3.4.3 One gust response factor shall apply for the entire structure.

2.3.4.4 When Cantilevered tubular or latticed pole structures are mounted on latticed structures, the gust response factor the the pole and the latticed structure shall be based on the height of the latticed structure without the pole. The stresses calculated for the pole structures and their connections to latticed structures shall be multiplied by 1.25 to compensate for the greater gust response for the mounted pole structures.

2.3.5 Structure Force Coefficients (Reference Table 1)

Site Name: East Hartford - 886 Main
Site No. CT2490
Done by: EC Checked by: MSC
Date: 2/14/2014

Existing T-Mobile Feeder Lines

=Input Values

V= **80** (mph)
z= **117** (ft)

K_z= **1.44**

Velocity Pressure: **qz= 23.52 psf** [2.3.3]

Is member analyzing a tube pole structure? If yes, then: Gh= 1.69

If no, then use value below:
Gh= 1.15 [2.3.4.1]

Gh= 1.69

Determine Cf:

If lattice structure see manual...

If cantilevered tube pole, then: Use Correct Value form Table 1 Below:

TABLE 1
Coefficients (Cf) for Cantilevered Tubular Pole Structures

C (mph ft)	Round	16 Sided r<0.26	16 Sided r≥0.26	12 Sides	8 Sided
<32	1.2	1.2	1.2	1.2	1.2
32 to 64	$130/C^{1.3}$	1.78+1.40r-C/91.5-Cr/22.9	.72+(64-C)/44.8	$12.5/C^{.6}$	1.2
>64	0.59	1.08-1.40r	0.72	1.03	1.2

Derivation of Structure Coefficient (Cf):

Dp = Avg. Diam. or Avg. Least width of Tubular Pole Structure: 1.2 feet

Site Name:	East Hartford - 886 Main
Site No.	CT2490
Done by:	EC Checked by: MSC
Date:	2/14/2014

Hudson Design Group LLC

$C = (K_z)^{1/2} * V * Dp$ (for Dp in ft [m] C= 115.03

C (mph ft)	Round Only Member
<32	1.2
32 < 64	0.27
> 64	0.59

(Max Cf= 1.2) Cf= 1.2
(Min Cf= 0.59)

Determine Ae: **[2.3.6]**

If tube structure, then use projected area including ice:
If not a tube structure, then see manual.

Ae= 0.00 sf

Determine Ca: **[2.3.7]**

2.3.7 The force coefficient (C_A) applied to the projected area (ft^2) [m^2] of a linear appurtenance (A_A) not considered as a structural component shall be determined from Table 3. The force coefficient for cylindrical members may be applied to the additional projected area of radial ice when specified. (Refer to Figure 1.)

TABLE 3
Appurtenance Force Coefficients

Member Type	Aspect Ratio ≤ 7	Aspect Ratio ≥ 25
	C_A	C_A
Flat	1.4	2
Cylindrical	0.8	1.2

Aspect Ratio=Overall length/width ratio in plane normal to wind direction.
(Aspect ratio is not a function of the spacing between support points of a linear appurtenance, nor the section length considered to have a uniformly distributed force.)

Note: Linear interpolation may be used to aspect ratios other than shown

2.3.8 Regardless of location, linear appurtenances not considered as structural components in accordance with 2.3.6.3 shall be included in the term $\Sigma C_A A_A$.

2.3.9 The horizontal force (F) applied to a section of the structure may be assumed to be uniformly distributed based on the wind pressure at the mid-height of the section.

Site Name: East Hartford - 886 Main
Site No. CT2490
Done by: EC Checked by: MSC
Date: 2/14/2014

Hudson Design Group LLC

	Item #1	Item #2	Item #3	Item #4	Item #5
Member Length (Inches):	72	20.4	19.7	29.9	23.5
Member Width (Inches):	15	18.5	17	13.3	9.7
Calculated Aspect Ratio:	5	1	1	2	2

From Table 3 Above:

	Item #1	Item #2	Item #3	Item #4	Item #5
Ca=	1.4	1.4	1.4	1.4	1.4

Determine Aa: (sf)

	Item #1	Item #2	Item #3	Item #4	Item #5
From above: Aa=	7.50	2.62	2.33	2.76	1.58

	Item #1	Item #2	Item #3	Item #4	Item #5
Calculated Ca*Aa:	10.50	3.67	3.26	3.87	2.22

Calculated Sums of Ca*Aa: 23.51 sf

Item 1 calculated force F:	**Antenna**	417.392906
Item 2 calculated force F:	**RRUS-12/E2**	145.855632
Item 3 calculated force F:	**RRUS-11**	129.430448
Item 4 calculated force F:	**RRUS-32**	153.689479
Item 5 calculated force F:	**Surge Suppressor**	88.0969564

Wind Force F= qz*Gh [Cf*Ae+∑(Ca*Aa)] F= 934.47 Pounds

Project: CT2490

Location: Antenna Support Pipe (Alpha and Gamma)
Multi-Loaded Multi-Span Beam
[2009 International Building Code(AISC 13th Ed ASD)]
Pipe 4 Std. x 11.5 FT (7 + 4 + 0.5) / ASTM A53-GR.B
Section Adequate By: 12.4%
Controlling Factor: Deflection

Ethan Carrier
Hudson Design Group LLC
1600 Osgood Street, Suite 3090, Bldg 20N
North Andover, MA 01845

StruCalc Version 8.0.113.0 2/14/2014 1:09:12 PM

DEFLECTIONS	Left		Center		Right	
Live Load	0.57	IN 2L/292	-0.03	IN L/1716	0.01	IN 2L/1320
Dead Load	0.05	in	0.00	in	0.00	in
Total Load	0.62	IN 2L/270	-0.03	IN L/1596	0.01	IN 2L/1232

Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/240

REACTIONS	A	B
Live Load	1560 lb	0 lb
Dead Load	164 lb	-39 lb
Total Load	1724 lb	-39 lb
Uplift (1.5 F.S)	**0 lb**	**-819 lb**
Bearing Length	0.44 in	0.00 in

BEAM DATA	Left	Center	Right
Span Length	7 ft	4 ft	0.5 ft
Unbraced Length-Top	0 ft	0 ft	0 ft
Unbraced Length-Bottom	7 ft	4 ft	0.5 ft

STEEL PROPERTIES
Pipe 4 Std. - A53-GR.B

Properties:

Steel Yield Strength:	Fy =	35	ksi
Modulus of Elasticity:	E =	29000	ksi
Tube Steel Section (X Axis):	dx =	4.5	in
Tube Steel Section (Y Axis):	dy =	4.5	in
Tube Steel Wall Thickness:	t =	0.221	in
Area:	A =	2.97	in2
Moment of Inertia (X Axis):	Ix =	6.82	in4
Section Modulus (X Axis):	Sx =	3.03	in3
Plastic Section Modulus:	Z =	4.05	in3

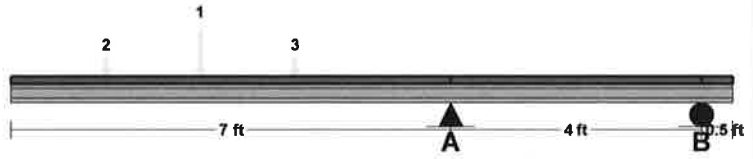
Design Properties per AISC 13th Edition Steel Manual:

Flange Buckling Ratio:	FBR =	20.36	
Allowable Flange Buckling Ratio:	AFBR =	58	
Allowable Flange Buckling Ratio non-compact:	AFBR_NC =	256.86	
Nominal Flexural Strength w/ Safety Factor:	Mn =	7073	ft-lb
Controlling Equation:	F8-1		
Shear Buckling Stress Coefficient Eqn. G6-2a:	Fcr =	21	ksi
Nominal Shear Strength w/ Safety Factor:	Vn =	18674	lb

Controlling Moment: -3386 ft-lb
Over right support of span 1 (Left Span)
Created by combining all dead loads and live loads on span(s) 1, 2, 3
Controlling Shear: 868 lb
At left support of span 2 (Center Span)
Created by combining all dead loads and live loads on span(s

Comparisons with required sections:	Req'd	Provided
Moment of Inertia (deflection):	6.07 in4	6.82 in4
Moment:	-3386 ft-lb	7073 ft-lb
Shear:	868 lb	18674 lb

LOADING DIAGRAM



UNIFORM LOADS	Left	Center	Right
Uniform Live Load	0 plf	0 plf	0 plf
Uniform Dead Load	0 plf	0 plf	0 plf
Beam Self Weight	11 plf	11 plf	11 plf
Total Uniform Load	11 plf	11 plf	11 plf

POINT LOADS - LEFT SPAN

Load Number	One	Two	Three
Live Load	418 lb	181 lb	181 lb
Dead Load	0 lb	0 lb	0 lb
Location	3 ft	1.5 ft	4.5 ft

NOTES

ICE WEIGHT CALCULATIONS

Project: CT2490 (Alpha & Gamma) * Density of ice used = 56 PCF

Thickness of ice: 1

Antenna

Weight of ice based on total radial SF area:		
Depth (in):	9	
height (in):	72	
Width (in):	15	
Total weight of ice on object:	112	pounds ice
Weight of object:	64	pounds
Combined weight of ice and object:	176	pounds

Pipe

Per foot weight of ice:		
pipe weight per foot:	10.8	
pipe length (ft):	12	= (7.5')
diameter (in):	4.5	
Per foot weight of ice on object:	6	pounds ice /ft
Total weight of ice on object:	66	pounds
Total weight of pipe:	129.6	pounds
Combined weight of pipe and ice:	196	pounds

RRH-11

Weight of ice based on total radial SF area:		
Depth (in):	7.2	
height (in):	19.7	
Width (in):	17	
Total weight of ice on object:	31	pounds ice
Weight of object:	50	pounds
Combined weight of ice and object:	81	pounds x 3/2

RRH-32

Weight of ice based on total radial SF area:		
Depth (in):	9.5	
height (in):	29.9	
Width (in):	13.3	
Total weight of ice on object:	44	pounds ice
Weight of object:	77	pounds
Combined weight of ice and object:	121	pounds /2

RRH-12

Weight of ice based on total radial SF area:			
Depth (in):	7.5		
height (in):	20.4		
Width (in):	18.5		
Total weight of ice on object:		34 pounds ice	
Weight of object:	58 pounds		
Combined weight of ice and object:		92 pounds	x2/2

A2

Weight of ice based on total radial SF area:			
Depth (in):	3.4		
height (in):	16.4		
Width (in):	15.2		
Total weight of ice on object:		20 pounds ice	
Weight of object:	22 pounds		
Combined weight of ice and object:		42 pounds	x2/2

Surge

Weight of ice based on total radial SF area:			
Depth (in):	9.7		
height (in):	23.5		
Width (in):	9.7		
Total weight of ice on object:		30 pounds ice	
Weight of object:	20 pounds		
Combined weight of ice and object:		50 pounds	/2

Total Weight:	713 pounds

Hudson Design Group LLC

Beta Sector's Calculations

Site Name:	East Hartford - 886 Main		
Site No.	CT2490		
Done by:	EC	Checked by:	MSC
Date:	2/14/2014		

References:

* Structural Standards for Steel Antenna Towers and Antenna Supporting Structures (TIA/EIA-222-F).

Material Reference Notes:

2.3.1 Wind and Ice Loads

The total design wind load shall include the sum of he horizontal forces applied to the structure in the direction of the wind and the design wind load on guys and discrete appurtenances.

Ice loading, depending on tower height, elevation, and exposure, may be a significant load on the structure in most parts of the United States. If the structure is to be located where ice accumulation is expected, consideration shall be given to an ice load when specifying the requirements for the structure.

2.3.2 Horizontal Force Applied to each Section of the Structure

$$F=q_z*G_H\,[C_F*A_E+\sum(C_A*A_A)]$$ (Not to exceed $2*q_z*G_H*A_G$)

where A_G = Gross area of one tower face (ft^2)

2.3.3 Velocity Pressure (q_z) and Exposure Coefficient (K_Z)

$q_z=.00256*K_Z*V^2$ V=Basic Wind Speed for the Structure Location (mph)

$K_Z=(z/33)^{2/7}$ z=Ht. above avg. ground level to midpoint of section (ft.)

$1.00 \le K_Z \le 2.58$ A_E=effective projected area of structural components in one face

2.3.4 Gust Response Factors (G_H)

2.3.4.1 For latticed structures , gust response factor (G_H) shall be calculated from the equation:

$G_H=0.65+0.60/(h/33)^{1/7}$ (h in (ft.)) $1.0 < G_H < 1.25$

2.3.4.2 For Tubular pole structures, the gust response factor (G_H) shall be 1.69

2.3.4.3 One gust response factor shall apply for the entire structure.

2.3.4.4 When Cantilevered tubular or latticed pole structures are mounted on latticed structures, the gust response factor the the pole and the latticed structure shall be based on the height of the latticed structure without the pole. The stresses calculated for the pole structures and their connections to latticed structures shall be multiplied by 1.25 to compensate for the greater gust response for the mounted pole structures.

2.3.5 Structure Force Coefficients (Reference Table 1)

Site Name: East Hartford - 886 Main
Site No. CT2490
Done by: EC Checked by: MSC
Date: 2/14/2014

Hudson Design Group LLC

Existing T-Mobile Feeder Lines

=Input Values

V= **80** (mph)
z= **109** (ft)

K_z= **1.41**

Velocity Pressure: **qz= 23.05 psf** [2.3.3]

Is member analyzing a tube pole structure? If yes, then: Gh= 1.69

If no, then use value below:
Gh= 1.16 [2.3.4.1]

Gh= 1.69

Determine Cf:

If lattice structure see manual...

If cantilevered tube pole, then: Use Correct Value form Table 1 Below:

TABLE 1
Coefficients (Cf) for Cantilevered Tubular Pole Structures

C (mph ft)	Round	16 Sided r<0.26	16 Sided r≥0.26	12 Sides	8 Sided
<32	1.2	1.2	1.2	1.2	1.2
32 to 64	$130/C^{1.3}$	1.78+1.40r-C/91.5-Cr/22.9	.72+(64-C)/44.8	$12.5/C^{.6}$	1.2
>64	0.59	1.08-1.40r	0.72	1.03	1.2

Derivation of Structure Coefficient (Cf):

Dp = Avg. Diam. or Avg. Least width of Tubular Pole Structure: 1.2 feet

Site Name:	East Hartford - 886 Main
Site No.	CT2490
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Date:	2/14/2014

Hudson Design Group LLC

$C = (K_z)^{1/2} * V * Dp$ (for Dp in ft [m] C= 113.87

C (mph ft)	Round Only Member
<32	1.2
32 < 64	0.28
> 64	0.59

(Max Cf= 1.2) Cf= 1.2
(Min Cf= 0.59)

Determine Ae: **[2.3.6]**

If tube structure, then use projected area including ice:
If not a tube structure, then see manual.

Ae= 0.00 sf

Determine Ca: **[2.3.7]**

2.3.7 The force coefficient (C_A) applied to the projected area (ft^2) [m^2] of a linear appurtenance (A_A) not considered as a structural component shall be determined from Table 3. The force coefficient for cylindrical members may be applied to the additional projected area of radial ice when specified. (Refer to Figure 1.)

TABLE 3
Appurtenance Force Coefficients

Member Type	Aspect Ratio ≤ 7	Aspect Ratio ≥ 25
	C_A	C_A
Flat	1.4	2
Cylindrical	0.8	1.2

Aspect Ratio=Overall length/width ratio in plane normal to wind direction.
(Aspect ratio is not a function of the spacing between support points of a linear appurtenance, nor the section length considered to have a uniformly distributed force.)

Note: Linear interpolation may be used to aspect ratios other than shown

2.3.8 Regardless of location, linear appurtenances not considered as structural components in accordance with 2.3.6.3 shall be included in the term $\Sigma C_A A_A$.

2.3.9 The horizontal force (F) applied to a section of the structure may be assumed to be uniformly distributed based on the wind pressure at the mid-height of the section.

Site Name: East Hartford - 886 Main
Site No. CT2490
Done by: EC Checked by: MSC
Date: 2/14/2014

Hudson Design Group LLC

	Item #1	Item #2	Item #3	Item #4	Item #5
Member Length (Inches):	72	20.4	19.7	29.9	23.5
Member Width (Inches):	15	18.5	17	13.3	9.7
Calculated Aspect Ratio:	5	1	1	2	2

From Table 3 Above:

	Item #1	Item #2	Item #3	Item #4	Item #5
Ca=	1.4	1.4	1.4	1.4	1.4

Determine Aa: (sf)

	Item #1	Item #2	Item #3	Item #4	Item #5
From above: Aa=	7.50	2.62	2.33	2.76	1.58
Calculated Ca*Aa:	10.50	3.67	3.26	3.87	2.22

Calculated Sums of Ca*Aa: 23.51 sf

Item 1 calculated force F:	**Antenna**	409.031424
Item 2 calculated force F:	**RRUS-12/E2**	142.933759
Item 3 calculated force F:	**RRUS-11**	126.837615
Item 4 calculated force F:	**RRUS-32**	150.610672
Item 5 calculated force F:	**Surge Suppressor**	86.3321417

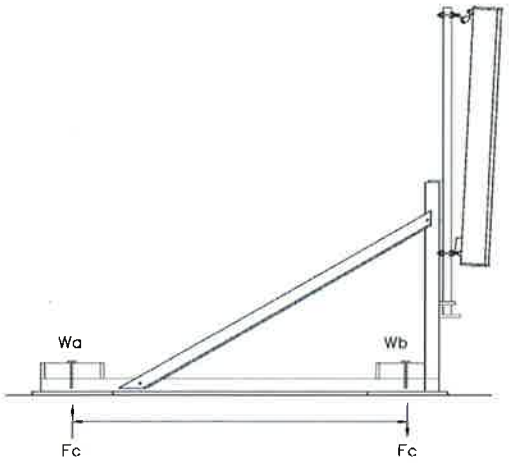
Wind Force F= qz*Gh [Cf*Ae+∑(Ca*Aa)] F= 915.75 Pounds

Site Name: East Hartford - 886 Main
Site No. CT2490
Done by: EC **Checked by:** MSC
Date: 2/14/2014

Calculate Total Ballast Required for Ballast Mount

WIND FORCES

F antenna =	1230	lbs.
F rrh =	961	lbs.
F surge =	87	lbs.
Antenna Height =	7	ft
RRH & Surge Height =	5	ft



Length = 7.5 ft

Overturning at Ballast

Moment =	17312.5	lbs.-ft	S.F. 1.25
Hold Down Force =	2308.33	lbs.	Per Side

Wa Ballast

Use Steel Frame
25 x [31.2+((7.5/2)x6)]
19 x [(7.5/2)x2]

Equipment		
Frame =	1485	lbs.

Total Ballast Required Wa= **823.33** lbs.

Blocks Required Wa = 22 Assumed 38lbs Block (4"x8"x16" Solid)

Wb Ballast

Use Steel Frame
25 x [31.2+((7.5/2)x6)]
19 x [(7.5/2)x2]
7.2 x 15 x 2 (ANGLES)

Equipment		
Frame	1701	lbs.
Antennas	192	lbs.
RRH's	445	lbs.
Surge Arrestor	20	lbs.
Total =	2358	lbs.

Total Ballast Required Wb = **-49.67** lbs.

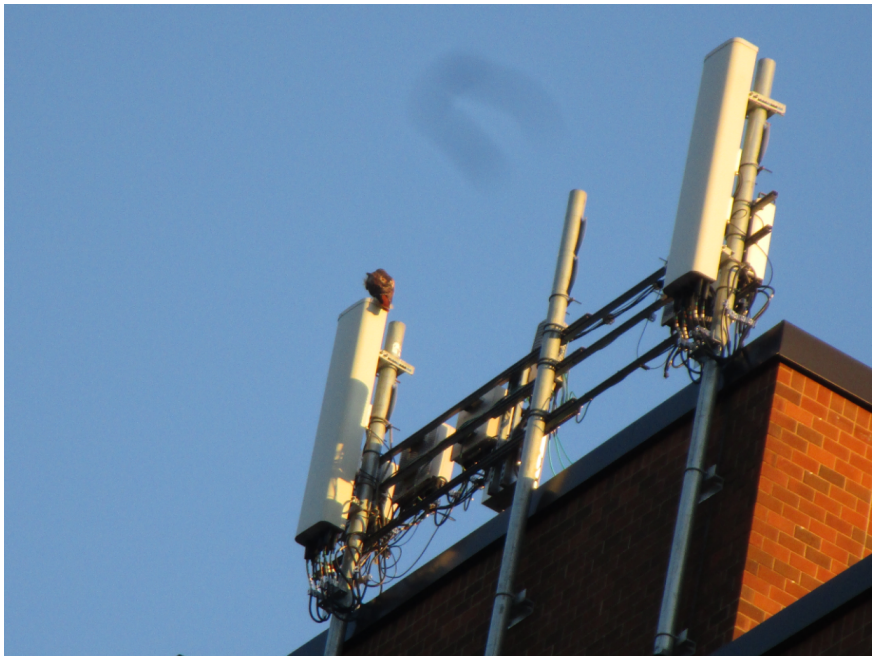
Blocks Required Wb= -2 Assumed 38lbs Block (4"x8"x16" Solid)

APPENDIX D

SITE PHOTOS

ALPHA SECTOR

BETA SECTOR



GAMMA SECTOR

Town of East Hartford Property Summary Report

886 MAIN ST

MAP LOT:	13-332	**CAMA PID:**	8733
LOCATION:	886 MAIN ST		
OWNER NAME:	HARTFORD EAST ASSOCIATION		

8733 03/27/2016

OWNER OF RECORD
HARTFORD EAST ASSOCIATION 954 WARWICK AVE WARWICK, RI 02888

LIVING AREA:	97981	**ZONING:**	B5	**ACREAGE:**	1.19

SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
HARTFORD EAST ASSOCIATION	27/ 37	01-Jan-1900	$0.00

CURRENT PARCEL ASSESSMENT

TOTAL:	$6,440,000.00	**IMPROVEMENTS:**	$6,076,700.00	**LAND:**	$363,300.00

ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2018	$6,440,000.00	$6,076,700.00	$363,300.00
2017	$5,390,000.00	$5,026,700.00	$363,300.00
2016	$4,760,000.00	$4,396,700.00	$363,300.00
2015	$4,760,000.00	$4,396,700.00	$363,300.00
2014	$5,943,560.00	$5,580,260.00	$363,300.00

Town of East Hartford Property Summary Report

886 MAIN ST

MAP LOT:	13-332	**CAMA PID:**	8733
LOCATION:	886 MAIN ST		
OWNER NAME:	HARTFORD EAST ASSOCIATION		

BUILDING # 1

YEAR BUILT	1983	**EXT WALL 1**	Brick
STYLE	High Rise	**INT WALLS 1**	Drywall
MODEL	Comm/Ind	**HEAT FUEL**	Gas
STORIES	11	**HEAT TYPE**	Forced Hot Air
OCCUPANCY	Apt w/ Elevator	**AC TYPE**	Unit
ROOF	Flat	**BEDROOMS**	
ROOF COVER	Rubber	**FULL BATHS**	0
FLOOR COVER 1	Mixed	**HALF BATHS**	
% BSMT	null	**TOTAL ROOMS**	120
% FIN BSMT	null	**% REC RM**	null
% SEMI FIN	null	**% ATTIC FINISH**	null
BSMT GARAGE	null	**FIREPLACES**	null

8733 03/27/2016

EXTRA FEATURES

DESCRIPTION	CODE	UNITS
Sprinklers-Wet	SPR1	97981 S.F.
Elevator Pass	ELV1	2 UNITS

OUTBUILDINGS

DESCRIPTION	CODE	UNITS
FR/SHED		90 SF

0 730 1460 ft

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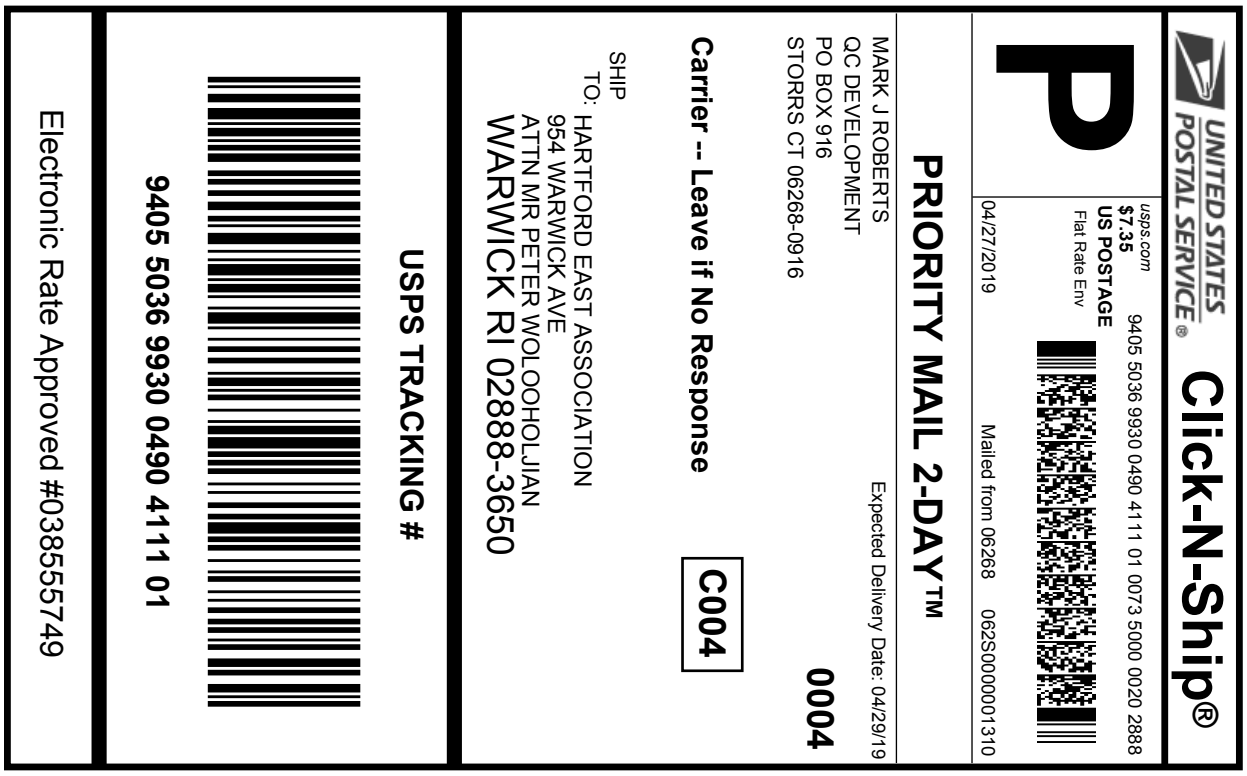
East Hartford MapsOnline



Cut on dotted line.

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1. **Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.**
2. **Place your label so it does not wrap around the edge of the package.**
3. **Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.**
4. **To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.**
5. **Mail your package on the "Ship Date" you selected when creating this label.**

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0490 4111 01

Trans. #:	462661366
Print Date:	04/26/2019
Ship Date:	04/27/2019
Expected Delivery Date:	04/29/2019

Priority Mail® Postage:	**$7.35**
Total	**$7.35**

From: MARK J ROBERTS
QC DEVELOPMENT
PO BOX 916
STORRS CT 06268-0916

To: HARTFORD EAST ASSOCIATION
954 WARWICK AVE
ATTN MR PETER WOLOOHOLJIAN
WARWICK RI 02888-3650

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