**QC Development**
PO Box 916
Storrs, CT 06268
860-670-9068
Mark.Roberts@QCDevelopment.net

February 15, 2017

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

**Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT2838**
**490 Jefferson Avenue (Bates Woods Park), New London, CT 06320**
**N 41-21-40.72**
**W 73-22-28.75**

Dear Ms. Bachman:

AT&T currently maintains twelve (12) antennas at the 111-foot level of the existing 114-foot Ballfield Lightpole at Bates Woods Park, New London, CT. The tower is owned by Message Center Management. The property is owned by the City of New London. AT&T now intends to install three (3) additional Ericsson remote radio units (RRUS-32) at the 111-foot level of the tower.

This facility was approved by the Connecticut Siting Council in Docket #0439 on October 31, 2013. This approval included a condition that the tower and antennas not exceed 115 feet above ground level. No modification to the overall facility height is proposed, so this modification therefore complies with the aforementioned approval.

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 Michael Passero, Mayor of the City of New London and the City's Office of Development and Planning, as well as the property owner and the tower 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.

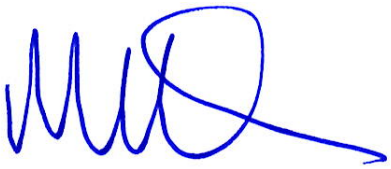
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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: The Honorable Michael Passero - as elected official and property owner (via e-mail)
Tammy Daugherty – as local Planning & Zoning representative (via e-mail)
Message Center Management - as tower owner (via e-mail)

# 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* | | | | | | | 0% |
| AT&T UMTS | 2 | 500 | 111 | 0.0326 | 850 | 0.5667 | 0.58% |
| AT&T UMTS | 2 | 500 | 111 | 0.0326 | 1900 | 1.0000 | 0.33% |
| AT&T LTE | 1 | 500 | 111 | 0.0163 | 700 | 0.4667 | 0.35% |
| Site Total | | | | | | | 1.25% |

*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* | | | | | | | 0% |
| AT&T UMTS | 2 | 500 | 111 | 0.0326 | 850 | 0.5667 | 0.58% |
| AT&T UMTS | 2 | 500 | 111 | 0.0326 | 1900 | 1.0000 | 0.33% |
| AT&T LTE | 1 | 1476 | 111 | 0.0481 | 700 | 0.4667 | 1.03% |
| AT&T LTE | 1 | 2421 | 111 | 0.0790 | 1900 | 1.0000 | 0.79% |
| AT&T LTE | 1 | 2535 | 111 | 0.0827 | 2100 | 1.0000 | 0.83% |
| Site Total | | | | | | | 3.55% |

*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

## PROJECT INFORMATION

| | |
|---|---|
| SCOPE OF WORK: | UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS |
| SITE ADDRESS: | 490 JEFFERSON AVENUE<br>NEW LONDON, CT 06320 |
| LATITUDE:<br>LONGITUDE: | 41° 21' 22" N<br>72° 07' 27" W |
| JURISDICTION: | NATIONAL, STATE & LOCAL CODES OR ORDINANCES |
| CURRENT USE: | TELECOMMUNICATIONS FACILITY |
| PROPOSED USE: | TELECOMMUNICATIONS FACILITY |
| DESIGN GUIDELINE: | LTE 3C |

# SITE NUMBER: CT2838

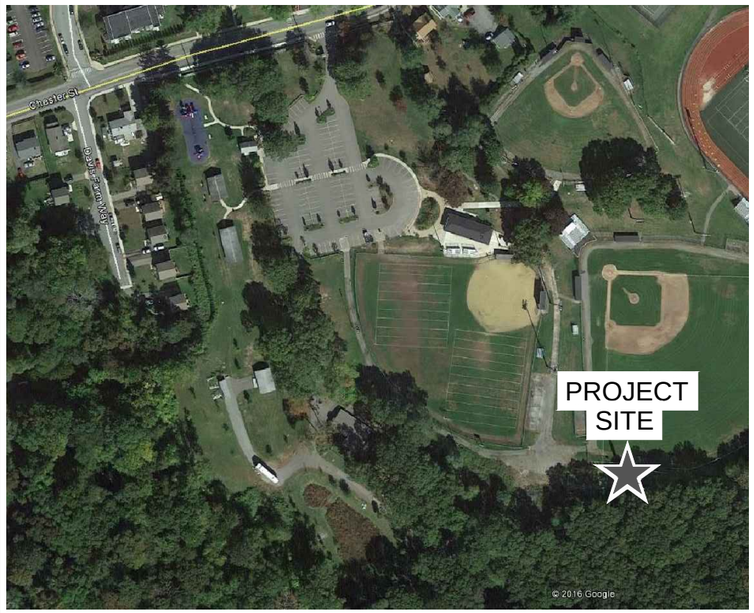
# SITE NAME: NEW LONDON JEFFERSON AVENUE

490 JEFFERSON AVENUE
NEW LONDON, CT 06320
NEW LONDON COUNTY

## DRAWING INDEX



## LOCUS MAP




DRIVING DIRECTIONS FROM 550 COCHITUATE ROAD, FRAMINGHAM, MA:

1. Head northeast, Turn right toward Speen St, Turn right onto Speen St
2. Turn right onto Cochituate Rd
3. Use the right lane to take the ramp to I-90/Masspike/Springfield/Boston
4. Keep left at the fork, follow signs for Interstate 90 W/Massachusetts Turnpike/Worchester/Springfield and merge onto I-90 W/Massachusetts Turnpike
5. Merge onto I-90 W/Massachusetts Turnpike
6. Take exit 10 toward MA-12 N/Auburn/Worcester
7. Keep right at the fork, follow signs for I-395 S/US-20 E/Norwich Ct
8. Continue onto I-395 S, Entering Connecticut
9. Take exit 77 for CT-85 toward Waterford/Chesterfield
10. Turn left onto CT-85 S
11. Turn right onto Jefferson Ave

## GENERAL NOTES

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

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED
PROFESSIONAL ENGINEER

DIG SAFE SYSTEM, INC.

CALL BEFORE YOU DIG

CALL TOLL FREE: 811 OR 888-DIG-SAFE

## UNDERGROUND SERVICE ALERT


ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway
East Providence, RI 02914
Phone: (401) 354-2403
Fax: (401) 633-6354

SAI COMMUNICATIONS
27 NORTHWESTERN DRIVE
SALEM, NH 03079


**SITE NUMBER: CT2838**
**SITE NAME: NEW LONDON JEFFERSON AVENUE**
490 JEFFERSON AVENUE
NEW LONDON, CT 06320
NEW LONDON COUNTY


at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681


| NO. | DATE | REVISIONS | BY | CHK |
|---|---|---|---|---|
| 0 | 01/24/17 | ISSUED FOR REVIEW | AAB | MRC |
| 1 | 02/03/17 | REVISION | AAB | MRC |

TITLE SHEET

SHEET NO. T-1

# GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.

3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE LESEE/LICENSEE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.

4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.

5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.

7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.

8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.

9. 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.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.

13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.

15. THE CONTRACTOR SHALL NOTIFY THE LESEE/LICENSEE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESEE/LICENSEE REPRESENTATIVE.

16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.

17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: DIG SAFE SYSTEM (MA, ME, NH, RI, VT): 1-888-344-7233 CALL BEFORE YOU DIG (CT): 1-800-922-4455

18. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS SHOWN HEREIN.

19. ALL DIMENSIONS SHOWN THUS ± ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WHICH EFFECT THE CONTRACTORS WORK. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH PROJECT OWNER PRIOR TO CONSTRUCTION.

20. NORTH ARROW SHOWN ON PLANS REFERS TO APPROXIMATE TRUE NORTH. PRIOR TO THE START OF CONSTRUCTION, ORDERING OR FABRICATING OF ANTENNA MOUNTS, CONTRACTOR SHALL CONSULT WITH PROJECT OWNER'S RF ENGINEER AND FIELD VERIFY ALL ANTENNA SECTOR LOCATIONS AND ANTENNA AZIMUTHS.

21. THE CONTRACTOR AND OR HIS SUB CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.

22. ANTENNA INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES AND SUPPORT STRUCTURES.

23. COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE PROVIDED BY THE PROJECT OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. A SCHEDULE OF PROJECT OWNER SUPPLIED MATERIALS IS ATTACHED TO THE BID DOCUMENTS (SEE EXHIBIT 3). ALL OTHER HARDWARE TO BE PROVIDED BY THE CONTRACTOR. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.

24. WHEN "PAINT TO MATCH" IS SPECIFIED FOR ANTENNA CONCEALMENT, PAINT PRODUCT FOR ANTENNA RADOME SHALL BE SHERWIN WILLIAMS COROTHANE II. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND PROJECT OWNER'S GUIDELINE'S.

25. COORDINATION, LAYOUT, AND FURNISHING OF CONDUIT, CABLE AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

26. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.

27. ALL (E)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 ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW.

28. ALL (E)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 UTILITY COMPANY ENGINEERING. THE AREAS OF THE PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE EQUIPMENT, DRIVEWAY OR

29. GRAVEL, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED AND COVERED WITH MULCH UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN SOIL EROSION AND SEDIMENTATION CONTROLS AT ALL TIMES

30. DURING CONSTRUCTION. PER FCC MANDATE, ENHANCED EMERGENCY (E911) SERVICE IS REQUIRED TO MEET NATIONWIDE STANDARDS

31. FOR WIRELESS COMMUNICATIONS SYSTEMS. PROJECT OWNER'S IMPLEMENTATION REQUIRES DEPLOYMENT OF EQUIPMENT AND ANTENNAS GENERALLY DEPICTED ON THIS PLAN, ATTACHED TO OR MOUNTED IN CLOSE PROXIMITY TO THE BTS RADIO CABINETS. PROJECT OWNER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS TO E911 EQUIPMENT AND LOCATION AS TECHNOLOGY EVOLVES TO MEET REQUIRED SPECIFICATIONS.

32. 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:

2009 INTERNATIONAL BUILDING CODE
2005 CT STATE BUILDING CODE
ELECTRICAL CODE: NEC 2014
LIGHTING CODE: NEC 2014

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, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, 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.

# 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 THHN INSULATION.

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 AND GREENLEE CONDUIT MEASURING TAPE IN EACH INSTALLED TELCO CONDUIT.

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. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".

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. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.

20. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.

21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ (E) MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.

22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM 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.

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 29307
LICENSED
PROFESSIONAL ENGINEER

# 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 | (P) | PROPOSED/NEW | TBR | TO BE REMOVED |
| (E) | EXISTING | N.T.S. | NOT TO SCALE | TBRR | TO BE REMOVED AND REPLACED |
| EG | EQUIPMENT GROUND | REF | REFERENCE | | |
| EGR | EQUIPMENT GROUND RING | REQ | REQUIRED | TYP | TYPICAL |
| (F) | FUTURE | | | | |


EGADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway, East Providence, RI 02914
Phone: (401) 354-2403 Fax: (401) 633-6354

SAI COMMUNICATIONS
27 NORTHWESTERN DRIVE
SALEM, NH 03079


**SITE NUMBER: CT2838**
**SITE NAME: NEW LONDON JEFFERSON AVENUE**
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| 0 | 01/24/17 | ISSUED FOR REVIEW | AAB | MRC |
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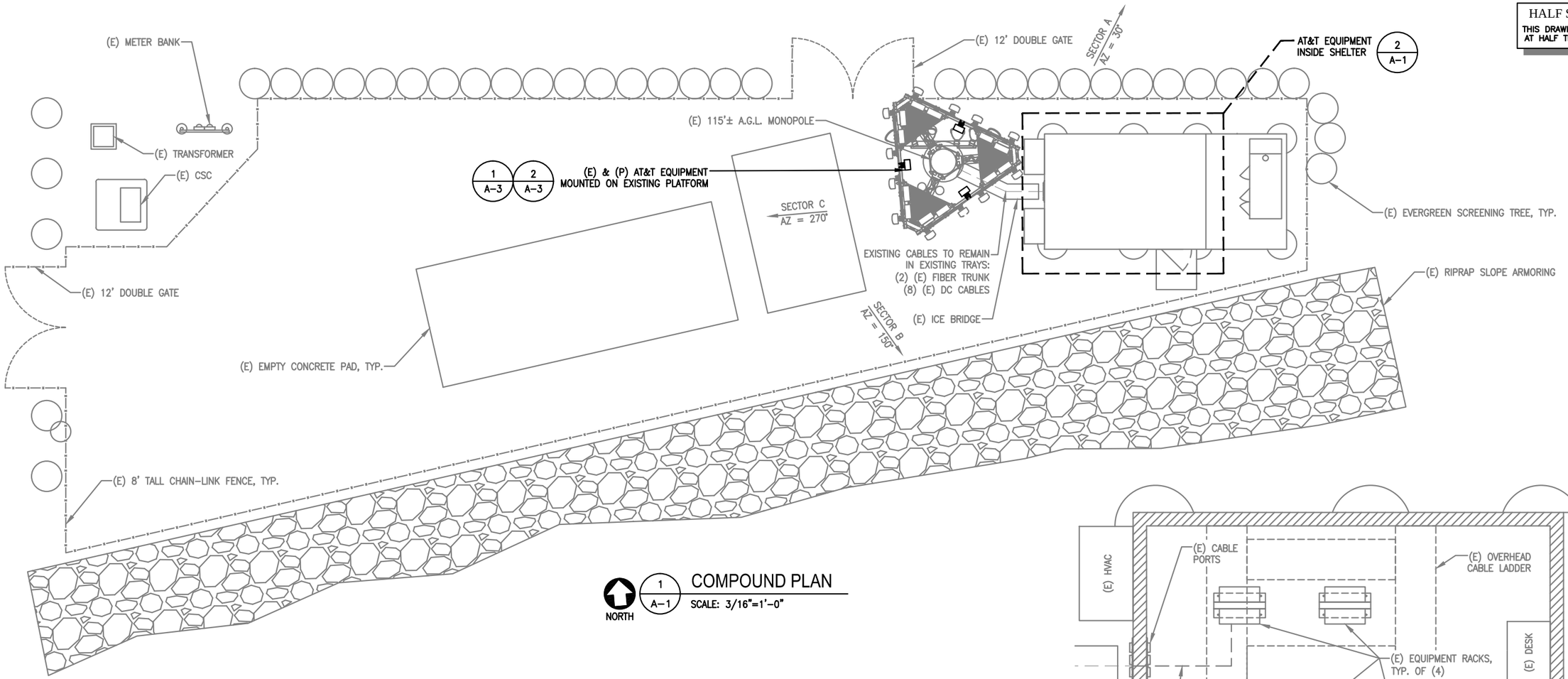
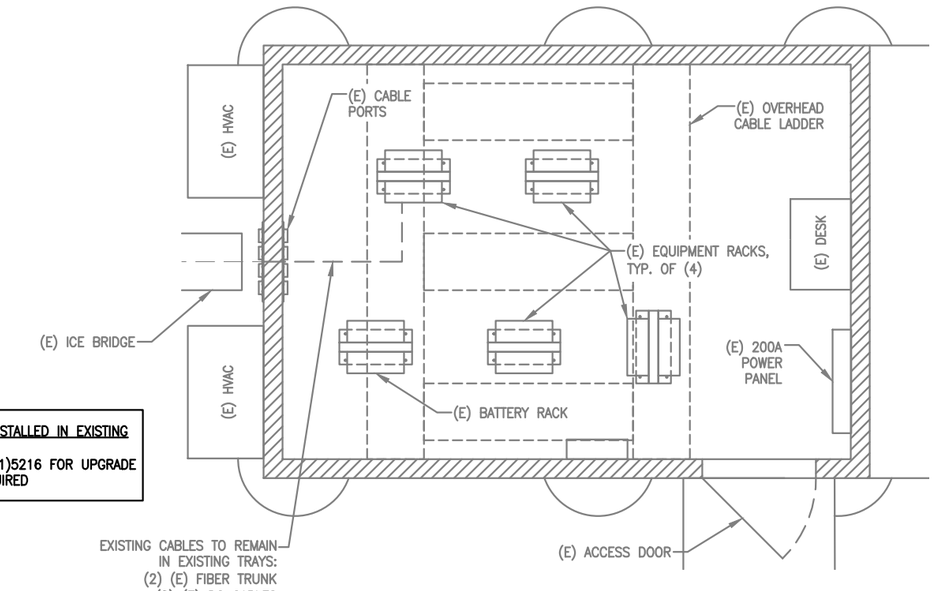
GENERAL NOTES

SHEET NO. GN-1

HALF SIZE PRINT
THIS DRAWING IS SCALEABLE AT HALF THE NOTED SCALE




GROUND EQUIPMENT TO BE INSTALLED IN EXISTING AT&T EQUIPMENT AREA:
REPLACE (E)(1)DUS WITH (P)(1)5216 FOR UPGRADE
ADD OR REUSE XMU AS REQUIRED

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED PROFESSIONAL ENGINEER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NEW LONDON COUNTY

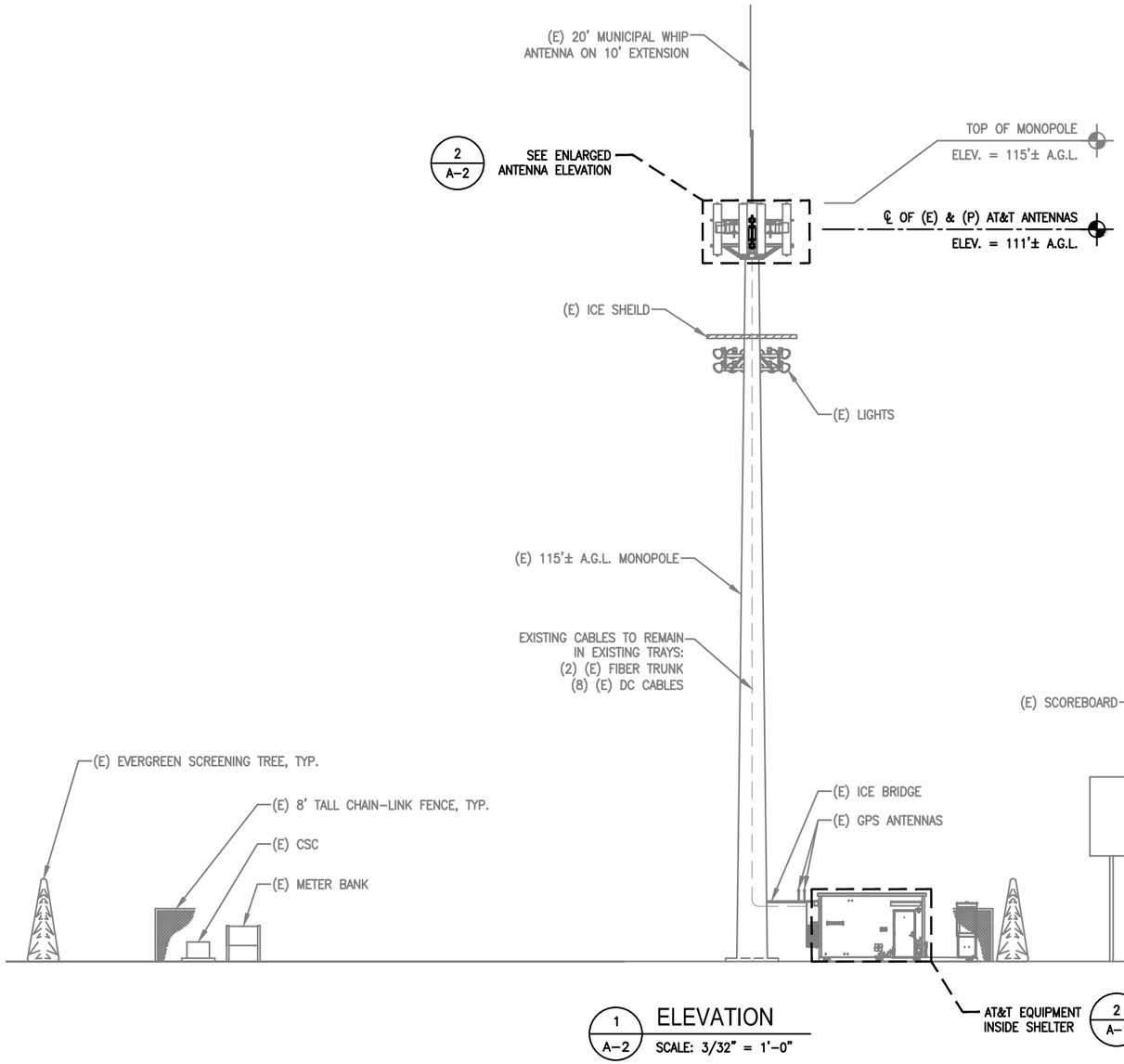
at&t
550 COCHITUATE ROAD, SUITE 13,
FRAMINGHAM, MA 01701-4681

| NO. | DATE | REVISIONS | BY | CHK |
|---|---|---|---|---|
| 0 | 01/24/17 | ISSUED FOR REVIEW | AAB | MRC |
| 1 | 02/03/17 | REVISION | AAB | MRC |

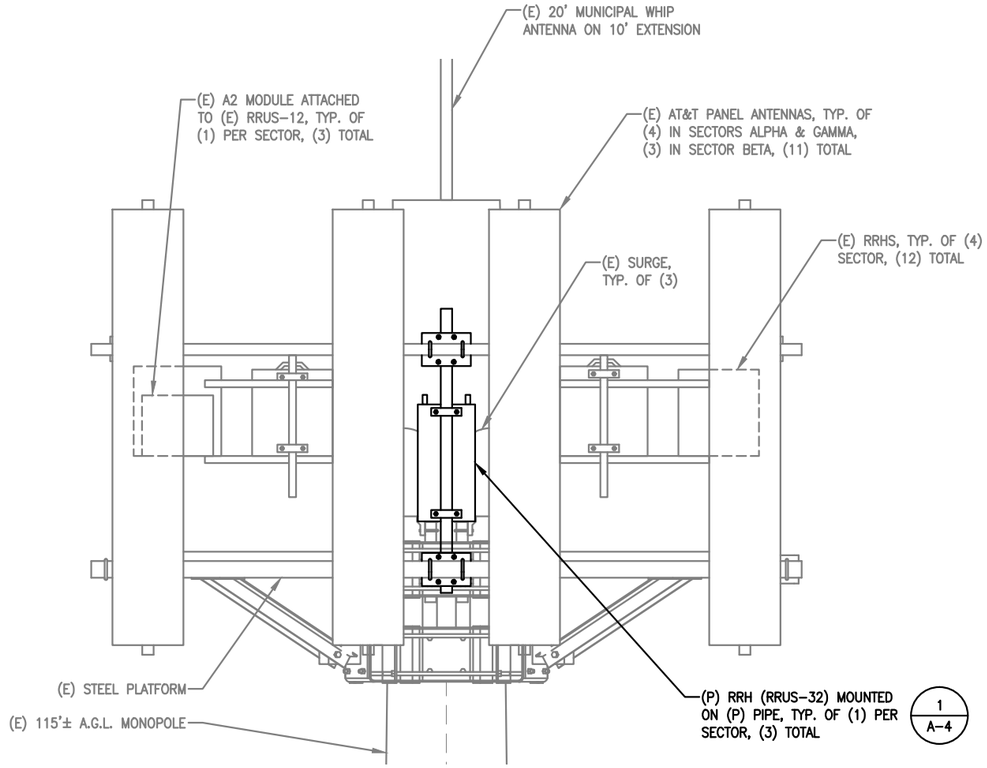
COMPOUND AND EQUIPMENT PLANS

SHEET NO. A-1

HALF SIZE PRINT
THIS DRAWING IS SCALEABLE AT HALF THE NOTED SCALE




1 A-2 ELEVATION
SCALE: 3/32" = 1'-0"




2 A-2 ENLARGED ANTENNA ELEVATION
SCALE: 3/4" = 1'-0"

STATE OF CONNECTICUT
MARC R. CHRETIEN
No. 28307
LICENSED
PROFESSIONAL ENGINEER


ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development - Surveying - Telecommunications
500 North Broadway, East Providence, RI 02914
Phone: (401) 354-2403
Fax: (401) 633-6354

SAI COMMUNICATIONS
27 NORTHWESTERN DRIVE
SALEM, NH 03079


**SITE NUMBER: CT2838**
**SITE NAME: NEW LONDON JEFFERSON AVENUE**
490 JEFFERSON AVENUE
NEW LONDON, CT 06320
NEW LONDON COUNTY


at&t
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ELEVATIONS

SHEET NO. A-2

HALF SIZE PRINT
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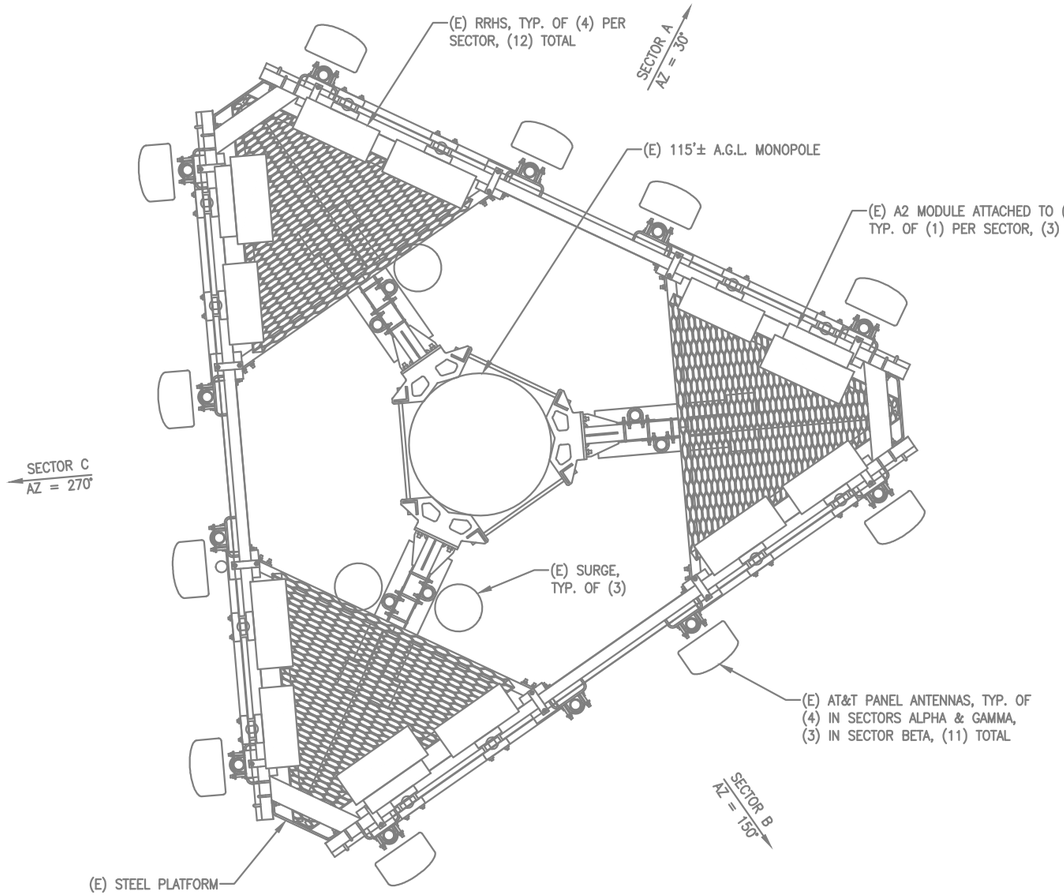
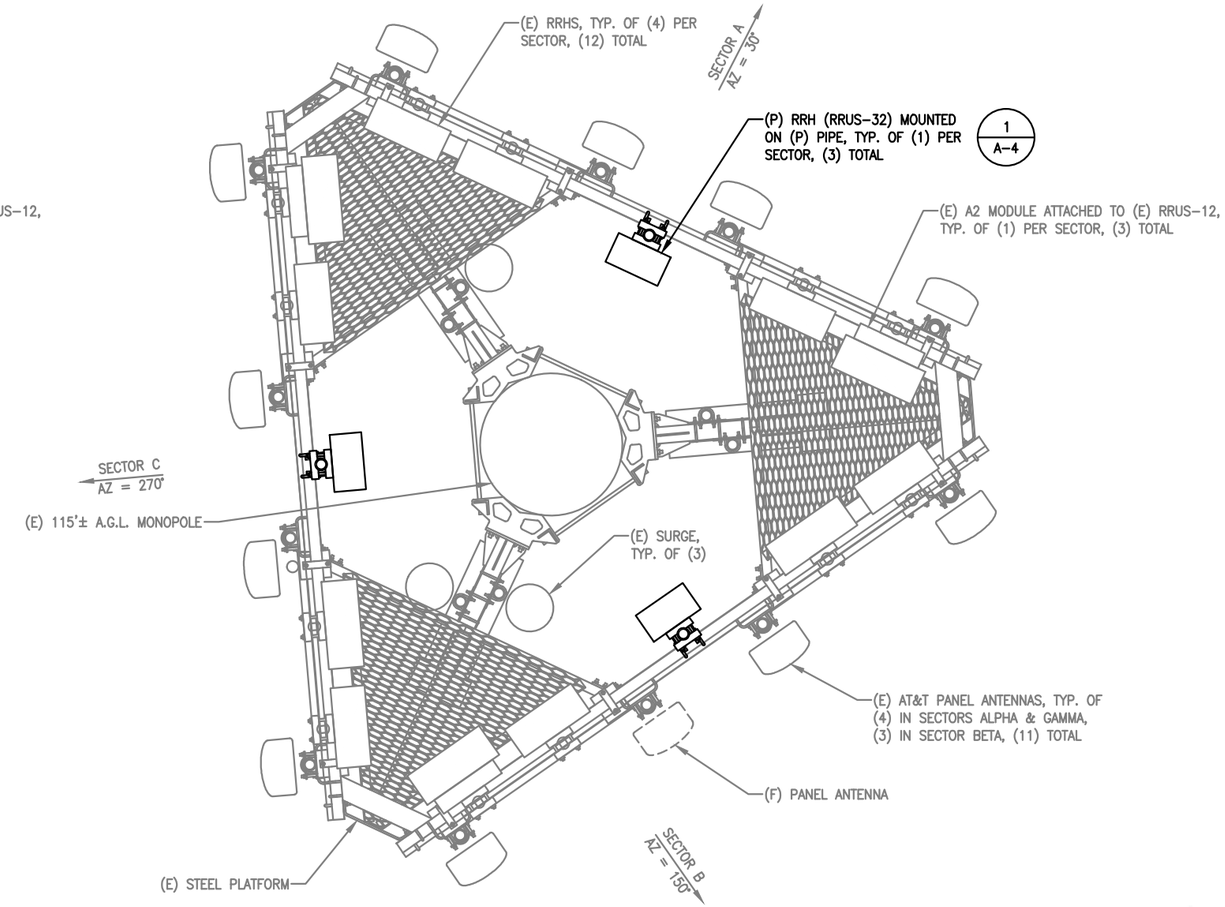



NORTH 1 A-3 EXISTING ANTENNA PLAN
SCALE: 3/4" = 1'-0"




NORTH 2 A-3 PROPOSED ANTENNA PLAN
SCALE: 3/4" = 1'-0"

STATE OF CONNECTICUT
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ANTENNA PLANS

SHEET NO. A-3

HALF SIZE PRINT

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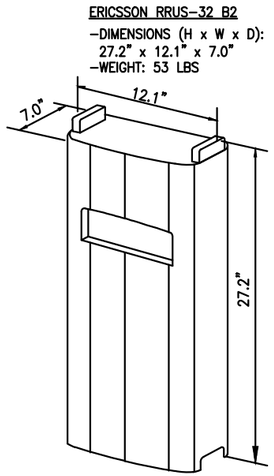
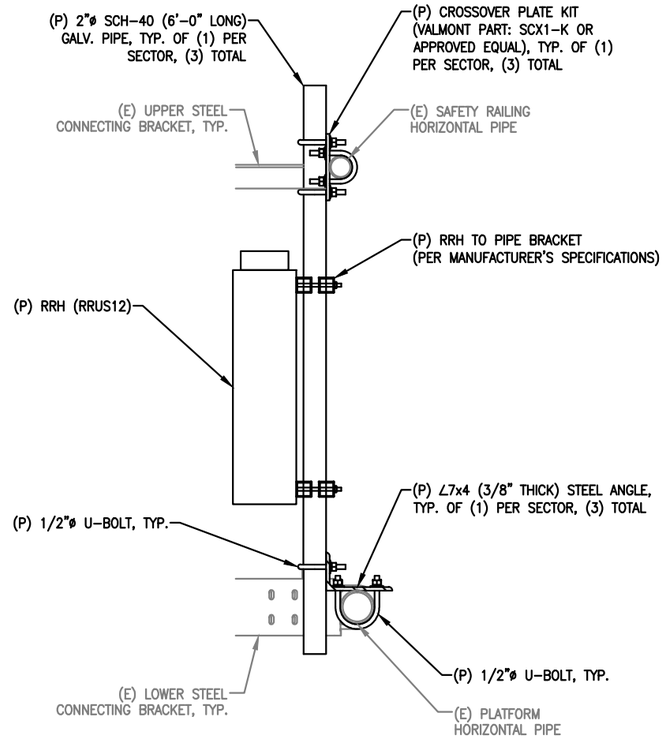



NOTES:
RRU CAN ONLY BE PAINTED ON SOLAR SHIELD.

1 / A-4 REMOTE RADIO HEAD (RRH) DETAILS

SCALE: N.T.S.




2 / A-4 RRH MOUNTING DETAIL

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

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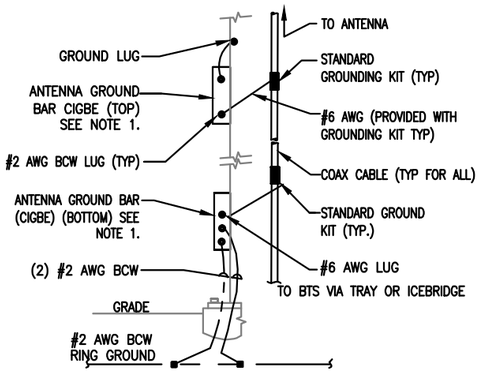
DETAILS

SHEET NO. A-4

CIRCUIT BREAKER
ELECTRIC BOX
ELECTRICAL CONDUIT
EXOTHERMIC CONNECTION (CADWELD) TO GROUND RING AND COMPRESSION TO GROUND HALO
DISCONNECT SWITH
GROUND ROD
GROUND ROD WITH ACCESS
MECHANICAL GROUND CONN.
GROUND ACCESS WELL
G — GROUNDING WIRE
GENERATOR
FUSE
GROUND BUS BAR
REVISION
TELEPHONE BOX
UTILITY METER
XIT GROUND ROD

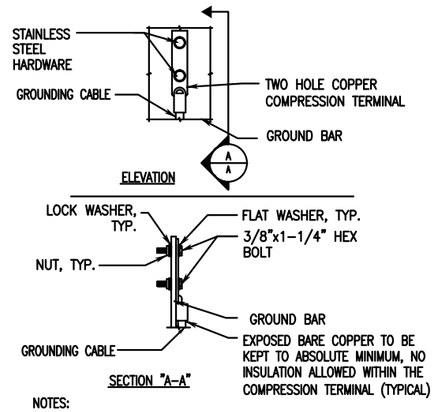
| | |
|---|---|
| ACCA | ANTENNA CABLE COVER ASSEMBLY |
| AWG | AMERICAN WIRE GAUGE |
| BTCW | BARE TINNED COPPER WIRE |
| C | CONDUIT |
| CIGBE | COAX INSULATED GROUND BAR EXTERNAL |
| CO | CONDUIT ONLY |
| DWG | DRAWING |
| EGB | EXTERNAL GROUND BAR |
| EMT | ELECTRICAL METALLIC TUBING |
| (E) | EXISTING |
| (F) | FUTURE |
| GEN | GENERATOR |
| GFI | GROUND FAULT CIRCUIT INTERRUPTER |
| GND | GROUND |
| GPS | GLOBAL POSITIONING SYSTEM |
| GR | GROWTH |
| IGR | INTERIOR GROUND RING (HALO) |
| MIGB | MASTER ISOLATED GROUND BAR |
| (P) | PROPOSED, NEW (PROVIDE AND INSTALL UNLESS NOTED OTHERWISE) |
| PCS | PERSONAL COMMUNICATION SERVICE |
| PPC | POWER PROTECTION CABINET |
| PRC | PRIMARY RADIO CABINET |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| RGS | RIGID GALVANIZED STEEL |
| RWY | RACEWAY |
| S.L.D. | SINGLE LINE DIAGRAM |
| TEL | TELEPHONE |
| TYP. | TYPICAL |
| WP | WEATHERPROOF EQUIPMENT |

1 G-1 ELEC. / GROUNDING LEGEND
SCALE: N.T.S.



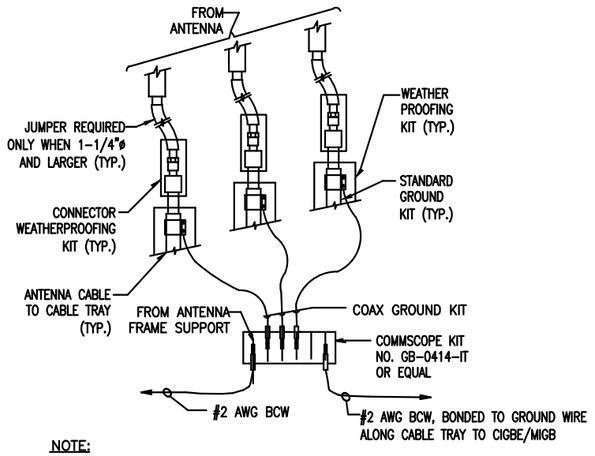

NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

2 G-1 TYP. ANTENNA CABLE GROUNDING
SCALE: N.T.S.



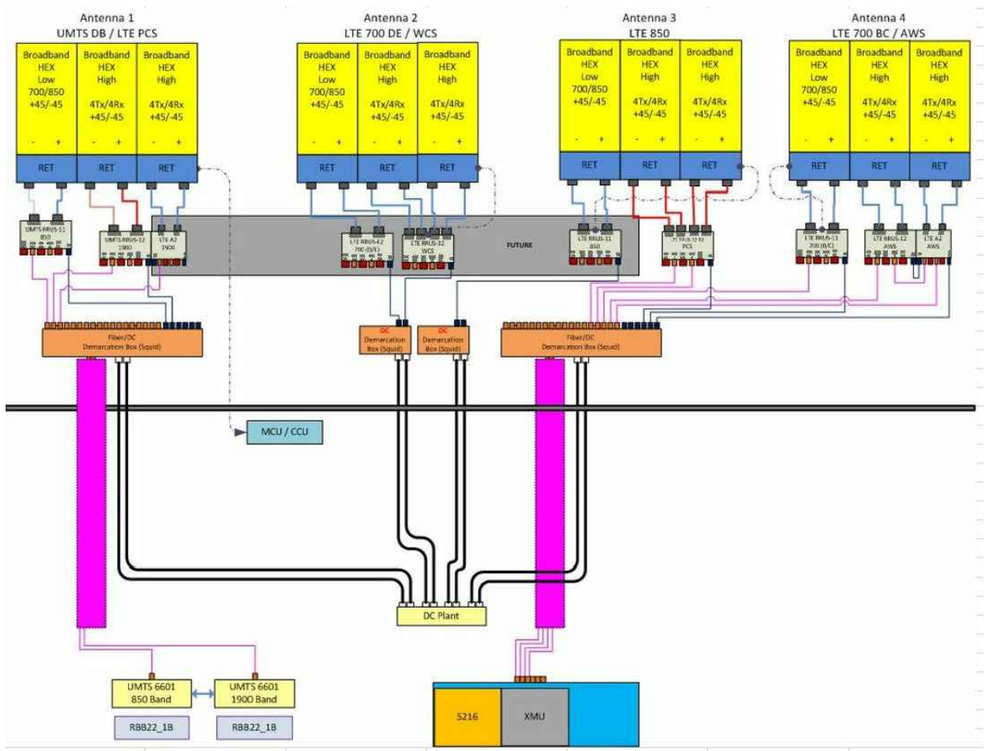

NOTES:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.
4. ALL GROUND LUGS MUST BE HEAT SHRUNK AT WIRE/LUG CONNECTION

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



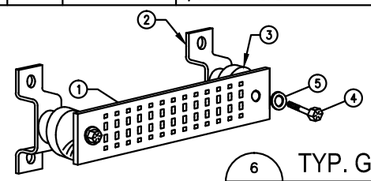

NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

4 G-1 TYP. GROUND WIRE TO GROUND BAR CONN.
SCALE: N.T.S.




5 G-1 ONE LINE PLUMBING DIAGRAM
SCALE: 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 |




6 G-1 TYP. GROUND BAR CONN.
SCALE: N.T.S.

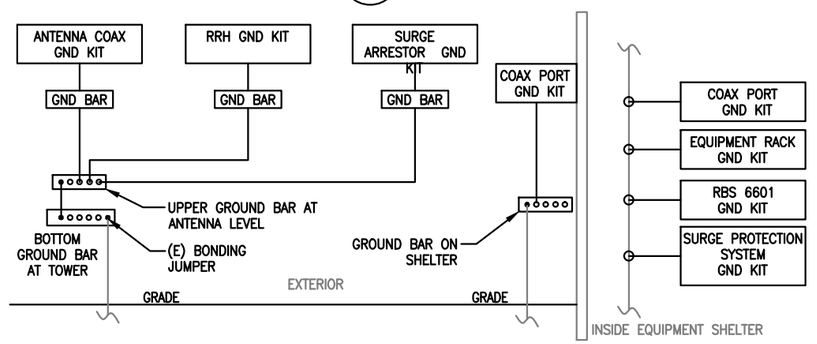
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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)




7 G-1 ONE LINE GROUNDING DIAGRAM
SCALE: N.T.S.

GROUNDING NOTES:
ALL GROUNDING SHALL BE DONE IN ACCORDANCE WITH THE AT&T MOBILITY GROUNDING GUIDE.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| 1 | 02/03/17 | REVISION | AAB | MRC |

**GROUNDING DETAILS AND ONE LINE DIAGRAM**

SHEET NO. G-1

# Structural Analysis Report

114’ Monopole (Light Pole)
490 Jefferson Avenue
New London, Connecticut 06320

AT&T Site Number CT2383

February 10, 2017

*Prepared By:*

ADVANCED ENGINEERING GROUP, P.C.
500 North Broadway
East Providence, RI 02914

*Prepared for*
SAI Communications
27 Northwestern Drive
Salem, NH 03079

ADVANCED ENGINEERING GROUP, P.C.

500 North Broadway
East Providence, RI 02914
Ph: 508-342-5339

February 10, 2017

Tim Burks
SAI Communications
27 Northwestern Drive
Salem, NH 03079

**STRUCTURAL ANALYSIS**

| | |
|---|---|
| Structure | 114' Valmont Monopole |
| Client | SAI c/o AT&T |
| Location | 490 Jefferson Avenue, New London, CT |

## EXECUTIVE SUMMARY

Advanced Engineering Group, P.C. (AEG) has performed a structural analysis of the existing 114'± monopole tower at the above-referenced address in order to ascertain the structural capacity of the tower with the proposed AT&T LTE 3C inventory consisting of:

- Three (3) RRUS 32 Remote Radio Heads

Based on the analysis performed, **the existing monopole is structurally adequate and is in conformance with the ANSI/TIA 222-G standard** when analyzed for the existing tower inventory and the proposed AT&T LTE inventory referenced above.

If you have any questions, of if we can be of further assistance, please do not hesitate to contact us.

Very truly yours

Marc R. Chretien, P.E.
Advanced Engineering Group. P.C.

# Table of Contents

## INTRODUCTION

At the request of Tim Burks, SAI Communications, on behalf of AT&T, Advanced Engineering Group, P.C. (AEG) has performed a structural analysis of the existing 114'± monopole tower at the above-referenced address in order to ascertain the structural capacity of the tower with the proposed AT&T LTE inventory with respect to the ANSI/TIA-222-G Standard, "Structural Standard for Antenna Supporting Structures and Antennas". The scope of this independent analysis is to determine the overall stability and the adequacy of structural members and member connections, as available and stated. This analysis assumes that the structure has been properly installed and maintained with no structural defects. Installation procedures and related loading are not within the scope of this analysis and should be performed and evaluated by a competent person of the erection contractor.

## SOURCES

| | Source | Information | Reference |
|---|---|---|---|
| Tower | SAI Communications | Original tower documents by Valmont Structures, dated 1/30/14 | Valmont Order No.: 228909 |
| Foundation | SAI Communications | Original tower documents by Valmont Structures, dated 1/30/14 | Valmont Order No.: 228909 |
| Existing Inventory | AEG, visual inspection from grade<br><br>SAI Communications | Antennas and mount heights<br><br>RFDS | Field inspection, 12/2/16<br><br>CT2838_LTE 3C_RFDS_V1.00_011117.xlsx |
| Proposed Inventory | SAI Communications | RFDS | CT2838_LTE 3C_RFDS_V1.00_011117.xlsx |

Note: Unless otherwise noted, all information regarding the structural elements of the existing tower and and the existing inventory is based on the above-referenced structural report by Valmont. A structural mapping was not performed. If any discrepancies are found to exist between the as-built tower (and inventory) and the information contained in this report, the results of this report are to be considered void and invalid, and this office is to be contacted so that the analysis can be revised. This office performed a site inspection on December 2, 2016, and conducted a visual survey of the tower and appurtenances from the ground. Since the tower was not climbed, a conditional assessment was not performed during the survey.

## ANALYSIS

The structural analysis was done in accordance with EIA/TIA-222-G, "Structural Standard for Antenna Supporting Structures and Antennas", and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition. The computer program used to model the structure is tnxTower (ver. 7.0.7.0), a commercially available program developed and maintained by Tower Numerics. Latticed structures members are modeled using beam/truss and cable members and the pole members are modeled using tubular beam elements. Stresses are internally calculated for various dead, live, wind, and ice load cases and then applied as external loads on the structure. Any applicable exemptions, as per Section 15.6 of the TIA-222-G Standard for existing structures originally designed in accordance with a previous revision of the TIA-222 Standard, have been taken. Selected output from the analysis is included in Appendix C. The analysis was conducted using the following parameters:

| | | |
|---|---|---|
| **Load Cases** | Full Wind | 120 mph w/o ice |
| | Ice | 50 mph w/ 3/4" radial ice |
| | Service | 60 mph |
| **Structure Criteria** | Structure Classification | Class II |
| | Exposure Category | C |

**Existing Tower Inventory**

| Elevation | Quantity | Model | Mount | Lines | Size & Location |
|---|---|---|---|---|---|
| 114 | 1 | Lightening Rod | NA | NA | |
| 110 | 12<br>6<br>6<br>3 | HPA-65R-BUU-H8<br>RRUS-11<br>RRUS-12<br>DC-6-48-60-18 | Low-profile Platform w/ rails and support struts | 2<br>8 | 5/8" Fiber within monopole<br>5/8" DC within monopole |
| 90 | 6 | Stadium Lights | Collar | 1 | 1" Conduit (assumed) |
| 88 | 6 | Stadium Lights | | | |

**Proposed AT&T Tower Inventory**

| Elevation | Quantity | Model | Mount | Lines | Size & Location |
|---|---|---|---|---|---|
| 110 | 3 | RRUS-32 | Low-profile Platform w/ rails and support struts | NA | NA |

**Final AT&T Tower Inventory**

| Elevation | Quantity | Model | Mount | Lines | Size & Location |
|---|---|---|---|---|---|
| 110 | 12<br>6<br>6<br>3<br>3 | HPA-65R-BUU-H8<br>RRUS-11<br>RRUS-12<br>RRUS-32<br>DC-6-48-60-18 | Low-profile Platform w/ rails and support struts | 2<br>8 | 5/8" Fiber within monopole<br>5/8" DC within monopole |

**Reserved Tower Inventory**

| Elevation | Quantity | Model | Mount | Lines | Size & Location |
|---|---|---|---|---|---|
| 110 | 3 | DC-6-48-60-18 | Low-profile Platform w/ rails and support struts | NA | NA |
| 100 | 12 | 8'x1'x4" Panel<br>22"x14"x4" RRH | 12 Platform | 12 | 7/8" within monopole |

The following table summarizes the results of the analysis based on stresses of individual members:

| Member | Capacity | Location | Results |
|---|---|---|---|
| Pole | 49.8% | 0-35' | **Pass** |
| Base Plate | 50.6% | 0' | **Pass** |

The following table summarizes the results of the proposed foundation (factored) reactions with that of the reactions of the original design by Valmont (the previous allowable stress reactions have been multiplied by a factor of 1.35 for comparison):

| Reaction | Original Design | Proposed | Percentage |
|---|---|---|---|
| Shear, K | 63.7 | 53 | **83.2%** |

| Reaction | Original Design | Proposed | Percentage |
|---|---|---|---|
| Axial, K | 74.7 | 48 | **64.3%** |
| Moment, Ft-K | 6818.0 | 4508 | **66.1%** |

Foundation as-built information was not available nor provided for this report. Therefore, the in-place capacity of the foundation could not be verified. A more thorough and accurate assessment of the foundation capacity will require site-specific foundation information. However, since the tower reactions are below those of the original design, it is the opinion of this office that the foundation can be considered structurally adequate.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the structural analysis, it is the opinion of this office that the existing 114'± monopole located at the above-referenced address is capable of supporting the proposed AT&T LTE 3C loads without structural modifications.

## LIMITATIONS AND ASSUMPTIONS

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

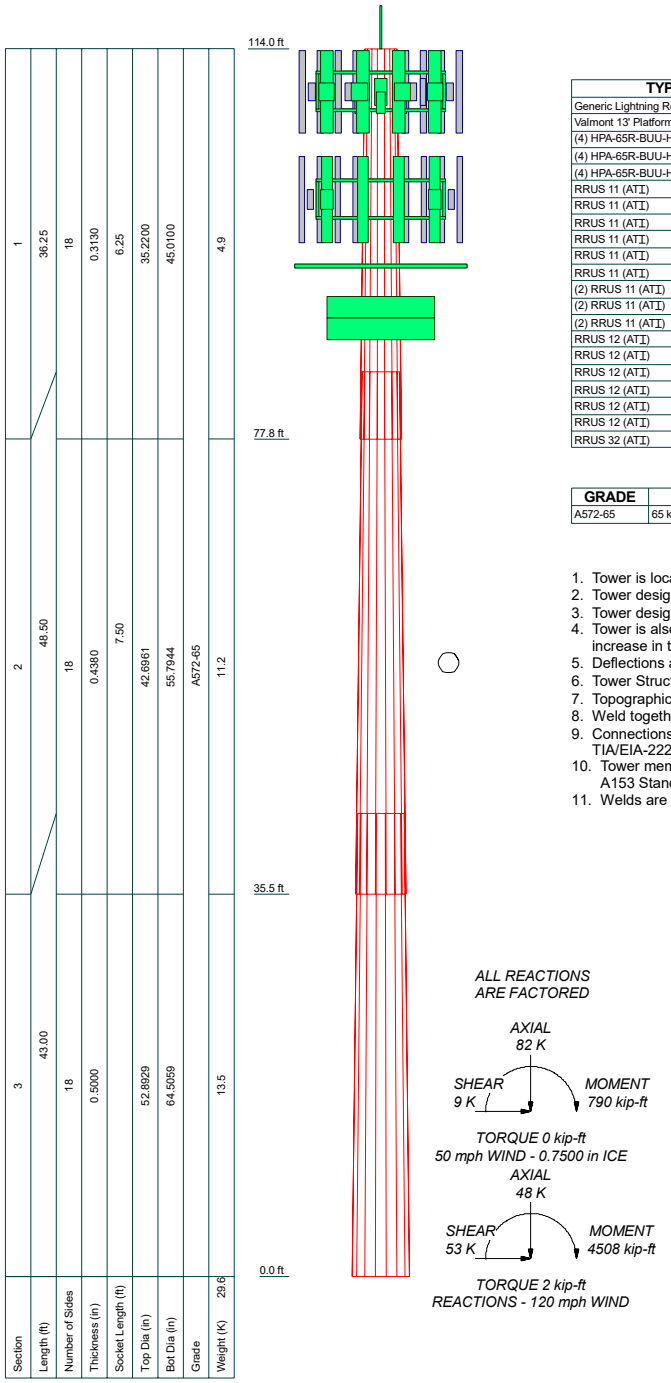
- This existing tower is assumed, for the purpose of this analysis, to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its member capacities ('as-new' condition).
- The tower member sizes and configuration are considered accurate as supplied.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

Appendix. If no data is available, the foundation system is assumed to support the structure with its new reactions.

- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report. All guy cable assemblies, as applicable, are assumed to develop the rated breaking strength of the wire.
- All prior structural modifications, if any, are assumed to be as per data supplied/available, and to have been properly installed and to be fully effective.

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

# APPENDIX A - Tower Schematic







### DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|---|---|---|---|
| Generic Lightning Rod 4' copper | 114 | RRUS 32 (AT⌶) | 110 |
| Valmont 13' Platform w/Rails (AT⌶) | 110 | RRUS 32 (AT⌶) | 110 |
| (4) HPA-65R-BUU-H8 (AT⌶) | 110 | DC-6-48-60-18 (AT⌶) | 110 |
| (4) HPA-65R-BUU-H8 (AT⌶) | 110 | DC-6-48-60-18 (AT⌶) | 110 |
| (4) HPA-65R-BUU-H8 (AT⌶) | 110 | DC-6-48-60-18 (AT⌶) | 110 |
| RRUS 11 (AT⌶) | 110 | DC-6-48-60-18 (AT⌶) | 110 |
| RRUS 11 (AT⌶) | 110 | DC-6-48-60-18 (AT⌶) | 110 |
| RRUS 11 (AT⌶) | 110 | DC-6-48-60-18 (AT⌶) | 110 |
| RRUS 11 (AT⌶) | 110 | Platform Strut (AT⌶) | 108 |
| RRUS 11 (AT⌶) | 110 | Valmont 13' Platform w/Rails | 100 |
| RRUS 11 (AT⌶) | 110 | (4) 8'x1'x4" Generic Panel | 100 |
| (2) RRUS 11 (AT⌶) | 110 | (4) 8'x1'x4" Generic Panel | 100 |
| (2) RRUS 11 (AT⌶) | 110 | (4) 8'x1'x4" Generic Panel | 100 |
| (2) RRUS 11 (AT⌶) | 110 | (2) RRH (22x14x4) | 100 |
| RRUS 12 (AT⌶) | 110 | (2) RRH (22x14x4) | 100 |
| RRUS 12 (AT⌶) | 110 | (2) RRH (22x14x4) | 100 |
| RRUS 12 (AT⌶) | 110 | Valmont 13' Platform w/o Rails (Ice Shield) | 94 |
| RRUS 12 (AT⌶) | 110 | | |
| RRUS 12 (AT⌶) | 110 | Stadium Lights (6) (Stadium Lights) | 90 |
| RRUS 12 (AT⌶) | 110 | Stadium Lights (6) (Stadium Lights) | 88 |
| RRUS 32 (AT⌶) | 110 | | |

### MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|---|---|---|---|---|---|
| A572-65 | 65 ksi | 80 ksi | | | |

### TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.

| | | | |
|---|---|---|---|
| ***Advanced Engineering Group*** | Job: ***CT2838*** | | |
| 500 North Broadway | Project: ***AT&T LTE 3C*** | | |
| East Providence, RI 02914 | Client: SAI Communications | Drawn by: MRC | App'd: |
| Phone: 401-354-2403 | Code: TIA-222-G | Date: 02/10/17 | Scale: NTS |
| FAX: | Path: X:\RISA\CT2838 114' Monopole-light pole.eri | | Dwg No. E-1 |

# APPENDIX B – Photos

Existing AT&T Antennas

Existing monopole base

Overall Tower


Existing Cables

# APPENDIX C – Calculations

# Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Basic wind speed of 120 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

# Tapered Pole Section Geometry

| Section | Elevation<br>ft | Section Length<br>ft | Splice Length<br>ft | Number of Sides | Top Diameter<br>in | Bottom Diameter<br>in | Wall Thickness<br>in | Bend Radius<br>in | Pole Grade |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 114.00-77.75 | 36.25 | 6.25 | 18 | 35.2200 | 45.0100 | 0.3130 | 1.2520 | A572-65 (65 ksi) |
| L2 | 77.75-35.50 | 48.50 | 7.50 | 18 | 42.6961 | 55.7944 | 0.4380 | 1.7520 | A572-65 (65 ksi) |
| L3 | 35.50-0.00 | 43.00 | | 18 | 52.8929 | 64.5059 | 0.5000 | 2.0000 | A572-65 (65 ksi) |

# Tapered Pole Properties

| Section | Tip Dia.<br>in | Area<br>$in^2$ | I<br>$in^4$ | r<br>in | C<br>in | I/C<br>$in^3$ | J<br>$in^4$ | It/Q<br>$in^2$ | w<br>in | w/t |
|---|---|---|---|---|---|---|---|---|---|---|
| L1 | 35.7633 | 34.6788 | 5338.5866 | 12.3920 | 17.8918 | 298.3824 | 10684.1978 | 17.3427 | 5.6478 | 18.044 |
| | 45.7044 | 44.4048 | 11207.8894 | 15.8674 | 22.8651 | 490.1749 | 22430.5263 | 22.2066 | 7.3709 | 23.549 |
| L2 | 45.0687 | 58.7477 | 13254.0141 | 15.0016 | 21.6896 | 611.0768 | 26525.4681 | 29.3794 | 6.7436 | 15.396 |
| | 56.6551 | 76.9572 | 29793.5552 | 19.6515 | 28.3436 | 1051.1577 | 59626.3134 | 38.4859 | 9.0489 | 20.66 |

| Section | Tip Dia. in | Area $in^2$ | I $in^4$ | r in | C in | I/C $in^3$ | J $in^4$ | It/Q $in^2$ | w in | w/t |
|---|---|---|---|---|---|---|---|---|---|---|
| L3 | 55.7656<br>65.5010 | 83.1475<br>101.5773 | 28835.7742<br>52574.3158 | 18.5995<br>22.7221 | 26.8696<br>32.7690 | 1073.1750<br>1604.3929 | 57709.4912<br>105217.810<br>2 | 41.5817<br>50.7983 | 8.4291<br>10.4730 | 16.858<br>20.946 |

| Tower Elevation ft | Gusset Area (per face) $ft^2$ | Gusset Thickness in | Gusset Grade | Adjust. Factor $A_f$ | Adjust. Factor $A_r$ | Weight Mult. | Double Angle Stitch Bolt Spacing Diagonals in | Double Angle Stitch Bolt Spacing Horizontals in | Double Angle Stitch Bolt Spacing Redundants in |
|---|---|---|---|---|---|---|---|---|---|
| L1 114.00-77.75 | | | | 1 | 1 | 1 | | | |
| L2 77.75-35.50 | | | | 1 | 1 | 1 | | | |
| L3 35.50-0.00 | | | | 1 | 1 | 1 | | | |

# Monopole Base Plate Data

| Base Plate Data | |
|---|---|
| Base plate is square | |
| Base plate is grouted | |
| Anchor bolt grade | A615-75 |
| Anchor bolt size | 2.2500 in |
| Number of bolts | 26 |
| Embedment length | 84.0000 in |
| $f'_c$ | 4 ksi |
| Grout space | 3.0000 in |
| Base plate grade | A572-50 |
| Base plate thickness | 3.5000 in |
| Bolt circle diameter | 71.8900 in |
| Outer diameter | 79.2000 in |
| Inner diameter | 56.0000 in |
| Base plate type | Plain Plate |

# Feed Line/Linear Appurtenances - Entered As Area

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | | $C_AA_A$ $ft^2/ft$ | Weight plf |
|---|---|---|---|---|---|---|---|---|
| LDF4.5-50 (5/8 FOAM) (AT&T Fiber) | C | No | Inside Pole | 110.00 - 4.00 | 2 | No Ice | 0.00 | 0.15 |
| | | | | | | 1/2" Ice | 0.00 | 0.15 |
| | | | | | | 1" Ice | 0.00 | 0.15 |
| LDF4.5-50 (5/8 FOAM) (AT&T DC) | C | No | Inside Pole | 110.00 - 4.00 | 8 | No Ice | 0.00 | 0.15 |
| | | | | | | 1/2" Ice | 0.00 | 0.15 |
| | | | | | | 1" Ice | 0.00 | 0.15 |
| LDF5-50A (7/8 FOAM) | C | No | Inside Pole | 100.00 - 4.00 | 12 | No Ice | 0.00 | 0.33 |
| | | | | | | 1/2" Ice | 0.00 | 0.33 |
| | | | | | | 1" Ice | 0.00 | 0.33 |

# Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | $A_R$ $ft^2$ | $A_F$ $ft^2$ | $C_AA_A$ In Face $ft^2$ | $C_AA_A$ Out Face $ft^2$ | Weight K |
|---|---|---|---|---|---|---|---|

| Tower Section | Tower Elevation ft | Face | $A_R$ $ft^2$ | $A_F$ $ft^2$ | $C_AA_A$ In Face $ft^2$ | $C_AA_A$ Out Face $ft^2$ | Weight K |
|---|---|---|---|---|---|---|---|
| L1 | 114.00-77.75 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.14 |
| L2 | 77.75-35.50 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.23 |
| L3 | 35.50-0.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.17 |

## Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | $A_R$ $ft^2$ | $A_F$ $ft^2$ | $C_AA_A$ In Face $ft^2$ | $C_AA_A$ Out Face $ft^2$ | Weight K |
|---|---|---|---|---|---|---|---|---|
| L1 | 114.00-77.75 | A | 1.668 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.14 |
| L2 | 77.75-35.50 | A | 1.582 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.23 |
| L3 | 35.50-0.00 | A | 1.410 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.17 |

## Shielding Factor Ka

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | $K_a$ No Ice | $K_a$ Ice |
|---|---|---|---|---|---|

## Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral ft<br>Vert ft | Azimuth Adjustment ° | Placement ft | | $C_AA_A$ Front $ft^2$ | $C_AA_A$ Side $ft^2$ | Weight K |
|---|---|---|---|---|---|---|---|---|---|
| Generic Lightning Rod 4' copper | C | From Face | 0.00<br>0.00<br>2.00 | 0.0000 | 114.00 | No Ice<br>1/2" Ice<br>1" Ice | 0.50<br>1.00<br>1.50 | 0.50<br>1.00<br>1.50 | 0.00<br>0.00<br>0.00 |
| Valmont 13' Platform w/Rails (AT&T) | C | None | | 0.0000 | 110.00 | No Ice<br>1/2" Ice<br>1" Ice | 53.00<br>68.00<br>83.00 | 53.00<br>68.00<br>83.00 | 2.00<br>3.00<br>4.00 |
| (4) HPA-65R-BUU-H8 (AT&T) | A | From Face | 4.00<br>0.00<br>0.00 | 0.0000 | 110.00 | No Ice<br>1/2" Ice<br>1" Ice | 13.06<br>13.68<br>14.28 | 9.77<br>11.22<br>12.29 | 0.11<br>0.20<br>0.31 |
| (4) HPA-65R-BUU-H8 (AT&T) | B | From Face | 4.00<br>0.00<br>0.00 | 0.0000 | 110.00 | No Ice<br>1/2" Ice<br>1" Ice | 13.06<br>13.68<br>14.28 | 9.77<br>11.22<br>12.29 | 0.11<br>0.20<br>0.31 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral ft<br>Vert ft | Azimuth Adjustment ° | Placement ft | | $C_AA_A$ Front $ft^2$ | $C_AA_A$ Side $ft^2$ | Weight K |
|---|---|---|---|---|---|---|---|---|---|
| (4) HPA-65R-BUU-H8 | C | From Face | 4.00 | 0.0000 | 110.00 | No Ice | 13.06 | 9.77 | 0.11 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 13.68 | 11.22 | 0.20 |
| | | | 0.00 | | | 1" Ice | 14.28 | 12.29 | 0.31 |
| RRUS 11 | A | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | 5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| RRUS 11 | B | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | 5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| RRUS 11 | C | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | 5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| RRUS 11 | A | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | -5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| RRUS 11 | B | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | -5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| RRUS 11 | C | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | -5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| (2) RRUS 11 | A | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | -5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| (2) RRUS 11 | B | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | -5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| (2) RRUS 11 | C | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 2.79 | 1.19 | 0.05 |
| (AT&T) | | | -5.00 | | | 1/2" Ice | 3.00 | 1.34 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.21 | 1.50 | 0.10 |
| RRUS 12 | A | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.15 | 1.29 | 0.05 |
| (AT&T) | | | 2.00 | | | 1/2" Ice | 3.36 | 1.44 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.59 | 1.60 | 0.10 |
| RRUS 12 | B | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.15 | 1.29 | 0.05 |
| (AT&T) | | | 2.00 | | | 1/2" Ice | 3.36 | 1.44 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.59 | 1.60 | 0.10 |
| RRUS 12 | C | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.15 | 1.29 | 0.05 |
| (AT&T) | | | 2.00 | | | 1/2" Ice | 3.36 | 1.44 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.59 | 1.60 | 0.10 |
| RRUS 12 | A | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.15 | 1.29 | 0.05 |
| (AT&T) | | | -2.00 | | | 1/2" Ice | 3.36 | 1.44 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.59 | 1.60 | 0.10 |
| RRUS 12 | B | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.15 | 1.29 | 0.05 |
| (AT&T) | | | -2.00 | | | 1/2" Ice | 3.36 | 1.44 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.59 | 1.60 | 0.10 |
| RRUS 12 | C | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.15 | 1.29 | 0.05 |
| (AT&T) | | | -2.00 | | | 1/2" Ice | 3.36 | 1.44 | 0.07 |
| | | | 0.00 | | | 1" Ice | 3.59 | 1.60 | 0.10 |
| RRUS 32 | A | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.33 | 2.43 | 0.08 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 3.57 | 2.65 | 0.11 |
| | | | 0.00 | | | 1" Ice | 3.82 | 2.87 | 0.14 |
| RRUS 32 | B | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.33 | 2.43 | 0.08 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 3.57 | 2.65 | 0.11 |
| | | | 0.00 | | | 1" Ice | 3.82 | 2.87 | 0.14 |
| RRUS 32 | C | From Face | 3.00 | 0.0000 | 110.00 | No Ice | 3.33 | 2.43 | 0.08 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 3.57 | 2.65 | 0.11 |
| | | | 0.00 | | | 1" Ice | 3.82 | 2.87 | 0.14 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert<br>ft<br>ft<br>ft | Azimuth Adjustment<br>° | Placement<br>ft | | $C_AA_A$ Front<br>$ft^2$ | $C_AA_A$ Side<br>$ft^2$ | Weight<br>K |
|---|---|---|---|---|---|---|---|---|---|
| DC-6-48-60-18 | A | From Face | 1.00 | 0.0000 | 110.00 | No Ice | 0.81 | 0.81 | 0.02 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 1.30 | 1.30 | 0.04 |
| | | | -1.00 | | | 1" Ice | 1.48 | 1.48 | 0.05 |
| DC-6-48-60-18 | B | From Face | 1.00 | 0.0000 | 110.00 | No Ice | 0.81 | 0.81 | 0.02 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 1.30 | 1.30 | 0.04 |
| | | | -1.00 | | | 1" Ice | 1.48 | 1.48 | 0.05 |
| DC-6-48-60-18 | C | From Face | 1.00 | 0.0000 | 110.00 | No Ice | 0.81 | 0.81 | 0.02 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 1.30 | 1.30 | 0.04 |
| | | | -1.00 | | | 1" Ice | 1.48 | 1.48 | 0.05 |
| DC-6-48-60-18 | A | From Face | 1.00 | 0.0000 | 110.00 | No Ice | 0.81 | 0.81 | 0.02 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 1.30 | 1.30 | 0.04 |
| | | | -1.00 | | | 1" Ice | 1.48 | 1.48 | 0.05 |
| DC-6-48-60-18 | B | From Face | 1.00 | 0.0000 | 110.00 | No Ice | 0.81 | 0.81 | 0.02 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 1.30 | 1.30 | 0.04 |
| | | | -1.00 | | | 1" Ice | 1.48 | 1.48 | 0.05 |
| DC-6-48-60-18 | C | From Face | 1.00 | 0.0000 | 110.00 | No Ice | 0.81 | 0.81 | 0.02 |
| (AT&T) | | | 0.00 | | | 1/2" Ice | 1.30 | 1.30 | 0.04 |
| | | | -1.00 | | | 1" Ice | 1.48 | 1.48 | 0.05 |
| Platform Strut | C | None | | 0.0000 | 108.00 | No Ice | 2.04 | 1.25 | 0.04 |
| (AT&T) | | | | | | 1/2" Ice | 2.39 | 1.69 | 0.05 |
| | | | | | | 1" Ice | 2.75 | 2.15 | 0.07 |
| Valmont 13' Platform w/o Rails | C | None | | 0.0000 | 94.00 | No Ice | 35.00 | 35.00 | 1.50 |
| | | | | | | 1/2" Ice | 42.00 | 42.00 | 2.50 |
| (Ice Shield) | | | | | | 1" Ice | 49.00 | 49.00 | 3.50 |
| Stadium Lights (6) | C | From Face | 1.00 | 0.0000 | 90.00 | No Ice | 24.00 | 4.80 | 0.40 |
| (Stadium Lights) | | | 0.00 | | | 1/2" Ice | 24.80 | 5.07 | 0.61 |
| | | | 0.00 | | | 1" Ice | 25.61 | 5.35 | 0.83 |
| Stadium Lights (6) | C | From Face | 1.00 | 0.0000 | 88.00 | No Ice | 24.00 | 4.80 | 0.40 |
| (Stadium Lights) | | | 0.00 | | | 1/2" Ice | 24.80 | 5.07 | 0.61 |
| | | | 0.00 | | | 1" Ice | 25.61 | 5.35 | 0.83 |
| Valmont 13' Platform w/Rails | C | None | | 0.0000 | 100.00 | No Ice | 53.00 | 53.00 | 2.00 |
| | | | | | | 1/2" Ice | 68.00 | 68.00 | 3.00 |
| | | | | | | 1" Ice | 83.00 | 83.00 | 4.00 |
| (4) 8'x1'x4" Generic Panel | A | From Face | 4.00 | 0.0000 | 100.00 | No Ice | 11.47 | 5.24 | 0.04 |
| | | | 0.00 | | | 1/2" Ice | 12.08 | 5.82 | 0.09 |
| | | | 0.00 | | | 1" Ice | 12.71 | 6.40 | 0.16 |
| (4) 8'x1'x4" Generic Panel | B | From Face | 4.00 | 0.0000 | 100.00 | No Ice | 11.47 | 5.24 | 0.04 |
| | | | 0.00 | | | 1/2" Ice | 12.08 | 5.82 | 0.09 |
| | | | 0.00 | | | 1" Ice | 12.71 | 6.40 | 0.16 |
| (4) 8'x1'x4" Generic Panel | C | From Face | 4.00 | 0.0000 | 100.00 | No Ice | 11.47 | 5.24 | 0.04 |
| | | | 0.00 | | | 1/2" Ice | 12.08 | 5.82 | 0.09 |
| | | | 0.00 | | | 1" Ice | 12.71 | 6.40 | 0.16 |
| (2) RRH (22x14x4) | A | From Face | 3.00 | 0.0000 | 100.00 | No Ice | 2.57 | 0.81 | 0.05 |
| | | | 0.00 | | | 1/2" Ice | 2.77 | 0.96 | 0.07 |
| | | | 0.00 | | | 1" Ice | 2.98 | 1.11 | 0.08 |
| (2) RRH (22x14x4) | B | From Face | 3.00 | 0.0000 | 100.00 | No Ice | 2.57 | 0.81 | 0.05 |
| | | | 0.00 | | | 1/2" Ice | 2.77 | 0.96 | 0.07 |
| | | | 0.00 | | | 1" Ice | 2.98 | 1.11 | 0.08 |
| (2) RRH (22x14x4) | C | From Face | 3.00 | 0.0000 | 100.00 | No Ice | 2.57 | 0.81 | 0.05 |
| | | | 0.00 | | | 1/2" Ice | 2.77 | 0.96 | 0.07 |
| | | | 0.00 | | | 1" Ice | 2.98 | 1.11 | 0.08 |

## Base Plate Design Data

| Plate Thickness<br>in | Number of Anchor Bolts | Anchor Bolt Size<br>in | Actual / Allowable Ratio Bolt Tension<br>K | Actual / Allowable Ratio Bolt Compression<br>K | Actual / Allowable Ratio Plate Stress<br>ksi | Actual / Allowable Ratio Stiffener Stress<br>ksi | Controlling Condition | Ratio |
|---|---|---|---|---|---|---|---|---|
| 3.5000 | 26 | 2.2500 | 113.22<br>223.65<br>0.51 | 116.76<br>371.27<br>0.31 | 18.059<br>45.000<br>0.40 | | Bolt T | 0.51 ✔ |

## Compression Checks

## Pole Design Data

| Section No. | Elevation<br>ft | Size | L<br>ft | $L_u$<br>ft | Kl/r | A<br>$in^2$ | $P_u$<br>K | $\phi P_n$<br>K | Ratio $\frac{P_u}{\phi P_n}$ |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 114 - 77.75 (1) | TP45.01x35.22x0.313 | 36.25 | 114.00 | 89.6 | 42.7279 | -15.33 | 1195.40 | 0.013 |
| L2 | 77.75 - 35.5 (2) | TP55.7944x42.6961x0.438 | 48.50 | 114.00 | 72.3 | 74.1413 | -28.23 | 2870.08 | 0.010 |
| L3 | 35.5 - 0 (3) | TP64.5059x52.8929x0.5 | 43.00 | 114.00 | 60.2 | 101.577<br>0 | -47.77 | 4671.81 | 0.010 |

## Pole Bending Design Data

| Section No. | Elevation<br>ft | Size | $M_{ux}$<br>kip-ft | $\phi M_{nx}$<br>kip-ft | Ratio $\frac{M_{ux}}{\phi M_{nx}}$ | $M_{uy}$<br>kip-ft | $\phi M_{ny}$<br>kip-ft | Ratio $\frac{M_{uy}}{\phi M_{ny}}$ |
|---|---|---|---|---|---|---|---|---|
| L1 | 114 - 77.75 (1) | TP45.01x35.22x0.313 | 697.20 | 2546.07 | 0.274 | 0.00 | 2546.07 | 0.000 |
| L2 | 77.75 - 35.5 (2) | TP55.7944x42.6961x0.438 | 2395.57 | 5710.07 | 0.420 | 0.00 | 5710.07 | 0.000 |
| L3 | 35.5 - 0 (3) | TP64.5059x52.8929x0.5 | 4507.92 | 9237.00 | 0.488 | 0.00 | 9237.00 | 0.000 |

## Pole Shear Design Data

| Section No. | Elevation<br>ft | Size | Actual $V_u$<br>K | $\phi V_n$<br>K | Ratio $\frac{V_u}{\phi V_n}$ | Actual $T_u$<br>kip-ft | $\phi T_n$<br>kip-ft | Ratio $\frac{T_u}{\phi T_n}$ |
|---|---|---|---|---|---|---|---|---|
| L1 | 114 - 77.75 (1) | TP45.01x35.22x0.313 | 37.60 | 1438.59 | 0.026 | 0.00 | 5098.36 | 0.000 |
| L2 | 77.75 - 35.5 (2) | TP55.7944x42.6961x0.438 | 45.26 | 2604.31 | 0.017 | 0.00 | 11434.08 | 0.000 |
| L3 | 35.5 - 0 (3) | TP64.5059x52.8929x0.5 | 52.74 | 3508.88 | 0.015 | 0.00 | 18496.58 | 0.000 |

## Pole Interaction Design Data

| Section No. | Elevation ft | Ratio $\frac{P_u}{\phi P_n}$ | Ratio $\frac{M_{ux}}{\phi M_{nx}}$ | Ratio $\frac{M_{uy}}{\phi M_{ny}}$ | Ratio $\frac{V_u}{\phi V_n}$ | Ratio $\frac{T_u}{\phi T_n}$ | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|---|---|---|---|---|---|---|---|---|---|
| L1 | 114 - 77.75 (1) | 0.013 | 0.274 | 0.000 | 0.026 | 0.000 | 0.287 ✔ | 1.000 | 4.8.2 ✔ |
| L2 | 77.75 - 35.5 (2) | 0.010 | 0.420 | 0.000 | 0.017 | 0.000 | 0.430 ✔ | 1.000 | 4.8.2 ✔ |
| L3 | 35.5 - 0 (3) | 0.010 | 0.488 | 0.000 | 0.015 | 0.000 | 0.498 ✔ | 1.000 | 4.8.2 ✔ |

## Section Capacity Table

| Section No. | Elevation ft | Component Type | Size | Critical Element | P K | $\phi P_{allow}$ K | % Capacity | Pass Fail |
|---|---|---|---|---|---|---|---|---|
| L1 | 114 - 77.75 | Pole | TP45.01x35.22x0.313 | 1 | -15.33 | 1195.40 | 28.7 | Pass |
| L2 | 77.75 - 35.5 | Pole | TP55.7944x42.6961x0.438 | 2 | -28.23 | 2870.08 | 43.0 | Pass |
| L3 | 35.5 - 0 | Pole | TP64.5059x52.8929x0.5 | 3 | -47.77 | 4671.81 | 49.8 | Pass |
| | | | | | | | Summary | |
| | | | | | | Pole (L3) | 49.8 | Pass |
| | | | | | | Base Plate | 50.6 | Pass |
| | | | | | | **RATING =** | **50.6** | **Pass** |


**Property Information**

| | |
|---|---|
| **Property ID** | 95-B11-220-1 |
| **Location** | 490 JEFFERSON AVE |
| **Owner** | NEW LONDON CITY OF |

SCCOG

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Parcels updated 01/11/2017
Properties updated 10/1/2013

# 490 JEFFERSON AVE

| | | | |
|---|---|---|---|
| **Location** | 490 JEFFERSON AVE | **Mblu** | B11/ 220/ 1/ / |
| **Acct#** | B11 0220 0001 | **Owner** | NEW LONDON CITY OF |
| **Assessment** | $32,814,740 | **Appraisal** | $46,878,200 |
| **PID** | 5464 | **Building Count** | 6 |

### Current Value

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2013 | $36,994,500 | $9,883,700 | $46,878,200 |
| **Assessment** | | | |
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2013 | $25,896,150 | $6,918,590 | $32,814,740 |

### Owner of Record

| | | | |
|---|---|---|---|
| **Owner** | NEW LONDON CITY OF | **Sale Price** | $0 |
| **Co-Owner** | HIGH SCHOOL | **Certificate** | |
| **Address** | JEFFERSON AVE<br>NEW LONDON, CT 06320 | **Book & Page** | 323/ 008 |
| | | **Sale Date** | 01/01/1700 |

### Ownership History

| Ownership History | | | | |
|---|---|---|---|---|
| **Owner** | **Sale Price** | **Certificate** | **Book & Page** | **Sale Date** |
| NEW LONDON CITY OF | $0 | | 323/ 008 | 01/01/1700 |

### Building Information

#### Building 1 : Section 1

| | |
|---|---|
| **Year Built:** | 1960 |
| **Living Area:** | 1,825 |
| **Replacement Cost:** | $408,696 |
| **Building Percent Good:** | 62 |
| **Replacement Cost Less Depreciation:** | $253,400 |

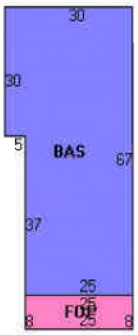
| Building Attributes | |
|---|---|
| **Field** | **Description** |
| STYLE | Schools-Public |
| MODEL | Commercial |

**Building Photo**

| | |
|---|---|
| Grade | Good |
| Stories: | 1 |
| Occupancy | 1 |
| Exterior Wall 1 | Concr/Cinder |
| Exterior Wall 2 | |
| Roof Structure | Gable/Hip |
| Roof Cover | Asph/F Gls/Cmp |
| Interior Wall 1 | Minim/Masonry |
| Interior Wall 2 | |
| Interior Floor 1 | Concr-Finished |
| Interior Floor 2 | |
| Heating Fuel | Coal or Wood |
| Heating Type | None |
| AC Type | None |
| Bldg Use | MUNICIPAL MDL-94 |
| Total Rooms | |
| Total Bedrms | 00 |
| Total Baths | 0 |
| Conv Type | |
| 1st Floor Use: | 903I |
| Heat/AC | NONE |
| Frame Type | MASONRY |
| Baths/Plumbing | AVERAGE |
| Ceiling/Wall | CEIL & MIN WL |
| Rooms/Prtns | AVERAGE |
| Wall Height | 9 |
| % Comn Wall | 0 |

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\02/56.jpg)

### Building Layout




| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| BAS | First Floor | 1,825 | 1,825 |
| FOP | Porch, Open, Finished | 200 | 0 |
| | | 2,025 | 1,825 |

## Building 2 : Section 1

**Year Built:** 1972
**Living Area:** 119,800
**Replacement Cost:** $23,199,531
**Building Percent Good:** 58
**Replacement Cost Less Depreciation:** $13,455,700

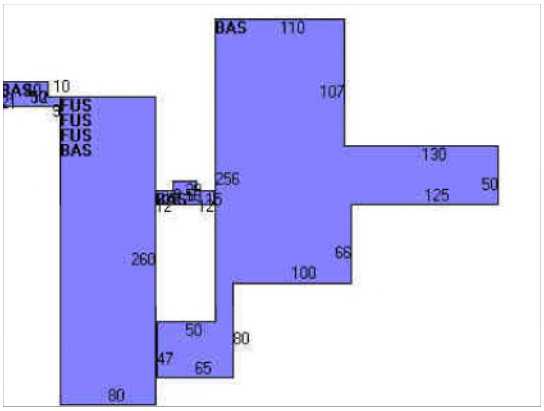
| Building Attributes : Bldg 2 of 6 | |
|---|---|
| **Field** | **Description** |
| STYLE | Schools-Public |
| MODEL | Commercial |
| Grade | Good |
| Stories: | 4 |
| Occupancy | 1 |
| Exterior Wall 1 | Brick/Masonry |

### Building Photo

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\02/57.jpg)

| | |
|---|---|
| Exterior Wall 2 | |
| Roof Structure | Flat |
| Roof Cover | Tar & Gravel |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |
| Interior Floor 1 | Vinyl/Asphalt |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Forced Air-Duc |
| AC Type | Central |
| Bldg Use | MUNICIPAL MDL-94 |
| Total Rooms | |
| Total Bedrms | 00 |
| Total Baths | 0 |
| Conv Type | |
| 1st Floor Use: | 903C |
| Heat/AC | HEAT/AC PKGS |
| Frame Type | STEEL |
| Baths/Plumbing | AVERAGE |
| Ceiling/Wall | CEIL & WALLS |
| Rooms/Prtns | AVERAGE |
| Wall Height | 10 |
| % Comn Wall | 20 |

### Building Layout




| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| FUS | Upper Story, Finished | 62,400 | 62,400 |
| BAS | First Floor | 57,400 | 57,400 |
| | | 119,800 | 119,800 |

## Building 3 : Section 1

**Year Built:** 1972
**Living Area:** 17,600
**Replacement Cost:** $1,530,320
**Building Percent Good:** 92
**Replacement Cost Less Depreciation:** $1,407,900

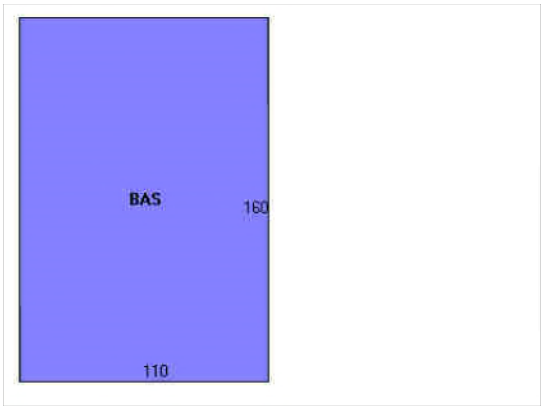
| Building Attributes : Bldg 3 of 6 | |
|---|---|
| **Field** | **Description** |
| STYLE | Commercial |
| MODEL | Commercial |
| Grade | Ave/Good |
| Stories: | 1 |
| Occupancy | 1 |
| Exterior Wall 1 | Pre-finsh Metl |
| Exterior Wall 2 | |
| Roof Structure | Flat |
| Roof Cover | Tar & Gravel |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |

### Building Photo

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\02/58.jpg)

### Building Layout

| | |
|---|---|
| Interior Floor 1 | Vinyl/Asphalt |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Forced Air-Duc |
| AC Type | Central |
| Bldg Use | MUNICIPAL MDL-94 |
| Total Rooms | |
| Total Bedrms | 00 |
| Total Baths | 0 |
| Conv Type | |
| 1st Floor Use: | 903C |
| Heat/AC | HEAT/AC PKGS |
| Frame Type | STEEL |
| Baths/Plumbing | AVERAGE |
| Ceiling/Wall | CEIL & WALLS |
| Rooms/Prtns | AVERAGE |
| Wall Height | 20 |
| % Comn Wall | 2 |




| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| BAS | First Floor | 17,600 | 17,600 |
| | | 17,600 | 17,600 |

**Building 4 : Section 1**

**Year Built:** 1972
**Living Area:** 14,980
**Replacement Cost:** $3,586,661
**Building Percent Good:** 58
**Replacement Cost Less Depreciation:** $2,080,300

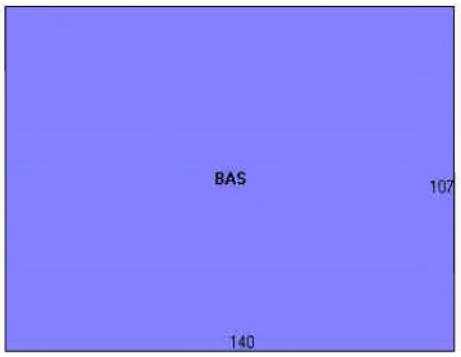
| Building Attributes : Bldg 4 of 6 | |
|---|---|
| **Field** | **Description** |
| STYLE | Schools-Public |
| MODEL | Commercial |
| Grade | Good |
| Stories: | 1 |
| Occupancy | 1 |
| Exterior Wall 1 | Brick/Masonry |
| Exterior Wall 2 | |
| Roof Structure | Flat |
| Roof Cover | Tar & Gravel |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |
| Interior Floor 1 | Hardwood |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Forced Air-Duc |
| AC Type | Central |

**Building Photo**

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\02/59.jpg)

**Building Layout**

| | |
|---|---|
| Bldg Use | MUNICIPAL MDL-94 |
| Total Rooms | |
| Total Bedrms | 00 |
| Total Baths | 0 |
| Conv Type | |
| 1st Floor Use: | 903C |
| Heat/AC | HEAT/AC PKGS |
| Frame Type | STEEL |
| Baths/Plumbing | AVERAGE |
| Ceiling/Wall | CEIL & WALLS |
| Rooms/Prtns | AVERAGE |
| Wall Height | 20 |
| % Comn Wall | 50 |




| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| BAS | First Floor | 14,980 | 14,980 |
| | | 14,980 | 14,980 |

### Building 5 : Section 1

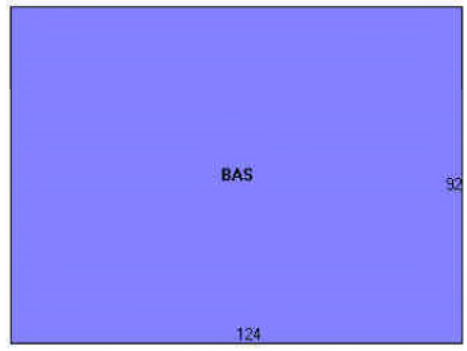
**Year Built:** 1972
**Living Area:** 11,408
**Replacement Cost:** $3,393,823
**Building Percent Good:** 58
**Replacement Cost Less Depreciation:** $1,968,400

| Building Attributes : Bldg 5 of 6 | |
|---|---|
| **Field** | **Description** |
| STYLE | Schools-Public |
| MODEL | Commercial |
| Grade | Excellent |
| Stories: | 1 |
| Occupancy | |
| Exterior Wall 1 | Brick/Masonry |
| Exterior Wall 2 | |
| Roof Structure | Flat |
| Roof Cover | Tar & Gravel |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |
| Interior Floor 1 | Vinyl/Asphalt |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Forced Air-Duc |
| AC Type | Central |
| Bldg Use | MUNICIPAL MDL-94 |
| Total Rooms | |
| Total Bedrms | 00 |

#### Building Photo

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\02/60.jpg)

#### Building Layout




| Building Sub-Areas (sq ft) | Legend |
|---|---|

| | |
|---|---|
| Total Baths | 0 |
| Conv Type | |
| 1st Floor Use: | 903C |
| Heat/AC | HEAT/AC PKGS |
| Frame Type | FIREPRF STEEL |
| Baths/Plumbing | AVERAGE |
| Ceiling/Wall | CEIL & WALLS |
| Rooms/Prtns | AVERAGE |
| Wall Height | 20 |
| % Comn Wall | 40 |

| Code | Description | Gross Area | Living Area |
|---|---|---|---|
| BAS | First Floor | 11,408 | 11,408 |
| | | 11,408 | 11,408 |

**Building 6 : Section 1**

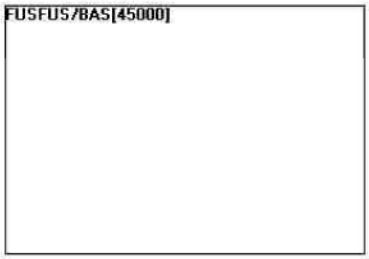
**Year Built:** 2005
**Living Area:** 135,000
**Replacement Cost:** $18,982,269
**Building Percent Good:** 88
**Replacement Cost Less Depreciation:** $16,704,400

| Building Attributes : Bldg 6 of 6 | |
|---|---|
| **Field** | **Description** |
| STYLE | School/College |
| MODEL | Commercial |
| Grade | Custom |
| Stories: | 2 |
| Occupancy | 1 |
| Exterior Wall 1 | Brick/Masonry |
| Exterior Wall 2 | Pre-finsh Metl |
| Roof Structure | Flat |
| Roof Cover | Rolled Compos |
| Interior Wall 1 | Drywall/Sheet |
| Interior Wall 2 | |
| Interior Floor 1 | Average |
| Interior Floor 2 | |
| Heating Fuel | Gas |
| Heating Type | Forced Air-Duc |
| AC Type | Central |
| Bldg Use | MUN POLICE |
| Total Rooms | |
| Total Bedrms | |
| Total Baths | |
| Conv Type | |
| 1st Floor Use: | |
| Heat/AC | HEAT/AC PKGS |
| Frame Type | FIREPRF STEEL |

**Building Photo**

(http://images.vgsi.com/photos/NewLondonCTPhotos//\00\01\02/61.jpg)

**Building Layout**




| Building Sub-Areas (sq ft) | | | Legend |
|---|---|---|---|
| **Code** | **Description** | **Gross Area** | **Living Area** |
| FUS | Upper Story, Finished | 90,000 | 90,000 |
| BAS | First Floor | 45,000 | 45,000 |
| | | 135,000 | 135,000 |

| | |
|---|---|
| Baths/Plumbing | AVERAGE |
| Ceiling/Wall | CEIL & WALLS |
| Rooms/Prtns | AVERAGE |
| Wall Height | 10 |
| % Comn Wall | 0 |

### Extra Features

| Extra Features | | | | Legend |
|---|---|---|---|---|
| **Code** | **Description** | **Size** | **Value** | **Bldg #** |
| GEN | GENERATOR BACKUP | 1 UNITS | $900 | 3 |
| SPR1 | SPRINKLERS-WET | 90000 S.F. | $79,200 | 6 |
| CNP1 | CANOPY-AVG | 3600 S.F. | $67,000 | 1 |
| ELV1 | Elevator, Pass | 2 UNITS | $92,800 | 2 |
| ELS1 | Pass Stops | 7 UNITS | $15,200 | 2 |

### Land

#### Land Use

| | |
|---|---|
| **Use Code** | 903C |
| **Description** | MUNICIPAL MDL-94 |
| **Zone** | R-3 |
| **Neighborhood** | JEF1 |
| **Alt Land Appr** | No |
| **Category** | |

#### Land Line Valuation

| | |
|---|---|
| **Size (Acres)** | 49.32 |
| **Frontage** | 0 |
| **Depth** | 0 |
| **Assessed Value** | $6,918,590 |
| **Appraised Value** | $9,883,700 |

### Outbuildings

| Outbuildings | | | | | | Legend |
|---|---|---|---|---|---|---|
| **Code** | **Description** | **Sub Code** | **Sub Description** | **Size** | **Value** | **Bldg #** |
| FN4 | FENCE-8' CHAIN | | | 600 L.F. | $4,200 | 1 |
| GRN2 | COMM GLASS | | | 600 S.F | $6,300 | 6 |
| PAV1 | PAVING-ASPHALT | | | 40000 S.F. | $60,000 | 2 |
| TEN | TENNIS COURT | | | 1 UNIT | $35,800 | 3 |
| LT1 | LIGHTS-IN W/PL | | | 12 UNITS | $6,500 | 2 |
| SHD1 | SHED FRAME | | | 280 S.F. | $1,700 | 1 |
| BHS2 | CMM BTH HSE GD | | | 4200 S.F. | $100,800 | 6 |
| LT2 | W/DOUBLE LIGHT | | | 6 UNITS | $5,000 | 2 |
| SHD1 | SHED FRAME | | | 160 S.F. | $1,000 | 1 |
| FN1 | FENCE-4' CHAIN | | | 400 L.F. | $1,600 | 1 |
| LT12 | W/FOUR LIGHTS | | | 8 UNITS | $22,200 | 2 |
| GRN2 | COMM GLASS | | | 600 S.F | $100,000 | 1 |
| FF | FOOTBALL NAT | | | 57600 S.F. | $149,800 | 1 |
| FF1 | FOOTBALL ARTIFIC | | | 57600 S.F. | $374,400 | 1 |

### Valuation History

| Appraisal | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2015 | $36,994,500 | $9,883,700 | $46,878,200 |
| 2014 | $36,994,500 | $9,883,700 | $46,878,200 |
| 2013 | $36,994,500 | $15,116,200 | $52,110,700 |

| Assessment | | | |
|---|---|---|---|
| **Valuation Year** | **Improvements** | **Land** | **Total** |
| 2015 | $25,896,150 | $6,918,590 | $32,814,740 |
| 2014 | $25,896,150 | $6,918,590 | $32,814,740 |
| 2013 | $25,896,150 | $10,581,340 | $36,477,490 |