May 7, 2014

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

Re:	**Notice of Exempt Modification – Antenna Swap**
Property Address:	**250 Meriden/Waterbury Turnpike, Southington, CT 06489 (the "Property")**
Applicant:	**New Cingular Wireless PCS, LLC ("AT&T")**

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 80 -foot tower location on the Property, consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 78-feet. The tower is owned by Crown Castle, International. The Council approved AT&T's use of the tower in the following prior decisions; TS-AT&T-131-020319, EM-CING-082-083-089-110-131-148-020702, EM-AT&T-"UNIVERSAL"-030221, EM-AT&T-"UNIVERSAL"-030520 EM-CING-081-126-131-164-165-070808 EM-CING-131-080530, EM-CING-131-12050, EM-AT&T-131-120705. AT&T now intends to replace three (3) Kathrein 800 10121 panel antennas and two (2) KMW AM-X-CD-16-65 panel antennas and one (1) Andrew SBNH 1D6565C panel antenna with six (6) CCI HPA – 65R-BUU H-6 panel antennas and add an additional three (3) CCI HPA - 65R-BUU H-8 panel antennas, while retaining two (2) KMW AM-X-CD-16-65 panel antennas and one (1) Andrew SBNH 1D6565C panel antenna (for a total of twelve (12) panel antennas) at the 78-foot level. Please refer to Tab 1 for further specifications of the replacement antennas.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Michael A. Riccio, Chairman of the Town Council of the Town of Southington, CT. A copy of this letter is also being sent to John P. Rogus, Jr. and Jan Rogus, 250 Meriden-Waterbury Turnpike, Southington, CT, the owners of the property where the tower is located and Crown Castle International, 500 Cummings Park # 3600, Woburn, MA 01801, the tower owner.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 78-foot level of the 80-foot tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

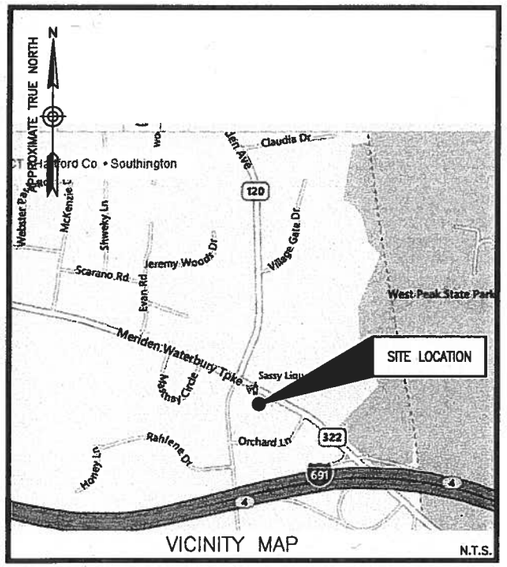
For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitutes an exempt modification under R.C.S.A. §16-50j-72(b)(2).

Sincerely,

Steven J. Quinn

at&t Mobility

SITE NAME: SOUTHINGTON ROGUS
SITE NUMBER: CT1033
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON, CT 06489



VICINITY MAP N.T.S.

DIRECTIONS FROM 500 ENTERPRISE DRIVE, ROCKY HILL, CT:

HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. TAKE RAMP LEFT FOR I-91 S. AT EXIT 18, TAKE RAMP RIGHT FOR I-691 WEST TOWARD WATERBURY/MERIDEN. AT EXIT 4, TAKE RAMP RIGHT FOR CT-322 TOWARD SOUTHINGTON. BEAR RIGHT ONTO CT-322/MERIDEN WATERBURY TPKE. THE SITE WILL BE ON THE LEFT.

SITE COORDINATES:
LATITUDE: N 41° 33' 24.54"
LONGITUDE: W 72° 51' 10.77"
*AS PER GOOGLE EARTH

ELEVATION DATA
GRADE ELEVATION AT TOWER = 335'± A.M.S.L
AS PER GOOGLE EARTH

ANTENNA ELEVATION (TO TOP OF ANTENNA)
ALPHA SECTOR: 81'-0"± A.G.L.
BETA SECTOR: 81'-0"± A.G.L.
GAMMA SECTOR: 81'-0"± A.G.L.

SITE INFORMATION

- REMOVE AND REPLACE (3) PANEL ANTENNAS PER SECTOR FOR A TOTAL OF (9) NEW ANTENNAS.
- ADD (5) NEW RRUS PER SECTOR ON A NEW MOUNT FOR A TOTAL OF (15) NEW RRUS.
- ADD (1) NEW 23" EQUIPMENT RACK IN EXISTING SHELTER.
- ADD (1) NEW GE INFINITY POWER PLANT IN EXISTING SHELTER.

PROJECT DESCRIPTION

SITE NAME:
SOUTHINGTON ROGUS

SITE NUMBER:
CT1033

LOCATION:
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON
NEW HAVEN COUNTY, CT 06489

APPLICANT/LESSEE:
AT&T MOBILITY
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CONNECTICUT 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	SITE PLAN & EQUIPMENT PLANS
C-2	ANTENNA LAYOUTS & ELEVATIONS
C-3	ANTENNA SCHEDULE & CONSTRUCTION DETAILS I
C-4	CONSTRUCTION DETAILS II
E-1	GROUNDING NOTES & DETAILS

SHEET INDEX

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

smartlink
1997 ANNAPOLIS EXCHANGE PARKWAY
SUITE 200
ANNAPOLIS, MD 21401

CT1033
SOUTHINGTON
ROGUS

CONSTRUCTION DRAWINGS

1	04/21/14	ISSUED AS FINAL
0	04/14/14	ISSUED AS FINAL
A	03/07/14	PRELIMINARY SUBMISSION

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

ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

DRAWN BY:	JC
REVIEWED BY:	PD
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063026
SITE ADDRESS:	

250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON CT 06489
NEW HAVEN 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 – SMARTLINK
   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.

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.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. 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.
7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
   FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
8. AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

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.

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CONSTRUCTION DRAWINGS

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ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY:	JC
REVIEWED BY:	PD
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063026
SITE ADDRESS:	

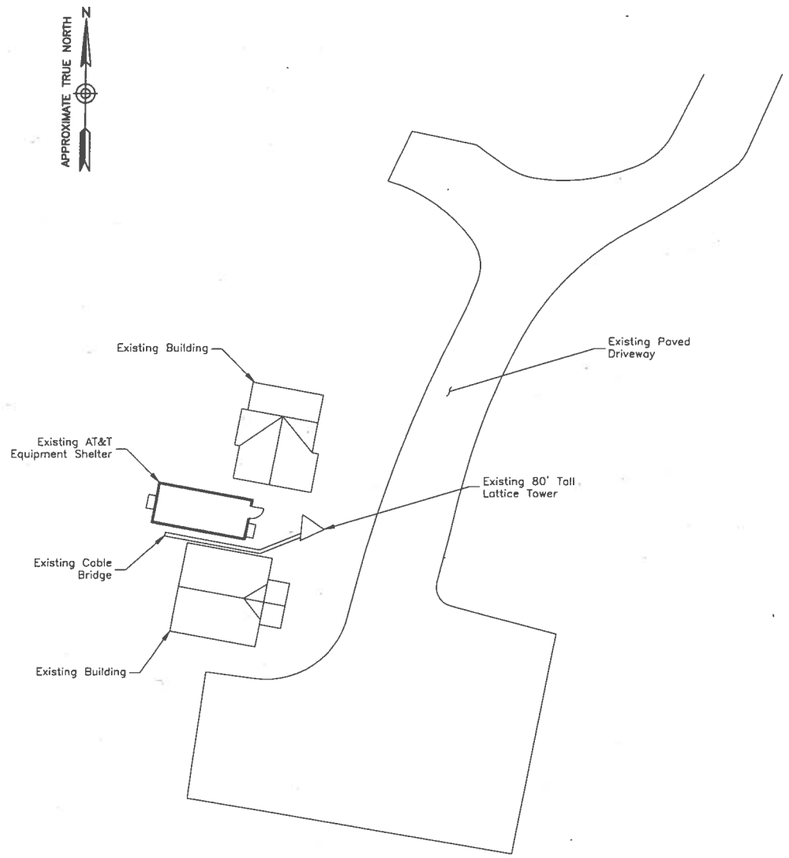
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON
CT 06489
NEW HAVEN COUNTY

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

G-1

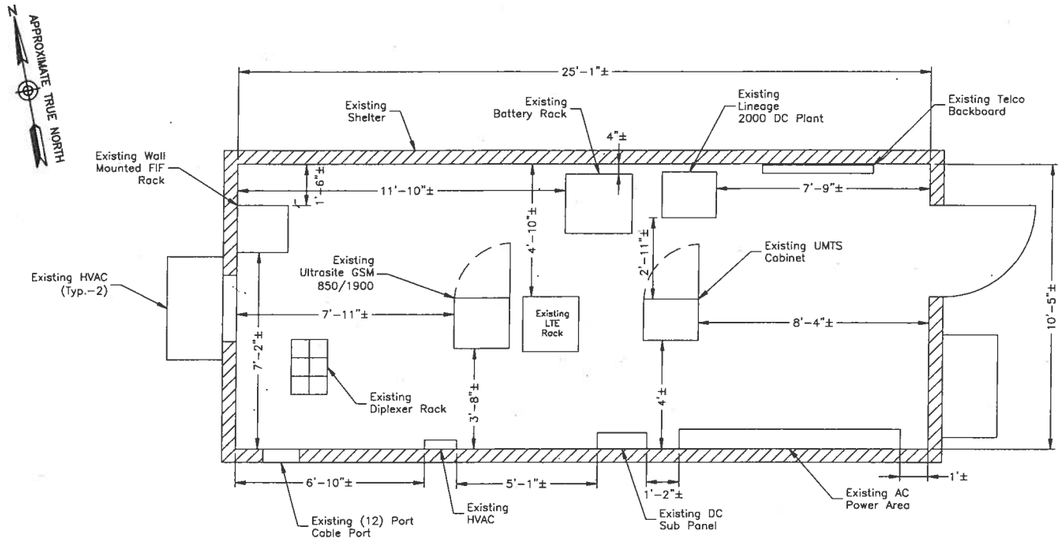


SITE PLAN

SCALE: 1"=40' FOR 11"x17"
1"=20' FOR 22"x34"

0' 20' 40'

1

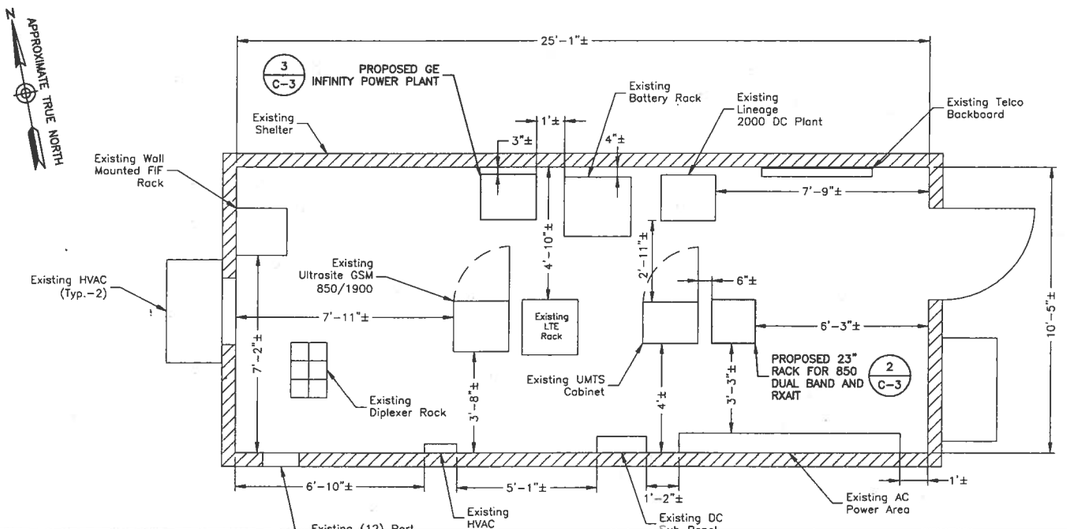


EXISTING EQUIPMENT PLAN

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

0' 2' 4' 6'

2



PROPOSED EQUIPMENT PLAN

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

0' 2' 4' 6'

3

NOTES:

1. NORTH SHOWN AS APPROXIMATE.
2. MOUNT ALL ANTENNAS, COAX, SURGE ARRESTORS, RRUS, ETC. IN ACCORDANCE WITH STRUCTURAL ANALYSIS.
3. NOT ALL INFORMATION IS SHOWN FOR CLARITY.

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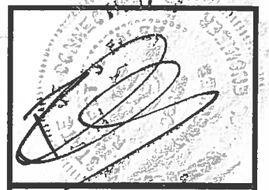


ROBERT J. FOLEY, P.E.
CT LICENSE No.: PEN.0029056

DRAWN BY:	JC
REVIEWED BY:	PD
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063026
SITE ADDRESS:	

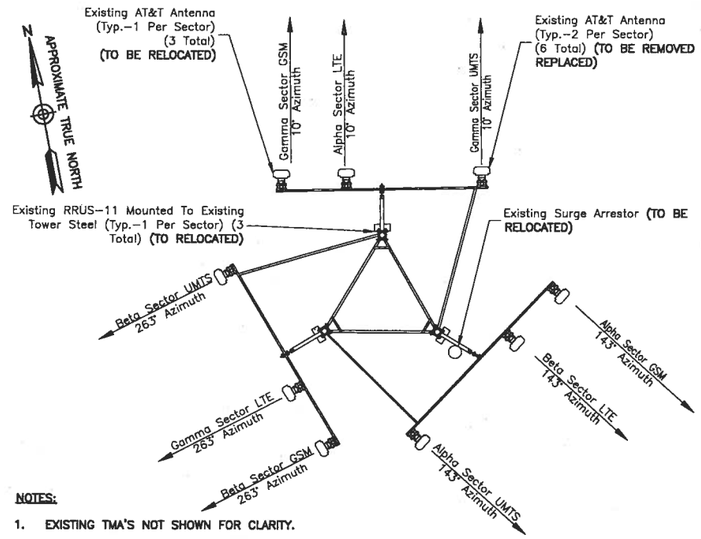
250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON
CT 06489
NEW HAVEN COUNTY

SHEET TITLE

SITE PLAN & EQUIPMENT PLANS

SHEET NUMBER

C-1

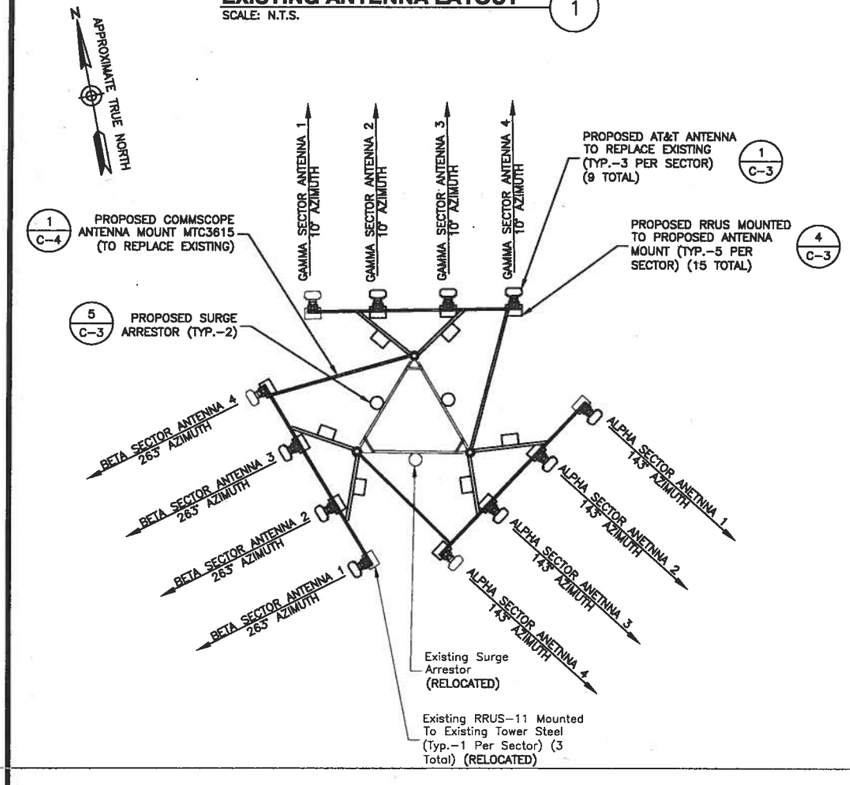


NOTES:

1. EXISTING TMA'S NOT SHOWN FOR CLARITY.
2. ALL EXISTING TMA'S ARE TO REMAIN.

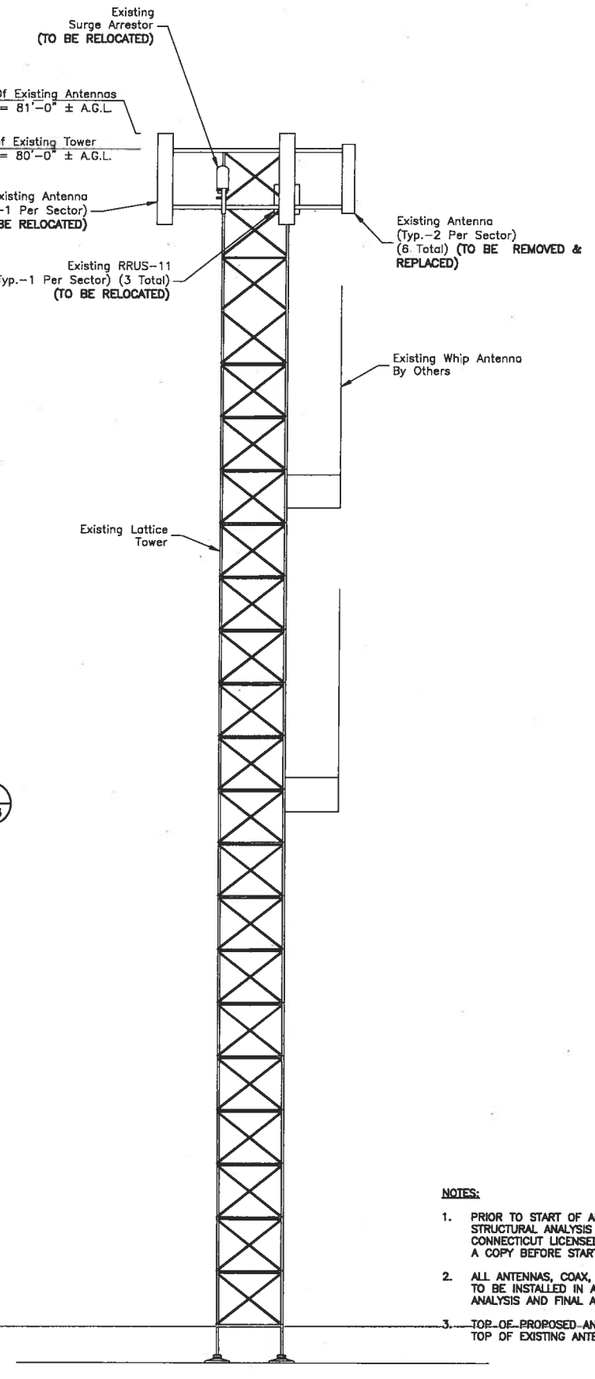
EXISTING ANTENNA LAYOUT (1)

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT (2)

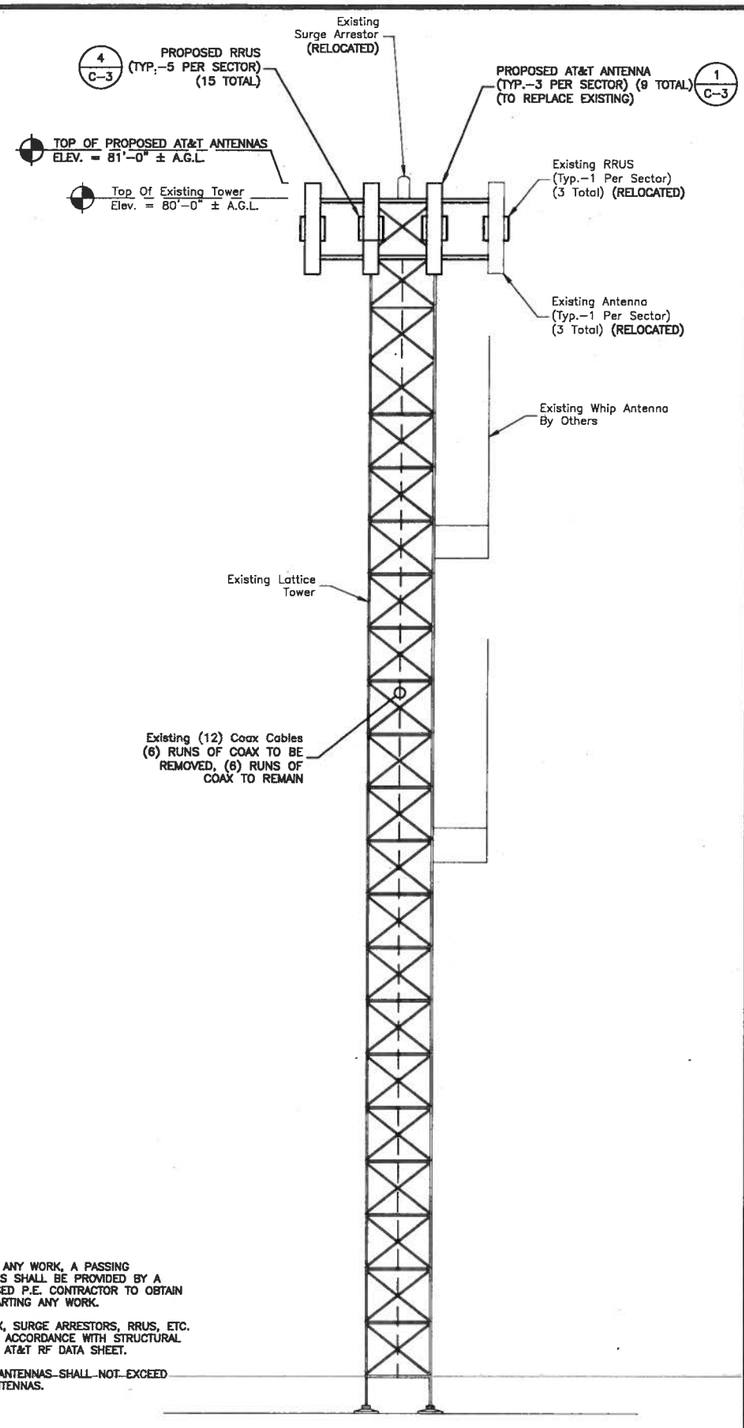
SCALE: N.T.S.



EXISTING EAST ELEVATION (3)

HSCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"

0' 5' 10'



NOTES:

1. PRIOR TO START OF ANY WORK, A PASSING STRUCTURAL ANALYSIS SHALL BE PROVIDED BY A CONNECTICUT LICENSED P.E. CONTRACTOR TO OBTAIN A COPY BEFORE STARTING ANY WORK.
2. ALL ANTENNAS, COAX, SURGE ARRESTORS, RRUS, ETC. TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS AND FINAL AT&T RF DATA SHEET.
3. TOP OF PROPOSED ANTENNAS SHALL NOT EXCEED TOP OF EXISTING ANTENNAS.

PROPOSED EAST ELEVATION (4)

SCALE: 1"=10' FOR 11"x17"
1"=5' FOR 22"x34"

0' 5' 10'

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JOB NUMBER:	50063028
SITE ADDRESS:	

250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON
CT 06489
NEW HAVEN COUNTY

SHEET TITLE

ANTENNA LAYOUTS & ELEVATIONS

SHEET NUMBER

C-2

EXISTING ANTENNA SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	KMW	AM-X-CD-16-65	72x11.8x5.9
	KMW	AM-X-CD-16-65	72x11.8x5.9
	KATHREIN	800-10121	54.5x10.3x5.9
BETA:	ANDREW	SBNH-1D6565C	96.4x11.9x7.1
	KMW	AM-X-CD-16-65	72x11.8x5.9
	KATHREIN	800-10121	54.5x10.3x5.9
GAMMA:	KMW	AM-X-CD-16-65	72x11.8x5.9
	ANDREW	SBNH-1D6565C	96.4x11.8x7.1
	KATHREIN	800-10121	54.5x10.3x5.9

PROPOSED ANTENNA SCHEDULE

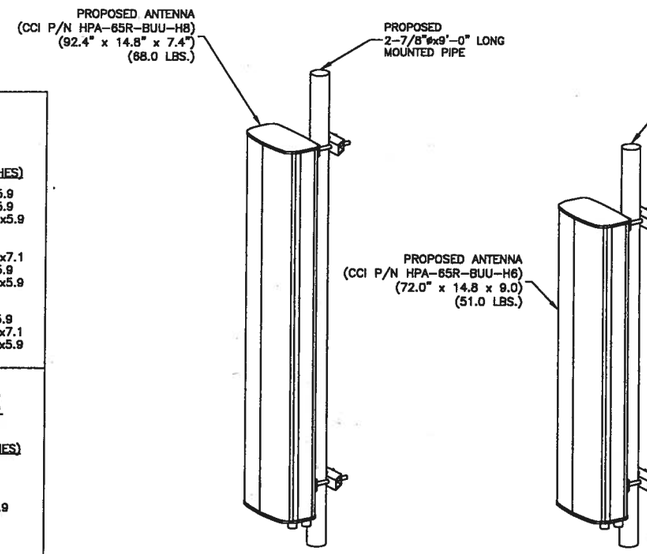
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	CCI	HPA-65R-BUU-H6	72x14.8x9
	CCI	HPA-65R-BUU-H6	72x14.8x9
	CCI	HPA-65R-BUU-H6	72x14.8x9
	KMW	AM-X-CD-16-65	72x11.8x5.9
BETA:	CCI	HPA-65R-BUU-H6	72x14.8x9
	CCI	HPA-65R-BUU-H6	72x14.8x9
	CCI	HPA-65R-BUU-H6	72x14.8x9
	ANDREWS	SBNH-1D6565C	96.4x11.9x7.1
GAMMA:	KMW	AM-X-CD-16-65	72x11.8x5.9
	CCI	HPA-65R-BUU-H8	92.4x14.8x7.4
	CCI	HPA-65R-BUU-H8	92.4x14.8x7.4
	CCI	HPA-65R-BUU-H8	92.4x14.8x7.4

EXISTING RRUS SCHEDULE

SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	ERICSSON	RRUS-11	19.7x17.0x7.2
BETA:	ERICSSON	RRUS-11	19.7x17.0x7.2
GAMMA:	ERICSSON	RRUS-11	19.7x17.0x7.2

PROPOSED RRUS SCHEDULE

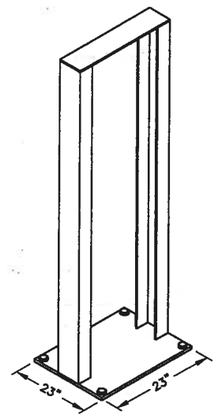
SECTOR	MAKE	MODEL#	SIZE (INCHES)
ALPHA:	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-E2	20.4x18.8x7.5
	ERICCSON	RRUS-32	29.9x13.3x6.7
BETA:	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-E2	20.4x18.8x7.5
	ERICSSON	RRUS-32	29.9x13.3x6.7
GAMMA:	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-11	19.7x17.0x7.2
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-12	20.4x18.5x7.5
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-A2	16.4x15.1x3.4
	ERICSSON	RRUS-E2	20.4x18.8x7.5
	ERICSSON	RRUS-32	29.9x13.3x6.7



NOTE:

1. PLEASE SEE RFDS FOR SPECIFIC ANTENNA MODEL.

ISOMETRIC ANTENNA DETAIL (1)
SCALE: N.T.S.

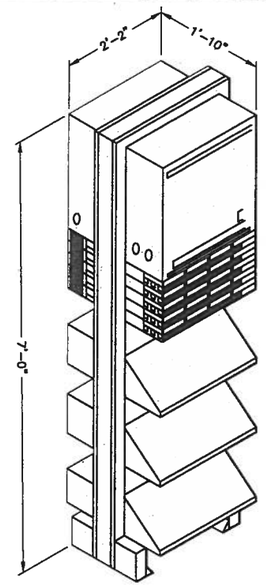


ISOMETRIC

NOTES:

1. CONTRACTOR SHALL SECURE RACK AS PER MANUFACTURER RECOMMENDATIONS.

23" x 23" INDOOR RACK (2)
N.T.S

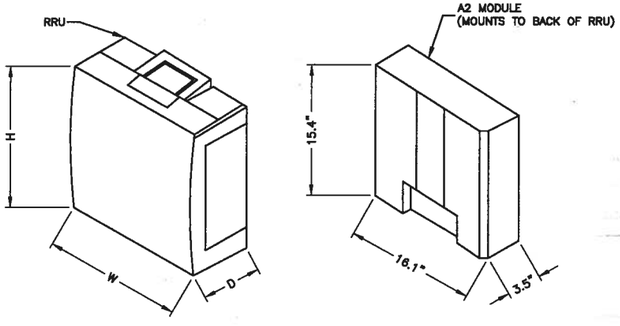


ISOMETRIC

NOTE:

1. CONTRACTOR SHALL SECURE RACK & POWER PLANT AS PER MANUFACTURER RECOMMENDATIONS.

GE INFINITY POWER PLANT DETAIL (3)
SCALE: N.T.S.



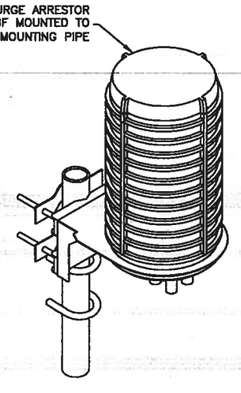
RRUS MODEL & DIMENSIONS

ERICSSON MODEL #	DIMENSIONS (HxWxD)
RRUS-11	19.7"x17.0"x7.2"
RRUS-12	20.4"x18.8"x7.5"
RRUS-E2	20.4"x18.8"x7.5"
RRUS-32	29.9"x13.3"x6.7"

RRU NOTES:

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

RRUS & A2 MODULE (4)
SCALE: N.T.S.



NOTE:

1. ALL ANTENNAS, COAX AND ANTENNA SUPPORT EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS AND FINAL RF DATA SHEET.

SURGE ARRESTOR MOUNTING DETAIL (5)
SCALE: N.T.S.

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CHECKED BY:	GHN
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JOB NUMBER:	50063026
SITE ADDRESS:	

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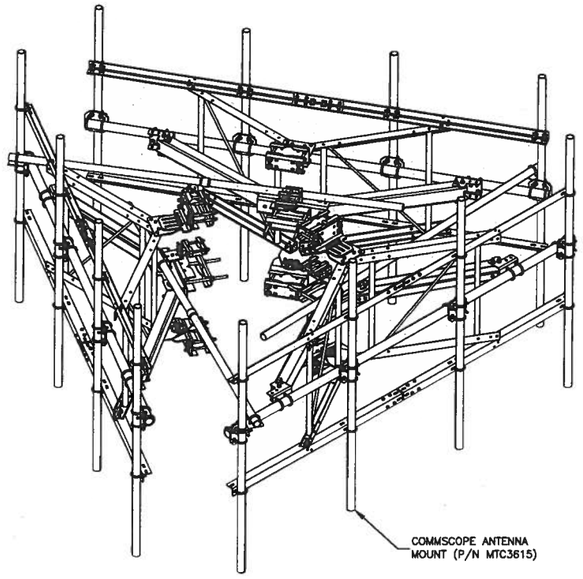
CT 06489
NEW HAVEN COUNTY

SHEET TITLE

ANTENNA SCHEDULE & CONSTRUCTION DETAILS I

SHEET NUMBER

C-3



ANTENNA MOUNT DETAIL (1)
SCALE: N.T.S.

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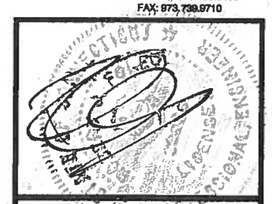

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CT LICENSE No. PEN.0029056

DRAWN BY:	JC
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CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063026
SITE ADDRESS:	

250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON
CT 06489
NEW HAVEN COUNTY

SHEET TITLE

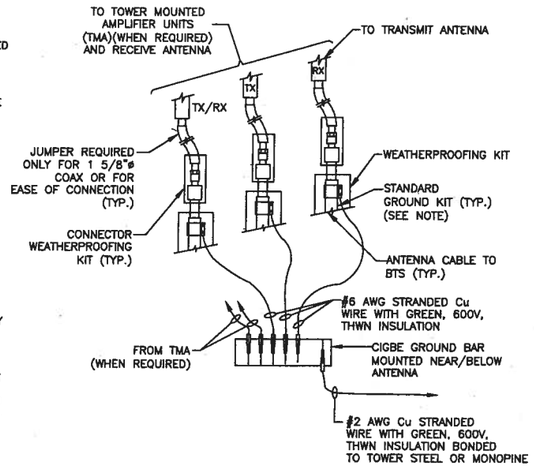
CONSTRUCTION DETAILS II

SHEET NUMBER

C-4

GROUNDING NOTES:

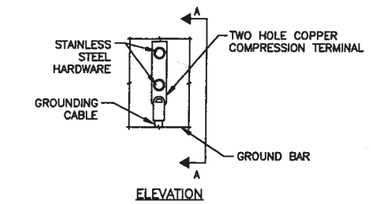
1. THE CONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ). THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA 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 8 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 SMARTLINK 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

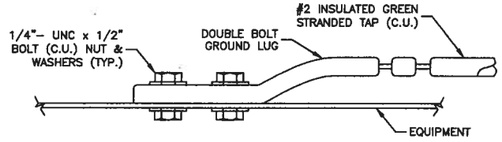


NOTES:

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

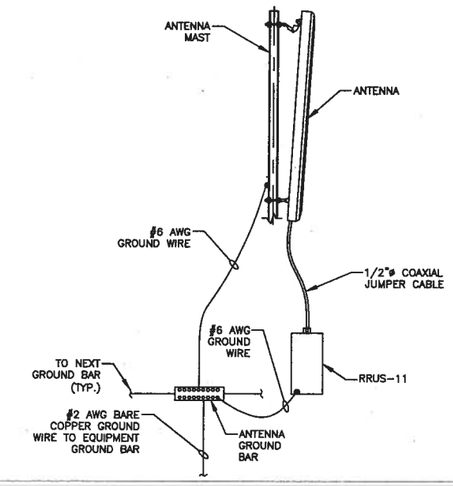
TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL — 2

SCALE: N.T.S.



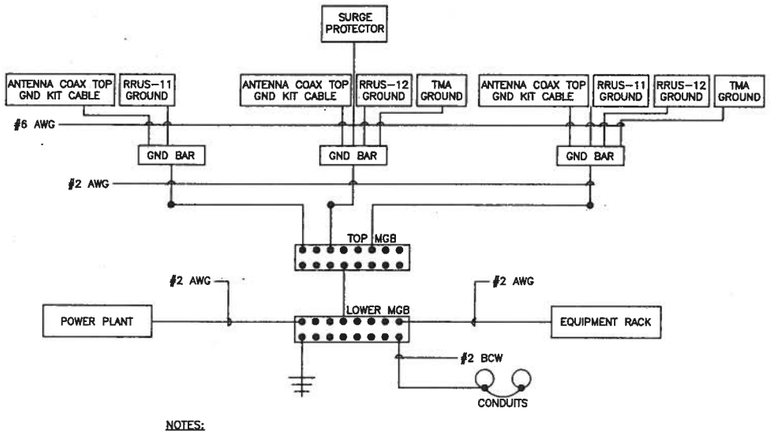
CONNECTION TO EQUIPMENT DETAIL — 3

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.

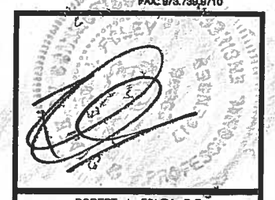
at&t
500 ENTERPRISE DRIVE SUITE 3A
ROCKY HILL, CT 06067

smartlink
1997 ANNAPOLIS EXCHANGE PARKWAY
SUITE 200
ANNAPOLIS, MD 21401

CT1033
SOUTHINGTON
ROGUS

CONSTRUCTION DRAWINGS		
1	04/21/14	ISSUED AS FINAL
0	04/14/14	ISSUED AS FINAL
A	03/07/14	PRELIMINARY SUBMISSION

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



ROBERT J. FOLEY, P.E.
CT LICENSE No. PEN.0029056

DRAWN BY:	JC
REVIEWED BY:	PD
CHECKED BY:	GHN
PROJECT NUMBER:	50063024
JOB NUMBER:	50063026
SITE ADDRESS:	

250 MERIDEN WATERBURY TURNPIKE, SOUTHINGTON
CT 06489
NEW HAVEN COUNTY

SHEET TITLE

GROUNDING NOTES & DETAILS

SHEET NUMBER

E-1

200 North Glebe Road, Suite 1000
Arlington, VA 22203-3728

Todd Oliver
Smartlink, LLC
Market Manager, NE
33 Boston Post Road, Suite 210
Marlborough, MA 01752

Reference: Smartlink LLC Site, Southington Rogus, 250 Meriden-Waterbury Turnpike**,** Southington, CT

Date: 25 April 2014

1. This letter will address the additional RF impact that adding AT&T LTE antennas to the referenced site. Attached are two documents which cover the modeled RF emissions from the site.

2. The first report, "RF Emissions Compliance Report," for the site complied by Sitesafe, uses the antenna patterns for the antennas at the site to calculate the General Public Maximum Permissible Exposure (MPE) on the ground. The total MPE of all the carriers is 5.573% (based on the General Public MPE) based on this modeling, with AT&T antennas emitting a maximum of 3.448% of the General Public MPE on the ground.

3. The second attachment has the calculations, used by the Connecticut Siting Council, which assumes the maximum antenna gain transmits in a spherical pattern where the worst case results would be at the base of the tower. That calculation, based on the existing antennas, gives a result of 89.6% of the General Public MPE, with the AT&T antennas emitting 68.22% of the General Public MPE on the ground, using the modeling predictions used by Connecticut Siting Council.

4. In either case, the site is compliant with FCC guidelines. If you have any questions regarding this site, the compliance report, please contact me at 719-434-0700 or dcotton@sitesafe.com.

Director, RF Compliance

Attachment 1

RF EMISSIONS COMPLIANCE REPORT

Smartlink on behalf of AT&T Mobility, LLC

AT&T Mobility, LLC Site FA: 10035233
AT&T Mobility, LLC USID: 140414
AT&T Mobility, LLC Site ID: CT1033
AT&T Mobility, LLC Site Name: Southington Rogus
250 Meriden-Waterbury Turnpike
Southington, CT
4/25/2014

Report Status:

AT&T Mobility, LLC Is Compliant

Prepared By:

Sitesafe, Inc.

200 North Glebe Road, Suite 1000 Arlington, VA 22203 Voice 703-276-1100
Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
AT&T Mobility, LLC
Southington, CT

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Sitesafe, Inc. in Arlington, Virginia; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by AT&T Mobility, LLC (See attached Site Summary and Carrier documents), and that AT&T Mobility, LLC's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "Southington Rogus" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of AT&T Mobility, LLC's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 3.448% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 5.573% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

Note: The following sources noted below were utilized in creating this report. Where there are discrepancies in data, the “Structural Analysis Report” document date April 14, 2014 will be used. The “Structural Analysis Report” has been signed and certified by a licensed professional engineer licensed by the State of Connecticut”. The “Structural Analysis Report” is believed to be the most accurate professional legal document at the site.

Sitesafe modeling software uses the antenna centerlines with the manufacturer antenna patterns whenever possible. The manufacturer antenna patterns for AT&T Mobility, LLC were used to determine the RF emissions from the AT&T Mobility, LLC antennas. Generic antennas were used for the other carriers on the tower as this information was not available, or provided at the time the study was conducted. Sitesafe has also referenced the AT&T Mobility, LLC construction diagram for this site.

The following documents below were the primary sources of data used to create this report. The primary document was the “Connecticut Siting Council” document. The AT&T Mobility, LLC construction diagram was referenced when appropriate.

Structural Analysis Report: 2014.04.14 - 59347 (CT1033) - SA - MOD LTE 01.11.14

AT&T Mobility, LLC Construction Drawing: 10035233.AE201.140414 (CT1033) Dewberry Rev 0

Connecticut Siting Council Data: AlphaExMPowDens 4-16-14

[1] This Power Density information was taken from the Connecticut Siting Council database dated April 16, 2014.
[2] This Power Density information is based on worse case assumptions from AT&T’s radio frequency engineers.

AT&T Mobility, LLC (Proposed)
Southington Rogus
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	1.621 %
AT&T Mobility, LLC	1.009 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed/Future)	0 %
AT&T Mobility, LLC (Proposed)	0.818 %
Rogus Electronics	1.072 %
Rogus Electronics	0.1 %
Rogus Electronics	0.151 %
Rogus Electronics	0.436 %
Rogus Electronics	0.302 %
Rogus Electronics	0.065 %
Composite Site MPE:	5.573 %

Attachment 2

Southington - 250 Meriden Waterbury Tpk

Power Density Calculations

Control Number	Site	Carrier	#Channels	ERP/Ch	Ant Ht	Power Density (mW/c	MHz	S	%MPE	Site Total
EM-CING-131-120705	Southington - 250 Meriden Waterbury Tpk	AT&T UMTS	2	565	78	0.0668	880	0.5867	11.38%	
EM-CING-131-120705	Southington - 250 Meriden Waterbury Tpk	AT&T UMTS	2	1077	78	0.1273	1900	1.0000	12.73%	
EM-CING-131-120705	Southington - 250 Meriden Waterbury Tpk	AT&T GSM	1	538	78	0.0318	880	0.5867	5.42%	
EM-CING-131-120705	Southington - 250 Meriden Waterbury Tpk	AT&T GSM	4	934	78	0.2208	1900	1.0000	22.08%	
EM-CING-131-120705	Southington - 250 Meriden Waterbury Tpk	AT&T LTE	1	1375	78	0.0813	734	0.4893	16.61%	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**Tran 1480**	**1**	**50**	**84**	**0.0025**	**450**	**0.3000**	**0.85%**	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**ASPA 680**	**1**	**50**	**83.5**	**0.0026**	**150**	**0.2000**	**1.29%**	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**Celwave**	**1**	**50**	**62**	**0.0047**	**50**	**0.2000**	**2.34%**	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**Hygain**	**1**	**50**	**62**	**0.0047**	**140**	**0.2000**	**2.34%**	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**Cellwave**	**1**	**50**	**59**	**0.0052**	**150**	**0.2000**	**2.58%**	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**Cellwave**	**1**	**50**	**59**	**0.0052**	**460**	**0.3067**	**1.68%**	
TS-SCLP-131-990317	**Southington - 250 Meriden Waterbury Tpk**	**Hygain**	**1**	**100**	**39**	**0.0236**	**28**	**0.2296**	**10.30%**	**89.60%**

Smartlink, LLC
6390 Fly Road
East Syracuse, NY 13057
(774) 369-3617

Kevin Clements
520 South Main Street, Suite 2531
Akron, OH 44311
(330) 572-3546
kclements@gpdgroup.com

GPD# 2014723.21.59347.01
April 14, 2014

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**59347**
	Site FA:	**10035233**
	Client #:	**CT1033**
	Site Name:	**SOUTHINGTON ROGUS**
	AT&T Project:	**MOD LTE 01.11.14**
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F, 2013 CTSBC & ASCE 7-05** **80-mph (fastest-mile) with 0" ice** **37-mph (fastest-mile) with 0.75" ice**
SITE DATA:		**250 Meriden Waterbury Tpke, Southington, CT 06489, Hartford County** **Latitude 41° 33' 24.473" N, Longitude 72° 51' 10.796" W** **Market: New England** **80' PiROD Self Support Tower**

Mr. Jerry Bruno,

GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results - LC5: Existing + Proposed

Tower Stress Level with Proposed Equipment:	90.2%	Pass
Foundation Ratio with Proposed Equipment:	90.5%	Pass

Note: See Appendix A for full output of all tower loading scenarios and corresponding capacities.

We at GPD appreciate the opportunity of providing our continuing professional services to you and Smartlink, LLC. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,

John N. Kabak, P.E.
Connecticut #: 28336

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to Smartlink, LLC. This report was commissioned by Mr. Jerry Bruno of Smartlink, LLC.

The proposed coax shall be installed on tower Face A near Leg A in 2 rows of 3 in order for the analysis to be valid. See Appendix C for the proposed coax layout.

LC5: Existing + Proposed Equipment*

Member	Capacity	Results
Leg	90.2%	Pass
Diagonal	78.8%	Pass
Horizontal	35.0%	Pass
Bolt Checks	67.0%	Pass
Anchor Rods	80.7%	Pass
Foundation	90.5%	Pass

*See Appendix A for full output of all tower loading scenarios and corresponding capacities.

ANALYSIS METHOD

tnxTower (Version 6.1.4.1), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Equipment Modification Form	AT&T Internal Loading Document, dated 1/15/2014	Siterra
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Geotechnical Report	GPD Job #: 2014723.59347.01, dated 4/4/2014	GPD
Previous Structural Analysis	B+T Job #: 84423.001.002, dated 9/14/2012	Siterra
Tower Mapping	GPD Job #: 2014723.21.59347.01, dated 4/14/2014	GPD
Foundation Mapping	GPD Job #: 2014723.59347.01, dated 4/4/2014	GPD

ASSUMPTIONS

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

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. 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.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. All existing loading was obtained from the tower mapping by GPD (job #: 2014723.21.59347.01, dated 4/14/2014), site photos, and the Equipment Modification Form and is assumed to be accurate.
12. Tower Leg A was assumed to be at 330 degrees based on the tower mapping by GPD and satellite imagery.
13. The proposed coax shall be installed on tower Face A near Leg A in 2 rows of 3 in order for the analysis to be valid. See Appendix C for the proposed coax layout.
14. The existing and proposed AT&T loading elevations have been modeled based on the tower mapping by GPD.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD Group should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	SOUTHINGTON ROGUS
Site Number	59347 (CT1033)
FA Number	10035233
Date of Analysis	4/14/2014
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	SST	
Tower Height (top of steel AGL)	80'	
Tower Manufacturer	PiROD	
Tower Model	U-5.0 x 80	
Tower Design	PiROD Job #: 115911-1	
Foundation Design	n/a	
Geotech Report	GPD Job #: 2014723.59347.01	4/4/2014
Tower Mapping	GPD Job #: 2014723.21.59347.01	4/14/2014
Previous Structural Analysis	B+T Job #: 84423.001.002	9/14/2012
Foundation Mapping	GPD Job #: 2014723.59347.01	4/4/2014

Design Parameters

Design Code Used	TIA/EIA-222-F 2013 CTSBC & ASCE 7-05
Location of Tower (County, State)	Hartford, CT
Basic Wind Speed (mph)	80 (fastest mile)
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

See next page for full output of all tower loading scenarios and corresponding capacities. In addition the remaining analysis outputs are only pertianing to the load case listed on the cover page of this analysis. Additional load case analysis outputs can be furnished by engineer upon request.

Steel Yield Strength (ksi)

Legs	50
Braces	36
Member Bolts	A325
Anchor Rods	50

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Face/Leg
Rogus Electronics	80	87.5	1	Omni	Unknown	15' Omni				Leg Mounted	3	Unknown	7/8"	Face A
Rogus Electronics	80	84	1	Omni	Unknown	8' Omni				Leg Mounted				
Rogus Electronics	80	84	1	Omni	Unknown	8' Omni				Leg Mounted				
AT&T Mobility	76	76	3	Panel	Kathrein	800 10121	23/143/263	3	Unknown	12' T-Frames	12	Unknown	7/8"	Face A
AT&T Mobility	76	76	4	Panel	KMW	AM-X-CD-16-65-00T-RET	23/143			on the same mounts	1	Conduit	2"	Face A
AT&T Mobility	76	76	2	Panel	Andrew	SBNH-1D6565C	263			on the same mounts	2	DC Power	3/4"	Face A
AT&T Mobility	76	76	6	TMA	CCI	DTMABP7819VG12A				on the same mounts	1	Fiber	3/8"	Face A
AT&T Mobility	76	76	3	RRU	Ericsson	RRUS 11				on the same mounts				
AT&T Mobility	76	76	1	Surge	Raycap	DC6-48-60-18-8F				on the same mounts				
Rogus Electronics	63	69	1	Omni	Unknown	12' Omni		2	Unknown	3' Standoffs	2	Unknown	7/8"	Face A
Rogus Electronics	63	67	1	Omni	Unknown	8' Omni				on the same mounts				
Rogus Electronics	50	60	1	Omni	Unknown	20' Omni		2	Unknown	3' Standoffs	1	Unknown	7/8"	Face A
Rogus Electronics	50	58	1	Omni	Unknown	16' Omni				on the same mounts	1	Unknown	1/2"	Face A
Misc.	38							2	Unknown	2' Standoffs				

Note: Prior to the installation of the proposed loading, all panel antennas, RRUs, and TMAs at 76' shall be removed. All other loading shall remain and be reused.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Face/Leg
AT&T Mobility	76	76	6	Panel	CCI	HPA-65R-BUU-H6K	143/263			on the existing mounts	6	LDF7-50A	1-5/8"	Face A
AT&T Mobility	76	76	3	Panel	CCI	HPA-65R-BUU-H8K	23			on the existing mounts				
AT&T Mobility	76	76	3	TMA	CCI	TMA				on the existing mounts				
AT&T Mobility	76	76	3	RRU	Ericsson	RRUS 12				on the existing mounts				
AT&T Mobility	76	76	3	RRU	Ericsson	RRUS 11				on the existing mounts				
AT&T Mobility	76	76	3	Module	Ericsson	RRUS A2 Module				on the existing mounts				

Note: The proposed loading shall be installed in addition to the remaining existing loading at the same elevation.

Note: The proposed coax shall be installed on tower Face A near Leg A in 2 rows of 3 in order for the analysis to be valid. See Appendix C for the proposed coax layout.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Face/Leg
AT&T Mobility	76	76	3	Generic	Generic	4001.68 Sq In Generic Appurtenance				on the existing mouts	19	Generic	7/8"	Face A

Note: The future loading shall be installed in addition to the existing loading at the same elevation.

Analysis Results (% Maximum Usage)

LC2A: Existing + Max AT&T Future		
Tower (%)		**87.3%**
Anchor Rods (%)		**77.8%**
Foundation (%)		**88.0%**
Foundation Adequate?		Yes

Analysis Results (% Maximum Usage)

LC2B: Existing + Max AT&T Calculated Future		
Max Sq. In. Loading Elev. Load:		***N/A***
Max Sq. In. Linear Appurtenence Elev. Load		***N/A***
Tower (%)		**N/A**
Anchor Rods (%)		**N/A**
Foundation (%)		**N/A**
Foundation Adequate?		N/A

Note: To be run only if LC2a fails.

Analysis Results (% Maximum Usage)

LC3: Existing		
Tower (%)		**72.3%**
Anchor Rods (%)		**64.0%**
Foundation (%)		**74.7%**
Foundation Adequate?		Yes

Analysis Results (% Maximum Usage)

LC5: Existing + Proposed		
Tower (%)		**90.2%**
Anchor Rods (%)		**80.7%**
Foundation (%)		**90.5%**
Foundation Adequate?		Yes

APPENDIX B

tnxTower Output File

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 80.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.00 ft at the top and 5.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 37 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement ft*	*Face Offset in*	*Lateral Offset (Frac FW)*	*#*	*# Per Row*	*Clear Spacing in*	*Width or Diameter in*	*Perimeter in*	*Weight plf*
Safety Line 3/8	B	Yes	Ar (CfAe)	80.00 - 8.00	0.0000	0	1	1	0.3750	0.3750		0.22
Coax Bracket (5/20') USID 59347	A	Yes	Af (CfAe)	80.00 - 8.00	2.5000	-0.1	1	1	0.5323	0.5323	2.1292	5.00
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	50.00 - 8.00	2.2500	0.1	4	2	0.5000	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	80.00 - 50.00	2.2500	0.1	3	2	0.5000	1.0900		0.33
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	76.00 - 8.00	1.0000	-0.1	12	6	1.5000	1.0900		0.33
2" Flex Conduit	A	Yes	Ar (CfAe)	76.00 - 8.00	0.0000	0.1	1	1	2.0000	2.0000		0.32
3/4" DC Power Line	A	Yes	Ar (CfAe)	76.00 - 8.00	0.0000	0.1	2	2	0.7500	0.0000		0.33
3/8" Fiber Cable	A	Yes	Ar (CfAe)	76.00 - 8.00	0.0000	0.1	1	1	0.3750	0.0000		0.10
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	63.00 - 8.00	3.5000	-0.28	2	2	1.5000	1.0900		0.33
LDF4-50A (1/2 FOAM)	A	Yes	Ar (CfAe)	50.00 - 8.00	3.0000	0.13	1	1	0.6300	0.6300		0.15
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	76.00 - 8.00	0.0000	0.35	6	3	0.5000	1.9800		0.82

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
15' Omni	A	From Leg	0.00 0.00 7.50	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.19 6.73 8.28 11.37 15.10	5.19 6.73 8.28 11.37 15.10	57.69 94.50 140.97 263.54 631.40
8' Omni	B	From Leg	0.00 0.00 4.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	20.00 32.45 50.14 101.86 274.93
8' Omni	C	From Leg	0.00 0.00 4.00	0.0000	80.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.60 2.42 3.24 4.23 6.32	1.60 2.42 3.24 4.23 6.32	20.00 32.45 50.14 101.86 274.93
Pirod 12' T-Frame	A	From Leg	0.90 1.20 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.76 12.74 16.72 24.68 40.60	11.22 15.70 20.18 29.14 47.06	344.92 500.17 655.42 965.92 1586.92
Pirod 12' T-Frame	B	From Leg	0.90 1.20 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.76 12.74 16.72 24.68 40.60	11.22 15.70 20.18 29.14 47.06	344.92 500.17 655.42 965.92 1586.92
Pirod 12' T-Frame	C	From Leg	0.90 1.20 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.76 12.74 16.72 24.68 40.60	11.22 15.70 20.18 29.14 47.06	344.92 500.17 655.42 965.92 1586.92
DC6-48-60-18-8F Surge Suppression Unit	C	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	18.90 36.62 56.82 105.34 239.02
(3) HPA-65R-BUU-H8K w/ Mount Pipe	A	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	13.37 14.10 14.83 16.31 19.37	9.42 10.82 12.07 14.24 18.79	94.20 189.07 293.65 535.90 1190.28
(3) HPA-65R-BUU-H6-K w/ Mount Pipe	B	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	8.11 9.30 10.21 12.17 16.35	76.55 158.03 247.79 455.80 1019.77
(3) HPA-65R-BUU-H6-K w/ Mount Pipe	C	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	10.60 11.27 11.91 13.21 15.93	8.11 9.30 10.21 12.17 16.35	76.55 158.03 247.79 455.80 1019.77
TMA	A	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.44 0.56 0.69 0.97	19.00 26.12 35.11 59.49

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						4" Ice	0.00	1.63	139.29
TMA	B	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.44 0.56 0.69 0.97 1.63	19.00 26.12 35.11 59.49 139.29
TMA	C	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.44 0.56 0.69 0.97 1.63	19.00 26.12 35.11 59.49 139.29
RRUS 11	A	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	50.70 71.50 95.33 152.89 312.97
RRUS 11	B	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	50.70 71.50 95.33 152.89 312.97
RRUS 11	C	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	50.70 71.50 95.33 152.89 312.97
RRUS 12	A	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	58.00 81.22 107.64 170.88 344.31
RRUS 12	B	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	58.00 81.22 107.64 170.88 344.31
RRUS 12	C	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.67 3.93 4.19 4.75 5.96	1.49 1.67 1.87 2.28 3.21	58.00 81.22 107.64 170.88 344.31
RRUS A2 MODULE	A	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.87 2.05 2.24 2.66 3.58	0.42 0.53 0.65 0.91 1.54	21.16 31.49 44.03 76.55 176.75
RRUS A2 MODULE	B	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.87 2.05 2.24 2.66 3.58	0.42 0.53 0.65 0.91 1.54	21.16 31.49 44.03 76.55 176.75
RRUS A2 MODULE	C	From Leg	1.80 2.40 0.00	53.0000	76.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.87 2.05 2.24 2.66 3.58	0.42 0.53 0.65 0.91 1.54	21.16 31.49 44.03 76.55 176.75
3' Standoff - Round (GPD)	A	From Leg	1.50	0.0000	63.00	No Ice	1.14	1.96	44.86

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	1.79	2.86	66.25
			0.00			1" Ice	2.44	3.76	87.64
						2" Ice	3.74	5.56	130.42
						4" Ice	6.34	9.16	215.98
3' Standoff - Round (GPD)	B	From Leg	1.50	0.0000	63.00	No Ice	1.14	1.96	44.86
			0.00			1/2" Ice	1.79	2.86	66.25
			0.00			1" Ice	2.44	3.76	87.64
						2" Ice	3.74	5.56	130.42
						4" Ice	6.34	9.16	215.98
12' Omni	A	From Leg	3.00	0.0000	63.00	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.23	4.23	42.30
			6.00			1" Ice	5.47	5.47	72.34
						2" Ice	7.69	7.69	156.25
						4" Ice	10.71	10.71	423.63
8' Omni	B	From Leg	3.00	0.0000	63.00	No Ice	1.60	1.60	20.00
			0.00			1/2" Ice	2.42	2.42	32.45
			4.00			1" Ice	3.24	3.24	50.14
						2" Ice	4.23	4.23	101.86
						4" Ice	6.32	6.32	274.93
3' Standoff - Round (GPD)	A	From Leg	1.50	0.0000	50.00	No Ice	1.14	1.96	44.86
			0.00			1/2" Ice	1.79	2.86	66.25
			0.00			1" Ice	2.44	3.76	87.64
						2" Ice	3.74	5.56	130.42
						4" Ice	6.34	9.16	215.98
3' Standoff - Round (GPD)	B	From Leg	1.50	0.0000	50.00	No Ice	1.14	1.96	44.86
			0.00			1/2" Ice	1.79	2.86	66.25
			0.00			1" Ice	2.44	3.76	87.64
						2" Ice	3.74	5.56	130.42
						4" Ice	6.34	9.16	215.98
16' Omni	A	From Leg	3.00	0.0000	50.00	No Ice	5.54	5.54	60.00
			0.00			1/2" Ice	7.18	7.18	99.23
			8.00			1" Ice	8.83	8.83	148.73
						2" Ice	12.19	12.19	279.19
						4" Ice	16.43	16.43	670.17
20' Omni	B	From Leg	3.00	0.0000	50.00	No Ice	4.00	4.00	40.00
			0.00			1/2" Ice	6.03	6.03	70.77
			10.00			1" Ice	8.07	8.07	114.12
						2" Ice	12.20	12.20	239.14
						4" Ice	20.59	20.59	646.79
2' Standoff - Round (GPD)	A	From Leg	1.00	0.0000	38.00	No Ice	1.14	1.62	37.40
			0.00			1/2" Ice	1.79	2.41	55.34
			0.00			1" Ice	2.44	3.20	73.28
						2" Ice	3.74	4.78	109.16
						4" Ice	6.34	7.94	180.92
2' Standoff - Round (GPD)	B	From Leg	1.00	0.0000	38.00	No Ice	1.14	1.62	37.40
			0.00			1/2" Ice	1.79	2.41	55.34
			0.00			1" Ice	2.44	3.20	73.28
						2" Ice	3.74	4.78	109.16
						4" Ice	6.34	7.94	180.92

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.00	15' Omni	28	4.7055	0.4346	0.1629	57051
76.00	Pirod 12' T-Frame	28	4.3251	0.4291	0.1557	57051
63.00	3' Standoff - Round (GPD)	28	3.1214	0.4015	0.1301	16795
50.00	3' Standoff - Round (GPD)	29	2.0366	0.3413	0.0974	10518
38.00	2' Standoff - Round (GPD)	29	1.2048	0.2639	0.0668	8095

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	80	Leg	A325N	0.6250	4	5779.50	12885.40	0.449 ✔	1.333	Bolt DS
T2	60	Leg	A325N	0.6250	5	10645.30	12885.40	0.826 ✔	1.333	Bolt DS
T3	40	Leg	A325N	0.7500	5	16563.40	18555.00	0.893 ✔	1.333	Bolt DS
T4	20	Leg	A572-50	1.7500	2	55523.60	51593.30	1.076 ✔	1.333	Bolt Tension

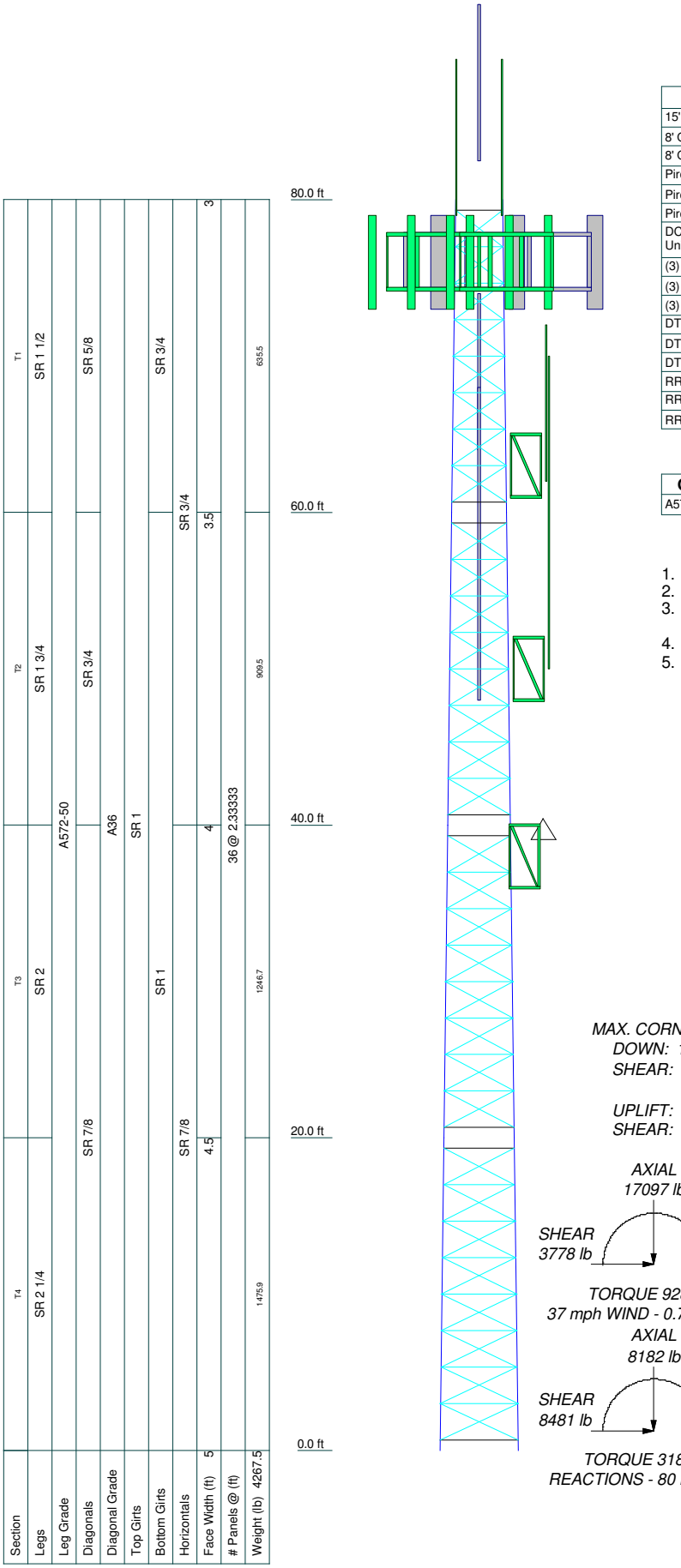
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	80 - 60	Leg	1 1/2	1	-24836.40	47255.9	52.6	Pass
T2	60 - 40	Leg	1 3/4	65	-56053.10	70625.1	79.4	Pass
T3	40 - 20	Leg	2	129	-87214.70	97965.6	89.0	Pass
T4	20 - 0	Leg	2 1/4	193	-116584.00	129240.21	90.2	Pass
T1	80 - 60	Diagonal	5/8	15	-2451.90	3112.95	78.8	Pass
T2	60 - 40	Diagonal	3/4	79	-2949.88	5340.08	55.2	Pass
T3	40 - 20	Diagonal	7/8	143	-3221.91	8207.89	39.3	Pass
T4	20 - 0	Diagonal	7/8	207	-3432.08	6989.62	49.1	Pass
T1	80 - 60	Horizontal	3/4	23	-443.07	4169.66	10.6	Pass
T2	60 - 40	Horizontal	3/4	87	-884.24	3164.88	27.9	Pass
T3	40 - 20	Horizontal	7/8	186	-1506.68	5314.24	28.4	Pass
T4	20 - 0	Horizontal	7/8	250	-1474.35	4216.88	35.0	Pass
T1	80 - 60	Top Girt	1	5	-118.71	13959.97	0.9	Pass
T2	60 - 40	Top Girt	1	69	-1202.01	11755.38	10.2	Pass
T3	40 - 20	Top Girt	1	133	-1155.91	9342.68	12.4	Pass
T4	20 - 0	Top Girt	1	197	-1037.59	7388.97	14.0	Pass
T1	80 - 60	Bottom Girt	3/4	8	-1306.84	3884.99	33.6	Pass
T2	60 - 40	Bottom Girt	1	71	-1771.78	9403.64	18.8	Pass
T3	40 - 20	Bottom Girt	1	135	-1930.81	7431.82	26.0	Pass
T4	20 - 0	Bottom Girt	1	199	-1901.04	6020.95	31.6	Pass

Summary	ELC:	LC5
Leg (T3)	90.2	Pass
Diagonal (T1)	78.8	Pass
Horizontal (T4)	35.0	Pass
Top Girt (T4)	14.0	Pass
Bottom Girt (T1)	33.6	Pass
Bolt Checks	80.7	Pass
Rating =	90.2	Pass

APPENDIX C

Tower Elevation Drawing



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
15' Omni	80	RRUS 12	76
8' Omni	80	RRUS 12	76
8' Omni	80	RRUS 12	76
Pirod 12' T-Frame	76	RRUS A2 MODULE	76
Pirod 12' T-Frame	76	RRUS A2 MODULE	76
Pirod 12' T-Frame	76	RRUS A2 MODULE	76
DC6-48-60-18-8F Surge Suppression Unit	76	3' Standoff - Round (GPD)	63
		3' Standoff - Round (GPD)	63
(3) HPA-65R-BUU-H8K w/ Mount Pipe	76	12' Omni	63
(3) HPA-65R-BUU-H6-K w/ Mount Pipe	76	8' Omni	63
(3) HPA-65R-BUU-H6-K w/ Mount Pipe	76	3' Standoff - Round (GPD)	50
DTMABP7819VG12A	76	3' Standoff - Round (GPD)	50
DTMABP7819VG12A	76	16' Omni	50
DTMABP7819VG12A	76	20' Omni	50
RRUS 11	76	2' Standoff - Round (GPD)	38
RRUS 11	76	2' Standoff - Round (GPD)	38
RRUS 11	76		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 90.2%

MAX. CORNER REACTIONS AT BASE:
DOWN: 116562 lb
SHEAR: 3229 lb

UPLIFT: -110971 lb
SHEAR: 4392 lb

AXIAL
17097 lb

SHEAR
3778 lb

MOMENT
206845 lb-ft

TORQUE 928 lb-ft
37 mph WIND - 0.7500 in ICE

AXIAL
8182 lb

SHEAR
8481 lb

MOMENT
492919 lb-ft

TORQUE 3184 lb-ft
REACTIONS - 80 mph WIND

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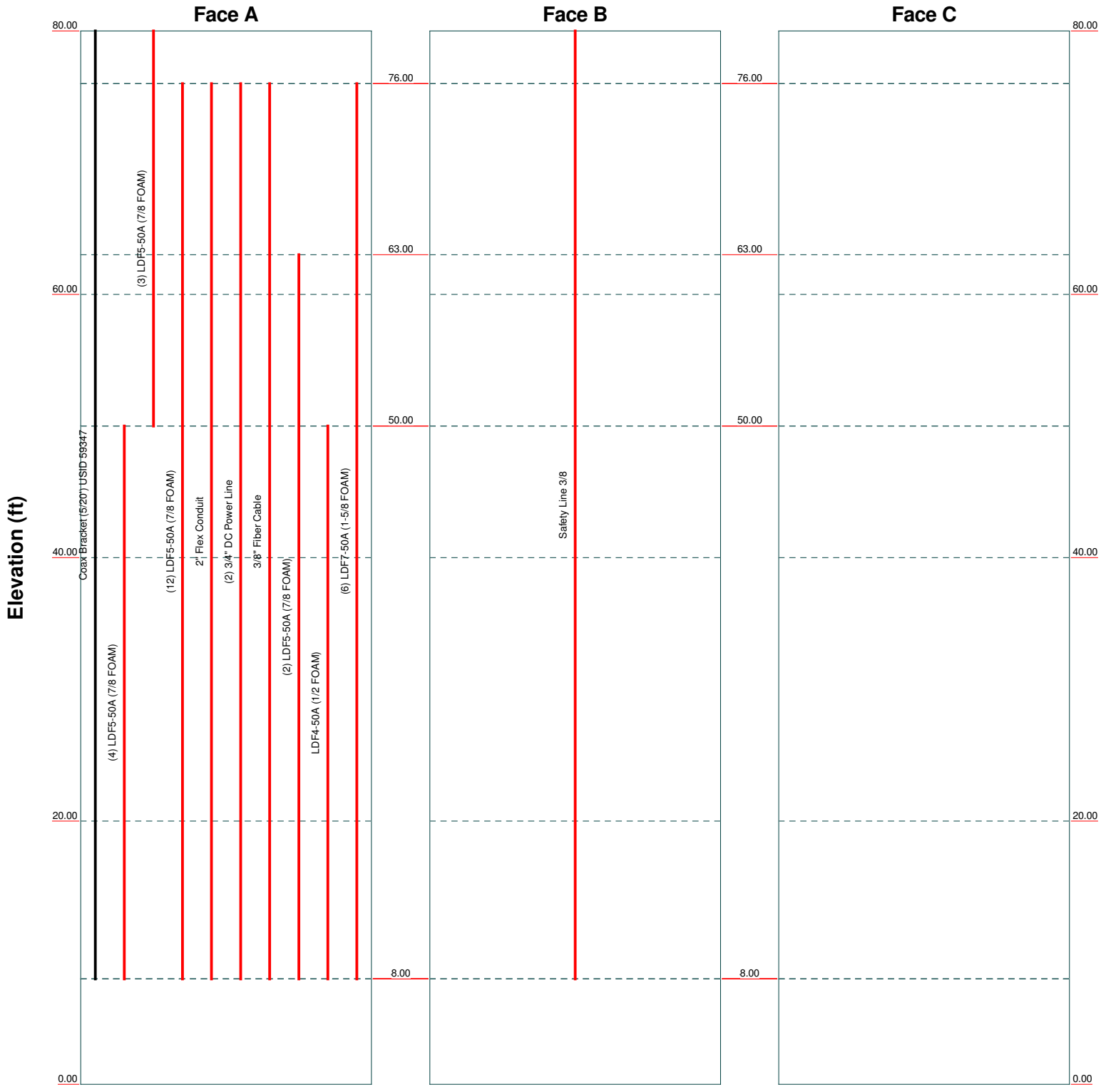
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***59347 (CT1033) SOUTHINGTON ROGUS***			
Project: ***2014723.21.59347.01***			
Client: Smartlink, LLC	Drawn by: kliccar		App'd:
Code: TIA/EIA-222-F	Date: 04/14/14		Scale: NTS
Path: C:\Users\kliccar\Desktop\TNX Temporary\59347.01 SOUTHINGTON ROGUS (SmartLink)\tnx\59347 (CT1033) SOUTHINGTON ROGUS.eri			Dwg No. E-1

Feed Line Distribution Chart
0' - 80'

Round | Flat | App In Face | App Out Face | Truss Leg

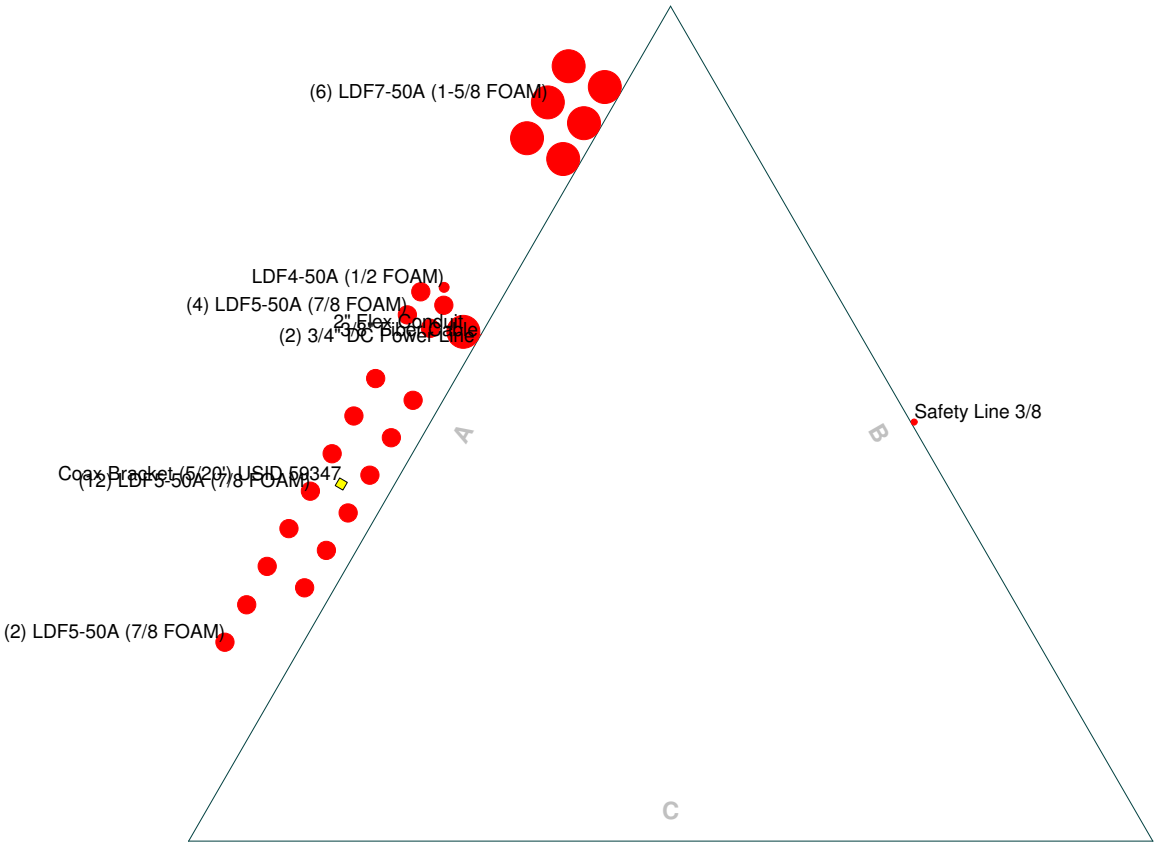


GPD Group
520 South Main St, Suite 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***59347 (CT1033) SOUTHINGTON ROGUS***		
Project: ***2014723.21.59347.01***		
Client: Smartlink, LLC	Drawn by: kliccar	App'd:
Code: TIA/EIA-222-F	Date: 04/14/14	Scale: NTS
Path: C:\Users\kliccar\Desktop\TNX Temporary\59347.01 SOUTHINGTON ROGUS (SmartLink)\tnx\59347 (CT1033) SOUTHINGTON ROGUS.eri		Dwg No. E-7

Feed Line Plan

Round Flat App In Face App Out Face



GPD Group
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Path: C:\Users\kliccar\Desktop\TNX Temporary\59347.01 SOUTHINGTON ROGUS (SmartLink)\tnx\59347 (CT1033) SOUTHINGTON ROGUS.eri			Dwg No. E-7

APPENDIX D

Foundation Analysis

Mat Foundation Analysis
59347 (CT1033) SOUTHINGTON ROGUS
2014723.21.59347.01

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Square
Reinforcing Known	No
Max Capacity	1

Tower Reactions		
Moment, M	492.92	k-ft
Axial, P	8.18	k
Shear, V	8.48	k

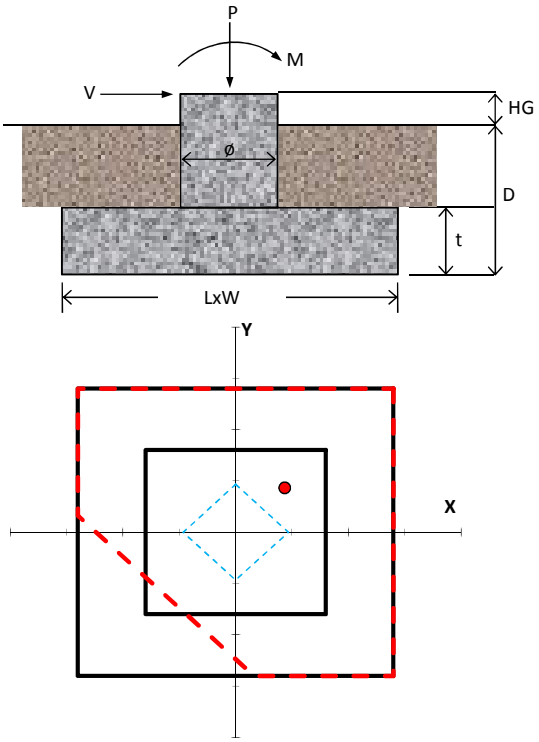
Pad & Pier Geometry		
Pier Width, ø	8	ft
Pad Length, L	14	ft
Pad Width, W	14	ft
Pad Thickness, t	3	ft
Depth, D	5.5	ft
Height Above Grade, HG	0.5	ft

Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	3	ksi
Clear Cover	3	in
Reinforced Top & Bottom?		
Pad Reinforcing Size		
Pad Quantity Per Layer		
Pier Rebar Size		
Pier Quantity of Rebar		

Soil Properties		
Soil Type	Granular	
Soil Unit Weight	115	pcf
Angle of Friction, ø	30	°
Bearing Type	Net	
Ultimate Bearing	5	ksf
Water Table Depth	99	ft
Frost Depth	3.5	ft

Bearing Summary			Load Case
Qxmax	1.99	ksf	1D+1W
Qymax	1.99	ksf	1D+1W
Qmax @ 45°	2.55	ksf	1D+1W
$Q_{(all)\ Gross}$	2.82	ksf	
Controlling Capacity	**90.5%**	**Pass**	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	2.27	≥1.5	1D+1W
FS(ot)y	2.27	≥1.5	1D+1W
Controlling Capacity	**66.2%**	**Pass**	



AT&T LETTER OF EXPLANATION

MUST PROVIDE WITH EACH STRUCTURAL ANALYSIS

SOUTHINGTON ROGUS
59347 (CT1033)
John N. Kabak, P.E.
4/14/2014

ALL STRUCTURES	Statement in COL A is Correct	VARIANCE from Col A	N/A	Alternate Value / Concept Used	Explanation	Comments / Reference
Structure Analyzed to F Code	X					
Note: ALL G analyses MUST be justified. A simple notation of jurisdiction requirement will suffice. F BUILT TOWERS in G Code jurisdictions MUST Have the new "5% Grace" Test Applied.G to be applied ONLY where this is exceeded. This 5% test applies to "like for like" only						
Guy Tensions Adjusted Within Code to Find Optimum tension / Minimum Reinforcement (Applies to Guyed Tower Failures Only). Note : AT&T requires a pulse chart for altered Tensions			X	SST		
Antenna Azimuths Inputted Per AT&T Information Note Default Azimuths in PL	X					
All Yield Stresses > = 50 ksi (legs)	X					
All Yield Stresses > = 36 ksi (Diagonals and Horizontals))	X					
Structures Designated Class II (G Only) - if site meets criteria for Class III, AT&T must approve justification *in advance of completing the analysis.*			X	F-Code		
Exposure B Rating Used (Topography) - Exposure C or higher requires written memo with LOE with details per EBP Document. Same applies for Topography rating higher than 2 also requires memo from PE with details per EBP document. IF PE is CHANGING TOPO cat from last SA of record - MEMO with LOE also required!			X	F-Code		
K value for Slenderness ratio < 1.0 (provide memo if K value 1.0 or greater).	X					
Shielding of All Appurtenances Used when Appropriate PER 2.6.9.4 (G Code Only)			X	F-Code		
0.75 Reduction "Shape" Factor (Figure 2.6) for platform mounts, 0.8 for T-Boom Mounts Used (G Only)			X	F-Code		
Pipes and round Members have 1.0 Drag Factors. Note if Pipe is attached to flat antenna, these must be considered separately if differing Drag factors are Used			X	F-Code		
Are Tower Diagonals Designed as "Tension Only"		X		Tension/Compression		
MODIFICATION SECTION	**Statement in COL A is Correct**	**Deviation from Col A**	**N/A**	**Alternate Value / Concept Used**	**Explanation**	**Comments / Reference**
Guyed						
Guyed Only: Reinforcement Recommendation accompanies Optimum Guy Tensioning Scenario.						
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member						
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.						
Self Supporting						

Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member						
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.						
Monopole						
Compression Collars						
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.						
Foundation						
Guyed Anchor Failure: Berm Solution						
SS Foundation Pad and Pier Failure Berm						
SS Foundation Caisson / Concrete Cap						
Monopole: Cap						

NOTE: EOR OF RECORD MUST PROVIDE MEMO w/ LOE WHEN CURRENT ANALYSIS DEVIATES FROM PRIOR ANALYSIS OF RECORD FOR THIS SITE !!!

(TO EXPLAIN CHANGES IN ENGINEERING IN CURRENT REPORT -- EXAMPLES: TOPO/EXPOSURE/K-VALUE/CLASSIFICATION)

GPD# 2014723.59347.01
April 4, 2014

GEOTECHNICAL REPORT

Client Site Number:	**CT1033**
Site USID:	**59347**
FA Number:	**10035233**
Site Name:	**SOUTHINGTON ROGUS**
Site Data:	**250 Meriden Waterbury Turnpike** **Southington (Hartford County), Connecticut 06489** **Latitude 41° 33' 24.473'' N, Longitude 72° 51' 10.796'' W** **Existing 80-ft PIROD Self-Support Tower**

GPD Group is pleased to submit this **Geotechnical Report** for the aforementioned tower. The purpose of the following report is to summarize the soil/rock conditions encountered during the subsurface exploration at this site and provide geotechnical engineering parameters for structural evaluation of the existing tower foundation system.

We at *GPD Group* appreciate the opportunity to provide continuing professional services to you. Please feel free to contact us with any questions or if you need additional assistance.

Respectfully Submitted,

Dustin Vincent, E.I.T.
Geotechnical Specialist

STATE OF CONNECTICUT
HEWITT T. WILKINSON
No. 26891
LICENSED
PROFESSIONAL ENGINEER

Chip Wilkinson, P.E.
Practice Leader
Connecticut P.E. License #26891

Attachments:
Site Location Map
Satellite Photograph
Topographic Map
Boring Log

DOCUMENTS REVIEWED

Document	Prepared By	Project No.	Date
Structural Analysis Report	B&T Engineering, Inc.	84423.001.0002	September 14, 2012

EXISTING FOUNDATION SYSTEM

Based on the results presented in our Foundation NDT Mapping Report (GPD Project No. 2014723.59347.01) dated April 4, 2014 the foundation system appears to be comprised of an 8-ft square x 2.5-ft tall formed concrete pedestal rising about 0 to 6 inches above grade supported on a 14-ft square x 3-ft thick concrete mat founded about 5 to 5.5 feet below grade.

GEOTECHNICAL RECOMMENDATIONS

Based on the results of this study, the following net design parameters may be used to evaluate the capacity of the foundation system. A factor of safety on the order of 2 to 3 should be applied to the ultimate skin friction and bearing pressure values provided below. The cohesion, internal angle of friction and unit weight parameters along with the vertical modulus of subgrade reaction (pci) and sliding friction coefficient values given in the following table are based on the results of the sample boring, published values and our past experience with similar soil/rock types. These values should, therefore, be considered approximate.

Self-Support Tower – Pedestal – Ultimate Design Parameters

Depth (feet)	Soil/Rock Description	Unit Weight (pcf)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)	Sliding Friction Coefficient @ Base	Vertical Modulus of Subgrade Reaction (pci)	Internal Angle of Friction (Degrees)	Cohesion (psf)
0 – 3.5	Topsoil and loose fine to coarse silty sand with gravel	110	Ignore	Ignore	-	-	-	-
3.5 – 7	Loose silty sand and loose sandy silt with gravel	115	300	5,000	0.35	80	30	0
7 – 10	Dense sandy silt with gravel	125	700	12,000	0.40	200	36	0
10 – 14	Very dense silt with sand, clay and gravel	130	1,000	15,000	0.40	250	38	0
14 – 20	Highly weathered rock	145	1,800	18,000	0.50	300	42	0
20 – 25	Weathered rock	145	2,800	21,000	0.50	350	44	0
25 – 30	Bedrock	155	6,000	30,000	0.60	500	0	15,000

The above parameters are provided for the evaluation of the existing tower foundation system. In the event that modifications or new tower construction is required, these parameters are not considered valid and GPD Group should be notified immediately to provide appropriate design parameters, as warranted.

GEOTECHNICAL EXPLORATION

Drilling and soil sampling was performed by New England Boring Contractors of CT, Inc. using a truck-mounted Mobile B-53 drill rig with hollow stem augers and an automatic SPT hammer. One (1) sample boring was drilled near the tower foundation to a depth of about thirty (30) feet. Representative samples were obtained by the split-barrel sampling procedure in general accordance with appropriate ASTM standards. In the split-barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound hammer with a free fall of 30 inches, is the standard penetration resistance value (N). Sampling depths and penetration distance, plus the standard penetration resistance values, are shown on the attached boring log. The samples were sealed and mailed to our laboratory for soil classification in general accordance with appropriate ASTM standards.

The subsurface conditions encountered at the boring location are indicated on the attached boring log. The stratification boundaries on the boring log represent the approximate location of changes in soil/rock types; in-situ, the transition between materials may be gradual. The boring log includes visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples.

GROUNDWATER

Groundwater was not encountered during drilling operations as noted on the attached boring log. It should be noted that fluctuations in the groundwater level can occur and perched water can develop over low permeability soil or rock strata following periods of heavy or prolonged precipitation. Long term monitoring in cased holes or piezometers would be necessary to accurately evaluate the potential range of groundwater conditions on the site.

ROCK EXPLORATION

The boring was advanced into the rock using core drilling procedures in general accordance with the appropriate ASTM standard. The rock was classified in the field and the "percent recovery" and rock quality designation (RQD) values were determined.

The "percent recovery" is the ratio of the sample length retrieved to the drilled length, expressed as a percent. An indication of the actual in-situ rock quality is provided by calculating the sample's RQD. The RQD is the percentage of the length of broken cores retrieved which have core segments at least 4 inches in length compared to each drilled length. The percent recovery and RQD are related to rock soundness and quality as illustrated below:

ROCK QUALITY DESIGNATION (RQD)

Relation of RQD and In-situ Rock Quality	
RQD (%)	Rock Quality
90 – 100	Excellent
75 – 90	Good
50 – 75	Fair
25 – 50	Poor
0 -25	Very Poor

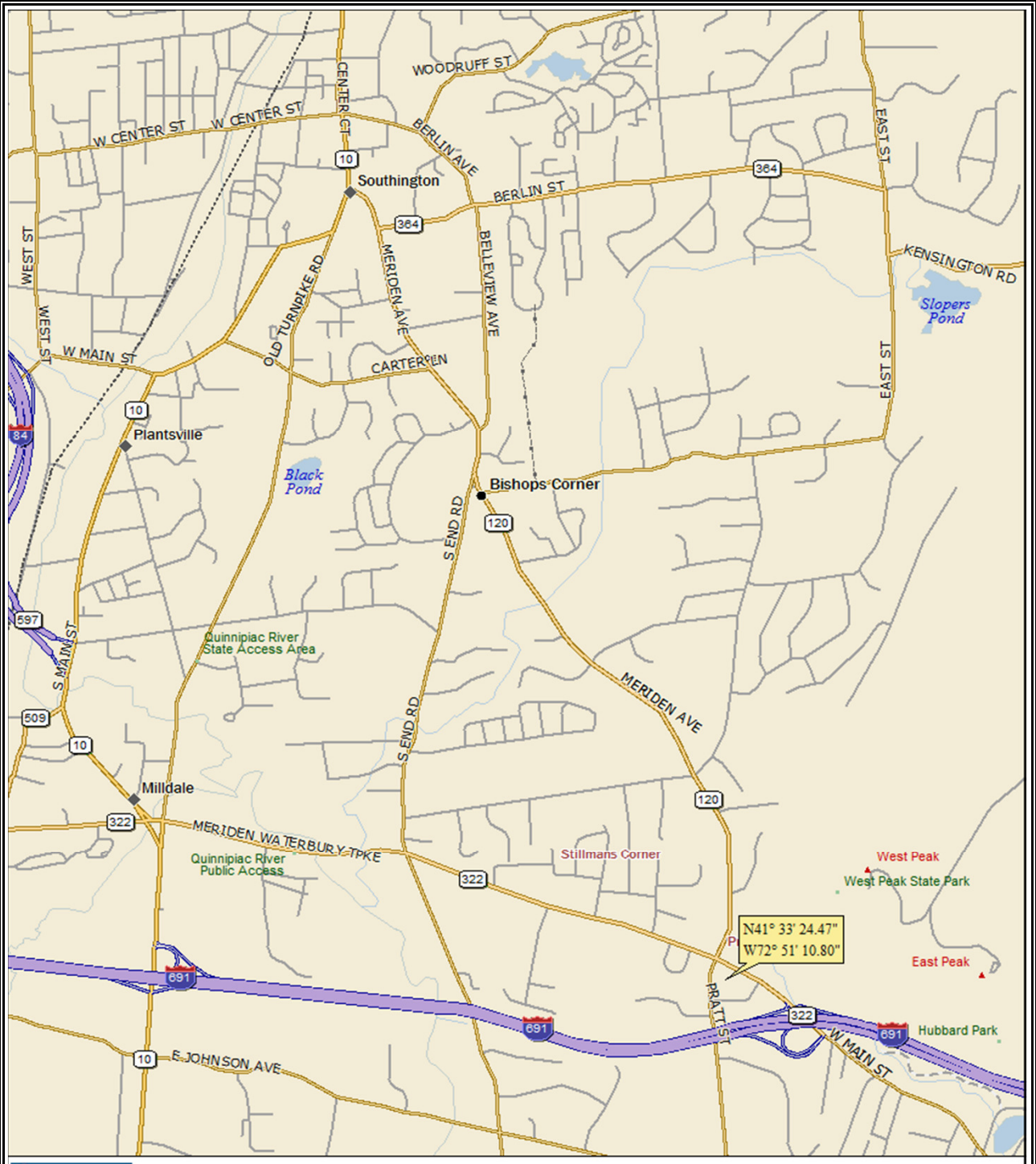
Classification and descriptions of rock core samples are based on visual and tactile observations. Petrographic analysis of thin sections may indicate other rock types. Percent recovery and rock quality designation (RQD) were calculated for these samples and are noted at their depths of occurrence on the boring log.

QUALIFICATIONS

The analysis and recommendations presented in this report are based upon the data obtained from the boring performed at this site and from other information discussed in this report. This report does not reflect variations that may occur across the site or due to the modifying effects of weather.

This report has been prepared for the exclusive use of **Smartlink, LLC** for specific application to the project discussed herein and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either expressed or implied, are intended or made. In the event that changes in the nature or design as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless ***GPD Group*** reviews the changes and either verifies or modifies the conclusions of this report in writing.

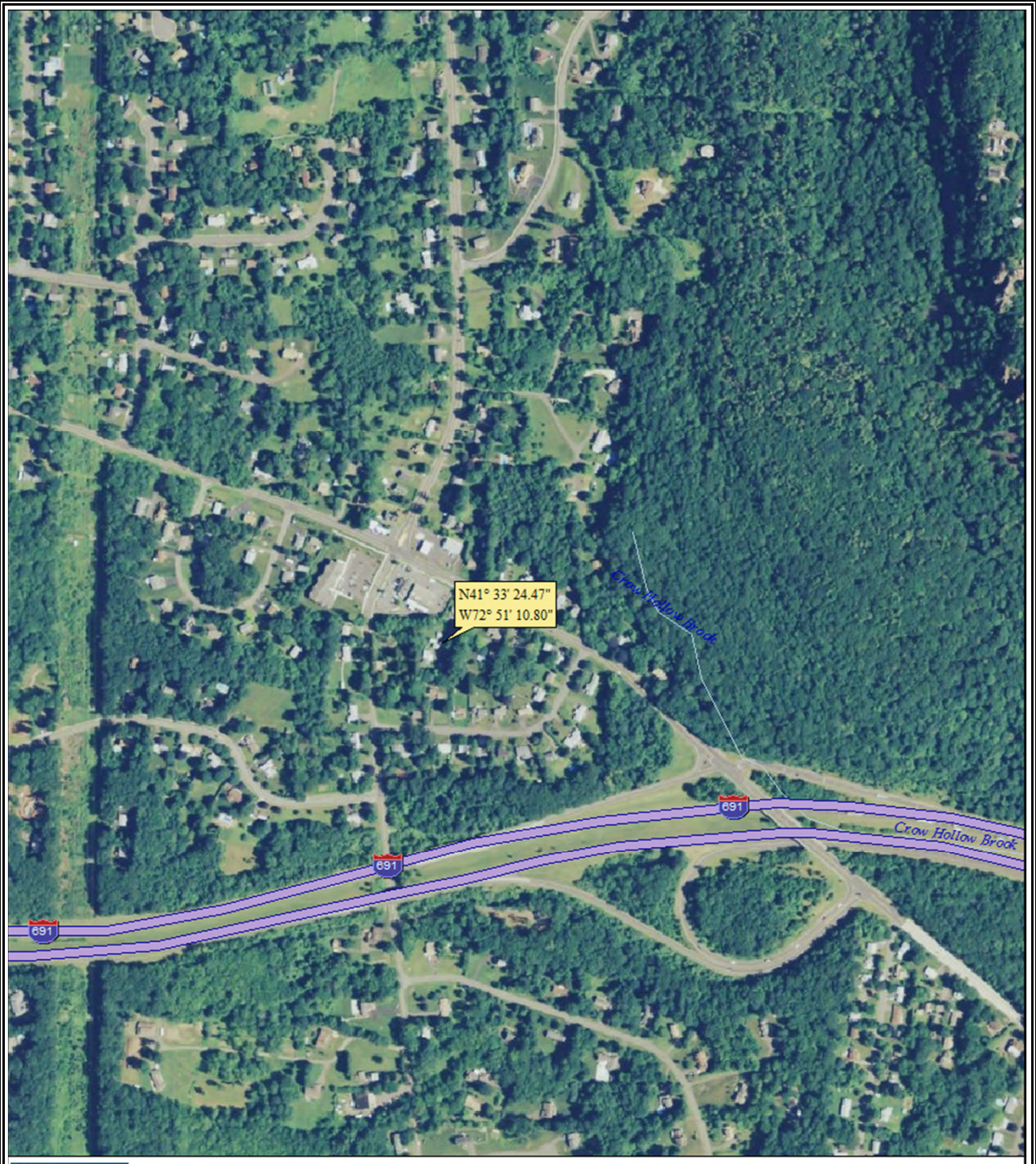
The scope of services for this project does not include either specifically or by implication any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken.



GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

SITE LOCATION MAP

Site Name: SOUTHINGTON ROGUS
Site USID: 59347
GPD Job Number: 2014723.59347.01
Date: April 2014



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MN (13.8° W)

0 200 400 600 800 1000 1200 ft

Data Zoom 14-6

GPD GROUP

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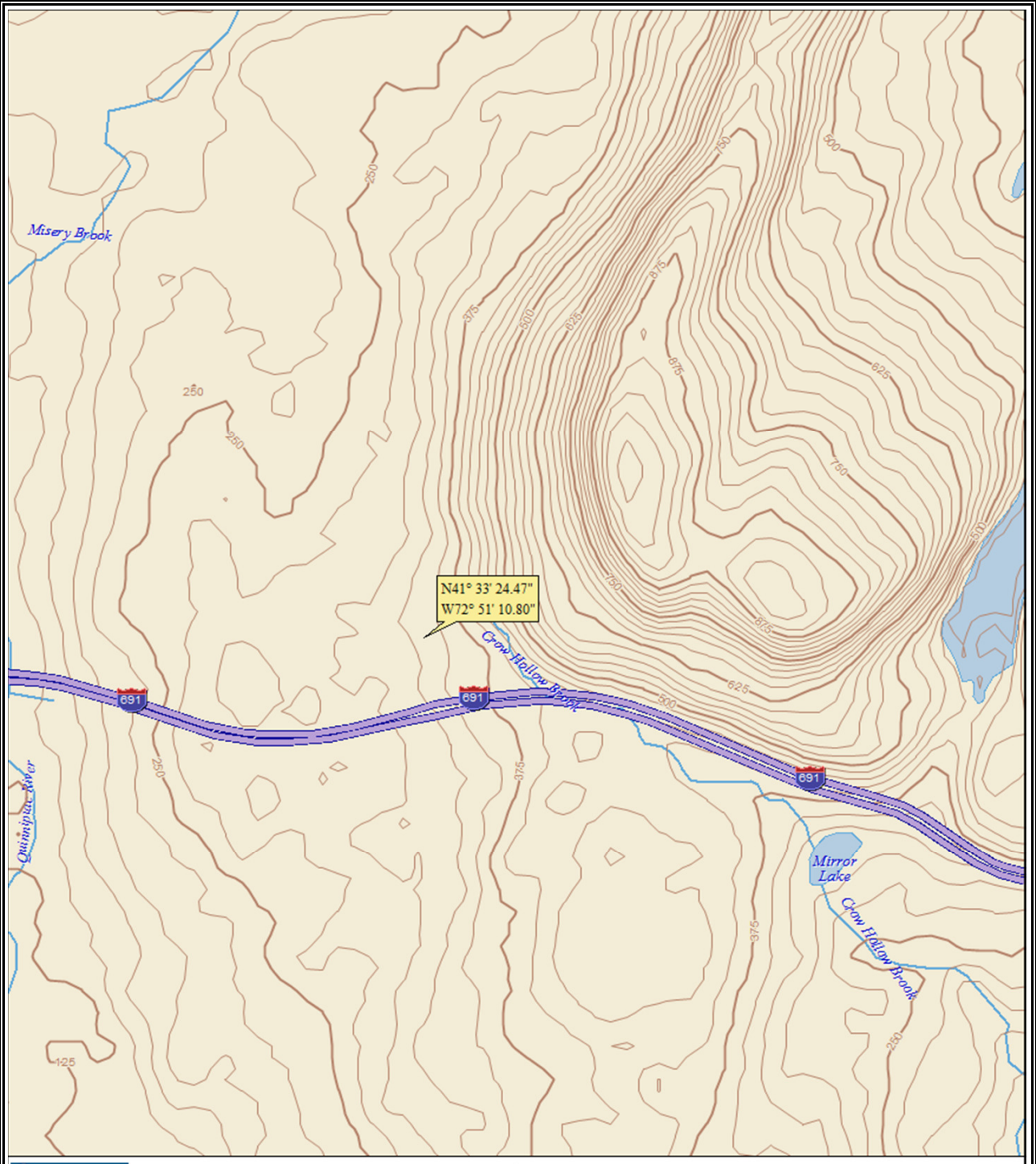
SATELLITE PHOTOGRAPH

Site Name: SOUTHINGTON ROGUS

Site USID: 59347

GPD Job Number: 2014723.59347.01

Date: April 2014



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MN (13.8° W)

0 600 1200 1800 2400 3000 3600 ft

Data Zoom 13-1

GPD GROUP

Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

TOPOGRAPHIC MAP

Site Name: SOUTHINGTON ROGUS

Site USID: 59347

GPD Job Number: 2014723.59347.01

Date: April 2014

Boring Number: B-1

GPD Group

CLIENT Smartlink, LLC
PROJECT NAME SOUTHINGTON ROGUS
PROJECT NUMBER 2014723.59347.01
PROJECT LOCATION Southington, Connecticut
DATE STARTED March 12, 2014 **COMPLETED** March 12, 2014
GROUND ELEVATION _____ **HOLE SIZE** _____
DRILLING CONTRACTOR New England Boring Contractors of CT, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING --- DRY
LOGGED BY Dustin Vincent **CHECKED BY** Nicholas Zadd
AT END OF DRILLING ---
NOTES

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		Organic topsoil, 4 inches									
		Loose brown fine to coarse SILTY SAND (SM) with gravel and trace org, moist	SS 1	50	6-3-4-5 (7)						
			SS 2	33	4-4-5-7 (9)						
5		Loose brown SANDY SILT (MLS) with gravel, moist									
			SS 3	75	4-4-5-7 (9)						
		Dense with trace clay below 7 feet	SS 4	67	12-14-18-29 (32)						
10		Very Dense brown SILT (ML) with sand and clay and gravel, moist	SS 5	75	19-26-48-72 (74)						
15		Highly weathered rock sampled as: brown SILT (ML) with gravel and some sand and trace clay	SS 6	58	51-100 (100)						
20		Weathered rock sampled as: brown fine to coarse SILTY SAND (SM) with gravel	SS 7	67	100/3"						
25		Bedrock	SS 8		100/0"						
			RC 9	100 (82)							
30		Boring terminated at 30.0 feet									

CENTER TERMINATION NOTE - GINT STD US LAB.GDT - 4/4/14 16:26 - O:\GEOTECH\GINT PROJECTS (STARTED AFTER 032414)\GINT PROJECTS 2014\SOUTHINGTON ROGUS.GPJ

GPD# 2014723.59347.01
April 4, 2014

FOUNDATION NDT MAPPING REPORT

Client Site Number:	**CT1033**
Site USID:	**59347**
FA Number:	**10035233**
Site Name:	**SOUTHINGTON ROGUS**
Site Data:	**250 Meriden Waterbury Turnpike** **Southington (Hartford County), Connecticut 06489** **Latitude 41° 33' 24.473'' N, Longitude 72° 51' 10.796'' W** **Existing 80-ft PIROD Self-Support Tower**

GPD Group is pleased to submit this **Foundation NDT Mapping Report** for the aforementioned tower. The purpose of this report is to summarize the results of our foundation exploration and provide the type and dimensions of the existing tower foundation system. The results of our non-destructive testing (NDT) for the detection of steel reinforcement bars within the upper exposed portion of the concrete tower foundation are also provided.

We at *GPD Group* appreciate the opportunity to provide continuing professional services to you. Please feel free to contact us with any questions or if you need additional assistance.

Respectfully Submitted,

Dustin Vincent, E.I.T.
Geotechnical Specialist

Chip Wilkinson, P.E.
Practice Leader

Attachments:
Site Location Map
Satellite Photograph
Topographic Map
Tower Foundation Drawing
Site Photographs

DOCUMENTS REVIEWED

Document	Prepared By	Project No.	Date
Structural Analysis Report	B&T Engineering, Inc.	84423.001.0002	September 14, 2012

EXISTING FOUNDATION SYSTEM

The dimensions of the existing foundation system were estimated using Sonic-Echo Impulse Response non-destructive testing (NDT) equipment in conjunction with hand tooling (i.e. probe rods and hand augers). Based on the results of the field tests, the foundation system appears to be comprised of an 8-ft square x 2.5-ft tall formed concrete pedestal rising about 0 to 6 inches above grade supported on a 14-ft square x 3-ft thick concrete mat founded about 5 to 5.5 feet below grade (refer to attached Tower Foundation Drawing).

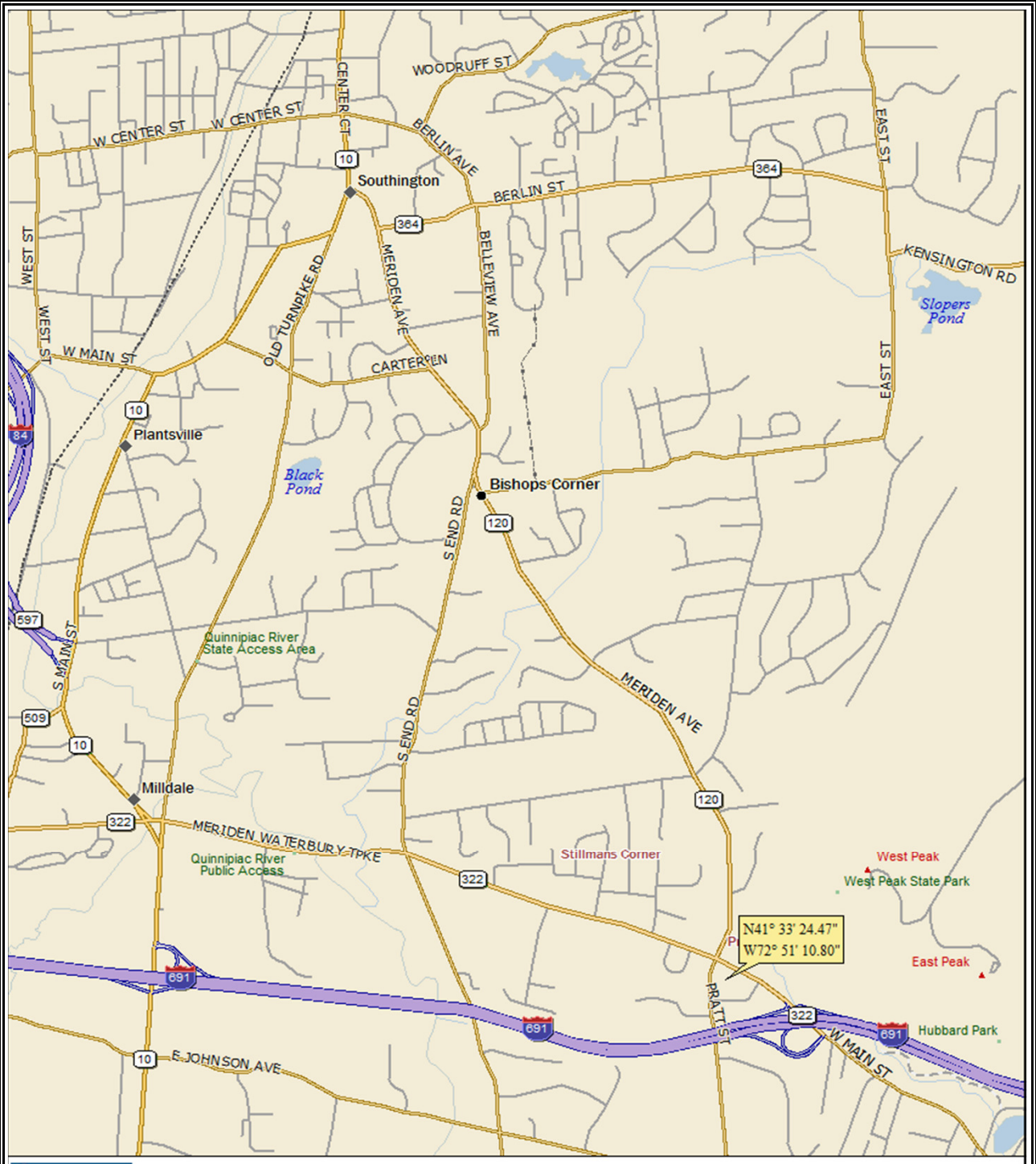
STEEL REINFORCEMENT

The size and spacing of the steel reinforcement (rebar) within the upper exposed portion of the formed concrete pedestal were estimated using a GSSI StructureScan Mini GPR Unit. Based on the results of the rebar testing, the primary steel reinforcement appears to be comprised of fifty-six (56) #10 vertical bars spaced an average of about 6 inches center-to-center with about 5.5 to 6.5 inches of concrete cover.

QUALIFICATIONS

The findings presented in this report are based upon the data obtained from the foundation exploration and from other information discussed in this report. The scope of services does not include either specifically or by implication any environmental assessment of the site or identification of contaminated or hazardous materials or conditions.

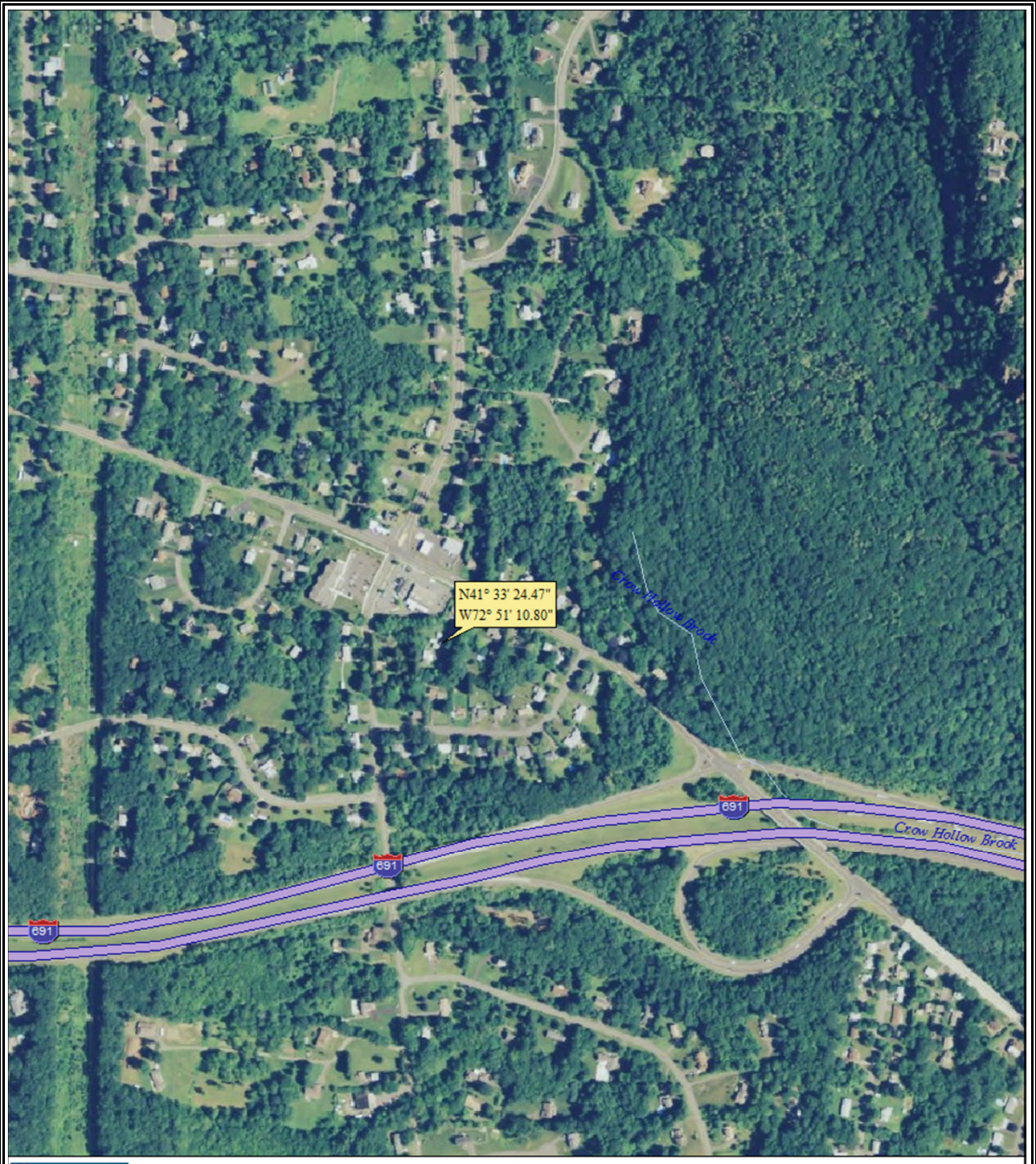
This report has been prepared for the exclusive use of **Smartlink, LLC** for specific application to the project discussed and has been prepared in accordance with generally accepted foundation exploration practices. No warranties, either expressed or implied, are intended or made. In the event that changes in the nature or design of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless ***GPD Group*** reviews the changes, and either verifies or modifies the conclusions of this report in writing.



GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

SITE LOCATION MAP

Site Name: SOUTHINGTON ROGUS
Site USID: 59347
GPD Job Number: 2014723.59347.01
Date: April 2014



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MN (13.8° W)

0 200 400 600 800 1000 1200 ft

Data Zoom 14-6

GPD GROUP

Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

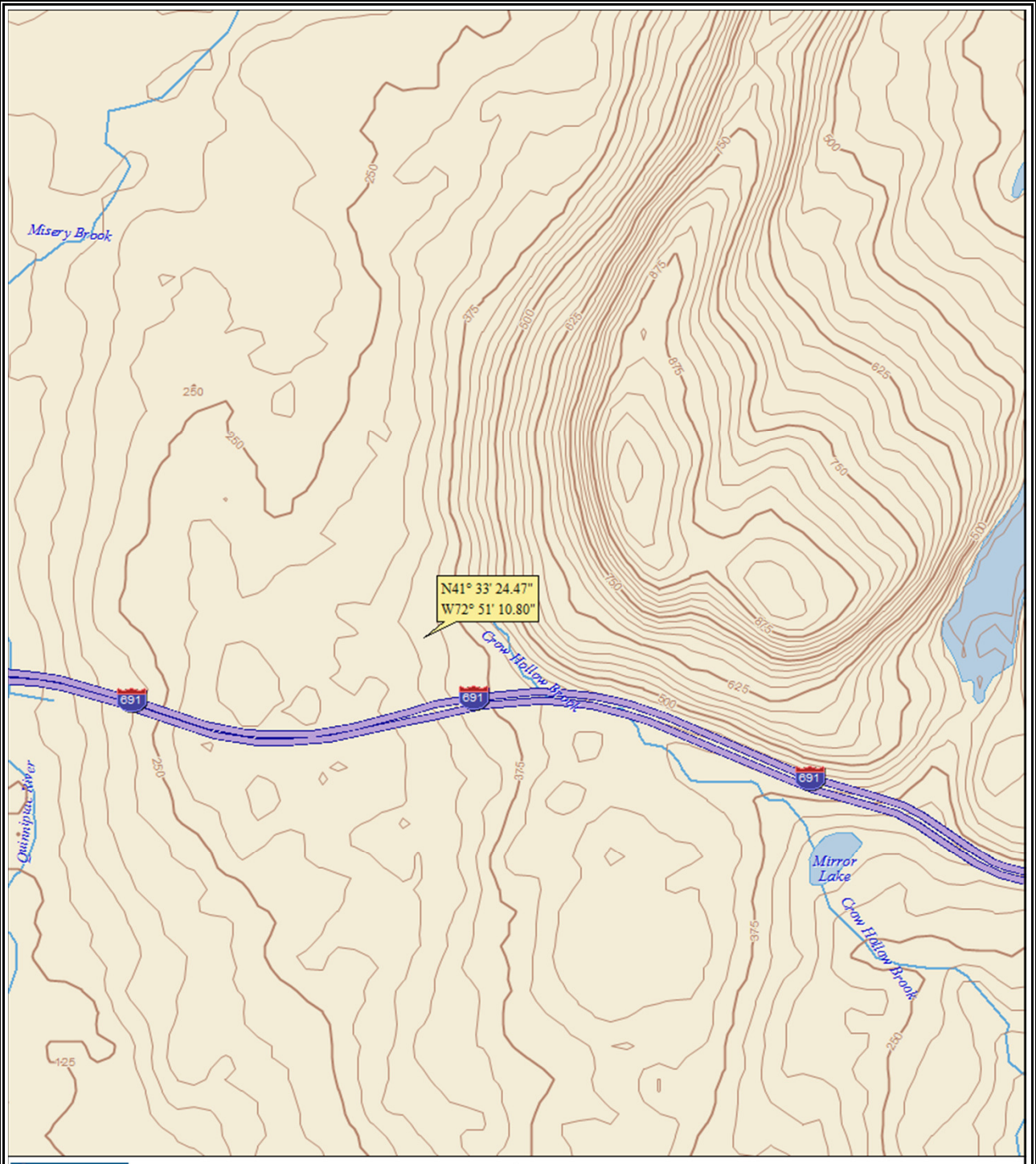
SATELLITE PHOTOGRAPH

Site Name: SOUTHINGTON ROGUS

Site USID: 59347

GPD Job Number: 2014723.59347.01

Date: April 2014



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MN (13.8° W)

0 600 1200 1800 2400 3000 3600 ft

Data Zoom 13-1

GPD GROUP

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TOPOGRAPHIC MAP

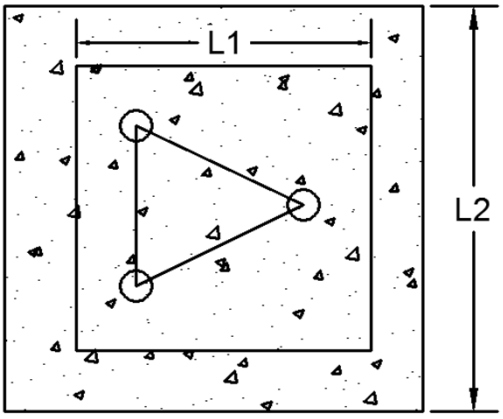
Site Name: SOUTHINGTON ROGUS

Site USID: 59347

GPD Job Number: 2014723.59347.01

Date: April 2014

Plan View



Foundation Dimensions

L1: 8 feet

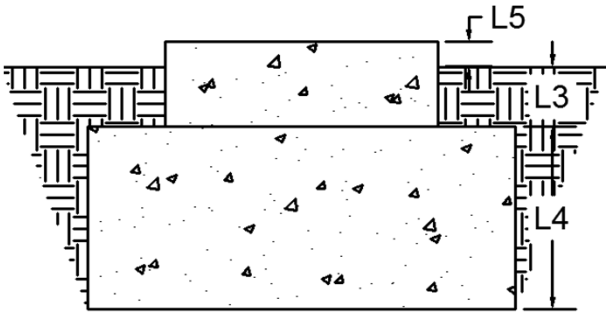
L2: 14 feet

L3: 2.5 feet

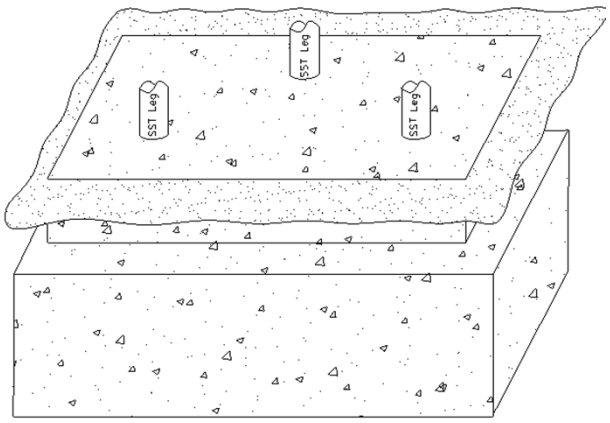
L4: 3 feet

L5: 0 to 6 inches (varies)

Elevation View



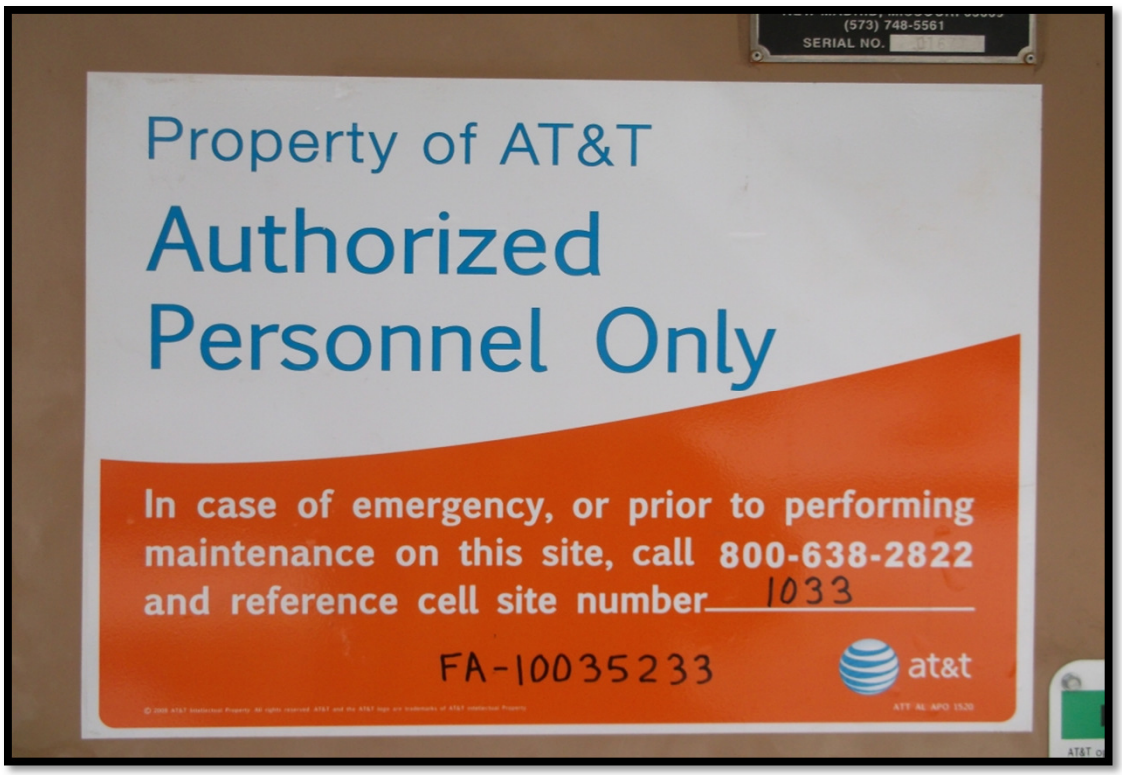
Isometric View



GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

TOWER FOUNDATION DRAWING

Site Name: SOUTHINGTON ROGUS
Site USID: 59347
GPD Job Number: 2014723.59347.01
Date: April 2014



1) PLACARD

2) ANTENNA CONFIGURATION

3) TOWER BASE

4) VIEW OF FOUNDATION AT GROUND SURFACE

5) OVERALL VIEW OF TOWER