COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

May 20, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: Notice of Exempt Modification
Town of Ridgefield/T-Mobile Equipment Upgrade
Site ID CT11103A
76 East Ridge Road, Ridgefield, CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the Town of Ridgefield owns the existing monopole telecommunications tower and related facility at 76 East Ridge Road, Ridgefield, CT (41.28080844/-73.4929006). T-Mobile intends to add three (3) antennas and related equipment at this existing telecommunications facility in Ridgefield ("Ridgefield Facility"). Please accept this letter as notification, pursuant to R.C.S.A. §16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman, Rudy Marconi, and the property owner, the Town of Ridgefield.

The existing Ridgefield Facility consists of a 130-foot monopole tower.[1] T-Mobile plans to add three (3) antennas on existing pipe mounts at a centerline of 100 feet. T-Mobile will also add three (3) remote radio units (RRUs) mounted on existing pipe mounts at the 100-foot centerline and replace an equipment cabinet on the concrete pad within the lease area.[2] (See the plans revised to April 29, 2015 attached hereto as **Exhibit A**). The Ridgefield Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated April 24, 2015, and attached hereto as **Exhibit B**.

---

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for approval of this structure, it does reference this structure in connection with a notices of intent captioned EM-VER-084-118-157-161-040219; EM-VER-118-101020, EM-VER-118-110819, EM-VER-118-110819, EM-SPRINT-118-130322, EM-VER-118-131213, EM-T-MOBILE-118-140529, EM-SPRINT-118-140826.

[2] The modifications required by the structural analysis dated April 24, 2015, as referenced above, will be implemented prior to installation of the proposed antennas and RRUs.

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

1. The proposed modification will not increase the height of the tower. T-Mobile's existing antennas are at a centerline of 100 feet; the additional antennas will be installed at the same 100-foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension on the site boundaries or lease area, as depicted on Sheet A-2 of Exhibit A. T-Mobile's equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the additional antennas and equipment will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated April 20, 2015, T-Mobile's operations would add 13.66% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 42.02% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit C.**

For the foregoing reasons, T-Mobile respectfully submits that the proposed additional antennas and equipment at the Ridgefield Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, T-Mobile shall commence construction approximately sixty days from the receipt of the Council's decision.

Sincerely,

Rachel Schwartzman

Rachel A. Schwartzman, Esq.

cc: Town of Ridgefield, First Selectman Rudy Marconi
Sheldon Freincle, Northeast Site Solutions

EXHIBIT A

T-MOBILE NORTHEAST LLC

SITE #: CT11103A

SITE NAME: RIDGEFIELD/DOWNTOWN 1

SITE ADDRESS:
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

WIRELESS BROADBAND FACILITY
CONSTRUCTION DRAWINGS
(702CU CONFIGURATION)

VICINITY MAP

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL BEFORE YOU DIG:

WWW.CBYD.COM

CALL 800 922 4455, OR 811

CALL THREE WORKING DAYS PRIOR TO DIGGING

SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

COLOR CODE FOR UTILITY LOCATIONS

ELECTRIC – RED		SEWER	– GREEN
GAS/OIL	– YELLOW	SURVEY	– PINK
TEL/CATV	– ORANGE	PROPOSED EXCAVATION	– WHITE
WATER	– BLUE	RECLAIMED WATER	– PURPLE

GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES. RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T–MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
11. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. THE CONTRACTOR SHALL NOTIFY THE T–MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T–MOBILE REPRESENTATIVE.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
17. ATLANTIS GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE ADEQUACY OF THE STRUCTURE AND COMPONENTS.
18. REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "POST–MOD TOWER ANALYSIS REPORT" PREPARED BY INFINIGY& DESIGN BUILD DELIVER "T–MOBILE SITE ID CT11103" DATED APRIL 24, 2015

SITE INFORMATION

SITE NUMBER:	CT11103A
SITE NAME:	RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS:	76 EAST RIDGE ROAD RIDGEFIELD ,CT 06877
LAT./LONG.:	N 41.28081" / W 73.49290"
JURISDICTION:	TOWN OF RIDGEFIELD
PROPERTY OWNER:	TOWN OF RIDGEFIELD POLICE DEPARTMENT – TOWN OF RIDGEFIELD JOHN S. ROCHE, CHIEF OF POLICE 76 EAST RIDGE ROAD RIDGEFIELD, CT 06877 203–438–6531 OR 203–431–2795 RPDCHIEF@RIDGEFIELDCT.ORG

CODE COMPLIANCE

CONNECTICUT STATE BUILDING CODE

2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT
2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B USE GROUP: N/A

PROJECT SUB–CONTRACTORS

APPLICANT:	T–MOBILE NORTHEAST, LLC. 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 (860) 692–7100
PROJECT MANAGER	LISA LIN ALLEN NORTHEAST SITE SOLUTIONS 54 MAIN STREET STURBRIDGE, MA 01566 (508) 434–5237
ARCHITECT/ENGINEER:	ATLANTIS GROUP INC. 1340 CENTRE STREET SUITE 212 NEWTON CENTER, MA 02459 (617) 965–0789

SHEET INDEX

SHEET	DESCRIPTION
T–1	TITLE SHEET
N–1	GENERAL AND ELECTRICAL NOTES
A–1	SITE PLAN AND ELEVATION
A–2	EQUIPMENT PLAN AND DETAILS
A–3	ANTENNA PLAN AND DETAILS
E–1	GROUNDING AND POWER ONE LINE DIAGRAM
E–2	GROUNDING DETAILS

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617–965–0789
Fax: 617–213–5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	0
04/29/15	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
   A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
   B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
   C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
   D. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
   E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
   F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
   A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
   B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
   A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALLY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
   B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
   C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
   D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
   E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:
   A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
   A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
   B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
   A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
   B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
   C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
   D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
   E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
   F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
   G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
   H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
   I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
   J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
   K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.

RACEWAYS CONT'D

   L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
   M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
   N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
   O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
   P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN WIRE SIZE
0 TO 50	NO. 12
51 TO 100	NO. 10
101 TO 150	NO. 8

8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
   A. GENERAL ELECTRIC COMPANY
   B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
   A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
   B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
   A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
   A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
   B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
   C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

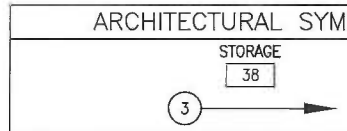
ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

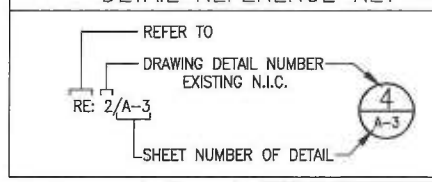
INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ARCHITECTURAL SYMBOLS



DETAIL REFERENCE KEY



ABBREVIATIONS

ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
@	AT
BTS	BASE TRANSMISSION STATION
CAB	CABINET
CLG	CEILING
CONC	CONCRETE
CONT	CONTINUOUS
DIA OR ø	DIAMETER
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
EGB	EQUIPMENT GROUND BAR
(E)	EXISTING
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG
MAX	MAXIMUM
MECH	MECHANICAL
MW	MICROWAVE DISH
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OPP	OPPOSITE
(P)	PROPOSED
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SS	STAINLESS STEEL
STL	STEEL
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TYP	TYPICAL
VIF	VERIFY IN FIELD
UON	UNLESS OTHERWISE NOTED
WWF	WELDED WIRE FABRIC
W/	WITH

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	0
04/29/15	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

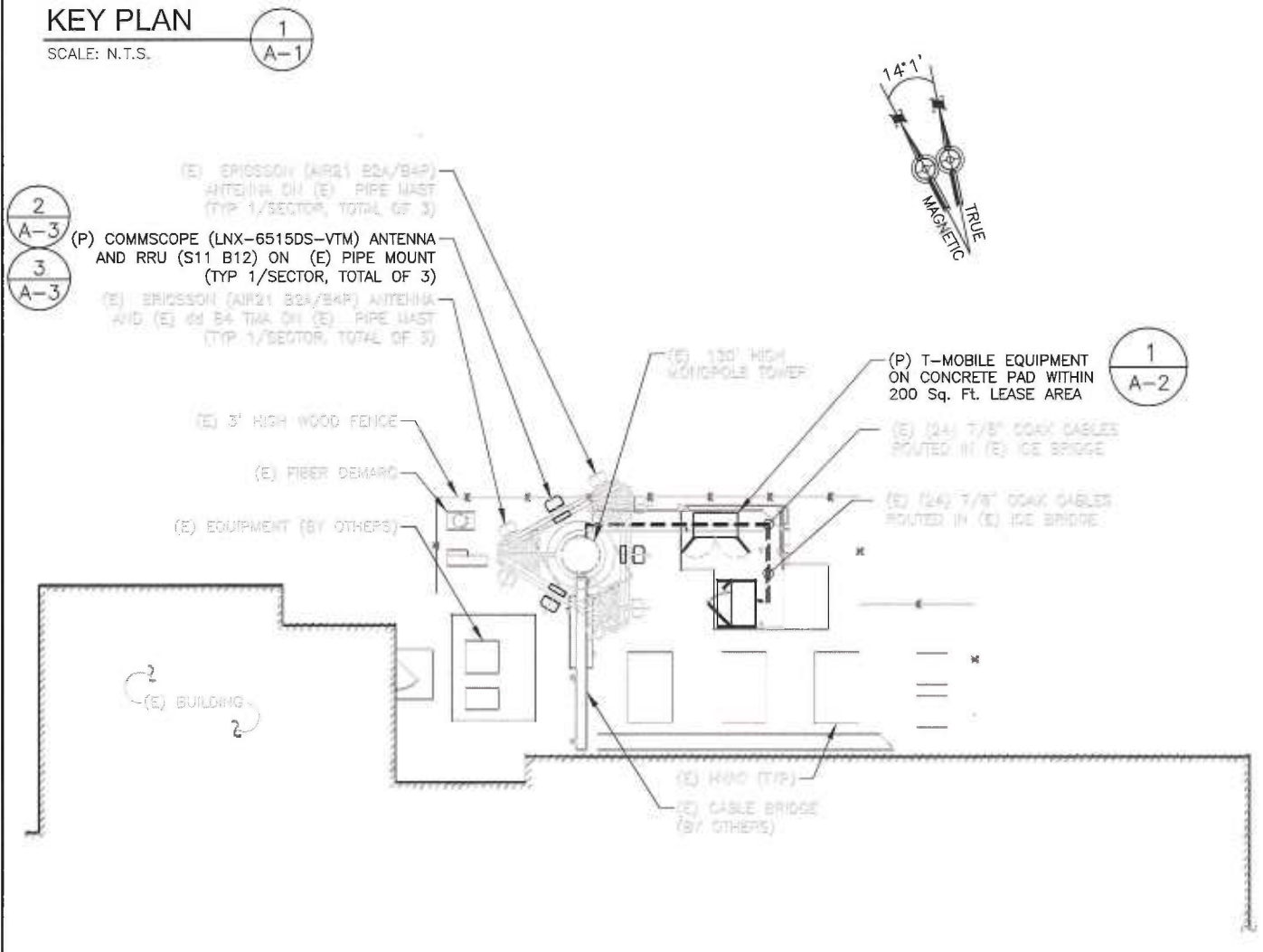
PROFESSIONAL SEAL

SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
GENERAL AND ELECTRICAL NOTES

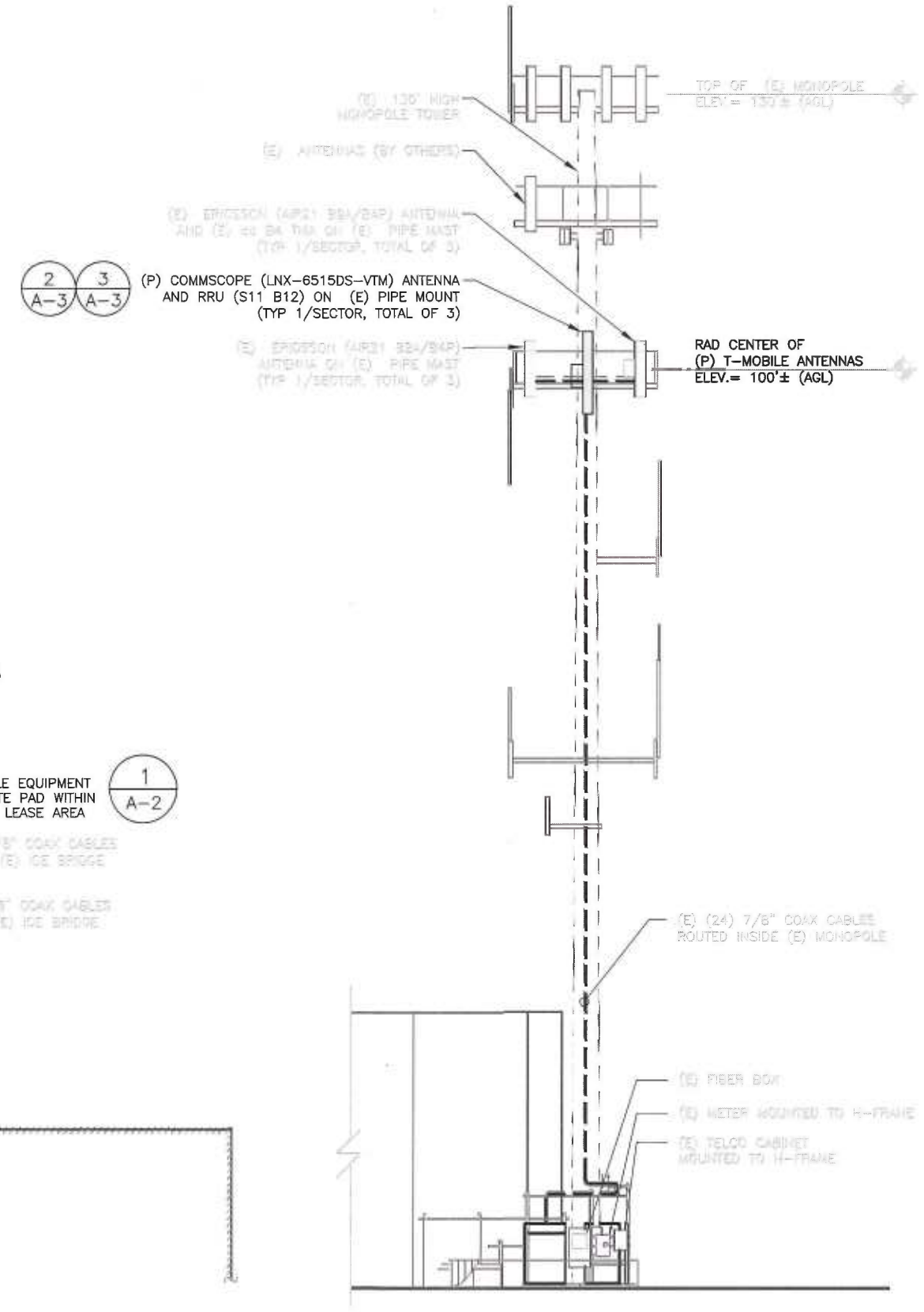
SHEET NUMBER
N-1

KEY PLAN (1/A-1)
SCALE: N.T.S.



SITE PLAN (2/A-1)
SCALE: 1/16" = 1'-0" (11x17)
1/8" = 1'-0" (24X36)

0 16 32 48
SCALE 1/16"=1' (11x17)
1/8" =1' (24x36)



ELEVATION (3/A-1)
SCALE: 1/16" = 1'-0" (11x17)
1/8" = 1'-0" (24X36)

0 16 32 48
SCALE 1/16"=1' (11x17)
1/8" =1' (24x36)

GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.

2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.

3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.

4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.

5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.

6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.

7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- BOARD ON BOARD FENCE
- DECIDUOUS TREES/SHRUBS
- EVERGREEN TREES/SHRUBS
- TREE LINE
- UTILITY POLE
- (E) EXISTING
- (N) NEW
- (P) PROPOSED
- (F) FUTURE
- PROP. LTE ANTENNA
- PROP. UMTS/GSM ANTENNA
- EX. GSM ANTENNA
- EX. UMTS ANTENNA

T-Mobile

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	0
04/29/15	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

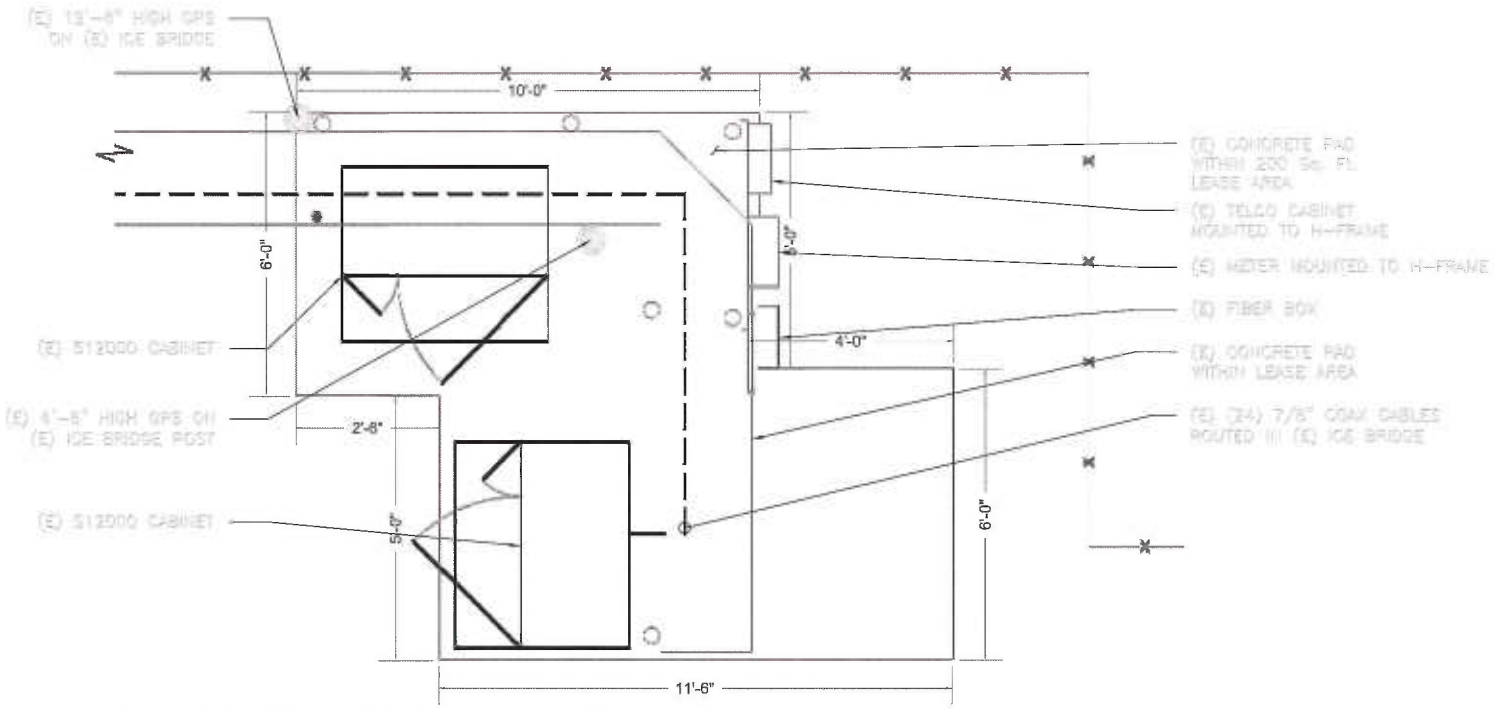
PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

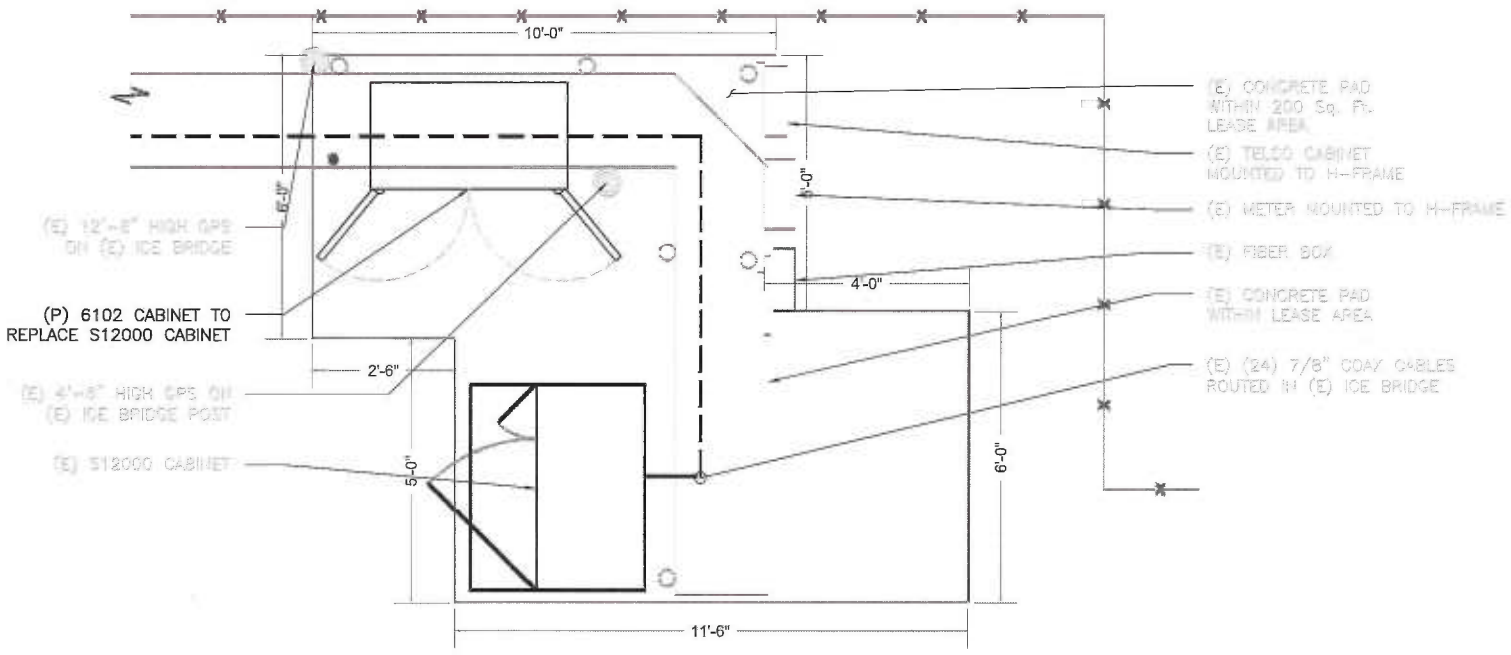
SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
SITE PLAN AND ELEVATION

SHEET NUMBER
A-1



EXISTING EQUIPMENT LAYOUT PLAN



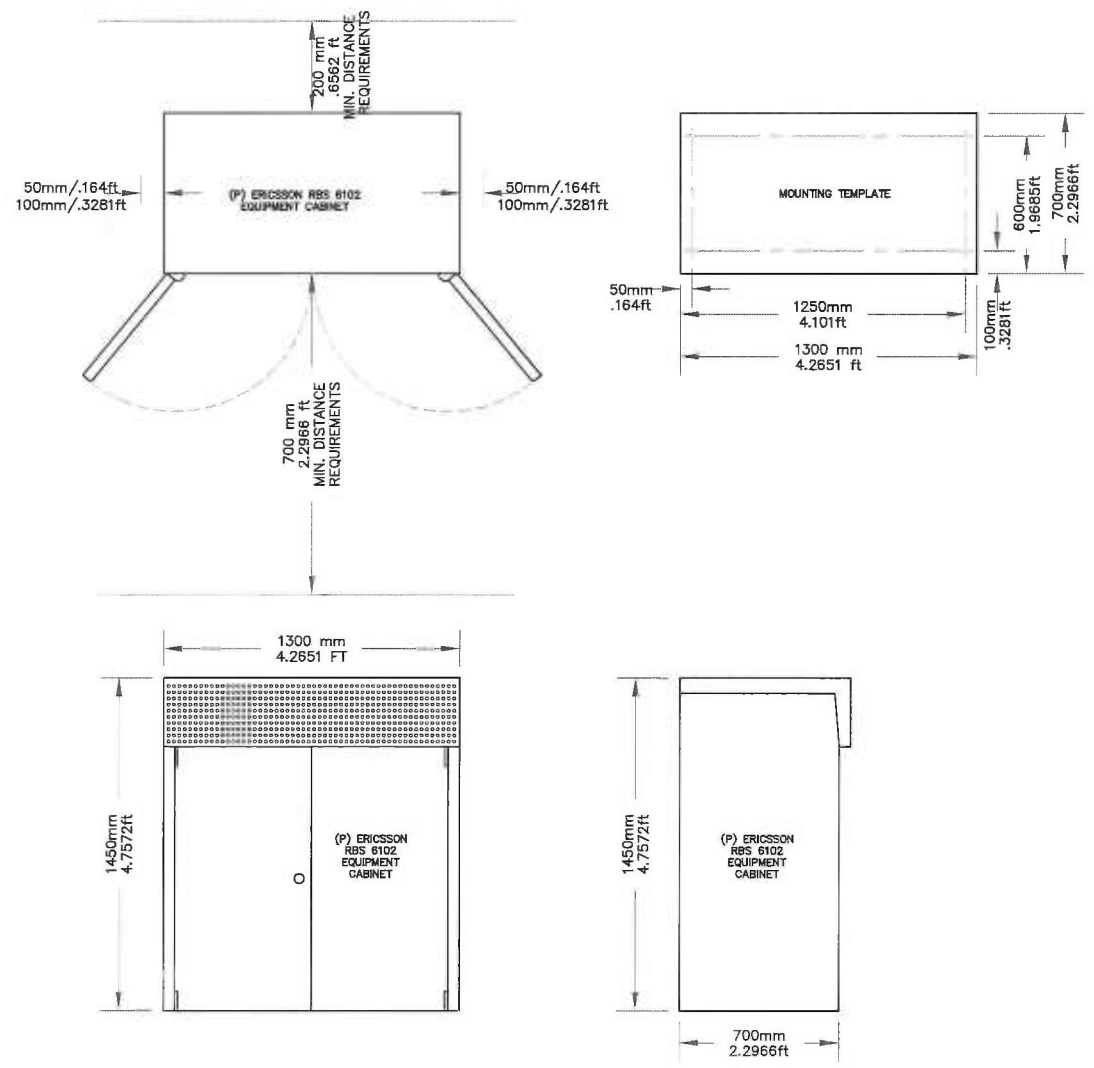
PROPOSED EQUIPMENT LAYOUT PLAN

EQUIPMENT LAYOUT PLAN (1 / A-2)

SCALE: 1" = 4'-0" (11x17)
1" = 2'-0" (24X36)

0 4 8 12

SCALE 1"=4' (11x17)
1"=2' (24x36)



ERICSSON RBS 6102 CABINET (2 / A-2)

SCALE: N.T.S

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0769
Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	0
04/29/15	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

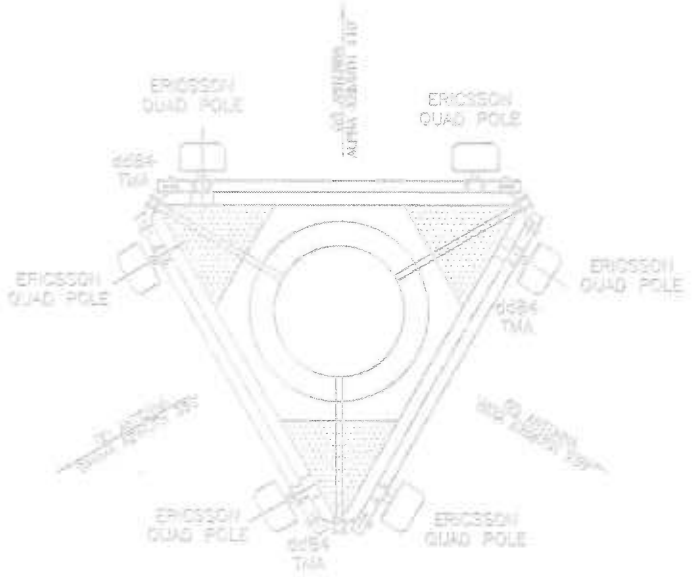
PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

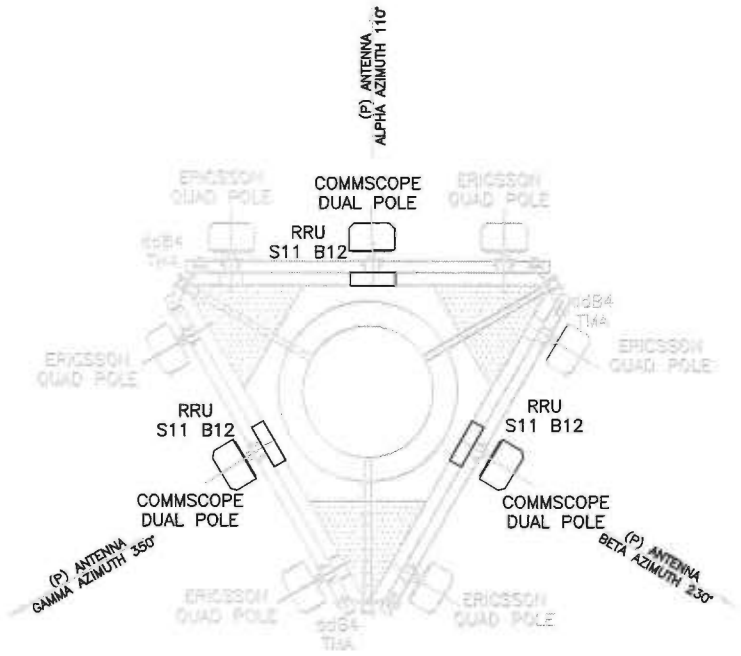
SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
EQUIPMENT PLAN AND DETAILS

SHEET NUMBER
A-2



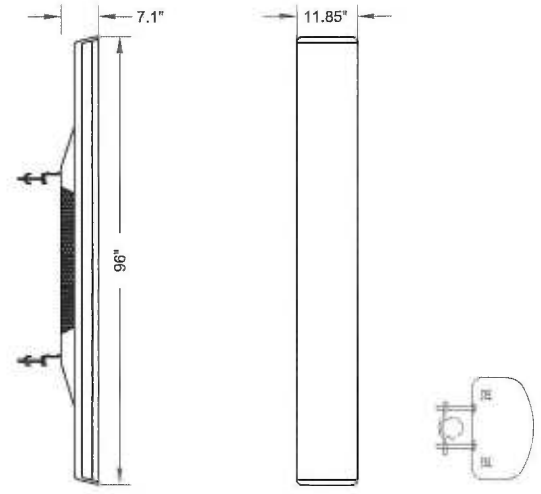
EXISTING ANTENNA



PROPOSED ANTENNA

ANTENNA PLAN (1 / A-2)

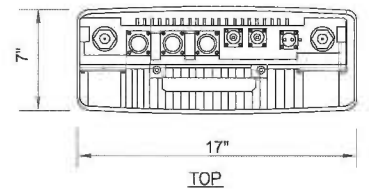
SCALE: N.T.S

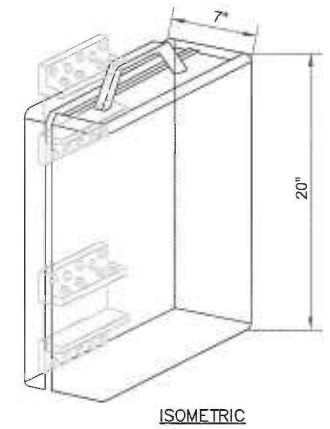


MANUFACTURE: COMMSCOPE DUAL POLE
MODEL NO. LNX-6515DS-VTM
DIMENSIONS – HxWxD, (IN) 96x11.85x7.1

COMMSCOPE ANTENNA DETAIL (2 / A-3)

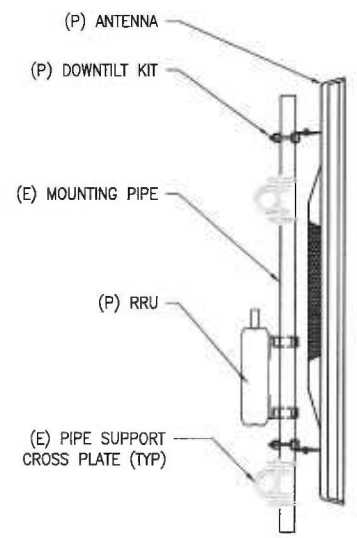
SCALE: N.T.S





RRUS 11 B12 DETAILS (3 / A-3)

SCALE: N.T.S



ANTENNA MOUNT DETAIL (4 / A-3)

SCALE: N.T.S

T-Mobile

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	0
04/29/15	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

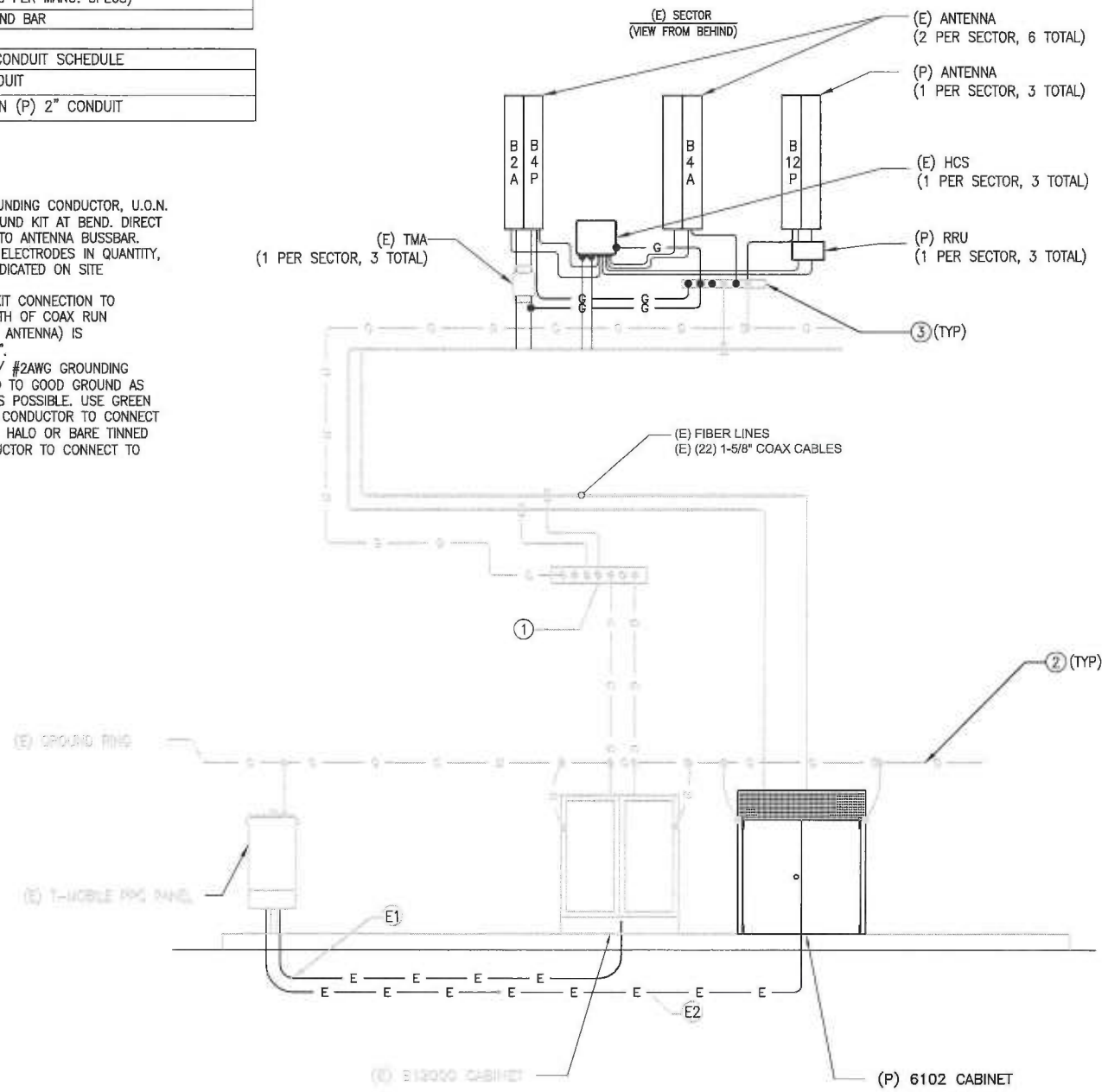
SHEET TITLE
ANTENNA PLAN AND DETAILS

SHEET NUMBER
A-3

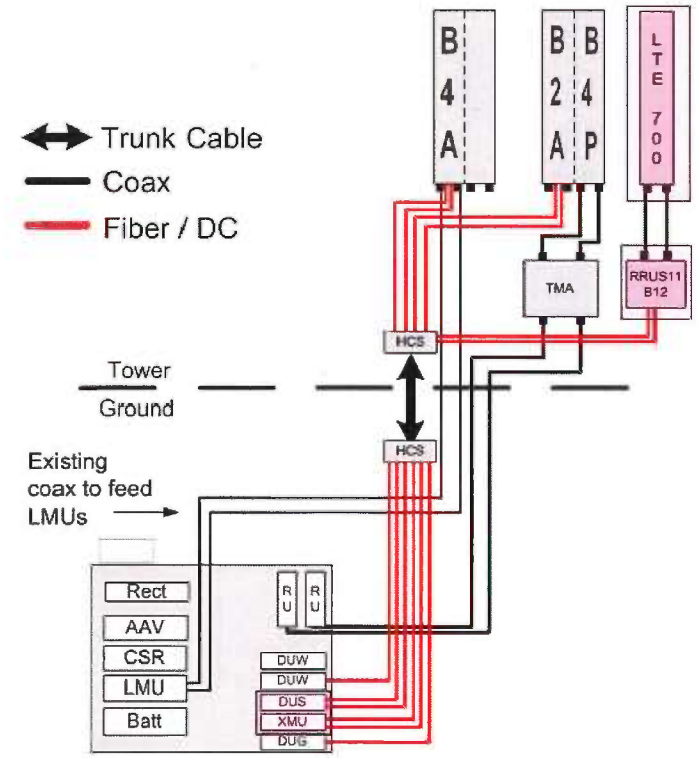
	GROUNDING SCHEDULE
①	(E) MGB (BUSSBAR #1)
②	(E) #2AWG BARE TINNED SOLID COPPER CONDUCTOR BONDED TO GROUND RING (GROUND CABINETS PER MANU. SPECS)
③	(E) SECTOR GROUND BAR

	CONDUIT SCHEDULE
E1	(E) POWER CONDUIT
E2	(E) 3#6+1#8G IN (P) 2" CONDUIT

NOTES:
A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".
E. GROUND HCS BOX W/ #2AWG GROUNDING CONDUCTOR ATTACHED TO GOOD GROUND AS DIRECT AND SHORT AS POSSIBLE. USE GREEN STRANDED INSULATED CONDUCTOR TO CONNECT TO BUSSBAR/GROUND HALO OR BARE TINNED SOLID COPPER CONDUCTOR TO CONNECT TO GROUND RING.



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



TRUNK FIBER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO ⅞" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
2. THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
3. LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
4. DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN ¾" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
5. BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
6. DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
7. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
8. MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
9. MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
10. COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
11. MAXIMUM HANGER SPACING 3FT (0.9 M).

HYBRID FIBER/POWER JUMPER NOTES:
1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A ⅜" COAXIAL CABLE.
2. THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN ¾" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
4. ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
5. ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
6. INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

702CU CONFIGURATION
COAX/FIBER PLUMBING DIAGRAM 2/E-1
SCALE: N.T.S

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	0
04/29/15	FINAL CD	1

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

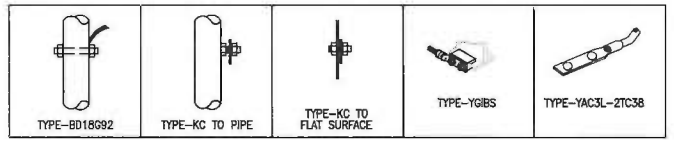
PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
GROUNDING DIAGRAM AND POWER ONE LINE DIAGRAM

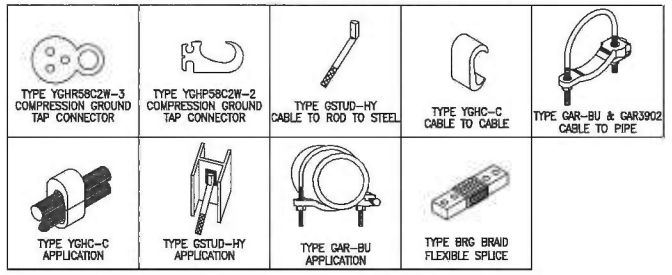
SHEET NUMBER
E-1



BURNDY GROUNDING DETAILS

1 / E-2

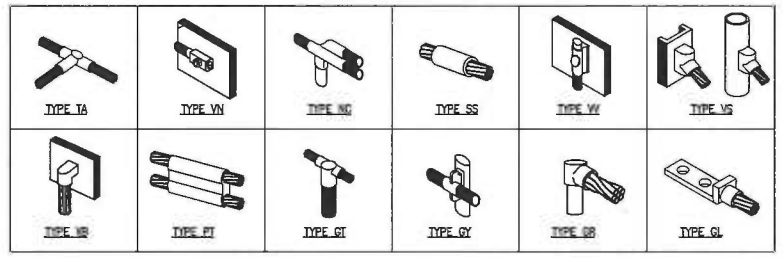
SCALE: N.T.S



BURNDY GROUNDING PRODUCTS

2 / E-2

SCALE: N.T.S



CADWELD GROUNDING CONNECTION PRODUCTS

3 / E-2

SCALE: N.T.S

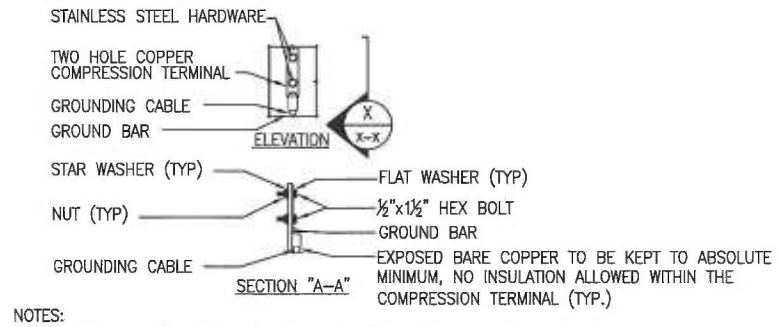
TERMINATION TYPES:
A. MECHANICAL COMPRESSION LUG
B. DOUBLE BARRELL COMPRESSION CONNECTOR
C. EXOTHERMIC TERMINATION
D. BEAM CLAMP

	SOLID #2 TINNED COPPER	#6 GROUND LEAD	#2/0 STRANDED MAIN DOWN CONDUCTOR	MASTER GRND BAR	STRUCTURAL OR TOWER STEEL	BLDG SERVICE ENTR OR GRND RING	GROUND ROD
SOLID #2 TINNED COPPER	B OR C	B OR C		C	A, C, OR D		C
#6 GROUND LEAD	B OR C			A	A, C, OR D		
#2/0 STRANDED GRNDG ELECTRODE CONDUCTOR				A	A, C, OR D	A	
MASTER GROUND BAR	C	A	A				
STRUCTURAL OR TOWER STEEL	A, C, OR D	A, C, OR D	A, C, OR D				
GROUND RING	C		C				C

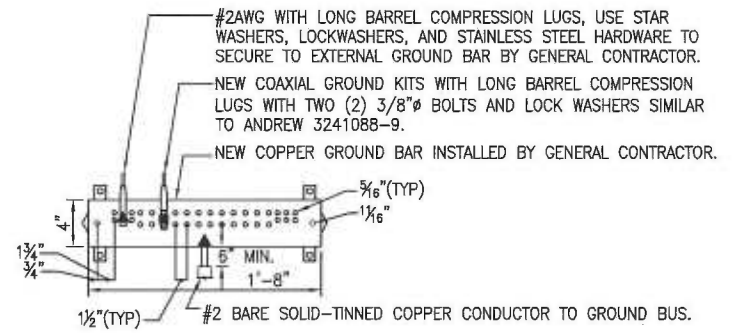
GROUNDING TERMINATION MATRIX

7 / E-2

SCALE: N.T.S



NOTES:
1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

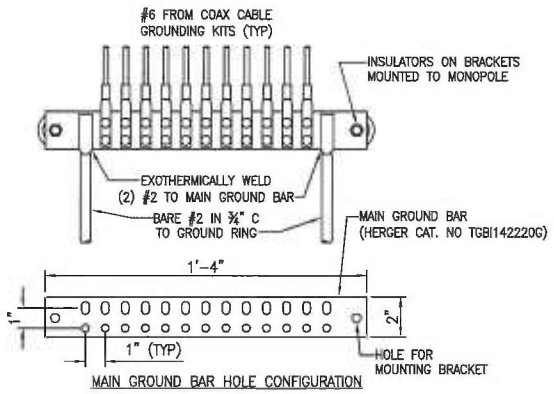


NOTES:
1. ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
2. FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
3. ALL HOLES ARE COUNTERSUNK 1/16".

TYPICAL GROUND BAR CONNECTIONS DETAIL

4 / E-2

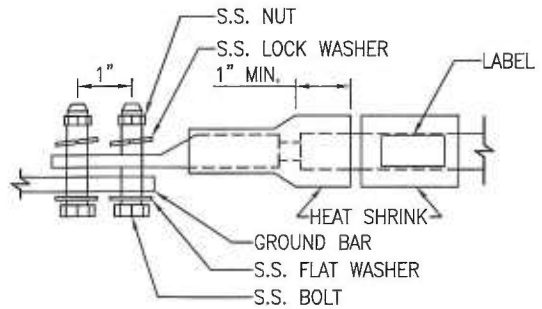
SCALE: N.T.S



GROUND BAR DETAIL

5 / E-2

SCALE: N.T.S



LUG NOTES:
1. ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
2. ALL HARDWARE SHALL BE S.S. ⅜"ø OR LARGER.
3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

GROUND BAR DETAIL

6 / E-2

SCALE: N.T.S

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX:(860) 692-7159

ATLANTIS GROUP
1340 Centre Street, Suite 212
Newton Center, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

SUBMITTALS

DATE	DESCRIPTION	REVISION
02/18/15	ISSUED FOR REVIEW	A
02/19/15	REVISION	B
04/29/15	FINAL CD	0

DEPT.	DATE	APP'D	REVISIONS
RFE.			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	CT11103A
DRAWN BY:	FG
CHECKED BY:	SM

PROFESSIONAL SEAL

SITE NAME
CT11103A
SITE NAME
RIDGEFIELD/DOWNTOWN 1
SITE ADDRESS
76 EAST RIDGE ROAD
RIDGEFIELD ,CT 06877

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E-2

NOTES:

GENERAL:

1. THE MODIFICATIONS OUTLINED IN THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-G AND ACI 355 2 CODES.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
4. THE CONTRACTOR SHOULD NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER TIA-1019-A-2011, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
7. CONTRACTORS PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.
8. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES & GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
9. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINIGY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
3. ALL WELDING SHALL BE DONE USING E80XX ELECTRODES.
4. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION
5. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.

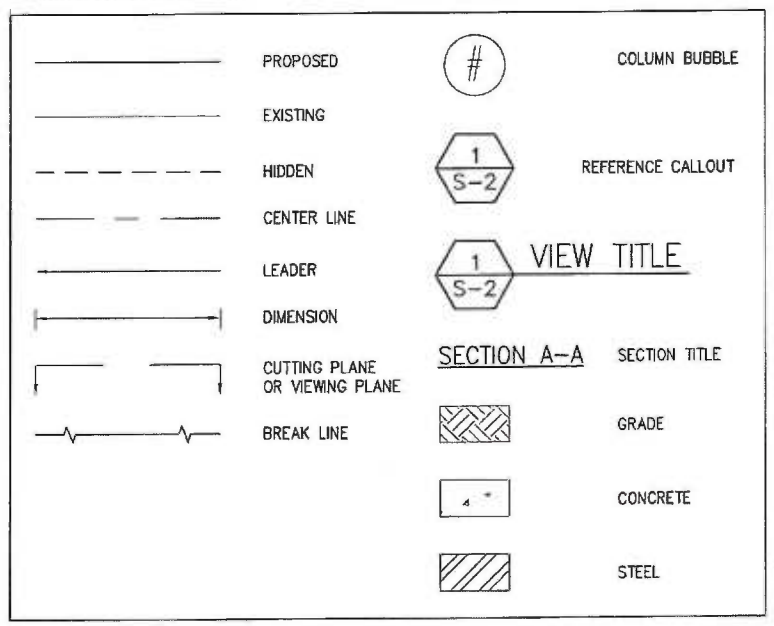
CONCRETE:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.

PLUMB & TENSION:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETENSIONING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINES AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS (EX. DO NOT EXCEED .6" FOR 20' OF VERTICAL DISTANCE)
4. THE TWIST BETWEEN ANY TWO ELEVATIONS SHALL NOT EXCEED .5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.
5. SEE "GUY WIRE RETENSIONING AND STANDARD SAFETY WIRE DETAILS" SHEET FOR ACCEPTABLE GUY WIRE TERMINATION EXTENSION, IF REQURED.

STRUCTURAL SYMBOLS



STRUCTURAL ABBREVIATIONS:

@	AT
AB	ANCHOR BOLT
ALT	ALTERNATE
APPROX	APPROXIMATE
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE
BRG	BEARING
CLR	CLEAR
CONC	CONCRETE
CONT	CONTINUOUS
CONT'D	CONTINUED
CTR	CENTERED
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DN	DOWN
do	DITTO
EA	EACH
EF	EACH FACE
EHS	EXTRA HIGH STRENGTH
EL, ELEV	ELEVATION
EMBED	EMBEDDED, EMBEDMENT
ENCL	ENCLOSURE
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EST	ESTIMATED
EW	EACH WAY
EXIST	EXISTING
EXT	EXTERIOR
FAB	FABRICATE
FIN	FINISHED
FND	FOUNDATION
FS	FAR SIDE
FT	FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GR	GRADE
GRND	GROUND, GRADE
GRTG	GRATING
HD	HEAVY DUTY
HEX	HEXAGON(AL)
HORIZ	HORIZONTAL
HP	HIGH POINT
HVY	HEAVY DUTY
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH, INCHES
INCL	INCLUDE, INCLUDING
INFO	INFORMATION
IT	INITIAL TENSION
KSI	KIP (1000 LBS)

L	ANGLE
LC	LENGTH OF CHORD
LG, LNG	LONG, LENGTH
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATE, LOCATION
LP	LOW POINT
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
NA	NOT APPLICABLE
NEC	NECESSARY
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPG, OPNG	OPENING
OPP	OPPOSITE
OS	OTHERWISE SPECIFIED
PCS	PIECES
PERIM	PERIMETER
PERP	PERPENDICULAR
PL	PLATE, PROPERTY LINE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
QC	QUALITY CONTROL
QUAL	QUALITY
R	RADIUS
REINF	REINFORCEMENT, REINFORCING
REQD	REQUIRED
REV	REVISION
SCHED	SCHEDULE
SP	SPACED, SPACES, SPACING
SPEC	SPECIFICATION
SQ	SQUARE
SQFT	SQUARE FEET
STD	STANDARD
STRUCT	STRUTURAL
SUB	SUBSTITUTE
T&B	TOP & BOTTOM
T/	TOP OF
THD	THREAD, THREADED
THK	THICK
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W/	WITH
W/O	WITHOUT
WP	WORKING POINT
YS	YIELD STRENGTH

T-Mobile

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
SOUTH BLOOMFIELD CT 06002

NSS NORTHEAST SITE SOLUTIONS
195 BROADYARD RD
FARMINGTON CT 06032

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 WATERVLIET SHAKER ROAD
ALBANY, NY 12205
OFFICE: (518) 690-0790
FAX: (518) 690-0793

SUBMITTALS

DATE	DESCRIPTION	REVISION
4/24/15	ISSUED FOR REVIEW	0

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO:	379-015
DRAWN BY:	VEB
CHECKED BY:	JRJ

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED
PROFESSIONAL ENGINEER
4/24/2015

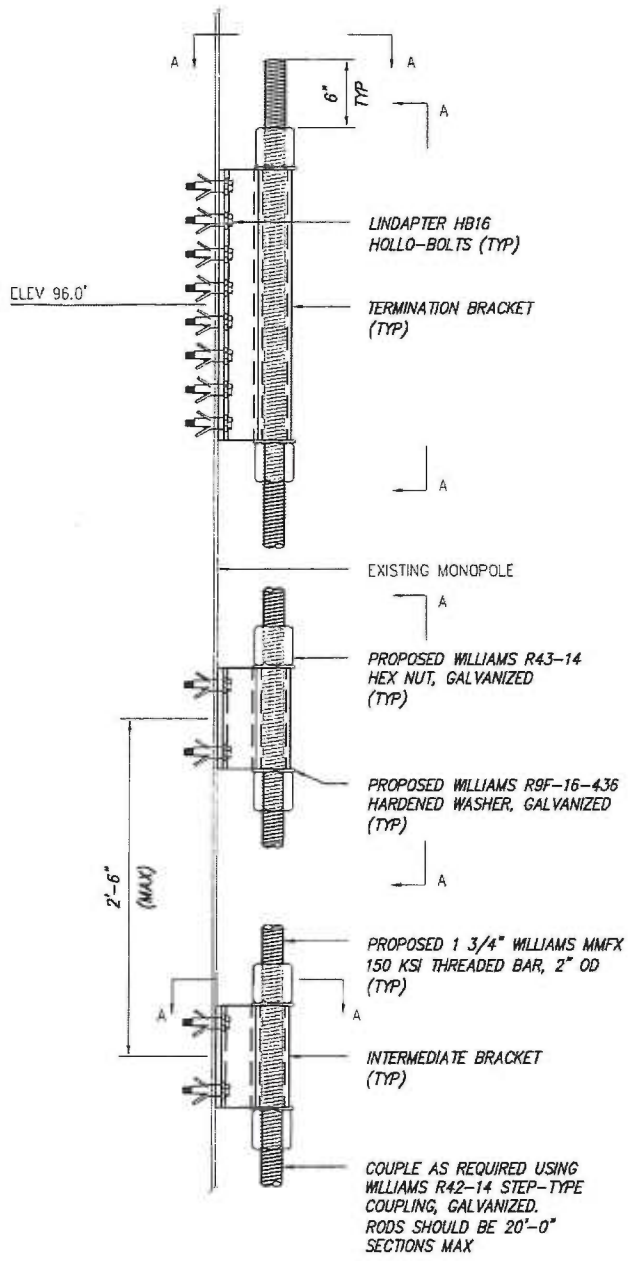
PROFESSIONAL SEAL

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

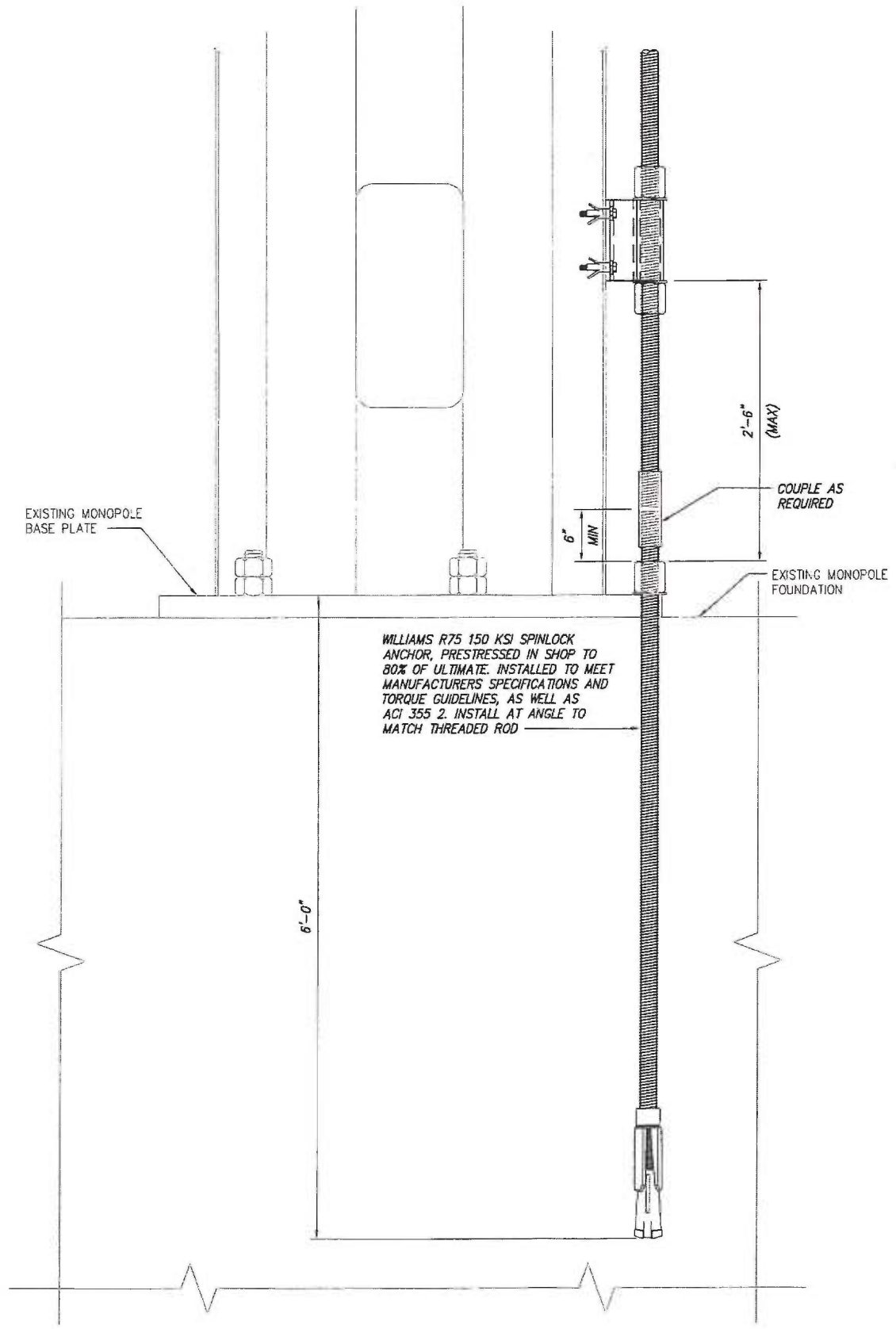
SITE NAME
CT11103A
76 EAST RIDGE RD
RIDGEFIELD, CT

SHEET TITLE
NOTES

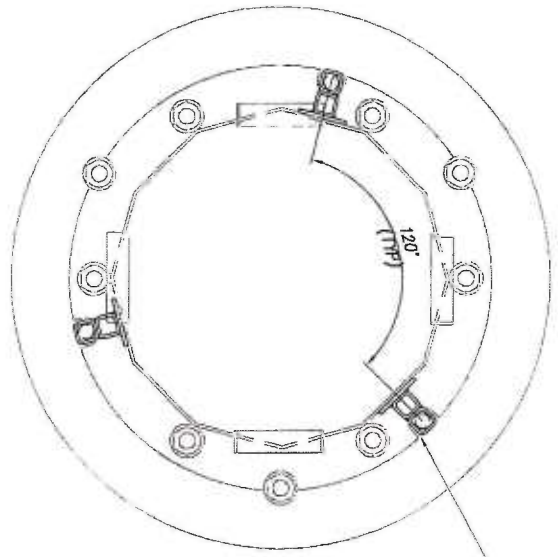
SHEET NUMBER
S1
SHEET OF 4 SHEETS



1 INSTALLATION DETAIL
SCALE: NTS



2 ANCHOR ROD DETAIL
SCALE: NTS



3 MODIFICATION LOCATIONS
SCALE: NTS

T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD
SOUTH BLOOMFIELD, CT 06002

NSS NORTHEAST SITE SOLUTIONS
199 BRICKYARD RD
FARMINGTON, CT 06032

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 WATERVLIET SHAKER ROAD
ALBANY, NY 12205
OFFICE (518) 690-0790
FAX (518) 690-0793

SUBMITTALS		
DATE	DESCRIPTION	REVISION
4/24/15	ISSUED FOR REVIEW	0

DEPT	DATE	APP'D	REVISIONS
RFE			
RF MAN			
ZONING			
CPS			
CONSTR.			
SITE AC			

PROJECT NO:	379-015
DRAWN BY:	VEB
CHECKED BY:	JRJ

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED
PROFESSIONAL ENGINEER
PROFESSIONAL SEAL
APR 24 2015

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

SITE NAME
CT11103A
76 EAST RIDGE RD.
RIDGEFIELD, CT

SHEET TITLE
INSTALLATION DETAILS

SHEET NUMBER
S4
SHEET OF 4 SHEETS

EXHIBIT B

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Road | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

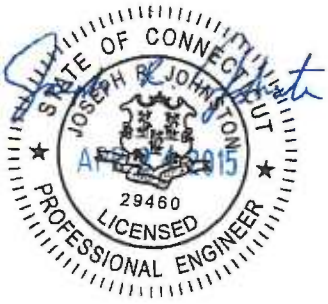
Post-Mod Tower Analysis Report

April 24, 2015

Site Name	CT11103A
Infinigy Job Number	379-015
Client	Northeast Site Solutions
Proposed Carrier	T-Mobile
Site Location	76 East Ridge Road, Ridgefield, CT 06877 39° 31' 53.1" N NAD83 76° 22' 10.5" W NAD83
Structure Type	130' Monopole
Structural Usage Ratio	**91%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements with the modifications listed below installed. The tower and foundations are therefore deemed adequate to support the existing and proposed loading as listed in this report.

- Considered the installation of (3) Williams R71 1-3/4" 150 KSI All-Thread-Bars with 30" connector spacing from 0'-96'
- Considered the installation of (3) Williams R7S 1-7/8" 150 KSI Spin-Lock anchors at the base of the pole



Joseph R. Johnston, P.E.
Department Manager - Structural

Contents

Introduction..... 3

Supporting Documentation..... 3

Analysis Code Requirements..... 3

Conclusion..... 3

Existing and Reserved Loading..... 4

Proposed Loading..... 4

Structure Usages..... 4

Foundation Reactions..... 5

Deflection, Twist, and Sway..... 5

Assumptions and Limitations..... 5

Calculations..... Appended

Introduction

Infinigy Engineering has been requested to perform a post modification structural analysis on the existing 130' monopole. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. Proposed modifications have been designed by Infinigy Engineering as listed in this report. The tower was analyzed using tnxTower version 6.1.3.1 tower analysis software.

Supporting Documentation

Previous Analysis	AECOM Job #36931429.00000, dated March 4, 2015

Analysis Code Requirements

Wind Speed	85 mph (Fastest-Mile)
Wind Speed w/ ice	75 mph (Fastest-Mile) w/ 1/2" ice
TIA Revision	ANSI/TIA/EIA-222-F
Adopted IBC	2003 IBC w/ 2005 CT Supplements & 2013 CT Amendments

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the modified structure meets the specified TIA code requirements. The tower and foundations are therefore deemed adequate to support the existing and proposed loading as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Joseph R. Johnston, P.E.
Department Manager - Structural | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (518) 669-4428
jjohnston@infinigy.com | www.infinigy.com

Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
130.0	1	Celwave PD440-140	Leg	(1) 1/2"	Town
128.0	3	Antel BXA-80080-4CF	Platform w/ Handrails	(18) 7/8" (1) 1-5/8" Hybrid	Verizon
	3	RFS APX75-866512			
	3	Antel BXA-171063-12CF			
	3	Til-Tek MGD3-800TX			
	1	Raycap DB-T1-6Z-8AB-0Z			
118.0	3	RFS APXVSPP18-C-A20	Platform w/ Handrails	(3) 1-5/8" Fiber (1) 1-1/4" Hybrid	Sprint
	3	RFS APXVTM14-C-120			
	3	ALU TD-RRH8x20			
	3	ALU 800 MHz RRH			
	3	ALU 1900MHz RRH			
100.0	2	Celwave PD1142-3	Platform w/ Handrails	(24) 7/8" (3) ½"	Town
	1	Celwave PD440-140			
	3	Ericsson AIR21, B2A B4P			T-Mobile
	3	Ericsson AIR21 B4A B2P			
	3	TMA			
86.0	1	Celwave PD1142-1	Side Arm	(2) ½"	Town
	1	Celwave PD1121			
58.0	1	Celwave PD1167	Side Arm	(2) ½"	
	1	Celwave PD1121	Side Arm		
50.0	1	GPS	Side Arm	(1) ½	Verizon

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
100.0	3	Andrew LNX-6515DS-VTM	--	--	T-Mobile
	3	Ericsson RRUS-11			

Structure Usages

Pole	78.9	Pass
Reinforcing	83.9	Pass
Base Plate	78.7	Pass
RATING =	**83.9**	**Pass**

Foundation Reactions

Reaction Data	Design Reactions	Analysis Reactions	Result
Moment (kip-ft)	N/A	2449.1	N/A
Shear (kip)	N/A	27.2	N/A
Axial (kip)	N/A	30.1	N/A

-Tower base reactions are acceptable per rigorous structural analysis

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
100.0	22.92	0.002	2.11

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.
*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

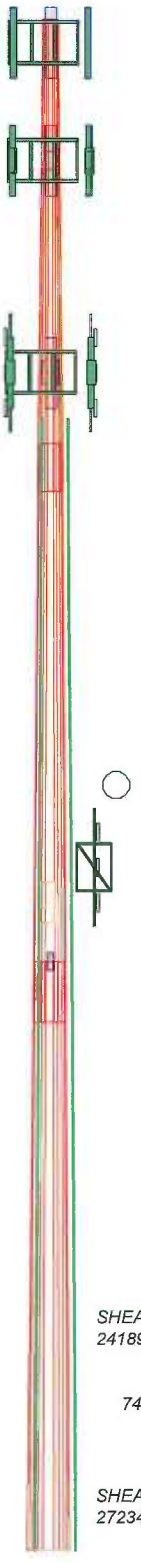
Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

Section	1	2	3
Length (ft)	40.08	49.17	50.00
Number of Sides	12	12	12
Thickness (in)	0.2200	0.3100	0.3800
Socket Length (ft)	4.08	5.17	
Top Dia (in)	16.2600	23.7422	32.8026
Bot Dia (in)	25.0800	34.5600	43.8000
Grade		A572-65	
Tube Length (ft)	16.00	20.00	20.00
Reinf Size			20.00
Reinf Grade			
Weight (lb) 14687.2	1975.8	4816.9	7894.6

Williams R71 1-3/4" 150 KSI All-Thread-Bar

Williams 150 KSI



AXIAL
36158 lb

SHEAR
24189 lb

MOMENT
2182278 lb-ft

TORQUE 3597 lb-ft
74 mph WIND - 0.5000 in ICE

AXIAL
30055 lb

SHEAR
27234 lb

MOMENT
2449143 lb-ft

TORQUE 3997 lb-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PD440-140	130	Angle Platform w/ Handrails (Verizon)	118
BXA-80080-4CF (Verizon)	128	PD1142-3 (Town)	100
BXA-80080-4CF (Verizon)	128	PD1142-3 (Town)	100
BXA-80080-4CF (Verizon)	128	PD440-140 (Town)	100
APX75-866512 (Verizon)	128	AIR 21, 1.3 M, B2A B4P (T-Mobile)	100
APX75-866512 (Verizon)	128	AIR 21, 1.3 M, B2A B4P (T-Mobile)	100
APX75-866512 (Verizon)	128	AIR 21, 1.3 M, B2A B4P (T-Mobile)	100
BXA-171063-12CF (Verizon)	128	AIR 21, 1.3M, B4A B2P (T-Mobile)	100
BXA-171063-12CF (Verizon)	128	AIR 21, 1.3M, B4A B2P (T-Mobile)	100
BXA-171063-12CF (Verizon)	128	AIR 21, 1.3M, B4A B2P (T-Mobile)	100
MGD3-800TX (Verizon)	128	TTA 18"x6"x6" (T-Mobile)	100
MGD3-800TX (Verizon)	128	TTA 18"x6"x6" (T-Mobile)	100
MGD3-800TX (Verizon)	128	TTA 18"x6"x6" (T-Mobile)	100
DB-T1-6Z-8AB-0Z (Verizon)	128	LNX-6515DS-VTM (T-Mobile)	100
Angle Platform w/ Handrails (Verizon)	128	LNX-6515DS-VTM (T-Mobile)	100
APXVSPP18-C-A20 (Sprint)	118	LNX-6515DS-VTM (T-Mobile)	100
APXVSPP18-C-A20 (Sprint)	118	RRUS-11 (T-Mobile)	100
APXVSPP18-C-A20 (Sprint)	118	RRUS-11 (T-Mobile)	100
APXVTM14-C-120 (Sprint)	118	RRUS-11 (T-Mobile)	100
APXVTM14-C-120 (Sprint)	118	Angle Platform w/ Handrails (Verizon)	100
APXVTM14-C-120 (Sprint)	118	PD1142-1 (Town)	86
TD-RRH8X20 (Sprint)	118	PD1121 (Town)	86
TD-RRH8X20 (Sprint)	118	Pipe Side Arm (Town)	86
TD-RRH8X20 (Sprint)	118	PD1167 (Town)	58
800 MHz RRH (Sprint)	118	PD1121 (Town)	58
800 MHz RRH (Sprint)	118	Pipe Side Arm (Town)	58
800 MHz RRH (Sprint)	118	Pipe Side Arm (Town)	58
1900MHz RRH (Sprint)	118	GPS (Town)	50
1900MHz RRH (Sprint)	118	Pipe Side Arm (Town)	50
1900MHz RRH (Sprint)	118		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Williams 150 KSI	120 ksi	150 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. BETA RELEASE FOR TESTING ONLY
6. TOWER RATING: 83.9%

Infinigy Solutions, LLC
1033 Watervliet Shaker Road.
Albany, NY 12205
Phone: (518) 690-0790
FAX: (518) 690-0793

Job:	***379-015***
Project:	***CT11103A - Mod Design***
Client:	North East Site Solutions / T-Mobile
Drawn by:	JJohnston
App'd:	
Code:	TIA/EIA-222-F
Date:	04/24/15
Scale:	NTS
Path:	N:\Northeast Site Solutions\TMobile\CT11103A\Structural\Structural Documents\CT11103A Mod Design.eri
Dwg No.	E-1

tnxTower	Job	Page
	379-015	1 of 13
Infinigy Solutions, LLC 1033 Watervliet Shaker Road. Albany, NY 12205 Phone: (518) 690-0790 FAX: (518) 690-0793	**Project** CT11103A - Mod Design	**Date** 11:26:36 04/24/15
	Client North East Site Solutions / T-Mobile	**Designed by** JJohnston

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate	√	Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension	√	All Leg Panels Have Same Allowable
	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Poles
√	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends		Include Shear-Torsion Interaction
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice Capacity Exemption		

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	130.00-89.92	40.08	4.08	12	16.2600	25.0800	0.2200	0.8800	A572-65 (65 ksi)
L2	89.92-44.83	49.17	5.17	12	23.7422	34.5600	0.3100	1.2400	A572-65 (65 ksi)
L3	44.83-0.00	50.00		12	32.8026	43.8000	0.3800	1.5200	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.8336	11.3627	373.1450	5.7423	8.4227	44.3024	756.0929	5.5924	3.7681	17.128
	25.9647	17.6108	1389.2099	8.8999	12.9914	106.9327	2814.9159	8.6675	6.1318	27.872
L2	25.5090	23.3900	1639.2314	8.3887	12.2984	133.2878	3321.5272	11.5118	5.5321	17.845
	35.7791	34.1884	5119.0013	12.2615	17.9021	285.9445	10372.4845	16.8265	8.4313	27.198
L3	35.1370	39.6722	5323.1297	11.6073	16.9917	313.2778	10786.1039	19.5255	7.7727	20.454
	45.3451	53.1287	12784.8276	15.5444	22.6884	563.4962	25905.5268	26.1483	10.7200	28.211

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 130.00-89.92				1	1	1		
L2 89.92-44.83				1	1	1		
L3 44.83-0.00				1	1	1		

Pole Reinforcing Data

Height Above Base ft	Segment Length ft	No. of Segments	Offset in	Grade	Type	Size	Unbraced Length ft	K	Bolt Hole Dia. in	Bolts per Row	Shear Lag Factor U
80.00	16.00	3	6.0000	Williams 150 KSI (120 ksi)	Solid Round	Williams R71 1-3/4" 150 KSI All-Thread-Bar	2.50	0.80	0.0000	1	1.000
60.00	20.00	3	6.0000	Williams 150 KSI (120 ksi)	Solid Round	Williams R71 1-3/4" 150 KSI All-Thread-Bar	2.50	0.80	0.0000	1	1.000
40.00	20.00	3	6.0000	Williams 150 KSI (120 ksi)	Solid Round	Williams R71 1-3/4" 150 KSI All-Thread-Bar	2.50	0.80	0.0000	1	1.000
20.00	20.00	3	6.0000	Williams 150 KSI (120 ksi)	Solid Round	Williams R71 1-3/4" 150 KSI All-Thread-Bar	2.50	0.80	0.0000	1	1.000
0.00	20.00	3	6.0000	Williams 150 KSI (120 ksi)	Solid Round	Williams R71 1-3/4" 150 KSI All-Thread-Bar	2.50	0.80	0.0000	1	1.000

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	√
Anchor bolt grade	A615
Anchor bolt size	2.2500 in
Number of bolts	12
Embedment length	102.0000 in
f'_c	3 ksi
Grout space	4.5000 in

Base Plate Data	
Base plate grade	A607-60
Base plate thickness	2.5000 in
Bolt circle diameter	49.7500 in
Outer diameter	56.5000 in
Inner diameter	42.2500 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	plf
7/8 (Verizon) ***	A	Surface Ar (CaAa)	128.00 - 0.00	3	2	0.000 0.000	1.1100		0.54

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		C_AA_A	Weight
				ft			ft^2/ft	plf
1/2 (Town) ***	A	No	Inside Pole	130.00 - 0.00	1	No Ice 1/2" Ice	0.00 0.00	0.25 0.25
7/8 (Verizon)	A	No	Inside Pole	128.00 - 0.00	12	No Ice 1/2" Ice	0.00 0.00	0.54 0.54
7/8 (Verizon)	A	No	Inside Pole	128.00 - 0.00	3	No Ice 1/2" Ice	0.00 0.00	0.54 0.54
1 5/8 (Verizon) ***	A	No	Inside Pole	128.00 - 0.00	1	No Ice 1/2" Ice	0.00 0.00	1.04 1.04
1 5/8" Fiber (Sprint)	A	No	Inside Pole	118.00 - 0.00	1	No Ice 1/2" Ice	0.00 0.00	1.61 1.61
1 5/8" Fiber (Sprint)	A	No	Inside Pole	118.00 - 0.00	2	No Ice 1/2" Ice	0.00 0.00	1.61 1.61
1 1/4" Hybriflex Cable (Sprint) ***	A	No	Inside Pole	118.00 - 0.00	1	No Ice 1/2" Ice	0.00 0.00	1.00 1.00
7/8 (T-Mobile)	A	No	Inside Pole	100.00 - 0.00	24	No Ice 1/2" Ice	0.00 0.00	0.54 0.54
1/2 (Town) ***	A	No	Inside Pole	100.00 - 0.00	3	No Ice 1/2" Ice	0.00 0.00	0.25 0.25
1/2 (Town) ***	A	No	Inside Pole	86.00 - 0.00	2	No Ice 1/2" Ice	0.00 0.00	0.25 0.25
1/2 (Town) ***	A	No	Inside Pole	58.00 - 0.00	2	No Ice 1/2" Ice	0.00 0.00	0.25 0.25
1/2 (Verizon) ***	A	No	Inside Pole	50.00 - 0.00	1	No Ice 1/2" Ice	0.00 0.00	0.25 0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	130.00-89.92	A	0.000	0.000	8.454	0.000	721.66
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	89.92-44.83	A	0.000	0.000	10.010	0.000	1405.96
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	44.83-0.00	A	0.000	0.000	9.952	0.000	1425.59
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	130.00-89.92	A	0.500	0.000	0.000	28.471	0.000	796.29
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	89.92-44.83	A	0.500	0.000	0.000	33.712	0.000	1494.32
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	44.83-0.00	A	0.500	0.000	0.000	33.518	0.000	1513.44
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	130.00-89.92	-0.2729	-0.1576	-0.5070	-0.2927
L2	89.92-44.83	-0.2844	-0.1642	-0.5606	-0.3237
L3	44.83-0.00	-0.2853	-0.1647	-0.5865	-0.3386

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PD440-140	B	None		0.0000	130.00	No Ice	2.66	2.66	20.00
						1/2" Ice	4.44	4.44	33.00
***									
BXA-80080-4CF	A	From Leg	3.00	0.0000	128.00	No Ice	5.25	1.63	14.30
(Verizon)			0.00			1/2" Ice	5.64	1.89	45.30

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						
BXA-80080-4CF	B	From Leg	3.00	0.0000	128.00	No Ice	5.25	1.63	14.30
(Verizon)			0.00			1/2" Ice	5.64	1.89	45.30
			0.00						
BXA-80080-4CF	C	From Leg	3.00	0.0000	128.00	No Ice	5.25	1.63	14.30
(Verizon)			0.00			1/2" Ice	5.64	1.89	45.30
			0.00						
APX75-866512	A	From Leg	3.00	0.0000	128.00	No Ice	6.19	1.52	19.80
(Verizon)			0.00			1/2" Ice	6.64	1.80	52.80
			0.00						
APX75-866512	B	From Leg	3.00	0.0000	128.00	No Ice	6.19	1.52	19.80
(Verizon)			0.00			1/2" Ice	6.64	1.80	52.80
			0.00						
APX75-866512	C	From Leg	3.00	0.0000	128.00	No Ice	6.19	1.52	19.80
(Verizon)			0.00			1/2" Ice	6.64	1.80	52.80
			0.00						
BXA-171063-12CF	A	From Leg	3.00	0.0000	128.00	No Ice	4.79	2.14	15.00
(Verizon)			0.00			1/2" Ice	5.24	2.51	42.45
			0.00						
BXA-171063-12CF	B	From Leg	3.00	0.0000	128.00	No Ice	4.79	2.14	15.00
(Verizon)			0.00			1/2" Ice	5.24	2.51	42.45
			0.00						
BXA-171063-12CF	C	From Leg	3.00	0.0000	128.00	No Ice	4.79	2.14	15.00
(Verizon)			0.00			1/2" Ice	5.24	2.51	42.45
			0.00						
MGD3-800TX	A	From Leg	3.00	0.0000	128.00	No Ice	3.23	2.37	15.00
(Verizon)			0.00			1/2" Ice	3.57	2.70	35.03
			0.00						
MGD3-800TX	B	From Leg	3.00	0.0000	128.00	No Ice	3.23	2.37	15.00
(Verizon)			0.00			1/2" Ice	3.57	2.70	35.03
			0.00						
MGD3-800TX	C	From Leg	3.00	0.0000	128.00	No Ice	3.23	2.37	15.00
(Verizon)			0.00			1/2" Ice	3.57	2.70	35.03
			0.00						
DB-T1-6Z-8AB-0Z	C	From Leg	0.00	0.0000	128.00	No Ice	4.62	2.77	21.00
(Verizon)			0.00			1/2" Ice	4.91	3.00	59.73
			0.00						
Angle Platform w/ Handrails	C	From Leg	0.00	0.0000	128.00	No Ice	42.40	42.40	2000.00
(Verizon)			0.00			1/2" Ice	48.40	48.40	2450.00
			0.00						
***									
APXVSPP18-C-A20	A	From Leg	3.00	0.0000	118.00	No Ice	8.26	3.06	57.00
(Sprint)			0.00			1/2" Ice	8.81	3.44	106.52
			0.00						
APXVSPP18-C-A20	B	From Leg	3.00	0.0000	118.00	No Ice	8.26	3.06	57.00
(Sprint)			0.00			1/2" Ice	8.81	3.44	106.52
			0.00						
APXVSPP18-C-A20	C	From Leg	3.00	0.0000	118.00	No Ice	8.26	3.06	57.00
(Sprint)			0.00			1/2" Ice	8.81	3.44	106.52
			0.00						
APXVTM14-C-120	A	From Leg	3.00	0.0000	118.00	No Ice	6.53	2.08	52.90
(Sprint)			0.00			1/2" Ice	6.96	2.38	90.49
			0.00						
APXVTM14-C-120	B	From Leg	3.00	0.0000	118.00	No Ice	6.53	2.08	52.90
(Sprint)			0.00			1/2" Ice	6.96	2.38	90.49
			0.00						
APXVTM14-C-120	C	From Leg	3.00	0.0000	118.00	No Ice	6.53	2.08	52.90

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
(Sprint)			0.00 0.00			1/2" Ice	6.96	2.38	90.49
TD-RRH8X20	A	From Leg	3.00	0.0000	118.00	No Ice	4.32	1.41	66.14
(Sprint)			0.00 0.00			1/2" Ice	4.60	1.61	90.08
TD-RRH8X20	B	From Leg	3.00	0.0000	118.00	No Ice	4.32	1.41	66.14
(Sprint)			0.00 0.00			1/2" Ice	4.60	1.61	90.08
TD-RRH8X20	C	From Leg	3.00	0.0000	118.00	No Ice	4.32	1.41	66.14
(Sprint)			0.00 0.00			1/2" Ice	4.60	1.61	90.08
800 MHz RRH	A	From Leg	3.00	0.0000	118.00	No Ice	2.25	2.40	64.00
(Sprint)			0.00 0.00			1/2" Ice	2.46	2.61	86.12
800 MHz RRH	B	From Leg	3.00	0.0000	118.00	No Ice	2.25	2.40	64.00
(Sprint)			0.00 0.00			1/2" Ice	2.46	2.61	86.12
800 MHz RRH	C	From Leg	3.00	0.0000	118.00	No Ice	2.25	2.40	64.00
(Sprint)			0.00 0.00			1/2" Ice	2.46	2.61	86.12
1900MHz RRH	A	From Leg	3.00	0.0000	118.00	No Ice	2.70	2.77	60.00
(Sprint)			0.00 0.00			1/2" Ice	2.94	3.01	83.90
1900MHz RRH	B	From Leg	3.00	0.0000	118.00	No Ice	2.70	2.77	60.00
(Sprint)			0.00 0.00			1/2" Ice	2.94	3.01	83.90
1900MHz RRH	C	From Leg	3.00	0.0000	118.00	No Ice	2.70	2.77	60.00
(Sprint)			0.00 0.00			1/2" Ice	2.94	3.01	83.90
Angle Platform w/ Handrails	C	From Leg	0.00	0.0000	118.00	No Ice	42.40	42.40	2000.00
(Verizon)			0.00 0.00			1/2" Ice	48.40	48.40	2450.00
***									
PD1142-3	A	From Leg	3.00	0.0000	100.00	No Ice	0.10	0.10	7.00
(Town)			0.00 0.00			1/2" Ice	0.97	0.97	10.25
PD1142-3	B	From Leg	3.00	0.0000	100.00	No Ice	0.10	0.10	7.00
(Town)			0.00 0.00			1/2" Ice	0.97	0.97	10.25
PD440-140	C	From Leg	3.00	0.0000	100.00	No Ice	2.66	2.66	20.00
(Town)			0.00 0.00			1/2" Ice	4.44	4.44	33.00
AIR 21, 1.3 M, B2A B4P	A	From Leg	3.00	0.0000	100.00	No Ice	6.53	4.36	83.00
(T-Mobile)			0.00 0.00			1/2" Ice	6.98	4.77	124.90
AIR 21, 1.3 M, B2A B4P	B	From Leg	3.00	0.0000	100.00	No Ice	6.53	4.36	83.00
(T-Mobile)			0.00 0.00			1/2" Ice	6.98	4.77	124.90
AIR 21, 1.3 M, B2A B4P	C	From Leg	3.00	0.0000	100.00	No Ice	6.53	4.36	83.00
(T-Mobile)			0.00 0.00			1/2" Ice	6.98	4.77	124.90
AIR 21, 1.3M, B4A B2P	A	From Leg	3.00	0.0000	100.00	No Ice	6.59	4.31	81.50
(T-Mobile)			0.00 0.00			1/2" Ice	7.03	4.72	123.39
AIR 21, 1.3M, B4A B2P	B	From Leg	3.00	0.0000	100.00	No Ice	6.59	4.31	81.50
(T-Mobile)			0.00 0.00			1/2" Ice	7.03	4.72	123.39

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
AIR 21, 1.3M, B4A B2P	C	From Leg	3.00			0.0000	100.00	No Ice	6.59	4.31	81.50
(T-Mobile)			0.00					1/2" Ice	7.03	4.72	123.39
			0.00								
TTA 18"x6"x6"	A	From Leg	3.00			0.0000	100.00	No Ice	1.05	1.08	20.61
(T-Mobile)			0.00					1/2" Ice	1.21	1.27	30.47
			0.00								
TTA 18"x6"x6"	B	From Leg	3.00			0.0000	100.00	No Ice	1.05	1.08	20.61
(T-Mobile)			0.00					1/2" Ice	1.21	1.27	30.47
			0.00								
TTA 18"x6"x6"	C	From Leg	3.00			0.0000	100.00	No Ice	1.05	1.08	20.61
(T-Mobile)			0.00					1/2" Ice	1.21	1.27	30.47
			0.00								
LNX-6515DS-VTM	A	From Leg	3.00			0.0000	100.00	No Ice	11.45	4.64	50.30
(T-Mobile)			0.00					1/2" Ice	12.06	5.14	116.17
			0.00								
LNX-6515DS-VTM	B	From Leg	3.00			0.0000	100.00	No Ice	11.45	4.64	50.30
(T-Mobile)			0.00					1/2" Ice	12.06	5.14	116.17
			0.00								
LNX-6515DS-VTM	C	From Leg	3.00			0.0000	100.00	No Ice	11.45	4.64	50.30
(T-Mobile)			0.00					1/2" Ice	12.06	5.14	116.17
			0.00								
RRUS-11	A	From Leg	3.00			0.0000	100.00	No Ice	4.42	1.63	55.00
(T-Mobile)			0.00					1/2" Ice	4.71	1.84	80.77
			0.00								
RRUS-11	B	From Leg	3.00			0.0000	100.00	No Ice	4.42	1.63	55.00
(T-Mobile)			0.00					1/2" Ice	4.71	1.84	80.77
			0.00								
RRUS-11	C	From Leg	3.00			0.0000	100.00	No Ice	4.42	1.63	55.00
(T-Mobile)			0.00					1/2" Ice	4.71	1.84	80.77
			0.00								
Angle Platform w/ Handrails	C	From Leg	0.00			0.0000	100.00	No Ice	42.40	42.40	2000.00
(Verizon)			0.00					1/2" Ice	48.40	48.40	2450.00
			0.00								
***											
PD1142-1	A	From Leg	3.00			0.0000	86.00	No Ice	1.86	1.86	10.00
(Town)			0.00					1/2" Ice	3.76	3.76	27.21
			0.00								
PD1121	A	From Leg	3.00			0.0000	86.00	No Ice	0.41	0.41	3.00
(Town)			0.00					1/2" Ice	1.52	1.52	11.00
			0.00								
Pipe Side Arm	A	From Leg	3.00			0.0000	86.00	No Ice	0.46	3.55	150.00
(Town)			0.00					1/2" Ice	0.62	4.93	175.00
			0.00								
***											
PD1167	B	From Leg	3.00			0.0000	58.00	No Ice	2.03	2.03	8.00
(Town)			0.00					1/2" Ice	3.39	3.39	13.00
			0.00								
PD1121	A	From Leg	3.00			0.0000	58.00	No Ice	0.41	0.41	3.00
(Town)			0.00					1/2" Ice	1.52	1.52	11.00
			0.00								
Pipe Side Arm	B	From Leg	3.00			0.0000	58.00	No Ice	0.46	3.55	150.00
(Town)			0.00					1/2" Ice	0.62	4.93	175.00
			0.00								
Pipe Side Arm	A	From Leg	3.00			0.0000	58.00	No Ice	0.46	3.55	150.00
(Town)			0.00					1/2" Ice	0.62	4.93	175.00
			0.00								
***											

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
GPS	A	From Leg	0.00	0.0000	50.00	No Ice	0.50	0.50	10.00
(Town)			0.00			1/2" Ice	0.63	0.63	15.96
			0.00						
Pipe Side Arm	A	From Leg	3.00	0.0000	50.00	No Ice	0.46	3.55	150.00
(Town)			0.00			1/2" Ice	0.62	4.93	175.00
			0.00						

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 89.92	38.618	35	2.7024	0.0389
L2	94 - 44.83	20.141	35	1.9910	0.0168
L3	50 - 0	5.685	35	1.0509	0.0041

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	PD440-140	35	38.618	2.7024	0.0390	16087
128.00	BXA-80080-4CF	35	37.527	2.6637	0.0377	16087
118.00	APXVSPP18-C-A20	35	32.114	2.4696	0.0310	6702
100.00	PD1142-3	35	22.924	2.1132	0.0200	2679
86.00	PD1142-1	35	16.725	1.8244	0.0133	2216
58.00	PD1167	36	7.520	1.2233	0.0054	2160
50.00	GPS	35	5.685	1.0509	0.0041	2182

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	130 - 89.92	76.917	10	5.3613	0.0774
L2	94 - 44.83	40.230	10	3.9725	0.0334
L3	50 - 0	11.373	11	2.1020	0.0081

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
130.00	PD440-140	10	76.917	5.3613	0.0781	8297
128.00	BXA-80080-4CF	10	74.753	5.2861	0.0754	8297
118.00	APXVSPP18-C-A20	10	64.014	4.9088	0.0619	3456
100.00	PD1142-3	10	45.765	4.2129	0.0399	1379
86.00	PD1142-1	11	33.429	3.6436	0.0266	1133
58.00	PD1167	11	15.044	2.4467	0.0108	1085
50.00	GPS	11	11.373	2.1020	0.0081	1092

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension	Actual Allowable Ratio Concrete Stress	Actual Allowable Ratio Plate Stress	Actual Allowable Ratio Stiffener Stress	Controlling Condition	Critical Ratio
in		in	lb	ksi	ksi	ksi		
2.5000	12	2.2500	123867.00 118089.52 1.05	2.169 2.100 1.03	41.981 45.000 0.93		Bolt T	1.05 ✔

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	lb	lb	
L1	130 - 89.92 (1)	TP25.08x16.26x0.22	40.08	0.00	0.0	39.000	16.6630	-9081.01	649857.00	0.014
L2	89.92 - 44.83 (2)	TP34.56x23.7422x0.31	49.17	0.00	0.0	39.000	33.0530	-12108.00	1289070.00	0.009
L3	44.83 - 0 (3)	TP43.8x32.8026x0.38	50.00	0.00	0.0	39.000	53.1287	-23128.30	2072020.00	0.011

Pole Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		lb-ft	ksi	ksi		lb-ft	ksi	ksi	
L1	130 - 89.92 (1)	TP25.08x16.26x0.22	313705.00	-39.342	39.000	1.009	0.00	0.000	39.000	0.000
L2	89.92 - 44.83 (2)	TP34.56x23.7422x0.31	845183.33	-37.959	39.000	0.973	0.00	0.000	39.000	0.000
L3	44.83 - 0 (3)	TP43.8x32.8026x0.38	1906100.00	-40.592	39.000	1.041	0.00	0.000	39.000	0.000

Pole Interaction Design Data

Section No.	Elevation	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft							
L1	130 - 89.92 (1)	TP25.08x16.26x0.22	0.014	1.009	0.000	1.023 ✔	1.333	H1-3 ✔
L2	89.92 - 44.83 (2)	TP34.56x23.7422x0.31	0.009	0.973	0.000	0.983 ✔	1.333	H1-3 ✔
L3	44.83 - 0 (3)	TP43.8x32.8026x0.38	0.011	1.041	0.000	1.052 ✔	1.333	H1-3 ✔

Reinforcing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L2	96 - 80	Williams R71 1-3/4" 150 KSI All-Thread-Bar	16.00	2.50	48.0 K=0.80	48.279	3.1416	-99084.30	151672.00	0.653
L2	80 - 60	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	48.0 K=0.80	48.279	3.1416	-132946.00	151672.00	0.877
L3	60 - 40	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	48.0 K=0.80	48.279	3.1416	-140521.00	151672.00	0.926
L3	40 - 20	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	48.0 K=0.80	48.279	3.1416	-157659.00	151672.00	1.039
L3	20 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	48.0 K=0.80	48.279	3.1416	-165522.00	151672.00	1.091

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L2	96 - 80	Williams R71 1-3/4" 150 KSI All-Thread-Bar	117.14	-1.790	90.000	0.020	0.00	0.000	90.000	0.000
L2	80 - 60	Williams R71 1-3/4" 150 KSI All-Thread-Bar	122.91	-1.878	90.000	0.021	0.00	0.000	90.000	0.000
L3	60 - 40	Williams R71 1-3/4" 150 KSI All-Thread-Bar	120.45	-1.840	90.000	0.020	0.00	0.000	90.000	0.000
L3	40 - 20	Williams R71 1-3/4" 150 KSI All-Thread-Bar	106.64	-1.629	90.000	0.018	0.00	0.000	90.000	0.000
L3	20 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	156.13	-2.385	90.000	0.027	0.00	0.000	90.000	0.000

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	96 - 80	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.653	0.020	0.000	0.673 ✔	1.333	H1-3 ✔
L2	80 - 60	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.877	0.021	0.000	0.897 ✔	1.333	H1-3 ✔
L3	60 - 40	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.926	0.020	0.000	0.947 ✔	1.333	H1-3 ✔
L3	40 - 20	Williams R71 1-3/4" 150 KSI All-Thread-Bar	1.039	0.018	0.000	1.058 ✔	1.333	H1-3 ✔
L3	20 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	1.091	0.027	0.000	1.118 ✔	1.333	H1-3 ✔

Tension Checks

Reinforcing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L2	96 - 80	Williams R71 1-3/4" 150 KSI All-Thread-Bar	16.00	2.50	60.0	72.000	3.1416	84373.00	226195.00	0.373
L2	80 - 60	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	60.0	72.000	3.1416	120862.00	226195.00	0.534
L3	60 - 40	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	60.0	72.000	3.1416	127888.00	226195.00	0.565
L3	40 - 20	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	60.0	72.000	3.1416	145600.00	226195.00	0.644
L3	20 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	20.00	2.50	60.0	72.000	3.1416	153648.00	226195.00	0.679

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L2	96 - 80	Williams R71 1-3/4" 150 KSI All-Thread-Bar	137.39	2.099	90.000	0.023	0.00	0.000	90.000	0.000
L2	80 - 60	Williams R71 1-3/4" 150 KSI All-Thread-Bar	146.96	2.245	90.000	0.025	0.00	0.000	90.000	0.000
L3	60 - 40	Williams R71 1-3/4" 150 KSI All-Thread-Bar	142.84	2.182	90.000	0.024	0.00	0.000	90.000	0.000
L3	40 - 20	Williams R71 1-3/4" 150 KSI All-Thread-Bar	128.28	1.960	90.000	0.022	0.00	0.000	90.000	0.000
L3	20 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	187.74	2.869	90.000	0.032	0.00	0.000	90.000	0.000

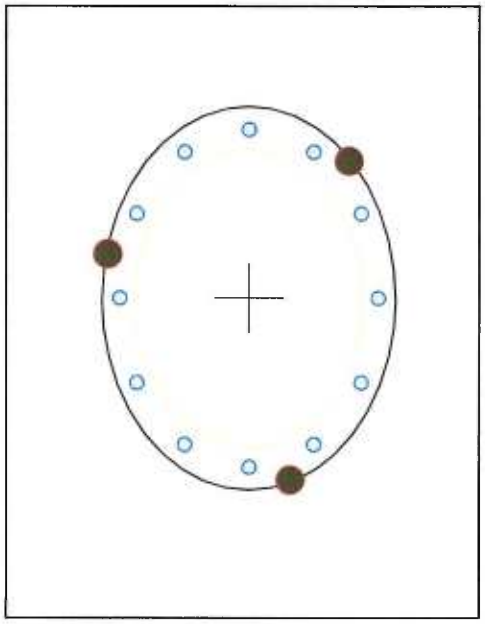
Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	96 - 80	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.373	0.023	0.000	0.396 ✔	1.333	H2-1 ✔
L2	80 - 60	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.534	0.025	0.000	0.559 ✔	1.333	H2-1 ✔
L3	60 - 40	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.565	0.024	0.000	0.590 ✔	1.333	H2-1 ✔
L3	40 - 20	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.644	0.022	0.000	0.665 ✔	1.333	H2-1 ✔
L3	20 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.679	0.032	0.000	0.711 ✔	1.333	H2-1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	130 - 89.92	Pole	TP25.08x16.26x0.22	1	-9081.01	866259.35	76.7	Pass
L2	89.92 - 44.83	Pole	TP34.56x23.7422x0.31	2	56795.10	1718330.24	73.7	Pass
	96 - 80	Reinforcing	Williams R71 1-3/4" 150 KSI All-Thread-Bar	18	-99084.30	202178.77	50.5	Pass
	80 - 60	Reinforcing	Williams R71 1-3/4" 150 KSI All-Thread-Bar	15	-132946.00	202178.77	67.3	Pass
L3	44.83 - 0	Pole	TP43.8x32.8026x0.38	3	47473.10	2762002.55	78.9	Pass
	60 - 40	Reinforcing	Williams R71 1-3/4" 150 KSI All-Thread-Bar	12	-140521.00	202178.77	71.0	Pass
	40 - 20	Reinforcing	Williams R71 1-3/4" 150 KSI All-Thread-Bar	9	-157659.00	202178.77	79.3	Pass
	20 - 0	Reinforcing	Williams R71 1-3/4" 150 KSI All-Thread-Bar	4	-165522.00	202178.77	83.9	Pass
							Summary	
						Pole (L3)	78.9	Pass
						Reinforcing (L3)	83.9	Pass
						Base Plate	78.7	Pass
						RATING =	**83.9**	**Pass**

Date:	4/24/2015
Customer:	NES / T-Mobile
Engineer:	JOEJ
Job #:	379-015
Baseplate/Flange:	Base Plate
Plate Shape:	Circle
Use Addendum 3:	No

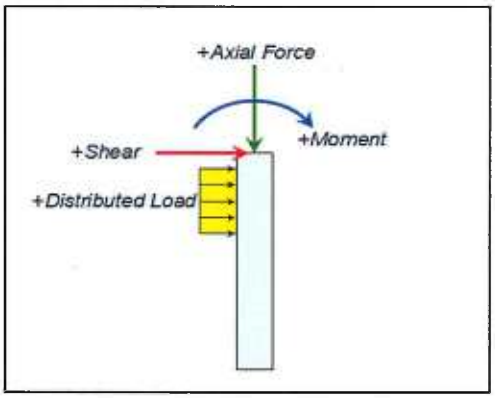


Loading Data		
TIA Code Revision:	Rev-F	
Axial:	30.06	kips
Moment:	2449.14	k-ft
Plate Data		
Pole Base Diameter:	43.8	in
Pole Base Shape:	12 Sided	
Pole thickness:	0.38	in
Pole Fy:	65	ksi
Base Weld Size:	0.38	in
Plate Diameter:	56.5	in
Plate Thickness:	2.5	in
Plate Steel Grade:	A572 Gr. 60	ksi
Internal/External:	External	ksi
Anchor Bolt Data		
Bolt Diameter:	2.25	in
Bolt Hole Diameter:	2.625	in
Bolt Quantity:	12	
Bolt Grade:	A615 Gr. 75	psi
Bolt Circle:	49.75	in
Bolt Spacing:	6	in
Fully Developed:	Unknown	
Additional Bolt Data		
Bolt Diameter:	R71 1-3/4"	in
Bolt Quantity:	3	
Bolt Grade:	A1035 Gr. 120	psi
Bolt Circle:	55.8	in
Angle:	5	deg
Stiffener Data		
Stiffener Quantity:		
Stiffener Height:		in
Stiffener Width:		in

Plate Ratio:	21.55
Bolt Ratio:	91.00
Additional Bolt Ratio:	**69.03**
Vertical Weld Ratio:	-
Horizontal Weld Ratio:	-
Stiffener Ratio:	-

Date:	4/24/2015
Site Name:	CT11103A
Client:	NES / T-Mobile
Infinigy Job #:	379-015
Analysis/Design:	Analysis
Tower Type:	Monopole

Infinigy Engineering PLLC
Drilled Shaft Calculations
ACI 318-11
Ensoft L-Pile 1212.6.37
Ensoft Shaft 2012.7.8



Loading Data			
TIA Code Revision:	ANSI/TIA/EIA-222-F		
Factored Moment:	2449.14	kip-ft	From tnxTower
Factored Uplift:	0	kips	
Factored Axial:	30.06	kips	
Factored Shear:	27.2	kips	
Service Moment:	1223.42	kip-ft	
Service Uplift:	0	kips	
Service Axial:	30.01	kips	
Service Shear:	13.6	kips	

Concrete Strength Check			
Bending Reduction Factor:	1.00		
Unfactored Ultimate Moment Capacity:	5832.30	k-ft	From L-Pile
Maximum Moment In Shaft:	2558.24	k-ft	
Depth of Maximum Moment in Shaft:	5.67	ft	
SF:	**2.28**	OK	

Servicability Soil Stability Check			
Allowable Service Pile Head Deflection:	0.75	in	
Maximum Service Pile Head Deflection:	0.18	in	From L-Pile
Deflection Ratio:	**24**	%	

LPile Plus for Windows, Version 2013-07.007

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This copy of LPile is used by:

Joseph R. Johnston, P.E.
Infinigy Engineering PLLC

Serial Number of Security Device: 140966619
This copy of LPile is licensed for exclusive use by: Infinigy, Latham, NY

Use of this program by any entity other than Infinigy, Latham, NY
is forbidden by the software license agreement.

Files Used for Analysis

Path to file locations: N:\Northeast Site Solutions\TMobile\CT11103A\Structural\Structural Documents\
Name of input data file: New LPile (USCS units).lp7d
Name of output report file: New LPile (USCS units).lp7o
Name of plot output file: New LPile (USCS units).lp7p
Name of runtime messeage file: New LPile (USCS units).lp7r

Date and Time of Analysis

Date: April 24, 2015 Time: 12:18:16

Problem Title

Project Name: CT11103A

Job Number: 379-015

Client: Northeast Site Solutions / T-Mobile

Engineer: JOEJ

New LPile (USCS units).lp7o

Description: Foundation Analysis

Program Options and Settings

Engineering Units of Input Data and Computations:
- Engineering units are US Customary Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed	=	500
- Deflection tolerance for convergence	=	1.0000E-05 in
- Maximum allowable deflection	=	100.0000 in
- Number of pile increments	=	100

Loading Type and Number of Cycles of Loading:
- Cyclic loading specified
- Number of cycles of loading = 4636737291354636288

Computational Options:
- Use unfactored loads in computations (conventional analysis)
- Compute pile response under loading and nonlinear bending properties of pile (only if nonlinear pile properties are input)
- Use of p-y modification factors for p-y curves not selected
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- No p-y curves to be computed and reported for user-specified depths
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

Total number of pile sections	=	1
Total length of pile	=	21.00 ft
Depth of ground surface below top of pile	=	0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	72.0000000
2	21.000000	72.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	=	Drilled Shaft (Bored Pile)
Section Length	=	21.00000 ft
Section Diameter	=	72.00000 in

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	0.0000 ft
Distance from top of pile to bottom of layer	=	3.33000 ft
Effective unit weight at top of layer	=	115.00000 pcf
Effective unit weight at bottom of layer	=	115.00000 pcf
Friction angle at top of layer	=	30.00000 deg.
Friction angle at bottom of layer	=	30.00000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Internal default values for subgrade k will be computed for this soil layer.

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	3.33000 ft
Distance from top of pile to bottom of layer	=	8.00000 ft
Effective unit weight at top of layer	=	115.00000 pcf
Effective unit weight at bottom of layer	=	115.00000 pcf
Friction angle at top of layer	=	30.00000 deg.
Friction angle at bottom of layer	=	38.00000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Internal default values for subgrade k will be computed for this soil layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	8.00000 ft
Distance from top of pile to bottom of layer	=	23.00000 ft
Effective unit weight at top of layer	=	115.00000 pcf
Effective unit weight at bottom of layer	=	93.00000 pcf

Friction angle at top of layer	=	38.00000 deg.
Friction angle at bottom of layer	=	45.00000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Internal default values for subgrade k will be computed for this soil layer.

(Depth of lowest soil layer extends 2.00 ft below pile tip)

Summary of Soil Properties

Layer Num.	Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.00	115.000	30.000	default
		3.330	115.000	30.000	default
2	Sand (Reese, et al.)	3.330	115.000	30.000	default
		8.000	115.000	38.000	default
3	Sand (Reese, et al.)	8.000	115.000	38.000	default
		23.000	93.000	45.000	default

Loading Type

Cyclic loading criteria were used for computation of p-y curves for all analyses.

Number of cycles of loading = 100

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load No.	Load Compute Type	Condition 1	Condition 2	Axial Thrust Force, lbs Top y vs. Pile Length
1	1 No	V = 27000. lbs	M = 29389700. in-lbs	30060.

2 1 V = 13600. lbs M = 14681000. in-lbs 30010.
No

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	21.00000 ft
Shaft Diameter	=	72.00000 in
Concrete Cover Thickness	=	3.00000 in
Number of Reinforcing Bars	=	26 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	4071.50408 sq. in.
Total Area of Reinforcing Steel	=	40.56000 sq. in.
Area Ratio of Steel Reinforcement	=	1.00 percent
Edge-to-Edge Bar Spacing	=	6.37546 in
Maximum Concrete Aggregate Size	=	0.75000 in
Ratio of Bar Spacing to Aggregate Size	=	8.50
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	12712.508 kips
Tensile Load for Cracking of Concrete	=	-1595.685 kips
Nominal Axial Tensile Capacity	=	-2433.600 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.41000	1.56000	32.29500	0.00000
2	1.41000	1.56000	31.35657	7.72870
3	1.41000	1.56000	28.59580	15.00823
4	1.41000	1.56000	24.17315	21.41555
5	1.41000	1.56000	18.34565	26.57826
6	1.41000	1.56000	11.45196	30.19635
7	1.41000	1.56000	3.89273	32.05953
8	1.41000	1.56000	-3.89273	32.05953
9	1.41000	1.56000	-11.45196	30.19635
10	1.41000	1.56000	-18.34565	26.57826
11	1.41000	1.56000	-24.17315	21.41555

12	1.41000	1.56000	-28.59580	15.00823
13	1.41000	1.56000	-31.35657	7.72870
14	1.41000	1.56000	-32.29500	0.00000
15	1.41000	1.56000	-31.35657	-7.72870
16	1.41000	1.56000	-28.59580	-15.00823
17	1.41000	1.56000	-24.17315	-21.41555
18	1.41000	1.56000	-18.34565	-26.57826
19	1.41000	1.56000	-11.45196	-30.19635
20	1.41000	1.56000	-3.89273	-32.05953
21	1.41000	1.56000	3.89273	-32.05953
22	1.41000	1.56000	11.45196	-30.19635
23	1.41000	1.56000	18.34565	-26.57826
24	1.41000	1.56000	24.17315	-21.41555
25	1.41000	1.56000	28.59580	-15.00823
26	1.41000	1.56000	31.35657	-7.72870

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 6.37546 inches
between Bars 22 and 23

Spacing to aggregate size ratio = 8.50062

Concrete Properties:

Compressive Strength of Concrete	=	3000.00000 psi
Modulus of Elasticity of Concrete	=	3122019. psi
Modulus of Rupture of Concrete	=	-410.79191 psi
Compression Strain at Peak Stress	=	0.00163
Tensile Strain at Fracture of Concrete	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.75000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 2

Number	Axial Thrust Force kips
1	30.010
2	30.060

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318-08 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than than 0.003. See ACI 318-08, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 30.010 kips

Bending Max Concrete Curvature rad/in.	Bending Max Steel Stress ksi	Bending Moment in-kip	Run Stiffness Msg kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
0.000000417	2236.1546265	5366771104.		40.5230234	0.0000169	
-0.0000131	0.0611507	0.4853032				
0.000000833	4460.1858598	5352223032.		38.2696653	0.0000319	
-0.0000281	0.1149120	0.9161502				
0.000001250	6671.8532690	5337482615.		37.5185999	0.0000469	
-0.0000431	0.1681773	1.3469993				
0.000001667	8871.1563471	5322693808.		37.1430999	0.0000619	
-0.0000581	0.2209464	1.7778498				
0.000002083	11058.	5307885623.		36.9178253	0.0000769	
-0.0000731	0.2732195	2.2087020				
0.000002500	13233.	5293067735.		36.7676629	0.0000919	
-0.0000881	0.3249964	2.6395555				
0.000002917	15395.	5278244302.		36.6604219	0.0001069	
-0.0001031	0.3762772	3.0704107				
0.000003333	15395.	4618463765.		20.1733348	0.0000672	
-0.0001728	0.2376751	-4.9751110	C			
0.000003750	15395.	4105301124.		19.9600391	0.0000749	
-0.0001951	0.2638900	-5.6201957	C			
0.000004167	15395.	3694771012.		19.7903524	0.0000825	
-0.0002175	0.2899937	-6.2651657	C			
0.000004583	15395.	3358882738.		19.6476027	0.0000901	
-0.0002399	0.3159099	-6.9106561	C			
0.000005000	15395.	3078975843.		19.5297774	0.0000976	
-0.0002624	0.3417212	-7.5559823	C			
0.000005417	15395.	2842131547.		19.4311287	0.0001053	
-0.0002847	0.3674273	-8.2011435	C			
0.000005833	15395.	2639122151.		19.3475512	0.0001129	
-0.0003071	0.3930281	-8.8461392	C			
0.000006250	15395.	2463180674.		19.2760342	0.0001205	
-0.0003295	0.4185234	-9.4909688	C			
0.000006667	15395.	2309231882.		19.2143196	0.0001281	
-0.0003519	0.4439128	-10.1356315	C			
0.000007083	15395.	2173394713.		19.1606808	0.0001357	
-0.0003743	0.4691963	-10.7801268	C			
0.000007500	15395.	2052650562.		19.1137749	0.0001434	
-0.0003966	0.4943735	-11.4244539	C			
0.000007917	15395.	1944616322.		19.0722360	0.0001510	
-0.0004190	0.5194363	-12.0686825	C			
0.000008333	15395.	1847385506.		19.0343328	0.0001586	
-0.0004414	0.5443587	-12.7130362	C			
0.000008750	15395.	1759414767.		19.0007332	0.0001663	
-0.0004637	0.5691754	-13.3572139	C			
0.000009167	15395.	1679441369.		18.9708530	0.0001739	
-0.0004861	0.5938860	-14.0012149	C			
0.000009583	15395.	1606422179.		18.9442098	0.0001815	
-0.0005085	0.6184905	-14.6450383	C			
0.0000100	15395.	1539487922.		18.9204015	0.0001892	
-0.0005308	0.6429885	-15.2886835	C			
0.0000104	15395.	1477908405.		18.8990903	0.0001969	
-0.0005531	0.6673799	-15.9321498	C			
0.0000108	15395.	1421065774.		18.8799905	0.0002045	
-0.0005755	0.6916643	-16.5754366	C			
0.0000113	15395.	1368433708.		18.8628587	0.0002122	
-0.0005978	0.7158417	-17.2185426	C			

```
     0.0000117         15395.    1319561076.     18.8474864      0.0002199
-0.0006201     0.7399117   -17.8614673  C
     0.0000121         15395.    1274058970.     18.8336936      0.0002276
-0.0006424     0.7638740   -18.5042100  C
     0.0000125         15586.    1246846075.     18.8213246      0.0002353
-0.0006647     0.7877286   -19.1467700  C
     0.0000129         16082.    1245086200.     18.8102437      0.0002430
-0.0006870     0.8114751   -19.7891463  C
     0.0000133         16579.    1243412412.     18.8003321      0.0002507
-0.0007093     0.8351133   -20.4313383  C
     0.0000138         17075.    1241816799.     18.7914856      0.0002584
-0.0007316     0.8586430   -21.0733452  C
     0.0000142         17571.    1240292380.     18.7836121      0.0002661
-0.0007539     0.8820638   -21.7151661  C
     0.0000146         18066.    1238832970.     18.7766300      0.0002738
-0.0007762     0.9053757   -22.3568002  C
     0.0000150         18561.    1237433072.     18.7704671      0.0002816
-0.0007984     0.9285783   -22.9982468  C
     0.0000154         19056.    1236087782.     18.7650586      0.0002893
-0.0008207     0.9516714   -23.6395050  C
     0.0000158         19551.    1234792712.     18.7603469      0.0002970
-0.0008430     0.9746547   -24.2805741  C
     0.0000163         20045.    1233543922.     18.7562800      0.0003048
-0.0008652     0.9975280   -24.9214530  C
     0.0000171         21033.    1231171341.     18.7498990      0.0003203
-0.0009097     1.0429436   -26.2026376  C
     0.0000179         22019.    1228945600.     18.7455941      0.0003359
-0.0009541     1.0879162   -27.4830517  C
     0.0000188         23003.    1226846566.     18.7431011      0.0003514
-0.0009986     1.1324436   -28.7626887  C
     0.0000196         23987.    1224857536.     18.7422011      0.0003670
-0.0010430     1.1765240   -30.0415416  C
     0.0000204         24969.    1222964526.     18.7427110      0.0003827
-0.0010873     1.2201550   -31.3196032  C
     0.0000213         25950.    1221155740.     18.7444766      0.0003983
-0.0011317     1.2633347   -32.5968662  C
     0.0000221         26929.    1219421154.     18.7473674      0.0004140
-0.0011760     1.3060608   -33.8733234  C
     0.0000229         27907.    1217752195.     18.7512717      0.0004297
-0.0012203     1.3483313   -35.1489673  C
     0.0000238         28883.    1216141485.     18.7560941      0.0004455
-0.0012645     1.3901438   -36.4237902  C
     0.0000246         29858.    1214582640.     18.7617518      0.0004612
-0.0013088     1.4314961   -37.6977845  C
     0.0000254         30832.    1213070108.     18.7681734      0.0004770
-0.0013530     1.4723860   -38.9709423  C
     0.0000263         31804.    1211599031.     18.7752968      0.0004929
-0.0013971     1.5128112   -40.2432555  C
     0.0000271         32775.    1210165147.     18.7830674      0.0005087
-0.0014413     1.5527693   -41.5147161  C
     0.0000279         33745.    1208764691.     18.7914375      0.0005246
-0.0014854     1.5922579   -42.7853157  C
     0.0000288         34713.    1207394331.     18.8003651      0.0005405
-0.0015295     1.6312747   -44.0550460  C
     0.0000296         35679.    1206051102.     18.8098131      0.0005565
-0.0015735     1.6698173   -45.3238983  C
     0.0000304         36644.    1204732359.     18.8197485      0.0005724
-0.0016176     1.7078831   -46.5918640  C
     0.0000313         37607.    1203435731.     18.8301423      0.0005884
-0.0016616     1.7454696   -47.8589342  C
     0.0000321         38569.    1202159086.     18.8409683      0.0006045
-0.0017055     1.7825743   -49.1250998  C
     0.0000329         39530.    1200900566.     18.8522035      0.0006206
```

-0.0017494	1.8191948	-50.3903507	C		
0.0000338	40488.	1199658311.		18.8638270	0.0006367
-0.0017933	1.8553282	-51.6546793	C		
0.0000346	41446.	1198430800.		18.8758203	0.0006528
-0.0018372	1.8909719	-52.9180751	C		
0.0000354	42401.	1197216597.		18.8881668	0.0006690
-0.0018810	1.9261233	-54.1805286	C		
0.0000363	43356.	1196014391.		18.9008515	0.0006852
-0.0019248	1.9607796	-55.4420297	C		
0.0000371	44308.	1194822981.		18.9138611	0.0007014
-0.0019686	1.9949380	-56.7025684	C		
0.0000379	45259.	1193641268.		18.9271835	0.0007177
-0.0020123	2.0285957	-57.9621344	C		
0.0000387	46208.	1192468236.		18.9408077	0.0007340
-0.0020560	2.0617499	-59.2207172	C		
0.0000396	47156.	1191302952.		18.9547241	0.0007503
-0.0020997	2.0943976	-60.0000000	CY		
0.0000404	48102.	1190144550.		18.9689239	0.0007667
-0.0021433	2.1265358	-60.0000000	CY		
0.0000412	49046.	1188992229.		18.9833992	0.0007831
-0.0021869	2.1581616	-60.0000000	CY		
0.0000421	49966.	1187299634.		18.9950493	0.0007994
-0.0022306	2.1890232	-60.0000000	CY		
0.0000429	50767.	1182924018.		18.9914193	0.0008150
-0.0022750	2.2181158	-60.0000000	CY		
0.0000437	51497.	1177085260.		18.9791971	0.0008303
-0.0023197	2.2459738	-60.0000000	CY		
0.0000446	52121.	1169065671.		18.9537493	0.0008450
-0.0023650	2.2722234	-60.0000000	CY		
0.0000454	52703.	1160422293.		18.9243283	0.0008595
-0.0024105	2.2976118	-60.0000000	CY		
0.0000462	53283.	1152065454.		18.8964720	0.0008740
-0.0024560	2.3225903	-60.0000000	CY		
0.0000471	53846.	1143636804.		18.8678574	0.0008884
-0.0025016	2.3469758	-60.0000000	CY		
0.0000479	54325.	1133744176.		18.8292832	0.0009022
-0.0025478	2.3700312	-60.0000000	CY		
0.0000487	54746.	1122994858.		18.7845965	0.0009157
-0.0025943	2.3920733	-60.0000000	CY		
0.0000496	55165.	1112574511.		18.7416980	0.0009293
-0.0026407	2.4137460	-60.0000000	CY		
0.0000529	56816.	1073690168.		18.5848852	0.0009835
-0.0028265	2.4966041	-60.0000000	CY		
0.0000562	58020.	1031474116.		18.3932847	0.0010346
-0.0030154	2.5689829	-60.0000000	CY		
0.0000596	59143.	992603795.		18.2108354	0.0010851
-0.0032049	2.6348093	-60.0000000	CY		
0.0000629	60210.	956980301.		18.0436661	0.0011352
-0.0033948	2.6948856	-60.0000000	CY		
0.0000662	60942.	919880081.		17.8491245	0.0011825
-0.0035875	2.7464500	-60.0000000	CY		
0.0000696	61643.	885881060.		17.6731497	0.0012298
-0.0037802	2.7932400	-60.0000000	CY		
0.0000729	62332.	854832772.		17.5087838	0.0012767
-0.0039733	2.8349802	-60.0000000	CY		
0.0000762	63013.	826402375.		17.3602268	0.0013237
-0.0041663	2.8721025	-60.0000000	CY		
0.0000796	63567.	798749076.		17.2070171	0.0013694
-0.0043606	2.9036074	-60.0000000	CY		
0.0000829	63971.	771504174.		17.0451531	0.0014133
-0.0045567	2.9296905	-60.0000000	CY		
0.0000862	64363.	746234324.		16.8958838	0.0014573
-0.0047527	2.9516705	-60.0000000	CY		

```
     0.0000896         64744.     722723981.     16.7519606      0.0015007
-0.0049493     2.9693515    -60.0000000  CY
     0.0000929         65121.     700854444.     16.6208623      0.0015444
-0.0051456     2.9830874    -60.0000000  CY
     0.0000963         65494.     680454104.     16.5013134      0.0015883
-0.0053417     2.9928127    -60.0000000  CY
     0.0000996         65862.     661374282.     16.3922121      0.0016324
-0.0055376     2.9984595    -60.0000000  CY
     0.0001029         66225.     643484437.     16.2926414      0.0016768
-0.0057332     2.9987172    -60.0000000  CY
     0.0001063         66506.     625934834.     16.1858991      0.0017198
-0.0059302     2.9990832    -60.0000000  CY
     0.0001096         66694.     608611362.     16.0633679      0.0017603
-0.0061297     2.9982617    -60.0000000  CY
     0.0001129         66876.     592262481.     15.9497116      0.0018010
-0.0063290     2.9985575    -60.0000000  CY
     0.0001163         67056.     576830018.     15.8442131      0.0018419
-0.0065281     2.9999991    -60.0000000  CY
     0.0001196         67233.     562228559.     15.7466522      0.0018830
-0.0067270     2.9969751    -60.0000000  CY
     0.0001229         67408.     548401526.     15.6558179      0.0019244
-0.0069256     2.9995964    -60.0000000  CY
     0.0001263         67580.     535283348.     15.5714191      0.0019659
-0.0071241     2.9970540    -60.0000000  CY
     0.0001296         67749.     522820070.     15.4929235      0.0020076
-0.0073224     2.9976434    -60.0000000  CY
     0.0001329         67912.     510938408.     15.4137299      0.0020487
-0.0075213     2.9997311    -60.0000000  CY
     0.0001363         68073.     499615876.     15.3386758      0.0020899
-0.0077201     2.9969080    -60.0000000  CY
     0.0001396         68231.     488820025.     15.2685081      0.0021312
-0.0079188     2.9965894     60.0000000  CY
     0.0001429         68388.     478518431.     15.2025881      0.0021727
-0.0081173     2.9991922     60.0000000  CY
     0.0001462         68544.     468676684.     15.1406749      0.0022143
-0.0083157     2.9996645     60.0000000  CY
     0.0001496         68693.     459231944.     15.0818869      0.0022560
-0.0085140     2.9937498     60.0000000  CY
     0.0001529         68840.     450178876.     15.0259439      0.0022977
-0.0087123     2.9970193     60.0000000  CY
     0.0001562         68954.     441304371.     14.9649272      0.0023383
-0.0089117     2.9992082     60.0000000  CY
     0.0001596         69051.     432696486.     14.9030953      0.0023783
-0.0091117     2.9999949     60.0000000  CY
     0.0001629         69133.     424347664.     14.8412447      0.0024179
-0.0093121     2.9954557     60.0000000  CY
     0.0001662         69204.     416262717.     14.7794770      0.0024571
-0.0095129     2.9938070     60.0000000  CY
     0.0001696         69270.     408473742.     14.7160938      0.0024956
-0.0097144     2.9967576     60.0000000  CY
     0.0001729         69335.     400973681.     14.6534631      0.0025338
-0.0099162     2.9987398     60.0000000  CY
     0.0001762         69399.     393755074.     14.5936493      0.0025721
-0.0101179     2.9998048     60.0000000  CY
     0.0001796         69463.     386800935.     14.5366653      0.0026105
-0.0103195     2.9984973     60.0000000  CY
     0.0001829         69526.     380096254.     14.4824272      0.0026491
-0.0105209     2.9942320     60.0000000  CY
     0.0002029         69867.     344315809.     14.2157195      0.0028846
-0.0117254     2.9980895     60.0000000  CY
     0.0002229         70123.     314568334.     14.0440048      0.0031306
-0.0129194     2.9991395     60.0000000  CYT
     0.0002429         70340.     289564920.     13.9012161      0.0033768
```

-0.0141132 2.9902407 60.0000000 CYT
0.0002629 70505. 268164492. 13.8131608 0.0036317
-0.0152983 2.9978187 60.0000000 CYT
0.0002829 70505. 249207355. 13.8440597 0.0039167
-0.0164533 2.9960342 60.0000000 CYT

Axial Thrust Force = 30.060 kips

Bending Max Concrete Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Run Stiffness Msg kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
0.000000417	2236.1538167	5366769160.	40.5305597	0.0000169	
-0.0000131	0.0611621	0.4853943			
0.000000833	4460.1850392	5352222047.	38.2734470	0.0000319	
-0.0000281	0.1149234	0.9162416			
0.000001250	6671.8524415	5337481953.	37.5211302	0.0000469	
-0.0000431	0.1681885	1.3470910			
0.000001667	8871.1555132	5322693308.	37.1450045	0.0000619	
-0.0000581	0.2209576	1.7779419			
0.000002083	11058.	5307885220.	36.9193546	0.0000769	
-0.0000731	0.2732306	2.2087943			
0.000002500	13233.	5293067397.	36.7689420	0.0000919	
-0.0000881	0.3250075	2.6396483			
0.000002917	15395.	5278244010.	36.6615223	0.0001069	
-0.0001031	0.3762882	3.0705038			
0.000003333	15395.	4618463509.	20.1766673	0.0000673	
-0.0001727	0.2377143	-4.9747888 C			
0.000003750	15395.	4105300897.	19.9630050	0.0000749	
-0.0001951	0.2639290	-5.6198732 C			
0.000004167	15395.	3694770807.	19.7931301	0.0000825	
-0.0002175	0.2900341	-6.2648301 C			
0.000004583	15395.	3358882552.	19.6501311	0.0000901	
-0.0002399	0.3159501	-6.9103201 C			
0.000005000	15395.	3078975673.	19.5320981	0.0000977	
-0.0002623	0.3417613	-7.5556458 C			
0.000005417	15395.	2842131390.	19.4332737	0.0001053	
-0.0002847	0.3674673	-8.2008066 C			
0.000005833	15395.	2639122005.	19.3495455	0.0001129	
-0.0003071	0.3930680	-8.8458019 C			
0.000006250	15395.	2463180538.	19.2778980	0.0001205	
-0.0003295	0.4185630	-9.4906310 C			
0.000006667	15395.	2309231754.	19.2160692	0.0001281	
-0.0003519	0.4439524	-10.1352933 C			
0.000007083	15395.	2173394592.	19.1623296	0.0001357	
-0.0003743	0.4692357	-10.7797881 C			
0.000007500	15395.	2052650448.	19.1153341	0.0001434	
-0.0003966	0.4944128	-11.4241148 C			
0.000007917	15395.	1944616214.	19.0737757	0.0001510	
-0.0004190	0.5194770	-12.0683290 C			
0.000008333	15395.	1847385404.	19.0357976	0.0001586	
-0.0004414	0.5443993	-12.7126822 C			
0.000008750	15395.	1759414670.	19.0021301	0.0001663	
-0.0004637	0.5692158	-13.3568595 C			
0.000009167	15395.	1679441276.	18.9721883	0.0001739	
-0.0004861	0.5939263	-14.0008599 C			
0.000009583	15395.	1606422090.	18.9454888	0.0001816	
-0.0005084	0.6185306	-14.6446829 C			

```
     0.0000100        15395.    1539487836.     18.9216288     0.0001892
-0.0005308     0.6430285    -15.2883276  C
     0.0000104        15395.    1477908323.     18.9002702     0.0001969
-0.0005531     0.6674197    -15.9317933  C
     0.0000108        15395.    1421065695.     18.8811266     0.0002045
-0.0005755     0.6917040    -16.5750796  C
     0.0000113        15395.    1368433632.     18.8639543     0.0002122
-0.0005978     0.7158812    -17.2181851  C
     0.0000117        15395.    1319561003.     18.8485443     0.0002199
-0.0006201     0.7399510    -17.8611094  C
     0.0000121        15395.    1274058899.     18.8347165     0.0002276
-0.0006424     0.7639132    -18.5038516  C
     0.0000125        15586.    1246916194.     18.8223148     0.0002353
-0.0006647     0.7877676    -19.1464110  C
     0.0000129        16083.    1245153998.     18.8112034     0.0002430
-0.0006870     0.8115140    -19.7887868  C
     0.0000133        16580.    1243478034.     18.8012631     0.0002507
-0.0007093     0.8351520    -20.4309783  C
     0.0000138        17076.    1241880377.     18.7923897     0.0002584
-0.0007316     0.8586815    -21.0729847  C
     0.0000142        17572.    1240354033.     18.7844908     0.0002661
-0.0007539     0.8821023    -21.7148051  C
     0.0000146        18067.    1238892809.     18.7774849     0.0002738
-0.0007762     0.9054140    -22.3564387  C
     0.0000150        18562.    1237491197.     18.7712994     0.0002816
-0.0007984     0.9286164    -22.9978848  C
     0.0000154        19057.    1236144285.     18.7658696     0.0002893
-0.0008207     0.9517093    -23.6391425  C
     0.0000158        19552.    1234847678.     18.7611377     0.0002971
-0.0008429     0.9746925    -24.2802109  C
     0.0000163        20046.    1233597431.     18.7570517     0.0003048
-0.0008652     0.9975656    -24.9210894  C
     0.0000171        21033.    1231222146.     18.7506352     0.0003203
-0.0009097     1.0429809    -26.2022728  C
     0.0000179        22019.    1228993953.     18.7462981     0.0003359
-0.0009541     1.0879532    -27.4826859  C
     0.0000188        23004.    1226892684.     18.7437759     0.0003514
-0.0009986     1.1324803    -28.7623218  C
     0.0000196        23988.    1224901608.     18.7428491     0.0003670
-0.0010430     1.1765603    -30.0411736  C
     0.0000204        24970.    1223006719.     18.7433344     0.0003827
-0.0010873     1.2201910    -31.3192340  C
     0.0000213        25950.    1221196201.     18.7450775     0.0003983
-0.0011317     1.2633704    -32.5964960  C
     0.0000221        26930.    1219460012.     18.7479473     0.0004140
-0.0011760     1.3060962    -33.8729520  C
     0.0000229        27908.    1217789566.     18.7518323     0.0004297
-0.0012203     1.3483663    -35.1485948  C
     0.0000238        28884.    1216177473.     18.7566367     0.0004455
-0.0012645     1.3901784    -36.4234165  C
     0.0000246        29859.    1214617338.     18.7622777     0.0004612
-0.0013088     1.4315304    -37.6974096  C
     0.0000254        30833.    1213103600.     18.7686837     0.0004770
-0.0013530     1.4724200    -38.9705662  C
     0.0000263        31805.    1211631393.     18.7757924     0.0004929
-0.0013971     1.5128448    -40.2428782  C
     0.0000271        32776.    1210196447.     18.7835493     0.0005087
-0.0014413     1.5528026    -41.5143376  C
     0.0000279        33746.    1208794993.     18.7919066     0.0005246
-0.0014854     1.5922909    -42.7849360  C
     0.0000288        34713.    1207423692.     18.8008221     0.0005405
-0.0015295     1.6313073    -44.0546650  C
     0.0000296        35680.    1206079574.     18.8102586     0.0005565
```

```
-0.0015735     1.6698495   -45.3235161  C
     0.0000304         36645.    1204759991.     18.8201833     0.0005724
-0.0016176     1.7079149   -46.5914805  C
     0.0000313         37608.    1203462566.     18.8305669     0.0005885
-0.0016615     1.7455011   -47.8585494  C
     0.0000321         38570.    1202185165.     18.8413833     0.0006045
-0.0017055     1.7826055   -49.1247137  C
     0.0000329         39530.    1200925928.     18.8526093     0.0006206
-0.0017494     1.8192256   -50.3899633  C
     0.0000338         40489.    1199682989.     18.8642241     0.0006367
-0.0017933     1.8553586   -51.6542905  C
     0.0000346         41447.    1198454828.     18.8762092     0.0006528
-0.0018372     1.8910019   -52.9176850  C
     0.0000354         42402.    1197240004.     18.8885479     0.0006690
-0.0018810     1.9261529   -54.1801371  C
     0.0000363         43356.    1196037205.     18.9012252     0.0006852
-0.0019248     1.9608089   -55.4416369  C
     0.0000371         44309.    1194845229.     18.9142277     0.0007014
-0.0019686     1.9949669   -56.7021742  C
     0.0000379         45260.    1193662973.     18.9275433     0.0007177
-0.0020123     2.0286242   -57.9617388  C
     0.0000387         46209.    1192489422.     18.9411611     0.0007340
-0.0020560     2.0617780   -59.2203202  C
     0.0000396         47157.    1191323639.     18.9550713     0.0007503
-0.0020997     2.0944253   -60.0000000  CY
     0.0000404         48102.    1190164759.     18.9692652     0.0007667
-0.0021433     2.1265631   -60.0000000  CY
     0.0000412         49047.    1189011979.     18.9837348     0.0007831
-0.0021869     2.1581885   -60.0000000  CY
     0.0000421         49966.    1187319243.     18.9953812     0.0007994
-0.0022306     2.1890499   -60.0000000  CY
     0.0000429         50768.    1182944361.     18.9917525     0.0008151
-0.0022749     2.2181426   -60.0000000  CY
     0.0000437         51498.    1177105839.     18.9795290     0.0008304
-0.0023196     2.2460006   -60.0000000  CY
     0.0000446         52122.    1169086597.     18.9540806     0.0008450
-0.0023650     2.2722501   -60.0000000  CY
     0.0000454         52703.    1160442810.     18.9246545     0.0008595
-0.0024105     2.2976382   -60.0000000  CY
     0.0000462         53284.    1152085569.     18.8967933     0.0008740
-0.0024560     2.3226163   -60.0000000  CY
     0.0000471         53847.    1143657119.     18.8681778     0.0008884
-0.0025016     2.3470017   -60.0000000  CY
     0.0000479         54326.    1133764828.     18.8296036     0.0009023
-0.0025477     2.3700570   -60.0000000  CY
     0.0000487         54747.    1123015146.     18.7849123     0.0009158
-0.0025942     2.3920987   -60.0000000  CY
     0.0000496         55166.    1112594432.     18.7420093     0.0009293
-0.0026407     2.4137710   -60.0000000  CY
     0.0000529         56817.    1073709117.     18.5851825     0.0009835
-0.0028265     2.4966278   -60.0000000  CY
     0.0000562         58021.    1031492575.     18.3935723     0.0010346
-0.0030154     2.5690054   -60.0000000  CY
     0.0000596         59144.     992621297.     18.2111249     0.0010851
-0.0032049     2.6348314   -60.0000000  CY
     0.0000629         60211.     956997174.     18.0439462     0.0011353
-0.0033947     2.6949063   -60.0000000  CY
     0.0000662         60943.     919896580.     17.8493978     0.0011825
-0.0035875     2.7464693   -60.0000000  CY
     0.0000696         61644.     885896715.     17.6734118     0.0012298
-0.0037802     2.7932576   -60.0000000  CY
     0.0000729         62333.     854847809.     17.5090521     0.0012767
-0.0039733     2.8349971   -60.0000000  CY
```

```
     0.0000762         63014.     826416703.     17.3604855      0.0013237
-0.0041663     2.8721175    -60.0000000  CY
     0.0000796         63568.     798763399.     17.2072755      0.0013694
-0.0043606     2.9036209    -60.0000000  CY
     0.0000829         63972.     771517928.     17.0454035      0.0014133
-0.0045567     2.9297021    -60.0000000  CY
     0.0000862         64364.     746247661.     16.8961437      0.0014573
-0.0047527     2.9516810    -60.0000000  CY
     0.0000896         64745.     722736783.     16.7522127      0.0015007
-0.0049493     2.9693599    -60.0000000  CY
     0.0000929         65122.     700866749.     16.6211073      0.0015444
-0.0051456     2.9830936    -60.0000000  CY
     0.0000963         65495.     680465945.     16.5015518      0.0015883
-0.0053417     2.9928168    -60.0000000  CY
     0.0000996         65863.     661385690.     16.3924445      0.0016324
-0.0055376     2.9984614    -60.0000000  CY
     0.0001029         66226.     643495435.     16.2928683      0.0016768
-0.0057332     2.9987123    -60.0000000  CY
     0.0001063         66507.     625945816.     16.1861440      0.0017198
-0.0059302     2.9990849    -60.0000000  CY
     0.0001096         66695.     608622228.     16.0636131      0.0017603
-0.0061297     2.9982561    -60.0000000  CY
     0.0001129         66877.     592273002.     15.9499511      0.0018010
-0.0063290     2.9985597    -60.0000000  CY
     0.0001163         67058.     576840212.     15.8444473      0.0018419
-0.0065281     2.9999991    -60.0000000  CY
     0.0001196         67234.     562238439.     15.7468818      0.0018831
-0.0067269     2.9969783    -60.0000000  CY
     0.0001229         67409.     548411116.     15.6560426      0.0019244
-0.0069256     2.9995976    -60.0000000  CY
     0.0001263         67581.     535292656.     15.5716398      0.0019659
-0.0071241     2.9970482    -60.0000000  CY
     0.0001296         67750.     522829120.     15.4931399      0.0020077
-0.0073223     2.9976463    -60.0000000  CY
     0.0001329         67913.     510947319.     15.4139626      0.0020488
-0.0075212     2.9997321    -60.0000000  CY
     0.0001363         68074.     499624544.     15.3389048      0.0020899
-0.0077201     2.9969015    -60.0000000  CY
     0.0001396         68232.     488828471.     15.2687331      0.0021313
-0.0079187     2.9965933     60.0000000  CY
     0.0001429         68389.     478526666.     15.2028092      0.0021727
-0.0081173     2.9991941     60.0000000  CY
     0.0001462         68545.     468684708.     15.1408930      0.0022144
-0.0083156     2.9996579     60.0000000  CY
     0.0001496         68695.     459239800.     15.0821023      0.0022560
-0.0085140     2.9937431     60.0000000  CY
     0.0001529         68841.     450186549.     15.0261559      0.0022977
-0.0087123     2.9970230     60.0000000  CY
     0.0001562         68955.     441312054.     14.9651432      0.0023383
-0.0089117     2.9992102     60.0000000  CY
     0.0001596         69052.     432703999.     14.9033078      0.0023783
-0.0091117     2.9999951     60.0000000  CY
     0.0001629         69135.     424355107.     14.8414587      0.0024179
-0.0093121     2.9954485     60.0000000  CY
     0.0001662         69205.     416270003.     14.7796874      0.0024571
-0.0095129     2.9938129     60.0000000  CY
     0.0001696         69272.     408480979.     14.7163246      0.0024956
-0.0097144     2.9967623     60.0000000  CY
     0.0001729         69336.     400980772.     14.6536903      0.0025339
-0.0099161     2.9987428     60.0000000  CY
     0.0001762         69401.     393762024.     14.5938730      0.0025722
-0.0101178     2.9998059     60.0000000  CY
     0.0001796         69464.     386807742.     14.5368866      0.0026106
```

```
-0.0103194     2.9984891    60.0000000  CY
     0.0001829         69527.     380102932.    14.4826451     0.0026491
-0.0105209     2.9942238    60.0000000  CY
     0.0002029         69869.     344321666.    14.2159341     0.0028846
-0.0117254     2.9980804    60.0000000  CY
     0.0002229         70124.     314573614.    14.0442081     0.0031307
-0.0129193     2.9991423    60.0000000  CYT
     0.0002429         70341.     289569785.    13.9014392     0.0033769
-0.0141131     2.9902521    60.0000000  CYT
     0.0002629         70506.     268168897.    13.8133869     0.0036318
-0.0152982     2.9978063    60.0000000  CYT
     0.0002829         70506.     249211449.    13.8443126     0.0039168
-0.0164532     2.9960438    60.0000000  CYT
```

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	30.010	69987.065	0.00300000
2	30.060	69988.202	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Load No.	Resistance Factor for Moment	Nominal Bending Stiffness kip-in^2	Ultimate (Factored) Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate Moment Capacity in-kip
1	0.65	1193353718.154	69987.065	19.506	45491.590
2	0.65	1193375398.927	69988.202	19.539	45492.329
1	0.70	1189059330.226	69987.065	21.007	48990.944
2	0.70	1189079129.471	69988.202	21.042	48991.740
1	0.75	1163575717.439	69987.065	22.508	52490.298
2	0.75		69988.202	22.545	

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 27000.0 lbs
Applied moment at pile head = 29389700.0 in-lbs
Axial thrust load on pile head = 30060.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Es*h	Soil Spr. Distrib. p Lat. Load
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	lb/in	lb/inch	lb/inch
0.00	0.7369	29389700.	27000.	-0.006170	0.000	1.215E+12	0.000	0.000	0.000
0.210	0.7214	29458205.	26981.	-0.006109	0.000	1.215E+12	-15.2160	53.1505	0.000
0.420	0.7061	29526609.	26922.	-0.006048	0.000	1.215E+12	-31.8666	113.7269	0.000
0.630	0.6909	29594806.	26818.	-0.005987	0.000	1.215E+12	-49.9998	182.3576	0.000
0.840	0.6759	29662680.	26668.	-0.005925	0.000	1.215E+12	-69.6633	259.7156	0.000
1.050	0.6611	29730108.	26465.	-0.005864	0.000	1.215E+12	-90.9047	346.5224	0.000
1.260	0.6464	29796954.	26207.	-0.005802	0.000	1.215E+12	-113.7715	443.5512	0.000
1.470	0.6318	29863072.	25890.	-0.005740	0.000	1.215E+12	-138.3107	551.6315	0.000
1.680	0.6175	29928308.	25508.	-0.005678	0.000	1.215E+12	-164.5692	671.6533	0.000
1.890	0.6032	29992493.	25058.	-0.005616	0.000	1.214E+12	-192.5936	804.5721	0.000
2.100	0.5891	30055451.	24535.	-0.005554	0.000	1.214E+12	-222.4302	951.4140	0.000
2.310	0.5752	30116992.	23935.	-0.005491	0.000	1.214E+12	-254.1251	1113.2821	0.000
2.520	0.5615	30176914.	23252.	-0.005429	0.000	1.214E+12	-287.7239	1291.3623	0.000
2.730	0.5479	30235004.	22482.	-0.005366	0.000	1.214E+12	-323.2723	1486.9303	0.000
2.940	0.5344	30291037.	21620.	-0.005303	0.000	1.214E+12	-360.8151	1701.3597	0.000
3.150	0.5211	30344774.	20665.	-0.005240	0.000	1.214E+12	-397.0502	1919.9459	0.000
3.360	0.5080	30395984.	19620.	-0.005177	0.000	1.214E+12	-432.4305	2145.0554	0.000
3.570	0.4951	30444443.	18470.	-0.005114	0.000	1.214E+12	-480.5047	2445.9580	0.000
3.780	0.4822	30489846.	17194.	-0.005051	0.000	1.214E+12	-531.9749	2779.8813	0.000
3.990	0.4696	30531867.	15784.	-0.004987	0.000	1.214E+12			

-587.0316	3150.2074	0.000				
4.200	0.4571	30570154.	14231.	-0.004924	0.000	1.214E+12
-645.8739	3560.6670	0.000				
4.410	0.4448	30604335.	12524.	-0.004860	0.000	1.213E+12
-708.7101	4015.3765	0.000				
4.620	0.4326	30634011.	10653.	-0.004797	0.000	1.213E+12
-775.7580	4518.8805	0.000				
4.830	0.4206	30658755.	8608.4896	-0.004733	0.000	1.213E+12
-847.2447	5076.1988	0.000				
5.040	0.4088	30678115.	6377.4676	-0.004670	0.000	1.213E+12
-923.4077	5692.8790	0.000				
5.250	0.3971	30691605.	3948.3110	-0.004606	0.000	1.213E+12
-1004.4943	6375.0566	0.000				
5.460	0.3855	30698712.	1308.2871	-0.004542	0.000	1.213E+12
-1090.7627	7129.5208	0.000				
5.670	0.3742	30698887.	-1556.0010	-0.004478	0.000	1.213E+12
-1182.4818	7963.7900	0.000				
5.880	0.3630	30691548.	-4658.6415	-0.004415	0.000	1.213E+12
-1279.9313	8886.1963	0.000				
6.090	0.3519	30676077.	-8009.9130	-0.004351	0.000	1.213E+12
-1379.8079	9880.2410	0.000				
6.300	0.3410	30651838.	-11612.	-0.004287	0.000	1.213E+12
-1479.0130	10929.	0.000				
6.510	0.3303	30618201.	-15471.	-0.004223	0.000	1.213E+12
-1583.4162	12080.	0.000				
6.720	0.3198	30574505.	-19599.	-0.004160	0.000	1.213E+12
-1693.2351	13344.	0.000				
6.930	0.3094	30520051.	-24012.	-0.004097	0.000	1.214E+12
-1808.6935	14734.	0.000				
7.140	0.2991	30454107.	-28722.	-0.004033	0.000	1.214E+12
-1930.0206	16260.	0.000				
7.350	0.2890	30375901.	-33747.	-0.003970	0.000	1.214E+12
-2057.4514	17939.	0.000				
7.560	0.2791	30284625.	-39100.	-0.003907	0.000	1.214E+12
-2191.2260	19785.	0.000				
7.770	0.2693	30179429.	-44799.	-0.003844	0.000	1.214E+12
-2331.5892	21815.	0.000				
7.980	0.2597	30059422.	-50860.	-0.003782	0.000	1.214E+12
-2478.7901	24051.	0.000				
8.190	0.2503	29923668.	-56811.	-0.003720	0.000	1.215E+12
-2244.1307	22596.	0.000				
8.400	0.2410	29773659.	-62591.	-0.003658	0.000	1.215E+12
-2343.6157	24508.	0.000				
8.610	0.2318	29608762.	-68624.	-0.003596	0.000	1.215E+12
-2444.6288	26572.	0.000				
8.820	0.2229	29428336.	-74914.	-0.003535	0.000	1.215E+12
-2547.0889	28802.	0.000				
9.030	0.2140	29231731.	-81464.	-0.003474	0.000	1.216E+12
-2650.9057	31213.	0.000				
9.240	0.2053	29018287.	-88276.	-0.003414	0.000	1.216E+12
-2755.9796	33821.	0.000				
9.450	0.1968	28787336.	-95355.	-0.003354	0.000	1.216E+12
-2862.1998	36647.	0.000				
9.660	0.1884	28538205.	-102703.	-0.003294	0.000	1.217E+12
-2969.4437	39710.	0.000				
9.870	0.1802	28270212.	-110315.	-0.003236	0.000	1.217E+12
-3072.2353	42960.	0.000				
10.080	0.1721	27982705.	-118187.	-0.003177	0.000	1.218E+12
-3175.0407	46482.	0.000				
10.290	0.1642	27675031.	-126319.	-0.003120	0.000	1.218E+12
-3278.6914	50318.	0.000				
10.500	0.1564	27346531.	-134713.	-0.003063	0.000	1.219E+12
-3383.0969	54506.	0.000				

10.710	0.1488	26996543.	-143370.	-0.003007	0.000	1.219E+12
-3488.1545	59088.	0.000				
10.920	0.1413	26624400.	-152294.	-0.002951	0.000	1.220E+12
-3593.7464	64112.	0.000				
11.130	0.1339	26229431.	-161483.	-0.002897	0.000	1.221E+12
-3699.7375	69635.	0.000				
11.340	0.1267	25810963.	-170941.	-0.002843	0.000	1.221E+12
-3805.9711	75724.	0.000				
11.550	0.1196	25368321.	-180636.	-0.002790	0.000	1.222E+12
-3888.7797	81965.	0.000				
11.760	0.1126	24900980.	-190286.	-0.002738	0.000	1.223E+12
-3769.6415	84369.	0.000				
11.970	0.1058	24409697.	-199626.	-0.002688	0.000	1.224E+12
-3643.0828	86807.	0.000				
12.180	0.0990	23895274.	-208637.	-0.002638	0.000	1.225E+12
-3509.1158	89279.	0.000				
12.390	0.0925	23358564.	-217302.	-0.002589	0.000	1.226E+12
-3367.7465	91785.	0.000				
12.600	0.0860	22800464.	-225601.	-0.002542	0.000	1.227E+12
-3218.9742	94326.	0.000				
12.810	0.0797	22221918.	-233517.	-0.002496	0.000	1.229E+12
-3062.7904	96901.	0.000				
13.020	0.0734	21623919.	-241029.	-0.002451	0.000	1.230E+12
-2899.1781	99510.	0.000				
13.230	0.0673	21007505.	-248119.	-0.002407	0.000	1.231E+12
-2728.1116	102154.	0.000				
13.440	0.0613	20373764.	-254769.	-0.002365	0.000	1.233E+12
-2549.5555	104833.	0.000				
13.650	0.0554	19723828.	-260959.	-0.002324	0.000	1.234E+12
-2363.4641	107547.	0.000				
13.860	0.0496	19058881.	-266671.	-0.002284	0.000	1.236E+12
-2169.7807	110297.	0.000				
14.070	0.0439	18380152.	-271885.	-0.002246	0.000	1.238E+12
-1968.4371	113081.	0.000				
14.280	0.0383	17688920.	-276582.	-0.002210	0.000	1.240E+12
-1759.3534	115901.	0.000				
14.490	0.0327	16986512.	-280743.	-0.002174	0.000	1.242E+12
-1542.4367	118757.	0.000				
14.700	0.0273	16274307.	-284346.	-0.002141	0.000	1.244E+12
-1317.5814	121649.	0.000				
14.910	0.0219	15553732.	-287373.	-0.002109	0.000	1.256E+12
-1084.6685	124576.	0.000				
15.120	0.0167	14826266.	-289803.	-0.002089	0.000	5.282E+12
-843.5370	127540.	0.000				
15.330	0.0114	14093443.	-291610.	-0.002083	0.000	5.287E+12
-591.0876	130539.	0.000				
15.540	0.006171	13356866.	-292767.	-0.002076	0.000	5.292E+12
-327.1097	133576.	0.000				
15.750	0.000948	12618212.	-293244.	-0.002070	0.000	5.297E+12
-51.3888	136648.	0.000				
15.960	-0.004261	11879230.	-293011.	-0.002064	0.000	5.302E+12
236.2941	139758.	0.000				
16.170	-0.009455	11141749.	-292038.	-0.002059	0.000	5.307E+12
536.1622	142904.	0.000				
16.380	-0.0146	10407672.	-290293.	-0.002053	0.000	5.312E+12
848.4430	146088.	0.000				
16.590	-0.0198	9678983.	-287746.	-0.002049	0.000	5.316E+12
1173.3681	149308.	0.000				
16.800	-0.0250	8957744.	-284363.	-0.002044	0.000	5.322E+12
1511.1734	152566.	0.000				
17.010	-0.0301	8246102.	-280113.	-0.002040	0.000	5.326E+12
1862.0991	155862.	0.000				
17.220	-0.0352	7546285.	-274961.	-0.002036	0.000	5.331E+12

2226.3890	159195.	0.000				
17.430	-0.0404	6860606.	-268875.	-0.002033	0.000	5.336E+12
2604.2909	162565.	0.000				
17.640	-0.0455	6191465.	-261818.	-0.002030	0.000	5.340E+12
2996.0565	165974.	0.000				
17.850	-0.0506	5541349.	-253757.	-0.002027	0.000	5.344E+12
3401.9407	169421.	0.000				
18.060	-0.0557	4912838.	-244654.	-0.002025	0.000	5.348E+12
3822.2019	172906.	0.000				
18.270	-0.0608	4308598.	-234474.	-0.002023	0.000	5.353E+12
4257.1014	176429.	0.000				
18.480	-0.0659	3731393.	-223180.	-0.002021	0.000	5.355E+12
4706.9035	179991.	0.000				
18.690	-0.0710	3184079.	-210732.	-0.002019	0.000	5.358E+12
5171.8743	183592.	0.000				
18.900	-0.0761	2669607.	-197094.	-0.002018	0.000	5.362E+12
5652.2825	187232.	0.000				
19.110	-0.0812	2191030.	-182225.	-0.002016	0.000	5.367E+12
6148.3983	190910.	0.000				
19.320	-0.0862	1751498.	-166086.	-0.002016	0.000	5.367E+12
6660.4928	194628.	0.000				
19.530	-0.0913	1354262.	-148636.	-0.002015	0.000	5.367E+12
7188.8379	198385.	0.000				
19.740	-0.0964	1002679.	-129833.	-0.002014	0.000	5.367E+12
7733.7055	202181.	0.000				
19.950	-0.1015	700207.	-109637.	-0.002014	0.000	5.367E+12
8295.3670	206017.	0.000				
20.160	-0.1065	450414.	-88469.	-0.002014	0.000	5.367E+12
8504.1009	201142.	0.000				
20.370	-0.1116	254626.	-66865.	-0.002013	0.000	5.367E+12
8642.4792	195122.	0.000				
20.580	-0.1167	113721.	-44914.	-0.002013	0.000	5.367E+12
8778.4772	189575.	0.000				
20.790	-0.1218	28563.	-22624.	-0.002013	0.000	5.367E+12
8912.1525	184443.	0.000				
21.000	-0.1268	0.000	0.000	-0.002013	0.000	5.367E+12
9043.5441	89838.	0.000				

* This analysis computed pile response using nonlinear moment-curvature relationships.
  Values of total stress due to combined axial and bending stresses are computed only
  for elastic sections only and do not equal the actual stresses in concrete and steel.
  Stresses in concrete and steel may be interpolated from the output for nonlinear
  bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection	=	0.7369022 inches
Computed slope at pile head	=	-0.0061704 radians
Maximum bending moment	=	30698887. inch-lbs
Maximum shear force	=	-293244. lbs
Depth of maximum bending moment	=	5.6700000 feet below pile head
Depth of maximum shear force	=	15.7500000 feet below pile head
Number of iterations	=	141
Number of zero deflection points	=	1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 13600.0 lbs
Applied moment at pile head = 14681000.0 in-lbs
Axial thrust load on pile head = 30010.0 lbs

Depth X	Deflect. y	Bending Moment	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil Res. Soil Spr. Distrib. p
Es*h	Lat. Load						
feet	inches	in-lbs	lbs	radians	psi*	lb-in^2	
lb/in	lb/inch	lb/inch					
0.00	0.1817	14681000.	13600.	-0.001237	0.000	5.283E+12	
0.000	0.000	0.000					
0.210	0.1786	14715365.	13588.	-0.001230	0.000	5.283E+12	
-9.6934	136.8033	0.000					
0.420	0.1755	14749668.	13550.	-0.001223	0.000	5.282E+12	
-20.5754	295.4934	0.000					
0.630	0.1724	14783840.	13483.	-0.001216	0.000	5.282E+12	
-32.6999	477.9870	0.000					
0.840	0.1693	14817804.	13383.	-0.001208	0.000	5.282E+12	
-46.1207	686.3230	0.000					
1.050	0.1663	14851475.	13248.	-0.001201	0.000	5.282E+12	
-60.8915	922.6718	0.000					
1.260	0.1633	14884758.	13075.	-0.001194	0.000	5.281E+12	
-77.0659	1189.3448	0.000					
1.470	0.1603	14917551.	12858.	-0.001187	0.000	5.281E+12	
-94.6972	1488.8047	0.000					
1.680	0.1573	14949742.	12595.	-0.001180	0.000	5.281E+12	
-113.8386	1823.6769	0.000					
1.890	0.1543	14981210.	12282.	-0.001173	0.000	5.281E+12	
-134.5431	2196.7620	0.000					
2.100	0.1514	15011823.	11915.	-0.001166	0.000	5.281E+12	
-156.8634	2611.0494	0.000					
2.310	0.1485	15041439.	11490.	-0.001159	0.000	5.280E+12	
-180.8520	3069.7319	0.000					
2.520	0.1456	15069906.	11002.	-0.001151	0.000	5.280E+12	
-206.5612	3576.2223	0.000					
2.730	0.1427	15097061.	10460.	-0.001144	0.000	5.280E+12	
-222.9027	3937.3880	0.000					
2.940	0.1398	15122800.	9883.2232	-0.001137	0.000	5.280E+12	
-235.2127	4240.2640	0.000					
3.150	0.1369	15147045.	9275.8059	-0.001130	0.000	5.280E+12	
-246.8645	4543.1400	0.000					
3.360	0.1341	15169721.	8635.0949	-0.001123	0.000	5.280E+12	
-261.6363	4916.8920	0.000					
3.570	0.1313	15190735.	7919.0785	-0.001115	0.000	5.279E+12	
-306.6307	5886.2363	0.000					
3.780	0.1285	15209802.	7086.5455	-0.001108	0.000	5.279E+12	
-354.1097	6945.8914	0.000					
3.990	0.1257	15226619.	6131.4560	-0.001101	0.000	5.279E+12	
-403.8978	8097.9124	0.000					
4.200	0.1229	15240871.	5048.2185	-0.001093	0.000	5.279E+12	
-455.8145	9344.3547	0.000					
4.410	0.1202	15252227.	3831.7028	-0.001086	0.000	5.279E+12	
-509.6741	10687.	0.000					
4.620	0.1175	15260347.	2477.2524	-0.001079	0.000	5.279E+12	

-565.2865	12129.	0.000				
4.830	0.1147	15264876.	980.6959	-0.001072	0.000	5.279E+12
-622.4567	13671.	0.000				
5.040	0.1120	15265452.	-661.6413	-0.001064	0.000	5.279E+12
-680.9855	15315.	0.000				
5.250	0.1094	15261702.	-2452.9259	-0.001057	0.000	5.279E+12
-740.6690	17065.	0.000				
5.460	0.1067	15253249.	-4395.8059	-0.001050	0.000	5.279E+12
-801.2994	18921.	0.000				
5.670	0.1041	15239706.	-6492.4005	-0.001043	0.000	5.279E+12
-862.6646	20886.	0.000				
5.880	0.1015	15220685.	-8744.2895	-0.001035	0.000	5.279E+12
-924.5488	22962.	0.000				
6.090	0.0989	15195792.	-11153.	-0.001028	0.000	5.279E+12
-986.7321	25150.	0.000				
6.300	0.0963	15164632.	-13718.	-0.001021	0.000	5.280E+12
-1048.9910	27454.	0.000				
6.510	0.0937	15126810.	-16439.	-0.001013	0.000	5.280E+12
-1111.0982	29875.	0.000				
6.720	0.0912	15081931.	-19317.	-0.001006	0.000	5.280E+12
-1172.8230	32415.	0.000				
6.930	0.0887	15029604.	-22349.	-0.000999	0.000	5.280E+12
-1233.9311	35076.	0.000				
7.140	0.0861	14969441.	-25535.	-0.000992	0.000	5.281E+12
-1294.1850	37860.	0.000				
7.350	0.0837	14901058.	-28871.	-0.000985	0.000	5.281E+12
-1353.3436	40769.	0.000				
7.560	0.0812	14824081.	-32354.	-0.000978	0.000	5.282E+12
-1411.1626	43806.	0.000				
7.770	0.0787	14738142.	-35981.	-0.000971	0.000	5.282E+12
-1467.3946	46972.	0.000				
7.980	0.0763	14642884.	-39747.	-0.000964	0.000	5.283E+12
-1521.7887	50269.	0.000				
8.190	0.0739	14537961.	-43437.	-0.000957	0.000	5.284E+12
-1406.1527	47971.	0.000				
8.400	0.0715	14424108.	-46990.	-0.000950	0.000	5.284E+12
-1413.8526	49855.	0.000				
8.610	0.0691	14301276.	-50559.	-0.000943	0.000	5.285E+12
-1419.1768	51770.	0.000				
8.820	0.0667	14169431.	-54139.	-0.000936	0.000	5.286E+12
-1422.0764	53717.	0.000				
9.030	0.0644	14028554.	-57724.	-0.000929	0.000	5.287E+12
-1422.5028	55696.	0.000				
9.240	0.0620	13878644.	-61306.	-0.000923	0.000	5.288E+12
-1420.4072	57706.	0.000				
9.450	0.0597	13719713.	-64879.	-0.000916	0.000	5.289E+12
-1415.7408	59748.	0.000				
9.660	0.0574	13551792.	-68438.	-0.000910	0.000	5.291E+12
-1408.4546	61823.	0.000				
9.870	0.0551	13374925.	-71974.	-0.000903	0.000	5.292E+12
-1398.4994	63930.	0.000				
10.080	0.0529	13189177.	-75483.	-0.000897	0.000	5.293E+12
-1385.8256	66069.	0.000				
10.290	0.0506	12994628.	-78956.	-0.000891	0.000	5.294E+12
-1370.3835	68241.	0.000				
10.500	0.0484	12791376.	-82386.	-0.000885	0.000	5.296E+12
-1352.1229	70445.	0.000				
10.710	0.0461	12579537.	-85767.	-0.000879	0.000	5.297E+12
-1330.9931	72683.	0.000				
10.920	0.0439	12359245.	-89090.	-0.000873	0.000	5.298E+12
-1306.9430	74953.	0.000				
11.130	0.0417	12130653.	-92350.	-0.000867	0.000	5.300E+12
-1279.9208	77257.	0.000				

11.340	0.0396	11893933.	-95537.	-0.000861	0.000	5.302E+12
-1249.8742	79594.	0.000				
11.550	0.0374	11649275.	-98645.	-0.000856	0.000	5.303E+12
-1216.7500	81965.	0.000				
11.760	0.0353	11396889.	-101666.	-0.000850	0.000	5.305E+12
-1180.4943	84369.	0.000				
11.970	0.0331	11137007.	-104591.	-0.000845	0.000	5.307E+12
-1141.0524	86807.	0.000				
12.180	0.0310	10869878.	-107413.	-0.000839	0.000	5.309E+12
-1098.3684	89279.	0.000				
12.390	0.0289	10595774.	-110123.	-0.000834	0.000	5.311E+12
-1052.3860	91785.	0.000				
12.600	0.0268	10314986.	-112712.	-0.000829	0.000	5.312E+12
-1003.0473	94326.	0.000				
12.810	0.0247	10027829.	-115174.	-0.000825	0.000	5.314E+12
-950.2935	96901.	0.000				
13.020	0.0226	9734636.	-117498.	-0.000820	0.000	5.316E+12
-894.0648	99510.	0.000				
13.230	0.0206	9435765.	-119675.	-0.000815	0.000	5.318E+12
-834.2999	102154.	0.000				
13.440	0.0185	9131595.	-121698.	-0.000811	0.000	5.321E+12
-770.9364	104833.	0.000				
13.650	0.0165	8822530.	-123556.	-0.000807	0.000	5.323E+12
-703.9103	107547.	0.000				
13.860	0.0145	8508994.	-125241.	-0.000803	0.000	5.325E+12
-633.1564	110297.	0.000				
14.070	0.0124	8191437.	-126743.	-0.000799	0.000	5.326E+12
-558.6081	113081.	0.000				
14.280	0.0104	7870332.	-128051.	-0.000795	0.000	5.328E+12
-480.1971	115901.	0.000				
14.490	0.008442	7546178.	-129158.	-0.000791	0.000	5.331E+12
-397.8537	118757.	0.000				
14.700	0.006453	7219496.	-130052.	-0.000788	0.000	5.333E+12
-311.5066	121649.	0.000				
14.910	0.004472	6890837.	-130723.	-0.000784	0.000	5.336E+12
-221.0827	124576.	0.000				
15.120	0.002500	6560773.	-131161.	-0.000781	0.000	5.338E+12
-126.5075	127540.	0.000				
15.330	0.000535	6229905.	-131355.	-0.000778	0.000	5.340E+12
-27.7045	130539.	0.000				
15.540	-0.001423	5898862.	-131295.	-0.000775	0.000	5.341E+12
75.4042	133576.	0.000				
15.750	-0.003373	5568297.	-130969.	-0.000773	0.000	5.343E+12
182.8984	136648.	0.000				
15.960	-0.005317	5238893.	-130367.	-0.000770	0.000	5.346E+12
294.8596	139758.	0.000				
16.170	-0.007254	4911361.	-129478.	-0.000768	0.000	5.348E+12
411.3709	142904.	0.000				
16.380	-0.009186	4586442.	-128288.	-0.000765	0.000	5.351E+12
532.5175	146088.	0.000				
16.590	-0.0111	4264904.	-126788.	-0.000763	0.000	5.353E+12
658.3860	149308.	0.000				
16.800	-0.0130	3947548.	-124964.	-0.000761	0.000	5.354E+12
789.0647	152566.	0.000				
17.010	-0.0149	3635201.	-122805.	-0.000760	0.000	5.356E+12
924.6438	155862.	0.000				
17.220	-0.0169	3328727.	-120297.	-0.000758	0.000	5.357E+12
1065.2147	159195.	0.000				
17.430	-0.0188	3029017.	-117430.	-0.000757	0.000	5.359E+12
1210.8708	162565.	0.000				
17.640	-0.0207	2736997.	-114188.	-0.000755	0.000	5.361E+12
1361.7067	165974.	0.000				
17.850	-0.0226	2453623.	-110560.	-0.000754	0.000	5.364E+12

1517.8187	169421.	0.000				
18.060	-0.0245	2179889.	-106532.	-0.000753	0.000	5.367E+12
1679.3042	172906.	0.000				
18.270	-0.0264	1916818.	-102089.	-0.000752	0.000	5.367E+12
1846.2620	176429.	0.000				
18.480	-0.0283	1665472.	-97219.	-0.000751	0.000	5.367E+12
2018.7918	179991.	0.000				
18.690	-0.0302	1426946.	-91907.	-0.000750	0.000	5.367E+12
2196.9945	183592.	0.000				
18.900	-0.0320	1202372.	-86139.	-0.000750	0.000	5.367E+12
2380.9715	187232.	0.000				
19.110	-0.0339	992918.	-79900.	-0.000749	0.000	5.367E+12
2570.8253	190910.	0.000				
19.320	-0.0358	799790.	-73175.	-0.000749	0.000	5.367E+12
2766.6586	194628.	0.000				
19.530	-0.0377	624231.	-65948.	-0.000748	0.000	5.367E+12
2968.5743	198385.	0.000				
19.740	-0.0396	467523.	-58205.	-0.000748	0.000	5.367E+12
3176.6757	202181.	0.000				
19.950	-0.0415	330989.	-49930.	-0.000748	0.000	5.367E+12
3391.0656	206017.	0.000				
20.160	-0.0434	215989.	-41106.	-0.000748	0.000	5.367E+12
3611.8465	209893.	0.000				
20.370	-0.0452	123926.	-31718.	-0.000748	0.000	5.367E+12
3839.1200	213809.	0.000				
20.580	-0.0471	56243.	-21749.	-0.000748	0.000	5.367E+12
4072.9869	217764.	0.000				
20.790	-0.0490	14425.	-11182.	-0.000748	0.000	5.367E+12
4313.5462	221760.	0.000				
21.000	-0.0509	0.000	0.000	-0.000748	0.000	5.367E+12
4560.8955	112898.	0.000				

* This analysis computed pile response using nonlinear moment-curvature relationships.
  Values of total stress due to combined axial and bending stresses are computed only
  for elastic sections only and do not equal the actual stresses in concrete and steel.
  Stresses in concrete and steel may be interpolated from the output for nonlinear
  bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.1816665 inches
Computed slope at pile head	=	-0.0012366 radians
Maximum bending moment	=	15265452. inch-lbs
Maximum shear force	=	-131355. lbs
Depth of maximum bending moment	=	5.0400000 feet below pile head
Depth of maximum shear force	=	15.3300000 feet below pile head
Number of iterations	=	6
Number of zero deflection points	=	1

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

Maximum Load Case	Load Type	Pile-head Maximum Condition 1 Shear V(lbs) or in Pile y(inches)	Pile-head Condition 2 Pile-head in-lb, rad., or Rotation in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Moment in Pile No. in-lbs
1	1	V = 27000. lbs	M = 29389700. radians	30060.	0.73690224	30698887.
		-293244.	-0.00617035			
2	1	V = 13600. lbs	M = 14681000. radians	30010.	0.18166647	15265452.
		-131355.	-0.00123660			

The analysis ended normally.

NOTES:

GENERAL:

1. THE MODIFICATIONS OUTLINED IN THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-G AND ACI 318 2 CODES.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
4. THE CONTRACTOR SHOULD NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER TIA-1019-A-2011, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
7. CONTRACTORS PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.
8. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES & GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.
9. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINIGY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
3. ALL WELDING SHALL BE DONE USING E80XX ELECTRODES.
4. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION
5. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.

CONCRETE:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS, REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.

PLUMB & TENSION:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETENSIONING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINES AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS (EX. DO NOT EXCEED .6" FOR 20' OF VERTICAL DISTANCE)
4. THE TWIST BETWEEN ANY TWO ELEVATIONS SHALL NOT EXCEED .5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.
5. SEE "GUY WIRE RETENSIONING AND STANDARD SAFETY WIRE DETAILS" SHEET FOR ACCEPTABLE GUY WIRE TERMINATION EXTENSION, IF REQUIRED.

STRUCTURAL SYMBOLS

PROPOSED	COLUMN BUBBLE
EXISTING	
HIDDEN	REFERENCE CALLOUT
CENTER LINE	
LEADER	VIEW TITLE
DIMENSION	
CUTTING PLANE OR VIEWING PLANE	SECTION TITLE
BREAK LINE	GRADE
	CONCRETE
	STEEL

STRUCTURAL ABBREVIATIONS:

@	AT
AB	ANCHOR BOLT
ALT	ALTERNATE
APPROX	APPROXIMATE
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE
BRG	BEARING
CLR	CLEAR
CONC	CONCRETE
CONT	CONTINUOUS
CONT'D	CONTINUED
CTR	CENTERED
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DN	DOWN
do	DITTO
EA	EACH
EF	EACH FACE
EHS	EXTRA HIGH STRENGTH
EL, ELEV	ELEVATION
EMBED	EMBEDDED, EMBEDMENT
ENCL	ENCLOSURE
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EST	ESTIMATED
EW	EACH WAY
EXIST	EXISTING
EXT	EXTERIOR
FAB	FABRICATE
FIN	FINISHED
FND	FOUNDATION
FS	FAR SIDE
FT	FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GR	GRADE
GRND	GROUND, GRADE
GRTG	GRATING
HD	HEAVY DUTY
HEX	HEXAGON(AL)
HORIZ	HORIZONTAL
HP	HIGH POINT
HVY	HEAVY DUTY
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH, INCHES
INCL	INCLUDE, INCLUDING
INFO	INFORMATION
IT	INITIAL TENSION
KSI	KIP (1000 LBS)
L	ANGLE
LC	LENGTH OF CHORD
LG, LNG	LONG, LENGTH
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATE, LOCATION
LP	LOW POINT
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
NA	NOT APPLICABLE
NEC	NECESSARY
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPG, OPNG	OPENING
OPP	OPPOSITE
OS	OTHERWISE SPECIFIED
PCS	PIECES
PERIM	PERIMETER
PERP	PERPENDICULAR
PL	PLATE, PROPERTY LINE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
QC	QUALITY CONTROL
QUAL	QUALITY
R	RADIUS
REINF	REINFORCEMENT, REINFORCING
REQD	REQUIRED
REV	REVISION
SCHED	SCHEDULE
SP	SPACED, SPACES, SPACING
SPEC	SPECIFICATION
SQ	SQUARE
SQFT	SQUARE FEET
STD	STANDARD
STRUCT	STRUCTURAL
SUB	SUBSTITUTE
T&B	TOP & BOTTOM
T/	TOP OF
THD	THREAD, THREADED
THK	THICK
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W/	WITH
W/O	WITHOUT
WP	WORKING POINT
YS	YIELD STRENGTH

T-Mobile

NSS NORTHEAST

INFINIGY8
FROM ZERO TO INFINIGY
the solutions are endless

SUBMITTALS

PROJECT NO: 379-015
DRAWN BY: VEB
CHECKED BY: JRJ

STATE OF CONNECTICUT
JOSEPH R. JOHNSON JR.
PROFESSIONAL ENGINEER

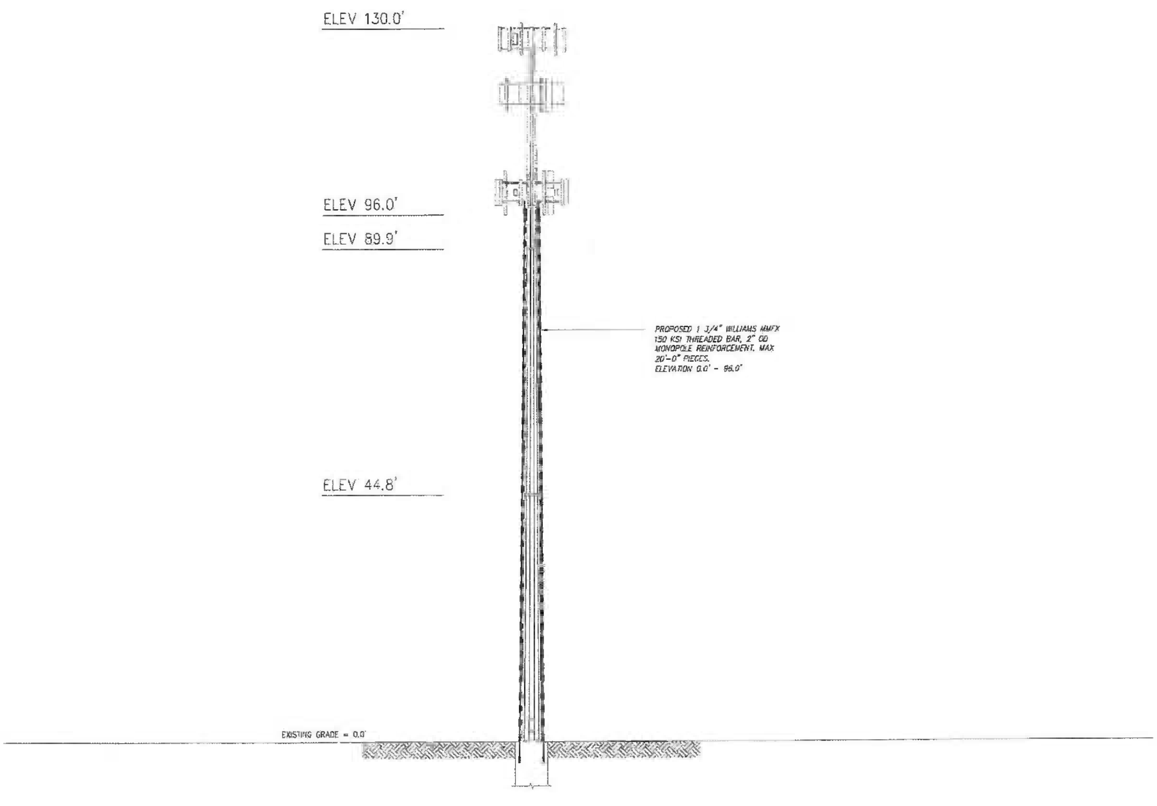
NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

SITE NAME
CT11103A
75 EAST RIDGE RD
RIDGEFIELD, CT

SHEET TITLE
NOTES

SHEET NUMBER
S1
SHEET OF 4 SHEETS

DESIGN BASED ON REQUIREMENTS FROM FAILING STRUCTURAL ANALYSIS BY INFINIGY JOB #379-015, DATED APRIL 24, 2015



T-Mobile

NSS NORTHEAST

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

1033 WATERVLIET SHAKER ROAD
ALBANY, NY 12205
OFFICE (518) 690-0790
FAX (518) 690-0793

SUBMITTALS

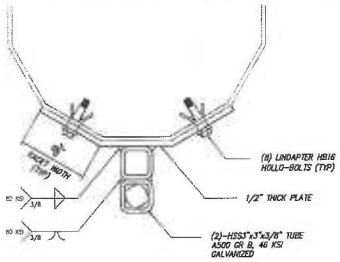
PROJECT NO:	379-015
DRAWN BY:	VEB
CHECKED BY:	

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

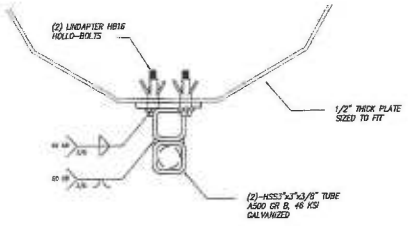
SITE NAME
CT11103A
78 EAST RIDGE RD.
RIDGEFIELD, CT

SHEET TITLE
TOWER ELEVATION

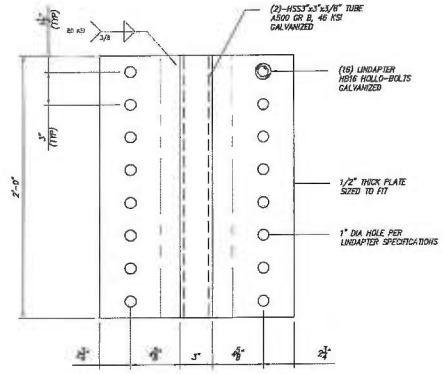
SHEET NUMBER
S2
SHEET OF 4 SHEETS



PLAN VIEW



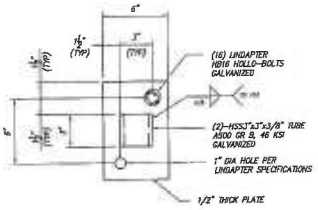
PLAN VIEW



NOTES:
1. BUILD OUT 3/8" WELDS TO OBTAIN FULL THROAT THICKNESS.
2. SIZED TO FIT POLE FLATS.

ELEVATION VIEW

1 TERMINATION BRACKET
SCALE: NTS



ELEVATION VIEW

2 INTERMEDIATE BRACKET
SCALE: NTS

T-Mobile

NSS NORTHEAST

INFINIGY
FROM ZERO TO INFINIGY
the solution ere endless

SUBMITTALS

DATE	DESCRIPTION	REVISION
4/15/2015	ISSUED FOR PERMIT	0

PROJECT NO:	373-016
DRAWN BY:	VEB
CHECKED BY:	JHJ

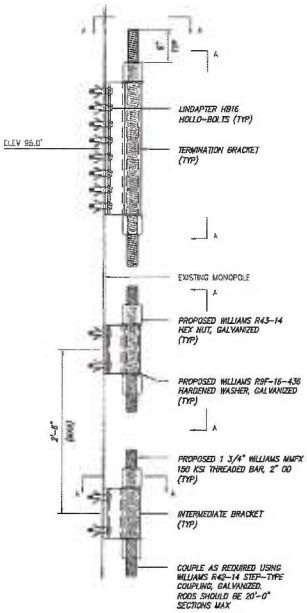
STATE OF CONNECTICUT
JOHN H. JOHNSON
APR 15 2015
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL SEAL

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

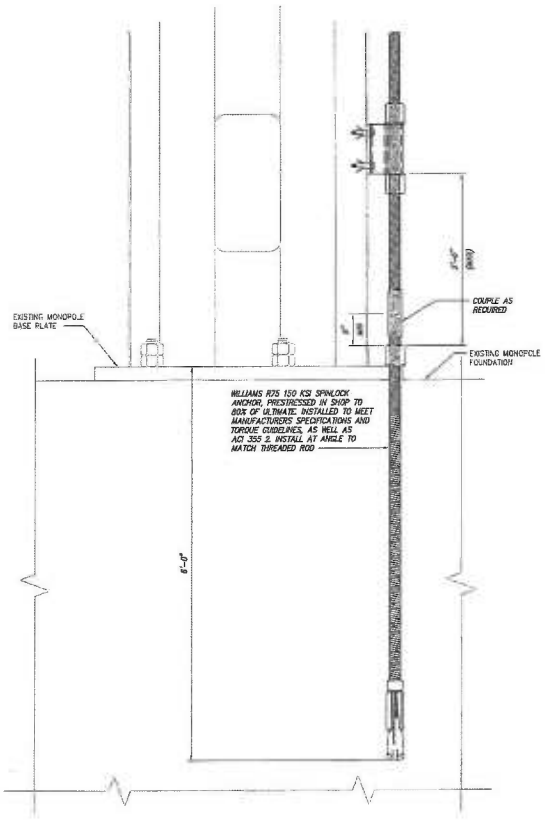
SITE NAME
CT11103A
78 EAST RIDGE RD.
RIDGEFIELD, CT

SHEET TITLE
REINFORCING BRACKET DETAILS

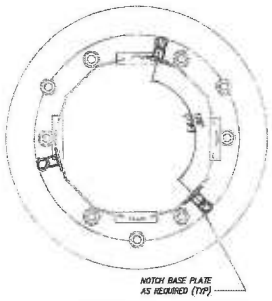
SHEET NUMBER
S3
SHEET OF 4 SHEETS



1 INSTALLATION DETAIL
SCALE: NTS



2 ANCHOR ROD DETAIL
SCALE: NTS



3 MODIFICATION LOCATIONS
SCALE: NTS

T-Mobile

NSS

INFINIGY8
FROM ZERO TO INFINIGY
the solutions are endless

SUBMITTALS

PROJECT NO:	379-013
DRAWN BY:	WEB
CHECKED BY:	

STATE OF CONNECTICUT
JOSEPH R. JOHNSON
LICENSED PROFESSIONAL ENGINEER

NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

SITE NAME
CT11103A
76 EAST RIDGE RD.
RIDGEFIELD, CT

SHEET TITLE
INSTALLATION DETAILS

SHEET NUMBER
S4
SHEET OF 4 SHEETS

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11103A

Ridgefield/ Downtown 1
76 East Ridge Road
Ridgefield, CT 06877

April 20, 2015

EBI Project Number: 6215002642

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	42.02 %

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

EBI Consulting
environmental | engineering | due diligence

April 20, 2015

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11103A – Ridgefield/ Downtown 1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **76 East Ridge Road, Ridgefield, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **76 East Ridge Road, Ridgefield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

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

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

7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P & B2A/B4P)** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P & B2A/B4P)** have a maximum gain of **15.9 dBd** at their main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **100 feet** above ground level (AGL).

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

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

EBI Consulting
environmental | engineering | due diligence

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.90	Antenna B1 MPE%	1.90	Antenna C1 MPE%	1.90
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P□	Make / Model:	Ericsson AIR21 B2A/B4P□	Make / Model:	Ericsson AIR21 B2A/B4P□
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A2 MPE%	1.90	Antenna B2 MPE%	1.90	Antenna C2 MPE%	1.90
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.75	Antenna B3 MPE%	0.75	Antenna C3 MPE%	0.75

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**13.66**
Verizon Wireless	28.01 %
Sprint	0.35 %
Site Total MPE %:	**42.02 %**

T-Mobile Sector 1 Total:	4.55 %
T-Mobile Sector 2 Total:	4.55 %
T-Mobile Sector 3 Total:	4.55 %
Site Total:	42.02 %

EBI Consulting
environmental | engineering | due diligence

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	4.55 %
Sector 2:	4.55 %
Sector 3 :	4.55 %
T-Mobile Total:	13.66 %
Site Total:	42.02 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **42.02%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803