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	SITE ADDRESS 387 SHORE ROAD LD LYME, CT 06376
	SHEET TITLE
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	SHEET NUMBER

ELECTRICAL NOTES:

- WORK INCLUDED 1 INCLUDE ALL LABOR MATERIALS FOURPMENT 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 ILL USTRATIONS
 - 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 THEOUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER
 - 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
- 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.
- LEXISTING 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
- SPECIFICE 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.

- . REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE
- WORK. 2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION THE PROJECT TO THE SATISFACTION OF THE ENGINEER.
- COORDINATION AND SUPERVISION
- CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF UNNECESSARY CUITING, CHANNELING, CHASING OR DRILLING O FLOORS, WALLS, PARTITIONS, CELLINGS 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 CALISES 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 CUTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK. 2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS
- WALLS FOR PIPING OR CONDUIT.
- TESTS, INSPECTION AND APPROVAL
- 1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT FACH 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.
- FROVIDE 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. THEN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL, VERIFY BUILDING STEEL IS
- FEFECTIVELY 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
- D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
- 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 3/4" TRADE SIZE
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS. H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT ELEXIBLE METAL CONDUIT
- CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED. I THE ROLITING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER
- TRADES TO DETERMINE THE EXACT LOCATIONS AND
- 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.
- GROUNDING BUSHINGS. N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS
- PROVIDE STAINLESTS STEEL BLANK COVER PLATES FOR ALL
 JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN 0. 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 CARLES

- 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/
- THEN 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. 144WG
- CONTROL 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
- 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 NO. 12 NO. 10 0 TO 50
- 51 TO 100 101 TO 150 NO. 8 8 VOLTAGE DROP IS NOT TO EXCEED 3%
- 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 CROUNDING 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.
- 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-F PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.
- INSTALLATION 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
- INDICATE 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
- TO COMPLETE THE WORK. S. MINOR DEVAITIONS 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 OF PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

GOVERNING THE WORK.

OF CONTRACTOR LICENSES AND BONDS.

CONTRACTS AND WARRANTIES

ADDITIONAL DETAILS.

2. EXTERIOR

3. INTERIOR

SHOP DRAWINGS

PROVAL

ADJACENT SURFACES

ADJACENT SURFACES.

FINISHED SURFACES.

SERVICE AGREEMENT FOR MCSA

RELATED DOCUMENTS AND COORDINATION

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

BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE

ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS

2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR

OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO

ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT

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.

LEANUP 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

A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL

FOREIGN MATTER. B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM

A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE AL

FORFIGN MATTER FROM WALLS, FLOOR, AND CEILING.

REMOVE ALL TRACES OF SPLASHED MATERIALS FROM

CHANGE ORDER PROCEDURE: 1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL

TO BE THE RESPONSIBILITY OF THE CONTRACTOR

LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR

2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND

PRODUCTS AND SUBSTITUTIONS 1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN

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.

FACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR

INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION INCLUDE RELATED SPECIFICATION SECTION AND DRAWING

PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR

SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL

ARCHITECTURAL SYMBOLS

STORAG

38

DETAIL REFERENCE KEY

- DRAWING DETAIL NUMBER-

EXISTING N.I.C.

LSHEET NUMBER OF DETAIL-

A-3,

(3)-

REFER TO

RE: 2/A-3

SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT

CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE

TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER

C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.

TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER

C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE

INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND

LEAVE THEIR WORK CLEAN AND READY TO USE.

 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. 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 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.

OLIALITY ASSURANCE

ADMINISTRATION

INSURANCE AND BONDS

POLICIES

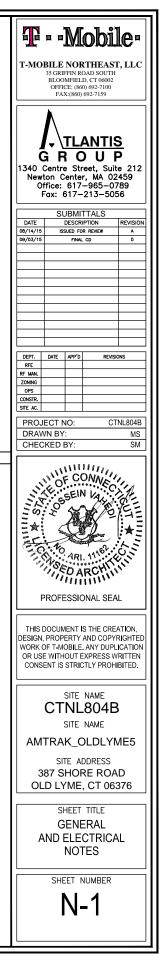
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED). 4. CONTRACTOR SHALL BE 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.

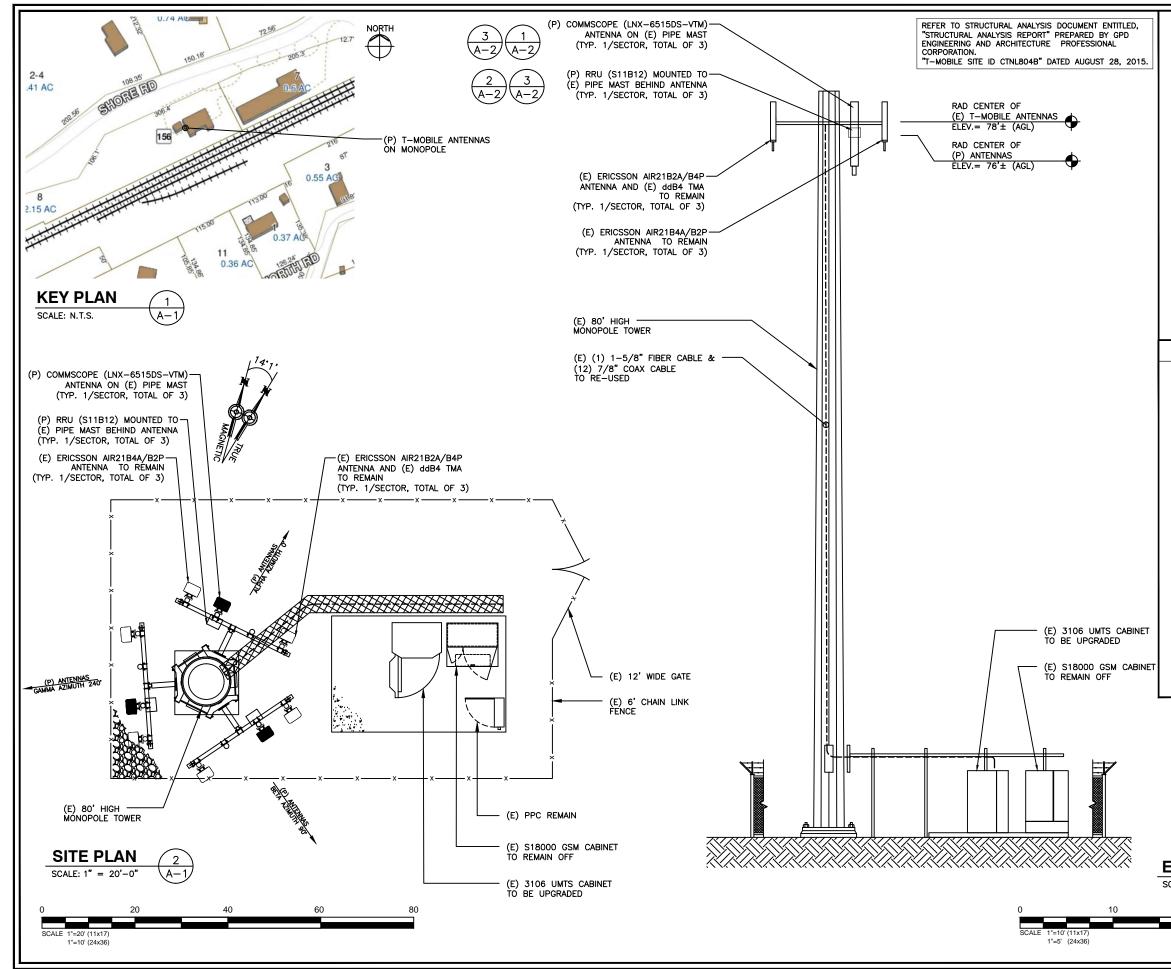
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION. 8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

 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 COVERAGE'S TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSTRANCE LIMITS. 2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL

3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ABI	BREVIATIONS
ADJ	ADJUSTABLE
AGL	ABOVE GROUND LINE
&	AND
APPROX	APPROXIMATE
0	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
ELEV	EQUAL
EQUIP EGB	EQUIPMENT
	Equipment ground bar Existing
(E)	
EXT	EXTERIOR
FF	FINISHED FLOOR
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GRND	GROUND
LG	LONG MAXIMUM
MAX	
MECH	MECHANICAL MICROWAVE DISH
MW	MANUFACTURER
MFR	
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTL	METAL
(N)	NEW
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
00	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





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 <u>CALL BEFORE YOU DIG</u> THREE WORKING DAYS PRIOR TO COMMENCING WORK.

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

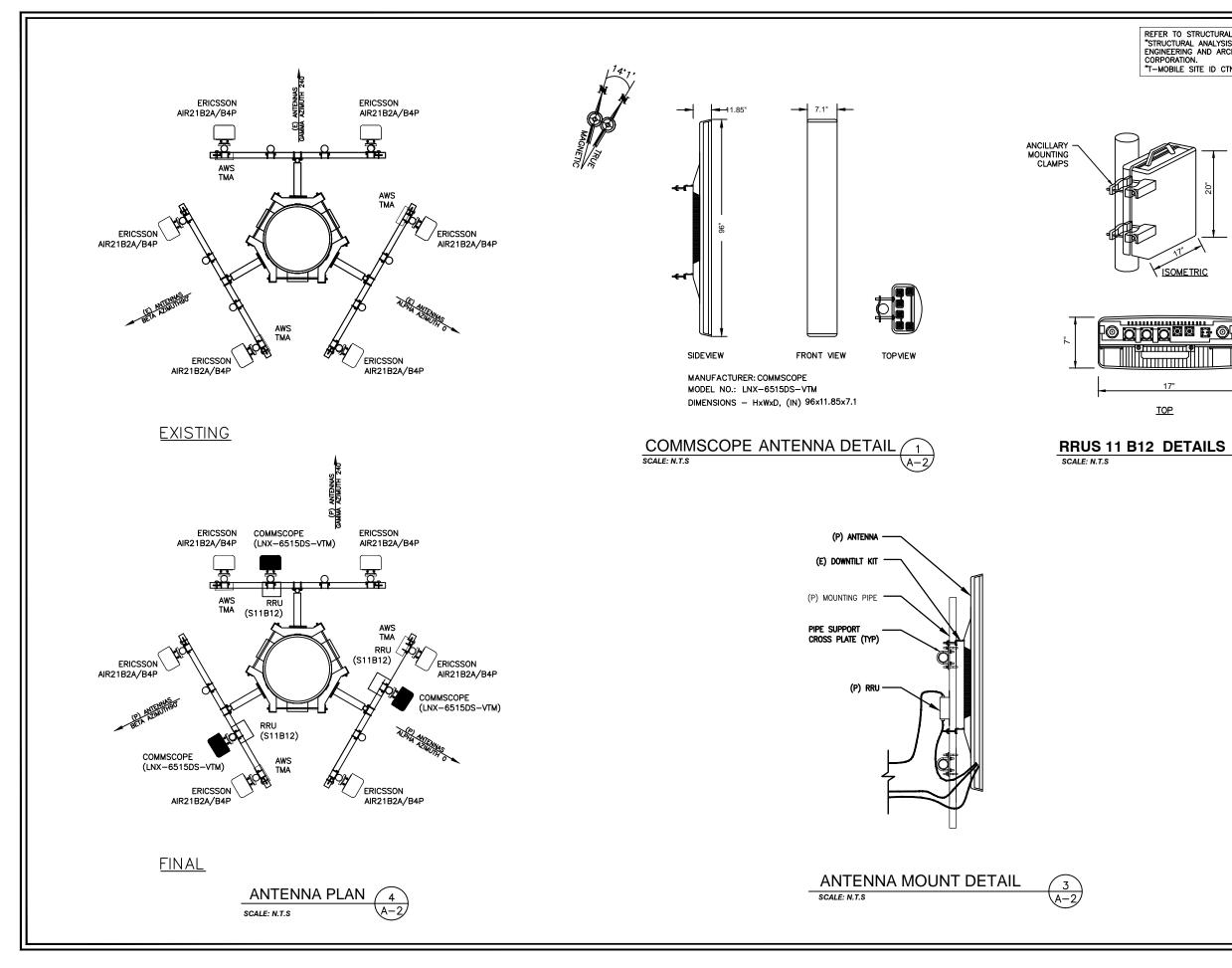
	<u>SITE LEGEND</u>
	SITE PROPERTY LINE
	STREET OR ROAD
- x - x - x -	CHAIN LINK FENCE
 ~	OPAQUE WOODEN FENCE
	BOARD ON BOARD FENCE
Ê	DECIDUOUS TREES/SHRUBS
	EVERGREEN TREES/SHRUBS
\sim	TREE LINE
×	UTILITY POLE
(E)	EXISTING
(N)	NEW
(P)	PROPOSED
(F)	FUTURE
-	PROP. LTE ANTENNA
	PROP. UMTS/GSM ANTENNA
÷	EX. GSM ANTENNA
.	EX. UMTS ANTENNA

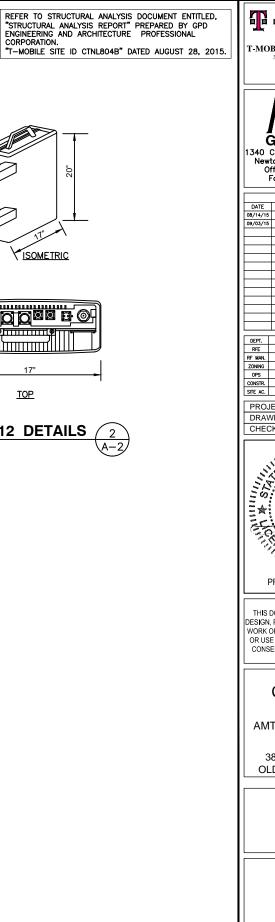
Ŧ	• •Mobi	ile-						
T-MO	BILE NORTHEAS 35 GRIFFIN ROAD SOUT BLOOMFIELD, CT 0600 OFFICE: (860) 692-7100 FAX:(860) 692-7159	H 2						
OFFICE: (860) 692-7100								
DATE 08/14/15	SUBMITTALS DESCRIPTION ISSUED FOR REVIEW	REVISION A						
09/03/15	FINAL CD							
DEPT. RFE RF MAN. ZONING OPS CONSTR.	DATE APP'D REV	ISIONS						
DRAW	/N BY:	CTNL804B MS SM						
CHECKED BY: SM								
THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED.								
SITE NAME CTNL804B SITE NAME AMTRAK_OLDLYME5 SITE ADDRESS 387 SHORE ROAD								
	D LYME, CT 00							
	SITE PLAN AND ELEVATION	1						
	SHEET NUMBER							

ELEVATION VIEW3SCALE: 1" = 10'-0"A-

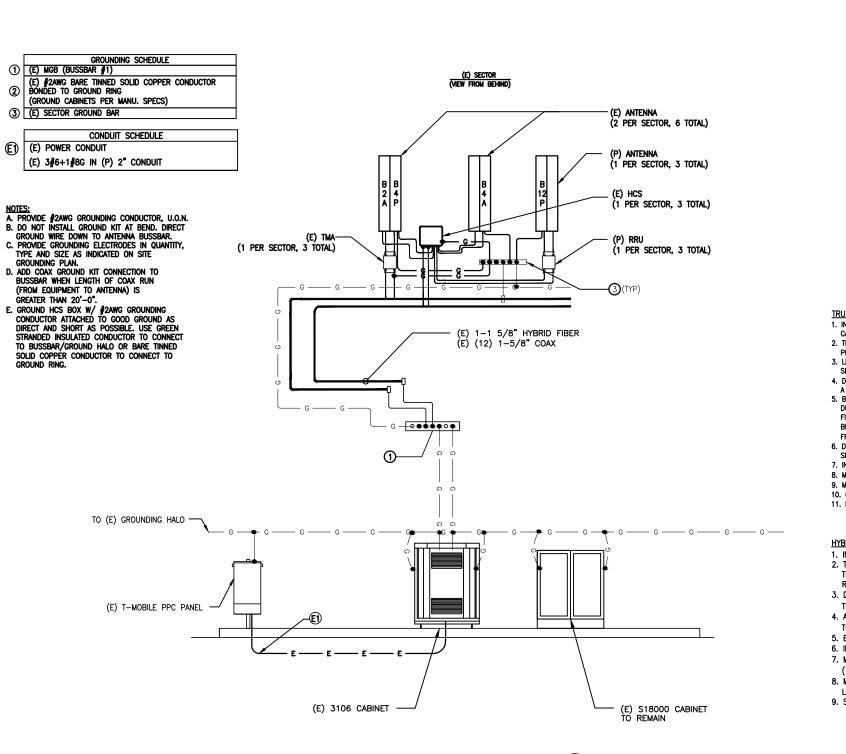
20

A-1









GROUNDING DIAGRAM

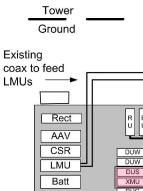
E-1

SCALE: N.T.S

2

E1)





TRUNK FIBER NOTES:

- 1. IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO %" 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 $\frac{3}{4}$ " (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 OF 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
- 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 3/4" COAXIAL CABLE.
- RRU OR BBU.
- 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).
- (130MM) UNLOADED.
- LONG TERM
- 9. STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

702CU CONFIGURATION COAX/FIBER PLUMBING DIAGRAM

SCALE: N.T.S

8. MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N)

 $\begin{pmatrix} 2 \\ E-1 \end{pmatrix}$

7. MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH

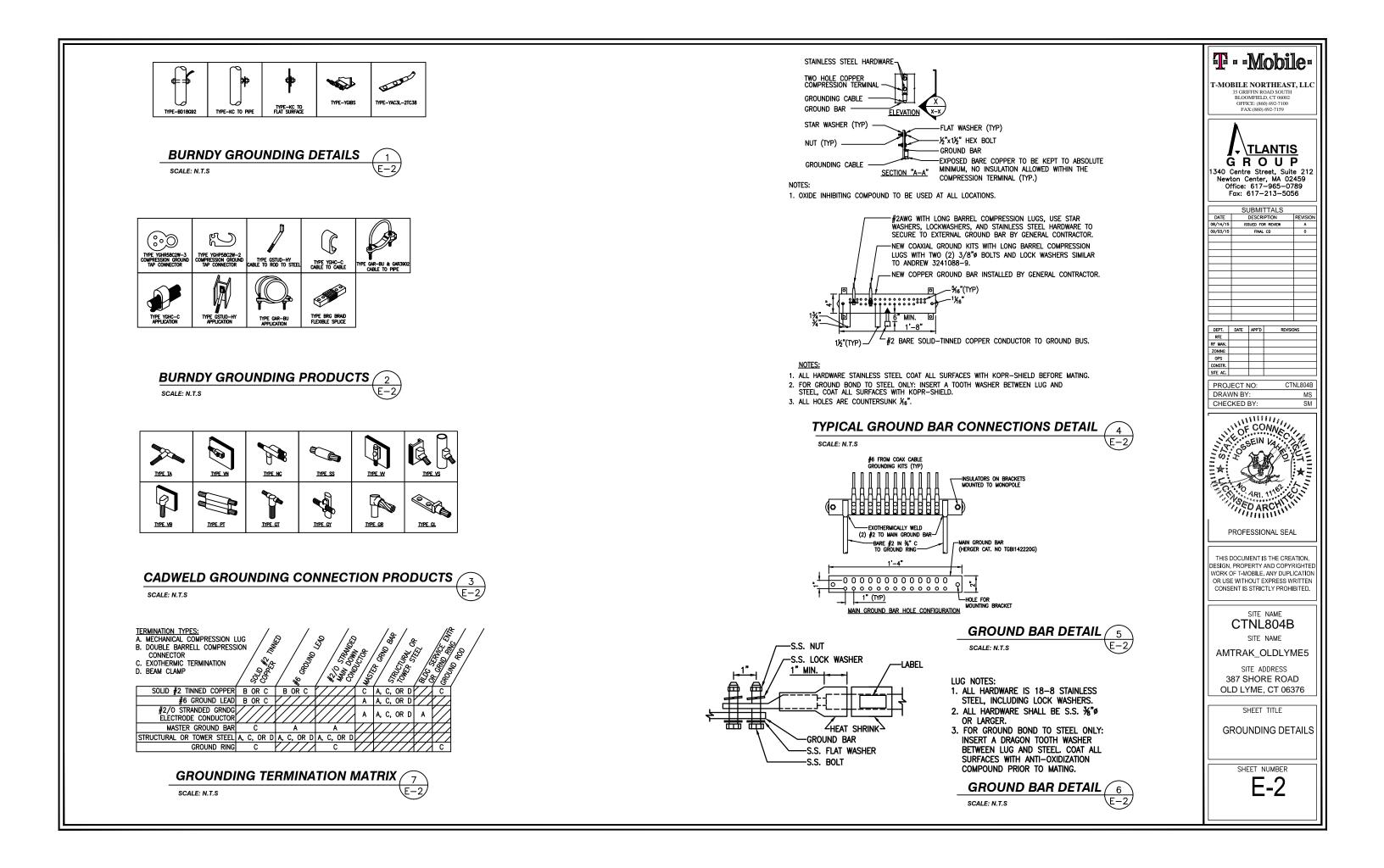
3. DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER

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

FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.

В BB 2:4 TMA







T-Mobile Towers 12920 SE 38th Street Bellevue, WA 98006 (425) 383-3978

REVIEWED

By JACKIE DONAHUE at 10:09 am, Aug 28, 2015



Professional Corporation Chris Scheks 520 South Main Street, Suite 2531 Akron, OH 44311 (614) 588-8973 cschecks@gpdgroup.com

GPD# 2015791.16

August 28, 2015

STRUCTURAL ANALYSIS REPORT

T-MOBILE DESIGNATION:	Site Number: Site Name: T-Mobile Project:	CTNL804B AMTRAK_OldLyme5 Network Modification
ANALYSIS CRITERIA:	Codes:	TIA/EIA-222-F, 2003 IBC & 2005 CTBC 104-mph fastest-mile (equivalent 120mph 3 second gust) with 0" ice 38-mph fastest-mile (equivalent 50mph 3 second gust) with 0.75" ice
SITE DATA:		387 Shore Road, Old Lyme, CT 06371, New London County Latitude 41° 17' 47.36" N, Longitude 72° 15' 34.89" W 80' Sabre Monopole

Mr. John Warzecha,

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

Analysis Results

Tower Stress Level with Proposed Equipment:	51.9%	Pass
Foundation Ratio with Proposed Equipment:	48.6%	Pass

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

Christopher J. Scheks, P.E. Connecticut #: 0030026

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by T-Mobile Towers. This report was commissioned by Mr. John Warzecha of T-Mobile Towers.

The proposed coax shall be installed inside the monopole in order for the results of this analysis to be valid. Please see Appendix C for feedline plan.

Member	Capacity	Results
Monopole	47.6%	Pass
Anchor Rods	31.2%	Pass
Base Plate	34.4%	Pass
Flange Plates	29.0%	Pass
Flange Bolts	51.9%	Pass
Foundation	48.6%	Pass

TOWER SUMMARY AND RESULTS

ANALYSIS METHOD

tnxTower (Version 6.1.4.1), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Structrual Analysis Worksheet	CTNL804B TMO L700, dated 8/24/2015	T-Mobile
Tower Design	Sabre Job #: 40204, dated 2/7/2011	T-Mobile
Foundation Design	Sabre Job #: 40204, dated 2/7/2011	T-Mobile
Geotechnical Report	Terracon Project #: J2105225, dated 11/11/2010	T-Mobile
Previous Structural Analysis	GPD Project #: 2014790.25 Rev 2, dated 3/19/2014	GPD

ASSUMPTIONS

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

- 1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
- 2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
- 3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
- 4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
- 5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
- 6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
- 7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
- 8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
- 9. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
- 10. The proposed loading is taken from the provided Structural Analysis Worksheet titled: CTNL804B TMO L700, dated 8/24/2015, and is assumed to be accurate.
- 11. Appurtenance azimuths have not been provided and have been assumed.
- 12. The proposed coax shall be installed inside the monopole in order for the results of this analysis to be valid.

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

DISCLAIMER OF WARRANTIES

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

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

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

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

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

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

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

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

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	AMTRAK_OldLyme5
Site Number	CTNL804B
Proposed Carrier	T-Mobile
Date of Analysis	August 28, 2015
Company Performing Analysis	GPD

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	80'	
Tower Manufacturer	Sabre	
Tower Model	n/a	
Tower Design	Sabre Job #: 40204	2/7/2011
Foundation Design	Sabre Job #: 40204	2/7/2011
Geotech Report	Terracon Project #: J2105225	11/11/2010
Tower Mapping	n/a	
Previous Structural Analysis	GPD Project #: 2014790.25 Rev 2	3/19/2014
Foundation Mapping	n/a	

Steel Yield Strength (ksi)

eteel field etterigtil (itel)	
Pole	65
Base Plate	50
Anchor Rods	75
Flange Plate	60
Flange Bolts	A325

Existing / Reserved Loading

Antenna					М	ount		Transmi	ssion Line					
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Туре	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Туре	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	77	77	3	Panel	Ericsson	AIR 21		3	Unknown	12' T-Arms	12	Unknown	7/8"	Internal
T-Mobile	77	77	3	Panel	Ericsson	AIR 33				on the existing mounts	1	Hybrid	1-5/8"	Internal
T-Mobile	77	77	1	COVP	Raycap	DC4-48-60-8-20F				on the existing mounts			ł	
T-Mobile	77	77	1	Dish	Unknown	2' HP Dish				on the existing mounts			1	

Proposed Loading

Antenna						Mount				Transmission Line				
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Туре	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Туре	Quantity	Model	Size	Attachment Int./Ext.
T-Mobile	77	78	6	Panel	Ericsson	AIR 21		3	Unknown	12' T-Arms	12	Unknown	7/8''	Internal
T-Mobile	77	76	3	Panel	Commscope	LNX-6515DS-VTM				on the existing mounts	1	Hybrid	1-5/8"	Internal
T-Mobile	77	78	3	TMA	Ericsson	KRY11271				on the existing mounts				
T-Mobile	77	78	3	RRUS	Ericsson	RRUS 11 B12				on the existing mounts				

Note: The proposed coax shall be installed inside the monopole in order for the results of this analysis to be valid. Please see Appendix C for feedline plan.

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

Design Parameters						
Design Code Used	TIA/EIA-222-F,					
Design Code Osed	2003 IBC & 2005 CTBC					
Location of Tower (County, State)	New London, CT					
Basic Wind Speed (mph)	104 (fastest-mile)					
Ice Thickness (in)	0.75					
Structure Classification (I, II, III)						
Exposure Category (B, C, D)						
Topographic Category (1 to 5)						

Analysis	Results	(%	Maximum	Usage)

Existing/Reserved + Fut	ure + Proposed Condition
Tower (%)	51.9%
Tower Base (%)	34.4%
Foundation (%)	48.6%
Foundation Adequate?	Yes

APPENDIX B

tnxTower Output File

Date

GPD Main Street

520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-3709

T-Mobile Towers

2015791.16

Designed by tbeltz

08:19:12 08/28/15

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 New London County, Connecticut. Basic wind speed of 104 mph. Nominal ice thickness of 0.7500 in. Ice thickness is considered to increase with height. Ice density of 56 pcf. A wind speed of 38 mph is used in combination with ice. Temperature drop of 50 °F. Deflections calculated using a wind speed of 50 mph. A non-linear (P-delta) analysis was used. Pressures are calculated at each section. Stress ratio used in pole design is 1.333.

Job

Project

Client

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or	Allow Shield	Component Type	Placement	Total Number		$C_A A_A$	Weigh
	Leg	~~~~~	- Jr -	ft			ft²/ft	plf
Step Pegs	С	No	CaAa (Out Of Face)	80.00 - 8.00	1	No Ice	0.08	2.72
						1/2" Ice	0.18	3.51
						1" Ice	0.28	4.92
						2" Ice	0.48	9.56
						4" Ice	0.88	26.18
Safety Line (3/8")	С	No	CaAa (Out Of Face)	80.00 - 8.00	1	No Ice	0.04	0.22
-						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
LDF5-50A (7/8 FOAM)	С	No	Inside Pole	77.00 - 8.00	12	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
1-5/8" Hybrid Cable	С	No	Inside Pole	77.00 - 8.00	1	No Ice	0.00	0.82
-						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82

	Discrete Tower Loads											
Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		$C_A A_A$ Front	C _A A _A Side	Weight			
			ft ft ft	o	ft		ft ²	ft ²	lb			
12' T-Arm - Round (GPD)	А	From Leg	2.00 0.00	0.0000	77.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00			

A	Job		Page
tnxTower		CTNL804B AMTRAK _ OldLyme5	2 of 4
GPD	Project		Date
520 South Main Street, Suite 2531		2015791.16	08:19:12 08/28/15
Akron, OH 44311	Client		Designed by
Phone: (330) 572-2100 FAX: (330) 572-3709		T-Mobile Towers	tbeltz

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		$C_A A_A$ Front	C _A A _A Side	Weight
			ft ft ft ft	o	ft		ft ²	ft ²	lb
			0.00			1" Ice	6.00	3.60	467.00
						2" Ice	6.67	4.87	533.00
						4" Ice	8.33	7.41	600.00
12' T-Arm - Round (GPD)	В	From Leg	2.00	0.0000	77.00	No Ice	4.70	2.33	333.00
			0.00			1/2" Ice	5.33	2.96	400.00
			0.00			1" Ice	6.00	3.60	467.00
						2" Ice 4" Ice	6.67 8.33	4.87 7.41	533.00 600.00
12' T-Arm - Round (GPD)	С	From Leg	2.00	0.0000	77.00	No Ice	8.33 4.70	2.33	333.00
12 I-AIII - Round (OFD)	C	Fioli Leg	0.00	0.0000	77.00	1/2" Ice	5.33	2.33	400.00
			0.00			1" Ice	6.00	3.60	467.00
			0.00			2" Ice	6.67	4.87	533.00
						4" Ice	8.33	7.41	600.00
(2) AIR 21 w/ Mount Pipe	А	From Leg	4.00	0.0000	77.00	No Ice	6.85	5.78	112.90
() IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		0	0.00			1/2" Ice	7.41	6.70	170.69
			1.00			1" Ice	7.94	7.50	235.28
						2" Ice	9.05	9.14	388.12
						4" Ice	11.38	12.65	819.05
(2) AIR 21 w/ Mount Pipe	В	From Leg	4.00	0.0000	77.00	No Ice	6.85	5.78	112.90
			0.00			1/2" Ice	7.41	6.70	170.69
			1.00			1" Ice	7.94	7.50	235.28
						2" Ice	9.05	9.14	388.12
	<i>a</i>		1.00	0.0000		4" Ice	11.38	12.65	819.05
(2) AIR 21 w/ Mount Pipe	С	From Leg	4.00	0.0000	77.00	No Ice	6.85	5.78	112.90
			0.00 1.00			1/2" Ice 1" Ice	7.41 7.94	6.70 7.50	170.69 235.28
			1.00			2" Ice	9.05	7.30 9.14	388.12
						2 Ice 4" Ice	11.38	12.65	819.05
NX-6515DS-VTM w/ Mount Pipe	А	From Leg	4.00	0.0000	77.00	No Ice	11.64	9.79	82.54
		110iii Bog	0.00	010000	11100	1/2" Ice	12.34	11.30	171.68
			-1.00			1" Ice	13.04	12.80	270.74
						2" Ice	14.48	15.12	502.93
						4" Ice	17.71	19.94	1143.89
NX-6515DS-VTM w/ Mount Pipe	В	From Leg	4.00	0.0000	77.00	No Ice	11.64	9.79	82.54
			0.00			1/2" Ice	12.34	11.30	171.68
			-1.00			1" Ice	13.04	12.80	270.74
						2" Ice	14.48	15.12	502.93
	G	F T	1.00	0.0000	77.00	4" Ice	17.71	19.94	1143.89
LNX-6515DS-VTM w/ Mount Pipe	С	From Leg	4.00 0.00	0.0000	77.00	No Ice 1/2" Ice	11.64 12.34	9.79 11.30	82.54 171.68
			-1.00			1/2 Ice 1" Ice	12.34	12.80	270.74
			-1.00			2" Ice	13.04	12.80	502.93
						2 Ice 4" Ice	17.71	19.94	1143.89
KRY 112 71	А	From Leg	4.00	0.0000	77.00	No Ice	0.68	0.45	13.20
	11	Troin Log	0.00	0.0000	11.00	1/2" Ice	0.80	0.56	18.38
			1.00			1" Ice	0.93	0.68	25.16
						2" Ice	1.22	0.94	44.33
						4" Ice	1.90	1.57	110.52
KRY 112 71	В	From Leg	4.00	0.0000	77.00	No Ice	0.68	0.45	13.20
			0.00			1/2" Ice	0.80	0.56	18.38
			1.00			1" Ice	0.93	0.68	25.16
						2" Ice	1.22	0.94	44.33
WDW 112 71	~	- ·	1.00	0.0000	77 ^^	4" Ice	1.90	1.57	110.52
KRY 112 71	С	From Leg	4.00	0.0000	77.00	No Ice 1/2" Ice	0.68	0.45	13.20
			0.00			172" Ice	0.80	0.56	18.38
			1.00			1" Ice 2" Ice	0.93 1.22	0.68 0.94	25.16 44.33

tran	Job		Page		
tnxTower		CTNL804B AMTRAK _ OldLyme5	3 of 4		
GPD	Project		Date		
520 South Main Street, Suite 2531		2015791.16	08:19:12 08/28/15		
Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-3709	Client	T-Mobile Towers	Designed by tbeltz		

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement		$C_A A_A$ Front	$C_A A_A$ Side	Weigh
			ft ft ft	o	ft		ft ²	ft ²	lb
						4" Ice	1.90	1.57	110.52
RRUS 11 B12	А	From Leg	4.00	0.0000	77.00	No Ice	3.31	1.36	50.70
			0.00			1/2" Ice	3.55	1.54	71.57
			1.00			1" Ice	3.80	1.73	95.49
						2" Ice	4.33	2.13	153.2
						4" Ice	5.50	3.04	313.8
RRUS 11 B12	В	From Leg	4.00	0.0000	77.00	No Ice	3.31	1.36	50.70
		C	0.00			1/2" Ice	3.55	1.54	71.57
			1.00			1" Ice	3.80	1.73	95.49
						2" Ice	4.33	2.13	153.2
						4" Ice	5.50	3.04	313.8
RRUS 11 B12	С	From Leg	4.00	0.0000	77.00	No Ice	3.31	1.36	50.70
			0.00			1/2" Ice	3.55	1.54	71.57
			1.00			1" Ice	3.80	1.73	95.49
						2" Ice	4.33	2.13	153.2
						4" Ice	5.50	3.04	313.8

Critical Deflections and Radius of Curvature - Service Wind								
Elevation	Appurtenance	Gov.	Deflection	Tilt	Twist	Radius of Curvature		
ft		Load Comb.	in	0	0	ft		
77.00	12' T-Arm - Round (GPD)	35	4.128	0.4680	0.0001	34994		

Compression Checks

Pole Design Data L Kl/r F_a Elevation Size L_u Α Actual Allow. Ratio Section P_a lbР Р No. ft ft ft ksi in^2 lb P_a -3226.59 200207.00 L1 80 - 55 (1) TP25.42x20x0.1875 25.00 79.00 105.8 13.333 15.0165 0.016 TP28.03x25.42x0.1875 L2 55 - 43 (2) 12.00 79.00 98.6 15.358 16.1167 -3766.74 247517.00 0.015 L3 43 - 1 (3) TP36.77x26.8938x0.3125 45.50 79.00 73.2 23.791 36.1613 -9275.65 860301.00 0.011

Pole Bending Design Data

Section	Elevation	Size	Actual	Actual	Allow.	Ratio	Actual	Actual	Allow.	Ratio
No.			M_x	f_{bx}	F_{bx}	f_{bx}	M_y	f_{by}	F_{by}	f_{by}
	ft		lb-ft	ksi	ksi	F _{bx}	lb-ft	ksi	ksi	F_{by}
L1	80 - 55 (1)	TP25.42x20x0.1875	143232.50	18.375	39.000	0.471	0.00	0.000	39.000	0.000
L2	55 - 43 (2)	TP28.03x25.42x0.1875	208588.33	23.219	39.000	0.595	0.00	0.000	39.000	0.000
L3	43 - 1 (3)	TP36.77x26.8938x0.3125	658614.17	24.312	39.000	0.623	0.00	0.000	39.000	0.000

Job

Project

Client

CTNL804B AMTRAK _ OldLyme5

Page 4 of 4

Date

GPD

520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-3709 2015791.16 T-Mobile Towers

Designed by tbeltz

08:19:12 08/28/15

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f _v ksi	Allow. F _v ksi	$\frac{Ratio}{f_v}$	Actual T lb-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	$\frac{Ratio}{f_{vt}}$ F_{vt}
L1	80 - 55 (1)	TP25.42x20x0.1875	7350.02	0.489	26.000	0.038	0.00	0.000	26.000	0.000
L2	55 - 43 (2)	TP28.03x25.42x0.1875	8030.56	0.498	26.000	0.038	0.00	0.000	26.000	0.000
L3	43 - 1 (3)	TP36.77x26.8938x0.3125	11865.70	0.328	26.000	0.025	0.00	0.000	26.000	0.000

Pole Interaction Design Data

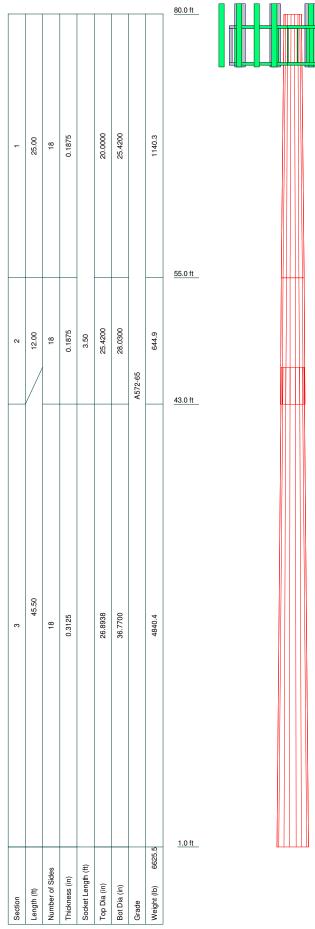
Section No.	Elevation	Ratio P	Ratio f_{bx}	Ratio f_{by}	$Ratio f_v$	$Ratio f_{vt}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft	P_a	F_{bx}	F_{by}	F_{v}	F_{vt}	-		
L1	80 - 55 (1)	0.016	0.471	0.000	0.038	0.000	0.488 🖌	1.333	H1-3+VT 🖌
L2	55 - 43 (2)	0.015	0.595	0.000	0.038	0.000	0.611 🖌	1.333	H1-3+VT 🖌
L3	43 - 1 (3)	0.011	0.623	0.000	0.025	0.000	0.634 🖌	1.333	H1-3+VT 🖌

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
L1	80 - 55	Pole	TP25.42x20x0.1875	1	-3226.59	266875.92	36.6	Pass
L2	55 - 43	Pole	TP28.03x25.42x0.1875	2	-3766.74	329940.15	45.8	Pass
L3	43 - 1	Pole	TP36.77x26.8938x0.3125	3	-9275.65	1146781.19	47.6	Pass
							Summary	
						Pole (L3)	47.6	Pass
						RATING =	47.6	Pass

APPENDIX C

Tower Elevation Drawing



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' T-Arm - Round (GPD)	77	LNX-6515DS-VTM w/ Mount Pipe	77
12' T-Arm - Round (GPD)	77	KRY 112 71	77
12' T-Arm - Round (GPD)	77	KRY 112 71	77
(2) AIR 21 w/ Mount Pipe	77	KRY 112 71	77
(2) AIR 21 w/ Mount Pipe	77	RRUS 11 B12	77
(2) AIR 21 w/ Mount Pipe	77	RRUS 11 B12	77
LNX-6515DS-VTM w/ Mount Pipe	77	RRUS 11 B12	77
LNX-6515DS-VTM w/ Mount Pipe	77		

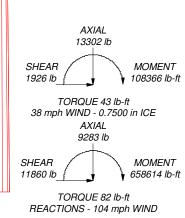
MATERIAL STRENGTH						
GRADE	Fy	Fu	GRADE	Fy	Fu	
A572-65	65 ksi	80 ksi				

TOWER DESIGN NOTES

Tower is located in New London County, Connecticut.
 Tower designed for a 104 mph basic wind in accordance with the TIA/EIA-222-F Standard.
 Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to

increase in thickness with height.

 Deflections are based upon a 50 mph wind.
 TOWER RATING: 47.6% 5.

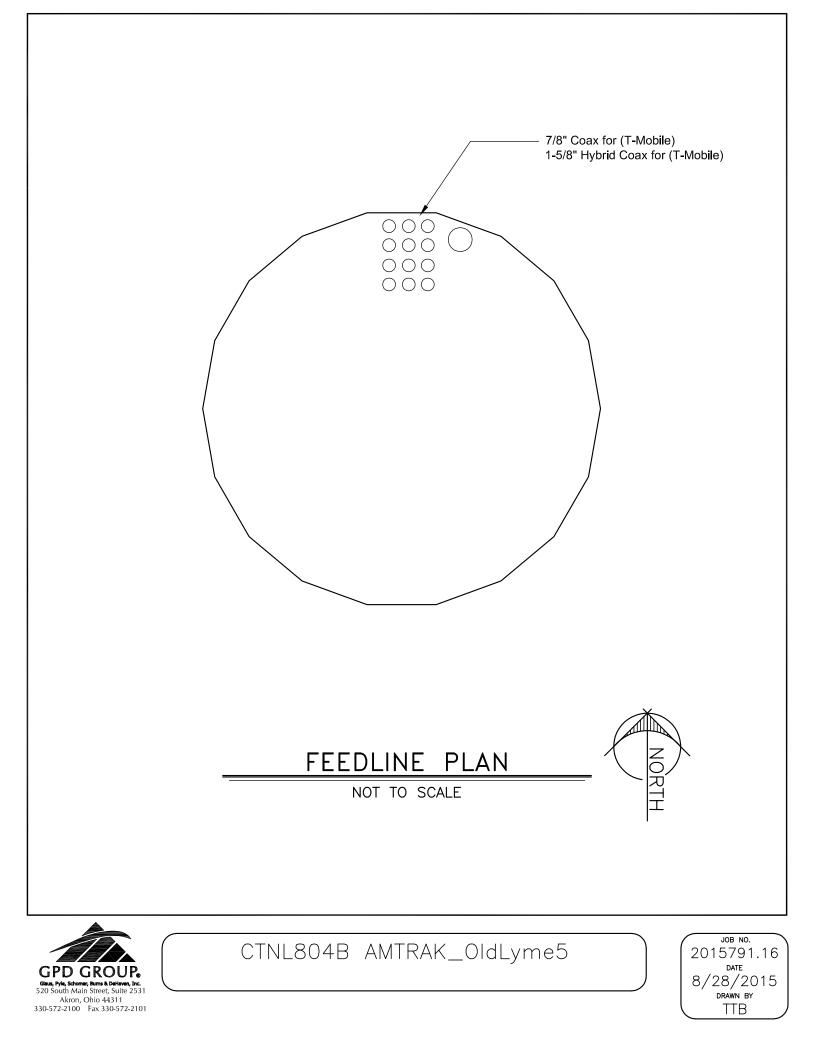


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GPD 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-3709

^{Job:} CTNL804B AMTRAK_ OldLyme5						
Project: 2015791.16						
Client: T-Mobile Towers	Drawn by: tbeltz	App'd:				
^{Code:} TIA/EIA-222-F		Scale: NTS				
Path:	04Pi02 2015701 16/ms/CTNI 204P or	Dwg No. E-1				



APPENDIX D

Flange Plate Analysis



Existing Flange Connection @ CTNL804B AMTRAK _ Old Lyme5 2015791.16



Acceptable Stress Ratio	ľ
=	100.0%

55'

UpperStiffeners Configuration =

Lower Stiffeners Configuration =

None

None

Flange Bolts						
# Bolts =	10					
Bolt Type =	A325					
Et =	44	ksi				
ASIF =	1.333	1101				
Bolt Circle =	28.375	in				
Bolt Diameter =	1	in				
Tension & Shear (ASD, Section	J3.5)					
F _v =	21	ksi				
Nominal Area =	0.79	in²				
$f_v =$	0.94					
Applied Shear =	0.94					
Allowable Shear =	21.99					
Ft^2 - 4.39(fv^2))^1/2 =		ksi				
Allowable Bolt Stress =	58.60839					
B =	46.03					
Prying Action Check N/A, top flange thickness > tc						
Max Comp. on Bolt =	24.54	kips				
Max Tension on Bolt =	23.89	kips				
Shear Capacity =	3.3%					
Tensile Capacity =	51.9%					
Bolt Capacity =	51.9%	ОК				
· · · ·						
Pole Informatio	n					
Pole Informatio Shaft Diam. (Upper) =	25.42	in				
	25.42	in in				
Shaft Diam. (Upper) =	25.42					
Shaft Diam. (Upper) = Thickness (Upper)=	25.42 0.1875	in				

25.42 in 0.1875 in 18 65 ksi

-		
Upper Flange	Plate	
Location =	External	
Plate Strength (F _y) =	60	ksi
Plate Thickness =	1	in
Outer Diameter =	32.625	in
wcalc =	12.61	in
wmax =	18.77	in
W =	12.61	in
S =	2.10	in ³
f _b =	17.41	ksi
F _b =	60	ksi
UP Capacity =	29.0%	ОК

Lower Flange Plate						
Location =	External					
Plate Strength (Fy) =	60	ksi				
Plate Thickness =	1	in				
Outer Diameter =	32.625	in				
wcalc =	12.61	in				
wmax =	18.77	in				
W =		in				
S =	2.10	in^3				
f _b =	17.41	ksi				
F _b =	60	ksi				
LP Capacity =	29.0%	OK				

GPD Flange Plate Stress (Rev F) - V1.08

Shaft Diam. (Lower) = Thickness (Lower)= # of Sides (Lower) = F_y (Lower) =

APPENDIX E

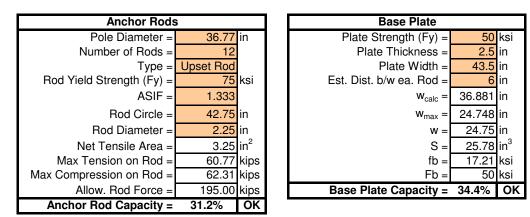
Anchor Rod & Base Plate Analysis

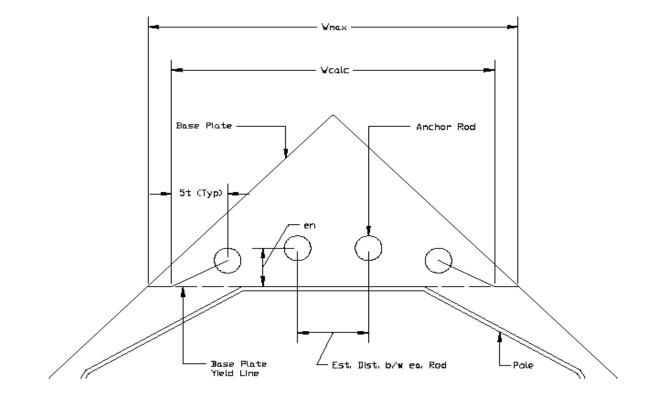


Anchor Rod and Base Plate Stresses CTNL804B AMTRAK _ Old Lyme5 2015791.16

100.0%

Overturning Moment =	658.61 k*ft	
Axial Force =	9.28 k	
Shear Force =	<mark>11.86</mark> k	Acceptable Stress Ratio





GPD Unstiffened Square Base Plate Stress (Rev F) - V2.07

APPENDIX F

Foundation Analysis



Mat Foundation Analysis CTNL804B AMTRAK _ Old Lyme5 2015791.16

Genera	il Info
Code	TIA/EIA-222-F (ASD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Round
Reinforcing Known	Yes
Max Capacity	1

Tower Re	actions	
Moment, M	658.61	k-ft
Axial, P	9.28	k
Shear, V	11.86	k

Pad & Pier	Geometry	
Pier Diameter, ø	5.5	ft
Pad Length, L	18.5	ft
Pad Width, W	18.5	ft
Pad Thickness, t	1.5	ft
Depth, D	5.6	ft
Height Above Grade, HG	1	ft

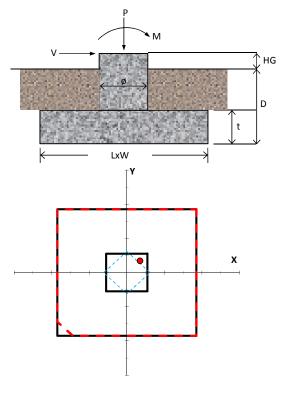
Pad & Pier F	Reinforcing	
Rebar Fy	60	ksi
Concrete Fc'	4	ksi
Clear Cover	3	in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 8	
Pad Quantity Per Layer	20	
Pier Rebar Size	# 7	
Pier Quantity of Rebar	30	

Soil Pro	perties	
Soil Type	Granular	
Soil Unit Weight	120	pcf
Angle of Friction, ø	30	•
Bearing Type	Net	
Ultimate Bearing	6	ksf
Water Table Depth	99	ft
Frost Depth	3.5	ft

GPD Mat Foundation Analysis - V1.02

Bearing S	ummary		Load Case
Qxmax	1.31	ksf	1D+1W
Qymax	1.31	ksf	1D+1W
Qmax @ 45°	1.62	ksf	1D+1W
Q _{(all) Gross}	3.34	ksf	
Controlling Capacity	48.6%	Pass	

Overturning Summa	ry (Required	FS=1.5)	Load Case
FS(ot)x	4.18	≥1.5	1D+1W
FS(ot)y	4.18	≥1.5	1D+1W
Controlling Capacity	35.9%	Pass	

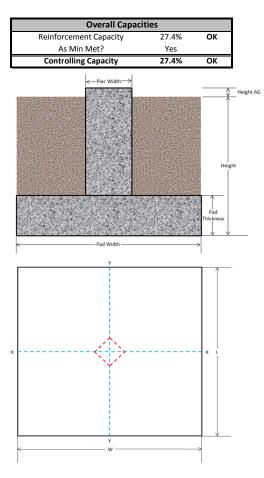




Base Foundation Reinforcement Check CTNL804B AMTRAK _ Old Lyme5 2015791.16

Code	
TIA/EIA-222-F	

Tower Reac	tions	
Moment	658.61	k-ft
Axial	9.28	
Shear	11.86	ĸ
Pad & Pier Ge		c.
Height	5.6	
Height above Grade		ft
Pad Length, L	18.5	
Pad Width, W	18.5	
Pad Thickness	1.5	ft
Pier Shape	Round	
Round Pier Diameter	5.5	ft
Pad & Pier Rei	nforcing	
Reinforcing Known	Yes	
f _c '	4	ksi
Clear Cover	3	in
Rebar Fy		ksi
Reinforced Top & Bottom?	Yes	
Pad Rebar Size	# 8	
Pad Rebar Quantity	# 0 20	
•	20 # 7	
Pier Rebar Size	# / 30	
Pier Rebar Quantity	30	
Unit Weig	htc	
Concrete Unit Weight	150	ncf
Soil Unit Weight		
	120	ncf
JOIL OTHER WEIGHT	120	pcf
		pcf
Orthogonal B	earing	
Orthogonal B Q _{max}	earing 1.53	ksf
Orthogonal B	earing	ksf
Orthogonal B Q _{max}	earing 1.53	ksf
Orthogonal B Q _{max} Q _{min}	earing 1.53 0.01	ksf
Orthogonal B Q _{max}	earing 1.53 0.01	ksf ksf
Orthogonal B Q _{max} Q _{min} Pad Moment C M _u =	earing 1.53 0.01 apacity 8.87	ksf ksf k-ft
Orthogonal B Q _{max} Q _{min} Pad Moment C M _u = ϕM_n =	earing 1.53 0.01 apacity 8.87 49.47	ksf ksf k-ft k-ft
Orthogonal B Q _{max} Q _{min} Pad Moment Co M _u = ϕM_n = Moment Capacity	earing 1.53 0.01 apacity 8.87 49.47 17.9%	ksf ksf k-ft
Orthogonal B Q _{max} Q _{min} Pad Moment Co M _u = ϕ M _n = Moment Capacity One-Way (Wide-Be	earing 1.53 0.01 apacity 8.87 49.47 17.9% cam) Shear	ksf ksf k-ft k-ft OK
Orthogonal B Q _{max} Q _{min} Pad Moment Co M _u = ϕM_n = Moment Capacity	earing 1.53 0.01 apacity 8.87 49.47 17.9%	ksf ksf k-ft k-ft OK
Orthogonal B Q _{max} Q _{min} Pad Moment Co M _u = ϕ M _n = Moment Capacity One-Way (Wide-Be	earing 1.53 0.01 apacity 8.87 49.47 17.9% cam) Shear	ksf ksf k-ft k-ft OK kips
Orthogonal B Q _{max} Q _{min} Pad Moment Co M _u = $\phi M_n=$ Moment Capacity One-Way (Wide-Be V _u = $\phi V_n=$	earing 1.53 0.01 apacity 8.87 49.47 17.9% 49.47 17.9% stam) Shear 37.50 284.32	ksf ksf k-ft k-ft OK kips kips
Orthogonal B Q _{max} Q _{min} Pad Moment C M _u = ϕ M _n = Moment Capacity One-Way (Wide-Be V _u = ϕ V _n = Shear Capacity	earing 1.53 0.01 apacity 8.87 49.47 17.9% aram) Shear 37.50 284.32 13.2%	ksf ksf k-ft k-ft OK kips
Orthogonal B Q _{max} Q _{min} Pad Moment C M _u = ϕ M _n = Moment Capacity One-Way (Wide-Be V _u = ϕ V _n = Shear Capacity Two-Way (Punchi	earing 1.53 0.01 apacity 8.87 49.47 17.9% aram) Shear 37.50 284.32 13.2% ng) Shear	ksf ksf k-ft k-ft OK kips kips OK
Orthogonal B Q_{max} Q_{min} $Pad Moment Co M_u^=\phi M_n^=Moment CapacityOne-Way (Wide-Be)V_u^=\phi V_n^=Shear CapacityTwo-Way (Punchi)V_u^=$	earing 1.53 0.01 apacity 8.87 49.47 17.9% aram) Shear 13.2% ng) Shear 196.15	ksf ksf k-ft k-ft OK kips OK kips
Orthogonal B Q _{max} Q _{min} Pad Moment C M _u = ϕ M _n = Moment Capacity One-Way (Wide-Be V _u = ϕ V _n = Shear Capacity Two-Way (Punchi	earing 1.53 0.01 apacity 8.87 49.47 17.9% aram) Shear 37.50 284.32 13.2% ng) Shear	ksf ksf k-ft k-ft OK kips OK kips
Orthogonal B Q_{max} Q_{min} $Pad Moment Co M_u^=\phi M_n^=Moment CapacityOne-Way (Wide-Be)V_u^=\phi V_n^=Shear CapacityTwo-Way (Punchi)V_u^=$	earing 1.53 0.01 apacity 8.87 49.47 17.9% aram) Shear 13.2% ng) Shear 196.15	ksf ksf k-ft k-ft OK kips OK kips
Orthogonal B Q_{max} Q_{min} Pad Moment C $M_u^=$ $\phi M_n^=$ Moment Capacity $One-Way$ (Wide-Be $V_u^=$ $\phi V_n^=$ Shear Capacity $Two-Way$ (Punchi) $V_u^=$ $\phi V_n^=$ Shear CapacityShear CapacityShear CapacityShear CapacityShear CapacityShear Capacity	earing 1.53 0.01 apacity 8.87 49.47 17.9% aram) Shear 13.2% ng) Shear 196.15 714.60 27.4%	ksf ksf k-ft k-ft OK kips kips Kips kips
Orthogonal B Q_{max} Q_{min} Pad Moment C $M_u^=$ $\phi M_n^=$ Moment Capacity $One-Way$ (Wide-Be $V_u^=$ $\phi V_n^=$ Shear Capacity Two-Way (Punchi) $V_u^=$ $\phi V_n^=$ Shear Capacity Two-Way (Punchi) $V_u^=$ $\phi V_n^=$ Shear Capacity Pier Comprese	earing 1.53 0.01 apacity 8.87 49.47 17.9% arm) Shear 37.50 284.32 13.2% ng) Shear 196.15 714.60 27.4% ision	ksf ksf k-ft k-ft OK kips kips kips kips kips K
Orthogonal B Q_{max} Q_{min} Pad Moment Ca $M_u^=$ $\phi M_n^=$ Moment Capacity $One-Way$ (Wide-Be $V_u^=$ $\phi V_n^=$ Shear Capacity $Two-Way$ (Punchi $V_u^=$ $\phi V_n^=$ Shear Capacity $Pier$ Compress $P_{u}^=$	earing 1.53 0.01 apacity 8.87 49.47 17.9% arm) Shear 37.50 284.32 13.2% ng) Shear 196.15 714.60 27.4% ision 12.06	ksf ksf k-ft k-ft OK kips kips kips Kips OK
Orthogonal B Q_{max} Q_{min} Pad Moment C $M_u^=$ $\phi M_n^=$ Moment Capacity $One-Way$ (Wide-Be $V_u^=$ $\phi V_n^=$ Shear Capacity Two-Way (Punchi) $V_u^=$ $\phi V_n^=$ Shear Capacity Two-Way (Punchi) $V_u^=$ $\phi V_n^=$ Shear Capacity Pier Comprese	earing 1.53 0.01 apacity 8.87 49.47 17.9% aam) Shear 37.50 284.32 13.2% ng) Shear 196.15 714.60 27.4% ision 12.06 6578.45	ksf ksf k-ft k-ft OK kips Kips kips OK kips



Base Foundation Reinforcement - V1.09