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July 24, 2024

Via Hand Delivery

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

Re: **Docket No. 513 –The Towers, LLC Certificate of Environmental Compatibility and Public Need for the Construction, Maintenance and Operation of a Wireless Telecommunications Facility Located off Mason Hill Road, Litchfield, Connecticut**

Development and Management Plan Submission

Dear Attorney Bachman:

Enclosed please find fifteen (15) copies of the following:

1. Development and Management ("D&M") Plan drawings prepared by Centek Engineering for the approved telecommunications facility off Mason Hill Road in Litchfield, Connecticut incorporating the Council's conditions of approval. Also enclosed are three (3) full size (24" x 36") sets of D&M plans.

2. Structural Design Report, containing the monopole tower and foundation design, prepared by Sabre Industries, Inc. dated May 8, 2024.

3. Geotechnical Engineering Report prepared by Down To Earth Consulting, LLC dated November 2023.

Together, this information constitutes the final D&M Plan submission for the approved telecommunications facility off Mason Hill Road in Litchfield, Connecticut.

Further, and in accordance with the Council's Decision and Order ("D+O"), the vehicle turn around has been relocated to avoid encroaching into the Eversource transmission line ROW. (See Condition No. 2c). In addition, construction of the facility will occur between the hours of 7 AM and 5 PM, Monday through Saturday (See Condition No. 7).

We respectfully request that this information be reviewed and this matter be placed on the next available Siting Council agenda for approval. Please feel free to contact me if you have any questions or require additional information. Thank you.

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Denise Raap, First Selectman
A.J. DeSantis, Project Manager, Vertical Bridge REIT
Laura Hughes, Project Manager, Vertical Bridge REIT

ATTACHMENT 1

CT SITING COUNCIL DOCKET NO.: 513

THE TOWERS, LLC

Cellco Partnership
d.b.a. verizon wireless ✓

& VERTICAL BRIDGE REIT, LLC

WIRELESS COMMUNICATIONS FACILITY
DEVELOPMENT AND MANAGEMENT PLAN
LITCHFIELD SE CT
MASON HILL ROAD
NORTHFIELD, CT 06778

SITE DIRECTIONS

FROM: 20 ALEXANDER DRIVE, WALLINGFORD, CT **TO:** PROPOSED TOWER SITE ENTRANCE ON MASON HILL ROAD, NORTHFIELD, CT

1.	START OUT NORTH ON ALEXANDER DR TOWARD BARNES INDUSTRIAL PARK RD.	0.2 MI.
2.	TURN RIGHT ONTO BARNES INDUSTRIAL PARK RD.	0.1 MI.
3.	TAKE FIRST LEFT ONTO CT-68.	0.4 MI.
4.	TURN RIGHT ONTO RAMP.	0.2 MI.
5.	TURN RIGHT ONTO N COLONY RD/US-5 N.	0.3 MI.
6.	MERGE ONTO CT-15 N TOWARD HARTFORD.	3.9 MI.
7.	MERGE ONTO I-691 W VIA EXIT 66W TOWARD MERIDEN/WATERBURY.	7.8 MI.
8.	TAKE THE I-84 W EXIT, EXIT 1, ON THE LEFT TOWARD DANBURY WATERBURY.	0.4 MI.
9.	STAY STRAIGHT TO GO ON I-84 W.	8.2 MI.
10.	MERGE ONTO CT-8 N VIA EXIT 20 TOWARD TORRINGTON.	0.2 MI.
11.	TAKE THE CT-254 EXIT, EXIT 38, TOWARD THOMASTON/US-6 W/CT-109.	0.1 MI.
12.	KEEP LEFT TO TAKE THE WATERBURY ROAD RAMP TOWARD THOMASTON.	1.1 MI.
13.	TURN LEFT ONTO WATERBURY ROAD/CT-254. CONTINUE TO FOLLOW CT-254.	2.1 MI.
14.	TURN LEFT ONTO NORTHFIELD ROAD/CT-254.	0.3 MI.
15.	TURN RIGHT ONTO KNIFE SHOP ROAD.	0.1 MI.
16.	TAKE FIRST RIGHT ONTO MASON HILL ROAD.	0.1 MI.
17.	TAKE THE FIRST LEFT TO STAY ON MASON HILL ROAD.	0.2 MI.
	THE ENTRANCE TO THE PROPOSED TOWER FACILITY IS ON THE RIGHT.	

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY CELLCO PARTNERSHIP.

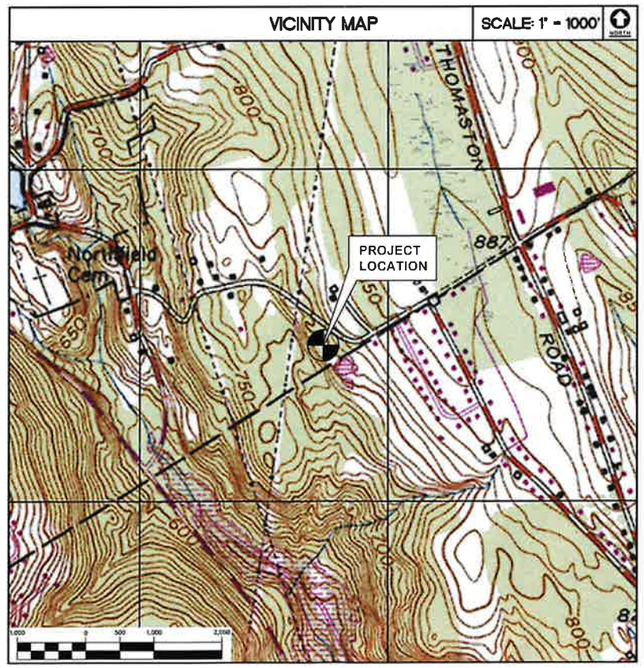
SITE INFORMATION

THE SCOPE OF WORK SHALL GENERALLY INCLUDE:

1. CONSTRUCTION OF A ±2,355 SF FENCED COMMUNICATIONS FACILITY COMPOUND WITHIN A PROPOSED ±2,650 SF CELLCO PARTNERSHIP LEASE AREA.
2. THE PROPOSED ±110' TALL STEEL MONOPOLE COMMUNICATIONS TOWER TO BE LOCATED WITHIN THE PROPOSED FENCED COMPOUND.
3. THE PROPOSED CELLCO PARTNERSHIP GROUND EQUIPMENT INSTALLATION TO CONSIST OF (2) EQUIPMENT CABINETS AND A PROPANE FUELED BACKUP POWER GENERATOR LOCATED ON A PROPOSED 10' x 16' CONCRETE PAD WITHIN THE FENCED COMPOUND AREA.
4. A 500 GALLON ABOVE-GROUND PROPANE TANK IS PROPOSED WITHIN THE COMPOUND FENCE FOR FUEL SUPPLY TO THE PROPOSED BACKUP POWER GENERATOR.
5. FACILITY ACCESS WILL BE VIA A PROPOSED 12' WIDE x ±130' LONG ACCESS DRIVE WITH A PROPOSED CURB CUT ON MASON HILL ROAD.
6. THE PROPOSED TOWER RF INSTALLATION TO CONSIST OF A TOTAL OF A TOTAL OF (9) PANEL ANTENNAS, (6) REMOTE RADIO UNITS (RRUs), (1) SURGE ARRESTOR AND (1) HYBRID CABLE AND ASSOCIATED JUMPER CABLES.
7. THE PROPOSED CELLCO PARTNERSHIP POWER AND FIBER TELCO UTILITY CONDUITS TO BE ROUTED UNDERGROUND FROM A PROPOSED UTILITY POLE ON MASON HILL ROAD R.O.W. TO THE PROPOSED FACILITY UTILITY BACKBOARD LOCATED ADJACENT TO THE PROPOSED FENCED COMPOUND. UTILITIES WILL BE ROUTED UNDERGROUND FROM THE FACILITY UTILITY BACKBOARD TO THE PROPOSED CELLCO PARTNERSHIP EQUIPMENT PAD LOCATED WITHIN THE FENCED COMPOUND.
8. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2021 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2022 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "H" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2022 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE, AND LOCAL CODES.
9. THERE WILL NOT BE ANY LIGHTING UNLESS REQUIRED BY THE FCC OR THE FAA.
10. THERE WILL NOT BE ANY SIGNS OR ADVERTISING ON THE ANTENNAS OR EQUIPMENT.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT INFORMATION

SITE NAME:	LITCHFIELD SE CT
SITE ADDRESS:	MASON HILL ROAD NORTHFIELD, CT 06778
SITE ID:	US-CT-5057
PROPERTY OWNER:	WILLIAMS JOYCE S 420 MICHELLE LANE THOMASTON, CT 06787
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DRIVE WALLINGFORD, CT 06492
APPLICANT NAME:	THE TOWERS, LLC C/O VERTICAL BRIDGE 750 PARK OF COMMERCE DRIVE, SUITE 200 BOCA RATON, FL 33487
VERTICAL BRIDGE CONTACT:	LAURA HUGHES PROJECT MANAGER (201) 681-6183 CHUCK BRUTOMESSO AIROSMITH DEVELOPMENT (860) 306-8355
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE (860) 275-8345
PROPOSED TOWER COORDINATES:	LATITUDE: 41°-41'-45.69" LONGITUDE: 73°-05'-36.74" GROUND ELEVATION: 793.82'± A.M.S.L.

SHEET INDEX

SHEET. NO.	DESCRIPTION	REV.
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N-1	ENVIRONMENTAL AND BUFFER ENHANCEMENT PLAN NOTES	0
C-1	PARTIAL SITE PLAN	0
C-2	PARTIAL SITE/GRADING AND DRAINAGE PLAN	0
C-3	FACILITY COMPOUND PLAN, ELEVATION AND ANTENNA CONFIG.	0
C-4	FACILITY SITE UTILITY PLAN AND DETAILS	0
C-5	SITE DETAILS AND NOTES	0
C-6	MISCELLANEOUS SITE DETAILS	0
C-6	MISCELLANEOUS DETAILS	0
C-8	EQUIPMENT AND RF DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	07/19/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN
C	07/17/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN - REVISED PER REVIEWER COMMENTS
B	07/12/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN - REVISED PER REVIEWER COMMENTS
A	06/20/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN - ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

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Cellco Partnership d/b/a/ Verizon Wireless

LITCHFIELD SE CT

MASON HILL ROAD
NORTHFIELD, CT 06778

DATE: 06/20/24
SCALE: AS NOTED
JOB NO. 24072.01

TITLE SHEET

T-1

Sheet No. 1 of 10

ENVIRONMENTAL NOTES - RESOURCES PROTECTION MEASURES:

WETLAND AND NORTHERN LONG-EARED BAT PROTECTION PROGRAM

AS A RESULT OF THE PROJECT'S LOCATION IN THE VICINITY OF SENSITIVE WETLAND RESOURCES AND HABITAT KNOWN TO BE USED BY NORTHERN LONG-EARED BAT ("NLEB"; MYOTIS SEPTENTRIONALIS), A FEDERALLY- AND STATE-LISTED ENDANGERED SPECIES, THE FOLLOWING PROTECTION PROGRAM SHALL BE IMPLEMENTED BY THE CONTRACTOR TO AVOID UNINTENTIONAL IMPACTS TO PROXIMATE WETLAND RESOURCES DURING CONSTRUCTION ACTIVITIES AND PROTECT THIS BAT SPECIES AND PREVENT INCIDENTAL TAKE.

IT IS OF THE UTMOST IMPORTANCE THAT THE CONTRACTOR COMPLIES WITH THE REQUIREMENT FOR THE INSTALLATION OF PROTECTIVE MEASURES AND THE EDUCATION OF ITS EMPLOYEES AND SUBCONTRACTORS PERFORMING WORK ON THE PROJECT SITE. THE WETLAND PROTECTION MEASURES SHALL BE IMPLEMENTED AND MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES UNTIL PERMANENT STABILIZATION OF SITE SOILS HAS OCCURRED.

ALL-POINTS TECHNOLOGY CORPORATION, P.C. ("APT") WILL SERVE AS THE ENVIRONMENTAL MONITOR FOR THIS PROJECT TO ENSURE THAT THESE PROTECTION MEASURES ARE IMPLEMENTED PROPERLY AND WILL PROVIDE AN EDUCATION SESSION ON THE PROJECT'S PROXIMITY TO SENSITIVE WETLAND RESOURCES AND POTENTIAL PRESENCE OF NLEB PRIOR TO THE START OF CONSTRUCTION ACTIVITIES AND TYPICAL AMPHIBIANS AND REPTILES ASSOCIATED WITH THESE HABITATS THAT MAY BE ENCOUNTERED DURING CONSTRUCTION. THE CONTRACTOR SHALL CONTACT DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST AT APT, AT LEAST 5 BUSINESS DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING. MR. GUSTAFSON CAN BE REACHED BY PHONE AT (860) 552-2033 OR VIA EMAIL AT DGUSTAFSON@ALLPOINTSTECH.COM.

THIS RESOURCES PROTECTION PROGRAM CONSISTS OF SEVERAL COMPONENTS INCLUDING: EDUCATION OF ALL CONTRACTORS AND SUB-CONTRACTORS PRIOR TO INITIATION OF WORK ON THE SITE; INSTALLATION OF EROSION CONTROLS; PETROLEUM MATERIALS STORAGE AND SPILL PREVENTION; PROTECTIVE MEASURES; NLEB PROTECTION MEASURES; HERBICIDE, PESTICIDE, AND SALT RESTRICTIONS; AND, REPORTING.

1. CONTRACTOR EDUCATION:
   a. PRIOR TO WORK ON SITE AND INITIAL DEPLOYMENT/MOBILIZATION OF EQUIPMENT AND MATERIALS, THE CONTRACTOR SHALL ATTEND AN EDUCATIONAL SESSION AT THE PRE-CONSTRUCTION MEETING WITH APT. THIS ORIENTATION AND EDUCATIONAL SESSION WILL CONSIST OF INFORMATION SUCH AS, BUT NOT LIMITED TO: IDENTIFICATION OF WETLAND RESOURCES PROXIMATE TO WORK AREAS AND THE ENVIRONMENTALLY SENSITIVE NATURE OF THE DEVELOPMENT SITE.
   b. THE CONTRACTOR WILL BE PROVIDED WITH CELL PHONE AND EMAIL CONTACTS FOR APT PERSONNEL TO IMMEDIATELY REPORT ANY RELEASES, IMPACTS TO NEARBY WETLAND RESOURCE AREAS, OR ENCOUNTERS WITH ANY RARE SPECIES. EDUCATIONAL POSTER MATERIALS OF THE ENVIRONMENTALLY SENSITIVE NATURE OF THE WORK AREA WILL BE PROVIDED BY APT AND DISPLAYED ON THE JOB SITE TO MAINTAIN WORKER AWARENESS AS THE PROJECT PROGRESSES.
   c. IF ANY RARE SPECIES ARE ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY CEASE ALL WORK, AVOID ANY DISTURBANCE TO THE SPECIES, AND CONTACT APT.
2. NLEB TREE CLEARING RESTRICTION
   a. TREE CLEARING IS RESTRICTED TO OCCUR ONLY BETWEEN NOVEMBER 1ST THROUGH MARCH 31ST, DURING THE BAT'S INACTIVE SEASON, WHEN NLEB BATS WOULD LIKELY BE IN HIBERNACULA AND NOT PRESENT IN FORESTED HABITAT ON THE SITE. DO NOT REMOVE TREES BETWEEN APRIL 1ST THROUGH OCTOBER 31ST.
3. EROSION AND SEDIMENTATION CONTROLS/ISOLATION BARRIERS
   a. PLASTIC NETTING USED IN A VARIETY OF EROSION CONTROL PRODUCTS (I.E., EROSION CONTROL BLANKETS, FIBER ROLLS [WATTLES], REINFORCED SILT FENCE) HAS BEEN FOUND TO ENTANGLE WILDLIFE, INCLUDING REPTILES, AMPHIBIANS, BIRDS AND SMALL MAMMALS. NO PERMANENT EROSION CONTROL PRODUCTS OR REINFORCED SILT FENCE WILL BE USED ON THE PROJECT. TEMPORARY EROSION CONTROL PRODUCTS THAT WILL BE EXPOSED AT THE GROUND SURFACE AND REPRESENT A POTENTIAL FOR WILDLIFE ENTANGLEMENT WILL USE EITHER EROSION CONTROL BLANKETS AND FIBER ROLLS COMPOSED OF PROCESSED FIBERS MECHANICALLY BOUND TOGETHER TO FORM A CONTINUOUS MATRIX (NETLESS) OR NETTING COMPOSED OF PLANAR WOVEN NATURAL BIODEGRADABLE FIBER TO AVOID/MINIMIZE WILDLIFE ENTANGLEMENT.
   b. THE EXTENT OF THE EROSION CONTROLS WILL BE AS SHOWN ON THE SITE PLANS. THE CONTRACTOR SHALL HAVE ADDITIONAL SEDIMENTATION AND EROSION CONTROLS STOCKPILED ON SITE SHOULD FIELD OR CONSTRUCTION CONDITIONS WARRANT EXTENDING DEVICES. IN ADDITION TO THE CONTRACTOR MAKING THESE DETERMINATIONS, REQUESTS FOR ADDITIONAL CONTROLS WILL ALSO BE AT THE DISCRETION OF THE ENVIRONMENTAL MONITOR.
   c. INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS, REQUIRED FOR EROSION CONTROL COMPLIANCE AND CREATION OF A BARRIER TO POSSIBLE MIGRATING/DISPERSING WILDLIFE, SHALL BE PERFORMED BY THE CONTRACTOR. THE ENVIRONMENTAL MONITOR WILL INSPECT THE WORK ZONE AREA PRIOR TO AND FOLLOWING EROSION CONTROL BARRIER INSTALLATION. IN ADDITION, WORK ZONES WILL BE INSPECTED PRIOR TO AND FOLLOWING EROSION CONTROL BARRIER INSTALLATION TO ENSURE THE AREA IS FREE OF WILDLIFE AND SATISFACTORILY INSTALLED. THE INTENT OF THE BARRIER IS TO SEGREGATE THE MAJORITY OF THE WORK ZONE FROM POSSIBLE MIGRATING WILDLIFE, IN ADDITION TO SERVING AS AN EROSION CONTROL DEVICE. OFTENTIMES COMPLETE ISOLATION OF A WORK ZONE IS NOT FEASIBLE DUE TO ACCESSIBILITY NEEDS AND LOCATIONS OF STAGING/MATERIAL STORAGE AREAS, ETC. IN THOSE CIRCUMSTANCES, THE BARRIERS WILL BE POSITIONED TO DEFLECT MIGRATING/DISPERSAL ROUTES AWAY FROM THE WORK ZONE TO MINIMIZE POTENTIAL ENCOUNTERS WITH WILDLIFE AT THE DISCRETION OF THE ENVIRONMENTAL MONITOR.
   d. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTIONS OF THE SEDIMENTATION AND EROSION CONTROLS FOR TEARS OR BREECHES AND ACCUMULATION LEVELS OF SEDIMENT, PARTICULARLY FOLLOWING STORM EVENTS THAT GENERATE A DISCHARGE, AS DEFINED BY AND IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THE CONTRACTOR SHALL NOTIFY THE APT ENVIRONMENTAL MONITOR WITHIN 24 HOURS OF ANY BREECHES OF THE SEDIMENTATION AND EROSION CONTROLS AND ANY SEDIMENT RELEASES BEYOND THE PERIMETER CONTROLS THAT IMPACT WETLANDS OR AREAS WITHIN 100 FEET OF WETLANDS. THE APT ENVIRONMENTAL MONITOR WILL PROVIDE PERIODIC INSPECTIONS OF THE SEDIMENTATION AND EROSION CONTROLS THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES ONLY AS IT PERTAINS TO THEIR FUNCTION TO PROTECT NEARBY WETLANDS. SUCH INSPECTIONS WILL GENERALLY OCCUR ONCE PER MONTH. THE FREQUENCY OF MONITORING MAY INCREASE DEPENDING UPON SITE CONDITIONS, LEVEL OF CONSTRUCTION ACTIVITIES IN PROXIMITY TO SENSITIVE RECEPTORS, OR AT THE REQUEST OF REGULATORY AGENCIES. IF THE ENVIRONMENTAL MONITOR IS NOTIFIED BY THE CONTRACTOR OF A SEDIMENT RELEASE, AN INSPECTION WILL BE SCHEDULED SPECIFICALLY TO INVESTIGATE AND EVALUATE POSSIBLE IMPACTS TO WETLAND RESOURCES.
   e. THIRD PARTY MONITORING OF SEDIMENTATION AND EROSION CONTROLS WILL BE PERFORMED BY OTHER PARTIES, AS NECESSARY, UNDER APPLICABLE LOCAL, STATE AND/OR FEDERAL REGULATIONS AND PERMIT CONDITIONS.
   f. NO EQUIPMENT, VEHICLES OR CONSTRUCTION MATERIALS SHALL BE STORED WITHIN 100 FEET OF WETLAND RESOURCES OUTSIDE OF THE ESTABLISHED WORK ZONE.
   g. ALL SILT FENCING AND OTHER EROSION CONTROL DEVICES SHALL BE REMOVED WITHIN 30 DAYS OF COMPLETION OF WORK AND PERMANENT STABILIZATION OF SITE SOILS. IF FIBER ROLLS/WATTLES, STRAW BALES, OR OTHER NATURAL MATERIAL EROSION CONTROL PRODUCTS ARE USED, SUCH DEVICES WILL NOT BE LEFT IN PLACE TO BIODEGRADE AND SHALL BE PROMPTLY REMOVED AFTER SOILS ARE STABLE SO AS NOT TO CREATE A BARRIER TO WILDLIFE MOVEMENT. SEED FROM SEEDING OF SOILS SHOULD NOT SPREAD OVER FIBER ROLLS/WATTLES AS IT MAKES THEM HARDER TO REMOVE ONCE SOILS ARE STABILIZED BY VEGETATION.
4. PETROLEUM MATERIALS STORAGE AND SPILL PREVENTION
   a. CERTAIN PRECAUTIONS ARE NECESSARY TO STORE PETROLEUM MATERIALS, REFUEL AND CONTAIN AND PROPERLY CLEAN UP ANY INADVERTENT FUEL OR PETROLEUM (I.E., OIL, HYDRAULIC FLUID, ETC.) SPILL DUE TO THE PROJECT'S LOCATION IN PROXIMITY TO WETLAND RESOURCES.
   b. A SPILL CONTAINMENT KIT CONSISTING OF A SUFFICIENT SUPPLY OF ABSORBENT PADS AND ABSORBENT MATERIAL WILL BE MAINTAINED BY THE CONTRACTOR AT THE CONSTRUCTION SITE THROUGHOUT THE DURATION OF THE PROJECT. IN ADDITION, A WASTE DRUM WILL BE KEPT ON SITE TO CONTAIN ANY USED ABSORBENT PADS/MATERIAL FOR PROPER AND TIMELY DISPOSAL OFF SITE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL LAWS.
   c. SERVICING OF MACHINERY SHALL NOT OCCUR WITHIN 100 FEET OF WETLANDS.
   d. AT A MINIMUM, THE FOLLOWING PETROLEUM AND HAZARDOUS MATERIALS STORAGE AND REFUELING RESTRICTIONS AND SPILL RESPONSE PROCEDURES WILL BE ADHERED TO BY THE CONTRACTOR.
      i. PETROLEUM AND HAZARDOUS MATERIALS STORAGE AND REFUELING
         1. REFUELING OF VEHICLES OR MACHINERY SHALL OCCUR A MINIMUM OF 100 FEET FROM WETLANDS AND SHALL TAKE PLACE ON AN IMPERVIOUS PAD WITH SECONDARY CONTAINMENT DESIGNED TO CONTAIN FUELS.
         2. ANY FUEL OR HAZARDOUS MATERIALS THAT MUST BE KEPT ON SITE SHALL BE STORED ON AN IMPERVIOUS SURFACE UTILIZING SECONDARY CONTAINMENT A MINIMUM OF 100 FEET FROM WETLANDS.
      ii. INITIAL SPILL RESPONSE PROCEDURES
         1. STOP OPERATIONS AND SHUT OFF EQUIPMENT.
         2. REMOVE ANY SOURCES OF SPARK OR FLAME.
         3. CONTAIN THE SOURCE OF THE SPILL.
         4. DETERMINE THE APPROXIMATE VOLUME OF THE SPILL.
         5. IDENTIFY THE LOCATION OF NATURAL FLOW PATHS TO PREVENT THE RELEASE OF THE SPILL TO SENSITIVE NEARBY WETLANDS.
         6. ENSURE THAT FELLOW WORKERS ARE NOTIFIED OF THE SPILL.
      iii. SPILL CLEAN UP & CONTAINMENT
         1. OBTAIN SPILL RESPONSE MATERIALS FROM THE ON-SITE SPILL RESPONSE KIT. PLACE ABSORBENT MATERIALS DIRECTLY ON THE RELEASE AREA.
         2. LIMIT THE SPREAD OF THE SPILL BY PLACING ABSORBENT MATERIALS AROUND THE PERIMETER OF THE SPILL.
         3. ISOLATE AND ELIMINATE THE SPILL SOURCE.
         4. CONTACT APPROPRIATE LOCAL, STATE AND/OR FEDERAL AGENCIES, AS NECESSARY.
         5. CONTACT A DISPOSAL COMPANY TO PROPERLY DISPOSE OF CONTAMINATED MATERIALS.
      iv. REPORTING
         1. COMPLETE AN INCIDENT REPORT.
         2. SUBMIT A COMPLETED INCIDENT REPORT TO LOCAL, STATE AND FEDERAL AGENCIES, AS NECESSARY, INCLUDING THE CONNECTICUT SITING COUNCIL.
5. HERBICIDE, PESTICIDE, AND SALT RESTRICTIONS
   a. THE USE OF HERBICIDES AND PESTICIDES AT THE FACILITY SHALL BE MINIMIZED. IF HERBICIDES AND/OR PESTICIDES ARE REQUIRED AT THE FACILITY, THEIR USE WILL BE USED IN ACCORDANCE WITH CURRENT INTEGRATED PEST MANAGEMENT ("IPM") PRINCIPLES WITH PARTICULAR ATTENTION TO AVOID/MINIMIZE APPLICATIONS WITHIN 100 FEET OF WETLAND RESOURCES.
   b. MAINTENANCE OF THE FACILITY DURING THE WINTER MONTHS SHALL MINIMIZE THE APPLICATION OF CHLORIDE-BASED DEICERS SALT WITH USE OF MORE ENVIRONMENTALLY FRIENDLY ALTERNATIVES.
6. REPORTING
   a. COMPLIANCE MONITORING REPORTS (BRIEF NARRATIVE AND APPLICABLE PHOTOS) DOCUMENTING EACH APT INSPECTION WILL BE SUBMITTED BY APT TO VERIZON AND ITS CONTRACTOR FOR COMPLIANCE VERIFICATION OF THESE PROTECTION MEASURES. THESE REPORTS ARE NOT TO BE USED TO DOCUMENT COMPLIANCE WITH ANY OTHER PERMIT AGENCY APPROVAL CONDITIONS (I.E., DEEP STORMWATER PERMIT MONITORING, ETC.). ANY NON-COMPLIANCE OBSERVATIONS OF EROSION CONTROL MEASURES OR EVIDENCE OF EROSION OR SEDIMENT RELEASE WILL BE IMMEDIATELY REPORTED TO VERIZON AND ITS CONTRACTOR AND INCLUDED IN THE REPORTS ALONG WITH ANY OBSERVATIONS OF WILDLIFE.
   b. FOLLOWING COMPLETION OF THE CONSTRUCTION PROJECT, APT WILL PROVIDE A FINAL COMPLIANCE MONITORING REPORT TO VERIZON DOCUMENTING IMPLEMENTATION OF THE WETLAND PROTECTION PROGRAM AND MONITORING OBSERVATIONS. VERIZON IS RESPONSIBLE FOR PROVIDING A COPY OF THE FINAL COMPLIANCE MONITORING REPORT TO THE CONNECTICUT SITING COUNCIL FOR COMPLIANCE VERIFICATION.
   c. ANY OBSERVATIONS OF RARE SPECIES WILL BE REPORTED TO CTDEEP BY APT, WITH PHOTO-DOCUMENTATION (IF POSSIBLE) AND WITH SPECIFIC INFORMATION ON THE LOCATION AND DISPOSITION OF THE ANIMAL.

BUFFER ENHANCEMENT PLAN NOTES:

MITIGATION GOALS

1. COMPENSATE FOR ACTIVITIES IN CLOSE PROXIMITY TO WETLANDS BY PROVIDING A WETLAND BUFFER ENHANCEMENT (THE "MITIGATION AREA") PLAN THAT INCLUDES PLANTING WITH NATIVE SPECIES WHICH WILL IMPROVE FUNCTIONS AND VALUES, PARTICULARLY WILDLIFE HABITAT AND WATER QUALITY.
2. PLANT ±3,000 SF OF UPLAND HABITAT ENHANCEMENT AREA WITH SUFFICIENT DENSITY, FOCUSING ON SUPPORTING THE EXISTING FORESTED CANOPY AND NATIVE SPECIES, TO SUPPORT A VARIETY OF FUNCTIONS AND VALUES THAT ARE SUPPORTED BY THE ADJACENT WETLANDS AND UPLANDS.

GENERAL MITIGATION NOTES

1. THE PROJECT WETLAND SCIENTIST WITH EXPERTISE IN WETLAND MITIGATION AND IN INVASIVE PLANT SPECIES IDENTIFICATION AND REMOVAL/ERADICATION WILL SUPERVISE ALL ELEMENTS OF THE MITIGATION PLAN. DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST, WITH ALL-POINTS TECHNOLOGY CORPORATION, P.C. WILL SERVE AS THE PROJECT WETLAND SCIENTIST; (860) 552-2033, DGUSTAFSON@ALLPOINTSTECH.COM.
2. ANY FOREIGN DEBRIS AND LITTER THAT HAS ACCUMULATED ON THE SURFACE OF THE MITIGATION AREA SHALL BE REMOVED AND PROPERLY DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
3. PLASTIC MESH SLEEVES AND DEER REPELLANTS WILL BE USED AS NECESSARY TO PROTECT PLANTED SHRUBS FROM EXCESSIVE DEER DAMAGE. PLANTS WITH EXCESSIVE DAMAGE WILL BE REPLACED.
4. PROPOSED ACTIVITIES ARE NOT ANTICIPATED TO RESULT IN SIGNIFICANT SOIL DISTURBANCE. ANY EXPOSED SOILS RESULTING FROM THE WETLAND BUFFER ENHANCEMENT ACTIVITIES WILL BE MULCHED AND SEEDED WITH AN APPROPRIATE NATIVE SEED MIX SUITABLE FOR THE AREA DEPENDING UPON SHADE AND SOIL MOISTURE CONDITIONS OF THE AFFECTED AREAS.
5. THE USE OF FERTILIZER AND PESTICIDES IN THE MITIGATION AREA IS PROHIBITED. HERBICIDE USAGE WILL ONLY OCCUR AS NECESSARY FOR THE CONTROL OF INVASIVE SPECIES.
6. A PRE-CONSTRUCTION MEETING WILL BE HELD ON SITE BETWEEN THE PROJECT WETLAND SCIENTIST AND CONTRACTOR(S) PERFORMING ALL ASPECTS OF THE WETLAND BUFFER ENHANCEMENT PLAN. THE PRIMARY INTENT OF THE PRE-CONSTRUCTION MEETING IS TO DISCUSS THE GOALS OF THE PLAN AND IMPLEMENTATION OF REQUIRED ELEMENTS NECESSARY TO ACHIEVE THESE GOALS AND SEQUENCE OF ELEMENTS.

PROPOSED WETLAND BUFFER ENHANCEMENT AREA

1. THE PROJECT WETLAND SCIENTIST RESPONSIBLE FOR THIS MITIGATION PLAN DESIGN SHALL BE NOTIFIED BY THE CONTRACTOR A MINIMUM OF SEVEN (7) BUSINESS DAYS PRIOR TO ANY PHASE OF THE MITIGATION PROJECT TO MONITOR AND OVERSEE IMPLEMENTATION OF THE MITIGATION PLAN. PLEASE CONTACT DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST, ALL-POINTS TECHNOLOGY CORP., P.C. AT (860) 552-2033 OR DGUSTAFSON@ALLPOINTSTECH.COM.
2. SOIL EXPOSED AS A RESULT OF GRADING ACTIVITIES OR NATIVE SPECIES PLANTING ACTIVITIES IN UPLAND AREAS WILL BE UNDER SOWN WITH NEW ENGLAND SEMI SHADE GRASS WITH FORB MIX (NEWP, OR APPROVED EQUIVALENT). THIS SEED MIX PROVIDES A PERMANENT CORE OF GRASSES, FORBS, WILDFLOWERS, LEGUMES, AND GRASSES TO PROVIDE BOTH GOOD EROSION CONTROL AND WILDLIFE HABITAT VALUE.
3. ALL PLANT MATERIALS INSTALLED SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE 'AMERICAN STANDARDS FOR NURSERY STOCK' BY THE AMERICAN ASSOCIATION OF NURSERYMEN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CAREFUL INSTALLATION, MAINTENANCE (INCLUDING WATERING), AND ESTABLISHMENT OF NATIVE SHRUB PLANT MATERIAL IN THE MITIGATION AREA. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR TO REMAIN ALIVE AND HEALTHY FOR A FULL TWELVE (12) MONTH PERIOD.
4. THE SPECIES, SIZE, AND QUANTITY OF THE PLANTINGS WILL FOLLOW THE MITIGATION AREA PLANTING SCHEDULE. THE PROJECT WETLAND SCIENTIST WILL INSPECT PLANT MATERIALS DELIVERED TO THE SITE TO ENSURE THAT THE SPECIMENS ARE HEALTHY, FREE FROM PESTS, AND SUITABLE FOR USE WITHIN THE WETLAND BUFFER MITIGATION AREA. UNSUITABLE SPECIMENS WILL BE REJECTED AND REPLACED WITH SUITABLE SPECIMENS. THE PROJECT WETLAND SCIENTIST MUST APPROVE ANY PLANTING SUBSTITUTIONS. ALL WOODY PLANT STOCK WILL BE CONTAINER-GROWN OR BURLAP BALLED. PLANTING WITHIN THE MITIGATION AREA WILL CONFORM TO THE PLANS OR WILL BE COMPLETED IN ACCORDANCE WITH DIRECTIONS PROVIDED IN THE FIELD BY THE PROJECT WETLAND SCIENTIST. ONLY PLANT MATERIALS NATIVE AND INDIGENOUS TO THE REGION SHALL BE USED.
5. ALL PLANTINGS TO BE SPACED IN A RANDOM PATTERN WITH ASSISTANCE FROM THE PROJECT WETLAND SCIENTIST TO SIMULATE NATURAL GROWTH PATTERNS. PLANT QUANTITIES MAY BE ADJUSTED IN THE FIELD DEPENDING UPON AVAILABLE PLANTING SPACE PROVIDED FOLLOWING WOODY INVASIVE PLANT REMOVAL ACTIVITIES. THE PLANT QUANTITIES NOTED REPRESENT THE MINIMUM QUANTITIES REQUIRED.
6. UPON COMPLETION OF PLANTING AND AS NECESSARY, SHRUBS SHALL BE MULCHED ONE FOOT FROM THE TRUNK/BASE WITH A 2 TO 3-INCH THICK LAYER OF NATURAL MULCH MATERIAL OR OTHER NATURAL ORGANIC MATERIAL FREE OF WEED SEEDS, INVASIVE SPECIES AND ARTIFICIAL COLORING. THE SURROUNDING SEEDED AREAS SHALL RECEIVE A LIGHT APPLICATION OF ONE INCH OF WEED FREE STRAW.

MITIGATION MONITORING SUCCESS STANDARDS AND REPORTING

1. THE MITIGATION AREA WILL BE ASSESSED USING THREE SUCCESS STANDARDS AS DESCRIBED BELOW. SUCCESS STANDARD 1: AT LEAST 75% OF THE SURFACE AREA OF THE WOODY AND HERBACEOUS UNDERSTORY WITHIN THE MITIGATION AREA SHOULD BE REESTABLISHED WITH INDIGENOUS WOODY AND HERBACEOUS SPECIES. SUCCESS STANDARD 2: VEGETATION SHOULD BE CHECKED TO ENSURE THAT NO MORE THAN 20% OF THE SURFACE AREA IS OCCUPIED BY INVASIVE WOODY SPECIES. SUCCESS STANDARD 3: SOILS WITHIN THE MITIGATION AREA DISTURBED DURING IMPLEMENTATION OF THIS PLAN ARE PERMANENTLY STABILIZED.
2. A REPORT WILL BE PREPARED UPON THE COMPLETION OF ALL MITIGAITON ACTIVITIES DOCUMENTING PROPER IMPLEMENTATION OF THE BUFFER ENHANCEMENT PLAN.
3. MONITORING OF THE BUFFER ENHANCEMENT AREA WILL BE PERFORMED DURING THE TWO (2) YEAR'S GROWING SEASON FOLLOWING COMPLETION OF NATIVE PLANTING ACTIVITIES. A MONITORING REPORT WILL PROVIDE DETAILS ON THE THREE SUCCESS STANDARDS PREVIOUSLY NOTED WITH THE GOAL BEING THAT ALL SUCCESS STANDARDS ARE SATISFIED BY THE END OF THE SECOND GROWING SEASON. THE MONITORING REPORT WILL INCLUDE REPRESENTATIVE PHOTOGAPHS, THE PERCENT SURVIVAL OF PLANTED SHRUBS AND WILL ALSO INCLUDE OBSERVATIONS OF VEGETATION HEALTH AND DEVELOPMENT ALONG WITH ANY WILDLIFE OBSERVATIONS. IF FOLLOWING COMPLETION OF TWO-YEAR MONITORING PROGRAM NOT ALL OF THE SUCCESS STANDARDS ARE SATISFIED, RECOMMENDATIONS FOR ADDITIONAL MONITORING/CORRECTIVE ACTIONS WILL BE INCLUDED IN THE REPORT.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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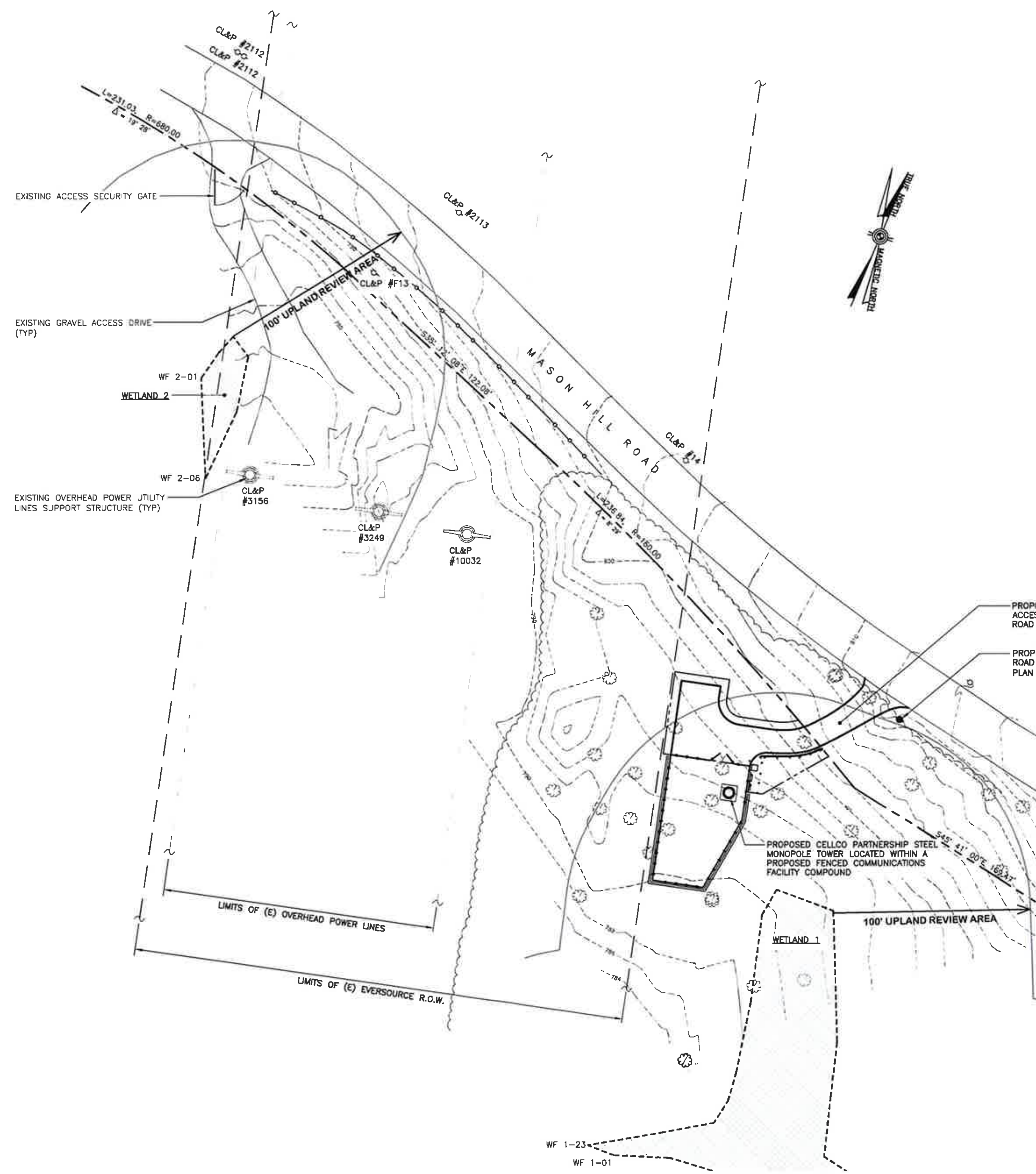
ENVIRONMENTAL AND BUFFER ENHANCEMENT PLAN NOTES

N-1

Sheet No. 2 of 10



SITE PLAN SYMBOLS LEGEND

- EVERSOURCE R.O.W.
- PROPERTY LINE
- TIMBER GUARD RAIL (EXISTING)
- ACCESS DRIVE (EXISTING)
- UTILITY POLE (EXISTING)
- UTILITY POLE (PROPOSED)
- TREELINE (EXISTING)
- OVERHEAD WIRES (EXISTING)
- TREE >6"ø (EXISTING)
- 2' CONTOUR LINE
- 790 — 10' CONTOUR LINE
- ACCESS DRIVE (PROPOSED)
- ACCESS/UTILITY EASEMENT (PROPOSED)
- WF 1-23 — WETLAND FLAG LOCATION/SERIES DESIGNATION

WETLANDS REFERENCE NOTE:

DELINEATED WETALAND BOUNDARY, 100 FT UPLAND REVIEW AREA, WETLAND AREA 1 AND WETLAND AREA 2 SHOWN HEREIN ARE REFERENCED FROM WETLAND INSPECTION REPORT PREPARED FOR VERIZON WIRELESS BY ALL POINTS TECHNOLOGY CORP., P.C. (APT) DATED SEPTEMBER 6, 2022. APT PROJECT NO: CT14113440.

SITE SURVEY REFERENCE NOTE:

EXISTING ROAD, SITE FEATURES, TREELINE/TREE LOCATIONS, STRUCTURES, TOPOGRAPHY, EVERSOURCE RIGHT OF WAY AND PROPERTY LINES SHOWN HEREIN ARE REFERENCED FROM SITE SURVEY PREPARED FOR CELLCO PARTNERSHIP BY CENTEK ENGINEERING, DATED 06/06/2024. CENTEK PROJECT NUMBER 24072.01.

1 / C-1 PARTIAL SITE PLAN
SCALE: 1"= 30'

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

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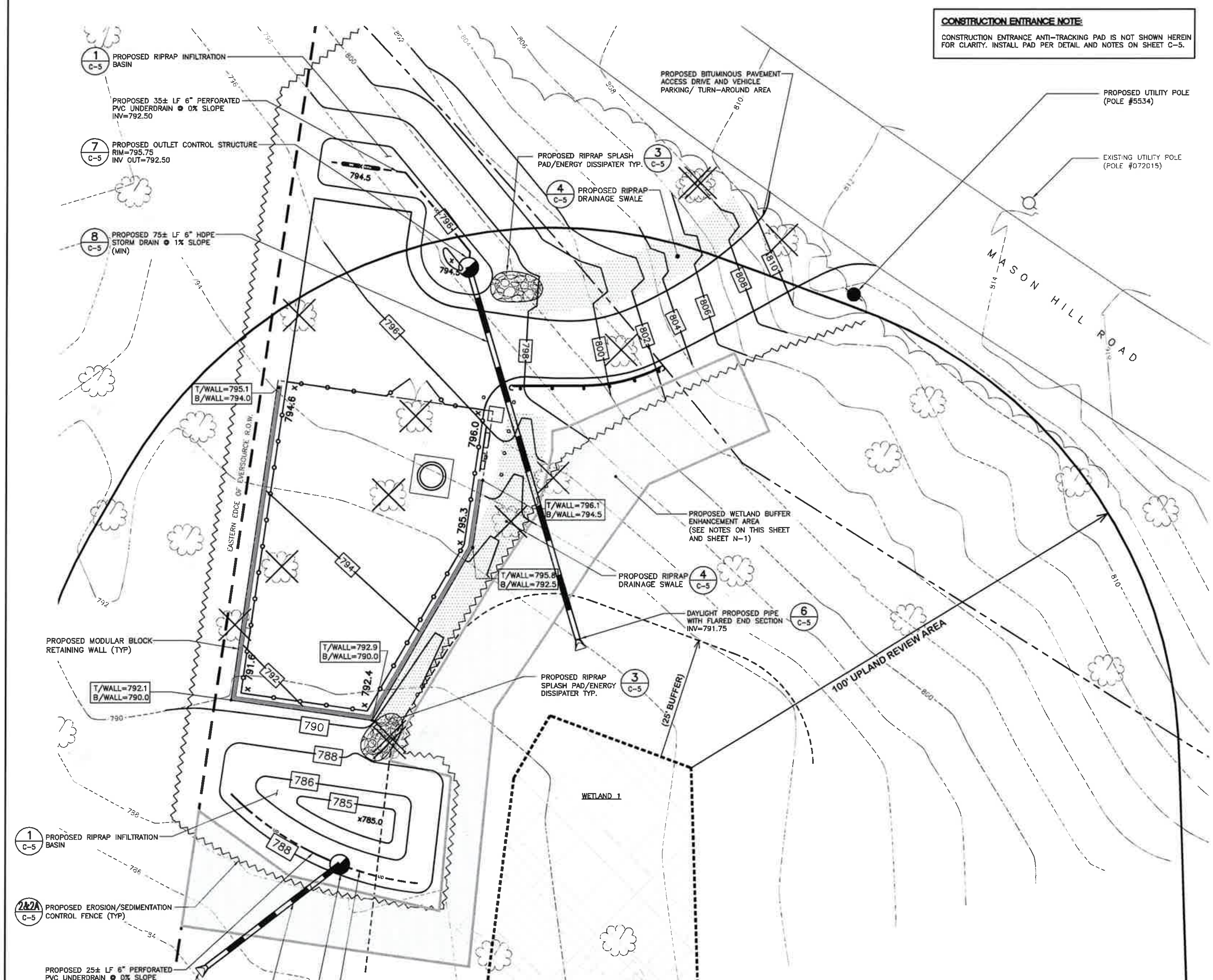
PARTIAL SITE PLAN

C-1

Sheet No. 3 of 10

CONSTRUCTION ENTRANCE NOTE:

CONSTRUCTION ENTRANCE ANTI-TRACKING PAD IS NOT SHOWN HEREIN FOR CLARITY. INSTALL PAD PER DETAIL AND NOTES ON SHEET C-5.



1 C-2 **PARTIAL SITE/ GRADING AND DRAINAGE PLAN**

SCALE: 1"= 10'

SITE/SURVEY PLAN SYMBOLS LEGEND

Symbol	Description
	FACILITY LEASE AREA (PROPOSED)
	PROPERTY LINE
	ROADWAY (EXISTING)
	UTILITY POLE (EXISTING)
	UTILITY POLE (PROPOSED)
	TREELINE (EXISTING)
	TREE >6"ø (EXISTING)
	TREE >6"ø TO BE REMOVED
	2' CONTOUR LINE
790	10' CONTOUR LINE
	ACCESS DRIVE (PROPOSED)
794	GRADING LINE/ELEVATION
x 794	SPOT ELEVATION (PROPOSED)
	SILTATION FENCE/COMPOST FILTER SOCK EROSION CONTROL

TREE REMOVAL SUMMARY

NOTE: A TOTAL OF (12) TREES OF 6" IN DIAMETER OR GREATER AT BREAST HEIGHT ARE PROPOSED TO BE REMOVED AS FOLLOWS:

PROPOSED SITE COMPOUND:	PROPOSED ACCESS DRIVE:
(4) 15"ø HICKORY	(1) 12"ø MAPLE
(2) 12"ø MAPLE	(1) 12"ø OAK
(2) 15"ø OAK	(1) 12"ø HICKORY
	(2) 15"ø HICKORY

PLANTING SCHEDULE: WETLAND BUFFER ENHANCEMENT AREA

QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
15	*AMELANCHIER CANADENSIS*	SERVICEBERRY	3-4'	5-7 FEET
15	*CORNUS RACEMOSA*	GRAY DOGWOOD	3-4'	5-7 FEET
15	*LINDERA BENZOIN*	SPICEBUSH	3-4'	5-7 FEET
15	*VIBURNUM DENTATUM*	ARROWWOOD	3-4'	5-7 FEET
15	*VIBURNUM LENTAGO*	NANNYBERRY	3-4'	5-7 FEET

NOTES:

1. THE WETLAND BUFFER ENHANCEMENT AREA WILL CONSIST OF PLANTING WITH SELECT NATIVE SHRUBS TO IMPROVE FUNCTION AND VALUE OF BUFFER ZONE WITH FOCUS ON PROVIDING A DENSE BUFFER OF NATIVE VEGETATION BETWEEN THE PROPOSED FACILITY AND NEARBY WETLAND WITH A FOCUS ON IMPROVING WILDLIFE HABITAT AND WATER QUALITY FUNCTIONS.
2. SOIL EXPOSED AS A RESULT OF GRADING ACTIVITIES AND NATIVE SPECIES PLANTING ACTIVITIES WILL BE UNDER SOWN WITH NATIVE SEED MIXES. IN AREAS WHERE THE EXISTING OVERSTORY TREES WILL BE RETAINED, THE NEW ENGLAND SEMI-SHADE GRASS AND FORBES MIX (NEW ENGLAND WETLANDS PLANTS INC., OR APPROVED EQUIVALENT) WILL BE APPLIED. THIS SEED MIX IS APPROPRIATE FOR SUNNY LOCATIONS BY PROVIDING A PERMANENT COVER OF GRASSES AND POLLINATOR SPECIES TO PROVIDE BOTH GOOD EROSION CONTROL AND WILDLIFE HABITAT VALUE.
3. SHRUB SPACING IS PROVIDED FOR GENERAL PURPOSES. ACTUAL LOCATION OF PLANTS TO BE ADJUSTED IN THE FIELD BASED ON AVAILABLE SPACE BETWEEN EXISTING TREES AND REMOVED INVASIVE SHRUBS. THE SUPERVISING WETLAND SCIENTIST WILL ASSIST IN SELECTING PLANTING LOCATIONS AND SPACING TO SIMULATE NATURAL GROWTH PATTERNS.

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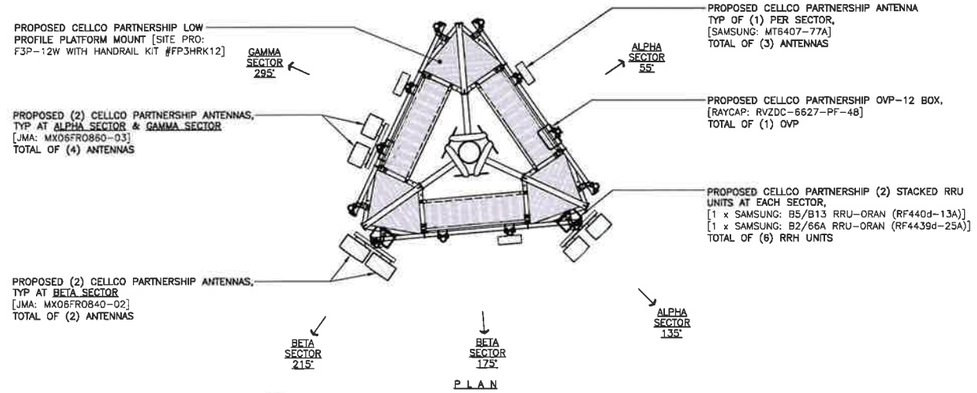
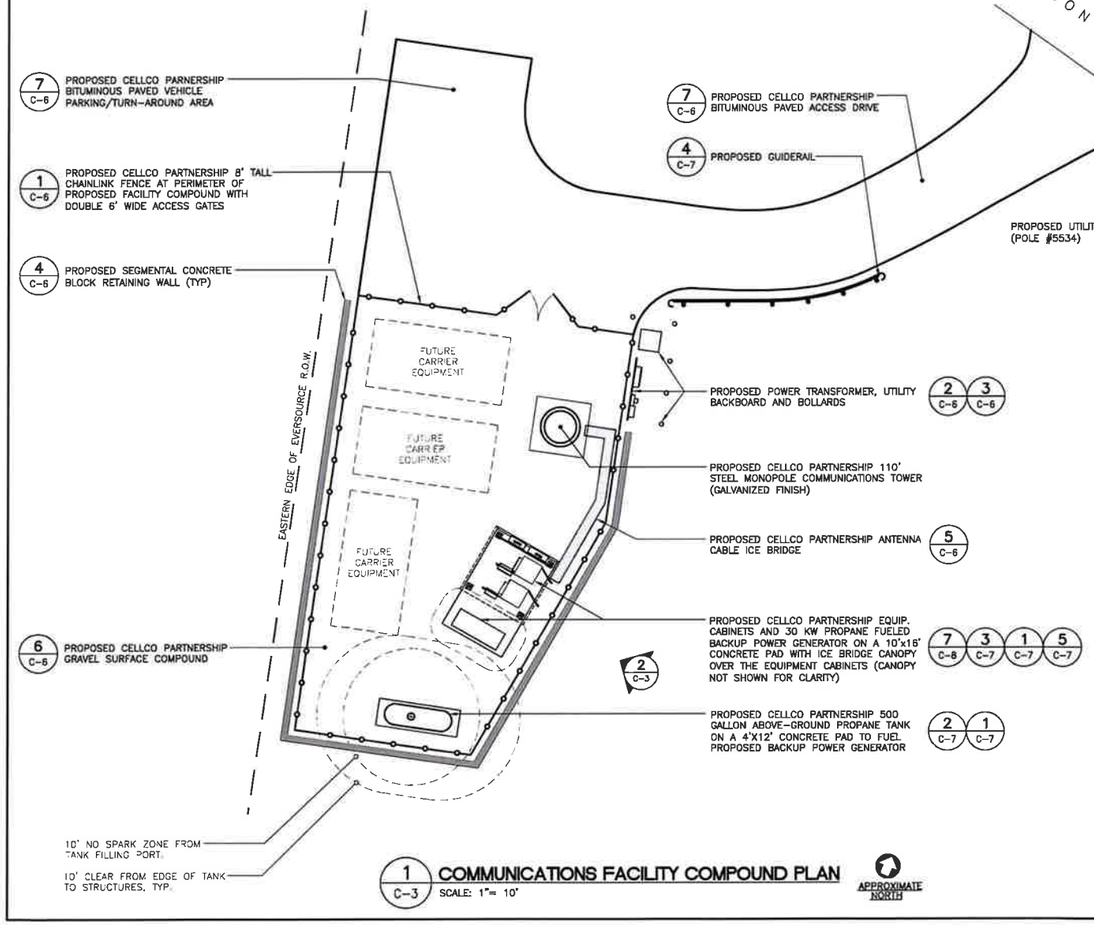
PARTIAL SITE/ GRADING AND DRAINAGE PLAN

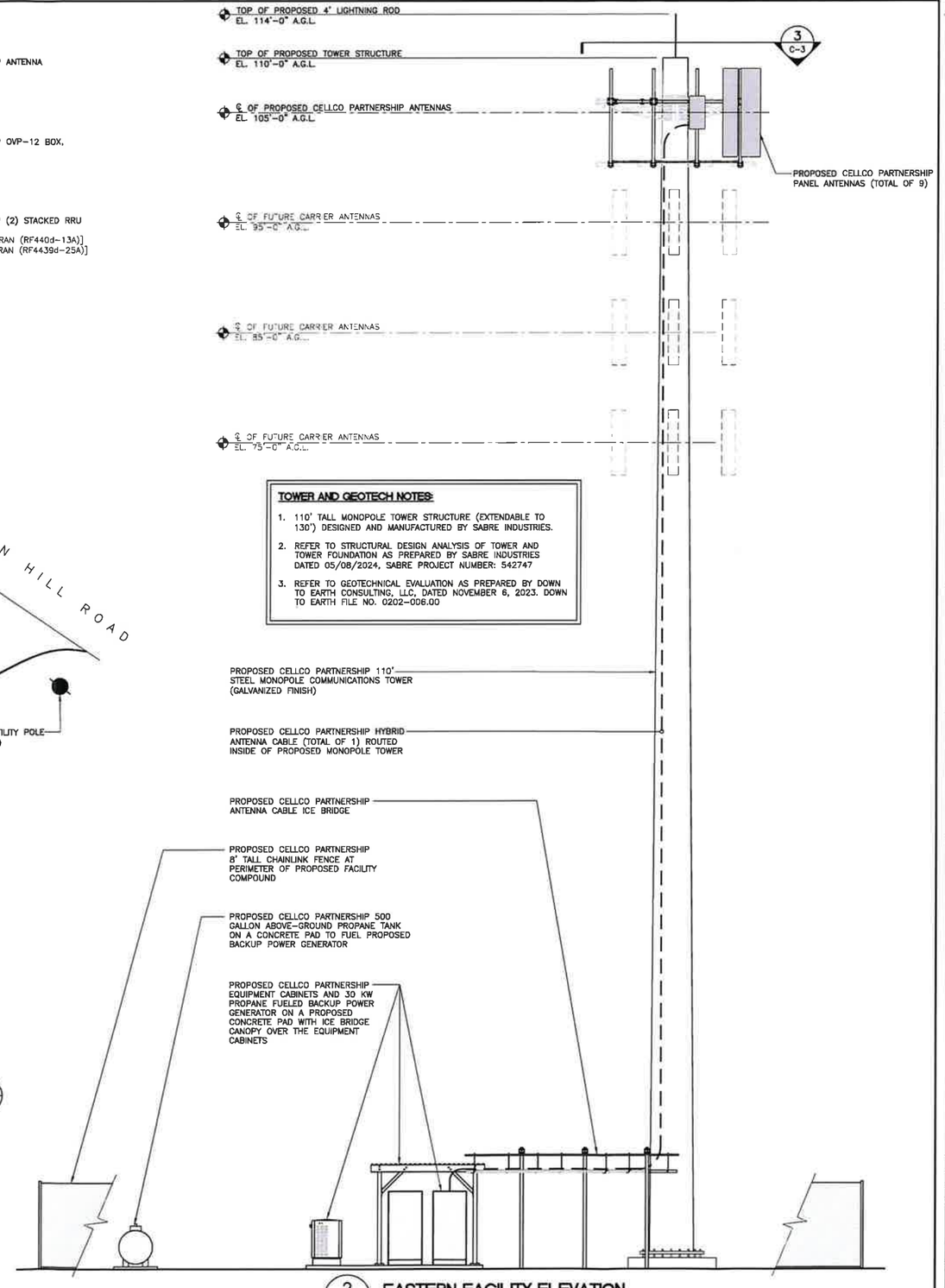
C-2



3 / C-3 **ANTENNA MOUNTING CONFIGURATION**
SCALE: 1/4" = 1'-0"
PLAN NORTH



1 / C-3 **COMMUNICATIONS FACILITY COMPOUND PLAN**
SCALE: 1"= 10'
APPROXIMATE NORTH



TOWER AND GEOTECH NOTES:

1. 110' TALL MONOPOLE TOWER STRUCTURE (EXTENDABLE TO 130') DESIGNED AND MANUFACTURED BY SABRE INDUSTRIES.
2. REFER TO STRUCTURAL DESIGN ANALYSIS OF TOWER AND TOWER FOUNDATION AS PREPARED BY SABRE INDUSTRIES DATED 05/08/2024, SABRE PROJECT NUMBER: 542747
3. REFER TO GEOTECHNICAL EVALUATION AS PREPARED BY DOWN TO EARTH CONSULTING, LLC, DATED NOVEMBER 6, 2023. DOWN TO EARTH FILE NO. 0202-006.00

2 / C-3 **EASTERN FACILITY ELEVATION**
SCALE: 3/16" = 1'

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D	07/19/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN

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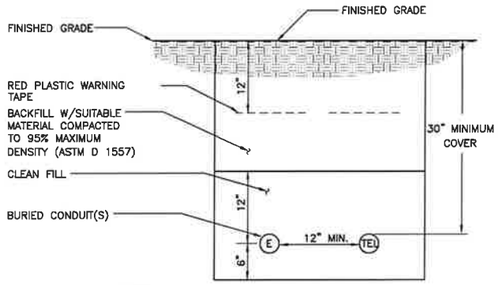
FACILITY COMPOUND PLAN, ELEVATION AND ANTENNA CONFIG.

C-3

Sheet No. 5 of 10



NOTES:

1. THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION.
2. WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

2 / C-4 **TYPICAL ELECTRICAL/TEL TRENCH DETAIL**

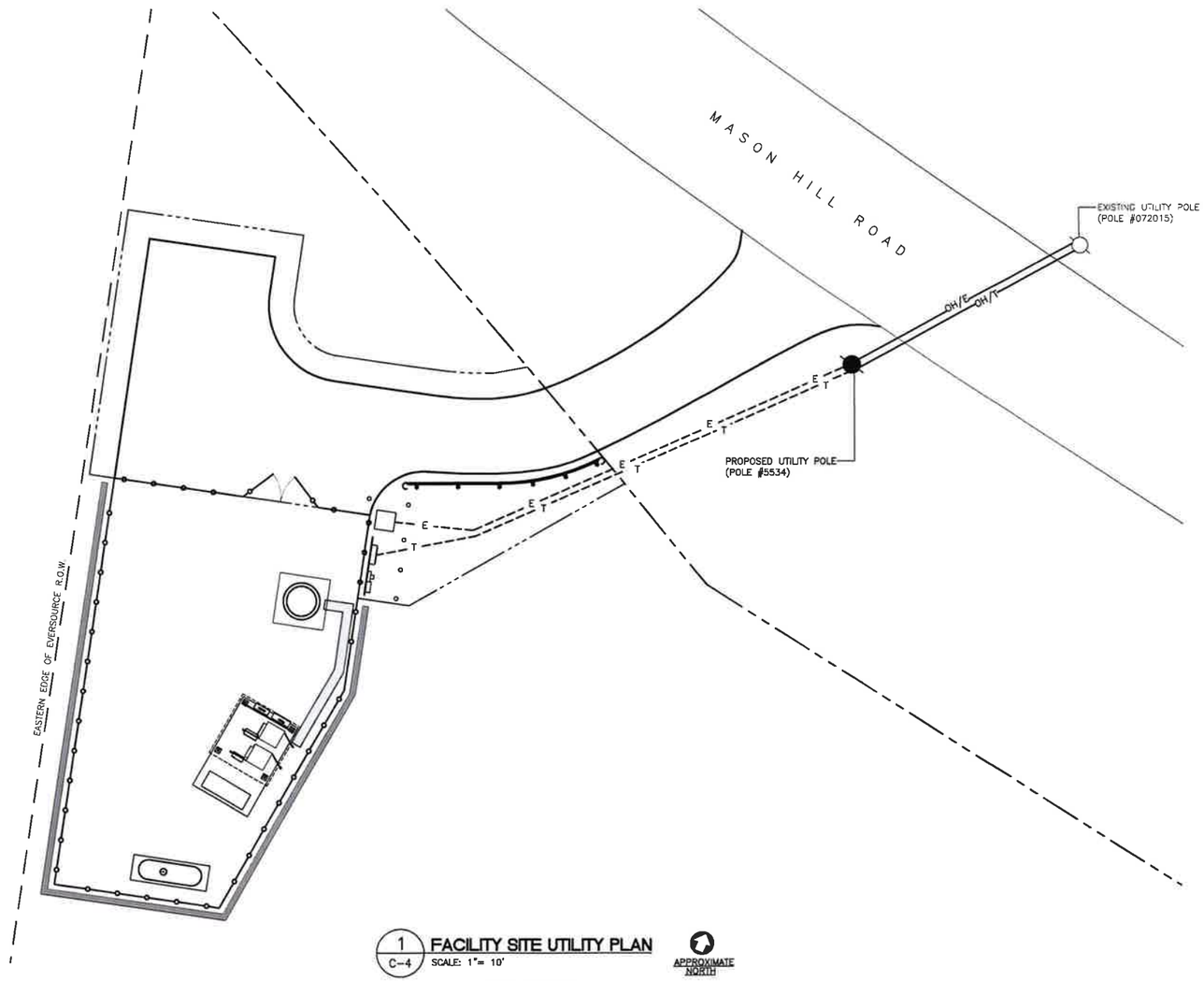
NOT TO SCALE

SITE UTILITY PLAN LEGEND

SYMBOL	DESCRIPTION
——·—·——	PROPERTY LINE
——·——·——	ACCESS/ UTILITY EASEMENT LINE (PROPOSED)
–T––––T––	UNDERGROUND COMMUNICATION CONDUIT (PROPOSED)
–E––––E––	UNDERGROUND ELECTRICAL CONDUIT (PROPOSED)
——OH/T——	OVERHEAD FIBER TELCO UTILITY LINE (PROPOSED)
——OH/E——	OVERHEAD ELECTRICAL UTILITY LINE (PROPOSED)

UTILITY NOTES

1. COORDINATE WITH OWNER FOR ALL EASEMENT DOCUMENTS.
2. UTILITY ROUTING SHOWN ON THIS PLAN IS SCHEMATIC. CONTRACTOR SHALL COORDINATE FINAL ROUTING WITH RESPECTIVE UTILITY COMPANIES PRIOR TO PERFORMING ANY UTILITY TRENCH WORK. ALL UTILITY CONDUITS AND PULL BOXES SHALL BE LOCATED WITHIN THE PROPOSED ACCESS/UTILITY EASEMENT.
3. UTILITY PULL BOXES/SILOS TO BE TRAFFIC RATED AND INSTALLED IN APPROXIMATE LOCATIONS SHOWN ON THIS PLAN, BUT NOT TO EXCEED 450' INTERVALS. CONTRACTOR TO COORDINATE FINAL PULL BOX LOCATIONS WITH RESPECTIVE LOCAL UTILITY COMPANIES.
4. CONTRACTOR SHALL COORDINATE ALL PERMITS AND PROCEDURES FOR CONDUIT INSTALLATION ALONG STREET/R.O.W.
5. PLAN IS FOR UTILITY ROUTING INFORMATION ONLY. SOME OTHER ELEMENTS NOT SHOWN FOR CLARITY. REFER TO CIVIL DRAWINGS FOR ALL OTHER EXISTING AND PROPOSED SITE INFORMATION.



1 / C-4 **FACILITY SITE UTILITY PLAN**

SCALE: 1"= 10'

APPROXIMATE NORTH

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

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FACILITY SITE UTILITY PLAN AND DETAILS

C-4

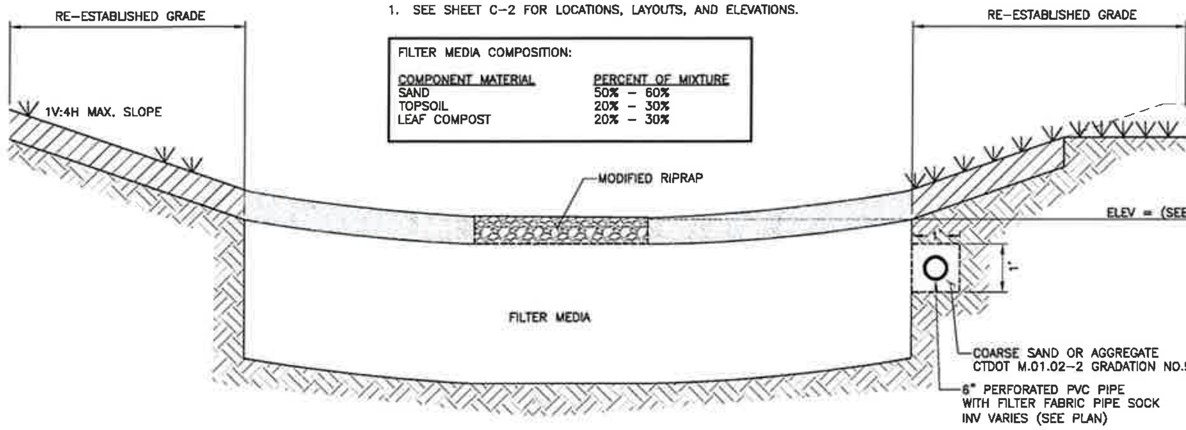
Sheet No. 6 of 10

NOTES:

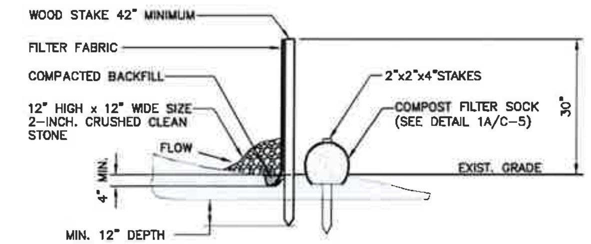
1. SEE SHEET C-2 FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.

FILTER MEDIA COMPOSITION:

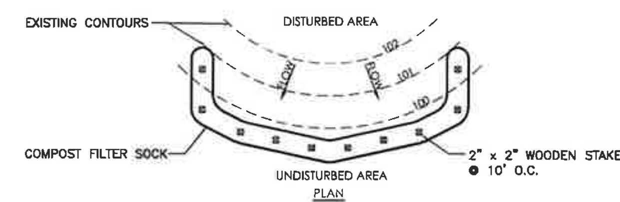
COMPONENT MATERIAL	PERCENT OF MIXTURE
SAND	50% - 60%
TOPSOIL	20% - 30%
LEAF COMPOST	20% - 30%



1 C-5 RIPRAP INFILTRATION BASIN
NOT TO SCALE



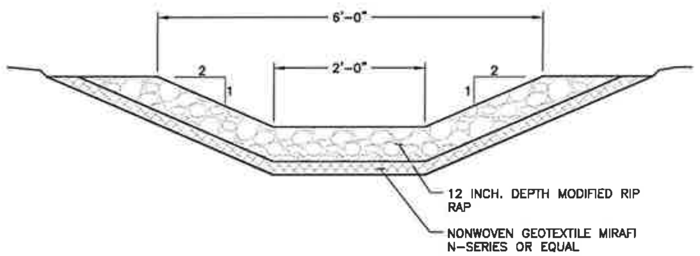
2 C-5 TYP. SILTATION FENCE/COMPOST FILTER SOCK EROSION CONTROL DETAIL
NOT TO SCALE



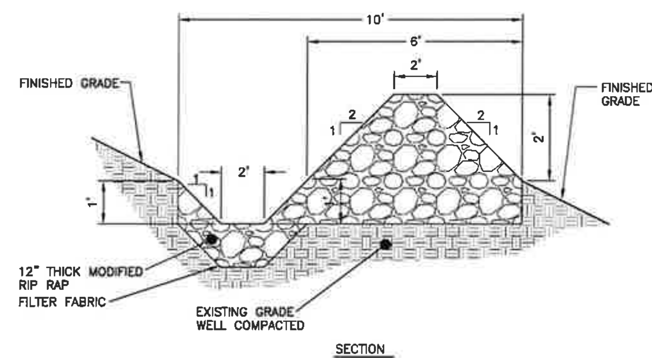
COMPOST FILTER SOCK NOTES:

1. SOCK FABRIC SHALL MEET REGULATORY STANDARDS. COMPOST SHALL MEET REGULATORY STANDARDS.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED REGULATORY STANDARDS.
3. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
4. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
5. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DEEMED APPROPRIATE BY THE SITE OWNER'S ENVIRONMENTAL CONSULTANT.
6. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED AS INSTRUCTED/ COORDINATED WITH CONSTRUCTION MANAGER AND PROPERTY OWNER. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

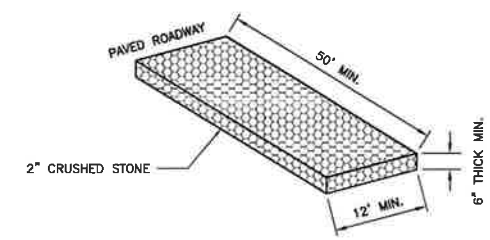
2A C-5 COMPOST FILTER SOCK EROSION CONTROL DETAIL
NOT TO SCALE



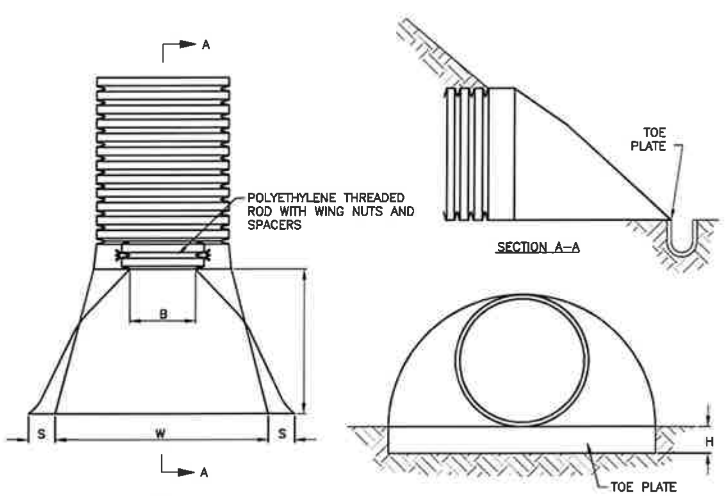
4 C-5 TYP. RIP RAP SWALE - SECTION
NOT TO SCALE



3 C-5 RIP RAP SPLASH PAD/ENERGY DISSIPATER
NOT TO SCALE



5 C-8 CONSTRUCTION ENTRANCE ANTI-TRACKING PAD
NOT TO SCALE

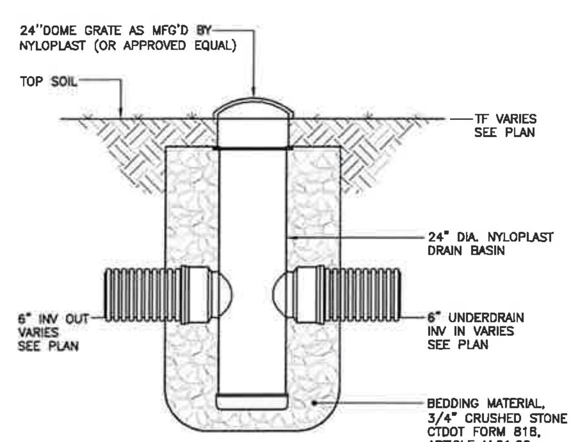


PIPE DIA.	S	B	H	L	W
6"	6.5"	10"	6.5"	25"	29"

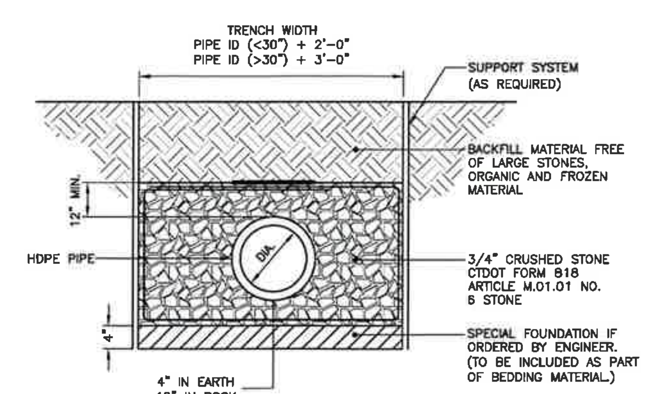
NOTE:

1. END SECTIONS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, COLUMBUS, OHIO. END SECTIONS TO BE WELDED TO PIPE AS PER MANUFACTURER'S RECOMMENDATIONS

6 C-5 HDPE END SECTION
NOT TO SCALE



7 C-5 OUTLET CONTROL STRUCTURE
NOT TO SCALE



8 C-5 HDPE TRENCH BEDDING
NOT TO SCALE

GENERAL CONSTRUCTION SEQUENCE

THE FOLLOWING IS A SUGGESTED SEQUENCE AND IS INTENDED TO BE A GENERAL GUIDE OF CONSTRUCTION ACTIVITIES. CONTRACTOR MAY OPT TO CHANGE THE SEQUENCE BASED ON FIELD CONDITIONS, ETC. THE SUGGESTED SEQUENCE DOES NOT ALLEVIATE THE CONTRACTOR FROM TAKING ANY NECESSARY STEPS OR MEASURES REQUIRED BY CODE, LAWS, ETC., OR AS INDICATED IN THE CONTRACT DRAWINGS AND/OR SPECIFICATIONS.

1. CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
2. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
3. REMOVE AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE SEEDED TO PREVENT EROSION.
4. PERFORM SITE GRADING, PLACING HAY BALES AND SILITATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
5. INSTALL UNDERGROUND UTILITIES.
6. INSTALL PERMANENT UNDERGROUND DRAINAGE STRUCTURES, PIPING AND DRAINAGE SWALES.
7. BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION. NO AREA SHALL BE LEFT UNSTABILIZED FOR A TIME PERIOD OF MORE THAN 30 DAYS.
8. DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
9. BEGIN EXCAVATION FOR AND CONSTRUCTION OF TOWER FOUNDATION AND EQUIPMENT PAD(S).
10. CONSTRUCT RETAINING WALLS.
11. FINISH ALL ROADWAYS, DRIVES, AND PARKING AREAS.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. NO FLOW SHALL BE DIVERTED TO ANY WETLANDS UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED IN REGARDED AREAS.
14. INSTALL WETLAND BUFFER ENHANCEMENTS.
15. AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

SOIL EROSION AND SEDIMENT CONTROL SEQUENCE

1. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS CONSTRUCTION ENTRANCE / ANTI TRACKING PAD, SILTATION FENCE, AND SILTATION FENCE SHALL BE IN PLACE PRIOR TO ANY GRADING ACTIVITY, INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. MEASURES SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR AREA IS STABILIZED.
2. THE ENTRANCE TO THE PROJECT SITE IS TO BE PROTECTED BY STONE ANTI TRACKING PAD OF ASTM C-33, SIZE NO. 2 OR 3, OR D.O.T. 2" CRUSHED GRAVEL. THE STONE ANTI TRACKING PAD IS TO BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
3. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM AND RESTABILIZATIONS WILL BE SCHEDULED AS SOON AS PRACTICAL.
4. ALL SOIL EROSION AND SEDIMENT CONTROL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE "CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL", INCLUDING THE LATEST PUBLISHED ERRATA SHEET.
5. ANY ADDITIONAL EROSION/SEDIMENTATION CONTROL DEEMED NECESSARY BY TOWN STAFF DURING CONSTRUCTION, SHALL BE INSTALLED BY THE CONTRACTOR. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/ REPLACEMENT/ MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE TOWN LAND USE DEPARTMENT OR AUTHORITY HAVING JURISDICTION.
6. IN ALL AREAS, REMOVAL OF TREES, BUSHES AND OTHER VEGETATION AS WELL AS DISTURBANCE OF THE SOIL IS TO BE KEPT TO AN ABSOLUTE MINIMUM WHILE ALLOWING PROPER DEVELOPMENT OF THE SITE. DURING CONSTRUCTION, EXPOSE AS SMALL AN AREA OF SOIL AS POSSIBLE FOR AS SHORT A TIME AS POSSIBLE.
7. SILTATION FENCE SHALL BE PLACED AS INDICATED BEFORE A CUT SLOPE HAS BEEN CREATED. SEDIMENT DEPOSITS SHOULD BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDES OF SILTATION FENCE. THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR TO BE USED IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. SILTATION FENCE IS TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE FENCE IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE EROSION CHECKS ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.
8. SWALE DISCHARGE AREA WILL BE PROTECTED WITH RIP RAP SPLASH PAD/ ENERGY DISSIPATER.
9. ALL FILL AREAS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
10. THE SOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING.
11. AFTER CONSTRUCTION IS COMPLETE AND GROUND IS STABLE, REMOVE SILTS IN THE RIP RAP ENERGY DISSIPATERS. REMOVE OTHER EROSION AND SEDIMENT DEVICES.

CONSTRUCTION SPECIFICATIONS - SILT FENCE

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

MAINTENANCE - SILT FENCE

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

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SITE DETAILS AND NOTES

C-5

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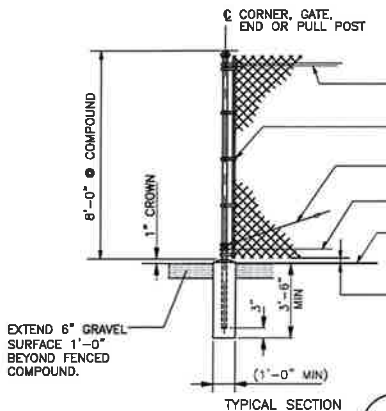
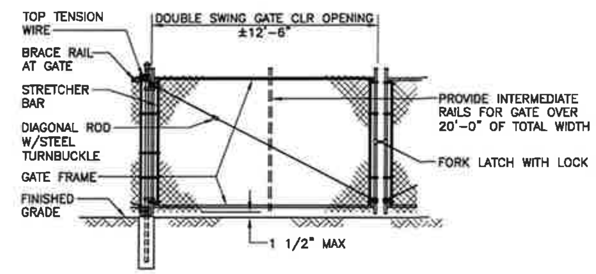


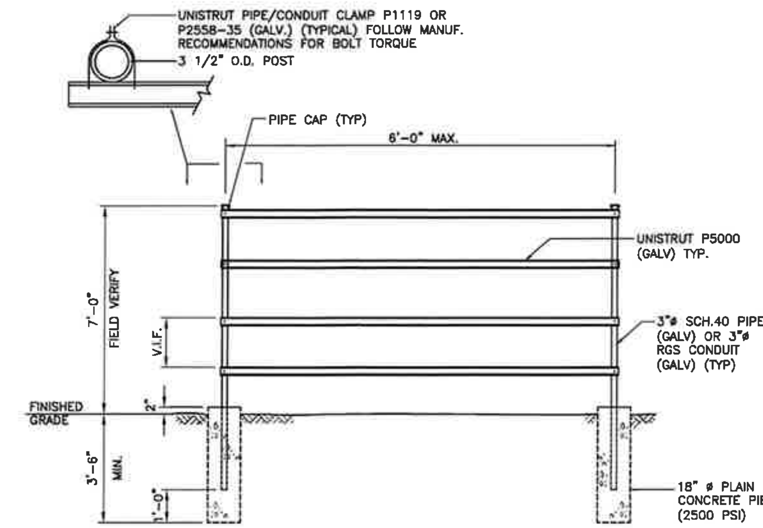
WOVEN WIRE FENCE NOTES:

1. GATE POST, CORNER, TERMINAL OR PULL POST 2 1/2"ø SCHEDULE 40 PIPE FOR GATE WIDTHS UP THRU 6 FEET OR 12 FEET FOR DOUBLE SWING GATE PER ASTM-F1083.
2. LINE POST: 2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
3. GATE FRAME: 1 1/2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
4. TOP RAIL & BRACE RAIL: 1 1/2"ø SCHEDULE 40 PIPE PER ASTM-F1083.
5. FABRIC: 12 GA. CORE WIRE SIZE 1 1/4" MESH, CONFORMING TO ASTM-A392.
6. TIE WIRE: MINIMUM 11 GA. GALVANIZED STEEL AT POSTS AND RAILS. A SINGLE WRAP OF FABRIC TIE AND TENSION WIRE BY HOG RINGS SPACED 24" INTERVALS.
7. TENSION WIRE: 7 GA. GALVANIZED STEEL.
8. GATE LATCH: DROP DOWN LOCKABLE FORK HATCH AND LOCK, KEYED TO OWNER'S REQUIREMENTS.
9. HEIGHT = 8' VERTICAL.



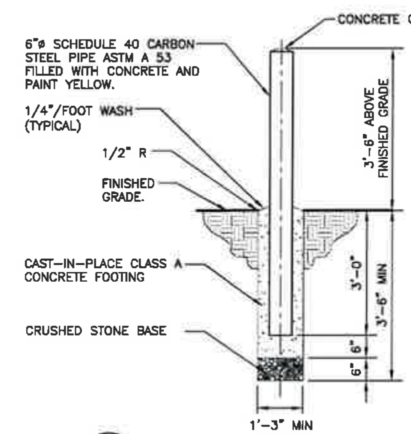
1 (C-6) COMPOUND WOVEN WIRE FENCE AND GATE DETAIL

NOT TO SCALE



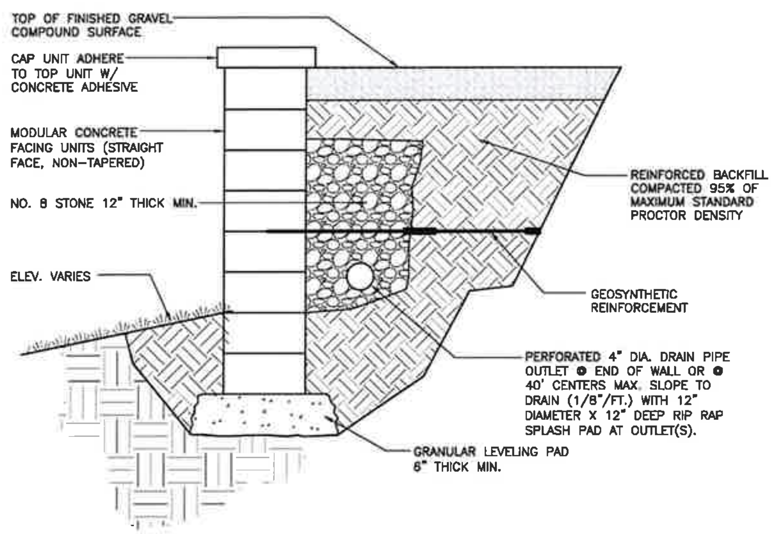
2 (C-6) UTILITY BACKBOARD FRAME CONSTRUCTION DETAIL (TYP)

NOT TO SCALE



3 (C-6) BOLLARD DETAIL

NOT TO SCALE

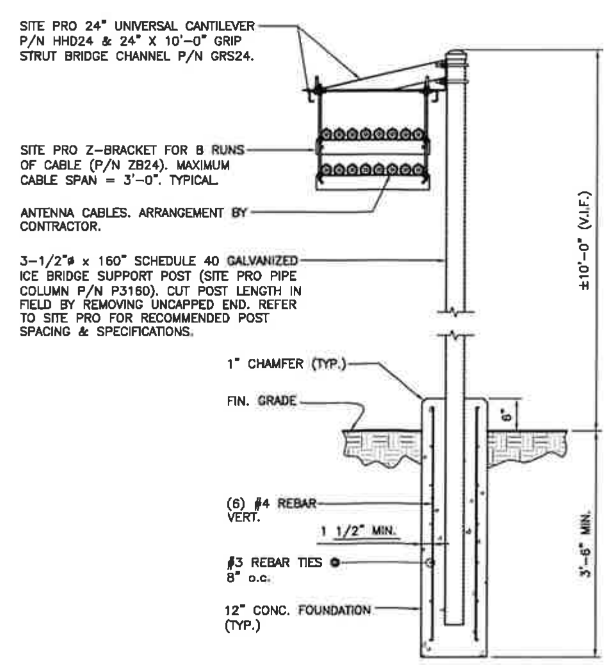


SEGMENTAL RETAINING WALL NOTES:

1. STRIP VEGETATION AND ORGANIC SOIL FROM WALL AND GEOSYNTHETIC ALIGNMENT.
2. BENCH CUT ALL EXCAVATED SLOPES.
3. DO NOT OVER EXCAVATE UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.
4. SITE SOIL ENGINEER SHALL VERIFY FOUNDATION SOILS AS BEING COMPETENT PER THE DESIGN STANDARDS AND PARAMETERS.
5. BASE SHALL CONSIST OF COMPACTED GRAVEL, 6" THICK MINIMUM.
6. CONTRACTOR MAY OPT FOR A LEAN CONCRETE PAD. CONCRETE PAD SHALL BE UNREINFORCED, 4" THICK.
7. MINIMUM EMBEDMENT OF WALL BELOW FINISHED GRADE SHALL BE (2) COURSES OF BLOCK.
8. FOLLOW APPLICABLE PROVISIONS OF THE WALL MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
9. NUMBER 8 CRUSHED STONE SHALL BE INSTALLED BEHIND THE WALL UP TO 18" FROM THE TOP OF THE WALL. CRUSHED STONE SHALL NOT EXTEND BELOW FINISHED GRADE IN FRONT OF THE WALL.
10. WHERE DRAIN PIPE IS USED, PROVIDE OUTLETS @ MAXIMUM 40 FT O.C.
11. FOR UNITS TO BE EMBEDDED, COMPACT FILL IN FRONT OF UNITS AT THE SAME TIME BACKFILL BEHIND UNITS IS COMPACTED.
12. COMPACTION TESTS SHALL BE TAKEN AS THE WALL IS INSTALLED. THE MINIMUM NUMBER OF TESTS SHALL BE DETERMINED BY THE ENGINEER.
13. COMPACTION SHALL BE TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY. (ASTM D-698)
14. REFER TO MANUFACTURER SHOP DRAWINGS FOR GEOSYNTHETIC TYPE, LENGTH AND LOCATION REQUIRED. PULL GEOSYNTHETIC TIGHT PRIOR TO BACKFILLING. GEOSYNTHETIC SHALL BE PLACED WITH STRONGEST DIRECTION PERPENDICULAR TO WALL. FOLLOW GEOSYNTHETIC MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
15. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE COMPLETE WALL SYSTEM AND ALL DETAILS BASED ON THE ACTUAL SOILS IN THE FIELD. THE SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT.
16. IF CONDITIONS ARE DIFFERENT THAN THOSE STATED IN THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR MUST CONTACT ENGINEER PRIOR TO PROCEEDING WITH THE CONSTRUCTION OF THE WALL.

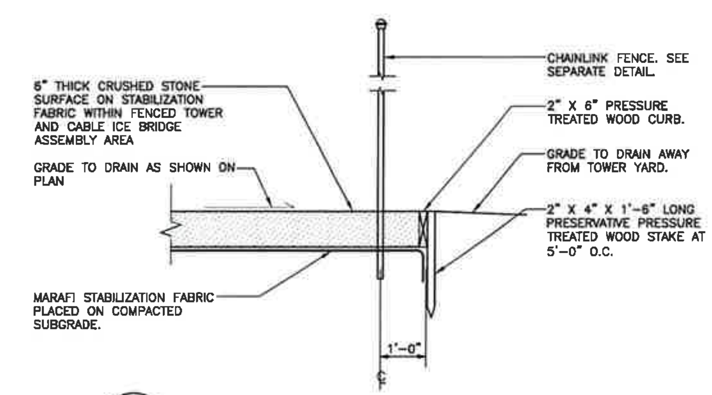
4 (C-6) SEGMENTAL RETAINING WALL DETAIL

NOT TO SCALE



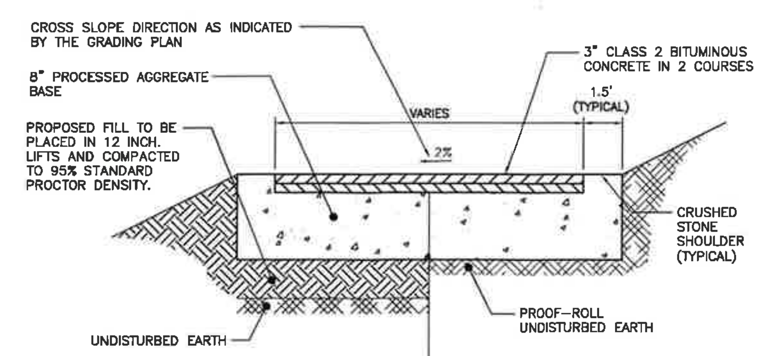
5 (C-6) ANTENNA CABLE ICE BRIDGE DETAIL

NOT TO SCALE



6 (C-6) COMPOUND SURFACING DETAIL

NOT TO SCALE



7 (C-6) BITUMINOUS CONCRETE SECTION DETAIL

NOT TO SCALE

DRIVEWAY AND TURN-AROUND AREA

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MISCELLANEOUS SITE DETAILS

C-6

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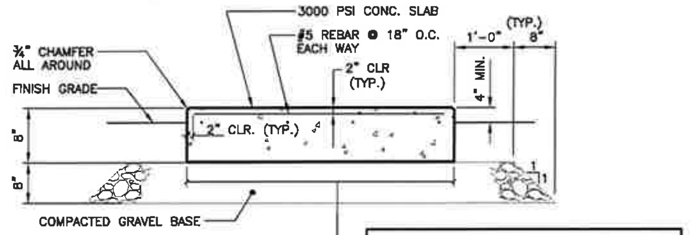
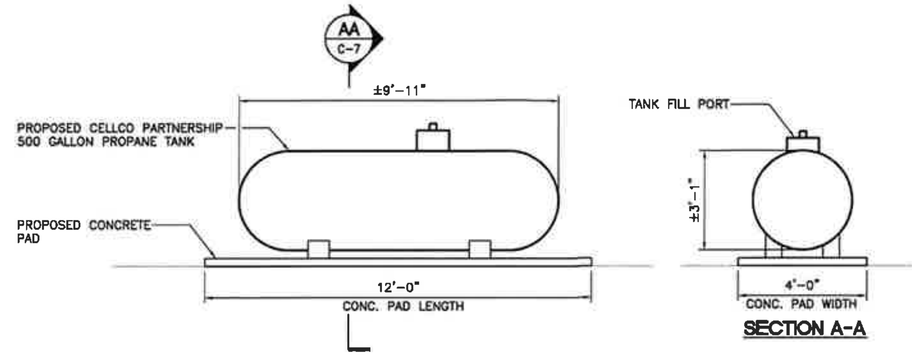


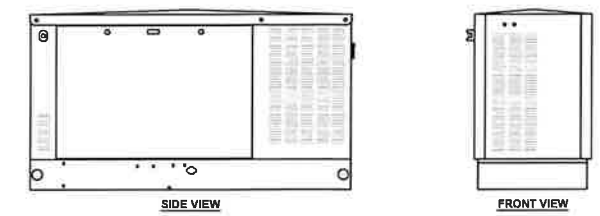
NOTES:

1. TOP OF SLAB TOLERANCE IS 1/4"±.
2. PROVIDE PVC SLEEVES FOR UTILITY CONDUIT PASSAGE THROUGH PAD OR CAST CONDUITS IN PLACE AS APPLICABLE. COORDINATE SLEEVE/CONDUIT LOCATIONS WITH CONSTRUCTION MANAGER.
3. COORDINATE EQUIPMENT/TANK HOLD-DOWN HARDWARE WITH RESPECTIVE MANUFACTURERS.

1 C-7 **CONCRETE EQUIPMENT/TANK PAD DETAIL**
NOT TO SCALE



2 C-7 **ABOVE-GROUND PROPANE TANK**
NOT TO SCALE

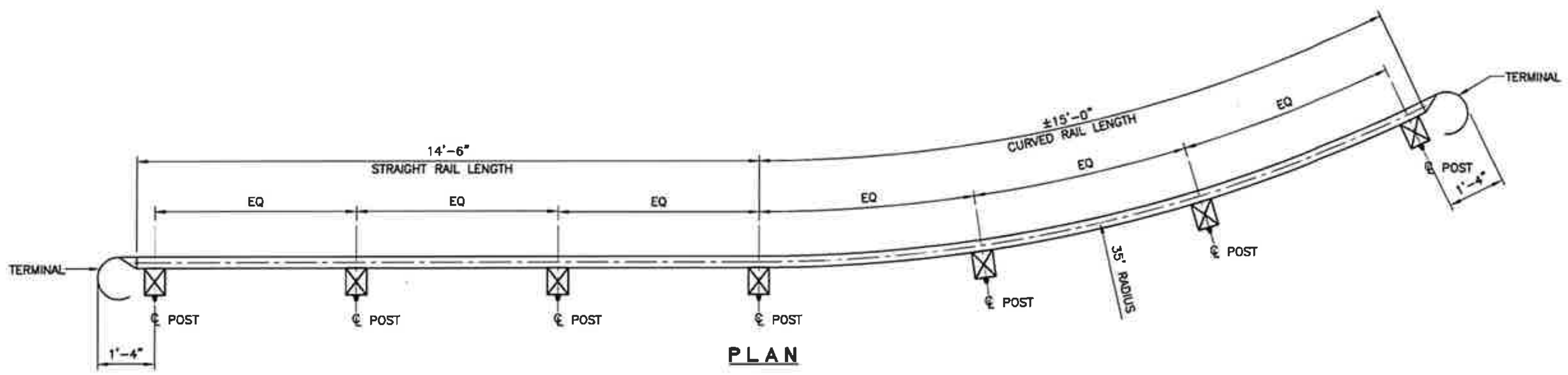


BACKUP POWER GENERATOR				
EQUIPMENT	POWER GENERATED	FUEL	ENCLOSURE	DIMENSIONS
MAKE: KOHLER MODEL: 30CCL	30 KW, AC	PROPANE	ALUMINUM SOUND-ATTENUATED ENCLOSURE WITH QUIET OPERATION OF 57 dbA @ 23 FT	89.8"L x 32.7"W x 50.5"H

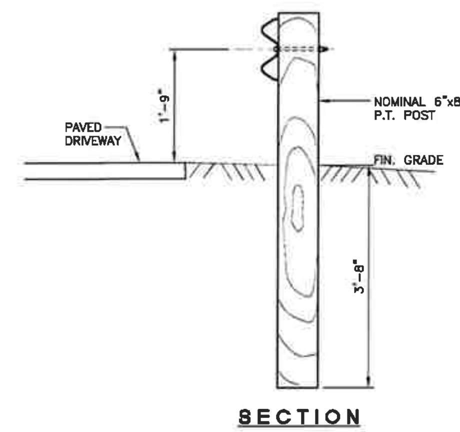
NOTES:

1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION AND ALL OPTIONAL FEATURES WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 C-7 **BACK-UP POWER GENERATOR**
NOT TO SCALE

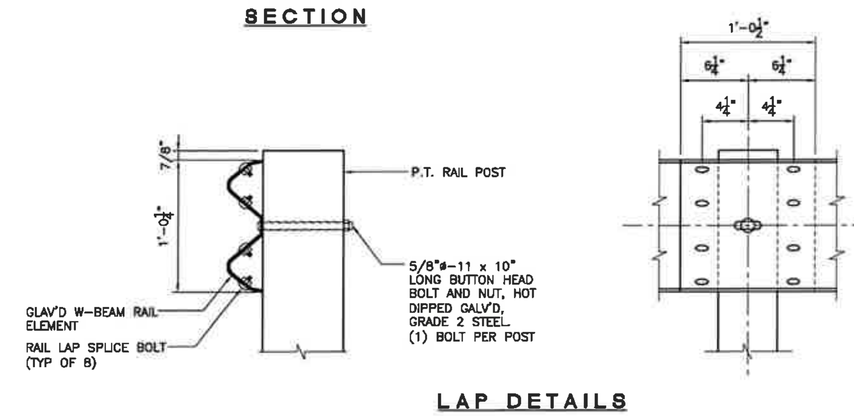


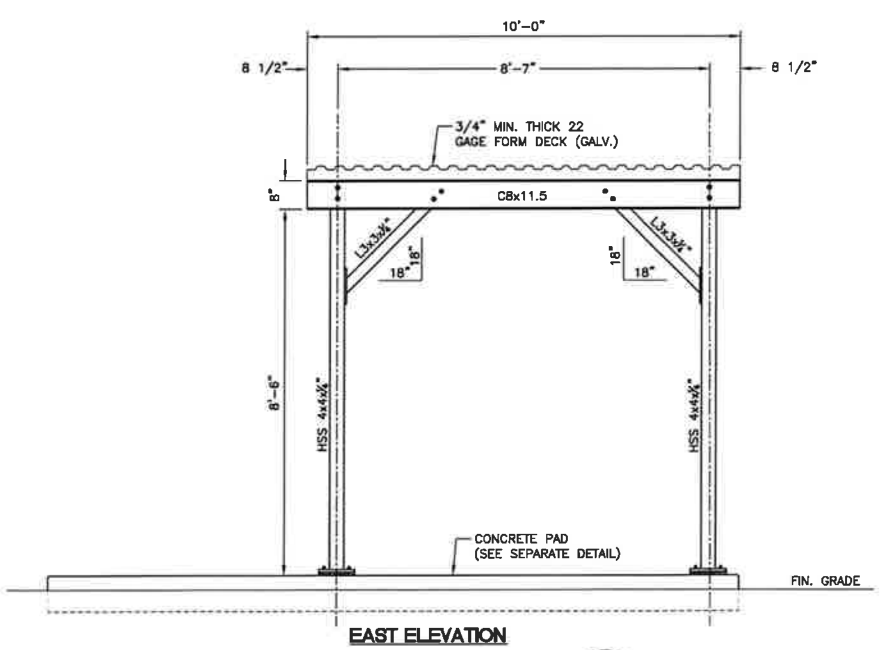
4 C-7 **TYPICAL GUIDERAIL DETAILS**
NOT TO SCALE

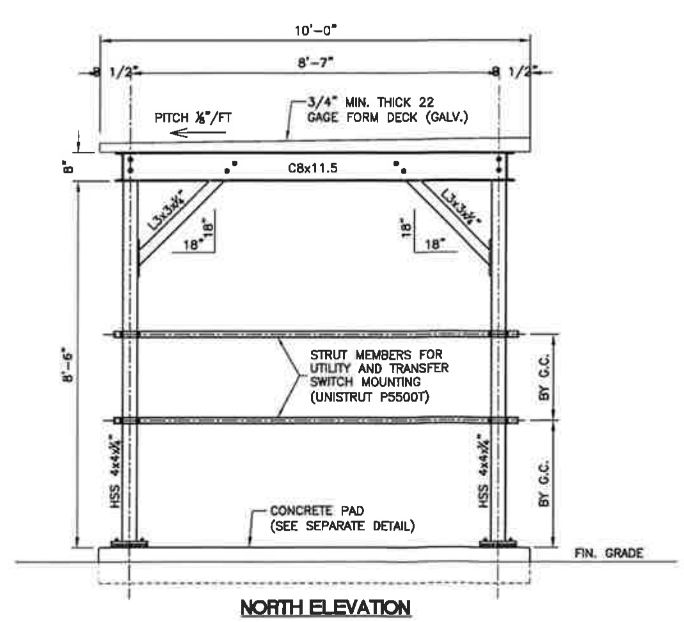


GENERAL GUIDERAIL NOTES:

1. ALL GUIDERAIL COMPONENTS AND ASSEMBLIES SHALL BE IN CONFORMANCE WITH STATE OF CT DOT STANDARDS. CONTRACTOR SHALL SUBMIT COMPREHENSIVE SHOP DRAWINGS FOR ENGINEER REVIEW PRIOR TO FABRICATION.
2. NO WASHERS TO BE USED ON THE 5/8" DIA. BUTTON HEAD BOLTS CONNECTING RAIL TO THE P.T. POSTS.
3. THE CURVED GUIDERAIL SECTION SHALL BE SHOP BENT.
4. MAINTAIN MINIMUM 27-3/4" RAIL HEIGHT.







5 C-7 **EQUIPMENT ICE BRIDGE CANOPY ELEVATIONS**
NOT TO SCALE

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MISCELLANEOUS DETAILS

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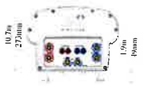
ELEVATION - ISOMETRIC



BOTTOM

8-PORT SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: JMA MODEL: MX06FRO860-03	95.9"L x 15.4"W x 10.7"D	65 LBS. (W/OUT MOUNT KIT)

1 / C-8 **SECTOR ANTENNA DETAIL**
NOT TO SCALE

ELEVATION - ISOMETRIC

BOTTOM

8-PORT SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: JMA MODEL: MX06FRO840-02	95.9"L x 19.8"W x 10.7"D	98 LBS. (W/OUT MOUNT KIT)

2 / C-8 **SECTOR ANTENNA DETAIL**
NOT TO SCALE

ANTENNA FRONT

SECTOR ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: MT6407-77A	35.1"h x 16.1"W x 5.5"D (NOT TO EXCEED)	87 LBS. (NOT TO EXCEED)
CLEARANCES AND SERVICE AREA		
TOP: 31.5" FRONT, SIDES & BOTTOM: 15.7"	HORIZONTAL DISTANCE: 31.5" (ANT. TO ANT.) VERTICAL DISTANCE: 63.0" (ANT. TO ANT.)	
NOTES: 1. THIS ANTENNA HAS ITS OWN BUILT-IN RRH.		

3 / C-8 **SECTOR ANTENNA DETAIL**
NOT TO SCALE

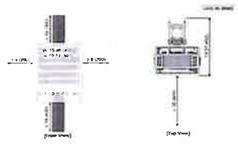
RRH - ISOMETRIC

RRH CLEARANCES

DUAL BAND RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF4439d-25A	B2: PCS (1900 MHz) B66: AWS (2100 MHz)	15.0"H x 15.0"W x 10.0"D	74.7 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.			

4 / C-8 **DUAL-BAND AWS/PCS MACRO RADIO UNIT DETAIL**
NOT TO SCALE

RRH - ISOMETRIC



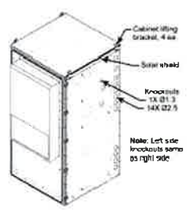
RRH CLEARANCES

DUAL BAND RRU (REMOTE RADIO UNIT)			
EQUIPMENT	BANDS	DIMENSIONS	WEIGHT
MAKE: SAMSUNG MODEL: RF440d-13A	B5: 850 MHz B13: 700 MHz	15.0"H x 15.0"W x 9.0"D	70.3 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.			

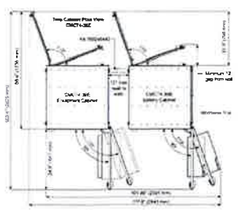
5 / C-8 **DUAL-BAND 700/850 MHZ MACRO RADIO UNIT DETAIL**
NOT TO SCALE

OVP BOX		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RAYCAP MODEL: RVZDC-6627-PF-48	19.18"H x 15.73"W x 10.25"D	26.9 LBS.
NOTES: 1. CONTRACTOR TO CONFIRM OVP BOX MAKE/MODEL AND QUANTITY WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING. 2. UNIT PROVIDES DC SURGE PROTECTION FOR 12 RRH UNITS.		

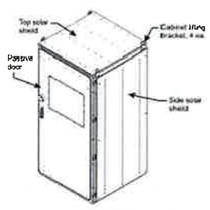
6 / C-8 **PROPOSED OVER-VOLTAGE PROTECTION BOX**
NOT TO SCALE



CMC74-36E EQUIP. CABINET



CMC74-36E EQUIP. CABINET &
CMC74-36B BATTERY CABINET



CMC74-36B BATTERY CABINET

EQUIPMENT / BATTERY CABINET & BATTERY CABINET					
CABINET TYPE	MAKE/MODEL	SUB-MODEL/ OPTIONS	DIMENSIONS	WT. (EMPTY MAX. WT. W/OUT PLINTH)	WT. (WITH EQUIP/BATTERIES)
EQUIP. CABINET	MAKE: COMMSCOPE MODEL: CMC74-36E	760250058/ 4KW DC AIR CONDITIONER	74.8"H x 36.4"W x 37.2"D	525 LBS. (MAX.)	VARIES
BATTERY CABINET	MAKE: COMMSCOPE MODEL: CMC74-36B	760250540/ 1 KW HVAC DOOR, 500 W HEATER, 6 BATTERY STRINGS	74.8"H x 36.4"W x 37.2"D	1,060 LBS. (MAX.)	1,237 LBS. (MAX.)
NOTES: 1. CONTRACTOR TO CONFIRM CABINET MAKE/MODEL/SUBMODEL AND ALL OPTIONAL FEATURES AND QUANTITIES WITH VERIZON WIRELESS CONSTRUCTION MANAGER PRIOR TO ORDERING.					

7 / C-8 **EQUIPMENT CABINET / BATTERY CABINET**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
D	07/19/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN
C	07/17/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN – REVISED PER REVIEWER COMMENTS
B	07/12/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN – REVISED PER REVIEWER COMMENTS
A	06/20/24	TJR	DMD	DEVELOPMENT AND MANAGEMENT PLAN – ISSUED FOR CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

verticalbridge

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a/ Verizon Wireless

LITCHFIELD SE CT

MASON HILL ROAD
NORTHFIELD, CT 06778

DATE: 06/20/24
SCALE: AS NOTED
JOB NO. 24072.01

RF EQUIPMENT DETAILS

C-8

Sheet No. 10 of 10

ATTACHMENT 2

Sabre Industries™
INNOVATION DELIVERED

Structural Design Report

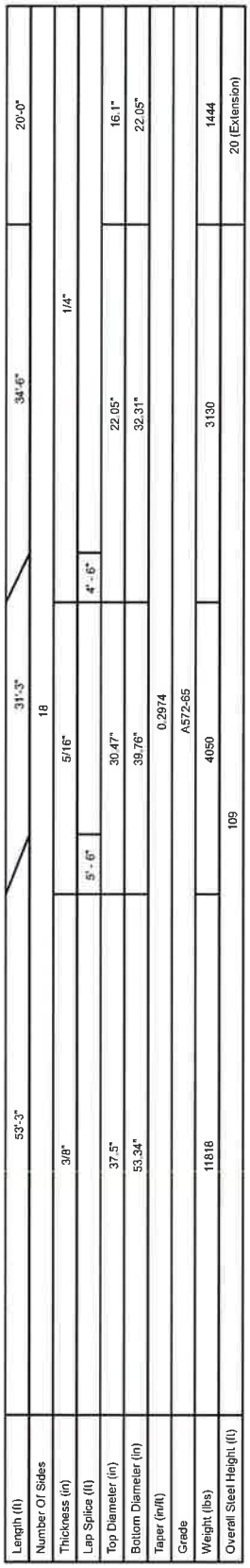
110' Extendible to 130' Monopole
Site: Litchfield SE, CT
Site Number: US-CT-5057

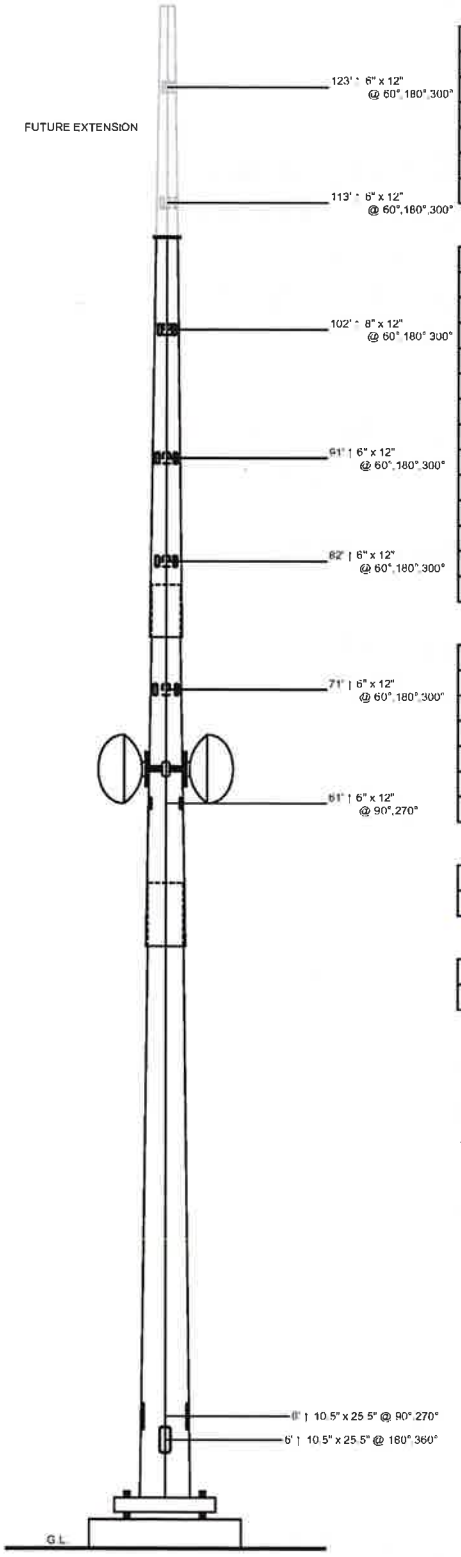
Prepared for: VERTICAL BRIDGE REIT, LLC
by: Sabre Industries ™

Job Number: 542747

May 8, 2024

Digitally Signed By Robert Beacom
DN: C=US,SERIALNUMBER=MAS20240205295328,ST=Texas,L=Alvarado,O=SABRE INDUSTRIES\, INC.,CN=Robert Beacom Date: 2024.05.08 13:31:32





Designed Appurtenance Loading

Elev	Description	Tx-Line
126/84**	(1) 30,000 Sq. In. (Ka = 0.82) + 8,000 lbs	(12) 1 5/8"
116/74**	(1) 30,000 Sq. In. (Ka = 0.82) + 8,000 lbs	(12) 1 5/8"
105	(1) 42,000 Sq.In. (Ka = 0.82) + 12,000 lb	(18) 1 5/8"
94	(1) 30,000 Sq. In. (Ka = 0.82) + 8,000 lbs	(12) 1 5/8"
64	(2) Dish Mount (Monopole Only) - Pipe Mount (up to 6' Dish)	
64	(2) 6' Solid Dish W/ Radome	(2) 1 5/8"

Design Criteria - ANSI/TIA-222-H

Wind Speed (No Ice)	115 mph
Wind Speed (Ice)	50 mph
Design Ice Thickness	1.00 in
Risk Category	II
Exposure Category	Site-Specific
Topographic Factor Procedure	Method 1 (Simplified)
Topographic Category	1
Ground Elevation	793 ft
Seismic Importance Factor, Ie	1.00
0.2-sec Spectral Response, Ss	0.182 g
1-sec Spectral Response, S1	0.054 g
Site Class	C
Seismic Design Category	A
Basic Seismic Force-Resisting System	Telecommunication Tower (Pole: Steel)

Limit State Load Combination Reactions

Load Combination	Axial (kips)	Shear (kips)	Moment (ft-k)	Deflection (ft)	Sway (deg)
1.2 D + 1.0 Wo	71.69	36.86	3888.97	9.5	8.13
0.9 D + 1.0 Wo	53.76	37.08	3798.05	9.15	7.76
1.2 D + 1.0 Di + 1.0 Wi	118.91	10.71	1229.3	3.18	2.74
1.2 D + 1.0 Ev + 1.0 Eh	74.07	1.78	217.22	0.58	0.51
0.9 D - 1.0 Ev + 1.0 Eh	52.23	1.81	211.72	0.56	0.49
1.0 D + 1.0 Wo (Service @ 60 mph)	59.71	9.02	936.8	2.31	1.95

Base Plate Dimensions

Shape	Diameter	Thickness	Bolt Circle	Bolt Qty	Bolt Diameter
Round	65.75"	2"	60"	14	2.25"

Anchor Bolt Dimensions

Length	Diameter	Hole Diameter	Weight	Type	Finish
84"	2.25"	2.625"	1695.4	A615-75	Galv

Notes

1) Antenna Feed Lines Run Inside Pole
2) All dimensions are above ground level, unless otherwise specified.
3) Weights shown are estimates. Final weights may vary.
4) This tower design and, if applicable, the foundation design(s) shown on the following page(s) also meet or exceed the requirements of the 2022 Connecticut Building Code.
5) Full Height Step Bolts
6) Tower Rating: 99.9%

** These Appurtenances cannot be installed at the higher elevation until the Monopole has been extended.

Sabre Industries
INNOVATION DELIVERED

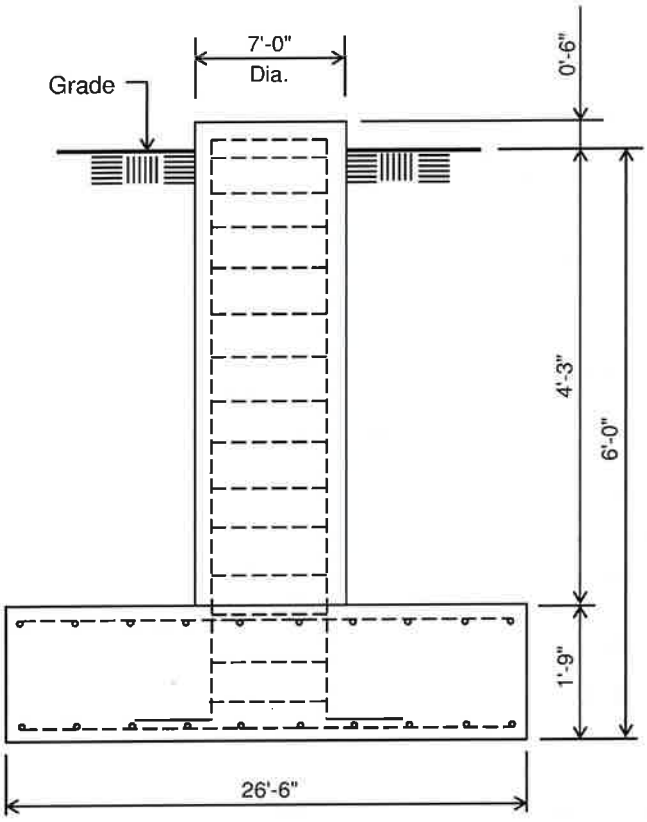
Sabre Industries
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6600
Fax: (712) 279-0814

Job:	**542747**
Customer:	VERTICAL BRIDGE REIT, LLC
Site Name:	Litchfield SE, CT US-CT-5057
Description:	110' ext. 130' Monopole
Date:	5/8/2024 By: REB

Sabre Industries™
INNOVATION DELIVERED

No.: 542747
Date: 05/08/24
By: REB

Customer: VERTICAL BRIDGE REIT, LLC
Site: Litchfield SE, CT US-CT-5057
110' Monopole Extendible to 130'



ELEVATION VIEW
(52.29 Cu. Yds.)
(1 REQUIRED; NOT TO SCALE)

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-14.
2) Rebar to conform to ASTM specification A615 Grade 60.
3) All rebar to have a minimum of 3" concrete cover.
4) All exposed concrete corners to be chamfered 3/4".
5) The foundation design is based on the geotechnical report by Down to Earth Consulting, LLC project no. 0202-006.00, dated: 11/6/23.
6) See the geotechnical report for compaction requirements, if specified.
7) 4.25 ft of soil cover is required over the entire area of the foundation slab.
8) This foundation is designed for a max capacity ratio of 95%.
9) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.

Rebar Schedule for Pad and Pier	
Pier	(36) #8 vertical rebar w/ hooks at bottom w/ #5 ties, (2) within top 5" of pier, then 4" C/C
Pad	(31) #10 horizontal rebar evenly spaced each way top and bottom (124 total)

7101 Southbridge Drive - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.279.0814

110' ext. 130' Monopole / Litchfield SE, CT

* All pole diameters shown on the following pages are across corners.
See profile drawing for widths across flats.

POLE GEOMETRY

ELEV ft	SECTION NAME	No. SIDE	OUTSIDE DIAM in	THICK -NESS in	RESISTANCES **Pn kip	**Mn ft-kip	SPLICE TYPE	OVERLAP... LENGTH ft	RATIO	w/t
129.0										
			16.35	0.250	934.4	302.3				
	A	18								10.1
			22.39	0.250	1285.0	574.1				
109.0										
			22.39	0.250	1285.0	574.1				
	B	18								14.3
			31.44	0.250	1692.5	1068.9				
79.0										
			31.44	0.250	1692.5	1068.9				
	B/C	18					SLIP	4.50	1.70	
			32.31	0.312	2292.8	1482.8				
74.5										
			32.31	0.312	2292.8	1482.8				
	C	18								16.9
			38.71	0.312	2610.4	2029.1				
53.2										
			38.71	0.312	2610.4	2029.1				
	C/D	18					SLIP	5.50	1.69	
			39.75	0.375	3358.3	2673.6				
47.7										
			39.75	0.375	3358.3	2673.6				
	D	18								17.5
			54.16	0.375	4142.1	4516.0				
0.0										

POLE ASSEMBLY

SECTION NAME	BASE ELEV ft	BOLTS AT BASE OF SECTION... NUMBER	TYPE	DIAM in	STRENGTH ksi	THREADS IN SHEAR PLANE	CALC BASE ELEV ft
A	109.000	0	A325	0.00	92.0	0	109.000
B	74.500	0	A325	0.00	92.0	0	74.500
C	47.750	0	A325	0.00	92.0	0	47.750
D	0.000	0	A325	0.00	92.0	0	0.000

POLE SECTIONS

SECTION NAME	No.of SIDES	LENGTH ft	OUTSIDE.DIAMETER BOT * in	TOP * in	BEND RAD in	MAT-ERIAL ID	FLANGE.ID BOT	TOP	FLANGE.WELD ..GROUP.ID.. BOT	TOP
A	18	20.00	22.39	16.35	0.625	1	0	0	0	0
B	18	34.50	32.81	22.39	0.625	2	0	0	0	0
C	18	31.25	40.38	30.94	0.625	3	0	0	0	0
D	18	53.25	54.16	38.08	0.625	4	0	0	0	0

* - Diameter of circumscribed circle

MATERIAL TYPES

==========

TYPE OF SHAPE	TYPE NO	NO OF ELEM.	ORIENT & deg	HEIGHT in	WIDTH in	.THICKNESS. WEB in	FLANGE in	IRREGULARITY .PROJECTION. % OF AREA	ORIENT deg
PL	1	1	0.0	22.39	0.25	0.250	0.250	0.00	0.0
PL	2	1	0.0	32.81	0.25	0.250	0.250	0.00	0.0
PL	3	1	0.0	40.38	0.31	0.312	0.312	0.00	0.0
PL	4	1	0.0	54.16	0.38	0.375	0.375	0.00	0.0

& - With respect to vertical

MATERIAL PROPERTIES
==========

MATERIAL TYPE NO.	ELASTIC MODULUS ksi	UNIT WEIGHT pcf	.. STRENGTH .. Fu ksi	Fy ksi	THERMAL COEFFICIENT /deg
1	29000.0	490.0	80.0	65.0	0.00001170
2	29000.0	490.0	80.0	65.0	0.00001170
3	29000.0	490.0	80.0	65.0	0.00001170
4	29000.0	490.0	80.0	65.0	0.00001170

* Only 5 condition(s) shown in full
* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

==========

LOADING CONDITION A ==========

115 mph wind with no ice. Wind Azimuth: 0• (1.2 D + 1.0 Wo)

LOADS ON POLE
==========

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	125.000	0.00	0.0	0.0	0.0000	1.8720	0.0000	0.0000
C	125.000	0.00	0.0	0.0	6.1999	9.6000	0.0000	0.0000
C	124.500	0.00	0.0	0.0	0.0238	0.0151	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0000	1.7222	0.0000	0.0000
C	115.000	0.00	0.0	0.0	6.0551	9.6000	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0258	0.0168	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0251	0.0168	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.0000	2.3363	0.0000	0.0000
C	104.000	0.00	0.0	0.0	8.2396	14.4000	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0282	0.0168	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.0000	1.3928	0.0000	0.0000
C	93.000	0.00	0.0	0.0	6.5761	9.6000	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0274	0.0168	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0266	0.0168	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0257	0.0168	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0000	0.1572	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0247	0.0168	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0235	0.0168	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0221	0.0168	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0204	0.0168	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0180	0.0168	0.0000	0.0000
D	129.000	0.00	180.0	0.0	0.0321	0.0538	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0593	0.0972	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0622	0.2266	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0622	0.2266	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0628	0.1295	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0686	0.1513	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0694	0.3411	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0694	0.3411	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0707	0.1929	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0663	0.2443	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0673	0.2528	0.0000	0.0000

D	0.000	0.00	180.0	0.0	0.0673	0.2528	0.0000	0.0000

ANTENNA LOADING

TYPE	ANTENNA ELEV ft	AZI	ATTACHMENT RAD ft	AZI	ANTENNA FORCES AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	63.0	270.0	2.2	270.0	0.13	0.40	0.24	0.91
STD+R	63.0	90.0	2.2	90.0	0.13	-0.40	0.24	-0.91

LOADING CONDITION M

115 mph wind with no ice. Wind Azimuth: 0° (0.9 D + 1.0 Wo)

LOADS ON POLE

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	FORCES HORIZ kip	DOWN kip	MOMENTS VERTICAL ft-kip	TORSNAL ft-kip
C	125.000	0.00	0.0	0.0	0.0000	1.4040	0.0000	0.0000
C	125.000	0.00	0.0	0.0	6.1999	7.2000	0.0000	0.0000
C	124.500	0.00	0.0	0.0	0.0238	0.0113	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0000	1.2917	0.0000	0.0000
C	115.000	0.00	0.0	0.0	6.0551	7.2000	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0258	0.0126	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0251	0.0126	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.0000	1.7522	0.0000	0.0000
C	104.000	0.00	0.0	0.0	8.2396	10.8000	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0282	0.0126	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.0000	1.0446	0.0000	0.0000
C	93.000	0.00	0.0	0.0	6.5761	7.2000	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0274	0.0126	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0266	0.0126	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0257	0.0126	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0000	0.1179	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0247	0.0126	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0235	0.0126	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0221	0.0126	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0204	0.0126	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0180	0.0126	0.0000	0.0000
D	129.000	0.00	180.0	0.0	0.0321	0.0403	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0593	0.0729	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0622	0.1699	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0622	0.1699	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0628	0.0971	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0686	0.1134	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0694	0.2558	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0694	0.2558	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0707	0.1447	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0663	0.1832	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0673	0.1896	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0673	0.1896	0.0000	0.0000

ANTENNA LOADING

TYPE	ANTENNA ELEV ft	AZI	ATTACHMENT RAD ft	AZI	ANTENNA FORCES AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	63.0	270.0	2.2	270.0	0.13	0.40	0.18	0.91
STD+R	63.0	90.0	2.2	90.0	0.13	-0.40	0.18	-0.91

LOADING CONDITION Y

50 mph wind with 1 ice. Wind Azimuth: 0° (1.2 D + 1.0 Di + 1.0 Wi)

LOADS ON POLE

==========

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	125.000	0.00	0.0	0.0	0.0000	1.8720	0.0000	0.0000
C	125.000	0.00	0.0	0.0	1.7079	18.7469	0.0000	0.0000
C	124.500	0.00	0.0	0.0	0.0247	0.0271	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0000	1.7222	0.0000	0.0000
C	115.000	0.00	0.0	0.0	1.6637	18.6716	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0267	0.0288	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0258	0.0288	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.0000	2.3363	0.0000	0.0000
C	104.000	0.00	0.0	0.0	2.2571	27.8725	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0287	0.0288	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.0000	1.3928	0.0000	0.0000
C	93.000	0.00	0.0	0.0	1.7951	18.4828	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0277	0.0288	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0266	0.0288	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0254	0.0288	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0000	0.1572	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0240	0.0288	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0225	0.0288	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0208	0.0288	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0186	0.0288	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0158	0.0288	0.0000	0.0000
D	129.000	0.00	180.0	0.0	0.0120	0.0793	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0210	0.1400	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0219	0.2708	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0219	0.2708	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0221	0.1744	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0239	0.2019	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0241	0.3929	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0241	0.3929	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0245	0.2465	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0226	0.3022	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0229	0.3063	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0229	0.3063	0.0000	0.0000

ANTENNA LOADING
==========

.....ANTENNA..... TYPE	ELEV ft	AZI	ATTACHMENT RAD ft	AZI	.....ANTENNA FORCES..... AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	63.0	270.0	2.2	270.0	0.03	0.08	0.58	0.19
STD+R	63.0	90.0	2.2	90.0	0.03	-0.08	0.58	-0.19

==========

LOADING CONDITION AK ==========

Seismic - Azimuth: 0° (1.2 D + 1.0 Ev + 1.0 Eh)

LOADS ON POLE
==========

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	.....FORCES..... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	125.000	0.00	0.0	0.0	0.0777	1.9213	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.3983	9.8528	0.0000	0.0000
C	124.500	0.00	0.0	0.0	0.0006	0.0155	0.0000	0.0000
C	119.000	0.00	0.0	0.0	0.0458	1.2495	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0006	0.0172	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0605	1.7676	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.3371	9.8528	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0005	0.0172	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.0671	2.3978	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.4136	14.7792	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0004	0.0172	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.0320	1.4294	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.2205	9.8528	0.0000	0.0000
C	91.750	0.00	0.0	0.0	0.0671	3.0820	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0003	0.0172	0.0000	0.0000

C	75.000	0.00	0.0	0.0	0.0003	0.0172	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0002	0.0172	0.0000	0.0000
C	63.380	0.00	0.0	0.0	0.0469	4.5088	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0111	1.0801	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0017	0.1613	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0001	0.0172	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0001	0.0172	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0001	0.0172	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0219	11.9347	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0000	0.0172	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0000	0.0172	0.0000	0.0000
D	129.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000

ANTENNA LOADING

TYPE	ELEV ft	AZI	ATTACHMENT RAD ft	AZI	ANTENNA FORCES AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	63.0	270.0	2.2	270.0	0.00	0.00	0.00	0.00
STD+R	63.0	90.0	2.2	90.0	0.00	0.00	0.00	0.00

LOADING CONDITION AL

Seismic - Azimuth: 0° (0.9 D - 1.0 Ev + 1.0 Eh)

LOADS ON POLE

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	FORCES HORIZ kip	DOWN kip	MOMENTS VERTICAL ft-kip	TORSNAL ft-kip
C	125.000	0.00	0.0	0.0	0.0777	1.3547	0.0000	0.0000
C	125.000	0.00	0.0	0.0	0.3983	6.9472	0.0000	0.0000
C	124.500	0.00	0.0	0.0	0.0006	0.0109	0.0000	0.0000
C	119.000	0.00	0.0	0.0	0.0458	0.8810	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0006	0.0122	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0605	1.2463	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.3371	6.9472	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0005	0.0122	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.0671	1.6907	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.4136	10.4208	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0004	0.0122	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.0320	1.0078	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.2205	6.9472	0.0000	0.0000
C	91.750	0.00	0.0	0.0	0.0671	2.1731	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0003	0.0122	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0003	0.0122	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0002	0.0122	0.0000	0.0000
C	63.380	0.00	0.0	0.0	0.0469	3.1791	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0111	0.7616	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0017	0.1138	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0001	0.0122	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0001	0.0122	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0001	0.0122	0.0000	0.0000
C	26.620	0.00	0.0	0.0	0.0219	8.4152	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0000	0.0122	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0000	0.0122	0.0000	0.0000
D	129.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000
D	0.000	0.00	180.0	180.0	0.0000	0.0000	0.0000	0.0000

ANTENNA LOADING

TYPE	ELEV ft	AZI	ATTACHMENT RAD ft	AZI	ANTENNA FORCES AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	63.0	270.0	2.2	270.0	0.00	0.00	0.00	0.00
STD+R	63.0	90.0	2.2	90.0	0.00	0.00	0.00	0.00

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110' ext. 130' Monopole / Litchfield SE, CT

MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

MAST ELEV ft	DEFLECTIONS (ft) HORIZONTAL ALONG	HORIZONTAL ACROSS	DOWN	ROTATIONS (deg) TILT ALONG	TILT ACROSS	TWIST
129.0	9.50J	0.05F	0.99J	8.13J	0.04F	0.00H
124.0	8.81J	0.05H	0.89J	8.13J	0.04F	0.00H
119.0	8.12J	0.05H	0.79J	8.06J	0.04F	0.00H
114.0	7.43J	0.04H	0.70J	7.94J	0.04F	0.00H
109.0	6.76J	0.04H	0.61J	7.73J	0.04F	0.00H
104.7	6.20J	0.04H	0.53J	7.51J	0.04F	0.00H
100.4	5.66J	0.04H	0.46J	7.24J	0.04F	0.00H
96.1	5.13J	0.03H	0.40J	6.92J	0.04F	0.00H
91.9	4.63J	0.03H	0.34J	6.57J	0.04F	0.00H
87.6	4.16J	0.03H	0.29J	6.19J	0.04F	0.00H
83.3	3.72J	0.03H	0.24J	5.78J	0.03F	0.00H
79.0	3.31J	0.02H	0.20J	5.36J	0.03F	0.00H
74.5	2.90J	0.02H	0.16J	4.99J	0.03H	0.00H
71.5	2.65J	0.02H	0.14J	4.73J	0.03H	0.00H
68.4	2.41J	0.02H	0.12J	4.47J	0.03H	0.00H
65.4	2.18J	0.02H	0.10J	4.21J	0.03H	0.00H
62.4	1.96J	0.02H	0.09J	3.95J	0.03H	0.00H
59.3	1.76J	0.01H	0.07J	3.70J	0.03H	0.00H
56.3	1.57J	0.01H	0.06J	3.44J	0.02H	0.00H
53.2	1.40J	0.01H	0.05J	3.20J	0.02H	0.00H
47.7	1.11J	0.01H	0.04J	2.83J	0.02H	0.00H
41.8	0.84J	0.01H	0.02J	2.42J	0.02H	0.00H
35.8	0.61J	0.01H	0.02J	2.03J	0.02H	0.00H
29.8	0.41J	0.00H	0.01J	1.65J	0.01H	0.00H
23.9	0.26J	0.00H	0.00J	1.29J	0.01H	0.00H
17.9	0.14J	0.00H	0.00J	0.95J	0.01H	0.00H
11.9	0.06J	0.00H	0.00J	0.62J	0.01H	0.00H
6.0	0.02J	0.00H	0.00Y	0.30J	0.00H	0.00H
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS

ELEV ft	ANT AZI deg	ANT TYPE	BEAM DEFLECTIONS (deg) ROLL	YAW	PITCH	TOTAL
63.0	90.0	STD+R	-3.957 A	0.003 H	-4.005 J	4.005 J
63.0	270.0	STD+R	3.957 A	0.003 H	4.005 J	4.005 J

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR ALONG kip	ACROSS kip	MOMENT.w.r.t.WIND.DIR ALONG ft-kip	ACROSS ft-kip	TORSION ft-kip
129.0	0.01 J	0.01 U	0.00 F	-0.03 H	-0.01 F	0.00 I
	21.06 AD	6.40 U	0.00 F	-8.20 E	0.01 AG	0.00 F
124.0	21.06 AA	6.41 D	0.02 F	-8.20 B	-0.03 W	-0.01 F
	21.50 AA	6.59 D	0.02 F	-48.24 D	-0.10 F	-0.02 C
119.0	21.50 AC	6.59 R	0.02 I	-48.28 J	-0.13 F	-0.02 C
	42.40 AC	12.87 R	0.02 I	-96.84 J	-0.22 F	-0.04 C
114.0	42.40 AC	12.89 E	-0.04 X	-96.85 J	-0.24 F	-0.04 C
	42.90 AC	13.10 E	-0.04 X	-176.57 E	-0.37 F	-0.08 C
109.0	42.90 AC	13.11 N	-0.08 X	-176.56 E	-0.35 F	-0.07 C
	43.38 AC	13.32 N	-0.08 X	-245.63 E	0.66 X	-0.11 C
104.7	43.39 Y	13.42 A	-0.10 X	-245.54 E	0.64 X	-0.11 C
	74.07 Y	21.86 A	-0.10 X	-352.18 E	1.10 X	-0.14 W
100.4	74.08 Y	21.85 A	0.17 F	-352.19 E	1.11 X	-0.13 C
	74.58 Y	22.06 A	0.17 F	-465.99 A	-1.70 F	-0.16 W
96.1	74.58 Y	22.06 R	0.21 F	-465.94 J	-1.62 F	-0.16 W
	95.00 Y	28.89 R	0.21 F	-589.37 J	-2.59 F	-0.18 W
91.9	95.00 Y	28.94 W	0.19 F	-589.41 J	-2.58 F	-0.18 U
	95.55 Y	29.17 W	0.19 F	-737.18 E	-3.47 F	-0.24 U
87.6	95.55 Y	29.27 U	0.16 F	-737.21 E	-3.49 F	-0.24 U
	96.14 Y	29.54 U	0.16 F	-884.99 E	-4.23 F	-0.32 U
83.3	96.14 Y	29.50 U	0.20 F	-884.97 E	-4.22 F	-0.32 U
	96.73 Y	29.74 U	0.20 F	-1032.58 E	-5.13 F	-0.38 U
79.0	96.73 Y	29.79 U	0.18 F	-1032.61 E	-5.16 F	-0.38 U
	97.98 Y	30.09 U	0.18 F	-1187.71 E	-6.03 F	-0.43 U
74.5	97.97 Y	30.19 U	0.27 F	-1187.58 E	-6.00 F	-0.43 U
	98.51 Y	30.38 U	0.27 F	-1292.50 E	-6.87 F	-0.47 U
71.5	98.51 Y	30.33 U	0.28 H	-1292.51 J	-6.90 F	-0.46 U
	99.06 Y	30.52 U	0.28 H	-1397.50 E	-7.45 F	-0.54 U
68.4						

	99.06 Y	30.52 U	-0.29 N	-1397.54 E	-7.45 F	-0.53 U
	99.62 Y	30.72 U	-0.29 N	-1502.71 E	-8.27 F	-0.58 U
65.4						
	99.62 Y	30.68 W	-0.31 U	-1502.52 E	-8.36 F	-0.56 U
	101.53 Y	32.35 W	-0.36 U	-1608.18 E	-8.86 F	1.14 H
62.4						
	101.53 Y	32.50 J	0.49 L	-1608.33 E	-8.91 F	1.14 H
	102.11 Y	32.70 J	0.49 L	-1718.08 J	-9.90 F	1.20 H
59.3						
	102.12 Y	32.96 J	0.34 R	-1717.87 J	-9.87 F	1.21 H
	102.71 Y	33.17 J	0.34 R	-1828.83 J	-10.84 F	1.26 H
56.3						
	102.71 Y	33.15 W	0.47 H	-1828.92 J	-10.70 F	1.26 H
	103.35 Y	33.38 W	0.47 H	-1939.00 J	-11.78 F	1.34 H
53.2						
	103.35 Y	33.36 W	0.46 H	-1938.89 J	-11.76 F	1.34 H
	105.51 Y	33.74 W	0.46 H	-2138.74 J	-13.13 F	1.46 H
47.7						
	105.51 Y	33.79 W	0.47 H	-2138.68 J	-13.12 F	1.46 H
	107.03 Y	34.24 W	0.47 H	-2355.99 J	-14.82 H	1.58 H
41.8						
	107.03 Y	34.22 W	0.48 H	-2355.97 J	-14.81 H	1.58 H
	108.57 Y	34.64 W	0.48 H	-2573.61 J	-17.66 H	1.68 H
35.8						
	108.57 Y	34.62 W	0.47 H	-2573.60 J	-17.65 H	1.68 H
	110.19 Y	35.05 W	0.47 H	-2791.80 J	-20.48 H	1.77 H
29.8						
	110.19 Y	35.01 W	0.49 H	-2791.78 J	-20.48 H	1.77 H
	111.86 Y	35.44 W	0.49 H	-3010.68 J	-23.40 H	1.83 H
23.9						
	111.86 Y	35.45 W	0.48 H	-3010.67 J	-23.40 H	1.83 H
	113.54 Y	35.86 W	0.48 H	-3229.93 J	-26.28 H	1.89 H
17.9						
	113.54 Y	35.85 W	0.48 H	-3229.93 J	-26.28 H	1.89 H
	115.30 Y	36.27 W	0.48 H	-3449.37 J	-29.18 H	1.92 H
11.9						
	115.30 Y	36.28 W	0.49 H	-3449.37 J	-29.18 H	1.92 H
	117.08 Y	36.68 W	0.49 H	-3669.07 J	-32.13 H	1.94 H
6.0						
	117.08 Y	36.68 W	0.50 H	-3669.07 J	-32.13 H	1.94 H
	118.91 Y	37.08 W	0.50 H	-3888.97 J	-35.12 H	1.95 H
base reaction	118.91 Y	-37.08 W	-0.50 H	3888.97 J	35.12 H	-1.95 H

COMPLIANCE WITH 4.8.2 & 4.5.4

ELEV ft	AXIAL	BENDING	SHEAR + TORSIONAL		TOTAL SATISFIED	D/t(w/t)	MAX ALLOWED
129.00							
	0.00J	0.00H	0.00U	0.00H	YES	10.12A	45.2
	0.02AD	0.02E	0.01U	0.03E	YES	11.17A	45.2
124.00							
	0.02AA	0.02B	0.01D	0.03I	YES	11.17A	45.2
	0.02AA	0.11D	0.01D	0.12J	YES	12.22A	45.2
119.00							
	0.02AC	0.11J	0.01R	0.12J	YES	12.22A	45.2
	0.04AC	0.19J	0.02R	0.21J	YES	13.27A	45.2
114.00							

	0.04AC	0.19J	0.02E	0.21J	YES	13.27A	45.2
	0.03AC	0.31E	0.02E	0.33E	YES	14.32A	45.2
109.00							
	0.03AC	0.31E	0.02N	0.33E	YES	14.32A	45.2
	0.03AC	0.38E	0.02N	0.40E	YES	15.22A	45.2
104.71							
	0.03Y	0.38E	0.02A	0.40J	YES	15.22A	45.2
	0.05Y	0.49E	0.03A	0.52E	YES	16.12A	45.2
100.43							
	0.05Y	0.49E	0.03A	0.52E	YES	16.12A	45.2
	0.05Y	0.59A	0.03A	0.62A	YES	17.01A	45.2
96.14							
	0.05Y	0.59J	0.03R	0.62J	YES	17.01A	45.2
	0.06Y	0.69J	0.04R	0.73J	YES	17.91A	45.2
91.86							
	0.06Y	0.69J	0.04W	0.73J	YES	17.91A	45.2
	0.06Y	0.80E	0.04W	0.83E	YES	18.81A	45.2
87.57							
	0.06Y	0.80E	0.04U	0.83E	YES	18.81A	45.2
	0.06Y	0.89E	0.04U	0.92E	YES	19.71A	45.2
83.29							
	0.06Y	0.89E	0.04U	0.92E	YES	19.71A	45.2
	0.06Y	0.97E	0.04U	1.00E	YES	20.61A	45.2
79.00							
	0.04Y	0.73E	0.03U	0.76E	YES	16.42A	45.2
	0.04Y	0.78E	0.03U	0.80E	YES	17.17A	45.2
74.50							
	0.04Y	0.80E	0.03U	0.83E	YES	16.89A	45.2
	0.04Y	0.83E	0.03U	0.85E	YES	17.40A	45.2
71.46							
	0.04Y	0.83J	0.03U	0.85J	YES	17.40A	45.2
	0.04Y	0.86E	0.03U	0.88E	YES	17.91A	45.2
68.43							
	0.04Y	0.86E	0.03U	0.88E	YES	17.91A	45.2
	0.04Y	0.88E	0.03U	0.90E	YES	18.42A	45.2
65.39							
	0.04Y	0.88E	0.03W	0.90E	YES	18.42A	45.2
	0.04Y	0.90E	0.03W	0.92E	YES	18.93A	45.2
62.36							
	0.04Y	0.90E	0.03J	0.92E	YES	18.93A	45.2
	0.04Y	0.92J	0.03J	0.94J	YES	19.44A	45.2
59.32							
	0.04Y	0.92J	0.03J	0.94J	YES	19.44A	45.2
	0.04Y	0.94J	0.03J	0.96J	YES	19.95A	45.2
56.29							
	0.04Y	0.94J	0.03W	0.96J	YES	19.95A	45.2
	0.04Y	0.96J	0.03W	0.98J	YES	20.46A	45.2
53.25							
	0.03Y	0.76J	0.02W	0.78J	YES	16.99A	45.2
	0.03Y	0.78J	0.02W	0.80J	YES	17.76A	45.2
47.75							
	0.03Y	0.80J	0.02W	0.82J	YES	17.46A	45.2
	0.03Y	0.82J	0.02W	0.83J	YES	18.30A	45.2
41.78							
	0.03Y	0.82J	0.02W	0.83J	YES	18.30A	45.2
	0.03Y	0.83J	0.02W	0.85J	YES	19.13A	45.2
35.81							
	0.03Y	0.83J	0.02W	0.85J	YES	19.13A	45.2
	0.03Y	0.84J	0.02W	0.86J	YES	19.97A	45.2
29.84							
	0.03Y	0.84J	0.02W	0.86J	YES	19.97A	45.2

	0.03Y	0.84J	0.02W	0.86J	YES	20.80A	45.2
23.87	.....						
	0.03Y	0.84J	0.02W	0.86J	YES	20.80A	45.2
	0.03Y	0.85J	0.02W	0.87J	YES	21.64A	45.2
17.91	.....						
	0.03Y	0.85J	0.02W	0.87J	YES	21.64A	45.2
	0.03Y	0.85J	0.02W	0.87J	YES	22.47A	45.2
11.94	.....						
	0.03Y	0.85J	0.02W	0.87J	YES	22.47A	45.2
	0.03Y	0.86J	0.02W	0.88J	YES	23.31A	45.2
5.97	.....						
	0.03Y	0.86J	0.02W	0.88J	YES	23.31A	45.2
	0.03Y	0.86J	0.02W	0.88J	YES	24.14A	45.2
0.00	.....						

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)
==========

DOWN	SHEAR.w.r.t.WIND.DIR ALONG	ACROSS	MOMENT.w.r.t.WIND.DIR ALONG	ACROSS	TORSION
kip	kip	kip	ft-kip	ft-kip	ft-kip
118.91	37.08	0.50	-3888.97	-35.12	1.95
Y	W	H	J	H	H

==========

==========
(USA 222-H) - Monopole Spatial Analysis (c)2017 Guymast Inc.

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110' ext. 130' Monopole / Litchfield SE, CT

****
********** Service Load Condition **********
****

* Only 1 condition(s) shown in full
* Some concentrated wind loads may have been derived from full-scale wind tunnel testing

LOADING CONDITION A ==========

60 mph wind with no ice. Wind Azimuth: 0° (1.0 D + 1.0 Wo)

LOADS ON POLE
==========

LOAD TYPE	ELEV	APPLY..LOAD..AT RADIUS	AZI	LOAD AZI	.....FORCES..... HORIZ	DOWN	.....MOMENTS..... VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip
C	125.000	0.00	0.0	0.0	0.0000	1.5600	0.0000	0.0000
C	125.000	0.00	0.0	0.0	1.5100	8.0000	0.0000	0.0000
C	124.500	0.00	0.0	0.0	0.0058	0.0126	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0000	1.4352	0.0000	0.0000
C	115.000	0.00	0.0	0.0	1.4748	8.0000	0.0000	0.0000
C	115.000	0.00	0.0	0.0	0.0063	0.0140	0.0000	0.0000
C	105.000	0.00	0.0	0.0	0.0061	0.0140	0.0000	0.0000
C	104.000	0.00	0.0	0.0	0.0000	1.9469	0.0000	0.0000
C	104.000	0.00	0.0	0.0	2.0068	12.0000	0.0000	0.0000
C	95.000	0.00	0.0	0.0	0.0069	0.0140	0.0000	0.0000
C	93.000	0.00	0.0	0.0	0.0000	1.1606	0.0000	0.0000

C	93.000	0.00	0.0	0.0	1.6017	8.0000	0.0000	0.0000
C	85.000	0.00	0.0	0.0	0.0067	0.0140	0.0000	0.0000
C	75.000	0.00	0.0	0.0	0.0065	0.0140	0.0000	0.0000
C	65.000	0.00	0.0	0.0	0.0063	0.0140	0.0000	0.0000
C	63.000	0.00	0.0	0.0	0.0000	0.1310	0.0000	0.0000
C	55.000	0.00	0.0	0.0	0.0060	0.0140	0.0000	0.0000
C	45.000	0.00	0.0	0.0	0.0057	0.0140	0.0000	0.0000
C	35.000	0.00	0.0	0.0	0.0054	0.0140	0.0000	0.0000
C	25.000	0.00	0.0	0.0	0.0050	0.0140	0.0000	0.0000
C	15.000	0.00	0.0	0.0	0.0044	0.0140	0.0000	0.0000
D	129.000	0.00	180.0	0.0	0.0078	0.0448	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0144	0.0810	0.0000	0.0000
D	79.000	0.00	180.0	0.0	0.0151	0.1888	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0151	0.1888	0.0000	0.0000
D	74.500	0.00	180.0	0.0	0.0153	0.1079	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0167	0.1260	0.0000	0.0000
D	53.250	0.00	180.0	0.0	0.0169	0.2842	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0169	0.2842	0.0000	0.0000
D	47.750	0.00	180.0	0.0	0.0172	0.1608	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0161	0.2036	0.0000	0.0000
D	5.969	0.00	180.0	0.0	0.0164	0.2107	0.0000	0.0000
D	0.000	0.00	180.0	0.0	0.0164	0.2107	0.0000	0.0000

ANTENNA LOADING

.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
STD+R	63.0	270.0	2.2	270.0	0.03	0.10	0.20	0.22
STD+R	63.0	90.0	2.2	90.0	0.03	-0.10	0.20	-0.22

MAXIMUM POLE DEFORMATIONS CALCULATED(w.r.t. wind direction)

MAST ELEV ft	.....DEFLECTIONS (ft)..... HORIZONTAL ALONG	ACROSS	DOWN	.....ROTATIONS (deg)..... TILT ALONG	ACROSS	TWIST
129.0	2.31K	0.01L	0.06K	1.95K	0.01L	0.00I
124.0	2.14K	0.01L	0.06K	1.95K	0.01L	0.00I
119.0	1.97K	0.01L	0.05K	1.94K	0.01L	0.00I
114.0	1.80K	0.01L	0.05K	1.91K	0.01L	0.00I
109.0	1.64K	0.01L	0.04K	1.86K	0.01L	0.00I
104.7	1.50K	0.01L	0.04K	1.80K	0.01L	0.00I
100.4	1.37K	0.01L	0.03K	1.74K	0.01L	0.00I
96.1	1.24K	0.01L	0.03K	1.66K	0.01L	0.00I
91.9	1.12K	0.01L	0.02K	1.58K	0.01L	0.00I
87.6	1.00K	0.01L	0.02K	1.49K	0.01L	0.00I
83.3	0.90K	0.01L	0.02K	1.39K	0.01L	0.00I
79.0	0.80K	0.00L	0.01K	1.28K	0.01L	0.00I
74.5	0.70K	0.00L	0.01K	1.20K	0.01L	0.00I
71.5	0.64K	0.00L	0.01K	1.13K	0.01L	0.00I
68.4	0.58K	0.00L	0.01K	1.07K	0.01L	0.00I
65.4	0.52K	0.00L	0.01K	1.01K	0.01L	0.00I
62.4	0.47K	0.00L	0.01K	0.95K	0.01L	0.00I
59.3	0.42K	0.00L	0.01K	0.89K	0.01L	0.00I
56.3	0.38K	0.00L	0.01K	0.83K	0.01L	0.00I

53.2	0.34K	0.00L	0.00K	0.77K	0.00L	0.00I
47.7	0.27K	0.00L	0.00K	0.68K	0.00L	0.00I
41.8	0.20K	0.00K	0.00K	0.58K	0.00L	0.00I
35.8	0.15K	0.00K	0.00K	0.49K	0.00L	0.00I
29.8	0.10K	0.00K	0.00K	0.40K	0.00K	0.00I
23.9	0.06K	0.00K	0.00K	0.31K	0.00K	0.00I
17.9	0.03K	0.00K	0.00K	0.23K	0.00K	0.00I
11.9	0.02K	0.00K	0.00K	0.15K	0.00K	0.00I
6.0	0.00K	0.00K	0.00K	0.07K	0.00K	0.00I
0.0	0.00A	0.00A	0.00A	0.00A	0.00A	0.00A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS

ELEV ft	ANT AZI deg	ANT TYPE	.... BEAM DEFLECTIONS (deg) .... ROLL	YAW	PITCH	TOTAL
63.0	90.0	STD+R	-0.951 A	0.000 I	0.957 D	0.957 D
63.0	270.0	STD+R	0.951 A	0.000 I	-0.957 D	0.957 D

MAXIMUM POLE FORCES CALCULATED(w.r.t. to wind direction)

MAST ELEV ft	TOTAL AXIAL kip	SHEAR.w.r.t.WIND.DIR ALONG kip	ACROSS kip	MOMENT.w.r.t.WIND.DIR ALONG ft-kip	ACROSS ft-kip	TORSION ft-kip
129.0	0.00 L	0.00 A	0.00 L	-0.01 A	0.00 E	0.00 L
	9.81 C	1.56 J	0.00 L	-1.96 I	-0.01 L	0.00 I
124.0	9.81 C	1.56 K	0.00 C	-1.96 D	-0.01 L	0.00 L
	10.06 C	1.61 K	0.00 C	-11.54 K	0.03 C	0.00 C
119.0	10.06 K	1.61 B	-0.01 C	-11.54 K	0.02 C	0.00 C
	19.78 K	3.14 B	-0.01 C	-23.18 K	0.07 C	0.00 C
114.0	19.78 C	3.14 K	-0.01 C	-23.18 K	0.07 C	0.00 C
	20.07 C	3.19 K	-0.01 C	-42.24 K	0.13 C	-0.01 C
109.0	20.07 C	3.20 K	0.01 K	-42.23 K	0.13 C	-0.01 C
	20.34 C	3.25 K	0.01 K	-58.80 K	0.17 C	-0.01 C
104.7	20.34 C	3.25 J	0.03 L	-58.80 K	0.17 C	-0.01 C
	34.56 C	5.31 J	0.03 L	-84.11 K	0.27 C	-0.01 C
100.4	34.57 C	5.30 K	0.02 K	-84.11 K	0.28 C	-0.01 C
	34.85 C	5.35 K	0.02 K	-111.31 K	0.31 C	-0.01 C
96.1	34.85 C	5.37 B	-0.03 C	-111.34 K	0.31 C	-0.01 C
	44.33 C	7.03 B	-0.03 C	-140.80 K	0.42 C	-0.02 C
91.9	44.33 C	7.04 B	0.03 K	-140.78 K	0.42 C	-0.02 C
	44.64 C	7.09 B	0.03 K	-176.13 K	0.53 C	-0.02 C
87.6						

	44.64 C	7.09 K	0.03 K	-176.13 K	0.52 C	-0.02 C
	44.98 C	7.16 K	0.03 K	-211.42 K	0.66 C	-0.03 C
83.3						
	44.98 L	7.17 B	0.03 K	-211.43 K	0.65 C	-0.03 C
	45.32 L	7.23 B	0.03 K	-246.71 K	-0.76 K	-0.03 C
79.0						
	45.32 L	7.23 K	0.04 K	-246.66 K	0.75 C	-0.03 C
	46.19 L	7.31 K	0.04 K	-283.82 K	-0.95 K	-0.03 C
74.5						
	46.19 L	7.32 C	-0.04 C	-283.77 K	-0.96 K	-0.03 C
	46.52 L	7.37 C	-0.04 C	-308.86 K	-1.05 K	-0.04 C
71.5						
	46.52 C	7.40 C	-0.09 C	-308.79 K	-1.07 K	-0.04 C
	46.86 C	7.45 C	-0.09 C	-333.99 K	1.23 C	-0.04 C
68.4						
	46.86 C	7.41 C	0.12 F	-334.00 K	1.21 C	-0.04 C
	47.21 C	7.46 C	0.12 F	-359.03 K	1.38 C	-0.05 C
65.4						
	47.20 C	7.52 C	0.09 F	-359.01 K	1.38 C	-0.05 C
	48.10 C	7.93 C	0.11 F	-384.44 K	1.56 C	0.18 I
62.4						
	48.10 C	7.89 K	0.11 L	-384.42 K	1.58 C	0.18 I
	48.46 C	7.94 K	0.11 L	-410.78 K	-1.72 L	0.18 I
59.3						
	48.46 L	7.93 J	0.11 L	-410.77 K	-1.71 L	0.18 I
	48.83 L	7.98 J	0.11 L	-437.08 K	-2.05 L	0.18 I
56.3						
	48.83 L	7.99 K	-0.08 B	-437.08 K	-2.06 L	0.18 I
	49.23 L	8.05 K	-0.08 B	-463.51 K	-2.27 L	0.18 I
53.2						
	49.23 L	8.07 K	0.10 L	-463.50 K	-2.27 L	0.18 I
	50.79 L	8.17 K	0.10 L	-511.64 K	-2.83 L	0.19 I
47.7						
	50.79 L	8.17 K	0.10 K	-511.63 K	-2.83 L	0.19 I
	51.78 L	8.28 K	0.10 K	-564.07 K	-3.36 L	0.19 I
41.8						
	51.78 L	8.27 K	0.10 K	-564.07 K	-3.36 L	0.19 I
	52.80 L	8.38 K	0.10 K	-616.67 K	-3.89 L	0.19 I
35.8						
	52.80 L	8.37 K	0.10 K	-616.67 K	-3.89 L	0.19 I
	53.86 L	8.48 K	0.10 K	-669.42 K	-4.41 L	0.20 I
29.8						
	53.86 L	8.52 K	-0.11 B	-669.42 K	-4.41 L	0.20 I
	54.96 L	8.62 K	-0.11 B	-722.57 K	-4.88 L	0.20 I
23.9						
	54.96 L	8.63 K	-0.11 B	-722.57 K	-4.88 L	0.20 I
	56.09 L	8.72 K	-0.11 B	-775.90 K	-5.35 L	0.20 I
17.9						
	56.09 L	8.73 K	-0.11 B	-775.90 K	-5.35 L	0.20 I
	57.26 L	8.83 K	-0.11 B	-829.40 K	-5.92 K	0.20 I
11.9						
	57.26 L	8.83 K	-0.11 B	-829.40 K	-5.92 K	0.20 I
	58.46 L	8.92 K	-0.11 B	-883.03 K	-6.53 K	0.20 I
6.0						
	58.46 L	8.92 K	-0.11 B	-883.03 K	-6.53 K	0.20 I
	59.71 L	9.02 K	-0.11 B	-936.80 K	-7.13 K	0.20 I
base reaction	59.71 L	-9.02 K	0.11 B	936.80 K	7.13 K	-0.20 I

COMPLIANCE WITH 4.8.2 & 4.5.4

ELEV ft	AXIAL	BENDING	SHEAR + TORSIONAL	TOTAL	SATISFIED	D/t(w/t)	MAX ALLOWED
129.00	0.00L	0.00A	0.00A	0.00A	YES	10.12A	45.2
	0.01C	0.01I	0.00J	0.02I	YES	11.17A	45.2
124.00	0.01C	0.01D	0.00K	0.02D	YES	11.17A	45.2
	0.01C	0.03K	0.00K	0.04K	YES	12.22A	45.2
119.00	0.01K	0.03K	0.00B	0.04K	YES	12.22A	45.2
	0.02K	0.05K	0.01B	0.06K	YES	13.27A	45.2
114.00	0.02C	0.05K	0.01K	0.06K	YES	13.27A	45.2
	0.02C	0.07K	0.00K	0.09K	YES	14.32A	45.2
109.00	0.02C	0.07K	0.00K	0.09K	YES	14.32A	45.2
	0.01C	0.09K	0.00K	0.11K	YES	15.22A	45.2
104.71	0.01C	0.09K	0.00J	0.11K	YES	15.22A	45.2
	0.02C	0.12K	0.01J	0.14K	YES	16.12A	45.2
100.43	0.02C	0.12K	0.01K	0.14K	YES	16.12A	45.2
	0.02C	0.14K	0.01K	0.17K	YES	17.01A	45.2
96.14	0.02C	0.14K	0.01B	0.17K	YES	17.01A	45.2
	0.03C	0.17K	0.01B	0.19K	YES	17.91A	45.2
91.86	0.03C	0.17K	0.01B	0.19K	YES	17.91A	45.2
	0.03C	0.19K	0.01B	0.22K	YES	18.81A	45.2
87.57	0.03C	0.19K	0.01K	0.22K	YES	18.81A	45.2
	0.03C	0.21K	0.01K	0.24K	YES	19.71A	45.2
83.29	0.03L	0.21K	0.01B	0.24K	YES	19.71A	45.2
	0.03L	0.23K	0.01B	0.26K	YES	20.61A	45.2
79.00	0.02L	0.17K	0.01K	0.19K	YES	16.42A	45.2
	0.02L	0.19K	0.01K	0.21K	YES	17.17A	45.2
74.50	0.02L	0.19K	0.01C	0.21K	YES	16.89A	45.2
	0.02L	0.20K	0.01C	0.22K	YES	17.40A	45.2
71.46	0.02C	0.20K	0.01C	0.22K	YES	17.40A	45.2
	0.02C	0.20K	0.01C	0.22K	YES	17.91A	45.2
68.43	0.02C	0.20K	0.01C	0.22K	YES	17.91A	45.2
	0.02C	0.21K	0.01C	0.23K	YES	18.42A	45.2
65.39	0.02C	0.21K	0.01C	0.23K	YES	18.42A	45.2
	0.02C	0.21K	0.01C	0.23K	YES	18.93A	45.2
62.36	0.02C	0.21K	0.01K	0.23K	YES	18.93A	45.2
	0.02C	0.22K	0.01K	0.24K	YES	19.44A	45.2
59.32	0.02L	0.22K	0.01J	0.24K	YES	19.44A	45.2
	0.02L	0.22K	0.01J	0.24K	YES	19.95A	45.2
56.29	0.02L	0.22K	0.01K	0.24K	YES	19.95A	45.2

	0.02L	0.23K	0.01K	0.25K	YES	20.46A	45.2
53.25							
	0.01L	0.18K	0.00K	0.20K	YES	16.99A	45.2
	0.01L	0.19K	0.00K	0.20K	YES	17.76A	45.2
47.75							
	0.02L	0.19K	0.00K	0.21K	YES	17.46A	45.2
	0.01L	0.20K	0.00K	0.21K	YES	18.30A	45.2
41.78							
	0.01L	0.20K	0.00K	0.21K	YES	18.30A	45.2
	0.01L	0.20K	0.00K	0.21K	YES	19.13A	45.2
35.81							
	0.01L	0.20K	0.00K	0.21K	YES	19.13A	45.2
	0.01L	0.20K	0.00K	0.22K	YES	19.97A	45.2
29.84							
	0.01L	0.20K	0.00K	0.22K	YES	19.97A	45.2
	0.01L	0.20K	0.00K	0.22K	YES	20.80A	45.2
23.87							
	0.01L	0.20K	0.00K	0.22K	YES	20.80A	45.2
	0.01L	0.20K	0.00K	0.22K	YES	21.64A	45.2
17.91							
	0.01L	0.20K	0.00K	0.22K	YES	21.64A	45.2
	0.01L	0.21K	0.00K	0.22K	YES	22.47A	45.2
11.94							
	0.01L	0.21K	0.00K	0.22K	YES	22.47A	45.2
	0.01L	0.21K	0.00K	0.22K	YES	23.31A	45.2
5.97							
	0.01L	0.21K	0.00K	0.22K	YES	23.31A	45.2
	0.01L	0.21K	0.00K	0.22K	YES	24.14A	45.2
0.00							

MAXIMUM LOADS ONTO FOUNDATION(w.r.t. wind direction)

DOWN	SHEAR.w.r.t.WIND.DIR		MOMENT.w.r.t.WIND.DIR		TORSION
	ALONG	ACROSS	ALONG	ACROSS	
kip	kip	kip	ft-kip	ft-kip	ft-kip
59.71	9.02	-0.11	-936.80	-7.13	0.20
L	K	B	K	K	I

Seismic Load Effects
Equivalent Lateral Force Procedure
ANSI/TIA-222-H

Parameters	
Risk Category	II
R	1.500
S_S	0.182
S_1	0.054
Site Class	C
T_L (sec)	6.000
F_a	1.300
F_v	1.500
S_{MS}	0.237
S_{M1}	0.081
S_{DS}	0.158
S_{D1}	0.054
T_s	0.342
I_e	1.000
Ω	1.500
C_S	0.030
E (ksi)	29,000
I_{top} (in^4)	400
I_{bot} (in^4)	22,396
I_{avg} (in^4)	11,398
g (in/s^2)	386.4
W_t (kips)	60.146
W_u (kips)	36.000
W_L (kips)	24.146
L_p (in)	1548
f_1 (Hertz)	0.250
T (sec)	3.992
k_e	2.0000
V_s (kips)	1.804
Seismic Design Category	A

Vertical Distribution of Seismic Forces

Description	h_i (ft.)	w_i (kips)	W_u (kips)	$w_i h_i^{ke}$	F_{sz} or E_h (kips)	E_v (kips)	1.2 D + 1.0 E_v (kips)	0.9 D - 1.0 E_v (kips)
Antenna Load	125.00	8.0000	8.0000	125,000.0000	0.3983	0.2528	9.8528	6.9472
Line Deadload	125.00	1.5600	0.0000	24,375.0000	0.0777	0.0493	1.9213	1.3547
Step Bolts/Safety Climb Load	124.50	0.0126	0.0000	195.3031	0.0006	0.0004	0.0155	0.0109
Structure - Section 1	119.00	1.0145	0.0000	14,366.3345	0.0458	0.0321	1.2495	0.8810
Antenna Load	115.00	8.0000	8.0000	105,800.0000	0.3371	0.2528	9.8528	6.9472
Line Deadload	115.00	1.4352	0.0000	18,980.5200	0.0605	0.0454	1.7676	1.2463
Step Bolts/Safety Climb Load	115.00	0.0140	0.0000	185.1500	0.0006	0.0004	0.0172	0.0122
Step Bolts/Safety Climb Load	105.00	0.0140	0.0000	154.3500	0.0005	0.0004	0.0172	0.0122
Antenna Load	104.00	12.0000	12.0000	129,792.0000	0.4136	0.3792	14.7792	10.4208
Line Deadload	104.00	1.9469	0.0000	21,057.6704	0.0671	0.0615	2.3978	1.6907
Step Bolts/Safety Climb Load	95.00	0.0140	0.0000	126.3500	0.0004	0.0004	0.0172	0.0122
Antenna Load	93.00	8.0000	8.0000	69,192.0000	0.2205	0.2528	9.8528	6.9472
Line Deadload	93.00	1.1606	0.0000	10,038.0294	0.0320	0.0367	1.4294	1.0078
Structure - Section 2	91.75	2.5024	0.0000	21,065.3596	0.0671	0.0791	3.0820	2.1731
Step Bolts/Safety Climb Load	85.00	0.0140	0.0000	101.1500	0.0003	0.0004	0.0172	0.0122
Step Bolts/Safety Climb Load	75.00	0.0140	0.0000	78.7500	0.0003	0.0004	0.0172	0.0122
Step Bolts/Safety Climb Load	65.00	0.0140	0.0000	59.1500	0.0002	0.0004	0.0172	0.0122
Structure - Section 3	63.38	3.6609	0.0000	14,705.9246	0.0469	0.1157	4.5088	3.1791
Line Deadload	63.00	0.1310	0.0000	519.9390	0.0017	0.0041	0.1613	0.1138
Mount/Antenna Load	63.00	0.8770	0.0000	3,480.8130	0.0111	0.0277	1.0801	0.7616
Step Bolts/Safety Climb Load	55.00	0.0140	0.0000	42.3500	0.0001	0.0004	0.0172	0.0122
Step Bolts/Safety Climb Load	45.00	0.0140	0.0000	28.3500	0.0001	0.0004	0.0172	0.0122
Step Bolts/Safety Climb Load	35.00	0.0140	0.0000	17.1500	0.0001	0.0004	0.0172	0.0122
Structure - Section 4	26.62	9.6904	0.0000	6,866.8539	0.0219	0.3062	11.9347	8.4152
Step Bolts/Safety Climb Load	25.00	0.0140	0.0000	8.7500	0.0000	0.0004	0.0172	0.0122
Step Bolts/Safety Climb Load	15.00	0.0140	0.0000	3.1500	0.0000	0.0004	0.0172	0.0122
	Σ	60.15	36.0000	566,240.40	1.80	1.90	74.07	52.23

Sabre Industries
INNOVATION DELIVERED

SO#: 542747
Site Name: Litchfield SE, CT
Date: 5/8/2024

Round Flange Plate and Bolts per ANSI/TIA 222-H
Elevation = 109 feet

Pole Data

Diameter:	22.05	in
Thickness:	0.25	in
Yield (Fy):	65	ksi
# of Sides:	18	"0" IF Round
Strength (Fu):	80	ksi

Reactions

Moment, Mu:	287.05	ft-kips
Axial, Pu:	24.11	kips
Shear, Vu:	13.1	kips

Bolt Data

Quantity:	10	
Diameter:	1	in
Bolt Material:	A325	
Strength (Fu):	120	ksi
Yield (Fy):	92	ksi
BC Diam. (in):	25.5	BC Override:

Flange Bolt Results

Allowable Φ*Rnt:	54.54 kips
Adjusted Φ*Rnt (due to shear):	54.51 kips
Maximum Bolt Tension:	51.62 kips
Bolt Interaction Ratio:	**94.7%** **Pass**

Plate Data

Diameter (in):	28	Dia. Override:
Thickness:	1.5	in
Center Hole Diam.:	15	in
Yield (Fy):	50	ksi
Single-Rod B-eff:	7.00	in
Drain Hole:	1	in. diameter
Drain Location:	10	in. center of pole to center of drain hole

Flange Plate Results

Compression Side Plate (Mu/Z):	16.4 ksi
Allowable Φ*Fy:	45.0 ksi
Compr. Plate Interaction Ratio:	**36.5%** **Pass**

Sabre Industries
INNOVATION DELIVERED

SO#: 542747
Site Name: Litchfield SE, CT
Date: 5/8/2024

Round Base Plate and Anchor Rods, per ANSI/TIA 222-H

Pole Data

Diameter:	53.340	in (flat to flat)
Thickness:	0.375	in
Yield (Fy):	65	ksi
# of Sides:	18	"0" IF Round
Strength (Fu):	80	ksi

Reactions

Moment, Mu:	3888.97	ft-kips
Axial, Pu:	71.69	kips
Shear, Vu:	36.86	kips

Anchor Rod Data

Quantity:	14	
Diameter:	2.25	in
Rod Material:	A615	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
BC Diam. (in):	60	BC Override:

Plate Data

Diameter (in):	65.75	Dia. Override:
Thickness:	2	in
Yield (Fy):	50	ksi
Eff Width/Rod:	12.09	in
Drain Hole:	2.625	in. diameter
Drain Location:	24.5	in. center of pole to center of drain hole
Center Hole:	41	in. diameter

Anchor Rod Results

(per 4.9.9)

Maximum Put:	218.39 Kips
Φt*Rnt:	243.75 Kips
Vu:	2.63 Kips
Φv*Rnv:	149.10 Kips
Tension Interaction Ratio:	0.80
Maximum Puc:	227.35 Kips
Φc*Rnc:	268.39 Kips
Vu:	2.63 Kips
Φc*Rnvc:	120.77 Kips
Compression Interaction Ratio:	0.85
Maximum Interaction Ratio:	**84.8%** **Pass**

Base Plate Results

Base Plate (Mu/Z):	41.6 ksi	
Allowable Φ*Fy:	45.0 ksi	(per AISC)
Base Plate Interaction Ratio:	**92.5%** **Pass**	

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES

130' Monopole VERTICAL BRIDGE REIT, LLC Litchfield SE, CT (542747) 05/08/24 REB

Overall Loads:			
Factored Moment (ft-kips)	4093.65		
Factored Axial (kips)	75.46		
Factored Shear (kips)	38.80		
Bearing Design Strength (ksf)	6	Max. Net Bearing Press. (ksf)	5.59
Water Table Below Grade (ft)	**2.5**		
Width of Mat (ft)	26.5	Allowable Bearing Pressure (ksf)	**4.00**
Thickness of Mat (ft)	1.75	Safety Factor	**2.00**
Depth to Bottom of Slab (ft)	6	Ultimate Bearing Pressure (ksf)	8.00
Quantity of Bolts in Bolt Circle	14	Bearing Φs	0.75
Bolt Circle Diameter (in)	60		
Effective Anchor Bolt Embedment (in)	66.5		
Diameter of Pier (ft)	7	Minimum Pier Diameter (ft)	7.00
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	6.20
Ht. of Pier Below Ground (ft)	4.25	Square Pier? (Y/N)	**N**
Quantity of Bars in Mat	31		
Bar Diameter in Mat (in)	1.27		
Area of Bars in Mat (in^2)	39.27		
Spacing of Bars in Mat (in)	10.36	Recommended Spacing (in)	5 to 12
Quantity of Bars Pier	36		
Bar Diameter in Pier (in)	1		
Tie Bar Diameter in Pier (in)	0.625		
Spacing of Ties (in)	4		
Area of Bars in Pier (in^2)	28.27	Minimum Pier A_s (in^2)	27.71
Spacing of Bars in Pier (in)	6.61	Recommended Spacing (in)	5 to 12
f'c (ksi)	4.5		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	**0.1**		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	52.29		
Two-Way Shear Action:			
Average d (in)	16.73		
ϕv_c (ksi)	0.193	v_u (ksi)	0.122
$\phi v_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}$	0.302		
$\phi v_c = \phi(\alpha_s d/b_o+2)f'_c{}^{1/2}$	0.193	J (in^3)	8.524E+06
$\phi v_c = \phi 4f'_c{}^{1/2}$	0.201	c + d (in)	91.17
Shear perimeter, b_o (in)	364.69	0.40M_{sc} (ft-kips)	1711.2
β_c	1		
One-Way Shear:			
ϕV_c (kips)	535.3	V_u (kips)	296.6
Stability:			
Overturning Design Strength (ft-k)	4810.3	Total Applied M (ft-k)	4345.9

Pier-Slab Transfer by Flexure:

b_{slab} (ft)	12.25		
ϕM_n (ft-kips)	2575.1	$0.60M_{sc}$ (ft-kips)	2566.8

Pier Design:

ϕV_n (kips)	1035.7	V_u (kips)	38.8
$\phi V_c=\phi 2(1+N_u/(2000A_g))f'_c{}^{1/2}b_wd$	571.9		
V_s (kips)	618.5	*** V_s max = 4 $f'_c{}^{1/2}b_wd$ (kips)	1514.7
Maximum Spacing (in)	8.71	(Only if Shear Ties are Required)	
Actual Hook Development (in)	15.46	Req'd Hook Development l_{dh} (in) - Tension	12.52
		Req'd Hook Development l_{dc} (in) - Compression	13.50

Flexure in Slab:

ϕM_n (ft-kips)	2785.3	M_u (ft-kips)	2431.4
a (in)	1.94		
Steel Ratio	0.00738		
β_1	0.825		
Maximum Steel Ratio (ρ_t)	0.0197		
Minimum Steel Ratio	0.0018		
Rebar Development in Pad (in)	114.00	Required Development in Pad (in)	34.08

Condition	1 is OK, 0 Fails
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Interaction Diagram	1
Two-Way Shear Action	1
One-Way Shear Action	1
Overturning	1
Flexure	1
Steel Ratio	1
Length of Development in Pad	1
Hook Development	1
Anchor Bolt Pullout	1
Anchor Bolt Punching Shear	1

ATTACHMENT 3

DOWN TO EARTH
CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

GEOTECHNICAL ENGINEERING REPORT
PROPOSED TELECOMMUNICATIONS TOWER
MASON HILL ROAD,
NORTHFIELD, CONNECTICUT

Prepared for:

Centek Engineering, Inc.
63-2 North Branford Road
Branford, Connecticut 06405

Prepared by:

Down To Earth Consulting, LLC
27 Siemon Company Drive - Suite No. 363 West
Watertown, Connecticut 06795

File No. 0202-006.00
November 2023

DOWN TO EARTH
CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

November 6, 2023
File No. 0202-006.00

Tyler Russell
Centek Engineering, Inc.
63-2 North Branford Road
Branford, Connecticut 06405

Via email: trussell@centekeng.com

Re: Geotechnical Engineering Report
Proposed Telecommunications Tower
Mason Hill Road, Northfield, Connecticut

Down To Earth Consulting, LLC (DTE) is pleased to submit this geotechnical engineering report for the proposed telecommunications tower that will be located off Mason Hill Road in Northfield, Connecticut. We appreciate this opportunity to work with you. Please call if you have any questions.

Sincerely,

Down To Earth Consulting, LLC

Daniel LaMesa, P.E.
Principal

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APPENDICES

1.0 INTRODUCTION

Down To Earth Consulting, LLC, completed a subsurface exploration program and geotechnical engineering evaluation for the proposed telecommunications tower that will be located off Mason Hill Road in Northfield, Connecticut (Site). Our geotechnical engineering services included: reviewing project plans, observing test borings, obtaining soil resistivity measurements, characterizing subsurface conditions within the proposed structure limits, performing geotechnical engineering analyses, and providing geotechnical design and construction recommendations for the project. Refer to Figures 1 and 2 (in Appendix 1) for an area plan and site plan, respectively.

Our services were performed in accordance with our proposal dated June 26, 2023 (Revised September 6, 2023). Our recommendations are based on allowable stress design methods and the 2021 International Building Code with 2022 Connecticut Supplements (Building Code).

2.0 BACKGROUND

The project generally consists of constructing a telecommunications tower with access roads, fencing, utilities, and other supporting infrastructure. The tower site is currently wooded with grades ranging from approximate Elevation 810 to 790. Tower loads were not provided to DTE at the time of writing this report. It's anticipated that nominal cuts and fills on the order of 4-feet or less will be needed to achieve design grades and that no significant slopes will be required. Refer to the project plans prepared by Centek for additional development details.

3.0 SUBSURFACE DATA

3.1 GENERAL SITE GEOLOGY

Published surficial and bedrock geological map data (*1:24,000 scale, Surficial Geology of the Narragansett Pier Quadrangle, Schafer, J.P., 1961* and *1:31,680 scale, Bedrock Geologic of the Narragansett Pier Quadrangle, Nichols, D.R., 1956*) was reviewed. The Site surficial material is mapped as Glacial Till. The underlying bedrock is mapped as Schist and Granofels.

3.2 SUBSURFACE EXPLORATIONS

We observed and logged one test boring (B-1) and six probes (P-1 to P-6) drilled by our subcontractor General Borings, Inc. on October 13, 2023. Exploration locations are depicted on Figure 2 (Appendix 1) and the log is included in Appendix 2. The exploration locations were located in the field by taping from existing survey points installed by others. The boring and probe locations should be considered approximate.

The boring and probes were drilled to explore the soil, bedrock, and groundwater conditions in the proposed tower area. Hollow stem auger drilling methods were used to advance the explorations to a depth of approximately 2.5 to 14 feet below existing grades.

Representative soil samples were obtained from the boring for soil classification by split barrel sampling procedures in general accordance with ASTM D-1586. The split-spoon sampling procedure utilizes a standard 2-inch O.D. split-barrel sampler that is driven into the bottom of the

boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the middle 12-inches of a normal 24-inch penetration is recorded as the Standard Penetration Resistance Value (N). The blows (i.e., "N-Value") are indicated on the boring logs at their depth of occurrence and provide an indication of the relative consistency of the material.

Rock coring was performed in the boring using an NX-size, double-tube core barrel. Descriptions of the rock cores are presented on the logs in addition to Recovery and Rock Quality Designation (RQD). Recovery is defined as the length of core obtained expressed as a percentage of the total length cored. RQD is the total length of core pieces, 4 inches or greater in length, expressed as a percentage of the total length cored. RQD provides an indication of the quality of the rock mass and relative extent of foliations and rock mass jointing.

Groundwater levels were measured using a weighted tape in the open borehole during drilling or inferred from wet samples.

4.0 SUBSURFACE CONDITIONS

4.1 SUBSURFACE PROFILE

The generalized subsurface profile in the area of the proposed telecommunications compound, as inferred from the test boring data, generally consists of a surficial layer of about 12 inches of Topsoil underlain by Subsoil, Sand, and Bedrock. A more detailed description of each layer is provided below:

- Subsoil: Very loose, dark brown to brown, sand and silt – about 12 inches thick; over
- Sand: Medium dense to very dense, brown, sand with little to some silt and gravel – about 2 to over 10 feet thick; over
- Bedrock: Good to excellent quality, moderately weathered, Schist/Granofels

Visual classifications of soil samples, and conditions encountered at each exploration location can be found on the provided exploration logs, included as Appendix 2.

4.2 GROUNDWATER

Groundwater was inferred based on a wet sample at about 2.5 feet below existing grade at the test boring location. The wet sample could also have been a result of perched water running over the shallow Bedrock surface. Groundwater levels measured in the test boring may not have had sufficient time to stabilize and should be considered approximate. Groundwater measurements were not obtained at the probe locations.

Groundwater levels will vary depending on factors such as temperature, season, precipitation, construction activity, and other conditions, which may be different from those at the time of these measurements. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

4.3 SOIL RESISTIVITY TESTING

On October 13, 2023, DTE field personnel conducted in-situ soil resistivity testing in accordance with accepted engineering practices using the Wenner electrode configuration. Electrodes were spaced at 5, 10, 20, 30 and 40 feet. A set of two approximately perpendicular resistivity lines were completed in the general vicinity of the proposed tower location. The results of the resistivity tests are as follows:

	Resistivity (ohm-cm)	
Electrode Spacing (ft)	Line 1	Line 2
5	371.0	289.1
10	92.0	97.8
20	45.5	54.9
30	30.9	31.9
40	26.8	15.3

Field resistivity results may be influenced by existing utilities, underground structures, and boulders. Resistivity results will also fluctuate depending on the degree of compaction, moisture content, constituent solubility, and temperature. Field resistivity values may also vary depending upon season, precipitation, and other conditions that may differ from those at the time of testing.

5.0 GEOTECHNICAL DESIGN RECOMMENDATIONS

We offer the following geotechnical design recommendations based on the subsurface conditions encountered at the site, available project information, and proposed construction.

5.1 FOUNDATION

We recommended supporting the telecommunications tower on a reinforced concrete mat (or pad-and-pier foundation) bearing on a minimum 12-inch-thick pad of compacted Crushed Stone over undisturbed natural Sand Deposits, Bedrock, or on Structural Fill (hereinafter specified as Compacted Granular Fill, CGF) over natural Sand Deposits and/or Bedrock. The mat should be embedded a minimum of 42 inches below final grades for frost protection or adequately insulated to present frost heave in accordance with the Building Code. The Crushed Stone Pad will provide a bearing transition between soil and bedrock, facilitate construction dewatering, and help prevent disturbance to the underlying soil during construction. A layer of filter fabric should be placed between the Crushed Stone and soil subgrade.

Existing Topsoil, Subsoil, and disturbed soils and bedrock (e.g. blast rock) are not suitable for support of the mat foundation. Areas that require over-excavation below the mat should be replaced with Crushed Stone or Compacted Granular Fill (CGF) placed one foot beyond the edge of the foundation and at a one horizontal to one vertical slope away and down from the bottom outside edge of the foundation. Actual bottom of unsuitable bearing material elevations will vary across the site and should be verified during construction excavation by a DTE representative.

We recommend a maximum net allowable bearing pressure of four kips per square foot (ksf). Higher pressures can be accommodated for footings bearing directly on Bedrock should they be desired by the project's structural engineer, in which case DTE should be consulted. We anticipate that the mat will undergo less than one inch of total settlement and less than a half inch of

differential settlement. Settlements will occur as the loads are applied and are expected to be complete at the end of construction. DTE should be provided the final foundation loads and geometries once they are available to confirm the above recommended bearing capacity and settlement estimates.

We recommend a maximum coefficient of friction of 0.5 between the mat and the recommended bearing strata to resist lateral loading. In general, passive pressures against the mat should be ignored in calculating lateral load resistance unless approved by DTE. A factor of safety of at least 1.5 should be applied to calculated sliding resistance.

Uplift/overturning resistance for the tower foundation may be computed as the sum of the weight of the foundation element and the weight of the soil overlying the foundation. We recommend using a soil unit weight of 100 pounds per cubic foot for CGF overlying the foundation for calculating uplift/overturning.

5.2 DRAINAGE

Based on the test boring, the mat foundation may be below the water table depending on the final grading and mat elevation. If so, the mat will have to be designed for the potential hydrostatic uplift pressures or the groundwater will have to be suppressed with a perimeter foundation drain.

If used, the drain should consist of 6-inch diameter perforated PVC pipe, surrounded by 6-inches of Crushed Stone, wrapped in non-woven filter fabric. Cleanouts should be installed in the direction of flow and at the beginning of piping runs and consist of 45-degree elbows (90-degree elbows should not be allowed). The drain should have a rodent screen on the outlet and be gravity drained to the site drainage system.

5.3 SEISMIC DESIGN

Based on the standard penetration test results, visual soil and bedrock classifications, and design peak ground acceleration at this locale, the site soils are not susceptible to liquefaction. We recommend using a Seismic Site Class "C" for the project per the Building Code.

6.0 MATERIALS RECOMMENDATIONS

6.1 ON-SITE MATERIALS

Based on our visual soil classifications, existing Site soils likely will not satisfy the requirements for CGF under Section 6.2. Excavated soils could be reused as Common Fill during Site development. If during construction excavated materials are planned for reuse, gradation analyses and Modified Proctor Test (ASTM D-1557, Method C) should be performed on representative soil samples and the results submitted to the Geotechnical Engineer for review and approval.

The elevated fines (i.e., soil particles passing the No. 200 sieve) content of some site soils could make them difficult to place and compact. Success in using these materials will depend on their moisture content and prevailing weather conditions when they are excavated, placed, and compacted.

Topsoil and Subsoil with organics should only be reused in landscaped areas for planting grass and other vegetation

6.2 COMPACTED GRANULAR FILL

Compacted Granular Fill (CGF) for use as structural fill shall consist of inorganic soil free of clay, loam, ice and snow, tree stumps, roots, and other organic matter; graded within the following limits:

Sieve Size	Percent finer by weight
3-inches	100%
1/2-inch	50 - 85
No. 4	40 - 75
No. 50	8 - 28
No. 200	0 - 12

6.3 CRUSHED STONE

Crushed Stone for use below foundations and around drains shall consist of sound, tough, durable, rock that is graded within the following:

Sieve Size	Percent finer by weight
5/8-inches	100%
1/2-inch	85 - 100
3/8 inch	15 - 45
No. 4	0 - 15
No. 8	0 - 5

6.4 COMMON FILL

Common Fill may be used for general site grading should conform to the following graduation requirements:

Sieve Size	Percent finer by weight
6-inches	100%
No. 200	0 - 25

6.5 MATERIAL COMPACTION

CGF should be placed in loose lifts not exceeding 8 inches in depth and compacted to at least 95 percent of its maximum dry density (and within 2% of optimum moisture content) as determined by ASTM D1557, Method C (Modified Proctor).

Common Fill should also be placed in loose lifts not exceeding 12 inches in depth, and compacted to at least 92 percent of its maximum dry density.

Crushed Stone is considered to be "self-compacting" and would negate the need to run laboratory proctor testing and have field density testing of in-place lifts. The crushed stone should be plate compacted to "chink up" the working surface in lifts. We recommend placing Crushed Stone in maximum 12-inch lifts and compacting the lifts with a minimum of four passes with a vibratory plate compactor weighing a minimum of 1,000 pounds and with a minimum centrifugal force of 10,000 pounds.

6.6 GEOTEXTILE FABRIC

Geotextile fabric used as a separation fabric for crushed stone and soil material should meet the following criteria:

Property	Criteria	Test Method
Grab Strength	min. 80lbs	ASTM D4632
Static (CBR) Puncture	min. 50lbs	ASTM D6241
Trapezoid Tear	min. 25lbs	ASTM D4533
Apparent Opening Size	No. 70-100 U.S. Sieve Size	ASTM D4751

Fabric should be needle-punched non-woven material. Seams should be overlapped a minimum of six inches. During stone placement, the stone drop height should not exceed three feet and equipment traffic should be kept off the fabric until at least 6 to 12 inches of material is placed.

7.0 CONSTRUCTION RECOMMENDATIONS

7.1 FOUNDATION SUBGRADE PREPARATION

Footing excavations should be cut relatively level for soil subgrades and no steeper than 18H:1V for Bedrock subgrades (unless concrete sub footings or rock dowels are used at the direction of DTE). The base of foundation excavations should be free of debris materials, water, ice, and loose and frozen soils prior placing CGF, Crushed Stone, or concrete. Should the materials at bearing level become disturbed, the affected materials should be removed prior to placing CGF, Crushed Stone, or concrete. We recommend the use of smooth-edged excavator buckets or clips (not back-bladed) to make the final subgrade excavations. Boulders encountered at the exposed foundation subgrade should be removed to a depth of at least 12 inches below bottom of the mat. Voids that result from boulder excavations should be filled with CGF or compacted Crushed Stone.

Mat subgrade bearing surfaces should be protected against freezing before and after concrete placement. If construction is performed during freezing weather, the mat should be backfilled to a sufficient frost protection depth as soon as possible after it is constructed. Alternatively, insulating blankets or other measures should be used for protection against freezing

7.2 BEDROCK REMOVAL

Bedrock removal may be required to reach subgrade levels for some of the proposed structure areas. Boulders and decomposed Bedrock may be able to be removed with an excavator. For sound Bedrock removal, hydraulic splitters, air rams, or other more aggressive (e.g. blasting) methods may be required.

A blast plan should be developed by the contractor and reviewed by the engineer if blasting is used to remove Bedrock. Controlled blasting techniques must be implemented to protect adjacent structures and limit risk of over-blast and excessive fracturing (and unnecessary over-excavation and replacement). Vibration thresholds should be developed for nearby structures by a Professional Engineer registered in the State of Connecticut and monitored during blasting. At least two layers of woven rubber tire blasting mats should be used to protect each blast. The mats will reduce blast noise and the potential for fly rock.

7.3 TEMPORARY EXCAVATIONS

The site soils are classified as OSHA Class "C" soil and can be cut at a maximum one vertical to one and a half horizontal (1V:1.5H) slope up to a maximum excavation depth of 20 feet. These maximum slope and excavation depths assume no surcharge load (i.e., stockpiles, construction equipment, traffic, etc.) at the top of the excavations or groundwater seepage.

7.4 TEMPORARY GROUNDWATER CONTROL

Groundwater may be encountered during foundation excavation. We anticipate groundwater and stormwater runoff can be managed by grading to low points and using sump pumps. Dewatering should be performed as necessary to allow excavation and observation of the subgrades in the dry and to maintain a stable and dry bottom. In addition, constructing small temporary earth berms and grading to allow drainage away from the excavation is recommended to control surface water runoff. All water is to be managed in accordance with local, state, and federal requirements.

8.0 REVIEW OF FINAL DESIGN, PLANS, AND SPECIFICATIONS

When project plans are finalized, and specifications are available, they should be provided to DTE for review of conformance with our geotechnical recommendations. If any changes are made to the proposed structure locations or elevations, the recommendations provided in this report will need to be verified by DTE for applicability.

9.0 CONSTRUCTION QUALITY CONTROL

We recommend that DTE make field observations of excavations and foundation preparation to monitor compliance with our recommendations and project specifications. Specifically, we recommend field observation of excavations, removal of unsuitable materials, foundation subgrades, and Fill placement and compaction to monitor compliance with project specifications. We can also assist in classifying material on-site for the purpose of segregation and/or mixing for re-use on-site.

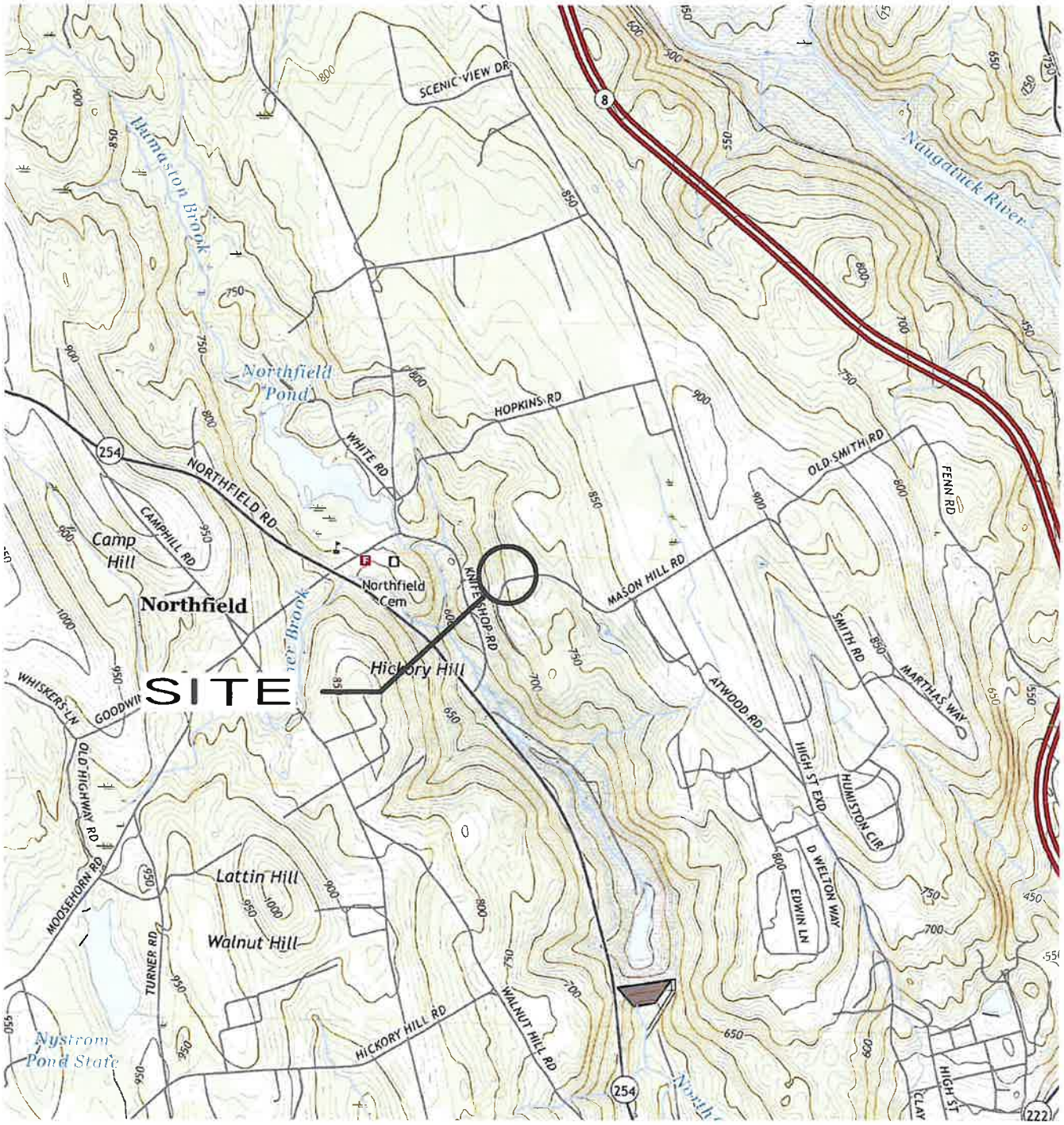
10.0 CLOSURE

We trust the information presented herein is sufficient for your use to progress design of the proposed telecommunications tower. We have enjoyed working with you on this project and look forward to our continued involvement. Please do not hesitate to call us if you have any questions.

This report is subject to the limitations included in Appendix 3.

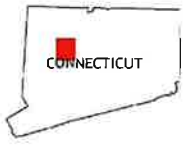
APPENDIX 1 -

FIGURES



DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

27 SIEMON COMPANY DRIVE #363W
WATERTOWN, CONNECTICUT 06795



QUADRANGLE LOCATION

AREA PLAN
PROPOSED TELECOMMUNICATION TOWER
MASON HILL ROAD
NORTHFIELD, CONNECTICUT

REFERENCE:
USGS TOPOGRAPHIC QUADRANGLE: THOMASTON, CT

SCALE 1"= 2,000'

2,000' 1,000' 0 2,000'

PROJECT NO.	0202-006.00
DATE:	10/16/23
FIGURE NO.	1

DRAWN BY: MF

REVIEWED BY: DFL

LEGEND

B-1 — TEST BORING NO. AND LOCATION

P-1 — TEST PROBE NO. AND LOCATION

NOTES:
1) BASE MAP DEVELOPED FROM AN ELECTRONIC FILE PREPARED BY CENTEK, ENTITLED 'LITCHFIELD SE_CT', DATED DECEMBER 30, 2021.
2) BORINGS WERE COMPLETED BY GENERAL BORINGS, INC. AND OBSERVED BY DOWN TO EARTH CONSULTING, LLC.
3) THE LOCATIONS OF THE EXPLORATIONS WERE DETERMINED BY TAPING AND VISUAL ESTIMATES FROM EXISTING SITE FEATURES. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

DESIGNED BY OTHERS						
DRAWN BY MF						
CHECKED BY DFL						
APPROVED BY DFL	NO.	DATE	REVISIONS	DRWN	CHKD	APPVD

SCALE 1"= 50'

50' 25' 0 50'

DOWN TO EARTH CONSULTING, LLC
27 SIMSON COMPANY DRIVE #363W
WATERTOWN, CONNECTICUT 06795

PROJECT
PROPOSED TELECOMMUNICATION TOWER
MASON HILL ROAD
NORTHFIELD, CONNECTICUT

DWG. TITLE
SITE AND EXPLORATION LOCATION PLAN

FILE NO. 0202-006.00

SCALE AS NOTED

DATE 10/16/23

FIGURE NO. 2

APPENDIX 2 -

EXPLORATION LOGS

DOWN TO EARTH CONSULTING, LLC

PROJECT		BORING NO.	B-1
PROPOSED TELECOMMUNICATION TOWER		SHEET	1 of 1
MASON HILL ROAD		FILE NO.	0202-006.00
NORTHFIELD, CONNECTICUT		CHKD. BY	DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	Jim Casson	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023	Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
10/3/23	-	2.5	-	Wet Sample

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1		S-1	7/24	0 to 2	1-1-1-5		Very loose, dark brown to brown, fine to medium SAND and SILT, trace Roots	12" Topsoil SUBSOIL
2								
3		S-2	8/13	2 to 3.1	7-20-50/1"		Very dense, brown, fine to coarse SAND, some Silt, little fine to coarse Gravel	SAND
4								
5		C-1	60/60	4 to 9		2.5	Excellent quality, moderately hard, slightly weathered, white/gray/brown, fine to coarse grained, SCHIST/GRANOFELS (REC=100%, RQD=90%)	BEDROCK
6						3		
7						3		
8						3		
9						3.5		
10		C-1	60/60	9 to 14		4	Good quality, moderately hard, slightly weathered, white/gray/brown, fine to coarse grained, SCHIST/GRANOFELS (REC=100%, RQD=70%)	
11						4.5		
12						3.5		
13						3.5		
14						4		
15							END OF EXPLORATION AT 14 FEET BELOW GROUND SURFACE	
16								
17								
18								
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28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) The soil obtained from split spoon Sample S-2 was wet. This could be an indication of the groundwater table level or perched water running over the bedrock surface.

DOWN TO EARTH CONSULTING, LLC

PROJECT		BORING NO.	P-1
PROPOSED TELECOMMUNICATION TOWER		SHEET	1 of 1
MASON HILL ROAD		FILE NO.	0218-009.00
NORTHFIELD, CONNECTICUT		CHKD. BY	DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	Jim Casson	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023	Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1								SOIL
2								
3							END OF EXPLORATION AT 2.5 FEET BELOW GROUND SURFACE	INFERRED BEDROCK OR BOULDER
4								
5								
6								
7								
8								
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16								
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39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal at 2.5 feet below ground surface on inferred bedrock or boulder.

DOWN TO EARTH CONSULTING, LLC

GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PROJECT

PROPOSED TELECOMMUNICATION TOWER

MASON HILL ROAD

NORTHFIELD, CONNECTICUT

BORING NO. P-2

SHEET 1 of 1

FILE NO. 0218-009.00

CHKD. BY DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	Jim Casson	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023	Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1								
2								
3								SOIL
4								
5								
6								
7							END OF EXPLORATION AT 6 FEET BELOW GROUND SURFACE	INFERRED BEDROCK OR BOULDER
8								
9								
10								
11								
12								
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19								
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40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.

2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.

3) Auger refusal at 6 feet below ground surface on inferred bedrock or boulder.

DOWN TO EARTH CONSULTING, LLC

PROJECT

PROPOSED TELECOMMUNICATION TOWER
MASON HILL ROAD
NORTHFIELD, CONNECTICUT

BORING NO. P-3
SHEET 1 of 1
FILE NO. 0218-009.00
CHKD. BY DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan
Driller	Jim Casson	Ground Surface El.	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023
		Datum	Not Available
		Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)

Date	Time	Depth (ft)	Elev.	Stabilization Time

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA
1								
2								
3								
4								SOIL
5								
6								
7								
8							END OF EXPLORATION AT 7 FEET BELOW GROUND SURFACE	INFERRED BEDROCK OR BOULDER
9								
10								
11								
12								
13								
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15								
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20								
21								
22								
23								
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36								
37								
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39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal at 7 feet below ground surface on inferred bedrock or boulder.

DOWN TO EARTH CONSULTING, LLC

PROJECT		
PROPOSED TELECOMMUNICATION TOWER	BORING NO.	P-4
MASON HILL ROAD	SHEET	1 of 1
NORTHFIELD, CONNECTICUT	FILE NO.	0218-009.00
	CHKD. BY	DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	Jim Casson	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023	Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION					SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)		
1								SOIL
2								
3							END OF EXPLORATION AT 2.5 FEET BELOW GROUND SURFACE	INFERRED BEDROCK OR BOULDER
4								
5								
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal at 2.5 feet below ground surface on inferred bedrock or boulder.

DOWN TO EARTH CONSULTING, LLC

PROJECT

PROPOSED TELECOMMUNICATION TOWER
MASON HILL ROAD
NORTHFIELD, CONNECTICUT

BORING NO.	P-5
SHEET	1 of 1
FILE NO.	0218-009.00
CHKD. BY	DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	Jim Casson	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023	Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
			-	

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min /ft)	SAMPLE DESCRIPTION	STRATA
1								
2								
3								
4								SOIL
5								
6								
7								
8							END OF EXPLORATION AT 6.5 FEET BELOW GROUND SURFACE	INFERRED BEDROCK OR BOULDER
9								
10								
11								
12								
13								
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal at 7 feet below ground surface on inferred bedrock.

DOWN TO EARTH CONSULTING, LLC

PROJECT		BORING NO.	P-6
PROPOSED TELECOMMUNICATION TOWER		SHEET	1 of 1
MASON HILL ROAD		FILE NO.	0218-009.00
NORTHFIELD, CONNECTICUT		CHKD. BY	DFL

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	Jim Casson	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	10/13/2023	Date End	10/13/2023

Hammer Type:	Lever Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Track Mounted D50 Diedrich
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION					SAMPLE DESCRIPTION	STRATA
		Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)		
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								SOIL
11							END OF EXPLORATION AT 10 FEET BELOW GROUND SURFACE	
12								
13								
14								
15								
16								
17								
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20								
21								
22								
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SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal was not encountered within 10 feet.

APPENDIX 3 -

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations by Down To Earth Consulting, LLC (DTE). The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made.

Review

4. In the event that any changes in the nature, design or location of the proposed telecommunication structures is planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DTE. It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

Construction

5. It is recommended that this firm be retained to provide soil engineering services during construction of the earthworks and foundation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

6. This report has been prepared for the exclusive use of Centek Engineering, Inc. for specific application to the project noted in this geotechnical report in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

7. This soil and foundation engineering report has been prepared for this project by DTE. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.

8. This report may contain comparative cost estimates for the purpose of evaluating alternative foundation schemes. These estimates may also involve approximate quantity evaluations. It should be noted that quantity estimates may not be accurate enough for construction bids. Since DTE has no control over labor and materials cost and design, the estimates of construction costs have been made on the basis of experience. DTE does not guarantee the accuracy of cost estimates as compared to contractor's bids for construction costs.