

September 8, 2021

Via Hand Delivery

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

Re: **Docket No. 491 – Application of Celco Partnership d/b/a Verizon Wireless For A Certificate Of Environmental Compatibility And Public Need For The Construction, Maintenance And Operation Of A Wireless Telecommunications Facility At 110 Yantic Lane, Norwich, Connecticut**

Development and Management Plan Submission

Dear Ms. Bachman:

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

1. Final Development and Management (“D&M”) Plans prepared by On-Air Engineering, LLC for the approved telecommunications facility at 110 Yantic Lane, Norwich, Connecticut, incorporating the Council’s conditions of approval. Also enclosed are three (3) full size (24” x 36”) sets of D&M plans.
2. Tower and Foundation design and calculations dated July 28, 2021, prepared by ROHN Products LLC.
3. Geotechnical Engineering Report prepared by Atlantic Consulting & Engineering, LLC dated May 14, 2021.

Robinson+Cole

Melanie A. Bachman, Esq.
September 8, 2021
Page 2

Together, this information constitutes the final D&M Plan submission for the approved telecommunications facility at 110 Yantic Lane in Norwich, Connecticut.

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

KCB/kmd
Enclosures
Copy to:

Glenn Pianka, Bozrah First Selectman
Peter A. Nystrom, Norwich Mayor
Tim Parks, Verizon Wireless



**WIRELESS COMMUNICATIONS FACILITY
DEVELOPMENT AND MANAGEMENT PLAN
DOCKET NO. 491**

SITE NAME: NORWICH 4 CT

**110 YANTIC LANE
NORWICH, CT 06360**

PROJECT SUMMARY	
SITE NAME:	NORWICH 4 CT
SITE ADDRESS:	110 YANTIC LANE NORWICH, CT 06360
PROPERTY OWNER:	ROBERT W LARSEN 110 YANTIC LANE NORWICH, CT 06360
PARCEL ID:	65-2-1
TOWER COORDINATES:	41° 33' 08.50" N 72° 07' 33.20" W
APPLICANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 20 ALEXANDER DR. WALLINGFORD, CT 06492
VERIZON WIRELESS CONTACTS:	MIKE HUMPHREYS - CONSTRUCTION STRUCTURE CONSULTING - SITE ACQUISITION
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE, LLP (860) 275-8345



DRAWING SCHEDULE	
SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
C-0	SITE UTILITY PLAN
C-1	SITE PLAN
C-2	ENLARGED SITE PLANS
C-3	ENVIRONMENTAL NOTES & DETAILS
C-4	COMPOUND PLAN, NORTH ELEVATION & EQUIPMENT PLAN
C-5	ANTENNA PLAN & DETAILS
C-6	STRUCTURAL EQUIPMENT PLAN & ELEVATIONS
C-7	STRUCTURAL DETAILS
C-8	SITE DETAILS & CSC REPORTING NOTES

PROJECT DESCRIPTION
- INSTALLATION OF A 110 FT. MONOPOLE/TOWER AND FENCED-IN COMPOUND AT GRADE
- INSTALLATION OF OUTDOOR CABINETS AND A PROPANE FUELED BACK-UP EMERGENCY GENERATOR ON A 18'-0"x10'-0" EQUIPMENT PAD WITHIN THE COMPOUND
- INSTALLATION OF (6) PANEL ANTENNAS AND ASSOCIATED DEVICES ON THE MONOPOLE
- INSTALLATION OF CABLING FROM EQUIP. CABINETS TO ANTENNAS
- ELECTRICAL & TELEPHONE CONNECTIONS TO EXISTING UTILITY DEMARCATION POINTS

Cellco Partnership
d/b/a Verizon Wireless



WIRELESS COMMUNICATIONS FACILITY
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

On Air Engineering, LLC

88 Foundry Pond Road
Cold Spring, NY 10516
onair@optonline.net
201-456-4624

LICENSURE



DAVID WEINPAHL, P.E.
CT LIC. NO. 22144

NO. DATE SUBMISSIONS

0	08.20.21	D&M REVIEW SET
1	09.02.21	D&M FILING SET

DRAWN BY: MF
CHECKED BY: DW

**NEW BUILD
MACRO**

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NORWICH 4 CT

PROJECT INFORMATION:
**110 YANTIC LANE
NORWICH, CT 06360**

DRAWING TITLE:
TITLE SHEET

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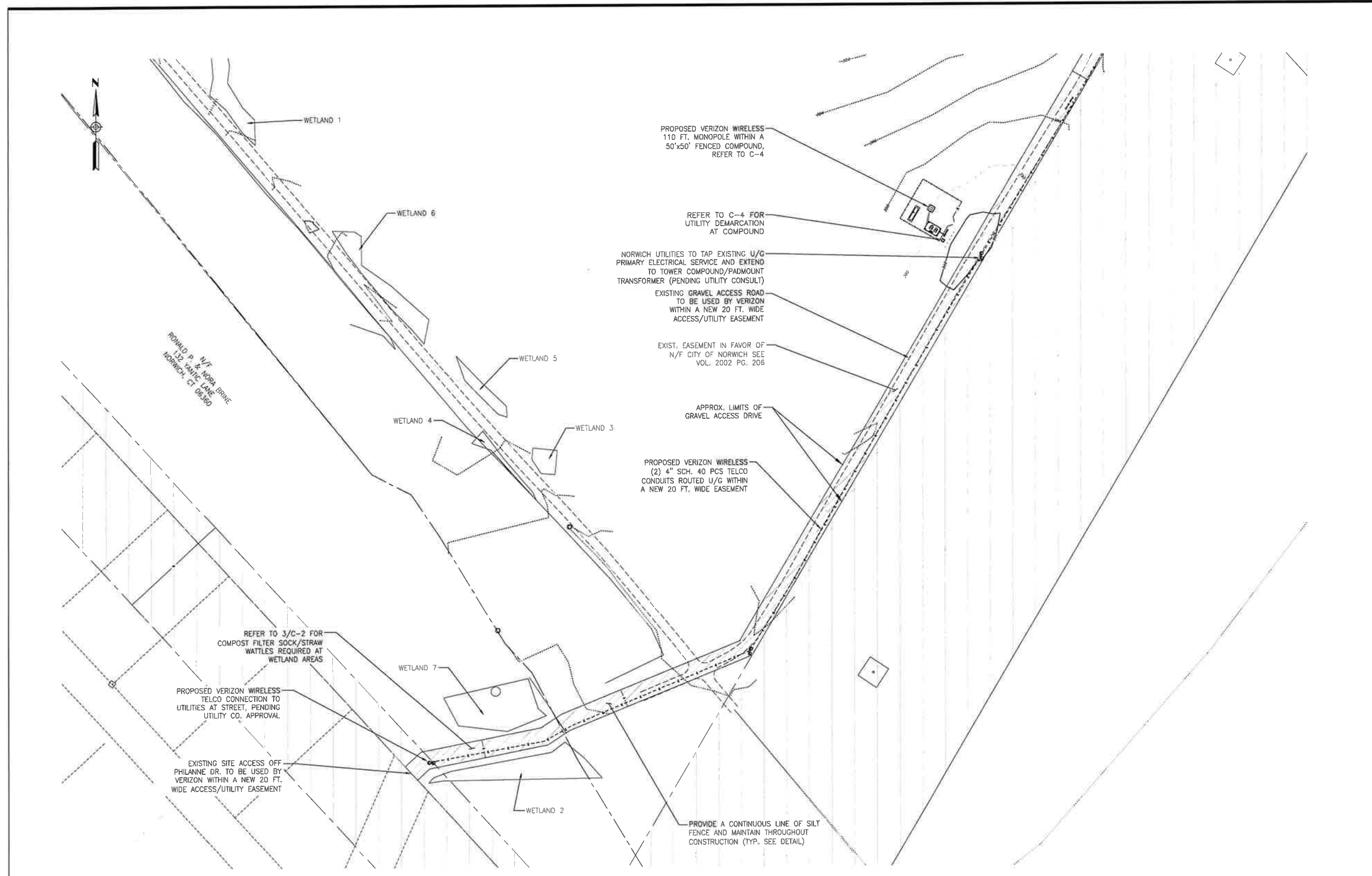
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MACRO**

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NORWICH 4 CT

PROJECT INFORMATION:
**110 YANTIC LANE
NORWICH, CT 06360**

DRAWING TITLE:
SITE UTILITY PLAN

SHEET NUMBER:
C-0



1 SITE UTILITY PLAN
C-0 Scale: 1"=30'



GENERAL NOTES

CONSTRUCTION NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL MEASUREMENTS. ANY VARIATIONS FROM CONDITIONS SHOWN ARE TO BE BROUGHT TO THE ATTENTION OF THE DESIGN PROFESSIONAL PRIOR TO BIDDING FOR RESOLUTION IN ACCORDANCE WITH CONTRACT DOCUMENT REQUIREMENTS.
2. ALL REQUIRED PERMITS ARE TO BE OBTAINED BY THE CONTRACTOR AT HIS EXPENSE.
3. ALL DIMENSIONS ARE TO THE OUTSIDE FACE OF THE NOTED ITEM.
4. WORK LIMITS SHALL BE AS NOTED. ALL ITEMS DISTURBED BY ANY AND ALL CONSTRUCTION ACTIVITIES SHALL BE RESTORED SUBSTANTIALLY TO THE CONDITION THEY EXISTED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, TO THE OWNERS APPROVAL.
5. THE CONTRACTOR AT A MINIMUM SHALL MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AS DIRECTED, AS NECESSARY, AND IN ACCORDANCE WITH CONTRACT REQUIREMENTS, AND SHALL CHECK ALL SYSTEMS ON A DAILY BASIS TO ENSURE THE PREVENTION OF SEDIMENT TRANSPORT AND THE CONTROL OF EROSION.
6. THE LOCATIONS OF SITE UTILITIES ARE APPROXIMATE. PRIOR TO COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL PLACE A "CALL BEFORE YOU DIG" (CBYD) REQUEST (PHONE: 1-800-922-4455). THE PROTECTION OF EXISTING UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AT HIS EXPENSE.
7. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL ACTIVITY ON THE SUBJECT PROPERTY. ALL FUEL, OIL, PAINTS, OR OTHER HAZARDOUS MATERIALS STORED ON-SITE DURING THE CONSTRUCTION PERIOD SHOULD BE IN A SECONDARY CONTAINER AND REMOVED TO A LOCKED INDOOR AREA WITH AN IMPERVIOUS FLOOR WHEN THEY ARE NOT BEING USED. BULK FUEL FOR CONSTRUCTION EQUIPMENT SHALL NOT BE STORED ON-SITE. IF THIS BECOMES NECESSARY, FUEL SHOULD BE LOCATED WITHIN A SECONDARY CONTAINMENT SYSTEM TO PREVENT LEAKS FROM ENTERING THE ENVIRONMENT, SHELTERED FROM PRECIPITATION, AND IN A SECURED AREA. A SUPPLY OF ADSORBENT SPILL RESPONSE MATERIAL SHOULD BE AVAILABLE, ESPECIALLY DURING REFUELING, TO CLEAN UP ANY SPILLS OF HAZARDOUS MATERIAL SUCH AS GASOLINE OR OIL. IF SPILL OCCURS CALL 24-HOURS A DAY AT (860) 424-3338 TO ALERT SPILL RESPONSE TEAM.
8. THE CONTRACTOR MUST MAINTAIN (REPAIR/REPLACE WHEN NECESSARY) THE SILTATION CONTROL DEVICES, AS SHOWN ON THIS SHEET AND DETAILS SHEETS, UNTIL ALL INSTALLATION IS COMPLETED AND ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.
10. INDICATED UNDERGROUND UTILITIES ARE BASED ON INDICATED MAP REFERENCES. THE LOCATIONS ARE CONSIDERED APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL CALL 1-800-922-4455 AND HAVE ALL UTILITIES MARKED ON THE GROUND.
11. ALL MATERIAL EXCAVATION, FILLING SHALL BE IN CONFORMANCE WITH APPROPRIATE SECTIONS OF THE CITY OF NORWICH REGULATIONS AND OSHA WORKPLACE SAFETY REGULATIONS.
12. CONTRACTOR SHALL USE WORK METHODS APPROVED BY OSHA FOR ALL TRENCHING AND EXCAVATION.
13. NO GRADED EARTH SLOPE SHALL EXCEED A 3H:1V SLOPE, UNLESS NOTED.
14. PROVIDE POSITIVE DRAINAGE OF FINISHED GRADE AT ALL DISTURBED AREAS AS INTENDED BY THESE PLANS.
15. ALL SITE WORK SHALL BE IN CONFORMANCE WITH CONN. D.O.T. FORM B17 OR LATEST EDITION AS A MINIMUM ACCEPTABLE STANDARD.

SURVEY REFERENCE

THIS MAP IS BASED ON A BOUNDARY SURVEY PREPARED BY J.R. RUSSO & ASSOCIATES, DATED 11-9-16, WHICH WAS PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THRU 20-300B-20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPT. 26, 1999. THE LIMITED TOPOGRAPHIC SURVEY PORTION OF THE ENLARGED C-2 SITE PLAN CONFORMS TO A VERTICAL ACCURACY OF CLASS T-2 AND IS INTENDED TO BE USED TO DEPICT A PROPOSED TELECOMMUNICATIONS SITE.

THE PROPERTY/BOUNDARY LINES DEPICTED HEREON ARE COMPILED FROM OTHER MAPS, DEEDS AND LIMITED FIELD SURVEY. THESE LINES ARE NOT TO BE CONSIDERED AS A BOUNDARY OPINION AND ARE SUBJECT TO CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE. PROPERTY MAY BE SUBJECT TO ENCUMBRANCES, EASEMENTS, RIGHTS OF WAY AS A TITLE SEARCH REPORT MAY DISCLOSE. PLANIMETRIC FEATURES SUCH AS PARKING AREAS, PAVED DRIVE ARE COMPILED FROM OTHER MAPS AND LIMITED FIELD SURVEY.

NORTH ORIENTATION AND HORIZONTAL DATUM BASED ON NAD 83. ELEVATIONS BASED ON NAVD 1988 DATUM.

PARCEL OWNER OF RECORD: ROBERT W. LARSEN

PARCEL KNOWN AS 110 YANTIC LANE

PARCEL AREA= 115± ACRES

PARCEL IS IN THE RESIDENTIAL ZONING DISTRICT R-80.

MAP 65, BLOCK 2, LOT 1, CITY OF NORWICH GIS ASSESSORS MAP

PARCEL IS NOT IN A FLOOD ZONE BASED ON THE FLOOD INSURANCE RATE MAPS, NEW LONDON COUNTY, CONNECTICUT, ALL JURISDICTIONS, & 09011C0211C, MAP EFFECTIVE DATES JULY 18, 2011, BY FEDERAL EMERGENCY MANAGEMENT AGENCY.

PARCEL IS SUBJECT TO RIGHTS AND EASEMENTS AS OF RECORD MAY APPEAR.

NOT ALL IMPROVEMENTS ARE NOT SHOWN.

Cellco Partnership
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NEW BUILD
MACRO

SITE NAME:

NORWICH 4 CT

PROJECT INFORMATION:

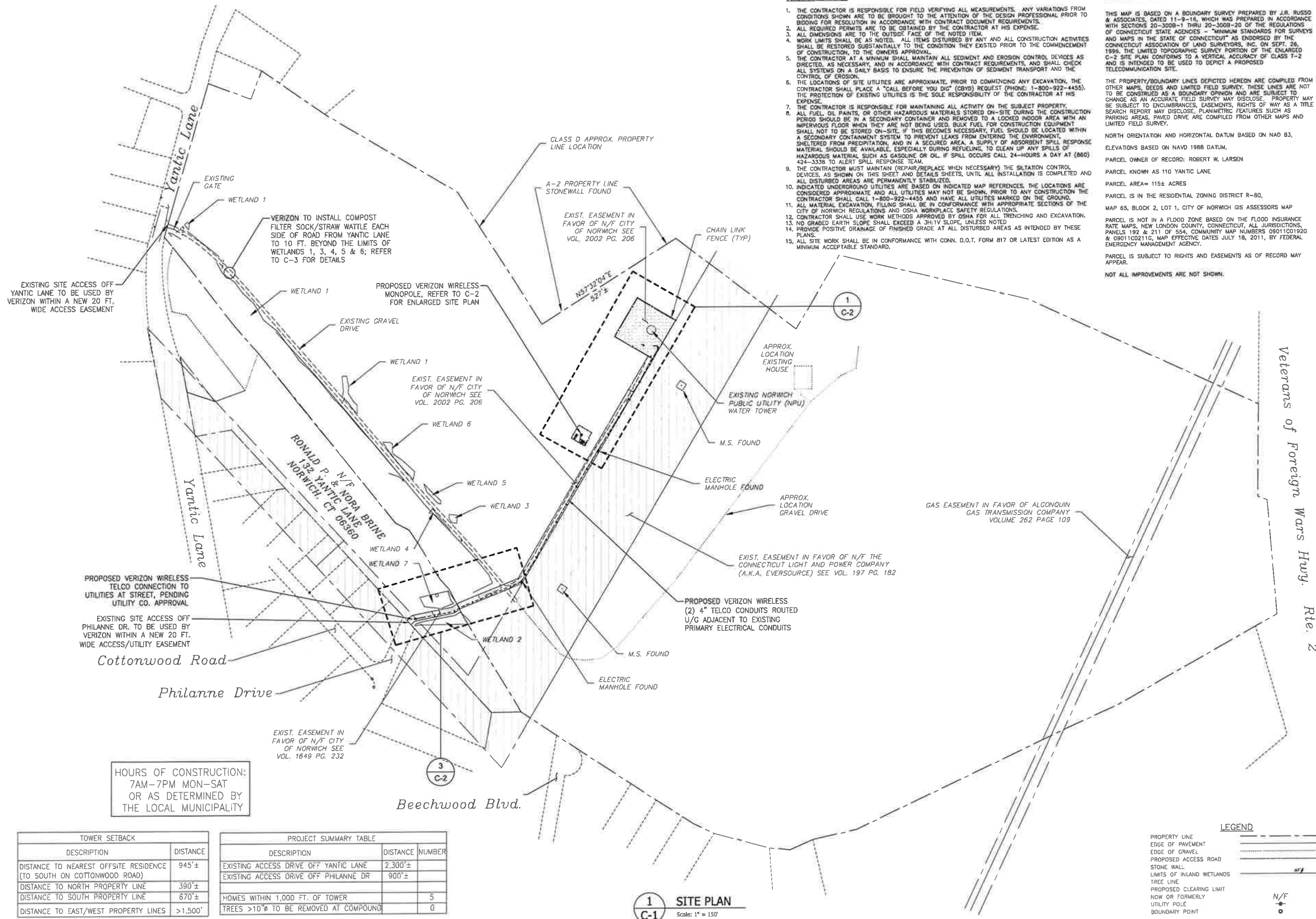
110 YANTIC LANE
NORWICH, CT 06360

DRAWING TITLE:

SITE PLAN

SHEET NUMBER:

C-1



HOURS OF CONSTRUCTION:
7AM-7PM MON-SAT
OR AS DETERMINED BY
THE LOCAL MUNICIPALITY

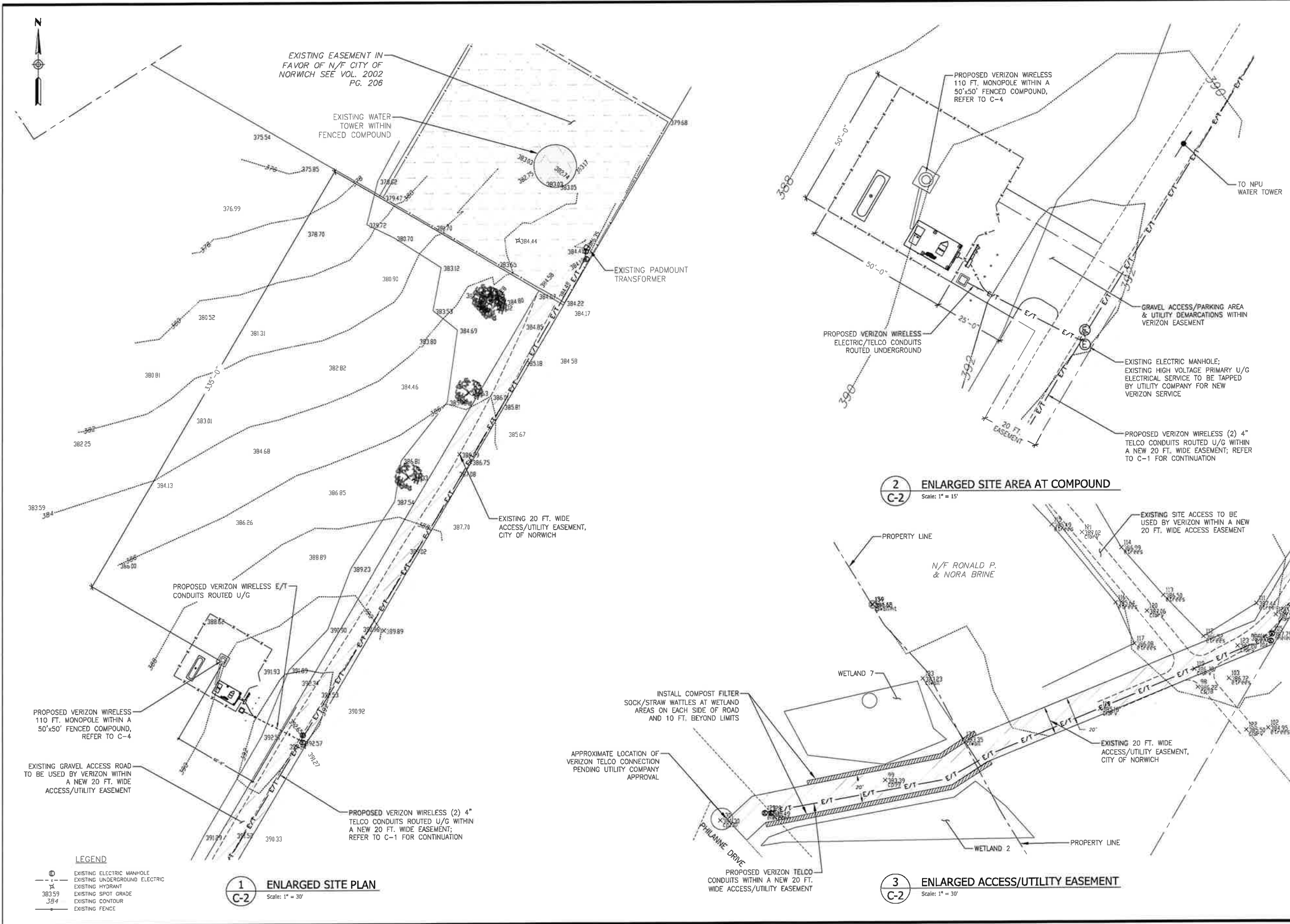
TOWER SETBACK	
DESCRIPTION	DISTANCE
DISTANCE TO NEAREST OFFSITE RESIDENCE (TO SOUTH ON COTTONWOOD ROAD)	945'±
DISTANCE TO NORTH PROPERTY LINE	390'±
DISTANCE TO SOUTH PROPERTY LINE	670'±
DISTANCE TO EAST/WEST PROPERTY LINES	>1,500'

PROJECT SUMMARY TABLE		
DESCRIPTION	DISTANCE	NUMBER
EXISTING ACCESS DRIVE OFF YANTIC LANE	2,300'±	
EXISTING ACCESS DRIVE OFF PHILANNE DR	900'±	
HOMES WITHIN 1,000 FT. OF TOWER		5
TREES >10" Ø TO BE REMOVED AT COMPOUND		0

1 SITE PLAN
Scale: 1" = 150'

LEGEND

- PROPERTY LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- PROPOSED ACCESS ROAD
- STONE WALL
- LIMITS OF INLAND WETLANDS
- TREE LINE
- PROPOSED CLEARING LIMIT
- NOW OR FORMERLY UTILITY POLE
- BOUNDARY POINT



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verizon

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MACRO**

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NORWICH 4 CT

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NORWICH, CT 06360**

DRAWING TITLE:
**ENLARGED
SITE PLANS**

SHEET NUMBER:
C-2

ENVIRONMENTAL NOTES

WETLAND PROTECTION PLAN

AS A RESULT OF THE PROPOSED DEVELOPMENT'S LOCATION IN THE VICINITY OF WETLANDS, THE FOLLOWING BEST MANAGEMENT PRACTICES ("BMPs") ARE RECOMMENDED TO AVOID UNINTENTIONAL IMPACT TO WETLAND HABITATS DURING CONSTRUCTION ACTIVITIES.

A WETLAND SCIENTIST FROM ALL-POINTS TECHNOLOGY CORP. (APT) EXPERIENCED IN COMPLIANCE MONITORING OF CONSTRUCTION ACTIVITIES WILL SERVE AS THE ENVIRONMENTAL MONITOR FOR THIS PROJECT TO ENSURE THAT THE FOLLOWING BMPs ARE IMPLEMENTED PROPERLY. THIS PROTECTION PROGRAM SHALL BE IMPLEMENTED REGARDLESS OF TIME OF YEAR THE CONSTRUCTION ACTIVITIES OCCUR. ALL-POINTS TECHNOLOGY CORPORATION, P.C. (APT) WILL SERVE AS THE ENVIRONMENTAL MONITOR FOR THIS PROJECT TO ENSURE THAT WETLAND PROTECTION MEASURES ARE IMPLEMENTED PROPERLY. 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.

THE PROPOSED WETLAND PROTECTION PROGRAM CONSISTS OF SEVERAL COMPONENTS INCLUDING: EDUCATION OF ALL CONTRACTORS AND SUB-CONTRACTORS PRIOR TO INITIATION OF WORK ON THE SITE; USE OF APPROPRIATE EROSION CONTROL MEASURES TO CONTROL AND CONTAIN EROSION WHILE AVOIDING/MINIMIZING WILDLIFE ENTANGLEMENT; PERIODIC INSPECTION AND MAINTENANCE OF EROSION CONTROLS FOR THE PURPOSES OF ENSURING PROTECTION OF WETLAND RESOURCES; 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 THE ENVIRONMENTAL MONITOR. THIS ORIENTATION AND EDUCATIONAL SESSION WILL CONSIST OF INFORMATION STRESSING THE ENVIRONMENTALLY SENSITIVE NATURE OF THE PROJECT AND PROXIMITY TO WETLAND RESOURCES AND THE NEED TO ENSURE THEIR PROTECTION THROUGHOUT THE DURATION OF THE CONSTRUCTION.
- b. THE ENVIRONMENTAL MONITOR WILL ALSO POST CAUTION SIGNS THROUGHOUT THE PROJECT SITE AND MAINTAIN THEM FOR THE DURATION OF CONSTRUCTION TO PROVIDE NOTICE OF THE ENVIRONMENTALLY SENSITIVE NATURE OF THE WORK AREA.
- c. THE CONTRACTOR WILL BE PROVIDED WITH THE ENVIRONMENTAL MONITOR'S CELL PHONE AND EMAIL CONTACT INFORMATION TO IMMEDIATELY REPORT ANY FAILURES OF EROSION CONTROLS OR RELEASES OF SEDIMENT INTO NEARBY WETLANDS.

2. EROSION AND SEDIMENTATION CONTROLS

- a. PLASTIC NETTING WITH LARGE MESH OPENINGS (> 1/4") 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 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 WITH A MESH SIZE <1/4" SUCH AS THAT TYPICALLY USED IN COMPOST FILTER SOCKS TO AVOID/MINIMIZE WILDLIFE ENTANGLEMENT.
- b. INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS, REQUIRED FOR EROSION CONTROL COMPLIANCE, SHALL BE PERFORMED BY THE CONTRACTOR FOLLOWING CLEARING ACTIVITIES AND PRIOR TO ANY EARTHWORK IN ACCORDANCE WITH THE PROJECT SITE PLANS. THE ENVIRONMENTAL MONITOR WILL INSPECT THE WORK ZONE AREA PRIOR TO AND FOLLOWING EROSION CONTROL BARRIER INSTALLATION TO ENSURE IT HAS BEEN SATISFACTORILY INSTALLED PRIOR TO THE INITIATION OF EARTHWORK.
- c. THE CONTRACTOR SHALL HAVE ADDITIONAL EROSION AND SEDIMENTATION CONTROLS SHOULD FIELD CONDITIONS WARRANT EXTENDING THE CONTROLS AS RECOMMENDED BY THE ENVIRONMENTAL MONITOR.
- d. IN ADDITION TO REQUIRED DAILY INSPECTION BY THE CONTRACTOR, THE EROSION AND SEDIMENTATION CONTROLS WILL BE INSPECTED BY THE CONTRACTOR FOR TEARS OR BREECHEES IN THE FABRIC FOLLOWING INSTALLATION AND FOLLOWING STORM EVENTS THAT PRODUCE A DISCHARGE. INSPECTIONS WILL BE CONDUCTED PERIODICALLY BY THE ENVIRONMENTAL MONITOR THROUGHOUT THE COURSE OF THE CONSTRUCTION PROJECT.
- e. ALL EROSION CONTROL MEASURES 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 MIGRATING WILDLIFE. SEED FROM SEEDING OF SOILS SHALL NOT BE SPREAD OVER FIBER ROLLS/WATTLES AS IT MAKES THEM HARDER TO REMOVE ONCE SOILS ARE STABILIZED BY VEGETATION.

3. PETROLEUM MATERIALS STORAGE AND SPILL PREVENTION

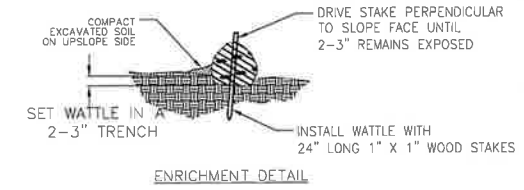
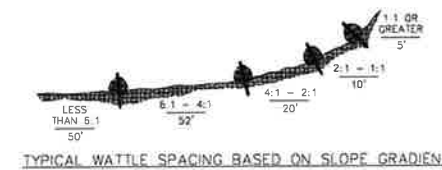
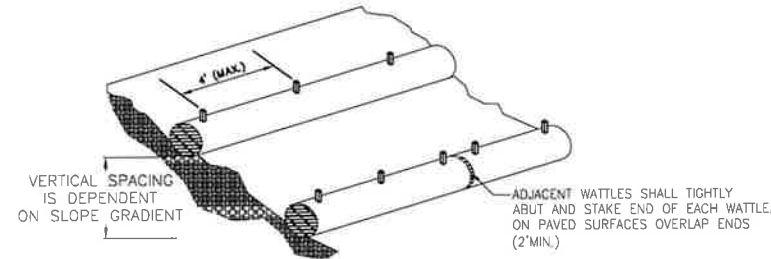
- a. CERTAIN PRECAUTIONS ARE NECESSARY TO STORE PETROLEUM MATERIALS, REFUEL AND CONTAIN AND PROPERLY CLEAN UP ANY INADVERTENT FUEL OR PETROLEUM (I.E., OIL, HYDRAULIC FLUID, ETC.) SPILL DUE TO THE PROJECT'S LOCATION IN PROXIMITY TO SENSITIVE WETLAND RESOURCES.
- b. A SPILL CONTAINMENT KIT CONSISTING OF 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. 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 TAKE PLACE ON AN IMPERVIOUS PAD WITH SECONDARY CONTAINMENT DESIGNED TO CONTAIN FUELS.
 - 2. ANY REFUELING DRUMS/TANKS 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 OR WATERCOURSES.
 - 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 WATERWAYS OR 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 THE 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 REQUIRED. REPORTING

4. REPORTING:

- a. INSPECTION REPORTS (BRIEF NARRATIVE AND APPLICABLE PHOTOS) WILL BE PREPARED BY THE ENVIRONMENTAL MONITOR DOCUMENTING EACH INSPECTION AND SUBMITTED TO THE PERMITTEE FOR COMPLIANCE VERIFICATION. ANY NON-COMPLIANCE OBSERVATIONS OF EROSION CONTROL MEASURES OR EVIDENCE OF EROSION OR SEDIMENT RELEASE WILL BE IMMEDIATELY REPORTED TO THE PERMITTEE AND ITS CONTRACTOR AND INCLUDED IN THE REPORTS.
- b. ANY INCIDENTS OF SIGNIFICANT RELEASE OF SEDIMENT OR OTHER MATERIALS INTO WETLAND RESOURCE AREAS SHALL BE REPORTED BY THE PERMITTEE WITHIN 24 HOURS TO THE CONNECTICUT SITING COUNCIL.
- c. ANY OBSERVATIONS OF RARE SPECIES WILL BE REPORTED TO THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION'S NATURAL DIVERSITY DATA BASE PROGRAM.
- d. FOLLOWING COMPLETION OF THE PROJECT, A SUMMARY REPORT WILL BE PREPARED BY THE ENVIRONMENTAL MONITOR DOCUMENTING COMPLIANCE WITH THE WETLAND PROTECTION PLAN AND SUBMITTED TO THE PERMITTEE, WHO SHALL SUBMIT A COPY TO THE CONNECTICUT SITING COUNCIL.

SEEDING SPECIFICATIONS

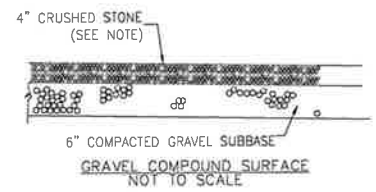
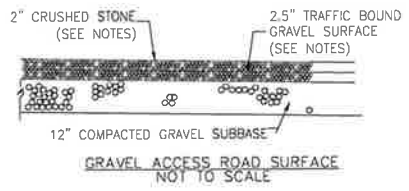
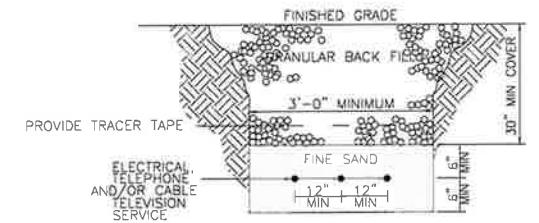
- A. IF GROUND HAS BEEN PREVIOUSLY MULCHED, MULCH MUST BE REMOVED OR ADDITIONAL NITROGEN MUST BE ADDED.
- B. REMOVE ALL SURFACE STONES 2" OR LARGER AS WELL AS ALL DEBRIS SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, CLUMPS, OR OTHER UNSUITABLE MATERIAL.
- C. APPLY FERTILIZER AT 7.5 POUNDS PER 1,000 SQUARE FEET AND LIME AT 200 POUNDS PER 1,000 SQUARE FEET UNLESS SOIL TESTING FOR REQUIREMENTS IS PERFORMED.
- D. NO MOWING IS TO BE UNDERTAKEN UNTIL THE MAJORITY OF THE VEGETATION IS AT LEAST 6" HIGH. MOWING SHOULD CUT THE TOP 1/3 OF VEGETATION. DO NOT UNDER ANY CIRCUMSTANCES CUT VEGETATION BELOW 3".
- E. DO NOT APPLY ANY FORM OF WEED CONTROL UNTIL GRASS HAS BEEN MOWED AT LEAST 4 TIMES.
- F. THESE SEEDING MEASURES ARE NOT TO BE USED ON SLOPES IN EXCESS OF 2:1 GRADING.
- G. PERMANENT SEEDING MEASURES ARE TO BE USED INSTEAD OF TEMPORARY SEEDING MEASURES WHERE WORK IS TO BE SUSPENDED FOR A PERIOD OF TIME LONGER THAN 1 YEAR.
- H. IF THERE IS NO EROSION, BUT SEED SURVIVAL IS LESS THAN 100 PLANTS PER SQUARE FOOT AFTER 4 WEEKS OF GROWTH, RE-SEED AS PLANTING SEASON ALLOWS.
- I. ALL DISTURBED AREAS OUTSIDE THE PAVEMENT AREA SHALL BE LOAMED AND SEEDDED IN ACCORDANCE WITH THE SUGGESTED SEEDING MIXTURES TABLE.



STRAW WATTLE NOTES:

- 1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP BY 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP-SLOPE FROM THE ANCHOR TRENCH.
- 2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT THE SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
- 3. SECURE THE WATTLE WITH 24" LONG STAKES EVERY 3-4' WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLES LEAVING 2-3" OF STAKE EXTENDING ABOVE. THE WATTLE STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.
- 4. SECURE WATTLES PLACED ON PAVED SURFACES WITH SANDBAGS SPACED AT AN INTERVAL SUFFICIENT TO PREVENT MOVEMENT OF WATTLE AND TO ENSURE THAT ENDS OF ADJACENT WATTLES REMAIN TIGHTLY ABUTTED.

STRAW WATTLE INSTALLATION



NOTE:

- 1. TRAFFIC BOUND GRAVEL SURFACE SHALL MEET CT DOT STANDARD SPECIFICATIONS M.02.06 GRADATION, GRADING "C".
- 2. CRUSHED STONE SHALL MEET CT DOT STANDARD SPECIFICATIONS M.01.01 NO.3.

NOTE:

- 1. CRUSHED STONE SHALL MEET CT DOT STANDARD SPECIFICATIONS M.01.01 NO.3.

SUGGESTED SEEDING MIXTURES AND PRACTICES

AREAS WHERE SEED MIX APPLIES	SEEDING MIXTURES BY WEIGHT	RATE PER 1,000 SQ. FT.	SEEDING DATES
ALL LAWN AREAS	RED FESCUES 45%	1 LBS.	APRIL 1 - JUNE 15 OR AUG. 15 - OCT. 1
	KENTUCKY BLUEGRASS 45%		
	PERENNIAL RYEGRASS 10%		
ROAD CUTS, FILLS, DIVERSION DITCHES, & STORMWATER BASINS	KENTUCKY TALL FESCUE 47% REDTOP 6% CREEPING RED FESCUE 47%	0.95 LBS.	APRIL 1 - JUNE 15 OR AUG. 15 - OCT. 1
WHERE TREES ARE TO BE RETAINED, THE SEED MIXTURE SHOULD BE ADAPTED FOR SHADY CONDITIONS.			
TEMPORARY SEEDING	ANNUAL RYEGRASS OR PERENNIAL RYEGRASS	1-1/2 LBS.	WITHIN 7 DAYS AFTER SUSPENSION OF GRADING WORK

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201-456-4624

LICENSURE



DAVID WEINPAIL, P.E.
CT LIC. NO. 22144

NO.	DATE	SUBMISSIONS
0	08.20.21	D&M REVIEW SET
1	09.02.21	D&M FILING SET

DRAWN BY:	CHECKED BY:
MF	DW

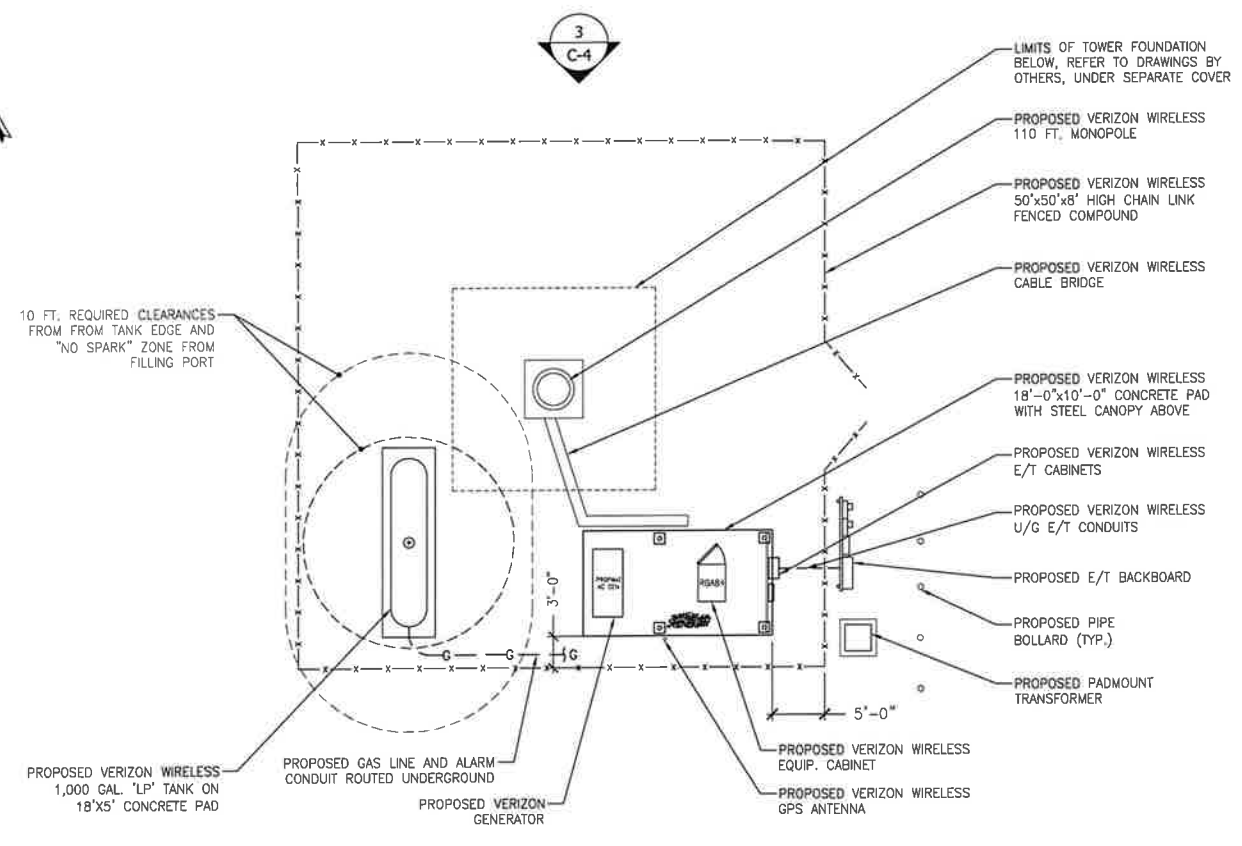
**NEW BUILD
MACRO**

SITE NAME:
NORWICH 4 CT

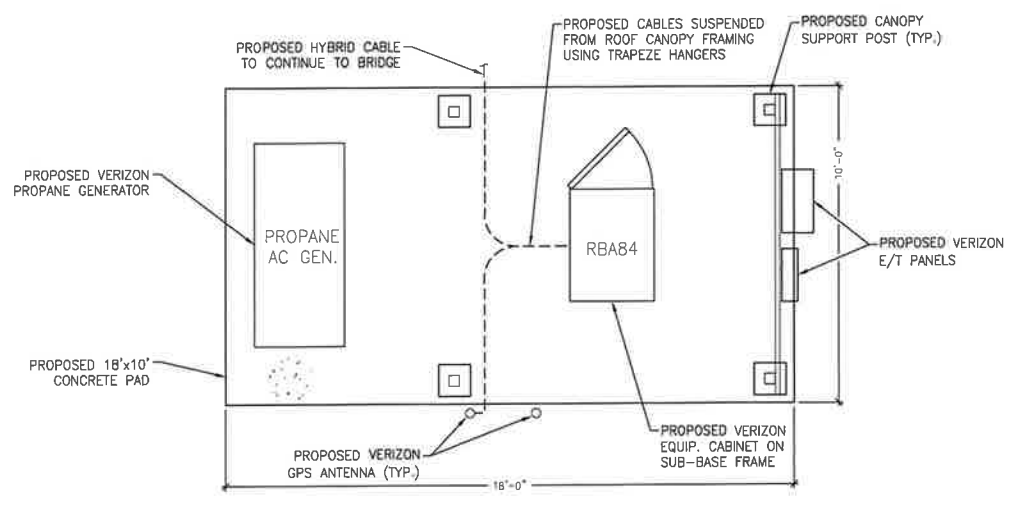
PROJECT INFORMATION:
**110 YANTIC LANE
NORWICH, CT 06360**

DRAWING TITLE:
**ENVIRONMENTAL
NOTES & DETAILS**

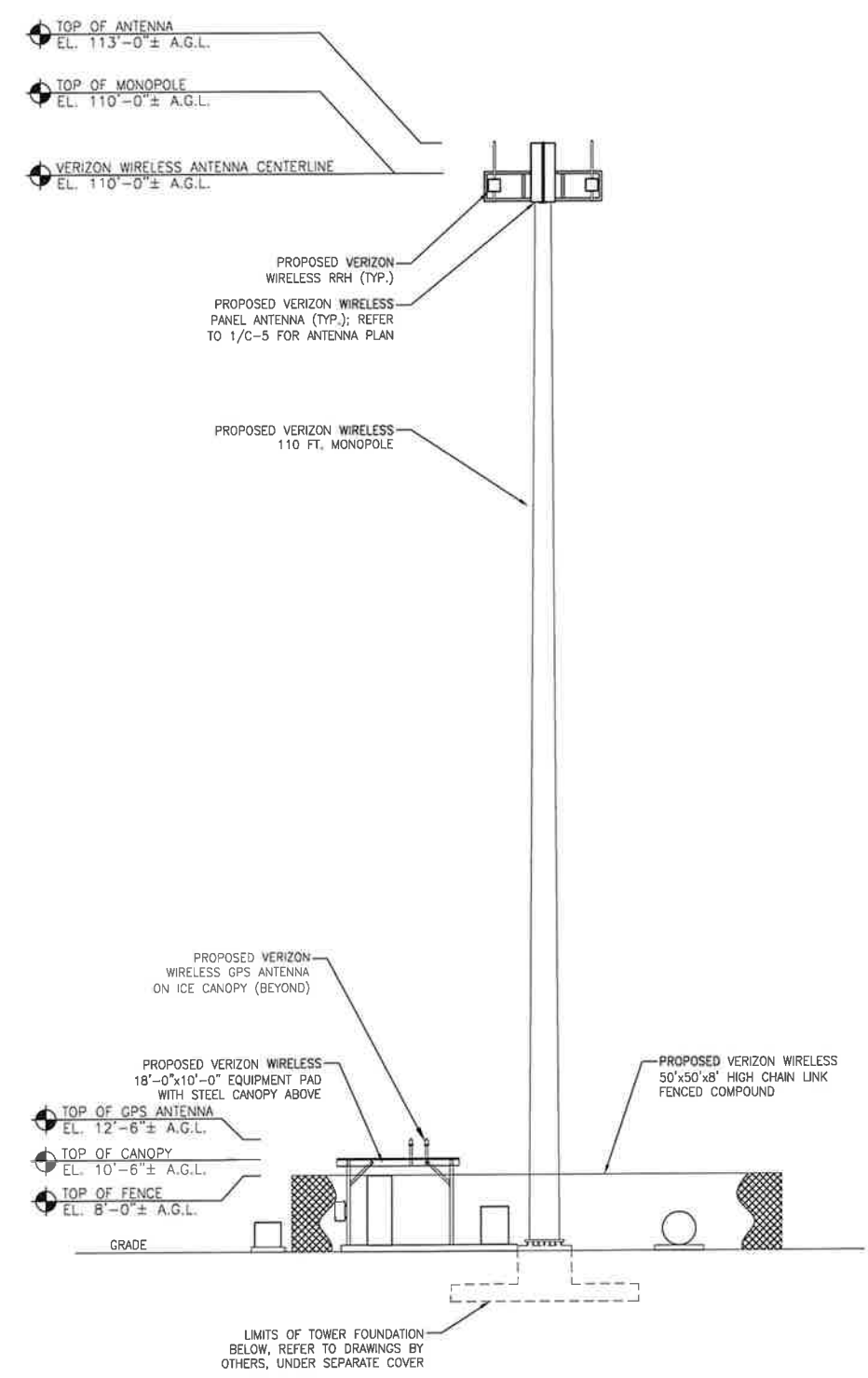
SHEET NUMBER:
C-3



1
C-4 **COMPOUND PLAN**
Scale: 1/8" = 1'-0"



2
C-4 **ENLARGED COMPOUND PLAN**
Scale: 3/8" = 1'-0"



3
C-4 **NORTH ELEVATION**
Scale: 1/8" = 1'-0"

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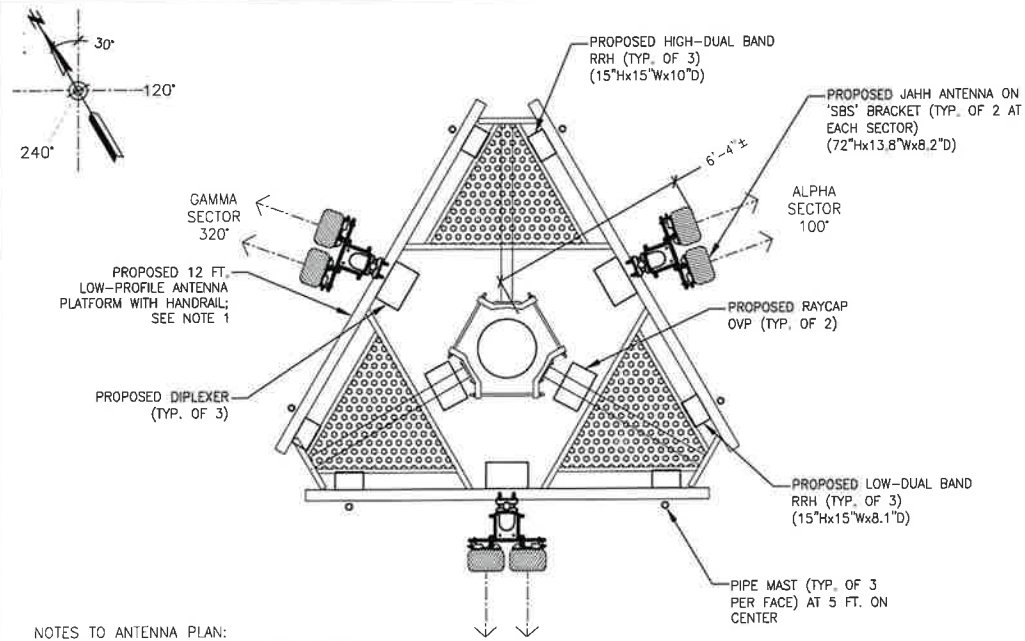
**NEW BUILD
MACRO**

SITE NAME:
NORWICH 4 CT

PROJECT INFORMATION:
**110 YANTIC LANE
NORWICH, CT 06360**

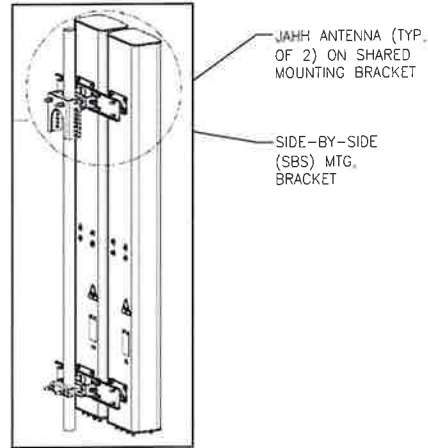
DRAWING TITLE:
**COMPOUND PLAN,
NORTH ELEVATION &
EQUIPMENT PLAN**

SHEET NUMBER:
C-4



NOTES TO ANTENNA PLAN:
 1. ANTENNA LOW-PROFILE PLATFORM SHALL BE SITE PRO #RMOP-4096-HK INCLUDING HANDRAIL AND BELOW PLATFORM SUPPORT; DESIGNED TO SUPPORT UP TO (12) PANEL ANTENNAS AND (12) RRH'S.
 2. CONTRACTOR SHALL SET BETA PLATFORM FACE AT 210° AZIMUTH.

1 ANTENNA PLAN @ 110 FT. A.G.L.
 Scale: 3/8" = 1'-0"



ANTENNA SPECIFICATIONS		
MODEL #	SIZE	ACCESSORY EQUIPMENT
JAHH-65B-R3B	72"Hx13.8"Wx8.2"D; 80 LBS.	SIDE-BY-SIDE MOUNTING BRACKET

2 ANTENNA DETAIL
 Scale: N.T.S.

RRH DIMENSIONS AWS/PCS (B66/B2)				
HEIGHT	WIDTH	DEPTH	WEIGHT	COLOR
15"	15"	10"	84.4 LBS	OFF WHITE

3 RRH DETAIL - AWS/PCS
 Scale: N.T.S.

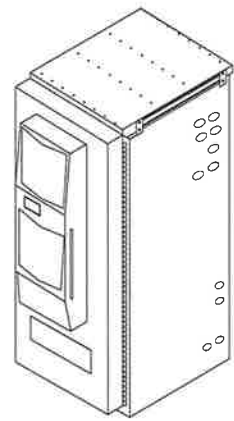
RRH DIMENSIONS 700/850 (B13/B5)				
HEIGHT	WIDTH	DEPTH	WEIGHT	COLOR
15"	15"	8.1"	70.3 LBS	OFF WHITE

4 RRH DETAIL - 700/850
 Scale: N.T.S.



EQUIPMENT SPECIFICATIONS				
MODEL #	LENGTH	WIDTH	HEIGHT	WEIGHT
QT025A 25kW	77"	34"	46"	1,414 LBS

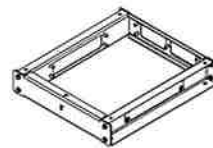
5 25kW NAT. GAS GENERATOR
 Scale: N.T.S.



EQUIPMENT SPECIFICATIONS				
MODEL #	HEIGHT	WIDTH	DEPTH	WEIGHT
RBA84	85.2"	32.0"	35.4"	1,955 LBS

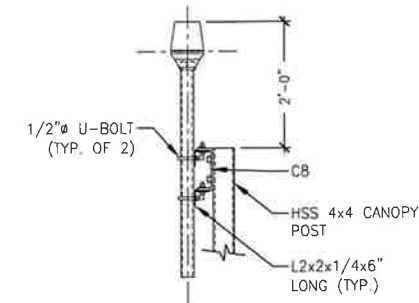
6 RBA84 EQUIPMENT CABINET
 Scale: 3/8" = 1'-0"

NOTE: (6/C-5)
 CABINET SPECIFICATION
 SUBJECT TO CHANGE AT
 TIME OF CONSTRUCTION
 PENDING AVAILABILITY



EQUIPMENT SPECIFICATIONS				
MODEL #	HEIGHT	WIDTH	DEPTH	WEIGHT
760238731	6"	32"	36.63"	-

7 RBA84 CABINET SUB-BASE (PLINTH)
 Scale: 3/8" = 1'-0"



NOTES:

- THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 2-1/2" DIAMETER, SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 24 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBURRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
- ATTACH TO POST NEAREST EQUIPMENT WITH CLEAN VIEW OF SKY.
- PRIOR TO INSTALLATION CONTRACTOR SHALL TEST GPS LOCATION WITH HAND HELD AND MOVE GPS ANTENNA TO OTHER ICE BRIDGE POSTS AS REQUIRED TO ACHIEVE ADEQUATE SIGNAL. FAILURE TO ACHIEVE ADEQUATE SIGNAL WITH A HAND HELD GPS SHALL BE REPORTED TO CONSTRUCTION MANAGER AND ENGINEER TO DETERMINE ALTERNATE INSTALLATION LOCATION FOR GPS ANTENNA.

8 GPS GROUNDING/MOUNTING BRACKET DETAIL
 Scale: N.T.S.

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LICENSE:



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DRAWN BY:

MF

CHECKED BY:

DW

NEW BUILD
 MACRO

SITE NAME:

NORWICH 4 CT

PROJECT INFORMATION:

110 YANTIC LANE
 NORWICH, CT 06360

DRAWING TITLE:

ANTENNA PLAN & DETAILS

SHEET NUMBER:

C-5

GENERAL STRUCTURAL NOTES:

1. ALL EQUIPMENT SHALL BE INSTALLED PLUMB AND LEVEL.
2. ALL WIDE FLANGE STRUCTURAL STEEL SHALL CONFORM WITH A992 SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATION. STEEL SHALL CONFORM TO ASTM A-36. PIPE SHALL CONFORM TO ASTM A-501 OR ASTM TYPE EOR S A-53 (GRADE B).
3. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325. THREAD EXCLUDED FROM SHEAR PLANE.
4. ALL STEEL EXPOSED TO MOISTURE SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND MANUFACTURED BY ZRC CHEMICAL PRODUCTS CO., QUINCY, MA, OR USE THERMAL SPRAYING WITH PLATZINC 85/15 AS MANUFACTURED BY PLATT BROTHERS & COMPANY, WATERBURY, CT 1-800-752-8276.
5. ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED.
6. ALL PIPE SIZES ARE NOMINAL DIAMETER (INSIDE DIAMETER).

CAST-IN-PLACE CONCRETE:

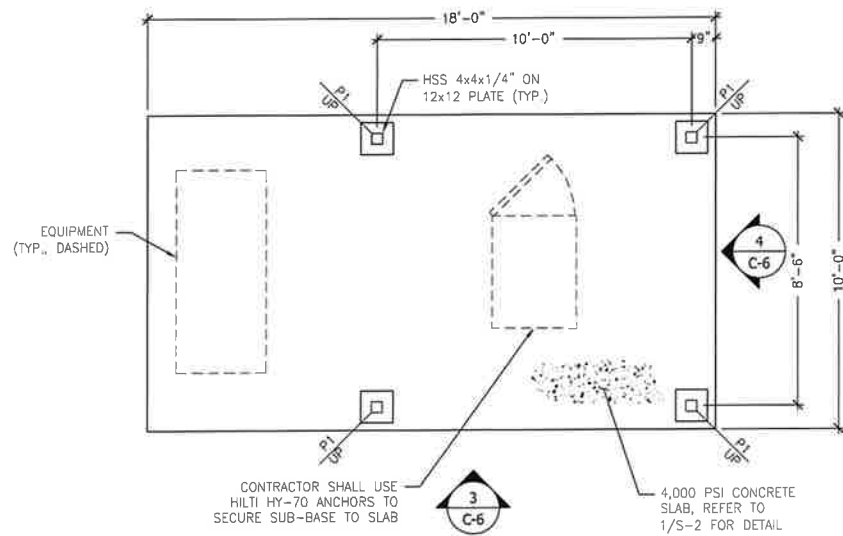
1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF THE ACI BUILDING CODE.
2. ALL CONCRETE SHALL ATTAIN 4000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. READY MIX: COMPLY WITH ACI-301 AND ASTM C-94. ALL CONCRETE EXPOSED TO THE GROUND OR WEATHER SHALL BE AIR ENTRAINED.
4. COLD WEATHER CONCRETE POURING SHALL BE IN ACCORDANCE WITH ACI-306.
5. THROUGHOUT CONSTRUCTION THE CONCRETE WORK SHALL BE ADEQUATELY PROTECTED AGAINST DAMAGE DUE TO EXCESSIVE LOADING, CONSTRUCTION EQUIPMENT, MATERIALS OR THODS, ICE, RAIN, SNOW, EXCESSIVE HEAT AND FREEZING TEMPERATURES.
6. EARLY DRYING OUT OF CONCRETE, ESPECIALLY DURING THE FIRST 24 HOURS, SHALL BE CAREFULLY GUARDED AGAINST. ALL SURFACES SHALL BE PROTECTED USING MOIST CURING OR A MEMBRANE CURING AGENT APPLIED AS SOON AS FORMS ARE REMOVED OR FINISHING OPERATIONS ARE COMPLETE. CARE SHALL BE EXERCISED SO AS NOT TO DAMAGE COATING.
7. APPLY NON-SLIP BROOM FINISH IMMEDIATELY AFTER TROWEL FINISHING.
8. CONTRACTOR TO COORDINATE REQUIREMENTS OF STRUCTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS INCLUDING ANY AND ALL PENETRATIONS SPECIFIED PRIOR TO POURING CONCRETE.
9. CONTRACTOR SHALL PROVIDE A 3/4" CHAMFER ON ALL CONCRETE SLABS.

REINFORCING:

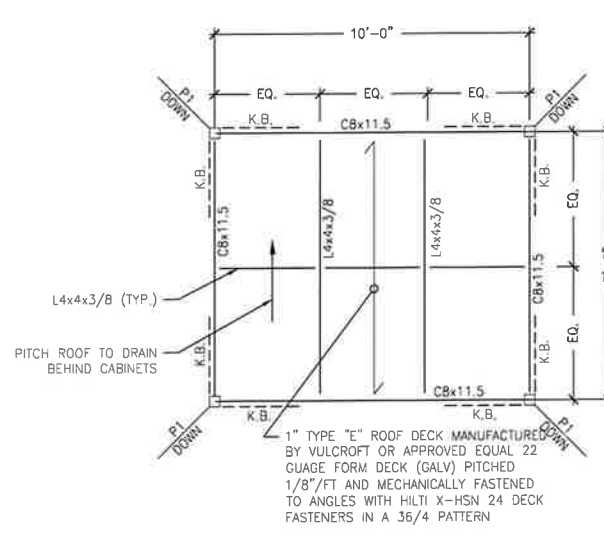
1. ALL REINFORCING BAR SHALL CONFORM TO THE LATEST ACI CODE AND DETAILING MANUAL.
2. WHERE REINFORCING IS CALLED OUT IN THE CONSTRUCTION DOCUMENTS IT SHALL BE 3" CLEAR COVER (MINIMUM UNLESS OTHERWISE NOTED).
3. ALL BARS SHALL BE ASTM A-615, GRADE 60.
4. WELDED WIRE FABRIC SHALL BE ASTM A-185.
5. WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL BE RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. LAP SHALL BE 40 BAR DIAMETERS.

FOUNDATION

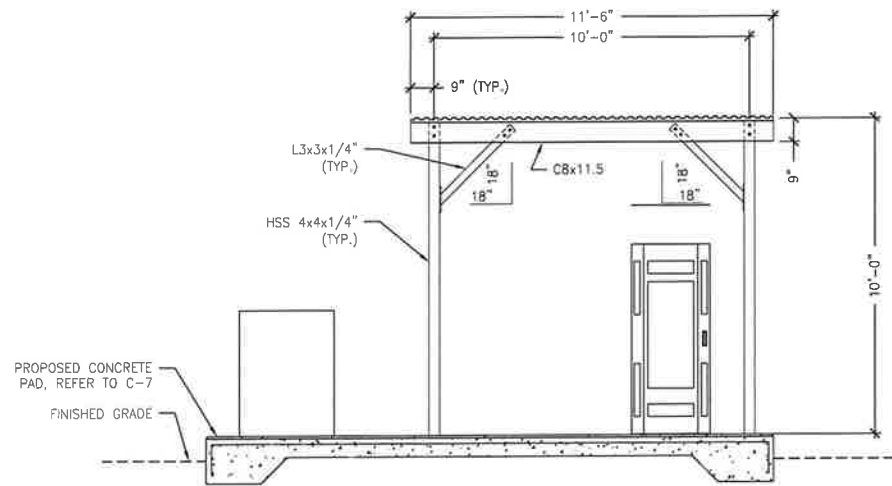
FOOTINGS SHALL BEAR ON UNDISTURBED SOIL AND /OR SUPERVISED COMPACTED FILL, FREE OF FROST, HAVING A MINIMUM ALLOWABLE BEARING CAPACITY OF 1 1/2 TONS PER SQUARE FOOT



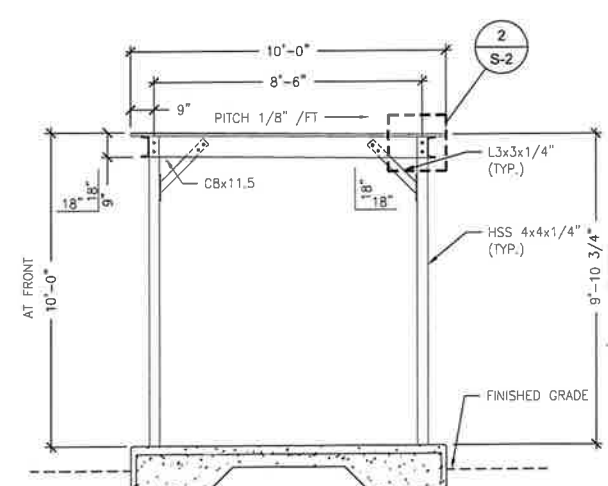
1 EQUIPMENT PLAN
Scale: 1/4" = 1'-0"



2 EQUIPMENT CANOPY ROOF FRAMING PLAN
Scale: 3/8" = 1'-0"



3 EQUIPMENT PAD AND CANOPY REAR ELEVATION
Scale: 3/8" = 1'-0"



4 EQUIPMENT PAD AND CANOPY SIDE ELEVATION
Scale: 3/8" = 1'-0"

PLAN NOTES

1. VERIFY ALL DIMENSIONS, ELEVATIONS, EXISTING FRAMING MEMBER SIZES AND GENERAL CONDITIONS PRIOR TO COMMENCEMENT OF WORK. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND EXISTING CONDITIONS.

LEGEND

SYMBOL	DESCRIPTION
	INDICATES HSS4x4x1/4 ASTM A500 GR. B (Fy=48ksi) STEEL POST.
	INDICATES SPAN DIRECTION
	INDICATES L3x3x1/4 ASTM A36 (Fy=36ksi) STEEL ANGLE

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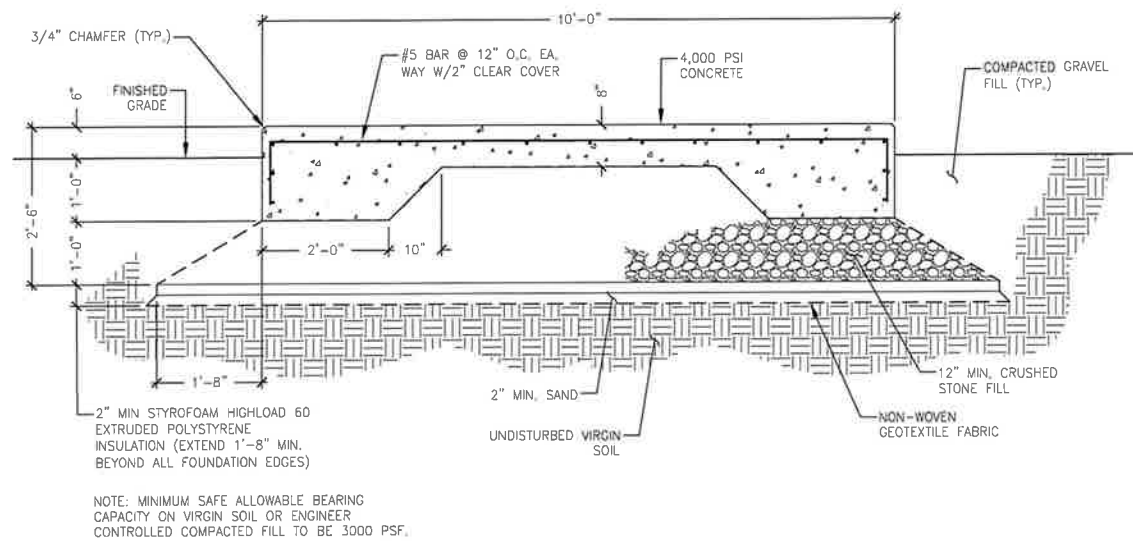
**NEW BUILD
MACRO**

SITE NAME:
NORWICH 4 CT

PROJECT INFORMATION:
**110 YANTIC LANE
NORWICH, CT 06360**

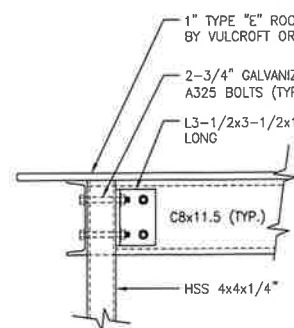
DRAWING TITLE:
**STRUCTURAL EQUIPMENT
PLAN & ELEVATIONS**

SHEET NUMBER:
C-6

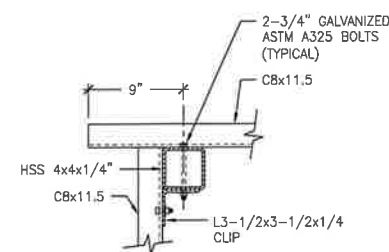


NOTE: MINIMUM SAFE ALLOWABLE BEARING CAPACITY ON VIRGIN SOIL OR ENGINEER CONTROLLED COMPACTED FILL TO BE 3000 PSF.

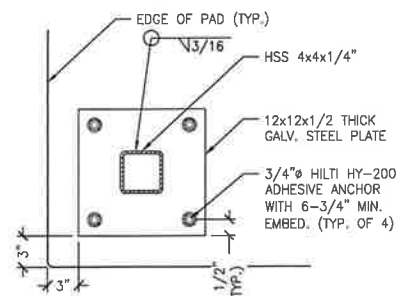
1 CONCRETE SLAB SECTION
Scale: 3/4" = 1'-0"



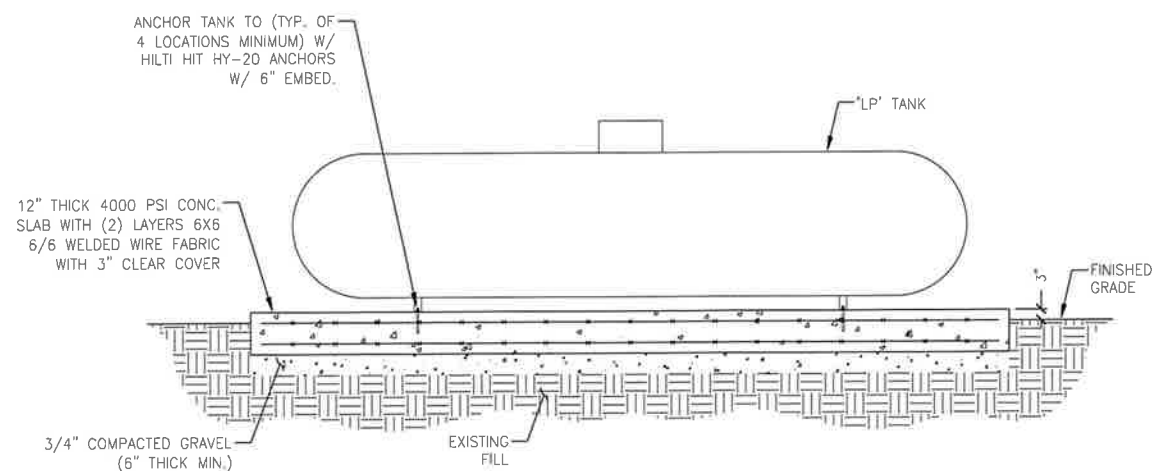
2 CANOPY CONNECTION SECTION
Scale: 1" = 1'-0"



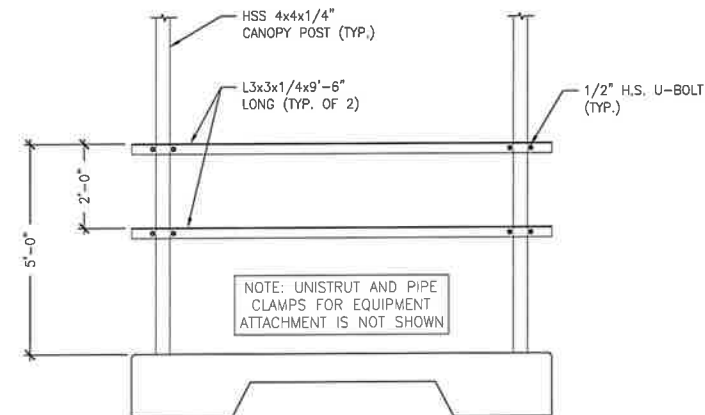
3 CANOPY CONNECTION PLAN
Scale: 1-1/2" = 1'-0"



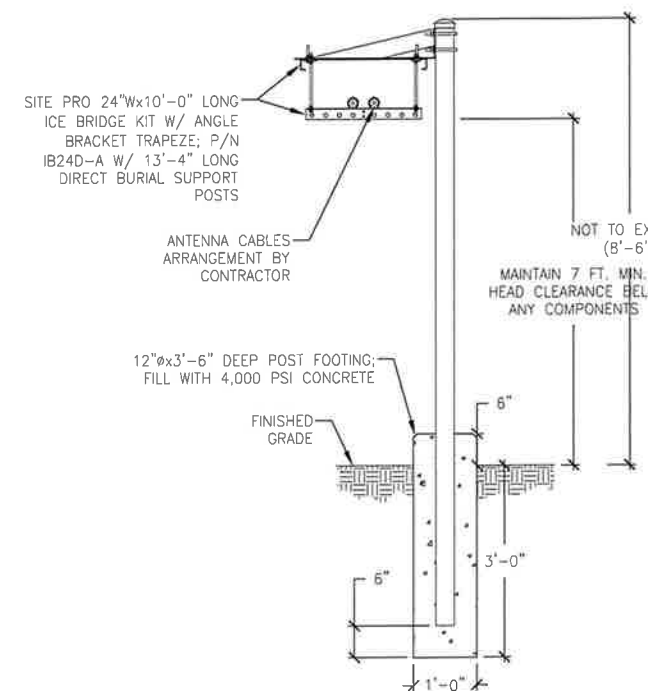
4 CANOPY POST PLAN DETAIL
Scale: 1-1/2" = 1'-0"



5 PROPANE TANK CONCRETE PAD DETAIL
Scale: 1/2" = 1'-0"



6 E/T FRAME DETAIL
Scale: 1/2" = 1'-0"



7 CABLE BRIDGE DETAIL
Scale: N.T.S.

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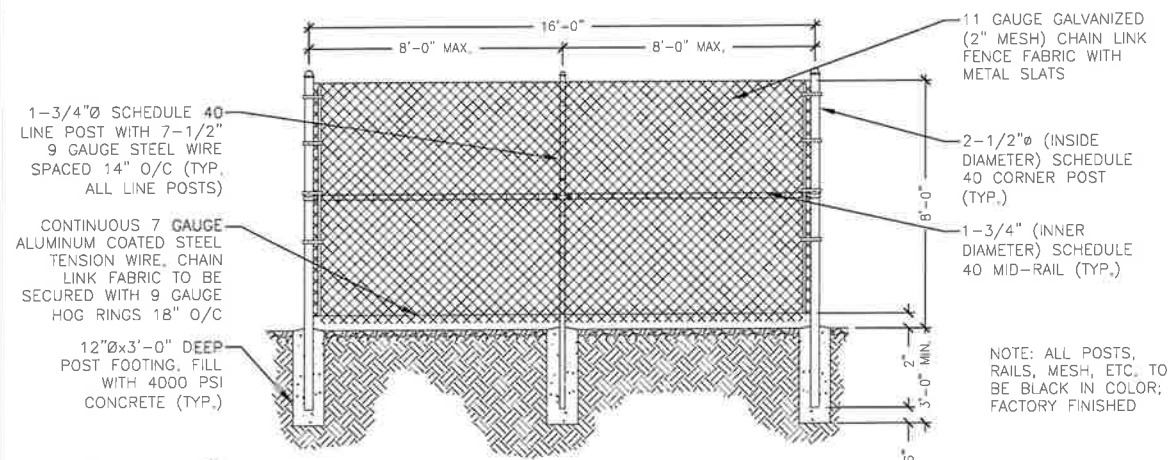
**NEW BUILD
MACRO**

SITE NAME:
NORWICH 4 CT

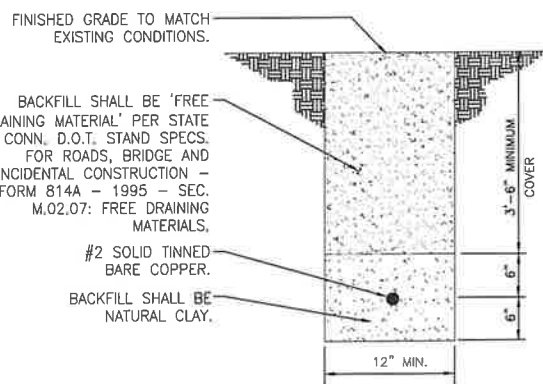
PROJECT INFORMATION:
**110 YANTIC LANE
NORWICH, CT 06360**

DRAWING TITLE:
STRUCTURAL DETAILS

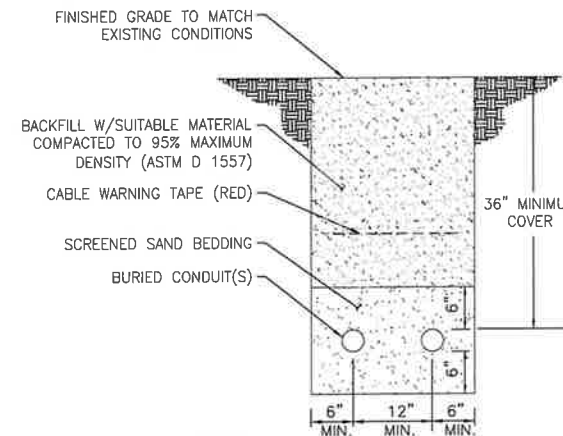
SHEET NUMBER:
C-7



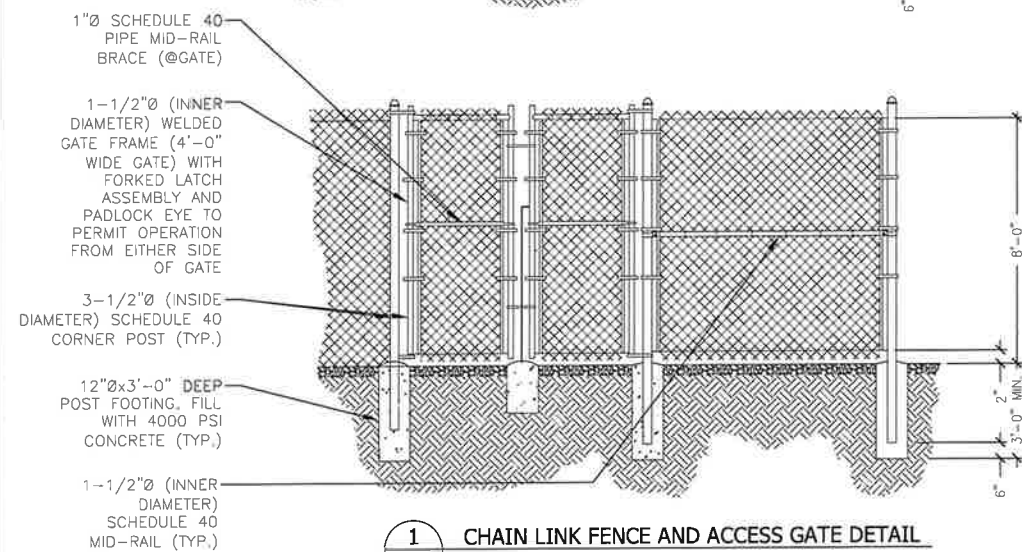
1 CHAIN LINK FENCE AND ACCESS GATE DETAIL
Scale: N.T.S.



2 EGR TRENCH/BACKFILL DETAIL
Scale: N.T.S.



3 TYPICAL ELECTRICAL TRENCH DETAIL
Scale: N.T.S.



4 FENCE POST/GRADE DETAIL
Scale: N.T.S.

SEC. 16-50J-77. REPORTING REQUIREMENTS

- (a) **SUPERVISORY PERSONNEL.** THE CERTIFICATE HOLDER, OR FACILITY OWNER OR OPERATOR, SHALL SUBMIT TO THE COUNCIL CONTACT INFORMATION FOR THE PERSONNEL OF THE CONTRACTOR ASSIGNED TO THE PROJECT.
- (b) **NOTICE.**
- (1) THE CERTIFICATE HOLDER, OR FACILITY OWNER OR OPERATOR, SHALL PROVIDE THE COUNCIL, IN WRITING, WITH A MINIMUM OF TWO WEEKS ADVANCE NOTICE OF THE BEGINNING OF:
- (A) CLEARING AND ACCESS WORK, AND
- (B) CONSTRUCTION OF THE TOWER AND ASSOCIATED EQUIPMENT.
- (2) THE CERTIFICATE HOLDER, OR FACILITY OWNER OR OPERATOR, SHALL PROVIDE THE COUNCIL WITH ADVANCE WRITTEN NOTICE WHENEVER A SIGNIFICANT MODIFICATION OF THE APPROVED D&M PLAN IS NECESSARY INCLUDING, BUT NOT LIMITED TO, A CHANGE IN THE LOCATION OF THE TOWER, ASSOCIATED EQUIPMENT, GUY WIRES, OR ACCESS ROAD. THE COUNCIL, OR ITS DESIGNEE SHALL PROMPTLY REVIEW THE CHANGES, AND THE COUNCIL SHALL APPROVE, MODIFY, OR DISAPPROVE THE CHANGES IN ACCORDANCE WITH SUBSECTION (d) OF SECTION 16-50J-75 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES.
- (3) THE CERTIFICATE HOLDER, OR FACILITY OWNER OR OPERATOR, SHALL PROVIDE THE COUNCIL WITH A MONTHLY CONSTRUCTION PROGRESS REPORT, OR A CONSTRUCTION PROGRESS REPORT AT THE TIME INTERVALS DETERMINED BY THE COUNCIL, INDICATING CHANGES AND DEVIATIONS FROM THE APPROVED D&M PLAN. THE COUNCIL MAY APPROVE THE CHANGES AND DEVIATIONS OR REQUEST CORRECTIONS OR MITIGATING MEASURES.
- (4) THE CERTIFICATE HOLDER, OR FACILITY OWNER OR OPERATOR, SHALL PROVIDE THE COUNCIL WITH WRITTEN NOTICE OF COMPLETION OF CONSTRUCTION AND SITE REHABILITATION.
- (c) **FINAL REPORT.** THE CERTIFICATE HOLDER, OR FACILITY OWNER OR OPERATOR, SHALL PROVIDE THE COUNCIL WITH A FINAL REPORT NOT LATER THAN 180 DAYS AFTER COMPLETION OF ALL SITE CONSTRUCTION AND SITE REHABILITATION. THIS FINAL REPORT SHALL IDENTIFY:
- (1) ALL AGREEMENTS WITH ABUTTERS OR OTHER PROPERTY OWNERS REGARDING SPECIAL MAINTENANCE PRECAUTIONS;
- (2) SIGNIFICANT MODIFICATIONS OF THE D&M PLAN THAT WERE REQUIRED BECAUSE OF THE PROPERTY RIGHTS OF UNDERLYING AND ADJOINING OWNERS OR FOR OTHER REASONS;
- (3) THE LOCATION OF CONSTRUCTION MATERIALS WHICH HAVE BEEN LEFT IN PLACE IN THE FORM OF CULVERTS, EROSION CONTROL STRUCTURES ALONG WATERCOURSES AND STEEP SLOPES, AND CORDUROY ROADS IN REGULATED WETLANDS;
- (4) THE LOCATION OF SPECIAL AREAS WHERE SPECIAL PLANTING AND RESEEDING HAVE BEEN DONE; AND
- (5) AGREEMENTS BETWEEN THE CERTIFICATE HOLDER AND PUBLIC AGENCIES AUTHORIZING PUBLIC RECREATIONAL USE OF THE SITE TO THE EXTENT OF THE CERTIFICATE HOLDER'S PROPERTY RIGHTS THERETO.
- (d) THE FINAL REPORT SHALL INCLUDE THE ACTUAL CONSTRUCTION COST OF THE TOWER AND ASSOCIATED EQUIPMENT, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING COSTS:
- (1) CONSTRUCTION OF THE TOWER AND ASSOCIATED EQUIPMENT;
- (2) SITE REHABILITATION; AND
- (3) PROPERTY ACQUISITION FOR SITE OR ACCESS TO SITE.

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201-456-4624

LICENSURE



DAVID WEINPAAL, P.E.
CT LIC. NO. 22144

NO. DATE SUBMISSIONS

0 08.20.21 D&M REVIEW SET

1 09.02.21 D&M FILING SET

DRAWN BY:

MF

CHECKED BY:

DW

**NEW BUILD
MACRO**

SITE NAME:

NORWICH 4 CT

PROJECT INFORMATION:

**110 YANTIC LANE
NORWICH, CT 06360**

DRAWING TITLE:

**SITE DETAILS & CSC
REPORTING NOTES**

SHEET NUMBER:

C-8



1 Fairholm Avenue
Peoria, IL 61603 USA
Phone: (309)-566-3000
Fax: (309)-566-3079

DATE: JULY 28, 2021

PURCHASER: VERIZON WIRELESS

PROJECT: 110FT TSP
NORWICH 4, CT

FILE NUMBER:238194

I CERTIFY THAT THE ATTACHED DRAWINGS WERE PREPARED UNDER MY SUPERVISION IN ACCORDANCE WITH THE DESIGN AND LOADING CRITERIA SPECIFIED BY THE PURCHASER AND THAT I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CONNECTICUT.

Stephen Yeo
7/28/2021

A circular professional engineer seal for the State of Connecticut. The seal contains the text "STATE OF CONNECTICUT" at the top, "STEPHEN YEO" in the center, and "23270 LICENSED PROFESSIONAL ENGINEER" at the bottom. The seal is surrounded by a decorative border of small dots.

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FILE NO. 238194

REV#	DESCRIPTION	DWN	CHK	APP

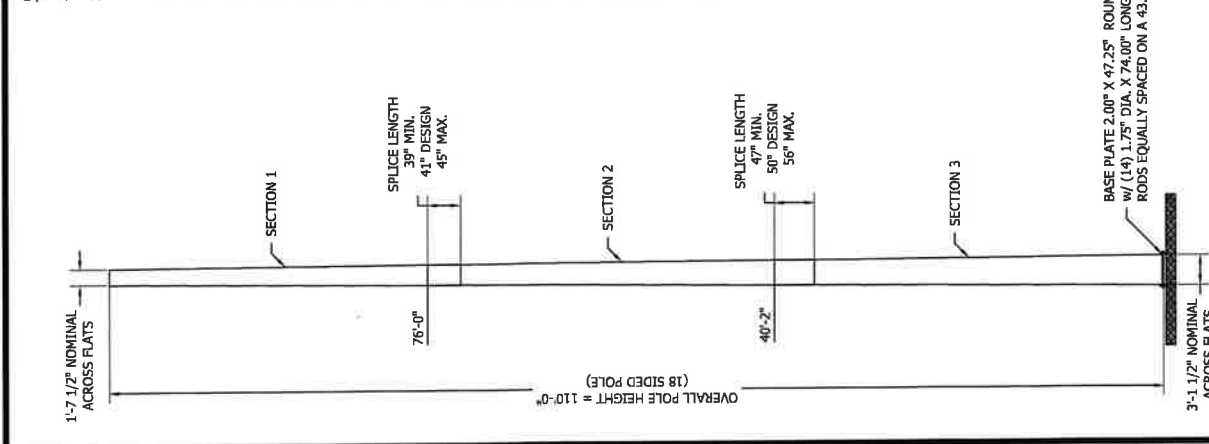
POLE DESIGN LOADING

DESIGN WIND LOAD PER ANSI/TIA-222-H USING THE FOLLOWING DESIGN CRITERIA:
 RISK CATEGORY: II
 BASIC WIND SPEED (NO ICE): 124 MPH PER ASCE 7-16
 BASIC WIND SPEED (W/ICE): 50 MPH PER ASCE 7-16
 DESIGN ICE THICKNESS: 1.00 INCHES PER ASCE 7-16
 GROUND ELEVATION: 24.331 FT
 EXPOSURE CATEGORY: B
 TOPOGRAPHIC METHOD: 1, CATEGORY: 1
 SEISMIC DESIGN PARAMETERS, S_s: 0.195, S_i: 0.054, T_l: 12, SITE CLASS: D
 THIS STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE FOLLOWING LOADS:

ELEVATION (FT)	ANTENNA LOADING		LINE SIZE (NOM)
	TOP	LIGHTNING ROD	
100	(12) 6 FT PANELS, (9) RRHS, & (3) RAYCAPS ON A LP MOUNT	(12) 1-5/8"	
90	(12) 6 FT PANELS, (9) RRHS, & (3) RAYCAPS ON A LP MOUNT	(12) 1-5/8"	
80	(12) 6 FT PANELS, (9) RRHS, & (3) RAYCAPS ON A LP MOUNT	(12) 1-5/8"	

GENERAL NOTES

- ROHN PRODUCTS POLE DESIGNS CONFORM TO ANSI/TIA-222-H UNLESS OTHERWISE SPECIFIED UNDER POLE DESIGN LOADING.
- THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA-222-H AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
- ANTENNAS AND LINES LISTED IN POLE DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
- STEP BOLTS WITH SAFETY CLIMB SYSTEM ARE PROVIDED AS A CLIMBING FACILITY FOR THE INSTALLATION OF THE STRUCTURE.
- POLE MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE POLE.
- WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-H, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
- FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
- STRUCTURAL BOLTS SHALL CONFORM TO GRADE A325 PER ASTM F3125, EXCEPT WHERE NOTED.
- STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION, IN ACCORDANCE WITH ANSI/TIA-222-H.
- ALL HIGH STRENGTH BOLTS ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE RCSC-SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS. NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
- PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
- TOLERANCE ON POLE STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
- DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA-222-H.
- DESIGN ASSUMES LEVEL GRADE AT POLE SITE.
- FOUNDATIONS SHALL BE DESIGNED TO SUPPORT THE REACTIONS SHOWN FOR THE CONDITIONS EXISTING AT THE SITE.
- DESIGN ASSUMES ALL ANTENNAS ARE MOUNTED SYMMETRICALLY TO MINIMIZE TORQUE, IF APPLICABLE.
- DESIGN ASSUMES ALL PANEL ANTENNAS WITH MOUNTING FRAMES ARE MOUNTED SYMMETRICALLY.
- DESIGN ASSUMES ALL TRANSMISSION LINES ARE ROUTED INTERNALLY.
- POLE SHIRT CONFORMS TO ASTM A572 GR 65. POLE BASE PLATE STEEL CONFORMS TO ASTM A572 GR 50 WITH CHAMPY IMPACT REQUIREMENTS. POLE ANCHOR BOLTS CONFORM TO ASTM F1554 GR 105.
- JACKING LUGS ARE PROVIDED ABOVE AND BELOW EACH SLIP JOINT TO FACILITATE THE USE OF JACKING DEVICES. NON-STAINING LUBRICANTS SHALL BE APPLIED TO THE SLIP JOINTS. JACKING FORCES SHOULD BE APPLIED UNTIL THE JOINT IS TIGHT WITH NO GAPS GREATER THAN 1/4"



MAXIMUM FACTORED REACTIONS	
DOWNLOAD	= 69.8 KIPS
SHEAR	= 26.6 KIPS
O.T.M	= 2,455.0 FT-KIPS

SECTION	LENGTH (FT)	DIAMETER		WALL THICK (IN)	F _y (KSI)	WEIGHT (KIPS)
		BOT	TOP			
1	36.41	25.98	19.50	0.2500	65.0	2.3
2	40.00	31.67	24.75	0.3125	65.0	4.0
3	40.00	37.50	30.38	0.3750	65.0	5.8

NOTE:
 FOR POLYGONAL POLES, DIAMETER IS MEASURED ACROSS FLATS. TABULATED WEIGHTS ARE APPROXIMATE. REFER TO ASSEMBLY DRAWING FOR FINAL WEIGHTS. ALL WEIGHTS SHALL BE VERIFIED PRIOR TO LIFTING.



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VERIZON WIRELESS
 DESIGN PROFILE
 110 FT O.A.H. TSP
 NORWICH 4, CT

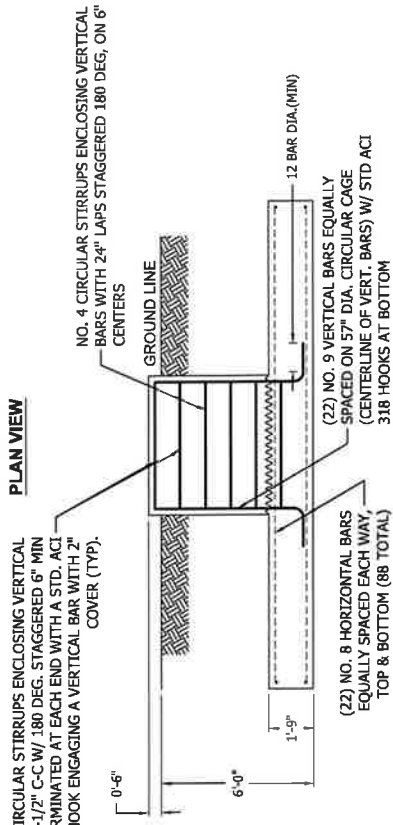
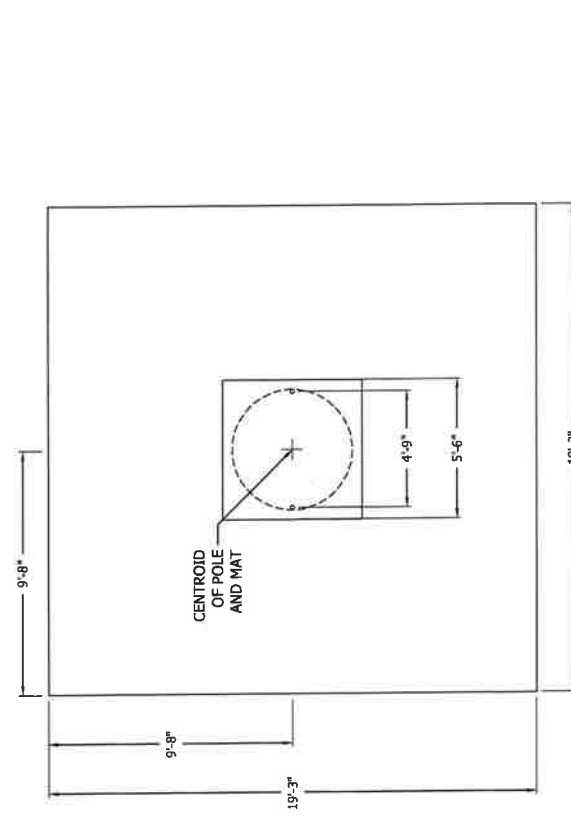
DWN: SWG
 ENGR: SWG
 DATE: 07/28/2021
 SHEET #: 1 OF 1
 PROJ. MGR: SWG

DRAWING NO: 238194-01-D1
 REV: 0

FILE NO.	238194	
REV#	DESCRIPTION	
OWN	CHK	APP
DATE	7/28/2021	
ENGINEER	SY	1 OF 1
PROJ. ENGR.	SWG	PROJ. MGRS.
DRAWING NO.	238194-01-F1	REV:
		0

GENERAL NOTES

- FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.
 - ULTIMATE SOIL BEARING PRESSURE AT 6 FT DEPTH = 40,000 PSF.
 - GROUND WATER TABLE IS AT OR BELOW FOUNDATION DEPTH.
 - MAXIMUM FROST PENETRATION DEPTH LESS THAN FOUNDATION DEPTH.
- WORK SHALL BE IN ACCORDANCE WITH THE PROJECT CONSTRUCTION DOCUMENTS, LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
- CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
- PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI IN 28 DAYS.
- MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 3/4 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING, WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING SHALL BE UTILIZED TO PREVENT HONEYCOMBS OR VOIDS.
- REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.
- WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
- MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH MINIMUM COVER ON REINFORCEMENT.
- CONCRETE COVER FROM TOP OF FOUNDATION TO ENDS OF VERTICAL REINFORCEMENT SHALL NOT EXCEED 3 INCHES NOR BE LESS THAN 2 INCHES.
- FOUNDATION DESIGN ASSUMES STRUCTURAL BACKFILL TO BE COMPACTED IN 8 INCH MAXIMUM LAYERS TO 95% OF MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D1557. ADDITIONALLY, STRUCTURAL BACKFILL MUST HAVE A MINIMUM COMPACTED UNIT WEIGHT OF 110 POUNDS PER CUBIC FOOT.
- FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. G-1797 DATED 5/14/2021 BY ATLANTIC CONSULTING & ENGINEERING, LLC.
- FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO A GEOTECHNICAL INVESTIGATION.
- FOUNDATION DESIGN ASSUMES INSTALLATION ON A PROPERLY DRAINED LEVEL SITE.
- FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.
- FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
- ALL CONSTRUCTION AND SAFETY EQUIPMENT AND TEMPORARY SUPPORTS REQUIRED FOR CONSTRUCTION SHALL BE DETERMINED, FURNISHED AND INSTALLED BY THE CONTRACTOR BASED ON THE MEANS AND METHODS CHOSEN BY THE CONTRACTOR. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED BY COMPETENT, QUALIFIED AND TRAINED PERSONNEL.
- FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
- FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
- FOR FOUNDATION AND ANCHOR TOLERANCES SEE ANCHOR ROD LAYOUT DRAWING.
- LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
- CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
- CONCRETE PREFERABLY SHALL BE PLACED AGAINST UNDISTURBED SOIL. WHEN FORMS ARE NECESSARY, THEY SHALL BE REMOVED PRIOR TO PLACING STRUCTURAL BACKFILL.
- CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH. FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.
- TOP OF FOUNDATION SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH.
- EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" MINIMUM.



CONCRETE VOLUME

SQUARE PIER	5.3 CU.YDS
PAD	24.0 CU.YDS
TOTAL	29.3 CU.YDS

FACTORED REACTIONS

O.T.M. =	2,455.0 FT-K
DOWNLOAD =	69.8 KIPS
SHEAR =	26.6 KIPS



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VERIZON WIRELESS
 MAT W/RAISED PIER
 FOUNDATION DESIGN
 NORWICH 4-CT



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 Contract: 238194
 Project: 110 FT O.A.H. TSP
 Date and Time: 7/27/2021 3:51:12 PM

Revision: 0
 Site: NORWICH 4- CT
 Engineer: SWG

ENGINEERING
 CHECKED BY: SY
 07/28/2021

Section A: PROJECT DATA

Project Title: 110 FT O.A.H. TSP
 Customer Name: VERIZON WIRELESS
 Site: NORWICH 4- CT
 Contract No.: 238194
 Revision: 0
 Engineer: SWG
 Date: Jul 27 2021
 Time: 03:50:45 PM

Design Standard: ANSI/TIA-222-H-2017

GENERAL DESIGN CONDITIONS

Start wind direction: 0.00 (Deg)
 End wind direction: 315.00 (Deg)
 Increment wind direction: 45.00 (Deg)
 Elevation above ground: 0.00 (ft)
 Mean elevation of base of structure above sea level Zs: 331.00 (ft)
 Rooftop wind speed-up factor Ks: 1.00
 Gust Response Factor Gh: 1.10
 Risk category: II
 Exposure category: B
 Topographic category: 1
 Material Density: 490.1 (lbs/ft³)
 Young's Modulus: 29000.0 (ksi)
 Poisson Ratio: 0.30
 Weight Multiplier: 1.06

WIND ONLY CONDITIONS:
 Basic Wind Speed (No Ice): 124.00 (mph)
 Directionality Factor Kd: 0.95
 Importance Factor I: 1.00
 Wind Load Factor: 1.00
 Dead Load Factor: 1.20

WIND AND ICE CONDITIONS:
 Basic Wind Speed (With Ice): 50.00 (mph)
 Directionality Factor Kd: 0.95
 Wind Load Importance Factor Iw: 1.00
 Ice Thickness Importance Factor Ii: 1.00
 Ice Thickness: 1.00 (in)
 Ice Density: 56.19 (lbs/ft³)
 Wind Load Factor: 1.00
 Dead Load Factor: 1.20
 Ice Load Factor: 1.00

WIND ONLY SERVICEABILITY CONDITIONS:
 Serviceability Wind Speed: 60.00 (mph)
 Directionality Factor Kd: 0.85
 Importance Factor I: 1.00
 Wind Load Factor: 1.00
 Dead Load Factor: 1.00

EARTHQUAKE CONDITIONS:
 Site class definition: D
 Spectral response acceleration Ss: 0.195
 Spectral response acceleration S1: 0.054
 Long-period transition period TL: 6.000
 Acceleration-based site coefficient Fa: 1.600
 Velocity-based site coefficient Fv: 2.400



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Revision: 0
Site: NORWICH 4- CT
Engineer: SWG

Design spectral response acceleration Sds: 0.208
Design spectral response acceleration Sd1: 0.086
Seismic analysis method: 1
Fundamental frequency of structure f1: 0.369
Total seismic shear Vs (Kips) : 0.97

Analysis performed using: TowerSoft Finite Element Analysis Program



ENGINEERING SOFTWARE
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 Project: 110 FT O.A.H. TSP
 Date and Time: 7/27/2021 3:51:12 PM

Revision: 0
 Site: NORWICH 4- CT
 Engineer: SWG

Section B: STRUCTURE GEOMETRY

Total Height (ft)	Bottom Diameter (in)	Top Diameter (in)
109.00	37.50	19.50

Sect. No	Length (ft)	Overlap (ft)	Bot Dia. (in)	Top Dia. (in)	Thick. (in)	Sides	Joint Type	Yield Stress (ksi)	Mass (lbs)	Calculated Taper (in/ft)	Corner Radius (in)
3	36.41	0.00	25.89	19.50	0.2500	18-sided	Telescopic	65.0	2339.4	0.17546	2.38
2	40.00	3.42	31.81	24.79	0.3125	18-sided	Telescopic	65.0	4005.3	0.17546	2.50
1	40.17	4.17	37.50	30.45	0.3750	18-sided	Flange	65.0	5795.1	0.17546	2.63

Total Mass: 12139.7



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Project: 110 FT O.A.H. TSP
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Revision: 0
Site: NORWICH 4- CT
Engineer: SWG

Section D: TRANSMISSION LINE DATA

Transmission Lines Position

No.	Bot El (ft)	Top El (ft)	Desc.	Radius (ft)	Az.	Orient.	No.	Shielded	Shielded Lines	Antenna
1	0.00	110.00	3/8" CABLE	2.00	0.00	0.00	1	No	0	
2	0.00	110.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	
3	0.00	100.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	
4	0.00	90.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	
5	0.00	80.00	LDF7P-50A	0.00	0.00	0.00	12	Yes	12	

Transmission Lines Details

No.	Desc.	Width (in)	Depth (in)	Unit Mass (lb/ft)
1	3/8" CABLE	0.38	0.38	1.00
2	LDF7P-50A	2.01	2.01	0.92
3	LDF7P-50A	2.01	2.01	0.92
4	LDF7P-50A	2.01	2.01	0.92
5	LDF7P-50A	2.01	2.01	0.92

Utilization of the cross-section for TX Lines: 33.14%



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Revision: 0
 Site: NORWICH 4- CT
 Engineer: SWG

Section F: POINT LOAD DATA

Structure Azimuth from North:0.00

POINT LOADS

No.	Description	Elev. (ft)	Radius (ft)	Azim. (Deg)	Orient. (Deg)	Vertical Offset (ft)	Tx Line	Comments
1	LIGHTNING ROD	110.00	0.00	0.0	0.0	0.00		
2	CARRIER	110.00	0.00	0.0	0.0	0.00		
3	CARRIER	100.00	0.00	0.0	0.0	0.00		
4	CARRIER	90.00	0.00	0.0	0.0	0.00		
5	CARRIER	80.00	0.00	0.0	0.0	0.00		

POINT LOADS WIND AREAS AND WEIGHTS

No.	Description	Frontal Bare Area (ft^2)	Lateral Bare Area (ft^2)	Frontal Iced Area (ft^2)	Lateral Iced Area (ft^2)	Weight Bare (Kips)	Weight Iced (Kips)	Gh
1	LIGHTNING ROD	1.00	1.00	2.00	2.00	0.10	0.20	1.10
2	CARRIER	132.50	132.50	195.50	195.50	3.95	10.60	1.10
3	CARRIER	132.50	132.50	195.50	195.50	3.95	10.60	1.10
4	CARRIER	132.50	132.50	195.50	195.50	3.95	10.60	1.10
5	CARRIER	132.50	132.50	195.50	195.50	3.95	10.60	1.10



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 Site: NORWICH 4- CT
 Engineer: SWG

Section H: STRUCTURE DISPLACEMENT DATA

Load Combination Wind Only - Serviceability

Elev. (ft)	Maximum displacements					
	N-S Disp (in)	W-E Disp (in)	Vert. Disp (in)	N-S Rot (deg)	W-E Rot (deg)	Twist Rot (deg)
109.00	24.3	-24.2	-0.3	-1.83	-1.84	0.00
102.40	21.8	-21.7	-0.3	-1.82	-1.83	0.00
95.80	19.3	-19.2	-0.2	-1.79	-1.79	0.00
89.20	16.8	-16.8	-0.2	-1.73	-1.74	0.00
82.60	14.5	-14.4	-0.2	-1.65	-1.65	0.00
76.00	12.3	-12.2	-0.1	-1.54	-1.54	0.00
72.59	11.2	-11.1	-0.1	-1.47	-1.48	0.00
66.10	9.3	-9.2	-0.1	-1.36	-1.36	0.00
59.62	7.5	-7.5	-0.1	-1.23	-1.23	0.00
53.14	5.9	-5.9	0.0	-1.09	-1.10	0.00
46.65	4.5	-4.5	0.0	-0.95	-0.95	0.00
40.17	3.3	-3.3	0.0	-0.80	-0.81	0.00
36.00	2.7	-2.6	0.0	-0.71	-0.71	0.00
30.00	1.8	-1.8	0.0	-0.59	-0.59	0.00
24.00	1.2	-1.2	0.0	-0.47	-0.47	0.00
18.00	0.7	-0.7	0.0	-0.35	-0.35	0.00
12.00	0.3	-0.3	0.0	-0.23	-0.23	0.00
6.00	0.1	-0.1	0.0	-0.11	-0.11	0.00
0.00	0.0	0.0	0.0	0.00	0.00	0.00



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 Engineer: SWG

Section K: POLE OUTPUT LOAD DATA

Load Combination	Max Envelope			
Wind Direction	Maximum			
Elev. (ft)	Axial Ld. (kips)	Shear Ld. (kips)	Torque (kipsft)	Bend Mom. (kipsft)
109.00	11.92	6.36	0.00	5.53
102.40	11.92	6.36	0.00	47.06
102.40	19.92	10.53	0.01	47.13
95.80	19.92	10.53	0.01	115.84
95.80	26.29	13.77	0.02	115.93
89.20	26.29	13.77	0.01	205.76
89.20	37.23	19.20	0.03	205.88
82.60	37.23	19.20	0.02	331.19
82.60	45.18	22.90	0.04	331.34
76.00	45.18	22.90	0.03	480.79
76.00	50.53	25.29	0.05	480.91
72.59	50.53	25.29	0.04	567.15
72.59	51.70	25.50	0.06	567.27
66.10	51.70	25.50	0.05	730.44
66.10	53.23	25.74	0.07	730.59
59.62	53.23	25.74	0.06	896.21
59.62	54.63	25.93	0.07	896.34
53.14	54.63	25.93	0.06	1062.39
53.14	56.06	26.07	0.07	1062.50
46.65	56.06	26.07	0.07	1230.46
46.65	57.53	26.18	0.07	1230.56
40.17	57.53	26.18	0.07	1399.35
40.17	58.76	26.25	0.07	1399.42
36.00	58.76	26.25	0.07	1508.03
36.00	60.37	26.32	0.07	1508.09
30.00	60.37	26.32	0.07	1665.14
30.00	62.29	26.39	0.07	1665.20
24.00	62.29	26.39	0.07	1821.93
24.00	63.91	26.42	0.07	1821.97
18.00	63.91	26.42	0.07	1979.90
18.00	65.56	26.43	0.07	1979.93
12.00	65.56	26.43	0.07	2138.11
12.00	67.24	26.43	0.07	2138.12
6.00	67.24	26.43	0.07	2296.49
6.00	68.94	26.42	0.07	2296.49
0.00	68.94	26.42	0.07	2454.97
Base	69.78	26.58	0.07	2454.98



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 Project: 110 FT O.A.H. TSP
 Date and Time: 7/27/2021 3:51:12 PM

Revision: 0
 Site: NORWICH 4- CT
 Engineer: SWG

Section L: STRENGTH ASSESSMENT DATA

Load Combination	Max Envelope				
Wind Direction	Maximum				
Elev. (ft)	Axial Ld. (kips)	Axial Cap (kips)	Moment (kipsft)	Mom. Cap (kipsft)	Assess.
109.00	11.92	1134.81	5.53	447.11	0.017
102.40	11.92	1203.07	47.06	502.87	0.098
102.40	19.92	1203.07	47.13	502.87	0.101
95.80	19.92	1271.33	115.84	561.91	0.213
95.80	26.29	1271.33	115.93	561.91	0.216
89.20	26.29	1339.59	205.76	624.23	0.339
89.20	37.23	1339.59	205.88	624.23	0.344
82.60	37.23	1407.85	331.19	689.82	0.493
82.60	45.18	1407.85	331.34	689.82	0.497
76.00	45.18	1476.11	480.79	758.69	0.650
76.00	50.53	1476.11	480.91	758.69	0.653
72.59	51.70	1847.87	567.27	948.89	0.613
66.10	51.70	1931.70	730.44	1037.48	0.718
66.10	53.23	1931.70	730.59	1037.48	0.719
59.62	53.23	2015.52	896.21	1130.01	0.807
59.62	54.63	2015.52	896.34	1130.01	0.808
53.14	54.63	2099.34	1062.39	1226.50	0.880
53.14	56.06	2099.34	1062.50	1226.50	0.881
46.65	56.06	2183.17	1230.46	1326.94	0.941
46.65	57.53	2183.17	1230.56	1326.94	0.942
40.17	57.53	2266.99	1399.35	1431.33	0.992
40.17	58.76	2266.99	1399.42	1431.33	0.992
36.00	60.37	2724.25	1508.09	1719.13	0.890
30.00	60.37	2817.35	1665.14	1839.35	0.917
30.00	62.29	2817.35	1665.20	1839.35	0.918
24.00	62.29	2910.45	1821.93	1963.63	0.940
24.00	63.91	2910.45	1821.97	1963.63	0.941
18.00	63.91	3003.54	1979.90	2091.98	0.959
18.00	65.56	3003.54	1979.93	2091.98	0.959
12.00	65.56	3096.64	2138.11	2224.39	0.974
12.00	67.24	3096.64	2138.12	2224.39	0.974
6.00	67.24	3189.74	2296.49	2360.87	0.985
6.00	68.94	3189.74	2296.49	2360.87	0.986
0.00	68.94	3282.84	2454.97	2501.40	0.994



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 Contract: 238194
 Project: 110 FT O.A.H. TSP
 Date and Time: 7/27/2021 3:51:12 PM

Revision: 0
 Site: NORWICH 4- CT
 Engineer: SWG

Section M: SECTION PROPERTIES DATA

Elev. (ft)	Diam. (in)	Width (in)	Thick. (in)	W/t	Area (in^2)	S (in^3)
109.0	19.5	2.9	0.250	11.8	15.3	72.22
102.4	20.7	3.1	0.250	12.6	16.2	81.22
102.4	20.7	3.1	0.250	12.6	16.2	81.22
95.8	21.8	3.3	0.250	13.4	17.1	90.76
95.8	21.8	3.3	0.250	13.4	17.1	90.76
89.2	23.0	3.6	0.250	14.2	18.0	100.82
89.2	23.0	3.6	0.250	14.2	18.0	100.82
82.6	24.1	3.8	0.250	15.0	18.9	111.42
82.6	24.1	3.8	0.250	15.0	18.9	111.42
76.0	25.3	4.0	0.250	15.8	19.9	122.54
76.0	25.3	4.0	0.250	15.8	19.9	122.54
72.6	25.9	4.1	0.250	16.3	20.3	128.51
72.6	25.4	3.9	0.313	12.3	24.9	153.26
66.1	26.5	4.1	0.313	13.0	26.0	167.57
66.1	26.5	4.1	0.313	13.0	26.0	167.57
59.6	27.7	4.3	0.313	13.6	27.1	182.52
59.6	27.7	4.3	0.313	13.6	27.1	182.52
53.1	28.8	4.5	0.313	14.3	28.3	198.10
53.1	28.8	4.5	0.313	14.3	28.3	198.10
46.7	29.9	4.7	0.313	14.9	29.4	214.32
46.7	29.9	4.7	0.313	14.9	29.4	214.32
40.2	31.1	4.9	0.313	15.5	30.5	231.19
40.2	31.1	4.9	0.313	15.5	30.5	231.19
36.0	31.8	5.0	0.313	15.9	31.2	242.36
36.0	31.2	4.7	0.375	12.7	36.7	277.67
30.0	32.2	4.9	0.375	13.2	37.9	297.09
30.0	32.2	4.9	0.375	13.2	37.9	297.09
24.0	33.3	5.1	0.375	13.7	39.2	317.16
24.0	33.3	5.1	0.375	13.7	39.2	317.16
18.0	34.3	5.3	0.375	14.1	40.4	337.89
18.0	34.3	5.3	0.375	14.1	40.4	337.89
12.0	35.4	5.5	0.375	14.6	41.7	359.28
12.0	35.4	5.5	0.375	14.6	41.7	359.28
6.0	36.4	5.7	0.375	15.1	42.9	381.32
6.0	36.4	5.7	0.375	15.1	42.9	381.32
0.0	37.5	5.9	0.375	15.6	44.2	404.02

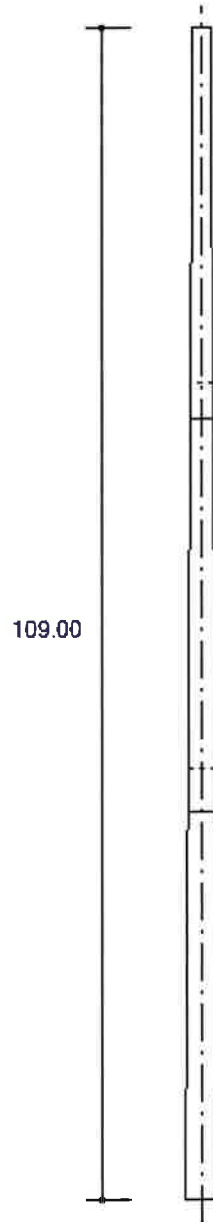
Note: w/t values marked with * (asterisk) indicate width to thickness exceeding maximum allowable values by standards.

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Contract: 238194
Project: 110 FT O.A.H. TSP
Date and Time: 7/27/2021 3:51:12 PM

Revision: 0
Site: NORWICH 4- CT
Engineer: SWG

DESIGN SPECIFICATION

Sct.	Length (ft)	Overlap (ft)	Top Dia. (in)	Bot Dia. (in)	Thick. (in)
3	36.41	0.00	19.50	25.89	0.2500
2	40.00	3.42	24.79	31.81	0.3125
1	40.17	4.17	30.45	37.50	0.3750



MAXIMUM BASE REACTIONS

Download (Kips)	69.8
Shear (Kips)	26.6
Moment (Kipsft)	2455.0

Customer: VERIZON WIRELESS
 Project: 110 FT O.A.H. TSP
 Site: NORWICH 4- CT
 Engr. File: 238194
 Build Code: ANSI/TIA-222-H-2016



Mat Foundation

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Design Parameters

Description	Load Case					Service
	1	2	3	4	5	
Total Moment, ft-kips	2,454.98	2,408.22	684.00	96.79	94.03	510.40
Total Shear, kips	26.58	26.53	6.94	.98	.98	5.56
Total Tower Wt, kips	38.71	29.01	69.78	40.19	27.79	32.36
Max. Uplift, kips	N/A	N/A	N/A	N/A	N/A	N/A
Shear, kips	N/A	N/A	N/A	N/A	N/A	N/A
Max Download, kips	N/A	N/A	N/A	N/A	N/A	N/A
Shear	N/A	N/A	N/A	N/A	N/A	N/A
Soil L.F.	1.20	0.90	1.20	1.20	0.90	1.00
Concrete L.F.	1.20	0.90	1.20	1.20	0.90	1.00

Foundation	
Ht. AGL, ft	0.50
Depth, ft.	6.00
Pole	
Butt OD, ft	3.13
Offset, in	.00
Soil	
Blow Count	N/A
Inplace Unit Wt, pcf	110.00
Submerged Unit Wt, pcf	60.00
Friction Angle, ϕ , deg.	30.00
Cohesion, ksf	N/A
Uplift Angle, deg.	30.00
Water Depth, ft	None
Ult Bearing Capacity, ksf	40.00

Mat	
Thickness, ft	1.75
Width, ft	19.25
EA, in	15.00
Batter, in/ft	0.00

Pier	
Height, ft	4.75
Diameter, ft	5.50
No. Piers	1
Shape	Square

Anchor Bolts	
Diameter, in	1.7500
No.	14
Length, in	74.00
Bolt Circle, in	42.88
Projection, in	9.00

Pocket	
Diameter, in	N/A
Thickness, ft	N/A

Concrete	
28 Day Strength, ksi	4.50
Dry Unit Wt, pcf	150.00
Wet Unit Wt, pcf	88.00

Rebar Fy	
Vertical, ksi	60.00
Circular, ksi	60.00
Horizontal, ksi	60.00

Results

ϕM_N – Parallel Axis 2,679.77 ft-kips
 ϕM_N – Diagonal Axis 2,946.67 ft-kips
 Moment – Interaction Ratio 0.963
 ϕV_N – Lateral Load 73.99 kips
 Lateral Load – Interaction Ratio 0.359

Final Mat Dimension : 19.25 x 19.25 x 1.75 ft. thick w/ (1) 5.50 ft. Square Pier

Final Pocket Dimension : Pockets not required

Total Volume of Concrete : 29.3 yd³

Designed By: SWG
 Date: 28 Jul,21 @ 08:05 AM

Checked By: ENGINEERING
 Date: CHECKED BY: SY
07/28/2021

Customer: VERIZON WIRELESS
 Project: 110 FT O.A.H. TSP
 Site: NORWICH 4- CT
 Engr. File: 238194
 Build Code: ANSI/TIA-222-H-2016



Mat Foundation

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OTM Capacity

Controlling Load Case: 2 [Wind w/Min. Dead Load]
 Foundation Width = 19.25 ft
 $M_U = 2,580.7$ ft-kips

	ϕM_N , ft-kips	x, ft	N	σ_{ur}
Parallel	2,679.8	1.925	0.100	10.78
Diagonal	2,946.7	6.087	0.224	10.78

$\phi M_N = 2,679.77$ ft-kips IRatio = 0.963
 $\phi V_N = 73.99$ kips IRatio = 0.359

Mat Design

$\gamma_e = 121.67$ pcf

Exterior Slab	x, ft	N	σ_R , ksf	P_s , kips	P_{su} , kips	Moment, ft-kips/ft		Shear, kips/ft	
						DownLoad Side	Uplift Side	Download Side	Uplift Side
Parallel	2.515	0.131	6.17	17.67	0.00	71.71	26.91	14.96	6.93
Diagonal	7.867	0.289	4.83	17.67	0.00	45.53	16.07	16.42	5.56

Punching Shear	Download			Uplift			Description
	Interior	Edge	Corner	Interior	Edge	Corner	
b_o , ft	27.33	N/A	N/A	N/A	N/A	N/A	2-Way Shear
V_{su} , psi	97.86	N/A	N/A	N/A	N/A	N/A	
ϕV_c , psi	225.30	N/A	N/A	N/A	N/A	N/A	
IR	0.43	N/A	N/A	N/A	N/A	N/A	
$0.5 * M_{ut}$, ft-kips	774.4			N/A			Moment transfer to slab
B_e , ft	10.8			N/A			
M_u , ft-kips/ft	72.0			N/A			
Edge Distances: a = 9.63 ft. b = 9.63 ft. c = 9.63 ft.							

Summary	Max. Value	Utilization
Slab Moment, ft-kips/ft	72.03	0.956
Slab Shear, kips/ft	16.42	0.750
Punching Shear, psi	97.86	0.434
Soil Bearing Required, σ_{ur} , ksf	8.23	0.206

Mat Reinforcement	
Min. Steel Area (Strength)	.853 in ² /ft.
Min. Steel Area (Temperature)	.227 in ² /ft.
Steel Strain Actual	0.014
Minimum Steel Strain Required	0.005

22 - #8 Horizontal bars equally spaced @10.71 in., each way, top and bottom, total of 88, $A_s = 0.898$ in²/ft

Designed By: SWG
 Date: 28 Jul,21 @ 08:05 AM

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 Date: CHECKED BY: SY
07/28/2021

Customer: VERIZON WIRELESS
Project: 110 FT O.A.H. TSP
Site: NORWICH 4- CT
Engr. File: 238194
Build Code: ANSI/TIA-222-H-2016



Mat Foundation

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Pier Design

Controlling Load Case: 1 [Wind w/Max. Dead Load]

C = 38.71 kips	Vc = 26.58 kips	Mc = 2,581.24 ft-kips
T = .00 kips	Vt = .00 kips	Mt = .00 ft-kips
Fy = 60.00 ksi	Fyt = 60.00 ksi	L.F. = 1.00
H = 66.00 in.	Ds = 57.00 in.	F'c = 4.50 ksi
U = 1.00	Irs = Square	

*** NOTE: Pier cross section is Square ***

SUMMARY OF ANALYSIS

Minimum area of steel required	= 21.846 in ²	(Rhomin = 0.0050)
Area of steel provided.	= 21.985 in ²	(Rhoactual = 0.0050)
Maximum steel area limit	= 273.696 in ²	(Rhomax = 0.0628)

(22) #9 Vertical Bars equally spaced w/ #5 Circular Ties @ 6" on center.

CIRCULAR TIE DATA

$V_u < 0.85 * V_c / 2$, shear reinforcement is not required

Use maximum tie spacing specified in ACI 318,
Section 7.10.5 for compression reinforcement.

DEVELOPMENT LENGTH MODIFIERS FOR BAR DEVELOPMENT

Modifier for tension development = 1.000
Modifier for compression development = 0.603
REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS, (12 in. min.)

Designed By: SWG
Date: 28 Jul,21 @ 08:05 AM

Checked By: ENGINEERING
Date: CHECKED BY: SY
07/28/2021

**Geotechnical Engineering Report
For:**

**Proposed Telecommunications Tower
Verizon Wireless
Site Name: Norwich 4 CT
110 Yantic Lane
Norwich, CT**

**Prepared for:
David Weinpahl, PE
On Air Engineering, LLC**

**Prepared by:
Atlantic Consulting & Engineering, LLC
525 John Street
Bridgeport, CT 06604**

May 14, 2021

**ENGINEERING REPORT
TABLE OF CONTENTS**

1.00 GENERAL SUMMARY

2.00 INTRODUCTION

 2.10 OBJECTIVE OF STUDY

 2.20 GEOTECHNICAL SCOPE OF SERVICES

 2.30 SITE AND PROJECT DESCRIPTION

3.00 SUBSURFACE EXPLORATIONS

4.00 SUBSURFACE CONDITIONS

5.00 IMPLICATIONS OF SUBSURFACE CONDITIONS

 5.10 GLACIAL TILL DEPOSITS

 5.20 ROCK

 5.30 GROUNDWATER

6.00 DESIGN OBSERVATIONS

 6.10 PIERS, PAD or SPREAD FOOTINGS

 6.20 SLAB ON GRADE

 6.30 PAVED AREAS

 6.40 SEISMIC CHARACTERISTICS/ LIQUEFACTION POTENTIAL

 6.50 SOIL LATERAL LOADS

7.00 CONSTRUCTION AND EARTHWORK CONSIDERATIONS

 7.10 FLOOR SLABS

 7.20 PAVEMENTS

 7.30 MATERIALS, PLACEMENT AND COMPACTION

 7.40 CONSTRUCTION MONITORING SERVICES

8.00 FINAL COMMENTS

FIGURE 1 : ROCK PINNING DETAILS

FIGURE 2 : BORING LOCATION PLAN

APPENDIX A : BORING LOGS 1

APPENDIX B : SIESMIC SUMMARY

**Geotechnical Engineering Report for 110 Yantic Lane, Norwich, CT
May 14, 2021**

1.00 GENERAL SUMMARY

Based on the studies performed as discussed herein, we have prepared the following conclusions and recommendations.

- 1.) Variable density naturally deposited inorganic GLACIAL TILL deposits overlying ROCK are present in the portions of the proposed construction area that were investigated. Liquefaction potential is negligible based on density and gradation of soils, depth of water table and rock depth.
- 2.) The existing naturally deposited inorganic silt, sand and gravel materials can be used to support the bottom of footings and also may meet gradation requirements for re-use as structural fill.
- 3.) If required, raises in grade materials beneath the footings, slabs and pavement should consist of structural fill.
- 3.) Replacement fills for footing, slab and pavement support as required should consist of "structural fill" as defined in paragraph 7.30 and be placed and compacted to 95 percent of the optimum dry density per ASTM D-1557.
- 4.) **Groundwater is NOT expected to impact portions the excavation** or cut areas of the proposed project, however the water table is approximately 24 inches below the bottom of work elevation, so precautions must be taken.
- 5.) Footings shall be excavated to naturally deposited inorganic materials as defined herein and the grade can be raised using structural fill since the acceptable bearing material is below the frost line. Bearing surfaces within the proposed footing areas are to be at least 3.5 feet below the existing grade.
- 6.) Provided bearing surfaces are prepared as described herein, an allowable soil bearing capacity of 6,000 pounds per square foot may be used for design purposes in sizing the footings and foundations. If structural fill is used to raise the bearing grade, 6,000 pounds per square foot can be used in the design.
- 7.) If the tower footings are constructed on rock, the bearing capacity can be up to 20 tons per square foot, based on the RQD hardness. Preparation of the bearing surfaces should be approved by the geotechnical engineer.
- 8.) All work to prepare in-place materials and to construct foundation systems should be performed under the observation of the geotechnical engineer. Specific important details of our geotechnical engineering study and recommendations are enclosed herein.

2.00 INTRODUCTION

This report presents the results of an engineering study performed by Atlantic Consulting & Engineering (ACE), at the site of the proposed tower on 110 Yantic Lane in Norwich, CT. Included in this report are a summary of subsurface conditions observed and the implications of these conditions with respect to the design and construction of the proposed structure. Please note that this report is subject to the limitations contained in Section 8.00.

2.10 OBJECTIVE OF STUDY

The objective of our scope of services was to explore subsurface conditions within the proposed compound area and develop geotechnical recommendations for the design of the foundation support for the proposed structure. Included are design criteria for proposed slab on grade and pavement sections.

2.20 GEOTECHNICAL SCOPE OF SERVICES

The scope of services performed by ACE to meet the above stated objectives for geotechnical services included the following:

- Inspection of the test boring and probes conducted by Soiltesting, Inc., on May 10, 2021.
- Evaluation of the soil samples and the rock core that were taken on site.
- Recommendations were prepared for foundation support for the proposed structure.
- Recommendations for slab and pavement section design have been prepared.
- General recommendations have been made as to earthwork and foundation construction procedures to be followed during the construction phase of this project.

2.30 SITE AND PROJECT DESCRIPTION

Verizon is constructing a 110 foot tall monopole to the south of the water tower. The subject site is located on the eastern side of Yantic Lane. Residences are located to the west and to the south of the site along Cottonwood Lane and Philanne Drive. Route 2 borders the northern portion of the site and the Norwich Public Utilities water company as well as the water tower is located to the east. The road/driveway enters from the east. Borings and probes were drilled to the southwest corner of the site where the new tower is proposed (see plan)

3.00 SUBSURFACE EXPLORATIONS

Subsurface explorations performed for this project consisted of hollow stem augured borings. Borings were terminated in rock deposits.

Test borings were located and drilled by Soiltesting, Inc. Approximate locations of borings are shown on the Boring Location Plan. One (1) test boring and four (4) probes were advanced throughout the site. Copies of the test boring logs are included in Appendix A, along with a boring location plan. Test boring locations should be considered accurate only to the degree implied by measuring method used to determine them. The test borings were conducted using a truck mounted drill rig. Soil samples from the test borings and rock were classified both on site and in the lab.

4.00 SUBSURFACE CONDITIONS

All explorations revealed GLACIAL TILL and ROCK beneath the surface. Loose to Medium dense sand and gravel with mixed silt along with deeper rock was predominant throughout the exploratory effort. The material is compact and stable to work on and is desirable as bearing material and should be prepared as outlined below. Since the material is a GLACIAL TILL DEPOSIT, if prepared properly, the soil can be assigned 3 tons per square foot bearing capacity. Groundwater will probably not affect the excavation work and stability of in situ soils if the excavation proceeds with caution.

5.00 IMPLICATIONS OF SUBSURFACE CONDITIONS

5.10 GLACIAL TILL DEPOSITS (3a)

Throughout the site beginning immediately beneath the surface, a naturally deposited GLACIAL TILL was encountered. The material is a medium compact brown sand and gravel mix. This material ranges in depth from the surface to a depth of 5 feet at the center point of the tower to up to 9 feet below grade 10 feet offset from the Center Point. The characteristics of this material make it suitable for footing support, and this can be the design bearing material for the project. Some of this material **may** meet the structural fill requirements outlined in section 7.30 and therefore could be reused as structural fill for raises in grade beneath footings and slabs, furthermore it appears to be suitable to raise the grade in paved areas and below slabs provided the final 8 inches area prepared in accordance with Paragraph 7.30 below.

5.20 ROCK

Rock and/or boulders were encountered below the glacial till the refusal was encountered as shallow as 5 feet at the center location and as deep as 9.5 feet. The RQD was low based on the 5-foot core that was taken. The proposed foundation can also be set on the rock and a bearing capacity of 20 tons per square foot can be used for design.

5.30 GROUNDWATER

Groundwater was NOT encountered. Therefore, it should not affect the excavation and construction activities.

6.00 DESIGN OBSERVATIONS

It is our recommendation that excavation extend to a depth and be pinned into the rock. Footings shall be pinned into the rock; If the foundation is on rock, the minimum excavation is 12 inches below grade. If the pad is designed to bear on rock and soil, then precautions should be taken for the rock-to-soil interface. If unsuitable materials are encountered at that elevation, then they must be removed followed by replacement with suitable compacted structural fill beneath the bottom of strip and pier footings (if necessary) or construction of the footings directly on the GLACIAL TILL Stratum.

If the in-place material is determined by the Geotechnical Engineer to be acceptable after visual observations, then areas beneath the slabs can be prepared as described in Section 7.10. Where bearing surfaces require a raise in grade, structural fill can be placed above the existing alluvial deposits as described in Section 7.30.

6.10 SPREAD FOOTINGS, PAD or PIERS

Construction of the tower will most likely require establishing a deep rock foundation with anchors to prevent over turning. Blasting or hydraulic hoe ramming may be required to attain the depths needed for proper support. The rock appears to be too dense to excavate using a backhoe. Construction on rock surfaces is shown in Figure 1.

For any other buildings that may be planned, Excavation to naturally deposited inorganic materials is an effective approach for this project due to the relatively shallow depth of the unsuitable materials in the major portion of the construction area. Spread footings, PIERS or PAD can bear directly on TILL deposits, ROCK or structural fill can be used to raise the grade

**Geotechnical Engineering Report for 110 Yantic Lane, Norwich, CT
May 14, 2021**

to a minimum of 42 inches below finish grade if raising the grade is required. There could possibly be an excavation below grade to remove the unsuitable soils. When structural fill is used to raise the grade to the bottom of footing, the compacted area shall extend 12 inches beyond the edge of the footing for every 12 inches of structural fill placed, for example if 2 feet of fill were used to raise the grade for a 4x4 footing, the actual area of structural fill should be 8x8 (2 feet along each side).

6.20 SLAB ON GRADE

For any ancillary buildings, it is recommended that a 4 to 6 inch slab on grade be used to support minor floor loads if required. The slab should over-lie 8 inches of free draining sand and gravel. Which can also be accomplished by the following: excavate 8 inches below bottom of slab having the Geotechnical Engineer observe proof rolling prior to placement of and compaction testing of the structural fill or free draining sand.

6.30 PAVED AREAS

The subgrade soil for pavement will consist of varying depths of the existing glacial till and rock. Our proposed pavement cross section consists of the following:

Roadways and Auto Parking Areas

4 - inch	Two 2" Bituminous Concrete Courses (Class 1 and 2)
4 - inch	Processed Aggregate Base
8 - inch	Structural fill placed on compacted subgrade proof rolled prior to lift placement with a 12 ton vibratory roller with vibrator if proof rolling the bearing stratum.

The above cross section is considered acceptable provided the existing materials are proofrolled and approved by the engineer. All subsequent replacement fills required beneath the sub-base should consist of compacted structural fill. Areas where weaving is observed should be locally excavated and the grade raised using structural fill. Given the fact that some paved areas may be within the loose fill, the depth of excavation depth may need to be increased to attain stable supporting soils. Proof-rolling in the presence of the engineer will enable determination of the stability of that soil.

6.40 SEISMIC CHARACTERISTICS & LIQUEFACTION POTENTIAL

For structural design, the IBC Seismic Site Soil Classification is considered to be "B". The mapped spectral response acceleration for 1 second period is $S_1=0.054$ and for short periods $S_s=0.196$. For transfer of ground shear into the naturally deposited inorganic sands, a factor of 0.35 can be assumed. See Seismic Summary in Appendix B. If the pad is designed on rock, then the seismic coefficients change.

Based on the results of the borings and the Standard Penetration Testing and soil sampling, the subsurface conditions at the site should be considered as having NEGLIGIBLE potential for liquefaction due to the density and gradation of the silt and sand coupled with the shallow depth of the rock.

6.50 SOIL LATERAL LOADS

Any walls will need to be designed for **passive, active and at-rest pressures**. To obtain K values, the ϕ of the soil is needed. For the loose sands and fill $\phi=26^\circ$ can be used; for structural fill, $\phi=37^\circ$ can be used; for existing naturally deposited inorganic alluvial deposits, $\phi=33^\circ$ can be used. Submerged or saturated soil pressure used in design shall include the weight of buoyant soil plus hydrostatic loading which reduces capacity of the soils.

7.00 CONSTRUCTION AND EARTHWORK CONSIDERATIONS

Development of the proposed site may require substantial rock removal. Grading problems may also occur if the work is carried out in wet weather due to the silt content of some of the onsite materials. The recommendations presented in this report are predicated upon site preparations, foundation wall construction, floor slabs and pavement construction monitored under controlled conditions and the direction of the geotechnical consultant.

It is recommended that placement of the concrete for piers and footings take place shortly following the preparation of the design bearing surface, since the introduction of water may adversely affect its structural characteristics. **Dewatering should take place throughout the operation if excavation near the water table takes place.**

7.10 FLOOR SLABS

Prior to placement of new structural fill, or free-draining sand, gravel base course materials, all deleterious materials, including topsoil and fill should be removed from within the limits of the building to the minimum depth below finish floor as determined by the structural engineer. The exposed subgrade materials should then be proof rolled with a minimum of 4 passes of a 10-ton roller in the presence of the undersigned. Any observed soft or weaving areas should be locally excavated and replaced with compacted structural fill. The final 8 inches of free draining sand and gravel shall be placed as defined in section 7.30. A 4-to-6-inch slab on grade is recommended for the use described herein, depending on the proposed loading.

7.20 PAVEMENTS

Prior to placement of new pavement section materials, the in-place materials should be removed to a **minimum depth of 8 inches** below the bottom of finish pavement grades unless the alluvial stratum is encountered at which point it may remain in place. Existing bearing surfaces should be proof rolled and subgrade should then be prepared as outlined under Section 7.10 and 7.30. Raises in grade below pavement section materials should be performed using structural fill, acceptable on-site material and processed base as described in section 6.30

7.30 MATERIALS, PLACEMENT AND COMPACTION

Structural fill to be used in backfilling within the building areas below footings and pavements, below the recommended 8-inch sand-gravel floor slab base course, and beneath the recommended pavement section, should be free from ice, snow, roots, stumps, and other deleterious materials. Structural fill should consist of a sandy GRAVEL or gravelly SAND material having a liquid limit and plasticity limit not exceeding 40 and 15, respectively, and conform to the following gradation requirements:

**Geotechnical Engineering Report for 110 Yantic Lane, Norwich, CT
May 14, 2021**

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
3.5 inch	100
No. 4	30 - 65
No. 10	20 - 50
No. 40	5 - 30
No. 100	0 - 10

Free draining sand and gravel for the pavement base course, whether existing or to be placed, should be free of ice, snow, roots, stumps, rubbish, and other deleterious materials and should consist of hard durable sand and gravel conforming to the following gradation requirements:

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
2 inch	100
1/2 inch	50 - 85
No. 4	40 - 75
No. 50	8 - 28
No. 100	0 - 10

All building areas, structural fill base course free draining sand-gravel fill, pavement base course and pavement sub-base material, should be placed in lifts not exceeding 8 inches in loose lift thickness and should be compacted to at least 95 percent of maximum dry density per ASTM D-1557. New structural fill required exterior to structural element (footings, foundation or retaining walls and pavements) zone of bearing should be compacted to at least 93 percent of the maximum dry density per ASTM D-1557.

If it is necessary to re-use existing acceptable on-site materials, compaction can be carried out by placing the material in lifts not exceeding 6 inches and should be compacted to a minimum of 95 percent of maximum dry density per ASTM D-1557. This cannot be conducted in wet weather, nor if the moisture content of the material is at a level where the desired compaction cannot be physically achieved. Modified Proctor testing, ASTM D-1557, will have to be conducted on samples of any fill desired to be reused. All reused material shall be free of roots, stumps, ice, snow, organic and any other deleterious materials.

7.40 CONSTRUCTION MONITORING SERVICES

It is recommended that Atlantic Consulting & Engineering and Fairfield Testing Laboratory be retained to provide geotechnical engineering and construction monitoring services during the excavation, foundation, and construction phases of the project. The purpose of these services is to observe compliance with the design concepts, contract documents, and geotechnical recommendations and to allow orderly design changes during construction in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Geotechnical Engineering Report for 110 Yantic Lane, Norwich, CT
May 14, 2021

During construction, the Atlantic Consulting & Engineering and Fairfield Testing Laboratories field representatives are recommended to be engaged to provide controlled inspections including with the following:

1. Observe the general progress of site work.
2. Perform the required field control tests for earthwork, including proof-rolling sub-grades and placement of structural fill.
3. Observe earthwork operations to ensure that the minimum compactive effort and maximum lift height restrictions are enforced. Certify rock anchoring and provide pull out testing, if required.
4. Observe, evaluate, and judge the suitability of prepared bearing surfaces as well as any possibility of using existing fill materials below slabs.
5. Observe and evaluate unanticipated subsurface conditions, when and where encountered and alternate procedures, which are proposed to address those unanticipated subsurface conditions.
7. Provide site monitoring for temporary storm water runoff, if necessary.

8.00 FINAL COMMENTS

This report has been prepared for specific application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event that any changes in the nature, design or location of structures are planned, the conclusions and recommendations contained in the report should not be considered valid, unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations submitted in this report are based in part upon the data obtained from the referenced test borings. The nature and extent of variations between explorations may not become evident until construction. In order to take full responsibility for information generated in this report, this geotechnical engineer shall be present to certify all bearing surfaces, acceptable bearing elevations and test the compaction of structural fill. If variations then appear evident, it will be necessary to re-evaluate the recommendation of this report.

Atlantic Consulting & Engineering should perform a general review of final design and specifications in order to determine that earthwork and foundation recommendations have been properly interpreted and implemented in the design specifications.

Submitted by

James E. Quill, PE

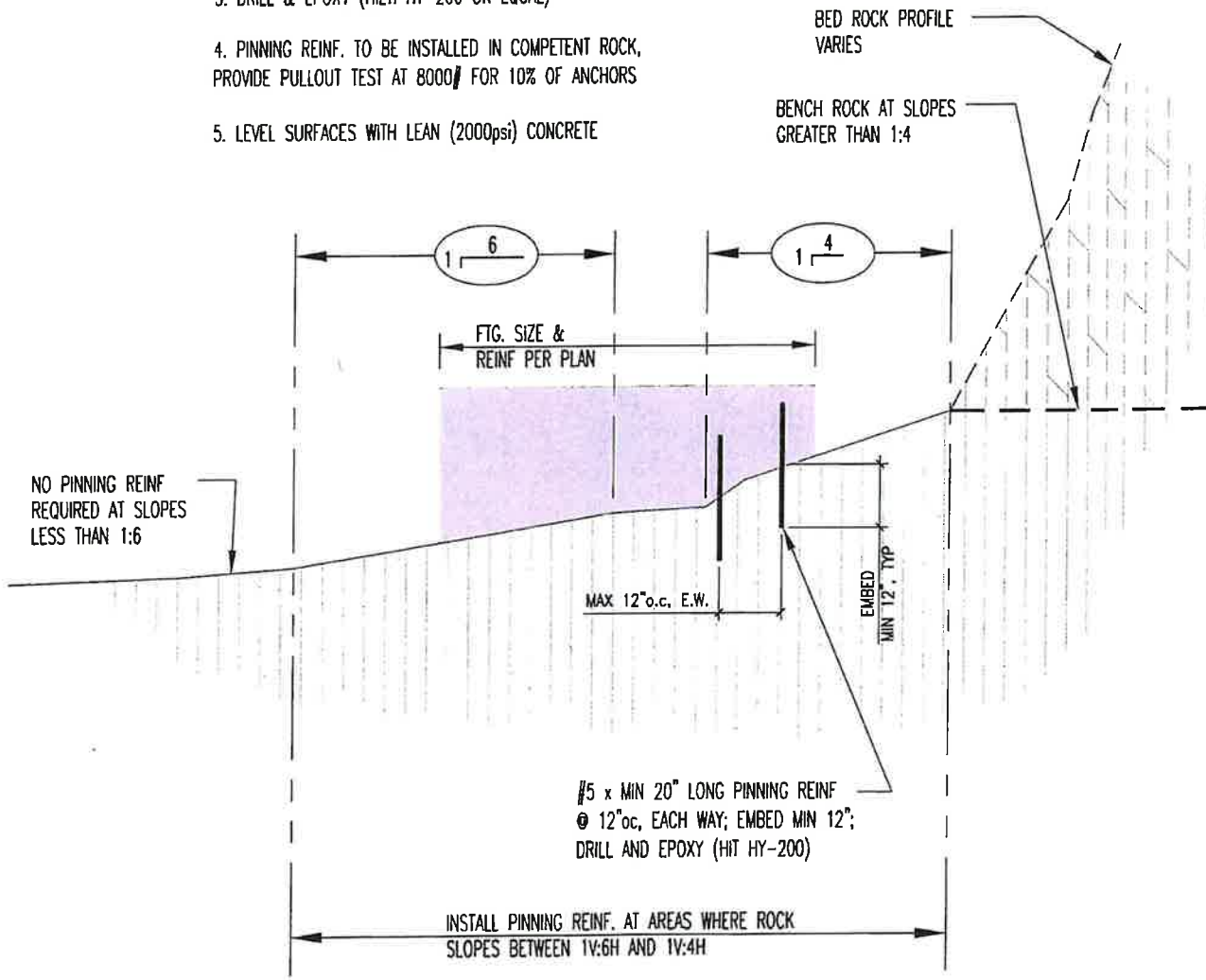
James E. Quill,
CT PE# 14358



Figure 1

Rock Pinning Plan

- NOTES:
1. GRADE 60 DEFORMED REINFORCEMENT PER ASTM A615
 2. INSTALL PINNING REINF. AT 12" oc E.W.
 3. DRILL & EPOXY (HILTI HY-200 OR EQUAL)
 4. PINNING REINF. TO BE INSTALLED IN COMPETENT ROCK, PROVIDE PULLOUT TEST AT 8000# FOR 10% OF ANCHORS
 5. LEVEL SURFACES WITH LEAN (2000psi) CONCRETE



1 ROCK PINNING DETAIL
 SCALE: NTS

Atlantic Consulting & Engineering LLC
 526 JOHN STREET
 BRIDGEPORT, CT
 06604-3928
 (800) 336-4422
 (800) 336-1788 FAX
 (EMAIL: INFO@ATLANTIC-ENG.COM)

TELECOMMUNICATIONS TOWER
 VERIZON WIRELESS
 SITE NAME: NORWICH 4 CT
 110 YANTIC LANE, NORWICH, CT

Rock Pinning

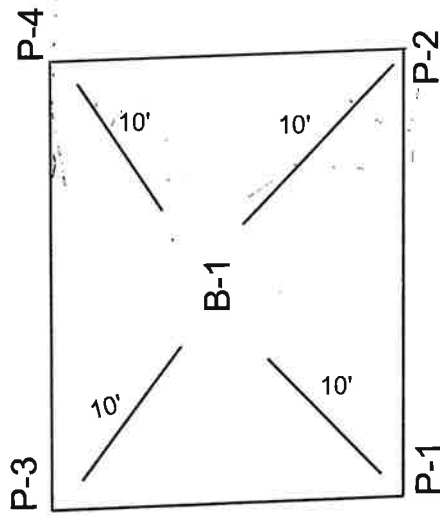
DATE: 5/14/21
 SCALE: NTS
 PREPARED FOR: REPORT

SHEET NO.
Fig 1

THIS DRAWING IS THE PROPERTY OF THE ENGINEER. IT HAS BEEN SPECIFICALLY PREPARED FOR THE OWNER FOR THIS PROJECT AT THIS SITE AND IS NOT TO BE USED FOR ANY OTHER PURPOSE, LOCATION, OR OWNER WITHOUT WRITTEN CONSENT OF THE ENGINEER.

Figure 2

Boring Location Plan



**BORING LOCATION PLAN
CELL TOWER
110 YANTIC LANE
NORWICH, CT**



APPENDIX A

Boring Logs B-1
Probes P-1 through P-4
Conducted on May 10, 2021

SOILTESTING, INC. 140 OXFORD RD. OXFORD, CT 06478 CT (203) 888-4531 NY (914) 946-4850	CLIENT: Atlantic Consulting and Engineering	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. G-1797	HOLE NO. B-1
	PROJECT NAME Proposed Cell Tower Cottonwood & Philanne	BORING LOCATIONS per sketch
FOREMAN - DRILLER MKJao	LOCATION Norwich CT	
INSPECTOR	TYPE	CASING HSA SAMPLER SS CORE BAR NQ2
GROUND WATER OBSERVATIONS AT <u>None</u> FT AFTER <u>0</u> HOURS	SIZE I.D.	4 1/4" 1 3/8" 2"
AT <u> </u> FT AFTER <u> </u> HOURS	HAMMER WT.	140# BIT
	HAMMER FALL	30" DIA
		OFFSET
		DATE START 5/10/21
		DATE FINISH 5/10/21
		SURFACE ELEV.
		GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE)		CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.
		NO	Type	PEN	REC	DEPTH @ BOT	0 - 6	6 - 12				
		1	SS	24"	10"	2'0"	1	1		moist v loose		6" Topsoil Brn F Sand am Silt
							2	2				
5		2	SS	1"	1"	5'1"	50/1"				5'0"	Cobbles and Boulders
											5'6"	AUGER REFUSAL 5'6"
10												E.O.B 5'6"
												Offset 5'0" to B-1A
5												
		1	NQ	60"	60"	10'6"	RQD=17%		3		5'6"	AUGER REFSAL 5'6"
									4			
									3			
									3			Bedrock
10									4		10'6"	
												E.O.B 10'6"
15												
20												
25												
30												

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO _____ FT. USED _____ CASING THEN _____ CASING TO _____ FT.	HOLE NO. B-1
A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST	
WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS	C = COARSE
SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER	M = MEDIUM
PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50%	F = FINE

SOILTESTING, INC. 140 OXFORD RD. OXFORD, CT 06478 CT (203) 888-4531 NY (914) 946-4850	CLIENT: Atlantic Consulting and Engineering	SHEET <u>1</u> OF <u>1</u>
	PROJECT NO. G-1797	HOLE NO. P-1-4
FOREMAN - DRILLER MK/ao	PROJECT NAME Proposed Cell Tower Cottonwood & Philanne	BORING LOCATIONS per Plan
INSPECTOR	LOCATION Norwich CT	OFFSET
GROUND WATER OBSERVATIONS AT ___ FT AFTER ___ HOURS	TYPE HSA	DATE START 5/10/21
AT ___ FT AFTER ___ HOURS	SIZE I.D. 4 1/4"	DATE FINISH 5/10/21
	HAMMER WT. 140#	SURFACE ELEV.
	HAMMER FALL 30"	GROUND WATER ELEV.

DEPTH	CASING BLOWS PER FOOT	SAMPLE					BLOWS PER 6 IN ON SAMPLER (FORCE ON TUBE) 0 - 6 6 - 12 12 - 18	CORE TIME PER FT (MIN)	DENSITY OR CONSIST	STRATA CHANGE DEPTH	FIELD IDENTIFICATION OF SOIL REMARKS INCL. COLOR, LOSS OF WASH WATER, SEAMS IN ROCK, ETC.		
		NO	Type	PEN	REC	DEPTH @ BOT						MOIST	ELEV
										P-1			
5									5'0"	AUGER REFUSAL 5'0" E.O.B 5'0"			
5									5'0"	P-2 AUGER REFUSAL 5'0" E.O.B 5'0"			
5										P-3			
10									9'6"	AUGER REFUSAL 9'6" E.O.B 9'6"			
5									5'6"	P-4 AUGER REFUSAL 5'6" E.O.B 5'6"			
10													
15													
20													

NOTE: Subsoil conditions revealed by this investigation represent conditions at specific locations and may not represent conditions at other locations or times.

GROUND SURFACE TO ___ FT. USED ___ CASING THEN ___ CASING TO ___ FT. HOLE NO. **P-1-4**

A = AUGER UP = UNDISTURBED PISTON T = THINWALL V = VANE TEST
 WOR = WEIGHT OF RODS WOH = WEIGHT OF HAMMER & RODS C = COARSE
 SS = SPLIT TUBE SAMPLER H.S.A. = HOLLOW STEM AUGER M = MEDIUM
 PROPORTIONS USED: TRACE = 0 - 10% LITTLE = 10 - 20% SOME = 20 - 35% AND = 35 - 50% F = FINE

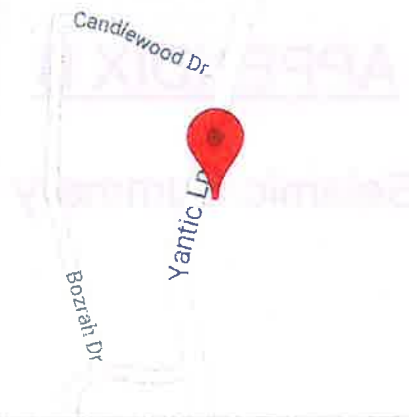
APPENDIX B

Seismic Summary



110 Yantic Ln, Norwich, CT 06360, USA

Latitude, Longitude: 41.5543284, -72.13074540000001



Google

Map data ©2021

Date	5/19/2021, 2:07:46 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	B - Rock

Type	Value	Description
S _S	0.196	MCE _R ground motion. (for 0.2 second period)
S ₁	0.054	MCE _R ground motion. (for 1.0s period)
S _{MS}	0.176	Site-modified spectral acceleration value
S _{M1}	0.043	Site-modified spectral acceleration value
S _{DS}	0.117	Numeric seismic design value at 0.2 second SA
S _{D1}	0.029	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	A	Seismic design category
F _a	0.9	Site amplification factor at 0.2 second
F _v	0.8	Site amplification factor at 1.0 second
PGA	0.108	MCE _G peak ground acceleration
F _{PGA}	0.9	Site amplification factor at PGA
PGA _M	0.097	Site modified peak ground acceleration
T _L	6	Long-period transition period in seconds
SsRT	0.196	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.206	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.054	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.059	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C _{RS}	0.948	Mapped value of the risk coefficient at short periods
C _{R1}	0.925	Mapped value of the risk coefficient at a period of 1 s

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