

THE CONNECTICUT LIGHT AND POWER COMPANY
Doing Business As
EVERSOURCE ENERGY

PETITION TO THE CONNECTICUT SITING COUNCIL
FOR A DECLARATORY RULING OF
NO SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT
FOR THE PROPOSED INSTALLATION OF ONE STEEL
POLE FOR COMMUNICATIONS IN THE TOWN OF
FARMINGTON, CONNECTICUT

A. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies, The Connecticut Light and Power Company doing business as Eversource Energy (“Eversource” or the “Company”), hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) to install a new steel pole with appurtenances (“Proposed Facility”) to enhance communications at its Farmington, Old Mountain Road Substation (“Substation”). See Figure 1, *Overview Map*.

B. Background

Eversource currently owns the 3.65-acre parcel at 29 Old Mountain Road in Farmington, Connecticut (the “Site”). The Company operates an existing power substation in a gravel-based, fenced compound consisting of substation equipment and a control house.

Eversource is in the process of reconfiguring its communications system throughout the State. The proposed installation is part of Eversource’s program to update the current obsolete analog voice radio communications system to a modern digital voice communications system. The new system will enable the highest level of voice communications under all operating conditions, including during critical emergency and storm restoration activities. The new radio system will also provide for remote control of distribution safety equipment.

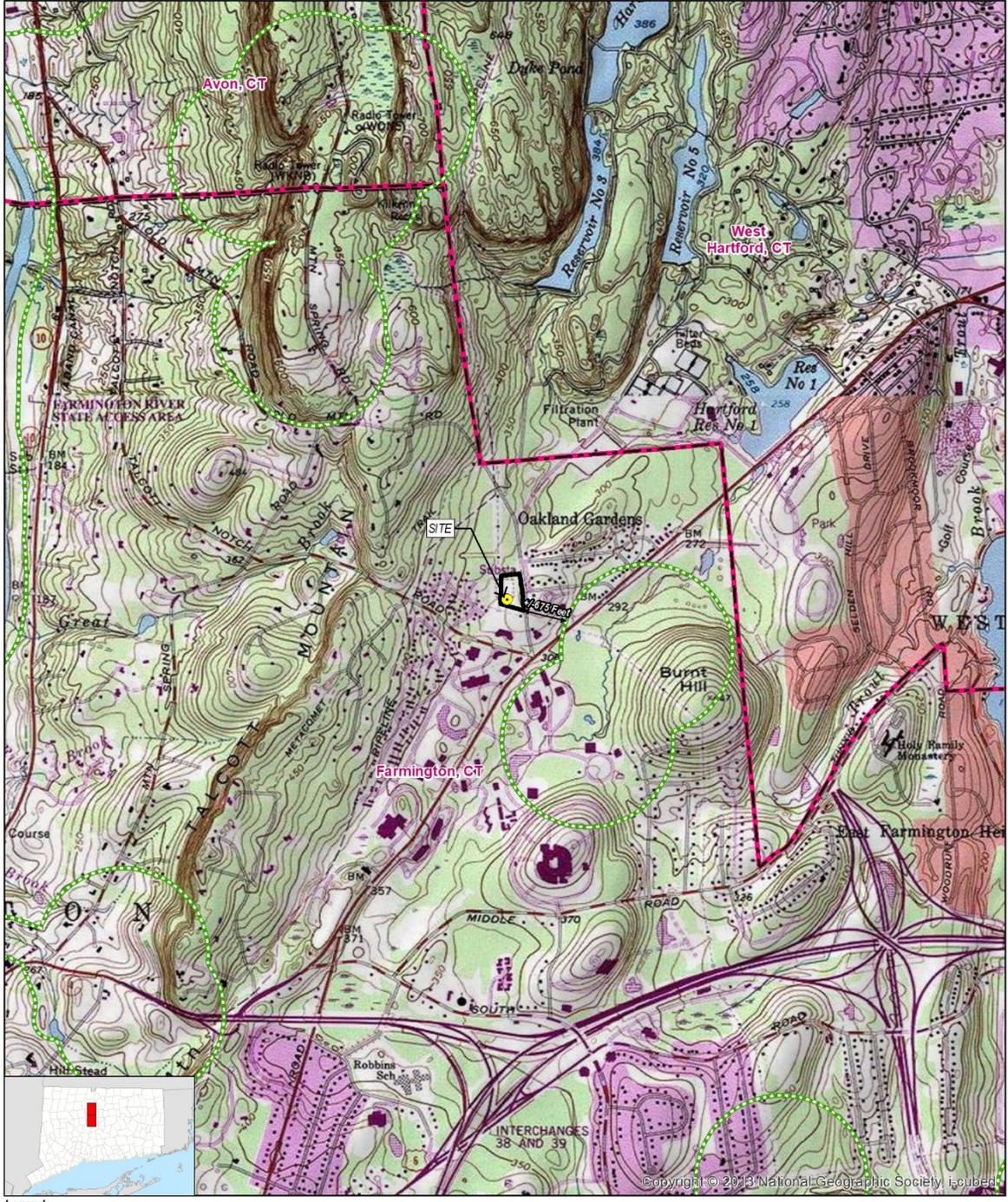


Figure 1
Overview Map

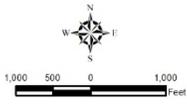
Proposed Communications Facility
Farmington 1C
29 Old Mountain Road
Farmington, Connecticut



Legend

- Proposed 63' Steel Pole
- Subject Property
- Natural Diversity Database (updated 6/2020)
- Municipal Boundary

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic
Quadrangle Maps, Avon (1984) and New Britain (1992), CT
Map Scale: 1:24,000
Map Date: July 2020



C. Description of the Project

The Company proposes to install one new steel pole within a new approximately 34.5 feet by 20 feet fenced gravel compound expansion off the Substation’s existing southern fence line. The Proposed Facility would be erected approximately 15 feet southeast of the location of the existing control house building. The ground elevation at this portion of the Site is approximately 336 feet above mean sea level (“AMSL”). The height of the building is 11 feet above ground level (“AGL”). The proposed steel pole would rise approximately 63 feet AGL. One omni-directional whip antenna, approximately 24 feet tall, would be mounted at the top of the pole and extend to a height of approximately 85 feet AGL. See *Figure 2, Detailed Site Map and Attachment 1, Site Plans (completed by Black & Veatch on July 1, 2020)*. An ice bridge and associated cabling will extend from the steel pole to the control house which will house the radio equipment. Eversource would own the Proposed Facility.

Specifications for the Company's new antenna are included in *Attachment 2, Antenna Specifications*. The Company would maintain its radio equipment and electrical power supply connections inside the existing control house building. No new underground connections would be required for the Proposed Facility.

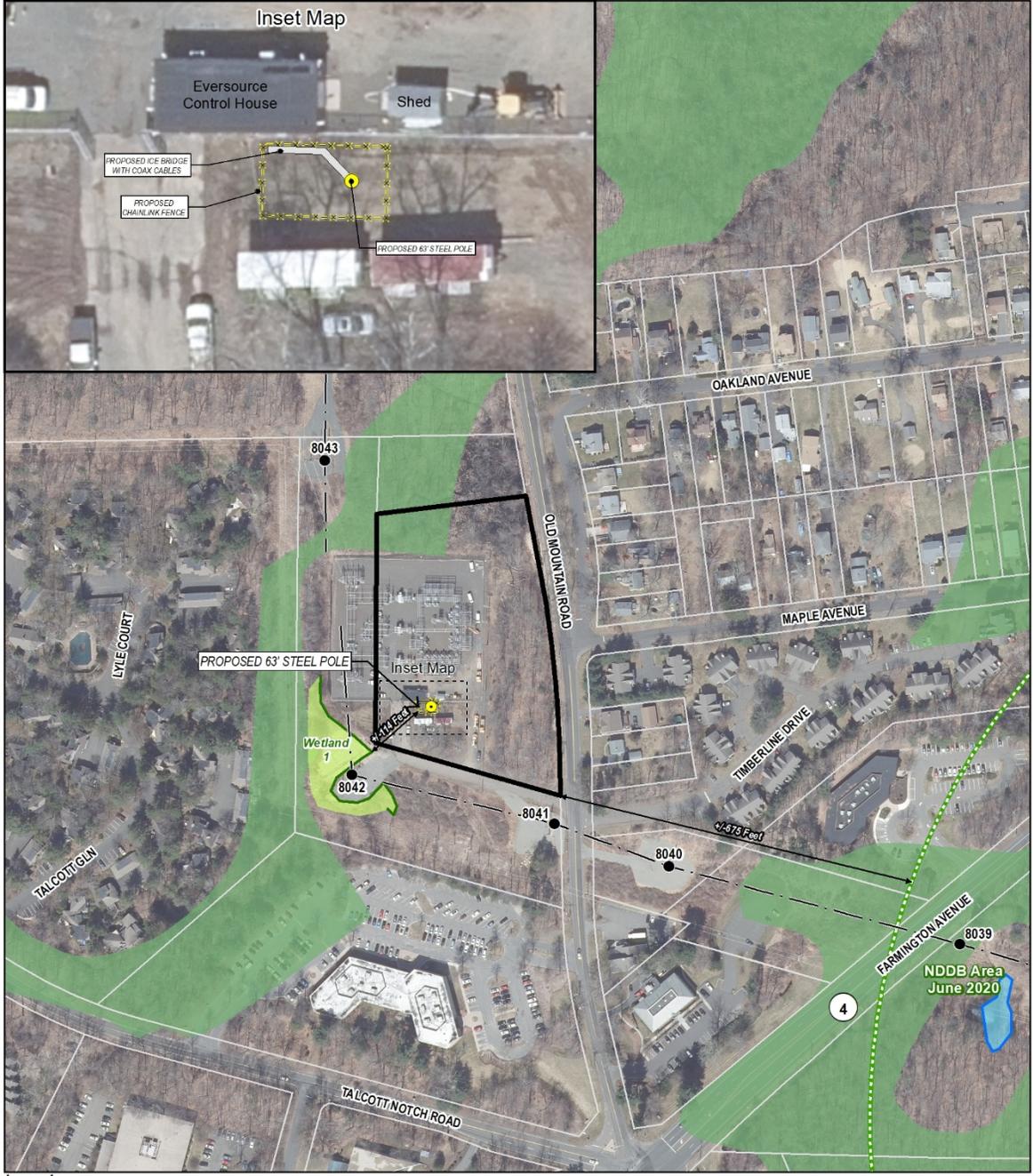
Table 1, *Antenna Schedule* summarizes the antenna type and vertical location proposed on the new pole.

TABLE 1 - ANTENNA SCHEDULE

Antenna Type	Antenna Make/Model	Antenna Center Line Elevation (ft. AGL)	Comments	Frequency
24' – 3" Omni	DB Spectra DS2C03F36D	±73.0	Eversource	217 MHz

For additional elevation information and location drawings of the proposed installation, please refer to the *Site Plans* in Attachment 1.

A structural loading analysis has been performed to ensure that the steel pole would be structurally capable of supporting the loading from the proposed antenna system. A review of the design and structural analysis for the Proposed Facility is included in Attachment 3, *Structural Analysis Report*, which was completed by Black & Veatch on June 25, 2020.



- Legend**
- Proposed 63' Steel Pole
 - Proposed Chainlink Fence
 - Proposed Ice Bridge and Coax Cables
 - Subject Property
 - Existing Structure
 - Overhead Eversource Line
 - Delineated Wetland Boundary Outline
 - Field Delineated Wetland
 - Approximate Wetland (not delineated; CTDEEP)
 - Open Water (CTDEEP)
 - Natural Diversity Database (updated 6/2020)
 - Parcel Boundary
 - Detail Map

Figure 2
Detailed Site Map
 Proposed Communications Facility
 Farmington 1C
 29 Old Mountain Road
 Farmington, Connecticut

Map Notes:
 Base Map Source: 2019 Aerial Photograph (CTECO)
 Map Scale: 1 inch = 250 feet
 Map Date: July 2020



D. Environmental Discussion

The Proposed Facility would not have a substantial adverse environmental effect because construction will occur within previously disturbed areas.

1) Wetlands and Watercourses

Groundwork for the Proposed Facility is limited to the installation of the foundations for the ice bridge, fence posts and steel pole in an existing grassy area. No wetlands are located within or immediately adjacent to the proposed work activities. The nearest wetland area is located off the southwest corner of the substation security fence within an electrical transmission corridor. The nearest construction activities associated with the Proposed Facility are approximately 110 feet northeast of the wetland boundary. Details of this wetland determination are provided in Attachment 4, *Wetlands Inspection Report*. Therefore, development of the Proposed Facility would not result in a likely adverse impact to wetlands due to the separating distance and presence of an intervening access drive.

2) Soil Erosion, Sediment Control, and Soil Remediation

Limited ground disturbance would be associated with the installation of the proposed steel pole and fencing. This work will be limited to a level, maintained lawn area located immediately south and southeast of the control house building. Therefore, soil erosion is not anticipated.

3) Wildlife and Vegetation

The Proposed Facility would not have a significant adverse effect on wildlife or vegetation because the steel pole, appurtenant equipment, and the associated construction work would be primarily confined to the existing grassy area adjacent to the active substation. Ground disturbance would be limited to a relatively small maintained lawn area immediately south of the substation fence. The Site, being completely developed with the substation, access drive and maintained lawn, does not support any significant wildlife habitat. Therefore, the Proposed Facility would not result in an adverse impact to wildlife.

No migratory bird species are anticipated to be impacted by the project. The Proposed Facility is not proximate to any Important Bird Area (“IBA”); the nearest IBA, Farmington High Chimney in Farmington, is located approximately 3.2 miles to the west. Further, the design and siting of the proposed monopole would comply with the U.S. Fish and Wildlife Service (“USFWS”) guidelines for minimizing potential impacts to bird species. Therefore,

no migratory bird species are anticipated to be impacted by the Proposed Facility.

According to the available Connecticut Department of Energy & Environmental Protection (“DEEP”) Wildlife Division Natural Diversity Data Base (“NDDB”) maps, the Proposed Facility is not located within a shaded NDDB buffer area. The nearest NDDB buffer area is located approximately 675 feet to the east. Eversource submitted a review request with respect to this project to confirm that no known populations of Federal or State Endangered, Threatened or Special Concern Species occur on this Site. DEEP concurred with the Company’s determination and “do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site.” A copy of the DEEP submission and determination letter is included in Attachment 5, *DEEP Correspondence*.

One federally-listed threatened species is known to occur in the vicinity of the Site, documented as the northern long-eared bat (“NLEB”; *Myotis septentrionalis*). NLEB’s range encompasses the entire State of Connecticut. Based on available NLEB data the Site is not within 150 feet of a known occupied maternity roost tree and is not within 0.25 mile of a known NLEB hibernaculum. The nearest NLEB habitat resource to the proposed activity is a hibernaculum located in Morris approximately 18 miles to the west of the Project. The facility would not require the removal of any trees that could potentially support NLEB habitat. Based on this information, it is the Company’s opinion that the Project is not likely to adversely affect NLEB.

4) Noise

No noise audible to exterior locations would be emitted by the Proposed Facility. Electrical components and other supporting telecommunication equipment will be internally installed within the control house building. As a result, noise emissions would be consistent with present day levels.

5) Safety and Health

The Proposed Facility would not create any safety or health hazards to persons or property. Eversource does not anticipate the need for specific traffic control measures during construction on the Site or equipment and materials delivery. Subsequent to completion of construction, the Proposed Facility would not generate any additional traffic to the area other than continued periodic maintenance visits.

Radio-signal emissions from the proposed equipment after installation on the Site would not

exceed the total radio-frequency ("RF") electromagnetic power density level permitted by the Federal Communications Commission ("FCC"). To ensure compliance with the applicable standard, the Company commissioned C Squared Systems to conduct RF power density calculations for the proposed installation using site-specific data and the methodology prescribed by the FCC's Office of Engineering and Technology Bulletin No. 65, Edition 97-01 (August 1997). The calculations indicate that the cumulative power density level for the proposed installation (1 antenna) would be 2.48% of the FCC Standard for public exposure to RF emissions. Please refer to Attachment 6, *Calculated Radio Frequency Emissions Report*, dated July 13, 2020, for a copy of the methodology and calculations.

6) Visual

The Proposed Facility would not result in a substantial change to existing conditions nor would it have a significant adverse visual impact on the environment or character of the community. The Proposed Facility would be a 63-foot tall steel pole with a top mounted omni-directional antenna bringing the total height of the facility to 85-feet AGL. The size and style of the steel pole would not substantially alter the current views of the Site. The Substation is shielded from Old Mountain Road by mixed deciduous trees. Numerous wooden utility poles and steel transmission poles are present south of the Site's access drive. Photo-simulations have been produced to provide a visual representation of the Proposed Facility from Old Mountain Road, please refer to *Attachment 7, Photographic Simulations*.

7) Historical and Archaeological Resources

A review of relevant historic and archaeological information was conducted to determine whether the Site holds potential historical and/or archaeological significance. No historic properties previously listed or deemed eligible for the National Register of Historic Places were identified within the Area of Potential Effect (APE – 0.5 mile). Please refer to *Attachment 8, Cultural Resources Screen*.

A review of cultural resources on file with the Connecticut State Historic Preservation Office ("SHPO") revealed that no previously recorded archaeological sites have been identified on the Site or within the APE. It is evident that the Site has been thoroughly disturbed and no intact soils remain. Thus, the Site retains no potential to yield intact prehistoric or historic period cultural deposits. The ground disturbance associated with the Proposed Facility would take place within a previously disturbed area. As no historic, archaeological or cultural resources were identified within the APE a SHPO submission was not conducted for this

Facility.

8) Forests and Parks

The Site contains no areas of recreation or public interest administered by any federal, state, local, or private agencies. No State or locally-designated scenic roads or other scenic areas are located proximate to the Site. Batterson Park and the West Hartford Reservoir are located approximately 0.18-mile southeast and 0.79-mile northeast, respectively, of the Site. No views are anticipated from either of these locations. The locations of non-residential development and other resources within two miles of the Site are listed in Table 2 and depicted on Figure 3, *Surrounding Features Map*.

9) Physical Environmental Effects

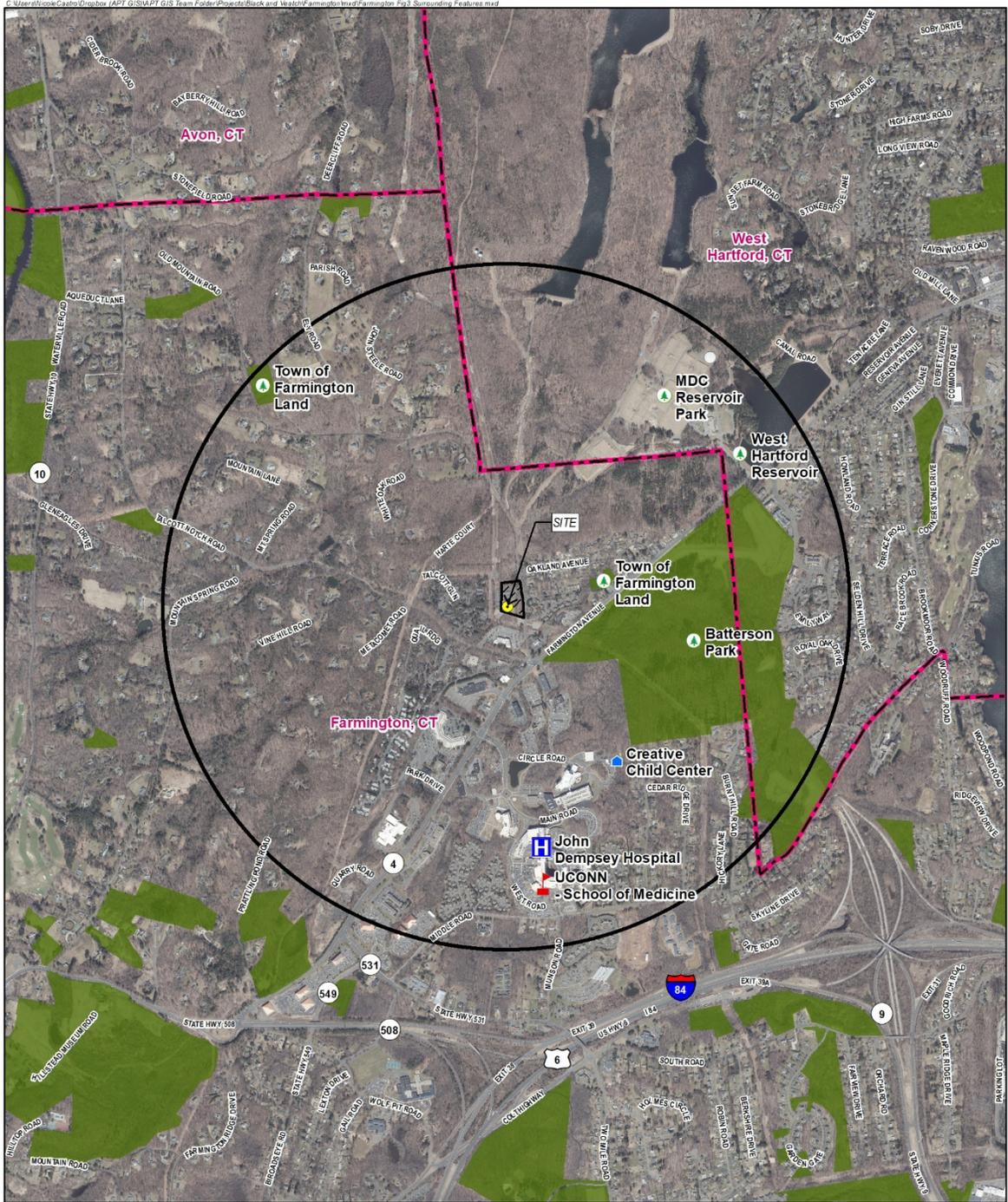
Construction of the Proposed Facility would not involve a significant alteration in the physical or environmental characteristics of the Site or the surrounding area. The proposed development would be located adjacent to the existing substation and require minimal earthwork. No trees or vegetation would need to be removed to accommodate construction. Coaxial cables would be routed into the existing control house building such that no supporting equipment would be located outside. Vehicular access to the Company's substation would not change in any way.

10) Federal Aviation Administration ("FAA") Registration

The Proposed Facility's coordinates, height, and structure type were reviewed by the FCC through its on-line antenna structure registration screening tool to determine if it requires FAA registration and lighting or marking. The results of this screening (August 21, 2020) concluded that the proposed structure does not require registration. A copy of the TOWAIR determination can be found in Attachment 9, *TOWAIR Determination Results*.

Table 2: SURROUNDING FEATURES WITHIN 2 MILES OF THE SITE

Resource Type	Name	Address	Distance from Site
Daycare	Creative Child Center	263 Farmington Avenue, Farmington, CT	0.49 Mile SE
Community Center	None		
Senior Center	None		
Airport	None		
Hospital	John Dempsey Hospital	100 Hospital Drive, Farmington, CT	0.64 Mile S
School	University of Connecticut – School of Medicine	200 Academic Way, Farmington, CT	0.75 Mile S
Park / Recreational	Batterson Park	Batterson Park Road, Farmington, CT	0.18 Mile E
	Town of Farmington Land	Maple Avenue, Farmington, CT	0.2 Mile E
	MDC Reservoir Park	1420 Farmington Avenue, West Hartford, CT	0.79 Mile NE
	Town of Farmington Land	Old Mountain Road, Farmington, CT	0.85 Mile NW
	West Hartford Reservoir	1420 Farmington Avenue, West Hartford, CT	0.79 Mile NE
National Register of Historic Places	None		
Youth Camp	None		



Legend

- Proposed 63' Steel Pole
- 1-mile Radius
- Subject Property
- Municipal Boundary

Surrounding Features

- Park / Recreation / Open Space
- Hospital
- School
- Daycare

Open Space Property (CTDEEP GIS)

- Open Space Property (CTDEEP GIS)

Map Notes:
 Base Map Source: 2019 CT ECO Imagery
 Map Scale: 1:24,000
 Map Date: July 2020

2,000 1,000 0 2,000 Feet

Figure 3
Surrounding Features
 Proposed Communications Facility
 Farmington 1C
 29 Old Mountain Road
 Farmington, Connecticut



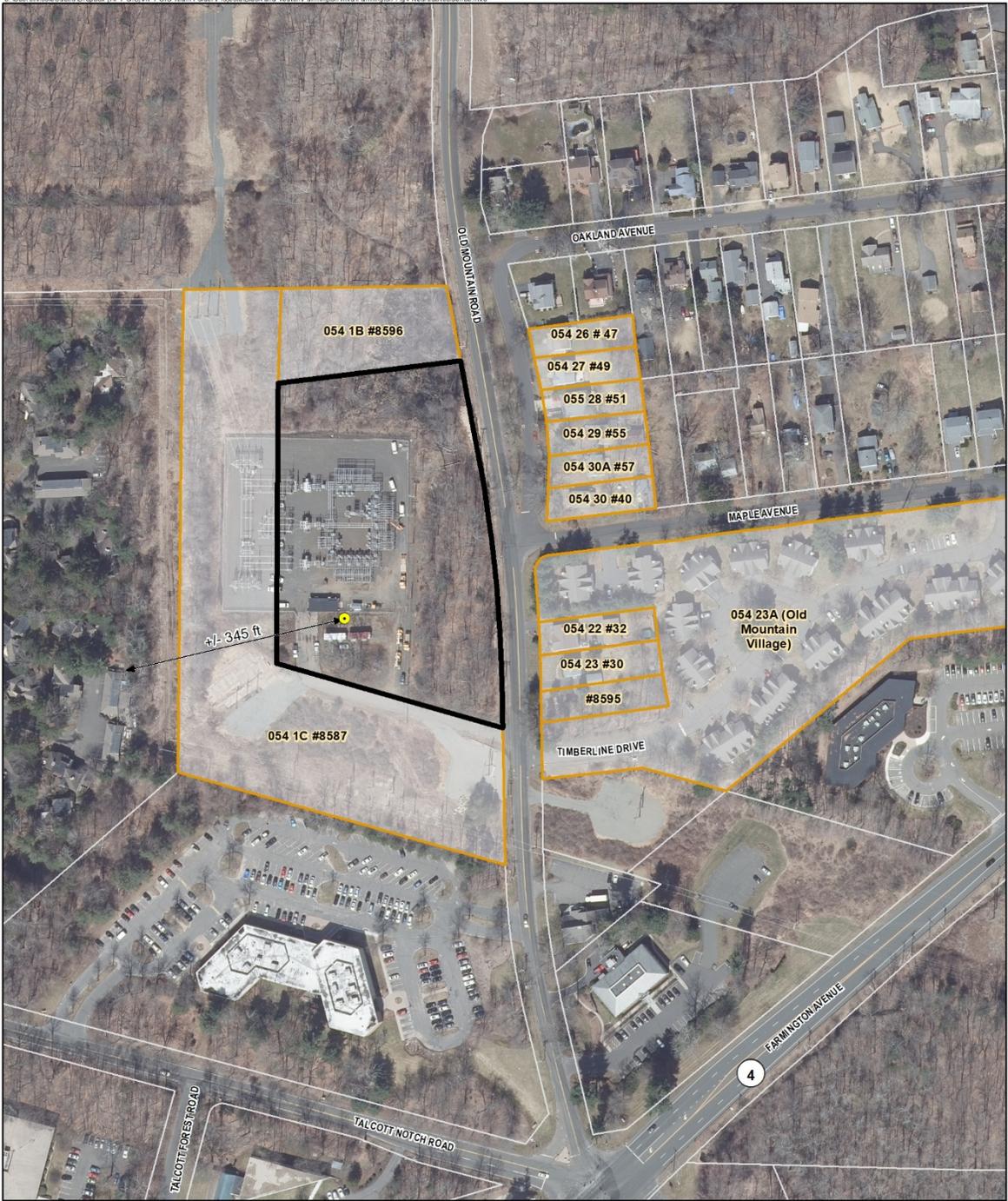
11) Location of Nearest Residence

The Site is accessed from Old Mountain Road which is developed with both residences and commercial businesses. The nearest residential property to the Site is located approximately 345 feet to the west in Talcott Glen. See Figure 4, *Nearest Residence*.

Direct abutters were served notice of this Petition concurrent with its submission to the Council. Those abutters are included in Table 3, *Direct Abutters* and depicted on Figure 4 *Abutters Map and Nearest Residence*.

TABLE 3 – DIRECT ABUTTERS

Line List Designation	Owner Name	Site Address	Town	State
054 1B #8596	CONNECTICUT LIGHT & POWER CO.	8596 OLD MOUNTAIN RD	Farmington	CT
054 1C #8587	CONNECTICUT LIGHT & POWER CO.	8587 OLD MOUNTAIN RD	Farmington	CT
054 23A #Multiple	MULTIPLE OWNERS	1 – 28 TIMBERLINE DR	Farmington	CT
054 23 #30	GAYLORD KATHLEEN S TRUSTEE	30 OLD MOUNTAIN RD	Farmington	CT
054 22 #32	MAGDALENA HASIAK	32 OLD MOUNTAIN RD	Farmington	CT
054 30 #40	FARMINGTON MERRIFIELD REAL	40 MAPLE AVENUE	Farmington	CT
054 30A #57	NANCY J KRECH	57 OAKLAND AVENUE	Farmington	CT
054 29 #55	JAMES C. & KRISTIN C LYNCH	55 OAKLAND AVENUE	Farmington	CT
055 28 #51	MARCUS A BORDIERE	51 OAKLAND AVENUE	Farmington	CT
054 27 #49	CZESLAWA DOMANSKA	49 OAKLAND AVENUE	Farmington	CT
054 26 #47	MARY M FOURNIER	47 OAKLAND AVENUE	Farmington	CT
#8595	JEANNETTE P. SHAW	8595 OLD MOUNTAIN RD	Farmington	CT



- Legend**
- Proposed 60' Steel Pole
 - Subject Property
 - Abutting Property
 - Parcel Boundary

Map Notes:
 Base Map Source: 2019 CT ECO Imagery
 Map Scale: 1 inch = 200 feet
 Map Date: June 2020



Figure 4
Abutters Map & Nearest Residence

Proposed Communications Facility
 Farmington 1C
 29 Old Mountain Road
 Farmington, Connecticut



E. Schedule

Construction of this facility would begin as soon as practical after issuance of the requested declaratory ruling by the Council and would be approximately three weeks in duration. Eversource anticipates that construction would be completed in the beginning of 2021.

F. Conclusion

Connecticut General Statutes Section 16-50k(a) provides that a Certificate of Environmental Compatibility and Public Need is needed for a proposed installation of a facility that the Council determines would have a "substantial adverse environmental effect." Based on evaluation of the environmental effect of the Proposed Facility, Eversource respectfully submits that the installation of the Proposed Facility would not result in a substantial adverse effect on the environment or ecology, nor would it damage existing scenic, historical or recreation values.

Accordingly, Eversource requests that the Council issue a declaratory ruling that no Certificate is required because the Proposed Facility would not have a substantial adverse environmental effect.

G. Communications with Company

Communications regarding this Petition for a Declaratory Ruling should be directed to:

Kathleen M. Shanley
Manager – Transmission Siting
Eversource Energy
56 Prospect Street
Hartford, CT 06103
Telephone: (860) 728-4527

EVERSOURCE ENERGY by:

Kathleen M. Shanley
Manager – Transmission Siting

Attachment 1 – Site Plans



FARMINGTON 1C

29 OLD MOUNTAIN RD

FARMINGTON, CT 06032

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT SUMMARY

- THE GENERAL SCOPE OF WORK CONSISTS OF THE FOLLOWING:
1. INSTALL (1) NEW 63'-0"± AGL STEEL POLE
 2. INSTALL (1) NEW DMR EQUIPMENT IN EXISTING CONTROL HOUSE
 3. INSTALL NEW ICE BRIDGE AT ELEVATION 0'-0"± AGL
 4. INSTALL NEW COMPOUND FENCING AT ELEVATION 0'-0"± AGL
 5. INSTALL (1) NEW OMNI/WHIP ANTENNA AT ELEVATION 85'-0"± AGL

GOVERNING CODES

2018 CONNECTICUT STATE BUILDING CODE (2015 IBC BASIS)
2017 NATIONAL ELECTRIC CODE
TIA-222-H

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

SITE INFORMATION

SITE NAME: FARMINGTON 1C
SITE ID NUMBER: #13750029
SITE ADDRESS: 29 OLD MOUNTAIN RD
FARMINGTON, CT 06032
MAP: 5
BLOCK: 4
LOT: 1D
ZONE: R40
LATITUDE: 41° 44' 29.23" N
LONGITUDE: 72° 47' 36.58" W
ELEVATION: 336'± AMSL
FEMA/FIRM DESIGNATION: X
ACREAGE: 3.65± AC (BOOK: 0288, PAGE: 0347)

CONTACT INFORMATION

APPLICANTS:
EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
POWER PROVIDER:
EVERSOURCE ENERGY
(800) 286-2000
PROPERTY OWNER:
EVERSOURCE ENERGY
107 SELDEN STREET
BERLIN, CT 06037
TELCO PROVIDER:
FRONTIER
(800) 921-8102
EVERSOURCE ENERGY
PROJECT MANAGER:
NIKOLL PRECI
(860) 655-3079
CALL BEFORE YOU DIG:
(800) 922-4455

DESIGN TYPE

SITE UPGRADE
NEW STEEL POLE

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
C-1	ABUTTERS MAP
C-2	PARTIAL SITE PLAN
C-3	SITE PLAN
C-4	TOWER ELEVATION & ANTENNA EQUIPMENT
C-5	ICE BRIDGE DETAILS
C-6	CHAINLINK FENCE DETAILS
C-7	EARTHWORK DETAILS
G-1	GROUNDING PLAN
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
G-4	GROUNDING DETAILS
G-5	GROUNDING DETAILS
N-1	NOTES & SPECIFICATIONS
N-2	NOTES & SPECIFICATIONS
N-3	NOTES & SPECIFICATIONS

DO NOT SCALE DRAWINGS

SUBCONTRACTOR SHALL VERIFY ALL PLANS & EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME



UNDERGROUND SERVICE ALERT
UTILITIES PROTECTION CENTER, INC.
811

48 HOURS BEFORE YOU DIG

LOCATION MAP



PROJECT NO: 403093
DRAWN BY: TYW
CHECKED BY: JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



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

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

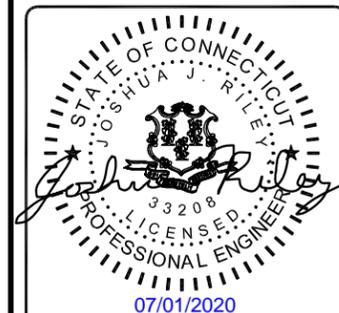
SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



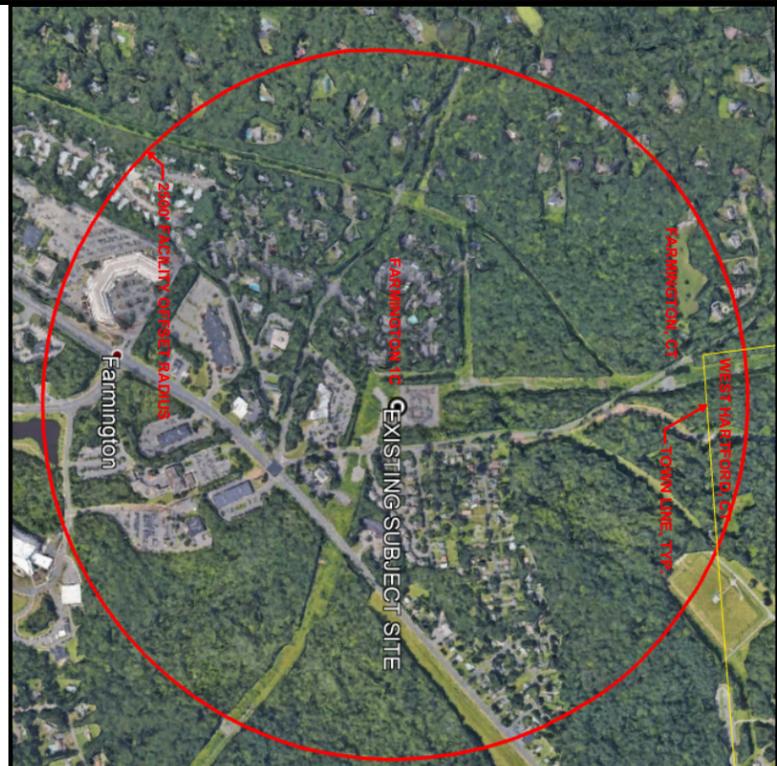
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
ABUTTERS MAP

SHEET NUMBER
C-1

Town of Farmington, Connecticut - Assessment Parcel Map
UNIQUE ID: 13750029 Address: 13750029



MUNICIPALITY NOTIFICATION LIMIT MAP

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Farmington and its mapping contractors assume no legal responsibility for the information contained herein.

ABUTTERS MAP

Approximate Scale: 1 inch = 100 feet



Map Produced Oct. 2019

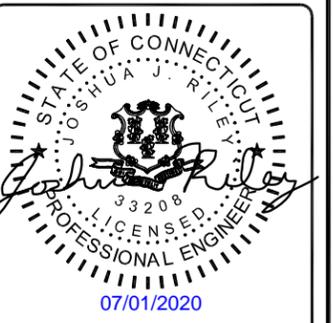


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING

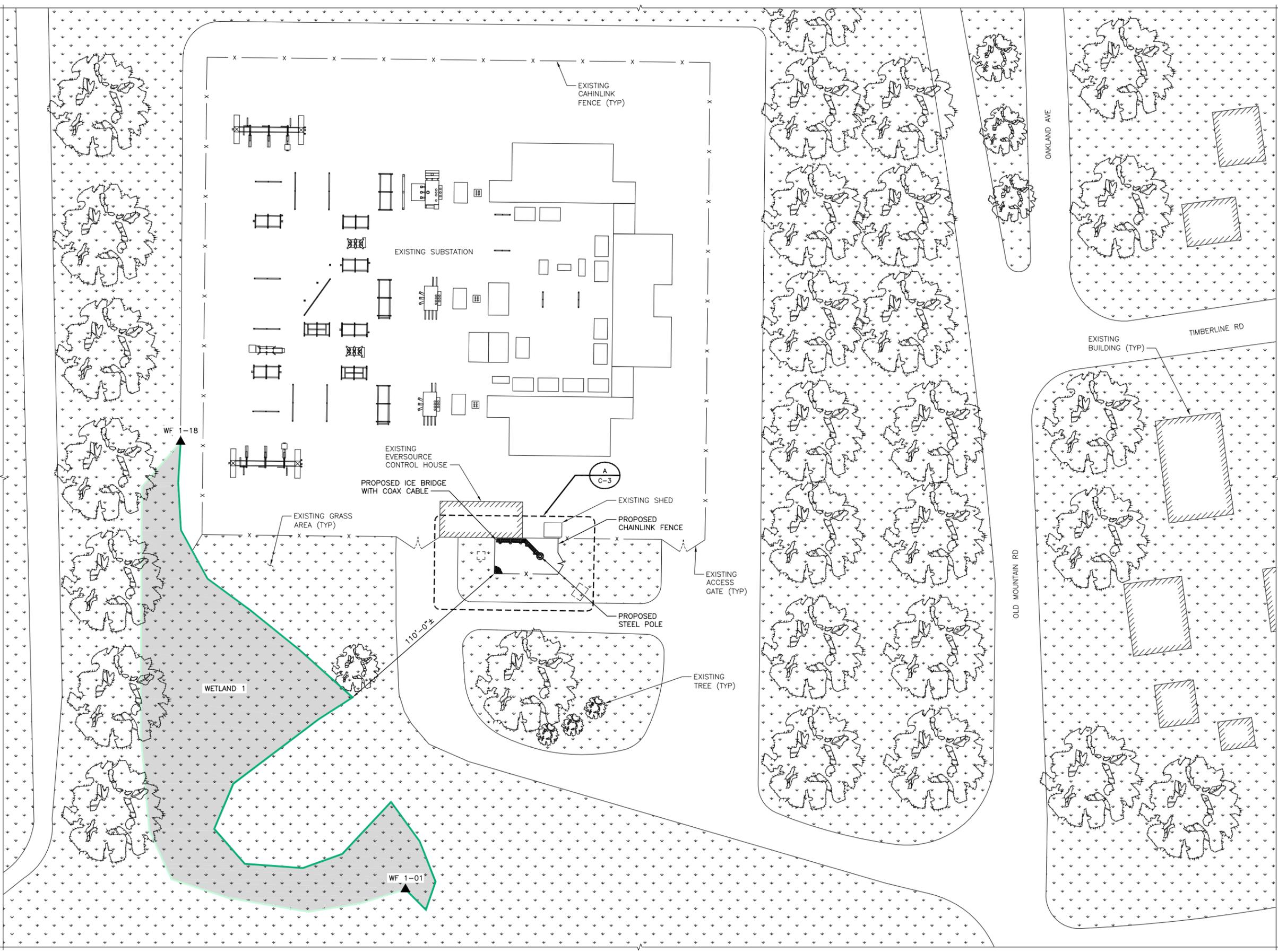


IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
PARTIAL SITE PLAN

SHEET NUMBER
C-2



PARTIAL SITE PLAN
NO SCALE



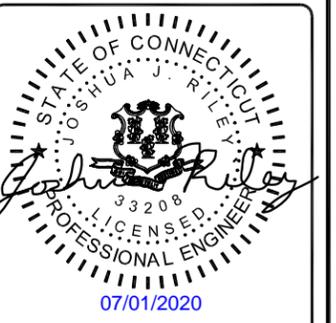


PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING

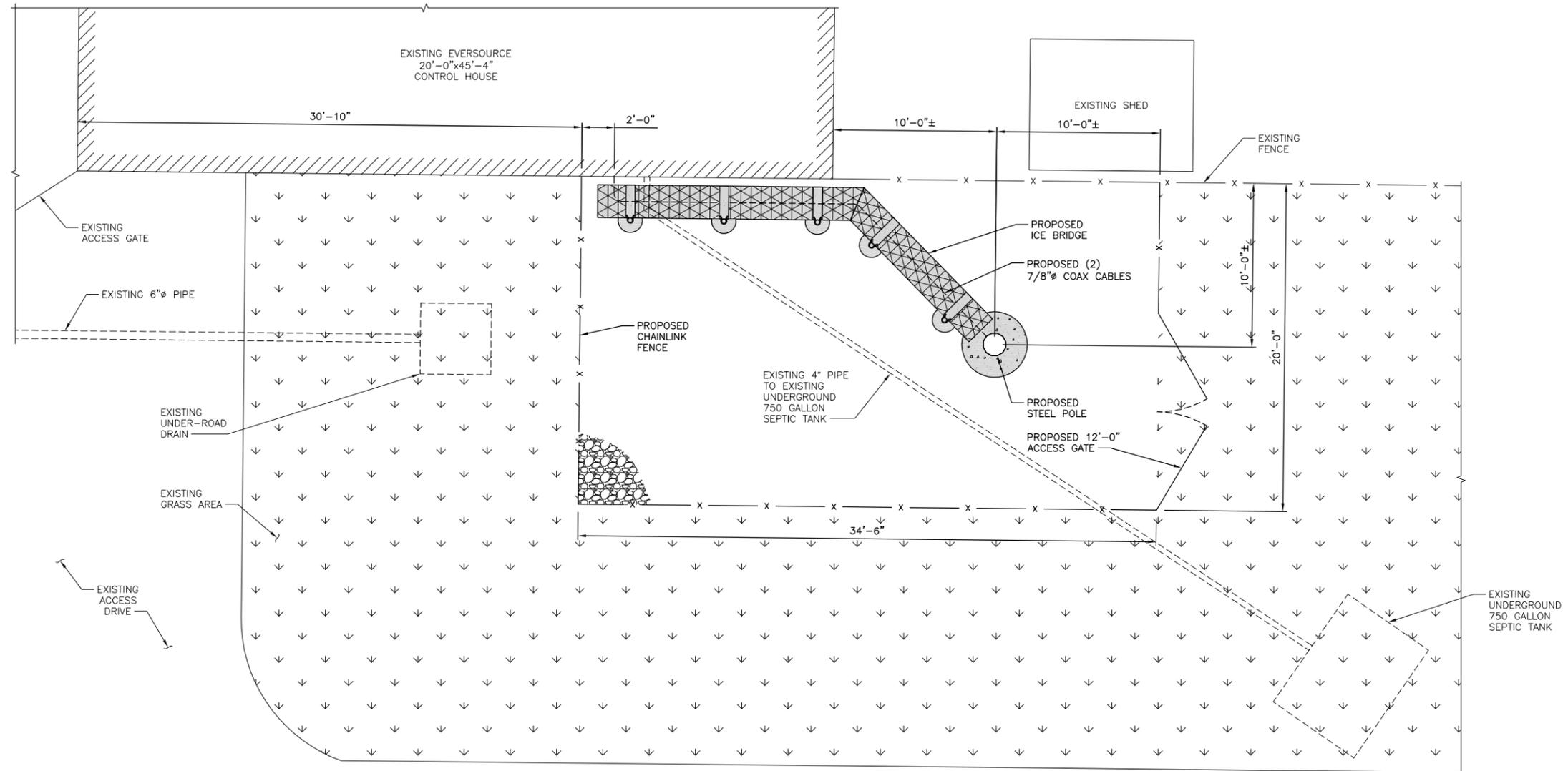


IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
SITE PLAN

SHEET NUMBER
C-3

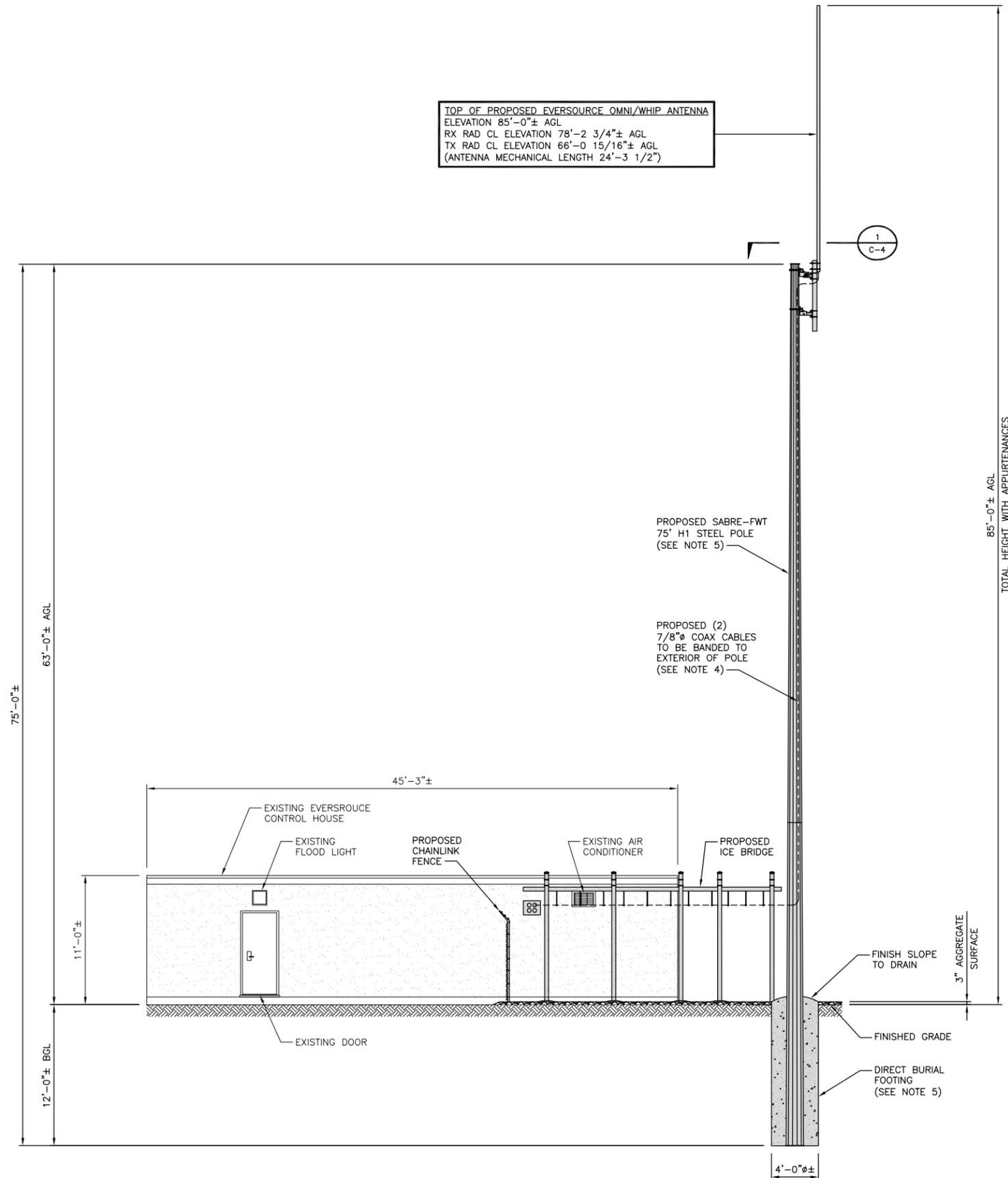


SITE PLAN
NO SCALE



TOP OF PROPOSED EVERSOURCE OMNI/WHIP ANTENNA
 ELEVATION 85'-0"± AGL
 RX RAD CL ELEVATION 78'-2 3/4"± AGL
 TX RAD CL ELEVATION 66'-0 15/16"± AGL
 (ANTENNA MECHANICAL LENGTH 24'-3 1/2")

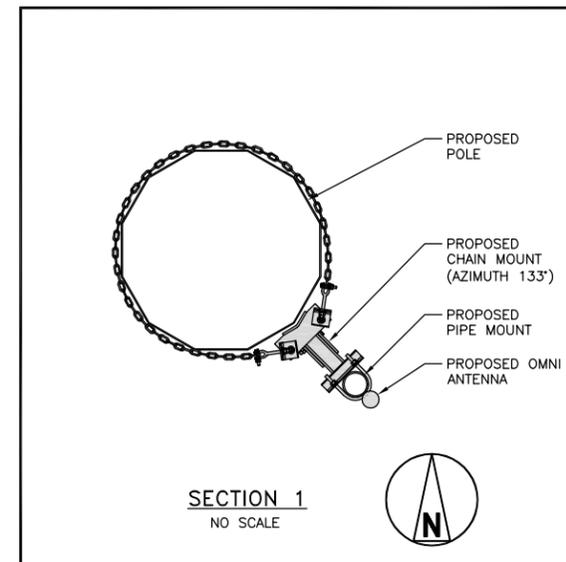
TOP OF PROPOSED POLE
 ELEVATION 63'-0"± AGL



TOWER ELEVATION
 NO SCALE

NOTES

1. ALL COAXIAL CABLE TO BE SECURED TO THE SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" OC.
2. CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING THE INSTALLATION OF COAXIAL CABLES, CONNECTORS AND ANTENNAS.
3. DESIGN OF THE FOUNDATION WAS BASED ON SUB012 EVERSOURCE SUBSTATION STANDARDS, SECTION 6.D., FOUNDATION STABILITY AND SOIL BEARING CAPACITY. NO SUBGRADE SOIL CONDITIONS WERE AVAILABLE OR ARE KNOWN.
4. PROPOSED COAX CABLES TO BE STACKED IN ONE ROW.
5. INSTALL POLE PER MANUFACTURER'S RECOMMENDATIONS EXCEPT FOR POLE EMBEDMENT. REFER TO SABRE-FWT ERECTION DRAWINGS - 75' H1-LD2 WPE'S.
6. PROPOSED OMNI/WHIP ANTENNA SHALL BE INSTALLED USING PROPOSED CLAMP SET SITE PRO 1 P/N: DCP12K. SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS, (3) ATTACHMENT POINTS (CLAMPS) REQUIRED (TOTAL OF 2 CLAMP SETS).



EVERSOURCE
 ENERGY

107 SELDEN STREET
 BERLIN, CT 06037
 PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
 OVERLAND PARK, KS 66211
 PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



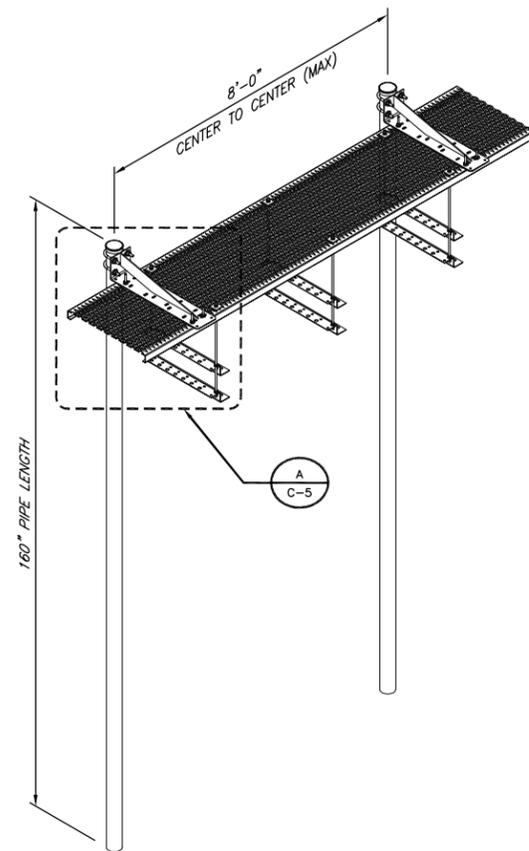
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

FARMINGTON 1C
 29 OLD MOUNTAIN RD
 FARMINGTON, CT 06032

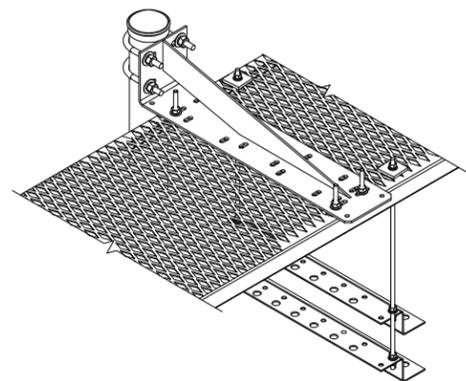
SHEET TITLE
 TOWER ELEVATION &
 ANTENNA EQUIPMENT

SHEET NUMBER

C-4



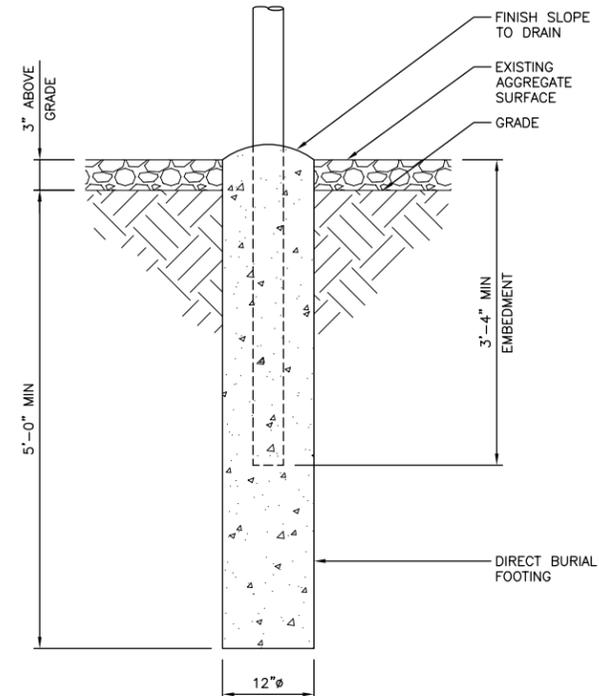
ICE BRIDGE DETAIL
SITEPRO 1 P/N IB24D-V
NO SCALE



DETAIL A
NO SCALE

NOTES

1. THE CLEARANCE BETWEEN THE BOTTOM OF THE FOUNDATION TO THE BOTTOM OF EMBEDDED PIPE SHALL BE A MINIMUM OF 4".



ICE BRIDGE
FOUNDATION DETAIL
NO SCALE

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000

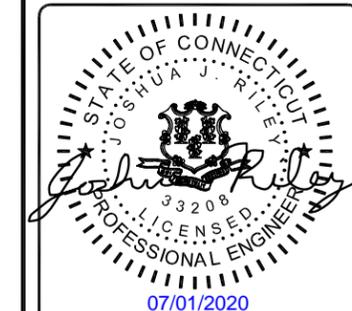


BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING

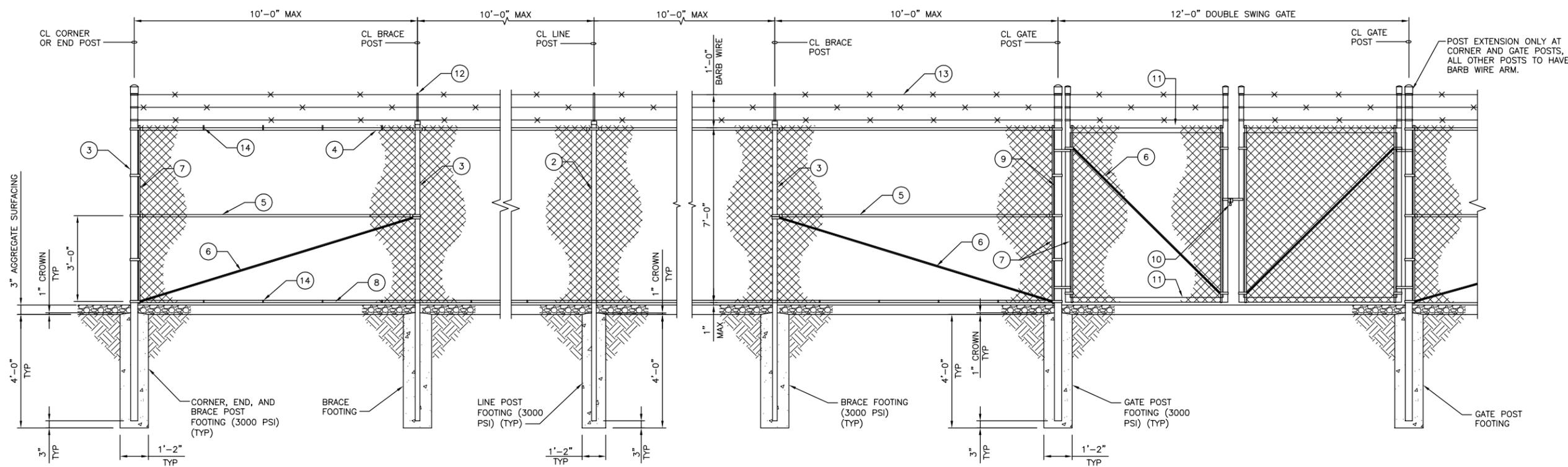


IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
ICE BRIDE
DETAILS

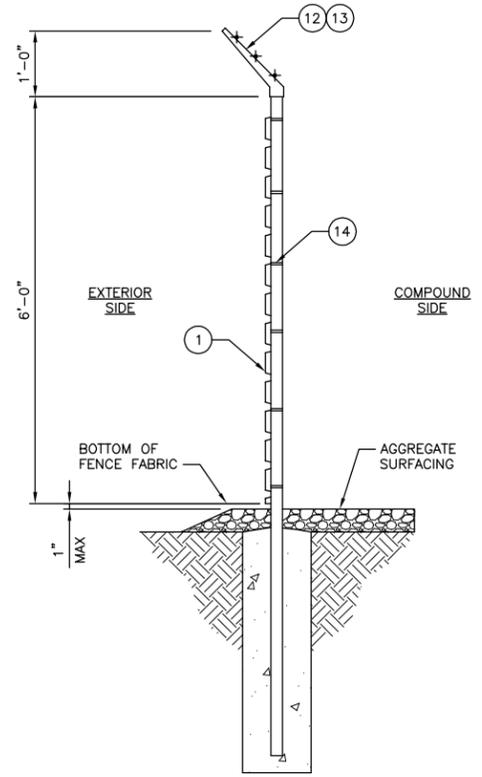
SHEET NUMBER
C-5



TYPICAL FENCE ELEVATION
NO SCALE

MATERIAL DESCRIPTION

- 1 CHAIN LINK FABRIC: 9 AWG, 1 1/4" MESH; ALUMINIZED STEEL, TWISTED SELVAGE ON TOP, KNUCKLED ON BOTTOM PER ASTM-A491.
- 2 LINE POSTS: 2 3/8" OD PIPE, 16 GAUGE (GALVANIZED) PER ASTM-F1083.
- 3 CORNER, END AND BRACE POSTS: 2 7/8" OD PIPE, SCHEDULE 40 (GALVANIZED).
- 4 TOP RAIL: 1.66" OD SCHEDULE 40 (GALVANIZED) PER ASTM-F1083.
- 5 BRACE RAIL: 1 5/8" OD 17 GAUGE PIPE (GALVANIZED).
- 6 DIAGONAL TRUSS ROD: 3/8" GALVANIZED ROD WITH TURNBUCKLE.
- 7 TENSION BAR: 3/16"x3/4" GALVANIZED FLAT BAR.
- 8 BOTTOM TENSION WIRE: GALVANIZED OR ALUMINUM COATED COIL SPRING WIRE, 7 GAUGE.
- 9 GATE POSTS: 4" OD SCHEDULE 40 PIPE (GALVANIZED).
- 10 COMBINATION PADLOCK ACCORDING TO EVERSOURCE REQUIREMENTS.
- 11 GATE FRAMES: 1 7/8" OD SCHEDULE 40 PIPE (GALVANIZED).
- 12 BARBED WIRE SUPPORT ARM: SINGLE ARM TYPE (GALVANIZED). ARM SHALL BE INCLINED OUTWARD AT AN ANGLE OF 45 DEGREES BARBED WIRE SHALL BE SPACED 6"± APART.
- 13 BARBED WIRE: GALVANIZED, ASTM A121 CLASS 3; THREE 14 GAUGE MINIMUM STEEL WIRES WITH 4 POINT ROUND 14 GAUGE BARBS SPACED 4" APART. BARBED WIRE MUST HAVE ENOUGH STRENGTH TO WITHSTAND A WEIGHT OF 250 POUNDS APPLIED AT THE OUTER STRAND OF BARBED WIRE, WITH A DEFLECTION OF LESS THAN 1/4".
- 14 FABRIC TIES: ALUMINUM BANDS OR WIRES. FABRIC SHALL BE ATTACHED TO THE TOP RAIL AND BOTTOM TENSION WIRE AT 24" CENTERS AND TO THE POSTS AT 15" CENTERS, ALL ON THE COMPOUND SIDE OF THE FENCE.
- 15 MISCELLANEOUS:
 - A. RAIL COUPLINGS: SLEEVE TYPE, 6" LONG EXPANSION SPRING EVERY FIFTH COUPLING.
 - B. POST TOPS: PRESSED STEEL, MALLEABLE IRON WITH PRESSED STEEL EXTENSION ARM, OR ONE-PIECE ALUMINUM CASTING; WITH HOLE FOR TOP, ALL DESIGNED TO FIT OVER THE OUTSIDE OF THE POSTS AND TO PREVENT ENTRY OF MOISTURE INTO TUBULAR POSTS.
 - C. LATCHES SHALL BE FORKED TYPE AND SHALL BE ARRANGED FOR PADLOCKING WITH THE PADLOCK ACCESSIBLE FROM BOTH SIDES OF THE GATE.
 - D. KEEPERS SHALL CONSIST OF MECHANICAL DEVICES FOR SECURING AND SUPPORTING THE FREE END OF THE GATES WHEN IN THE FULL OPEN POSITION. KEEPERS SHALL BE MOUNTED ON 2 7/8" O.D. PIPE POSTS FILLED WITH CONCRETE AND SET IN CONCRETE FOUNDATIONS.
 - E. INSTALL FENCING PER ASTM-F567.
 - F. INSTALL SWING GATES PER ASTM-F900.
 - G. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLETED IF REQUIRED.
 - H. USE GALVANIZED HIG-RING WIRE TO MOUNT ALL SIGNS.
 - I. ALL SIGNS MUST BE MOUNTED ON INSIDE OF FENCE.
 - J. ALL POSTS SHALL HAVE "MUSHROOM" SLEEVE EMBEDDED IN CONCRETE.
 - K. BOTTOM TENSION WIRE SHALL BE WEAVED THROUGH THE FENCE FABRIC AND THEN SECURED.
 - L. BOTTOM TENSION WIRE AND THE PIPE RAIL ELEVATION ABOVE THE GRADE LINE SHALL CORRESPOND WITH THE MIDDLE OF THE BOTTOM FABRIC DIAMOND.
 - M. ANY UNGALVANIZED AREAS REMAINING AFTER GATE FABRICATION SHALL BE REPAIRED PER ASTM-A780.



TYPICAL FENCE SECTION
NO SCALE

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



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

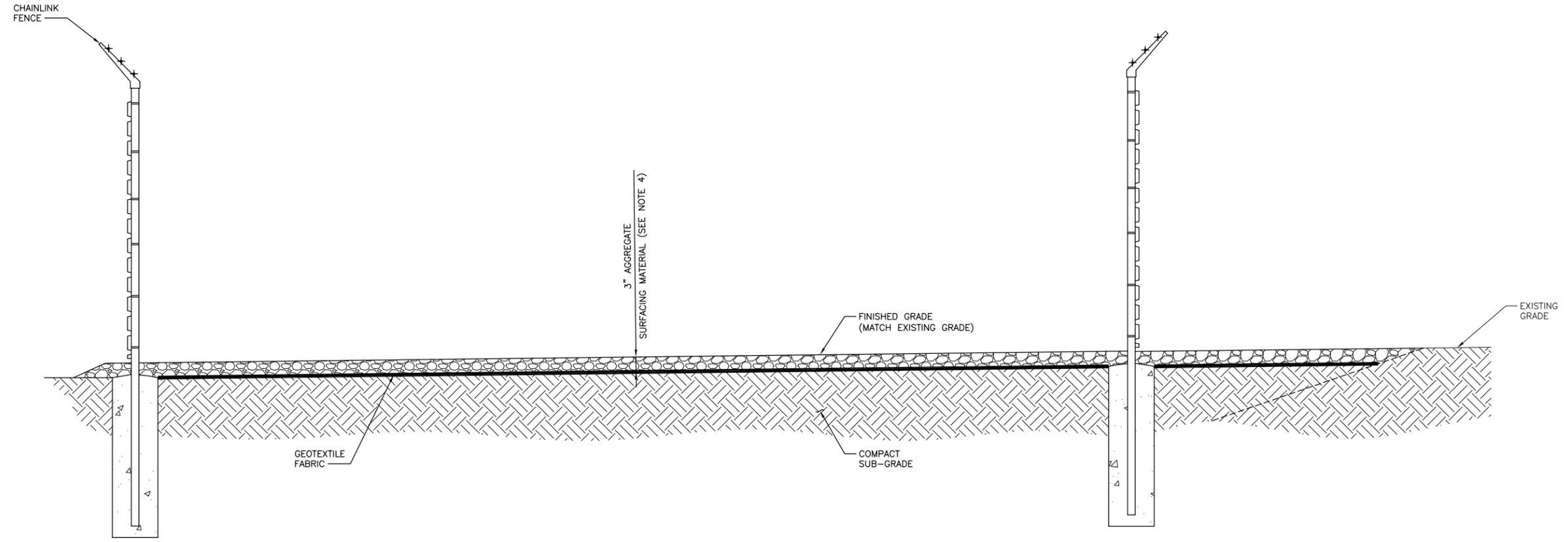
FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
CHAINLINK FENCE DETAILS

SHEET NUMBER
C-6

NOTES

1. CONTRACTOR TO SEED DISTURBED SOIL AROUND PROPOSED GRAVEL FINISH GRADE.
2. CONTRACTOR TO REPLACE TOP SOIL WITH COMPACTED SUBGRADE AND FINISH TO MATCH EXISTING GRADE.
3. CONTRACTOR TO SLOPE GRADE AWAY FROM SUBSTATION.
4. AGGREGATE SURFACING MATERIAL TO BE FOUR (4) LAYERS OF 3/4 INCH, ANGULAR BASALT TRAP ROCK.
5. AGGREGATE SURFACING MATERIAL SHALL EXTEND A MINIMUM OF THREE (3) FEET OUT FROM THE FENCE LINE WHERE POSSIBLE.



TYPICAL COMPOUND GRADING
NO SCALE



107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



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

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
**EARTHWORK
DETAILS**

SHEET NUMBER
C-7

LEGEND

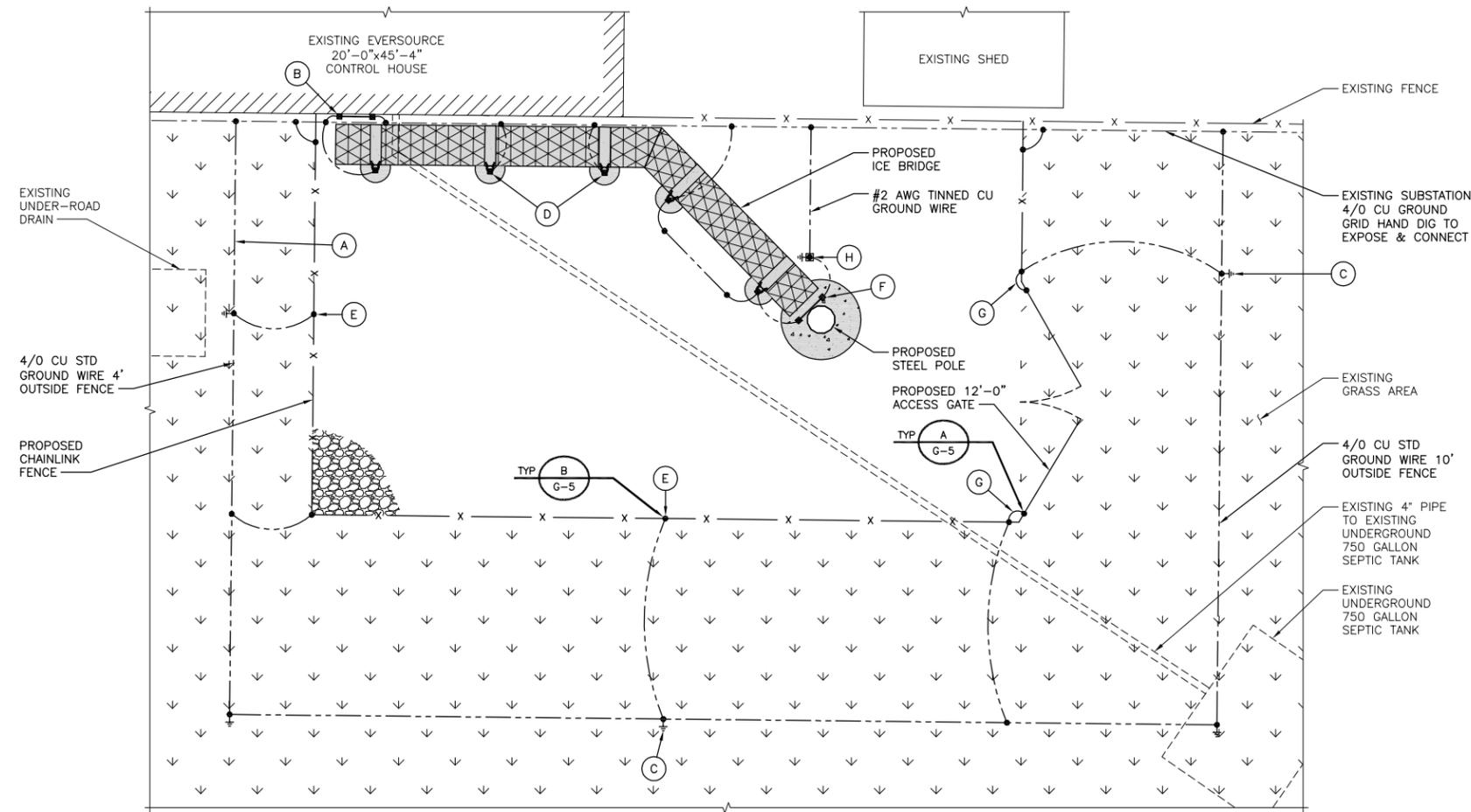
- EXOTHERMIC (UNLESS NOTED OTHERWISE).
- COMPRESSION CONNECTION (TWO HOLE LUG OR EQUIVALENT).
- ⊕ 5/8"Øx10'-0" COPPER CLAD STEEL GROUND ROD.
- ⊕ 5/8"Øx10'-0" COPPER CLAD STEEL GROUND ROD WITH INSPECTION SLEEVE.
- GROUND WIRE.

KEY NOTES

- (A) **GROUND RING** - BURY 4/0 CU AROUND PERIMETER TO EXISTING GROUND GRID AND MAKE AN EXOTHERMIC CONNECTION.
- (B) **EXTERIOR GROUND BAR**: EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE EXTERIOR GROUND BAR AND MAKE AN EXOTHERMIC CONNECTION.
- (C) **GROUND ROD**: COPPER CLAD STEEL 5/8"Ø TEN (10) FEET LONG.
- (D) **ICE BRIDGE SUPPORT POST GROUNDING**: EXTEND #2 TINNED CU WIRE FROM BURIED GROUND RING TO ALL ICE BRIDGE SUPPORT POSTS AND EXOTHERMICALLY WELD.
- (E) **FENCE GROUNDING**: EXTEND 4/0 CU WIRE FROM BURIED GROUND RING TO FENCE CORNER POSTS AND EVERY SECOND FENCE POST WITH AN EXOTHERMIC WELD.
- (F) **POLE GROUND BAR**: EXTEND TWO #2 TINNED CU WIRE FROM BURIED GROUND RING UP TO THE POLE GROUND BAR AND MAKE A EXOTHERMIC CONNECTION. SECURE GROUND BAR DIRECTLY TO POLE WITH STAINLESS STEEL MOUNTING MATERIAL.
- (G) **GATE GROUNDING**: EXTEND 4/0 TINNED CU WIRE FROM BURIED GROUND RING TO GATE POSTS AND EXOTHERMICALLY WELD. USE FLEXIBLE BRAID TO CONNECT SWING GATE TO GATE POSTS.
- (H) **GROUND ROD WITH INSPECTION SLEEVE**: COPPER CLAD STEEL 5/8"Ø TEN (10) FEET LONG WITH INSPECTION SLEEVE.

NOTES

1. ALL GROUNDING SYSTEM CONDUCTORS AND CONNECTIONS BELOW GRADE SHALL BE THERMAL WELDS AT GROUND RODS AND AT A MINIMUM OF 36" BELOW GRADE, OR 6" BELOW FROST LINE, WHICH EVER IS GREATER OF THE TWO DIMENSIONS.
2. ALL INSTALLATIONS SHALL BE FIELD VERIFIED.
3. ALL GROUND WIRE SHALL BE #2 AWG BARE COPPER TINNED UNLESS NOTED OTHERWISE.
4. ALL GROUND WIRES SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
5. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF GROUND RODS AND GROUND RING WITH FOUNDATION AND UNDERGROUND CONDUIT.
6. EACH EQUIPMENT CABINET SHALL BE CONNECTED WITH #2 AWG INSULATED SOLID TINNED COPPER WIRE TO GROUND BAR. EQUIPMENT CABINETS SHALL EACH HAVE (2) LUG CONNECTIONS.
7. KOPR-SHIELD ANTI-OXIDATION COMPOUND SHALL BE USED ON ALL COMPRESSION GROUNDING CONNECTIONS.
8. ALL EXOTHERMIC CONNECTIONS SHALL BE INSTALLED UTILIZING THE PROPER CONNECTION/MOLD AND MATERIALS FOR THE PARTICULAR APPLICATION.
9. ALL BOLTED GROUNDING CONNECTIONS SHALL BE INSTALLED WITH AN EXTERNAL TOOTHED LOCK WASHER. GROUNDING BUS BARS MAY HAVE PRE PUNCHED HOLES OR TAPPED HOLES. ALL HARDWARE SHALL BE 3/8" STAINLESS STEEL.
10. EXTERNAL GROUNDING CONDUCTOR SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS, CONDUITS, OR SUPPORTS TO PRECLUDE ESTABLISHING A MAGNETIC CHOKE POINT.
11. PLASTIC CLIPS SHALL BE USED TO FASTEN AND SUPPORT GROUNDING CONDUCTORS. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED.
12. STANDARD BUS BARS MGB, GWB, IGB, TELCO GB, FIBER GB, AND POWER GB SHALL BE FURNISHED AND INSTALLED BY THE SUBCONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
13. THE CONTRACTOR SHALL MEASURE GROUND RESISTANCE AT INSPECTION SLEEVE H. TEST AFTER ALL GROUNDING IS COMPLETE. RECORD THE MEASUREMENT IN THE TEST PLAN DOCUMENT AND PROVIDE RESULTS TO THE PROJECT MANAGER FOR REVIEW. THE GROUND SYSTEM RESISTANCE TO EARTH GROUND SHALL NOT EXCEED FIVE (5) OHMS. IF THE GROUND TEST EXCEEDS THE MAXIMUM OF 5 OHMS, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ADDITIONAL GROUND CONNECTIONS AS REQUIRED TO MEET THE 5 OHMS MAXIMUM.
14. IF COAX ON ICE BRIDGE IS MORE THAT 6' FROM THE GROUND BAR AT THE BASE OF THE TOWER, A SECOND GROUND BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE RUN TO GROUND THE COAX GROUND KIT AND THE IN-LINE SURGE ARRESTORS.
15. CONTRACTOR SHALL REPAIR/PLACE EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.



GROUNDING PLAN
NO SCALE

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING

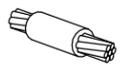
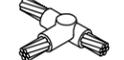


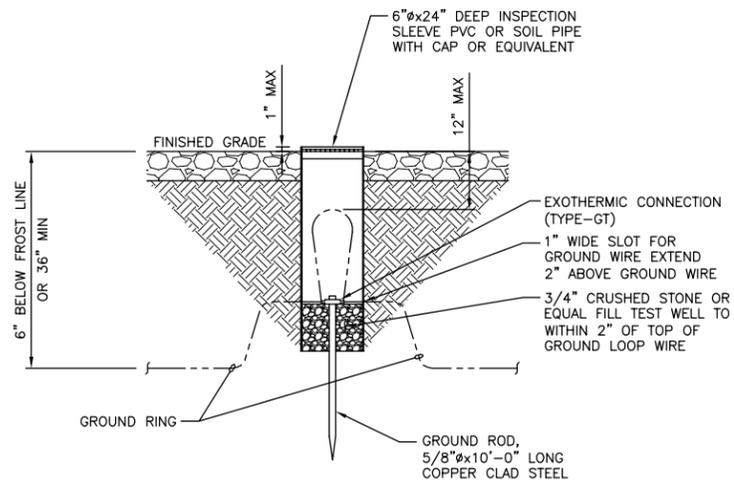
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
GROUNDING PLAN

SHEET NUMBER
G-1

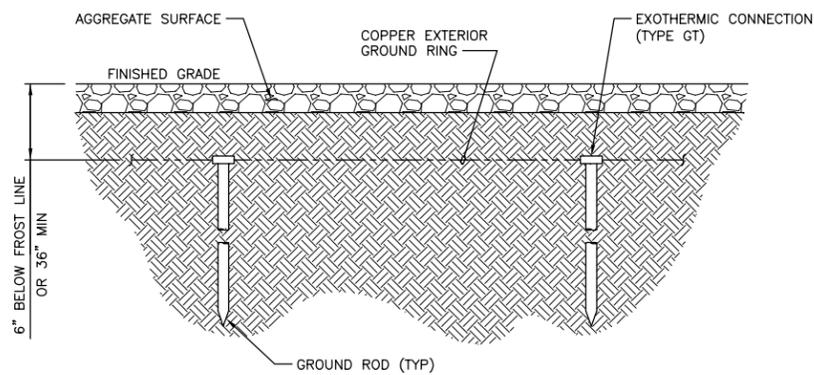
CADWELD CONNECTIONS OR APPROVED EQUAL		BURNDY CONNECTIONS OR APPROVED EQUAL	
 HORIZONTAL SPLICE SPLICE OF HORIZONTAL CABLES TYPE SS	 PARALLEL HORIZONTAL CONDUCTORS PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES TYPE PT	 VERTICAL PIPE CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES TYPE VS	 BOND JUMPER FIELD FABRICATED GREEN STRANDED INSULATED TYPE 2-YA-2
 HORIZONTAL STEEL SURFACE TO FLAT STEEL SURFACE OR HORIZONTAL PIPE TYPE HS	 PARALLEL HORIZONTAL CONDUCTORS PARALLEL DEAD END TAP OR HORIZONTAL THRU CONDUCTOR TYPE PC	 VERTICAL STEEL SURFACE CABLE DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE TYPE VS	 COPPER LUGS TWO HOLE - LONG BARREL LENGTH TYPE YA-2
 HORIZONTAL TEE TEE OF HORIZONTAL RUN AND TAP CABLES TYPE TA	 THROUGH CABLE TO GROUND ROD THROUGH CABLE TO TOP OF GROUND ROD TYPE GT		



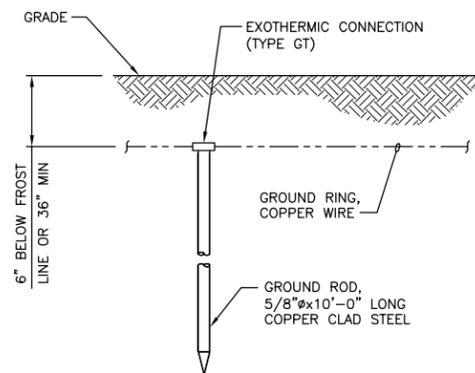
**GROUND ROD WITH
INSPECTION SLEEVE**
NO SCALE

NOTES

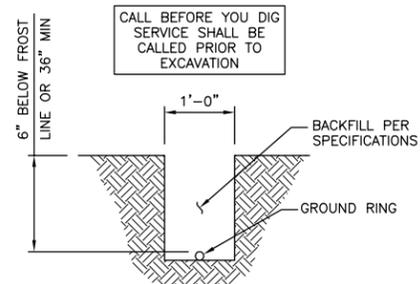
1. REFER TO SHEET G-1 FOR WIRE SIZES.



GROUND RING DETAIL
NO SCALE



GROUND ROD
NO SCALE



NOTES

1. ALL EXOTHERMIC WELD CONNECTIONS SHALL
BE BELOW FROST LINE.

GROUND RING TRENCH
NO SCALE

EVERSOURCE
ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



07/01/2020

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

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
GROUNDING
DETAILS

SHEET NUMBER

G-2



PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



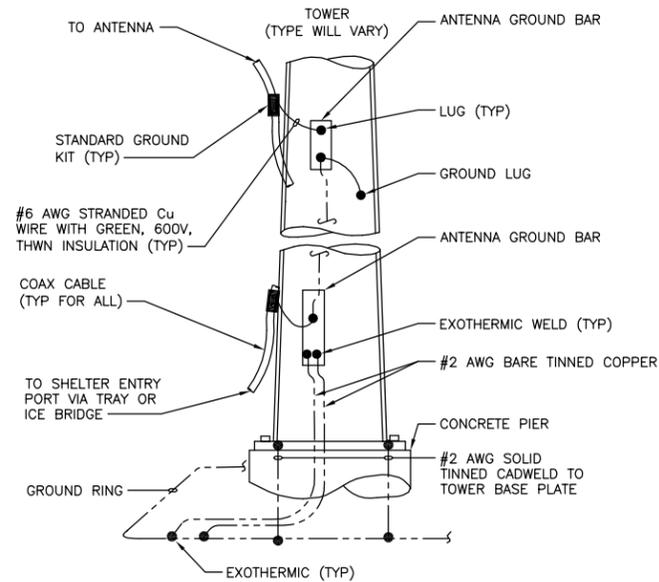
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
**GROUNDING
DETAILS**

SHEET NUMBER

G-4

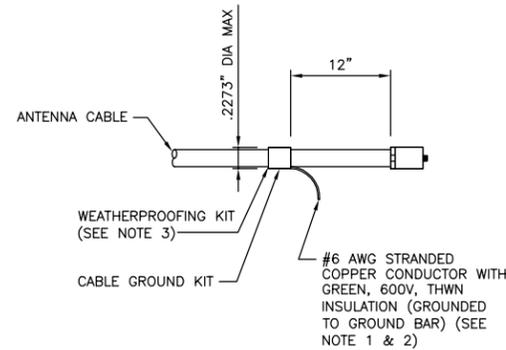


NOTE

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.

ANTENNA CABLE GROUNDING

NO SCALE

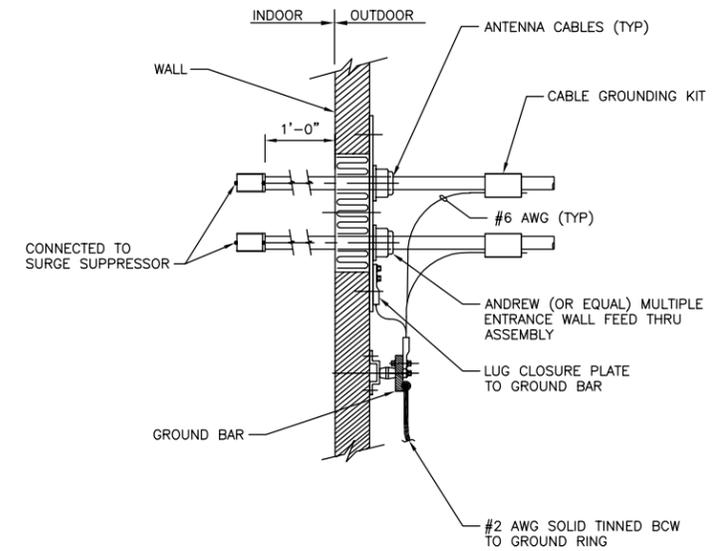


NOTES

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.

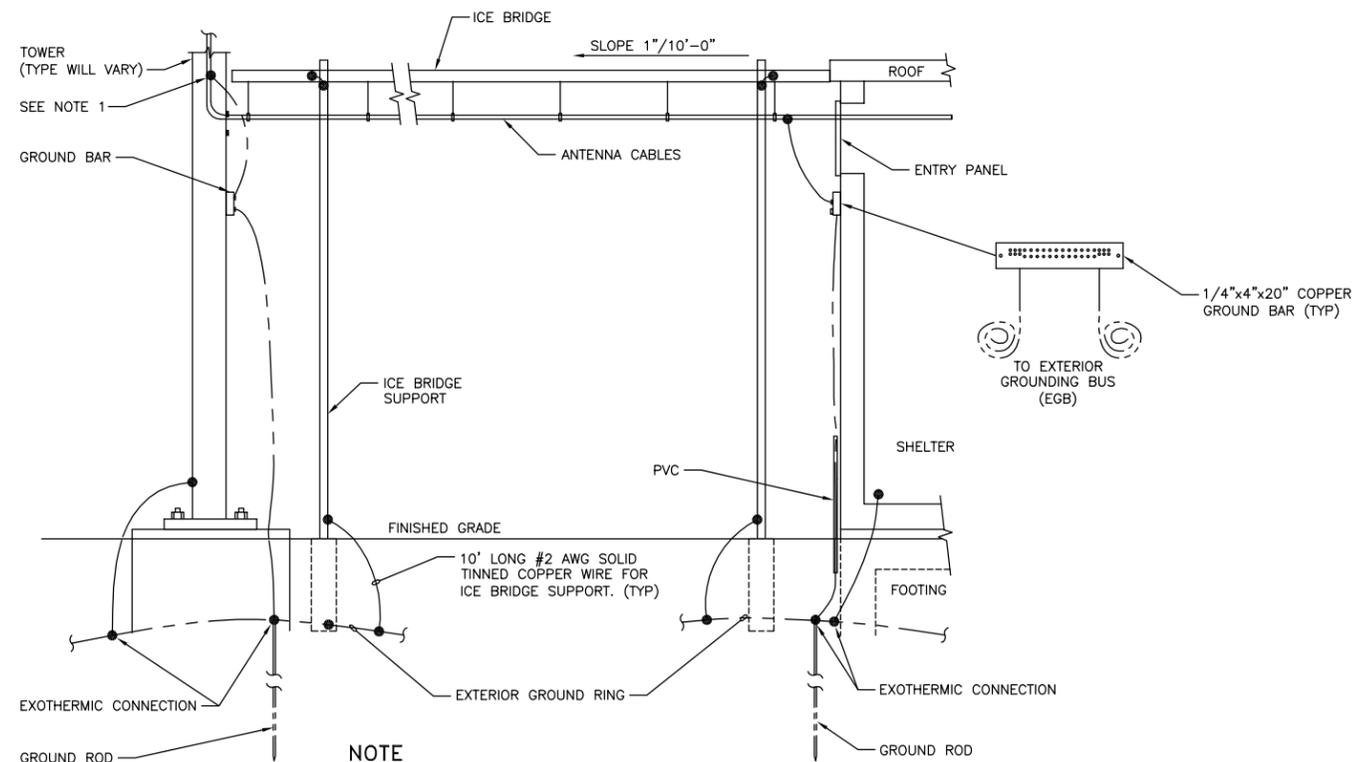
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NO SCALE



CABLE INSTALLATION WITH WALL FEED THRU ASSEMBLY

NO SCALE



NOTE

1. PROVIDE GROUND KIT 6" BEFORE TURN

ICE BRIDGE AND ANTENNA CABLE DETAIL

NO SCALE



PROJECT NO: 403093

DRAWN BY: TYW

CHECKED BY: JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



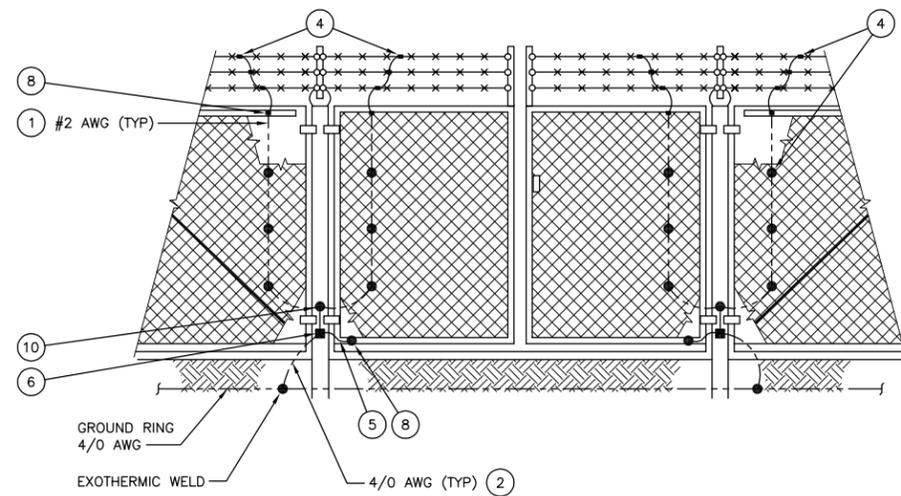
07/01/2020

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

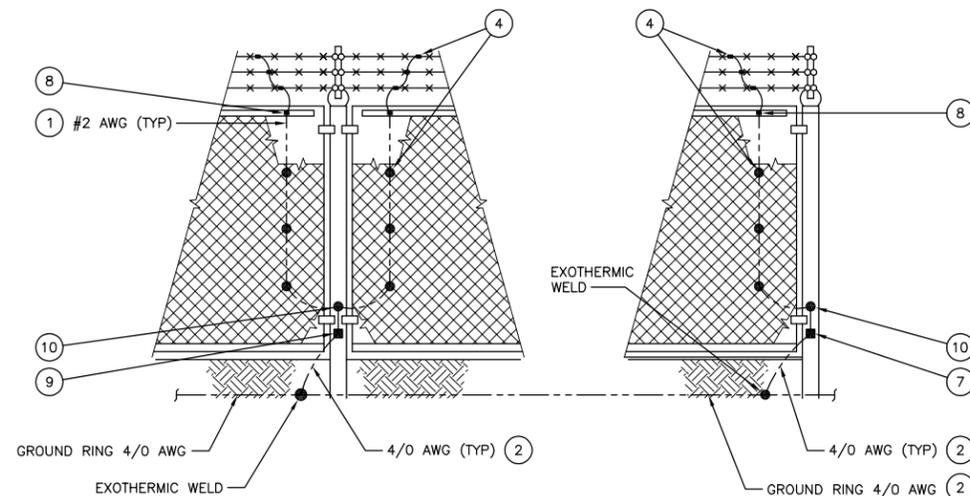
FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
**GROUNDING
DETAILS**

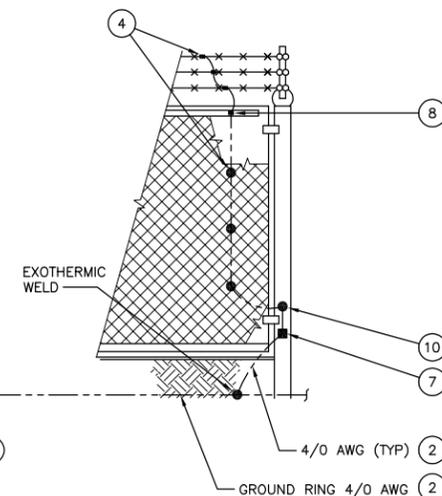
SHEET NUMBER
G-5



DETAIL A
12' GATE GROUNDING DETAIL
NO SCALE



DETAIL B
FENCE GROUNDING DETAIL
NO SCALE



DETAIL C
CORNER DETAIL
NO SCALE

CONNECTER MATERIAL DESCRIPTION

ITEM#	DESCRIPTION	STOCK#
1	CABLE, BARE COPPER, #2 SOLID TINNED FOR BARBED WIRE FABRIC GROUND	533919
2	CABLE, BARE COPPER, 4/0 FOR ATTACHING FENCE TO SUBSTATION GROUND GRID	513367
3	CONNECTER, COMPRESSION, 4/0 GROUND LEAD TO 4/0 GROUND GRID	516765
4	CONNECTER, SPLIT BOLT, TINNED COPPER FOR ATTACHING #8-#2 COPPER CABLE TO FENCE FABRIC AND BARBED WIRE	517632
5	COPPER BRAID, FLEXIBLE, TINNED 1 1/2"	512015
6	CONNECTOR, GROUND, 4/0 COPPER CABLE TO GATE POST	501917
7	CONNECTOR, GROUND, 4/0 COPPER CABLE TO CORNER POST	517487
8	CONNECTOR, GROUND, #2 COPPER CABLE TO TOP RAIL	515108
9	CONNECTOR, GROUND, 4/0 COPPER CABLE TO LINE POST	501915
10	CONNECTOR, COPPER, PARALLEL GROOVE, #1-4/0 RUN, #6-4/0 TAP	517579

EXCAVATION

- CONTRACTOR SHALL GRADE ONLY AREAS SHOWN TO BE MODIFIED HEREIN AND ONLY TO THE EXTENT REQUIRED TO SHED OVERLAND WATER FLOW AWAY FROM SITE. SLOPES SHALL NOT BE STEEPER THAN 3:1 (HORIZONTAL:VERTICAL), UNLESS NOTED OTHERWISE. SEDIMENTATION AND EROSION CONTROLS SHOWN AND SPECIFIED SHALL BE ESTABLISHED BEFORE STRIPPING EXISTING VEGETATION.
- ORGANIC MATERIAL AND DEBRIS SHALL BE STRIPPED AND STOCKPILED BEFORE ADDING FILL MATERIAL.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- ALL FILL SHALL BE PLACED IN ONE FOOT LIFTS AND COMPACTED IN PLACE. STRUCTURAL FILL SHALL BE COMPACTED TO 95% OF ITS MAXIMUM DRY UNIT WEIGHT TESTED IN ACCORDANCE WITH ASTM D1557.
- EXCAVATIONS FOR FOOTINGS SHALL BE CUT LEVEL TO THE REQUIRED DEPTH AND TO UNDISTURBED SOIL. REPORT UNSUITABLE SOIL CONDITIONS TO THE CONSTRUCTION MANAGER.
- TRENCH EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH DAY.
- SURPLUS MATERIAL SHALL BE REMOVED FROM THE SITE.
- TOWER FOUNDATION EXCAVATION, BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH THE TOWER MANUFACTURER'S DESIGNS AND SPECIFICATIONS.

MATERIAL

- NATIVE GENERAL MATERIAL MAY BE USED FOR TRENCH BACKFILL WHERE SELECT MATERIAL IS NOT SPECIFIED. GRAVEL MATERIAL FOR CONDUIT TRENCH BACKFILL SHALL NOT CONTAIN ROCK GREATER THAN 2 INCHES IN DIAMETER.
- BANK OR CRUSHED GRAVEL SHALL CONSIST OF TOUGH, DURABLE PARTICLES OF CRUSHED OR UNCRUSHED GRAVEL FREE OF SOFT, THIN, ELONGATED OR LAMINATED PIECES AND MEET THE GRADATION REQUIREMENTS.
- PROCESSED AGGREGATE BASE SHALL CONSIST OF COURSE AND FINE AGGREGATES COMBINED AND MIXED SO THAT THE RESULTING MATERIAL CONFORMS TO THE GRADATION REQUIREMENTS. COURSE AGGREGATE SHALL BE EITHER GRAVEL OR BROKEN STONE AND FINE AGGREGATE SHALL CONSIST OF SAND.

SQUARE MESH SIEVES	PERCENT PASSING BY WEIGHT		
	BANK FILL	GRAVEL BASE	GRAVEL PROCESSED AGG BASE
PASS 5"	100	100	90-100
PASS 3 1/2"	100	100	
PASS 2 1/4"	95-100	100	
PASS 2"	55-100		
PASS 1 1/2"			
PASS 1"			
PASS 3/4"			
PASS 1/4"	25-60	25-60	50-75
PASS #10	15-45	15-45	25-45
PASS #40	2-25	5-25	5-20
PASS #100	0-10	0-10	2-12
PASS #200	0-5	0-5	

- FILL MATERIAL SHALL BE FREE OR ORGANIC MATERIAL, ICE, TRASH AND DEBRIS.
- REFER TO MOST CURRENT GEOTECHNICAL ENGINEERING REPORT FOR ALL FILL MATERIAL REQUIREMENTS.

ELECTRICAL

- CONTRACTOR SHALL VERIFY EXISTING ELECTRIC SERVICE TYPE AND CAPACITY AND ORDER NEW ELECTRIC SERVICE FROM LOCAL ELECTRIC UTILITY, WHERE APPLICABLE.
- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES, AND SHALL BE ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION. WHERE A CONFLICT EXISTS BETWEEN CODES, PLAN AND SPECIFICATIONS, OR AUTHORITIES HAVING JURISDICTION, THE MORE STRINGENT AUTHORITIES SHALL APPLY.
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC, FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.
- ALL ELECTRICAL CONDUCTORS SHALL BE 100% COPPER AND SHALL HAVE TYPE THHN INSULATION UNLESS INDICATED OTHERWISE.
- CONDUIT SHALL BE THREADED RIGID GALVANIZED STEEL OR EMT WITH ONLY COMPRESSION TYPE COUPLINGS AND CONNECTORS, ALL MADE UP WRENCH TIGHT.
- ALL BURIED CONDUIT SHALL BE MINIMUM SCH 40 PVC UNLESS NOTED OTHERWISE, OR AS PER LOCAL CODE REQUIREMENTS.
- PROVIDE FLEXIBLE STEEL CONDUIT OR LIQUID TIGHT FLEXIBLE STEEL CONDUIT TO ALL VIBRATING EQUIPMENT, INCLUDING HVAC UNITS, TRANSFORMERS, MOTORS, ETC, OR WHERE EQUIPMENT IS PLACED UPON A SLAB ON GRADE.
- ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR BONDED TO ALL ENCLOSURES, PULLBOXES, ETC.
- CONDUIT AND CABLE WITHIN CORRIDORS SHALL BE CONCEALED AND EXPOSED ELSEWHERE, UNLESS NOTED OTHERWISE.
- ELECTRICAL MATERIALS INSTALLED ON ROOFTOP SHALL BE LISTED FOR NEMA 3R USE. -AND ALL WIRING WITHIN A VENTILATION DUCT SHALL BE LISTED FOR SUCH USE. IN GENERAL WIRING METHODS WITHIN A DUCT SHALL BE AN MC CABLE WITH SMOOTH OR CORRUGATED METAL JACKET AND HAVE NO OUTER COVERING OVER THE METAL JACKET. INTERLOCKED ARMOR TYPE OF MC CABLE IS NOT ACCEPTABLE FOR THIS APPLICATION. CONTRACTOR CAN ALSO USE TYPE MI CABLE IN THE VENTILATION DUCT PROVIDED IT DOES NOT HAVE ANY OUTER COVERINGS OVER THE METAL EXTERIOR.
- WIRING DEVICES SHALL BE SPECIFICATION GRADE, AND WIRING DEVICE COVER PLATES SHALL BE PLASTIC WITH ENGRAVING AS SPECIFIED.

- GROUNDING SYSTEM RESISTANCE SHALL BE MEASURED, RECORDED, AND DATED USING MEGGER DET14 OR SIMILAR INSTRUMENT. GROUND RESISTANCE SHALL NOT EXCEED 5 OHMS. IF THE RESISTANCE VALUE IS EXCEEDED, NOTIFY CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION.
- COORDINATE WITH BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK INVOLVING EXISTING SYSTEMS OR EQUIPMENT IN ORDER TO DETERMINE THE EFFECT, IF ANY, ON OTHER TENANTS WITHIN THE BUILDING, AND TO DETERMINE THE APPROPRIATE TIME FOR PERFORMING THIS WORK.
- THE CONTRACTOR SHALL BE REQUIRED TO VISIT THE SITE PRIOR TO SUBMITTING BID IN ORDER TO DETERMINE THE EXTENT OF THE EXISTING CONDITIONS.
- ALL CONDUCTOR ENDS SHALL BE TAGGED AND ELECTRICAL EQUIPMENT LABELED WITH ENGRAVED IDENTIFICATION PLATES.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING AND ALARM TIE-INS.

GROUNDING

- #6 THWN SHALL BE STRANDED #6 COPPER WITH GREEN THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
- #2 THWN SHALL BE STRANDED #2 COPPER WITH THWN INSULATION SUITABLE FOR WET INSTALLATIONS.
- #2 BARE TINNED SHALL BE SOLID COPPER TINNED. ALL BURIED WIRE SHALL MEET THIS CRITERIA.
- ALL LUGS SHALL BE 2-HOLE, LONG BARREL, TINNED SOLID COPPER UNLESS OTHERWISE SPECIFIED, LUGS SHALL BE THOMAS AND BETTS SERIES 548##BE OR EQUIVALENT (IE #2 THWN - 54856BE, #2 SOLID - 54856BE, AND #6 THWN - 54852BE).
- ALL HARDWARE, BOLTS, NUTS, AND WASHERS SHALL BE 18-8 STAINLESS STEEL. EVERY CONNECTION SHALL BE BOLT-FLAT WASHER-BUSS-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT IN THAT EXACT ORDER. BACK-TO-BACK LUGGING, BOLT-FLAT WASHER-LUG-BUSS-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT, IN THAT EXACT ORDER, IS ACCEPTED WHERE NECESSARY TO CONNECT MANY LUGS TO A BUSS BAR. STACKING OF LUGS, BUSS-LUG-LUG, IS NOT ACCEPTABLE.
- WHERE CONNECTIONS ARE MADE TO STEEL OR DISSIMILAR METALS, A THOMAS AND BETTS DRAGON TOOTH WASHER MODEL DTWXXX SHALL BE USED BETWEEN THE LUG AND THE STEEL, BOLT-FLAT WASHER-STEEL-DRAGON TOOTH WASHER-LUG-FLAT WASHER-BELLEVILLE WASHER-NUT.
- ALL CONNECTIONS, INTERIOR AND EXTERIOR, SHALL BE MADE WITH THOMAS AND BETTS KPOR-SHIELD. COAT ALL WIRES BEFORE LUGGING AND COAT ALL SURFACES BEFORE CONNECTING.
- THE MINIMUM BEND RADIUS SHALL BE 8 INCHES FOR #6 WIRE AND SMALLER AND 12 INCHES FOR WIRE LARGER THAN #6.
- ALL CONNECTIONS TO THE GROUND RING SHALL BE EXOTHERMIC WELD.
- BOND THE FENCE TO THE GROUND RING AT EACH CORNER, AND AT EACH GATE POST WITH #2 SOLID TINNED WIRE. EXOTHERMIC WELD BOTH ENDS.
- GROUND KITS SHALL BE SOLID COPPER STRAP WITH #6 WIRE 2-HOLE COMPRESSION CRIMPED LUGS AND SHALL BE SEALED ACCORDING TO MANUFACTURER INSTRUCTIONS.
- FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL BE USED.
- GROUND BARS SHALL BE FURNISHED AND INSTALLED WITH PRE-DRILLED HOLE DIAMETERS AND SPACINGS. GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED. GROUND LUGS SHALL MATCH THE SPACING ON THE BAR. HARDWARE DIAMETER SHALL BE MINIMUM 3.8 INCH.
- MGB GROUND CONNECTION SHALL BE EXOTHERMIC WELDED TO THE GROUND SYSTEM.
- ALL CABLE TRAY AND/OR PLATFORM STEEL SHALL BE BONDED TOGETHER WITH JUMPERS (#6 IN EQUIPMENT ROOM, #2 ELSEWHERE AND HOMERUN).

CABLE TRAY

- CABLE TRAY SHALL BE MADE OF EITHER CORROSION RESISTANT METAL OR WITH A CORROSION RESISTANT FINISH.
- CABLE TRAY SHALL BE OF LADDER TRAY TYPE WITH FLAT COVER CLAMPED TO SIDE RAILS.
- CABLE LADDER SHALL BE SIZED TO FIT ALL CABLES IN ACCORD WITH NEC AND NEMA 11-15-84.
- CABLE LADDER TRAYS SHALL BE NEMA CLASS 12A BY PW INDUSTRIES, INC OR EQUAL.
- CABLE LADDER TRAY SHALL BE SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- ALL WORKMANSHIP SHALL CONFORM TO THESE REQUIREMENTS AND ALL LOCAL CODES AND STANDARDS TO ENSURE SAFE AND ADEQUATE GROUNDING SYSTEM.

ANTENNA & CABLE NOTES

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TRANSMISSION CABLES, JUMPERS, CONNECTORS, GROUNDING STRAPS, ANTENNAS, MOUNTS AND HARDWARE. ALL MATERIALS SHALL BE INSPECTED BY THE CONTRACTOR FOR DAMAGE UPON DELIVERY. JUMPERS SHALL BE SUPPLIED AT ANTENNAS AND EQUIPMENT INSIDE SHELTER COORDINATE LENGTH OF JUMP CABLES WITH EVERSOURCE. COORDINATE AND VERIFY ALL OF THE MATERIALS TO BE PROVIDED WITH EVERSOURCE PRIOR TO SUBMITTING BID AND ORDERING MATERIALS.
- AFTER INSTALLATION, THE TRANSMISSION LINE SYSTEM SHALL BE PIM/SWEEP TESTED FOR PROPER INSTALLATION AND DAMAGE WITH ANTENNAS CONNECTED. CONTRACTOR TO OBTAIN LATEST TESTING PROCEDURES FROM EVERSOURCE PRIOR TO BIDDING.
- ANTENNA CABLES SHALL BE COLOR CODED AT THE FOLLOWING LOCATIONS:
 - AT THE ANTENNAS.
 - AT THE WAVEGUIDE ENTRY PLATE ON BOTH SIDES OF THE EQUIPMENT SHELTER WALL.
 - JUMPER CABLES AT THE EQUIPMENT ENTER.
- SYSTEM INSTALLATION:
 - THE CONTRACTOR SHALL INSTALL ALL CABLES AND ANTENNAS TO THE MANUFACTURER'S SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR THE PROCUREMENT AND INSTALLATION OF THE FOLLOWING:
 - ALL CONNECTORS, ASSOCIATED CABLE MOUNTING, AND GROUNDING HARDWARE.
 - WALL MOUNTS, STANDOFFS, AND ASSOCIATED HARDWARE.
 - 1/2 INCH HELIAX ANTENNA JUMPERS OF APPROPRIATE LENGTHS.
 - MINIMUM BENDING RADIUS FOR COAXIAL CABLES:
 - 7/8 INCH, RMIN = 15 INCHES
 - 1 5/8 INCH, RMIN = 25 INCHES
 - CABLE SHALL BE INSTALLED WITH A MINIMUM NUMBER OF BENDS WHERE POSSIBLE. CABLE SHALL NOT BE LEFT UNTERMINATED AND SHALL BE SEALED IMMEDIATELY AFTER BEING INSTALLED.
 - ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WATERPROOF SPLICING KIT.
 - CONTRACTOR SHALL VERIFY EXACT LENGTH AND DIRECTION OF TRAVEL IN FIELD PRIOR TO CONSTRUCTION.
 - CABLE SHALL BE FURNISHED WITHOUT SPLICES AND WITH CONNECTORS AT EACH END.

TYPICAL WOVEN WIRE FENCING NOTES

- INSTALL FENCING PER ASTM F567, SWING GATES PER ASTM F900.
- GATE POST, CORNER, TERMINAL OR PULL POST 2 1/2 INCH DIAMETER SCHEDULE 40 FOR GATE WIDTHS UP THROUGH 6 FEET OR 12 FEET DOUBLE SWING GATE PER ASTM F1083.
- LINE POST: 2 INCH DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
- GATE FRAME: 1 1/2 INCH DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
- TOP RAIL AND BRACE RAIL: 1 1/2 DIAMETER SCHEDULE 40 PIPE PER ASTM F1083.
- FABRIC: 12 GA CORE WIRE SIZE 2 INCH MESH, CONFORMING TO ASTM A392.
- TIE WIRE: MINIMUM 11 GA GALVANIZED STEEL POSTS AND RAILS. A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAX 24 INCH INTERVALS.
- TENSION WIRE: 7 GA GALVANIZED STEEL.
- BARBED WIRE: DOUBLE STRAND 12 - 1/2 INCH OUTSIDE DIAMETER TWISTED WIRE TO MATCH WITH FABRIC 12 GA, 4 POINT BARBS SPACED ON APPROXIMATELY 5 INCH CENTERS.
- GATE LATCH: DROP DOWN LOCKABLE FORK LATCH AND LOCK, KEYED ALIKE FOR ALL SITES.
- LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED IF REQUIRED.
- HEIGHT = 6 FEET VERTICAL + 1 FOOT BARBED WIRE VERTICAL DIMENSION.



107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



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

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

SHEET TITLE
**NOTES
& SPECIFICATIONS**

SHEET NUMBER
N-2

SYMBOLS

●	EXOTHERMIC CONNECTION
■	COMPRESSION CONNECTION
⦿	5/8"Øx10'-0" COPPER CLAD STEEL GROUND ROD.
⦿	TEST GROUND ROD WITH INSPECTION SLEEVE
---	GROUNDING CONDUCTOR
(A)	KEY NOTES
— X — X — X — X — X —	CHAINLINK FENCE
— □ — □ — □ — □ — □ —	WOOD FENCE
---	LEASE AREA
▨	ICE BRIDGE
▧	CABLE TRAY
— G — G — G — G — G —	GAS LINE
— E/T — E/T — E/T — E/T —	UNDERGROUND ELECTRICAL/TELCO
— E/C — E/C — E/C — E/C —	UNDERGROUND ELECTRICAL/CONTROL
— E — E — E — E — E —	UNDERGROUND ELECTRICAL
— T — T — T — T — T —	UNDERGROUND TELCO
---	PROPERTY LINE (PL)

ABBREVIATIONS

AC	ALTERNATING CURRENT	MGB	MASTER GROUNDING BAR
AIC	AMPERAGE INTERRUPTION CAPACITY	MIN	MINIMUM
ANI	AUXILIARY NETWORK INTERFACE	MW	MICROWAVE
ATM	ASYNCHRONOUS TRANSFER MODE	MTS	MANUAL TRANSFER SWITCH
ATS	AUTOMATIC TRANSFER SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	OC	ON CENTER
AWS	ADVANCED WIRELESS SERVICES	PP	POLARIZING PRESERVING
BATT	BATTERY	PCU	PRIMARY CONTROL UNIT
BBU	BASEBAND UNIT	PDU	PROTOCOL DATA UNIT
BTC	BARE TINNED COPPER CONDUCTOR	PWR	POWER
BTS	BASE TRANSCEIVER STATION	RECT	RECTIFIER
CCU	CLIMATE CONTROL UNIT	RET	REMOTE ELECTRICAL TILT
CDMA	CODE DIVISION MULTIPLE ACCESS	RMC	RIGID METALLIC CONDUIT
CHG	CHARGING	RF	RADIO FREQUENCY
CLU	CLIMATE UNIT	RUC	RACK USER COMMISSIONING
COMM	COMMON	RRH	REMOTE RADIO HEAD
DC	DIRECT CURRENT	RRU	REMOTE RADIO UNIT
DIA	DIAMETER	RWY	RACEWAY
DWG	DRAWING	SFP	SMALL FORM-FACTOR PLUGGABLE
EC	ELECTRICAL CONDUCTOR	SIAD	SMART INTEGRATED ACCESS DEVICE
EMT	ELECTRICAL METALLIC TUBING	SSC	SITE SOLUTIONS CABINET
FIF	FACILITY INTERFACE FRAME	T1	1544KBPS DIGITAL LINE
GEN	GENERATOR	TDMA	TIME-DIVISION MULTIPLE ACCESS
GPS	GLOBAL POSITIONING SYSTEM	TMA	TOWER MOUNT AMPLIFIER
GSM	GLOBAL SYSTEM FOR MOBILE	TVSS	TRANSIENT VOLTAGE SUPPRESSION SYSTEM
HVAC	HEAT/VENTILATION/AIR CONDITIONING	TYP	TYPICAL
ICF	INTERCONNECTION FRAME	UMTS	UNIVERSAL MOBILE TELECOMMUNICATION SYSTEM
IGR	INTERIOR GROUNDING RING (HALO)	UPS	UNINTERRUPTIBLE POWER SUPPLY (DC POWER PLANT)
LTE	LONG TERM EVOLUTION		

EVERSOURCE ENERGY

107 SELDEN STREET
BERLIN, CT 06037
PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211
PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
0	06/29/30	ISSUED FOR FILING



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

FARMINGTON 1C
29 OLD MOUNTAIN RD
FARMINGTON, CT 06032

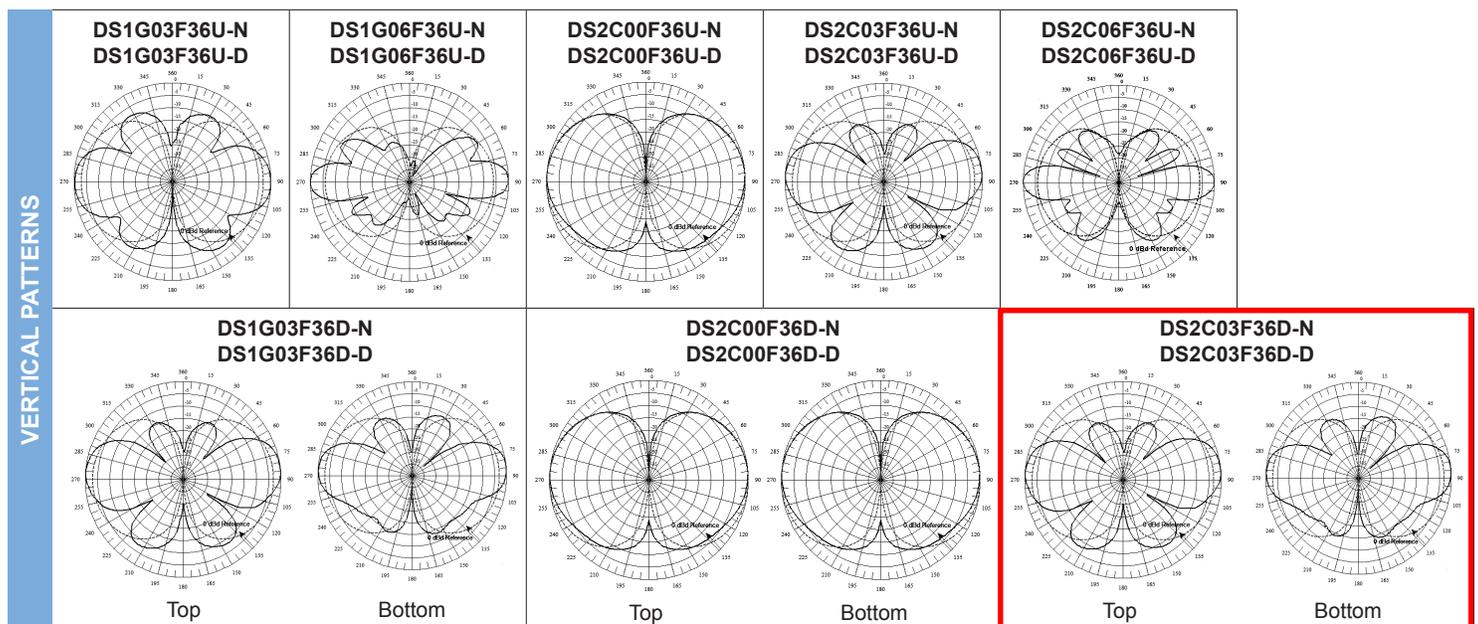
SHEET TITLE
NOTES & SPECIFICATIONS

SHEET NUMBER
N-3

Attachment 2 – Antenna Specifications

VHF Omni Antennas (160-222 MHz)

		160-174 MHz						217-222 MHz									
Model Number		DS1G03F36U-N	DS1G03F36U-D	DS1G06F36U-N	DS1G06F36U-D	DS1G03F36D-N	DS1G03F36D-D	DS2C00F36U-N	DS2C00F36U-D	DS2C03F36U-N	DS2C03F36U-D	DS2C06F36U-N	DS2C06F36U-D	DS2C00F36D-N	DS2C00F36D-D	DS2C03F36D-N	DS2C03F36D-D
Input Connector		N(F)	7/16 DIN														
Type		Single		Single		Dual		Single		Single		Single		Dual		Dual	
ELECTRICAL	Bandwidth, MHz	14		14		14		5		5		5		5		5	
	Power, Watts	500		500		350		500		500		500		350		350	
	Gain, dBd	3		6		3		0		3		6		0		3	
	Horizontal Beamwidth, degrees	360		360		360		360		360		360		360		360	
	Vertical Beamwidth, degrees	30		16		30		60		30		16		60		30	
	Beam Tilt, degrees	0		0		0		0		0		0		0		0	
	Isolation (minimum), dB	N/A		N/A		30		N/A		N/A		N/A		30		30	
MECHANICAL	Number of Connectors	1		1		2		1		1		1		2		2	
	Flat Plate Area, ft ² (m ²)	2.53 (0.24)		4.38 (0.41)		4.5 (0.42)		1.9 (0.18)		1.9 (0.18)		2.58 (0.24)		2.4 (0.22)		4.1 (0.38)	
	Lateral Windload Thrust, lbf(N)	95 (423)		164 (730)		169 (752)		53 (236)		69 (307)		108 (480)		90 (400)		169 (752)	
	Survival Wind Speed without ice, mph(kph)	110 (177)		75 (121)		75 (121)		222 (357)		172 (277)		110 (177)		130 (209)		75 (121)	
	with 0.5" radial ice, mph(kph)	93 (150)		60 (97)		65 (105)		193 (311)		150 (241)		96 (154)		115 (185)		65 (105)	
Mounting Hardware included	DSH3V3R		DSH3V3N		DSH3V3N		DSH2V3R		DSH2V3R		DSH3V3N		DSH3V3R		DSH3V3N		
DIMENSIONS	Length, ft(m)	12.7 (3.9)		21.9 (6.7)		22.3 (6.8)		7.7 (2.3)		9.9 (3)		18.1 (5.5)		13.6 (4.1)		24.3 (7.4)	
	Radome O.D., in(cm)	3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)	
	Mast O.D., in(cm)	2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)	
	Net Weight w/o bracket, lb(kg)	37 (16.8)		60 (27.2)		63 (28.6)		19 (8.6)		26 (11.8)		47 (21.3)		40 (18.1)		70 (31.8)	
	Shipping Weight, lb(kg)	67 (30.4)		90 (40.8)		93 (42.2)		39 (17.7)		56 (25.4)		77 (34.9)		70 (31.8)		100 (45.4)	



Attachment 3 – Structural Analysis Report

Date: **June 25, 2020**



Black & Veatch Corp.
6800 W. 115th St., Suite 2292
Overland Park, KS 66211
(913) 458-2522

Subject: **Structural Analysis Report**

Eversource Designation: **Site Number:** ES-234
Site Name: Farmington1C

Engineering Firm Designation: **Black & Veatch Corp. Project Number:** 403093

Site Data: **29 Old Mountain Rd, Farmington, Hartford County, CT**
Latitude 41° 44' 29.2", Longitude -72° 47' 36.9"
63 Foot – Proposed Monopole Tower

Black & Veatch Corp. is pleased to submit this **“Structural Analysis Report”** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Proposed Equipment Configuration

Sufficient Capacity – 53.8%

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Chris Giannotti

Respectfully submitted by:

Joshua J Riley, P.E.
Professional Engineer

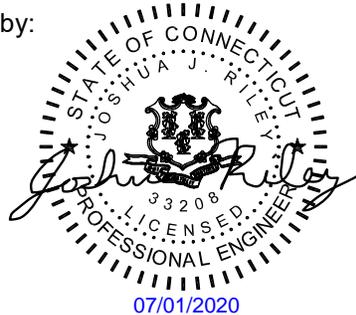


TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Configuration

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Table 4 - Tower Component Stresses vs. Capacity - LC1

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a proposed 63 ft Monopole tower manufactured by Sabre-FWT.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	III
Wind Speed:	135 mph ultimate
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.182
Seismic S₁:	0.064
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
60.0	73.0	1	DBSPECTRA	DS2C03F36D-D	2	7/8	-
	60.0	1	Generic	Mount Pipe 4" Sch 40 (4.5 OD) x 6'-0"			
		1	Site Pro 1	Chain Mount (P/N TCHM1)			

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
TOWER MANUFACTURER DRAWINGS	Sabre-FWT Erection Drawing 75' H1-LD2 WPE's	-	Eversource
GEOTECHNICAL REPORT	Substation Foundation Design Dated 8/31/2015	-	Eversource

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures to be installed and maintained in accordance with the manufacturer's specifications.
- 2) Tower is in plumb condition.
- 3) All coax cables routed as specified in Appendix B of this report.
- 4) All members are assumed to be as specified in the original tower design documents.
- 5) All member protective coatings are in good condition.
- 6) All tower members were properly design, fabricated, installed and have been properly maintained since erection.

- 7) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 8) Soil parameters provided by Eversource. Black & Veatch does not assume any responsibility for its accuracy.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	63 - 15.5	Pole	TP14.65x8x0.1875	1	-1.47	500.92	32.2	Pass
L2	15.5 - 0	Pole	TP16.445x13.995x0.1875	2	-2.26	574.21	42.6	Pass
							Summary	
						Pole (L2)	42.6	Pass
						RATING =	42.6	Pass

Table 4 - Tower Component Stresses vs. Capacity - LC1

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation Soil Interaction	0	53.8	Pass
	Base Foundation		42.8	Pass
Structure Rating (max from all components) =				53.8%

Notes:

- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The proposed tower must conform to the following specifications:

- Pole Type: Sabre-FWT 75' H1
- Embedment Depth: 12 ft
- Foundation: Concrete Encased with 4.0 ft Diameter (design meets SUB 090 8.A.2 requirements)

After proper installation, the tower and its foundation will have sufficient capacity to carry the proposed load configuration.

Maximum Tower Deflections - Service Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Check*</i>
L1	63 - 15.5	5.691	42	0.7319	0.0184	OK
L2	17.5 - 0	0.519	42	0.266	0.0023	OK

*Limit State Deformation (TIA-222-H Section 2.8.2)

1) Maximum Rotation = 4 Degrees

2) Maximum Deflection = 0.03 * Tower Height = 23 in.

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Combined Max</i>	<i>Check*</i>
L1	63 - 15.5	16.045	42	2.0764	0.0563	2.077	OK**
L2	17.5 - 0	1.446	42	0.742	0.0069	0.742	OK**

*Up to 0.5 degree is considered acceptable per SUB090 Section 7

** Deflection approved by Eversource Energy

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.
 This tower is designed using the TIA-222-H standard.
 The following design criteria apply:

- 1) Tower is located in Hartford County, Connecticut.
- 2) Tower base elevation above sea level: 336.00 ft.
- 3) Basic wind speed of 135 mph.
- 4) Risk Category III.
- 5) Exposure Category B.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.00 ft.
- 9) Nominal ice thickness of 2.0000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) A non-linear (P-delta) analysis was used.
- 16) Pressures are calculated at each section.
- 17) Stress ratio used in pole design is 1.
- 18) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|---|
| Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
✓ Use Code Stress Ratios
✓ Use Code Safety Factors - Guys
Escalate Ice
Always Use Max Kz
Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section
Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
SR Members Have Cut Ends
SR Members Are Concentric | Distribute Leg Loads As Uniform
Assume Legs Pinned
✓ Assume Rigid Index Plate
✓ Use Clear Spans For Wind Area
Use Clear Spans For KL/r
Retension Guys To Initial Tension
✓ Bypass Mast Stability Checks
✓ Use Azimuth Dish Coefficients
✓ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination
Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing
Treat Feed Line Bundles As Cylinder
Ignore KL/ry For 60 Deg. Angle Legs | Use ASCE 10 X-Brace Ly Rules
Calculate Redundant Bracing Forces
Ignore Redundant Members in FEA
SR Leg Bolts Resist Compression
All Leg Panels Have Same Allowable
Offset Girt At Foundation
✓ Consider Feed Line Torque
Include Angle Block Shear Check
Use TIA-222-H Bracing Resist.
Exemption
Use TIA-222-H Tension Splice
Exemption

<div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets
Pole Without Linear Attachments
Pole With Shroud Or No
Appurtenances
Outside and Inside Corner Radii Are
Known |
|--|---|---|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	63.00-15.50	47.50	2.00	12	8.0000	14.6500	0.1875	0.7500	A572-65 (65 ksi)
L2	15.50-0.00	17.50		12	13.9950	16.4450	0.1875	0.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	8.2161	4.7168	36.7463	2.7969	4.1440	8.8673	74.4579	2.3215	1.6415	8.755
	15.1007	8.7317	233.1166	5.1776	7.5887	30.7189	472.3574	4.2975	3.4237	18.26
L2	14.7124	8.3363	202.8562	4.9431	7.2494	27.9824	411.0416	4.1029	3.2482	17.324
	16.9590	9.8155	331.1345	5.8202	8.5185	38.8723	670.9682	4.8309	3.9048	20.825

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 63.00-15.50				1	1	1			
L2 15.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter r	Perimeter r	Weight plf
7/8	C	No	Surface Ar (CaAa)	60.00 - 0.00	2	2	0.000 0.030	1.1100		0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
L1	63.00-15.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	9.879	0.000	0.05
L2	15.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.441	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		in	ft ²	ft ²	ft ²	ft ²	K
L1	63.00-15.50	A	2.331	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	38.285	0.000	0.58
L2	15.50-0.00	A	1.985	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.335	0.000	0.20

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	63.00-15.50	-0.0365	1.1621	-0.0514	1.6356
L2	15.50-0.00	-0.0389	1.2383	-0.0613	1.9498

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1		7/8 15.50 - 60.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front	C _A A _A Side	Weight K	
						ft ²	ft ²		
Side Arm Mount [SO 203-1]	A	From Leg	0.50 0.00 0.00	0.0000	60.00	No Ice	1.78	3.79	0.13
						1/2" Ice	2.24	4.47	0.15
						Ice	2.75	5.21	0.19
						1" Ice	3.89	6.78	0.29
DS2C03F36D-D	A	From Leg	1.00 0.00 13.00	0.0000	60.00	No Ice	7.29	7.29	0.07
						1/2" Ice	9.75	9.75	0.12
						Ice	12.23	12.23	0.19
						1" Ice	17.24	17.24	0.37
						2" Ice			

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice

Comb. No.	Description
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	63 - 15.5	Pole	Max. Tension	27	0.00	0.00	-0.00
			Max. Compression	26	-4.52	0.00	0.83
			Max. Mx	8	-1.47	-57.85	0.22
			Max. My	2	-1.48	0.00	54.47
			Max. Vy	8	2.01	-57.85	0.22
			Max. Vx	2	-1.93	0.00	54.47
			Max. Torque	9			0.56
L2	15.5 - 0	Pole	Max. Tension	1	0.00	0.00	0.00
			Max. Compression	26	-6.30	0.00	0.69
			Max. Mx	8	-2.26	-99.05	0.20
			Max. My	2	-2.26	0.00	94.19
			Max. Vy	8	2.71	-99.05	0.20
			Max. Vx	2	-2.63	0.00	94.19
			Max. Torque	9			0.56

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	29	6.30	-0.60	0.34
	Max. H _x	21	1.70	2.71	0.00
	Max. H _z	2	2.26	0.00	2.63
	Max. M _x	2	94.19	0.00	2.63
	Max. M _z	8	99.05	-2.71	0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. Torsion	9	0.56	-2.71	0.00
	Min. Vert	5	1.70	-1.35	2.27
	Min. H _x	8	2.26	-2.71	0.00
	Min. H _z	14	2.26	0.00	-2.63
	Min. M _x	14	-93.78	0.00	-2.63
	Min. M _z	20	-99.05	2.71	0.00
	Min. Torsion	21	-0.56	2.71	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	1.89	0.00	0.00	-0.17	0.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	2.26	0.00	-2.63	-94.19	0.00	0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	1.70	0.00	-2.63	-93.66	0.00	0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	2.26	1.35	-2.27	-81.59	-49.53	-0.28
0.9 Dead+1.0 Wind 30 deg - No Ice	1.70	1.35	-2.27	-81.13	-49.28	-0.28
1.2 Dead+1.0 Wind 60 deg - No Ice	2.26	2.35	-1.31	-47.19	-85.78	-0.48
0.9 Dead+1.0 Wind 60 deg - No Ice	1.70	2.35	-1.31	-46.90	-85.35	-0.48
1.2 Dead+1.0 Wind 90 deg - No Ice	2.26	2.71	-0.00	-0.20	-99.05	-0.56
0.9 Dead+1.0 Wind 90 deg - No Ice	1.70	2.71	-0.00	-0.15	-98.55	-0.56
1.2 Dead+1.0 Wind 120 deg - No Ice	2.26	2.35	1.31	46.79	-85.78	-0.48
0.9 Dead+1.0 Wind 120 deg - No Ice	1.70	2.35	1.31	46.60	-85.35	-0.48
1.2 Dead+1.0 Wind 150 deg - No Ice	2.26	1.35	2.27	81.19	-49.53	-0.28
0.9 Dead+1.0 Wind 150 deg - No Ice	1.70	1.35	2.27	80.83	-49.28	-0.28
1.2 Dead+1.0 Wind 180 deg - No Ice	2.26	0.00	2.63	93.78	0.00	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	1.70	0.00	2.63	93.36	0.00	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	2.26	-1.35	2.27	81.19	49.53	0.28
0.9 Dead+1.0 Wind 210 deg - No Ice	1.70	-1.35	2.27	80.83	49.28	0.28
1.2 Dead+1.0 Wind 240 deg - No Ice	2.26	-2.35	1.31	46.79	85.78	0.48
0.9 Dead+1.0 Wind 240 deg - No Ice	1.70	-2.35	1.31	46.60	85.35	0.48
1.2 Dead+1.0 Wind 270 deg - No Ice	2.26	-2.71	-0.00	-0.20	99.05	0.56
0.9 Dead+1.0 Wind 270 deg - No Ice	1.70	-2.71	-0.00	-0.15	98.55	0.56
1.2 Dead+1.0 Wind 300 deg - No Ice	2.26	-2.35	-1.31	-47.19	85.78	0.48
0.9 Dead+1.0 Wind 300 deg - No Ice	1.70	-2.35	-1.31	-46.90	85.35	0.48
1.2 Dead+1.0 Wind 330 deg - No Ice	2.26	-1.35	-2.27	-81.59	49.53	0.28
0.9 Dead+1.0 Wind 330 deg - No Ice	1.70	-1.35	-2.27	-81.13	49.28	0.28
1.2 Dead+1.0 Ice+1.0 Temp	6.30	0.00	-0.00	-0.69	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	6.30	0.00	-0.67	-28.25	0.00	0.00

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	6.30	0.35	-0.58	-24.56	-14.34	-0.10
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	6.30	0.60	-0.34	-14.47	-24.84	-0.17
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	6.30	0.69	-0.00	-0.69	-28.68	-0.19
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	6.30	0.60	0.34	13.09	-24.84	-0.17
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	6.30	0.35	0.58	23.18	-14.34	-0.10
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	6.30	0.00	0.67	26.88	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	6.30	-0.35	0.58	23.18	14.34	0.10
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	6.30	-0.60	0.34	13.09	24.84	0.17
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	6.30	-0.69	-0.00	-0.69	28.68	0.19
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	6.30	-0.60	-0.34	-14.47	24.84	0.17
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	6.30	-0.35	-0.58	-24.56	14.34	0.10
Dead+Wind 0 deg - Service	1.89	0.00	-0.52	-18.49	0.00	0.00
Dead+Wind 30 deg - Service	1.89	0.26	-0.45	-16.04	-9.61	-0.05
Dead+Wind 60 deg - Service	1.89	0.46	-0.26	-9.33	-16.64	-0.09
Dead+Wind 90 deg - Service	1.89	0.53	0.00	-0.17	-19.22	-0.10
Dead+Wind 120 deg - Service	1.89	0.46	0.26	8.99	-16.64	-0.09
Dead+Wind 150 deg - Service	1.89	0.26	0.45	15.70	-9.61	-0.05
Dead+Wind 180 deg - Service	1.89	0.00	0.52	18.15	0.00	0.00
Dead+Wind 210 deg - Service	1.89	-0.26	0.45	15.70	9.61	0.05
Dead+Wind 240 deg - Service	1.89	-0.46	0.26	8.99	16.64	0.09
Dead+Wind 270 deg - Service	1.89	-0.53	0.00	-0.17	19.22	0.10
Dead+Wind 300 deg - Service	1.89	-0.46	-0.26	-9.33	16.64	0.09
Dead+Wind 330 deg - Service	1.89	-0.26	-0.45	-16.04	9.61	0.05

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-1.89	0.00	0.00	1.89	0.00	0.000%
2	0.00	-2.26	-2.63	0.00	2.26	2.63	0.000%
3	0.00	-1.70	-2.63	0.00	1.70	2.63	0.000%
4	1.35	-2.26	-2.27	-1.35	2.26	2.27	0.000%
5	1.35	-1.70	-2.27	-1.35	1.70	2.27	0.000%
6	2.35	-2.26	-1.31	-2.35	2.26	1.31	0.000%
7	2.35	-1.70	-1.31	-2.35	1.70	1.31	0.000%
8	2.71	-2.26	0.00	-2.71	2.26	0.00	0.000%
9	2.71	-1.70	0.00	-2.71	1.70	0.00	0.000%
10	2.35	-2.26	1.31	-2.35	2.26	-1.31	0.000%
11	2.35	-1.70	1.31	-2.35	1.70	-1.31	0.000%
12	1.35	-2.26	2.27	-1.35	2.26	-2.27	0.000%
13	1.35	-1.70	2.27	-1.35	1.70	-2.27	0.000%
14	0.00	-2.26	2.63	0.00	2.26	-2.63	0.000%
15	0.00	-1.70	2.63	0.00	1.70	-2.63	0.000%
16	-1.35	-2.26	2.27	1.35	2.26	-2.27	0.000%
17	-1.35	-1.70	2.27	1.35	1.70	-2.27	0.000%
18	-2.35	-2.26	1.31	2.35	2.26	-1.31	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
19	-2.35	-1.70	1.31	2.35	1.70	-1.31	0.000%
20	-2.71	-2.26	0.00	2.71	2.26	0.00	0.000%
21	-2.71	-1.70	0.00	2.71	1.70	0.00	0.000%
22	-2.35	-2.26	-1.31	2.35	2.26	1.31	0.000%
23	-2.35	-1.70	-1.31	2.35	1.70	1.31	0.000%
24	-1.35	-2.26	-2.27	1.35	2.26	2.27	0.000%
25	-1.35	-1.70	-2.27	1.35	1.70	2.27	0.000%
26	0.00	-6.30	0.00	0.00	6.30	0.00	0.000%
27	0.00	-6.30	-0.67	0.00	6.30	0.67	0.000%
28	0.35	-6.30	-0.58	-0.35	6.30	0.58	0.000%
29	0.60	-6.30	-0.34	-0.60	6.30	0.34	0.000%
30	0.69	-6.30	0.00	-0.69	6.30	0.00	0.000%
31	0.60	-6.30	0.34	-0.60	6.30	-0.34	0.000%
32	0.35	-6.30	0.58	-0.35	6.30	-0.58	0.000%
33	0.00	-6.30	0.67	0.00	6.30	-0.67	0.000%
34	-0.35	-6.30	0.58	0.35	6.30	-0.58	0.000%
35	-0.60	-6.30	0.34	0.60	6.30	-0.34	0.000%
36	-0.69	-6.30	0.00	0.69	6.30	0.00	0.000%
37	-0.60	-6.30	-0.34	0.60	6.30	0.34	0.000%
38	-0.35	-6.30	-0.58	0.35	6.30	0.58	0.000%
39	0.00	-1.89	-0.52	0.00	1.89	0.52	0.000%
40	0.26	-1.89	-0.45	-0.26	1.89	0.45	0.000%
41	0.46	-1.89	-0.26	-0.46	1.89	0.26	0.000%
42	0.53	-1.89	0.00	-0.53	1.89	0.00	0.000%
43	0.46	-1.89	0.26	-0.46	1.89	-0.26	0.000%
44	0.26	-1.89	0.45	-0.26	1.89	-0.45	0.000%
45	0.00	-1.89	0.52	0.00	1.89	-0.52	0.000%
46	-0.26	-1.89	0.45	0.26	1.89	-0.45	0.000%
47	-0.46	-1.89	0.26	0.46	1.89	-0.26	0.000%
48	-0.53	-1.89	0.00	0.53	1.89	0.00	0.000%
49	-0.46	-1.89	-0.26	0.46	1.89	0.26	0.000%
50	-0.26	-1.89	-0.45	0.26	1.89	0.45	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00033678
5	Yes	4	0.00000001	0.00019740
6	Yes	4	0.00000001	0.00060762
7	Yes	4	0.00000001	0.00036135
8	Yes	4	0.00000001	0.00034206
9	Yes	4	0.00000001	0.00020406
10	Yes	4	0.00000001	0.00033285
11	Yes	4	0.00000001	0.00019866
12	Yes	4	0.00000001	0.00047241
13	Yes	4	0.00000001	0.00028134
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00047241
17	Yes	4	0.00000001	0.00028134
18	Yes	4	0.00000001	0.00033285
19	Yes	4	0.00000001	0.00019866
20	Yes	4	0.00000001	0.00034206
21	Yes	4	0.00000001	0.00020406
22	Yes	4	0.00000001	0.00060762
23	Yes	4	0.00000001	0.00036135
24	Yes	4	0.00000001	0.00033678
25	Yes	4	0.00000001	0.00019740
26	Yes	4	0.00000001	0.00003915
27	Yes	4	0.00000001	0.00065546
28	Yes	4	0.00000001	0.00069427
29	Yes	4	0.00000001	0.00072887
30	Yes	4	0.00000001	0.00068251
31	Yes	4	0.00000001	0.00065593
32	Yes	4	0.00000001	0.00062550
33	Yes	4	0.00000001	0.00057148
34	Yes	4	0.00000001	0.00062550
35	Yes	4	0.00000001	0.00065593
36	Yes	4	0.00000001	0.00068251
37	Yes	4	0.00000001	0.00072887
38	Yes	4	0.00000001	0.00069427
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	63 - 15.5	5.691	42	0.7319	0.0184
L2	17.5 - 0	0.519	42	0.2660	0.0023

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
60.00	Side Arm Mount [SO 203-1]	42	5.259	0.7062	0.0171	27302

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	63 - 15.5	29.739	8	3.8488	0.1039
L2	17.5 - 0	2.680	8	1.3756	0.0127

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
60.00	Side Arm Mount [SO 203-1]	8	27.478	3.7119	0.0965	5224

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	KI/r	A	P _u	φP _n	Ratio P _u / φP _n
	ft		ft	ft		in ²	K	K	
L1	63 - 15.5 (1)	TP14.65x8x0.1875	47.50	0.00	0.0	8.5627	-1.47	500.92	0.003
L2	15.5 - 0 (2)	TP16.445x13.995x0.1875	17.50	0.00	0.0	9.8155	-2.26	574.21	0.004

Pole Bending Design Data

Section No.	Elevation	Size	M _{ux}	φM _{nx}	Ratio M _{ux} / φM _{nx}	M _{uy}	φM _{ny}	Ratio M _{uy} / φM _{ny}
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	63 - 15.5 (1)	TP14.65x8x0.1875	57.85	181.41	0.319	0.00	181.41	0.000
L2	15.5 - 0 (2)	TP16.445x13.995x0.1875	99.05	234.81	0.422	0.00	234.81	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V _u	φV _n	Ratio V _u / φV _n	Actual T _u	φT _n	Ratio T _u / φT _n
	ft		K	K		kip-ft	kip-ft	
L1	63 - 15.5 (1)	TP14.65x8x0.1875	2.01	150.28	0.013	0.56	187.47	0.003
L2	15.5 - 0 (2)	TP16.445x13.995x0.1875	2.71	172.26	0.016	0.56	246.34	0.002

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	63 - 15.5 (1)	0.003	0.319	0.000	0.013	0.003	0.322	1.000	4.8.2
L2	15.5 - 0 (2)	0.004	0.422	0.000	0.016	0.002	0.426	1.000	4.8.2

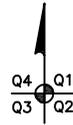
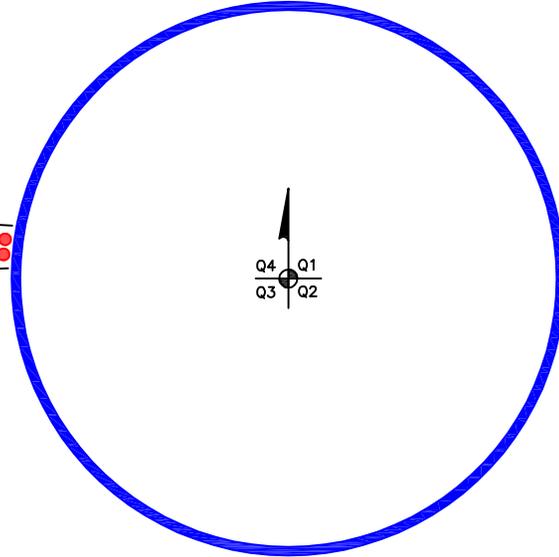
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	63 - 15.5	Pole	TP14.65x8x0.1875	1	-1.47	500.92	32.2	Pass	
L2	15.5 - 0	Pole	TP16.445x13.995x0.1875	2	-2.26	574.21	42.6	Pass	
							Summary		
							Pole (L2)	42.6	Pass
							RATING =	42.6	Pass

APPENDIX B
BASE LEVEL DRAWING



(PROPOSED EQUIPMENT CONFIGURATION)
(2) 7/8 TO 60 FT LEVEL



APPENDIX C
ADDITIONAL CALCULATIONS

Black & Veatch

 *
 * CAISSON - Pier Foundations Analysis and Design - Copyright Power Line Systems, Inc. 1993-2016 *
 *

Project Title: ES-234 Farmington1C

Project Notes: Eversource

Calculation Method: Full 8CD

***** I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
4.00	0.00		

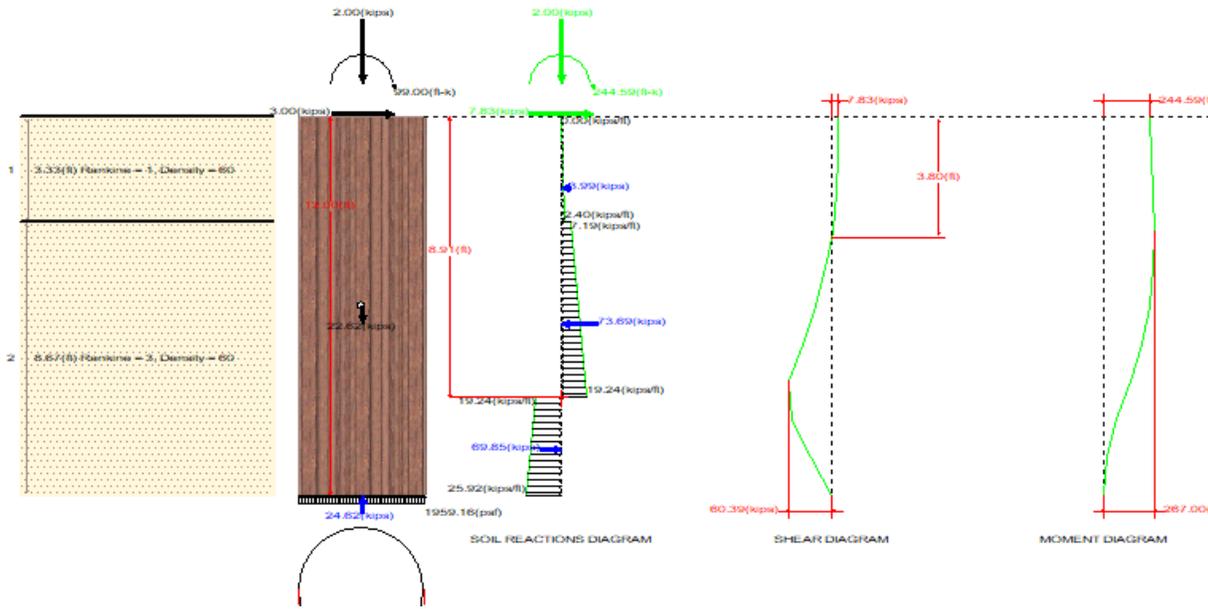
Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft ³)	CU (psf)	KP	PHI (deg)
1	Sand	3.33	0.00	60.0		1.000	
2	Sand	8.67	3.33	60.0		3.000	30.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
99.0	2.0	3.00	2.47

***** R E S U L T S



Calculated Pier Properties

Length (ft)	Weight (kips)	Pressure Due To Axial Load (psf)	Pressure Due To Weight (psf)	Total End-Bearing Pressure (psf)
12.000	22.619	159.2	1800.0	1959.2

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft ³)	CU (psf)	KP	Force (kips)	Arm (ft)
Sand	0.00	3.33	60.0		1.000	3.99	2.22
Sand	3.33	5.58	60.0		3.000	73.69	6.54
Sand	8.91	3.09	60.0		3.000	-69.85	10.53

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	7.8	244.6	3.2	99.0
1.20	7.3	253.8	3.0	102.7
2.40	5.8	261.7	2.3	106.0
3.60	1.8	267.0	0.7	108.1
4.80	-9.1	263.0	-3.7	106.5
6.00	-23.1	244.0	-9.3	98.8
7.20	-40.2	206.4	-16.3	83.5
8.40	-60.4	146.3	-24.4	59.2
9.60	-56.0	69.7	-22.7	28.2
10.80	-29.5	18.0	-12.0	7.3
12.00	-0.0	-0.0	-0.0	-0.0

Embedded Pole

This sheet calculates the capacity of an embedded pole according to either EIA/TIA-222-F, TIA-222-G, or TIA-222-H.

ES-234 Farmington1C
Eversource

TIA Revision: H

Reactions:		
Tower Weight, P_u :	2	kip
Moment, M_u :	99.0	kip-ft

Embedded Shaft Properties:		
Shaft Filled & Encased with Concrete?	Y	Y/N
Yield Stress, F_y :	65	ksi
# of Sides:	12	"0" if round
Thickness of Pole, t :	0.1875	in
Dia. at Top of Pole Section:	13.995	in
Dia. at Bot. of Pole Section:	18.125	in
Length of Pole Section:	29.5	ft
Diameter at Max Moment, D :	16.98	in

Pier Properties		
Diameter of Pier, D_p :	4.0	ft
Depth of Foundation, L :	12	ft
Concrete Density, δ_c :	88	pcf

Soil Properties		
Soil Unit Weight, γ :	60	pcf
Ultimate Gross Bearing, B_c :	4	ksf

Caisson Analysis		
Depth to Zero Shear	3.79	ft
Max Moment	108.43	kip-ft
Overturning FOS:	2.47	

Depth		Shear		Moment	
2.4	ft	2.3	kips	106	kip-ft
3.6	ft	0.7	kips	108.1	kip-ft
4.8	ft	-3.7	kips	106.5	kip-ft

Design Checks				
	Capacity/ Availability	Demand/ Limits	Rating	Check
<i>Steel Axial Capacity (k):</i>	747.12	2.00	0.27%	Pass
<i>Steel Moment Capacity (k-ft):</i>	254.71	108.43	42.57%	Pass
<i>Combined Ratio:</i>	1.00	0.428	42.84%	Pass
<i>Soil Moment Capacity (FOS):</i>	2.47	1.33	53.85%	Pass
<i>Bearing Pressure (ksf):</i>	3.00	1.21	40.35%	Pass

Soil Rating:	53.8%
Structural Rating:	42.8%

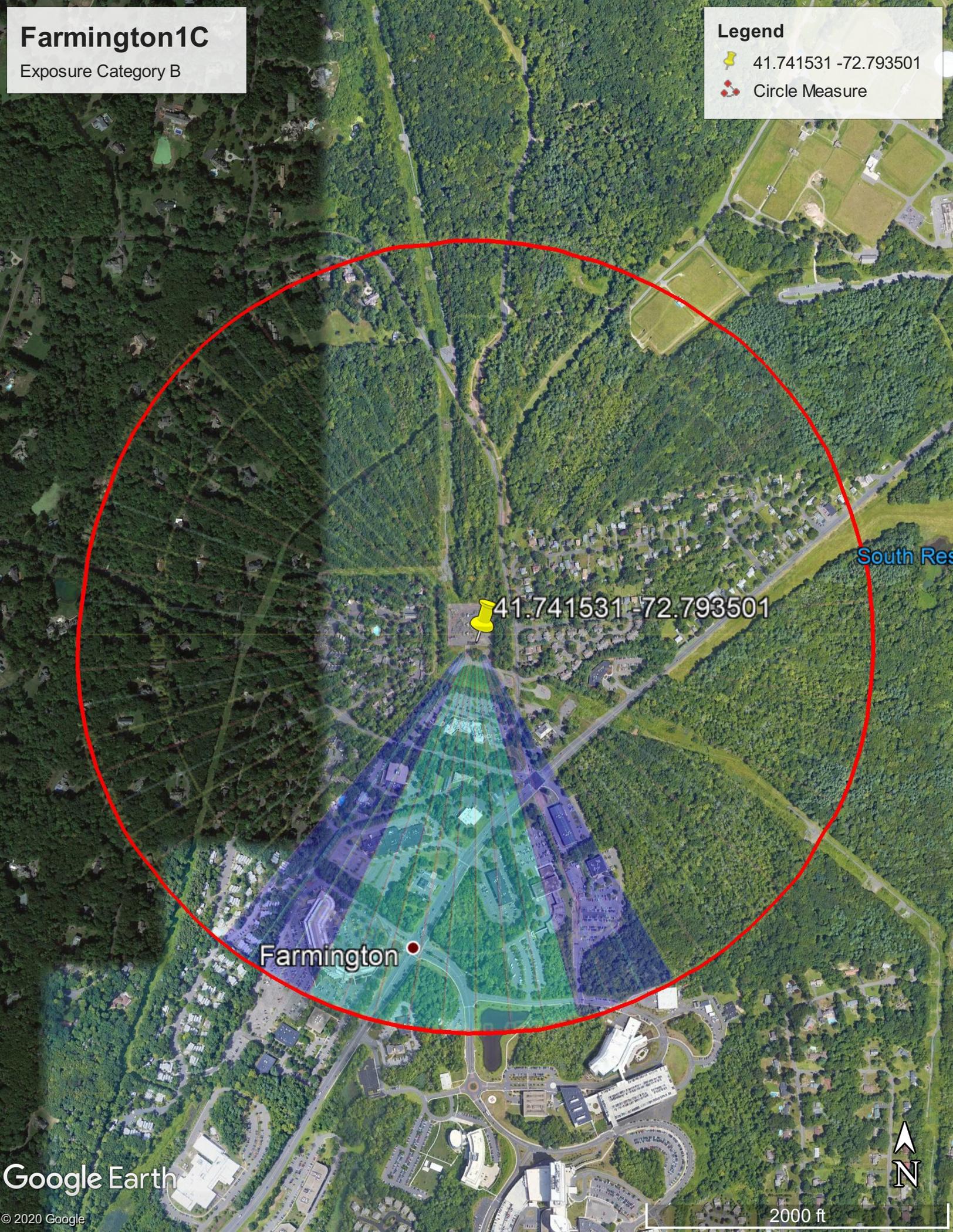
REFERENCES

Farmington1C

Exposure Category B

Legend

-  41.741531 -72.793501
-  Circle Measure



Farmington

41.741531 -72.793501

South Res

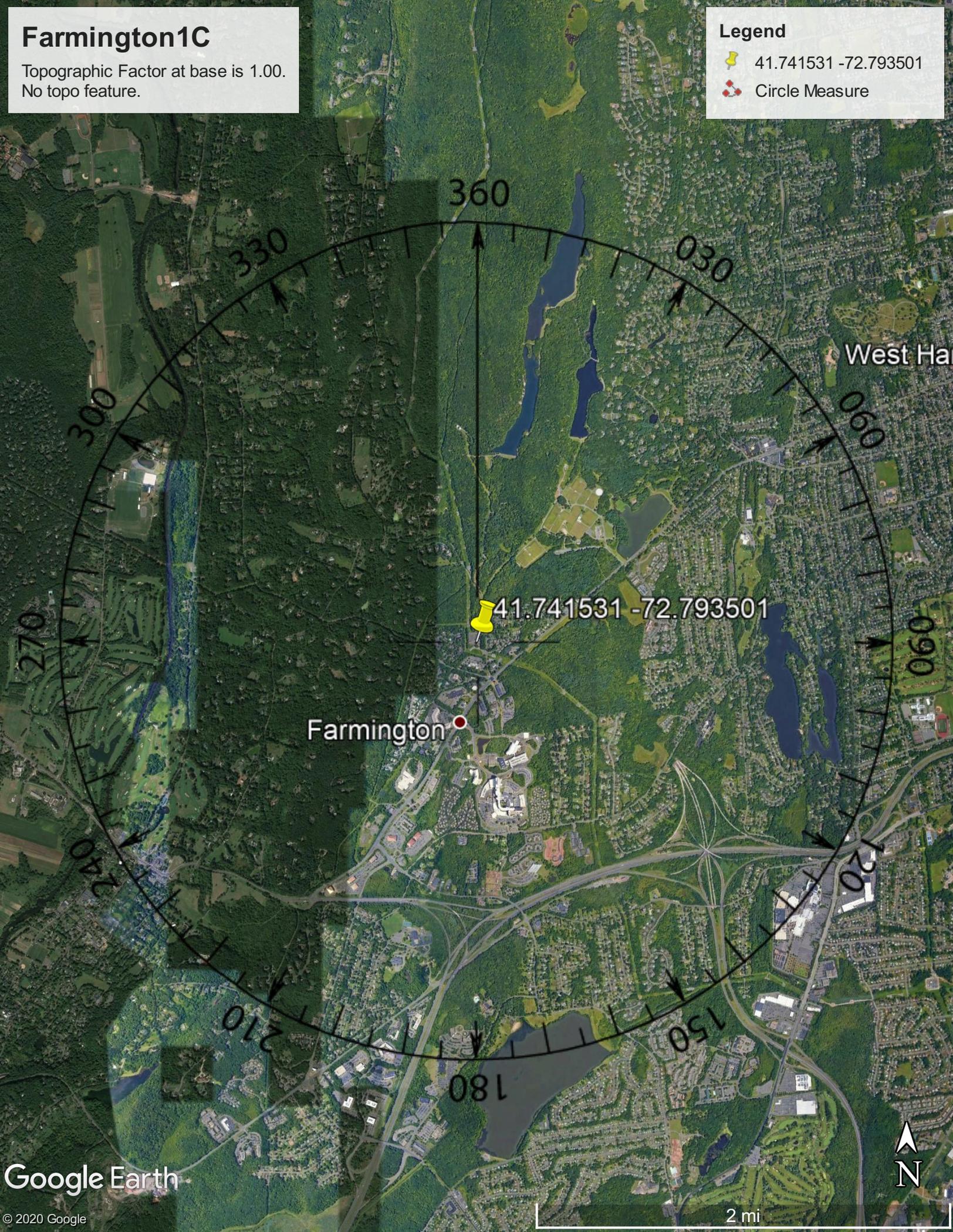


Farmington1C

Topographic Factor at base is 1.00.
No topo feature.

Legend

-  41.741531 -72.793501
-  Circle Measure

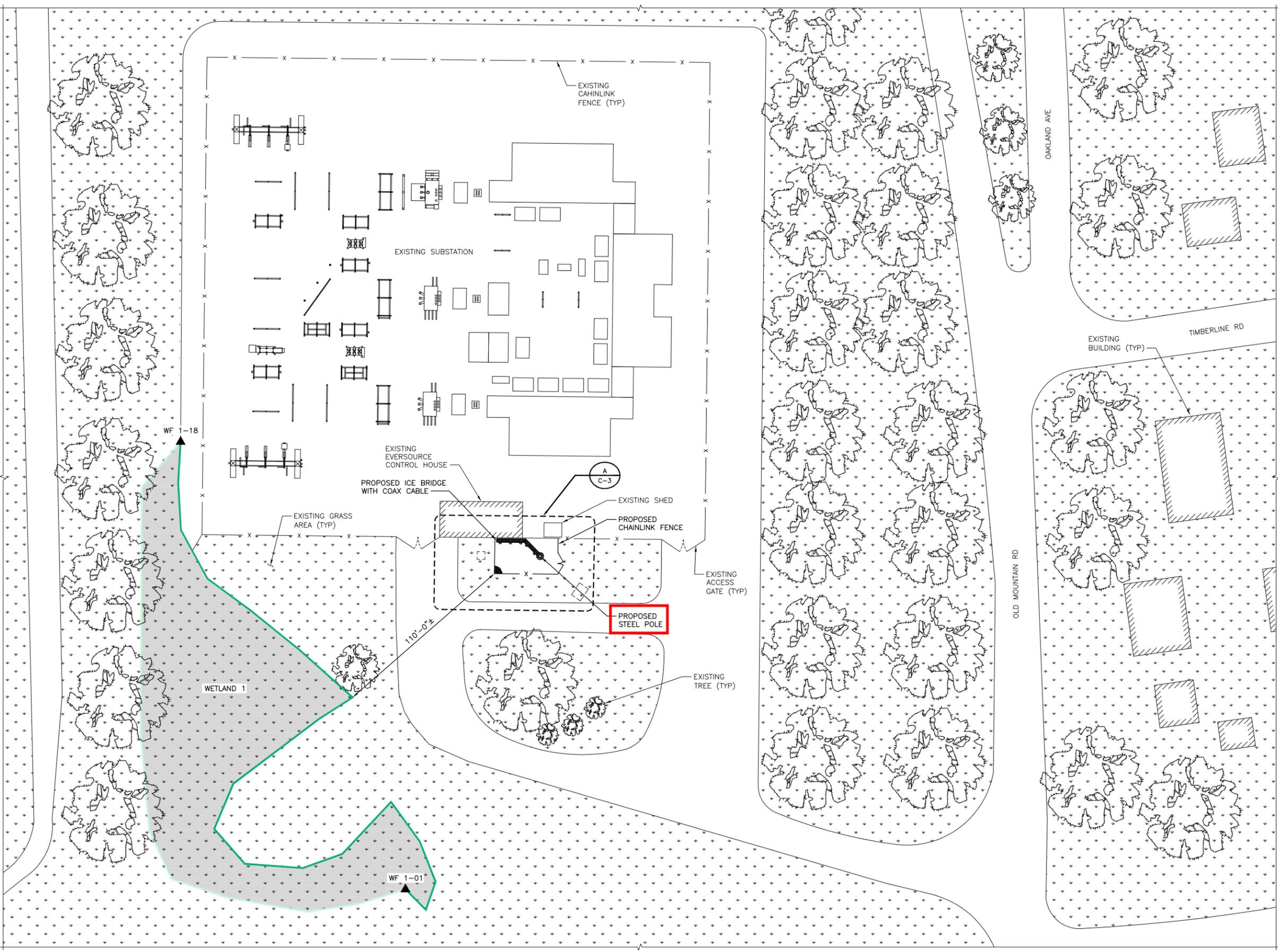


West Ha

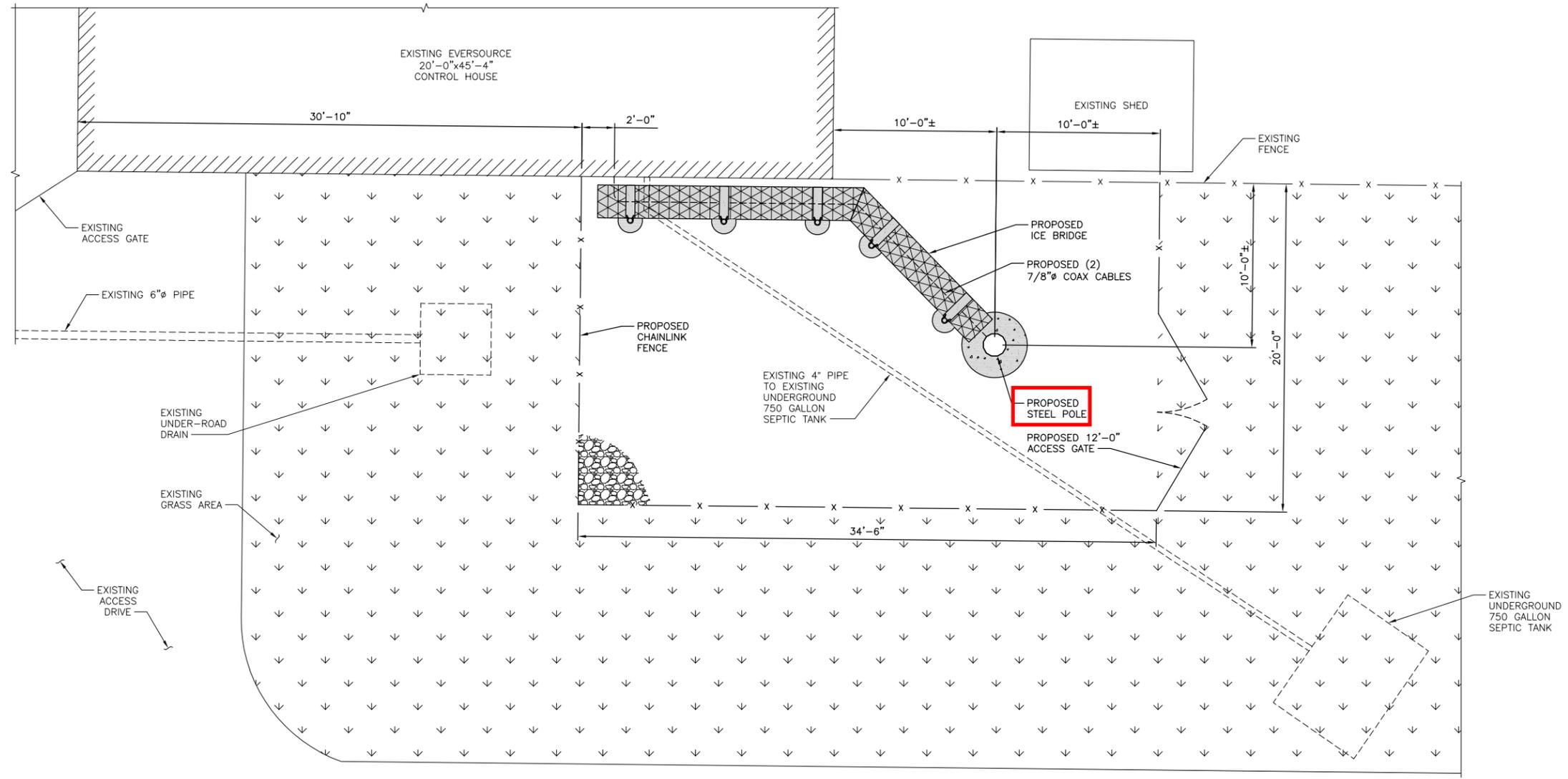
Farmington

41.741531 -72.793501





PARTIAL SITE PLAN
NO SCALE



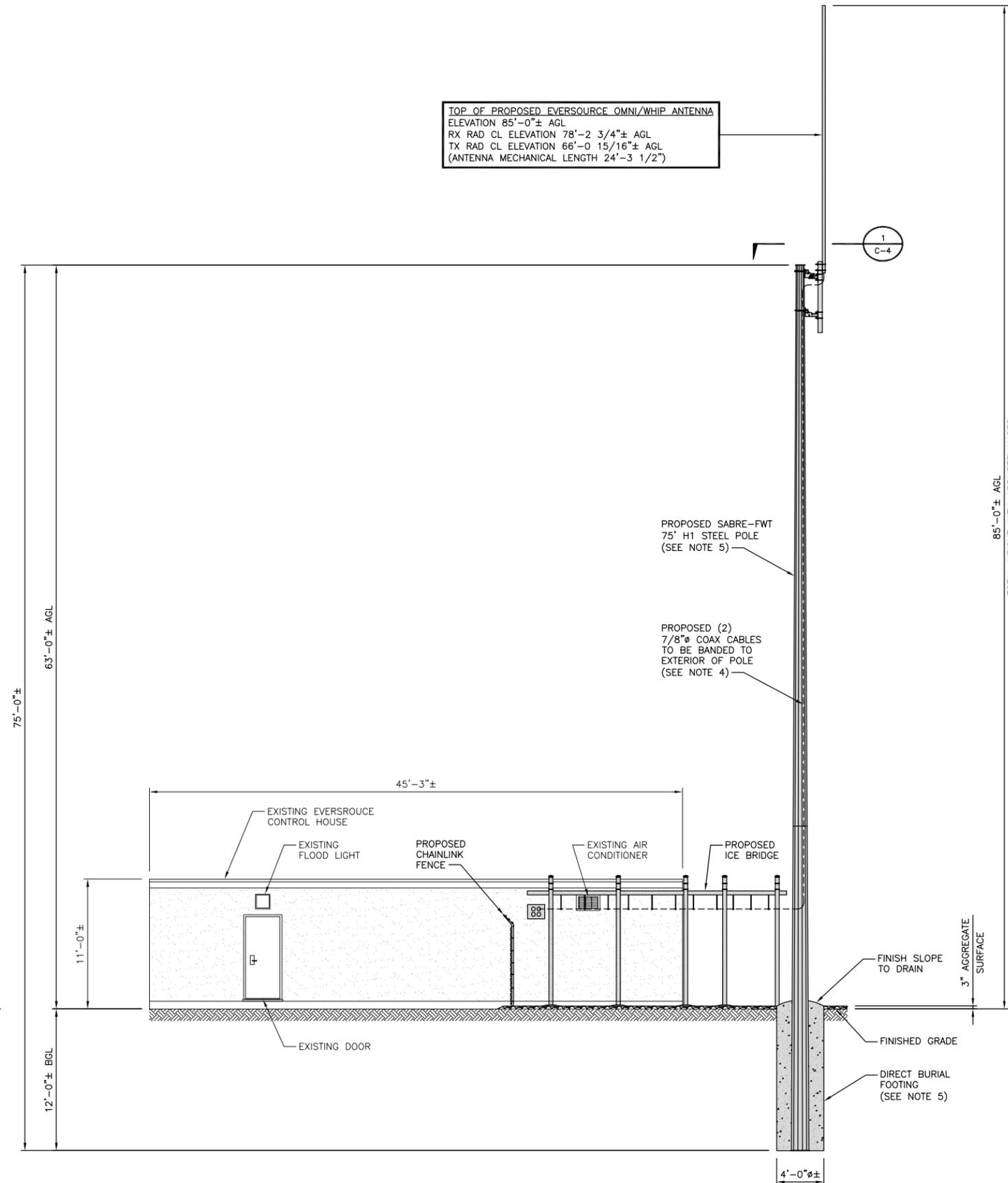
SITE PLAN
NO SCALE



TOP OF PROPOSED EVERSOURCE OMNI/WHIP ANTENNA
 ELEVATION 85'-0"± AGL
 RX RAD CL ELEVATION 78'-2 3/4"± AGL
 TX RAD CL ELEVATION 66'-0 15/16"± AGL
 (ANTENNA MECHANICAL LENGTH 24'-3 1/2")

TOP OF PROPOSED POLE
 ELEVATION 63'-0"± AGL

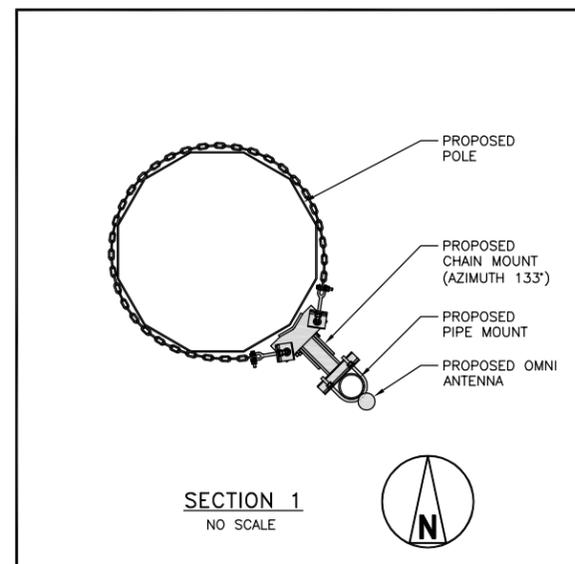
FINISHED GRADE
 ELEVATION 336'-0"± AMSL



TOWER ELEVATION
 NO SCALE

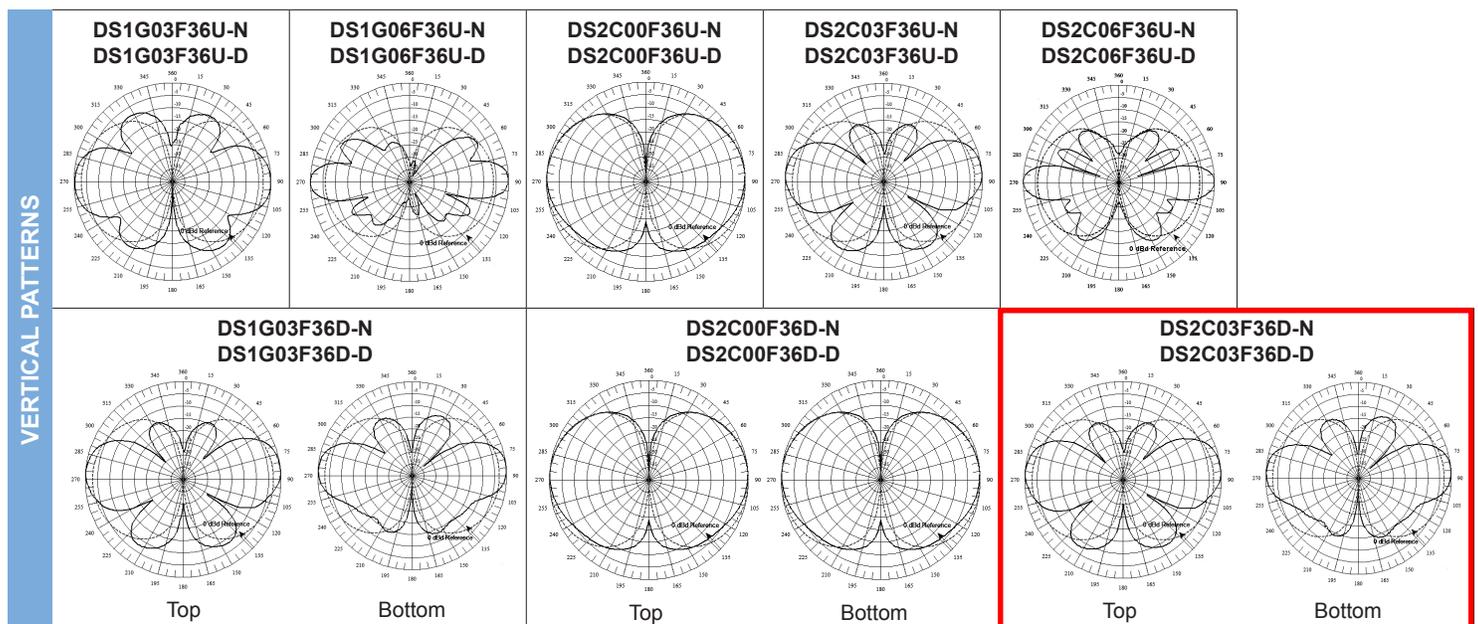
NOTES

1. ALL COAXIAL CABLE TO BE SECURED TO THE SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" OC.
2. CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING THE INSTALLATION OF COAXIAL CABLES, CONNECTORS AND ANTENNAS.
3. DESIGN OF THE FOUNDATION WAS BASED ON SUB012 EVERSOURCE SUBSTATION STANDARDS, SECTION 6.D., FOUNDATION STABILITY AND SOIL BEARING CAPACITY. NO SUBGRADE SOIL CONDITIONS WERE AVAILABLE OR ARE KNOWN.
4. PROPOSED COAX CABLES TO BE STACKED IN ONE ROW.
5. INSTALL POLE PER MANUFACTURER'S RECOMMENDATIONS EXCEPT FOR POLE EMBEDMENT. REFER TO SABRE-FWT ERECTION DRAWINGS - 75' H1-LD2 WPE'S.
6. PROPOSED OMNI/WHIP ANTENNA SHALL BE INSTALLED USING PROPOSED CLAMP SET SITE PRO 1 P/N: DCP12K. SPACE CLAMPS PER ANTENNA MANUFACTURER'S RECOMMENDATIONS, (3) ATTACHMENT POINTS (CLAMPS) REQUIRED (TOTAL OF 2 CLAMP SETS).

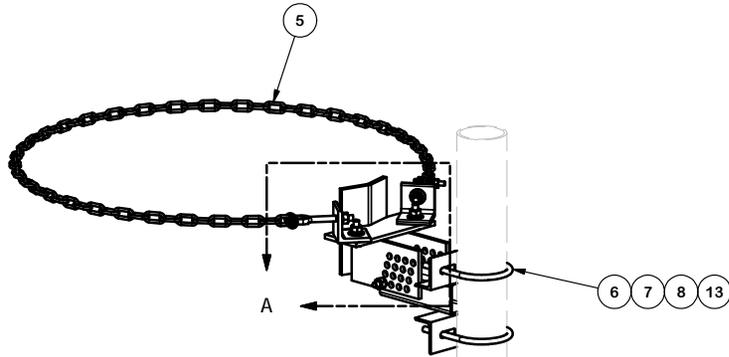


VHF Omni Antennas (160-222 MHz)

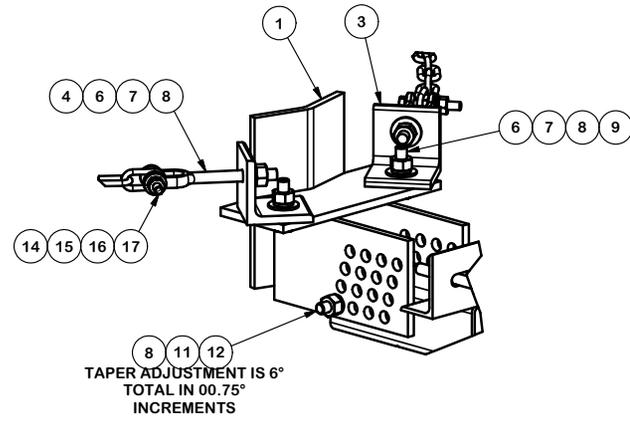
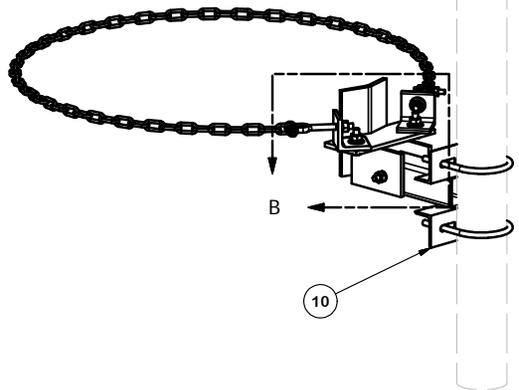
		160-174 MHz						217-222 MHz									
Model Number		DS1G03F36U-N	DS1G03F36U-D	DS1G06F36U-N	DS1G06F36U-D	DS1G03F36D-N	DS1G03F36D-D	DS2C00F36U-N	DS2C00F36U-D	DS2C03F36U-N	DS2C03F36U-D	DS2C06F36U-N	DS2C06F36U-D	DS2C00F36D-N	DS2C00F36D-D	DS2C03F36D-N	DS2C03F36D-D
Input Connector		N(F)	7/16 DIN														
Type		Single		Single		Dual		Single		Single		Single		Dual		Dual	
ELECTRICAL	Bandwidth, MHz	14		14		14		5		5		5		5		5	
	Power, Watts	500		500		350		500		500		500		350		350	
	Gain, dBd	3		6		3		0		3		6		0		3	
	Horizontal Beamwidth, degrees	360		360		360		360		360		360		360		360	
	Vertical Beamwidth, degrees	30		16		30		60		30		16		60		30	
	Beam Tilt, degrees	0		0		0		0		0		0		0		0	
	Isolation (minimum), dB	N/A		N/A		30		N/A		N/A		N/A		30		30	
MECHANICAL	Number of Connectors	1		1		2		1		1		1		2		2	
	Flat Plate Area, ft ² (m ²)	2.53 (0.24)		4.38 (0.41)		4.5 (0.42)		1.9 (0.18)		1.9 (0.18)		2.58 (0.24)		2.4 (0.22)		4.1 (0.38)	
	Lateral Windload Thrust, lbf(N)	95 (423)		164 (730)		169 (752)		53 (236)		69 (307)		108 (480)		90 (400)		169 (752)	
	Survival Wind Speed without ice, mph(kph)	110 (177)		75 (121)		75 (121)		222 (357)		172 (277)		110 (177)		130 (209)		75 (121)	
	with 0.5" radial ice, mph(kph)	93 (150)		60 (97)		65 (105)		193 (311)		150 (241)		96 (154)		115 (185)		65 (105)	
Mounting Hardware included	DSH3V3R		DSH3V3N		DSH3V3N		DSH2V3R		DSH2V3R		DSH3V3N		DSH3V3R		DSH3V3N		
DIMENSIONS	Length, ft(m)	12.7 (3.9)		21.9 (6.7)		22.3 (6.8)		7.7 (2.3)		9.9 (3)		18.1 (5.5)		13.6 (4.1)		24.3 (7.4)	
	Radome O.D., in(cm)	3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)		3 (7.6)	
	Mast O.D., in(cm)	2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)		2.5 (6.4)	
	Net Weight w/o bracket, lb(kg)	37 (16.8)		60 (27.2)		63 (28.6)		19 (8.6)		26 (11.8)		47 (21.3)		40 (18.1)		70 (31.8)	
	Shipping Weight, lb(kg)	67 (30.4)		90 (40.8)		93 (42.2)		39 (17.7)		56 (25.4)		77 (34.9)		70 (31.8)		100 (45.4)	



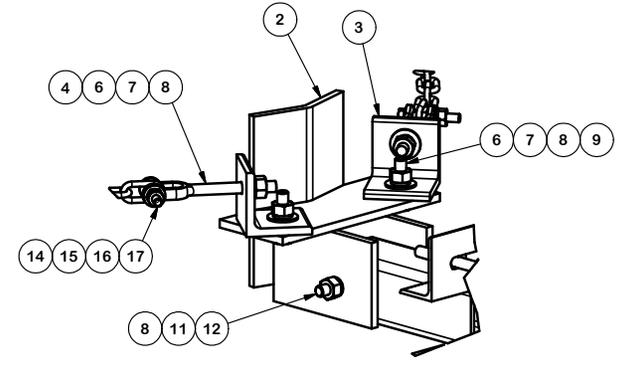
TOWER/MAST SIZE AT PROPOSED ANTENNA ATTACHMENT = 8 1/2" ± DIAMETER.
 PROPOSED CHAIN MOUNT FITS POLYGON OR ROUND POLES 5"-36" IN DIAMETER.
 NOTE: (1) 4" (4.5" OD) SCH 40 x 6'-0" MOUNT PIPE IS REQUIRED.



2-3/8" OD PIPE or 4-1/2" OD PIPE
PIPES NOT INCLUDED



DETAIL A
 UPPER MOUNTING BRACKET



DETAIL B
 LOWER MOUNTING BRACKET

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-UCMMH	TOP CHAIN MOUNT BRACKET		16.17	16.17
2	1	X-UCMSH	LOWER CHAIN MOUNT BRACKET		14.14	14.14
3	4	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3.000 in	1.84	7.36
4	4	JB4	JAW BOLT GALV. 1/2" x 6"		0.51	2.04
5	2	GC4095	1/4" x GR40 GALV. CHAIN 9.5'		4.07	8.14
6	16	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.15
7	16	G12FW	1/2" HDG USS FLATWASHER		0.03	0.55
8	18	G12LW	1/2" HDG LOCKWASHER		0.01	0.25
9	4	G1202	1/2" x 2" HDG HEX BOLT GR5	2	0.18	0.70
10	2	X-UAPM	UNIVERSAL ANGLE TUBE 9"		9.31	18.62
11	2	A12NUT	1/2" HDG A325 HEX NUT		0.07	0.14
12	2	A1205	1/2" x 5" A325 HDG BOLT	5 in.	0.34	0.69
13	4	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	3.89
13	4	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	2.63
14	4	G38FW	3/8" HDG USS FLATWASHER		0.01	0.05
15	4	G38LW	3/8" HDG LOCKWASHER		0.01	0.03
16	4	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.14
17	4	G38212	3/8" x 2-1/2" HDG HEX BOLT GR5		0.10	0.41
					TOTAL WT. #	80.15

TOLERANCE NOTES
 TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
 DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
 BENDS ARE ± 1/2 DEGREE
 ALL OTHER MACHINING (± 0.030")
 ALL OTHER ASSEMBLY (± 0.060")

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION 1'-0" STANDOFF, SINGLE SECTOR, TAPER ADJUSTMENT CHAIN MOUNT, SITE PRO 1	
CPD NO.	DRAWN BY RH18 3/12/2010
CLASS 81	ENG. APPROVAL BMC 3/15/2010
SUB 01	CHECKED BY CUSTOMER

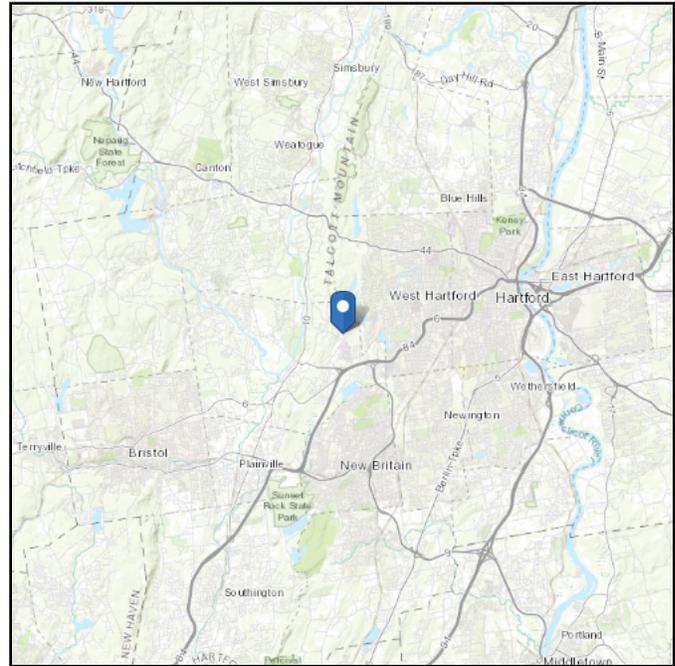
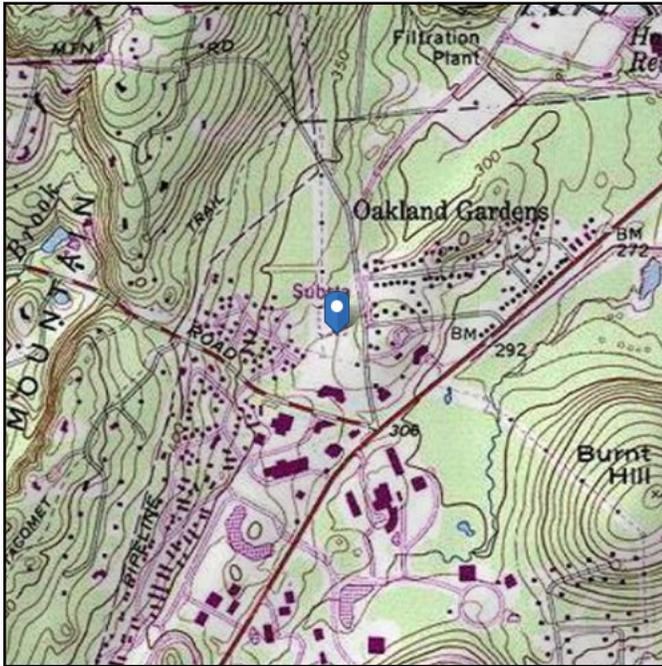
 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	Engineering Support Team: 1-888-753-7446
PART NO.	TCHM1
DWG. NO.	TCHM1

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: III
Soil Class: D - Stiff Soil

Elevation: 320.29 ft (NAVD 88)
Latitude: 41.741531
Longitude: -72.793501



Data Source: ASCE/SEI 7-10, Fig. 26.5-1B and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Mon Oct 07 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

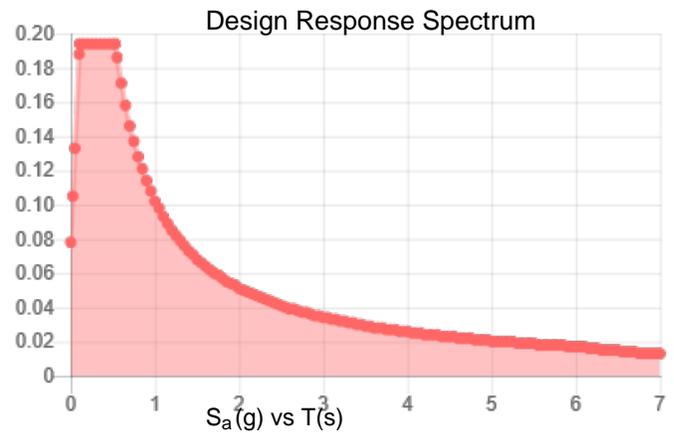
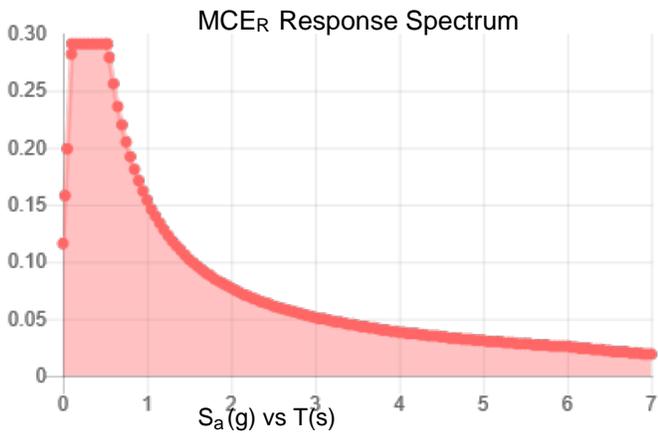
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.182	S_{DS} :	0.194
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.291	PGA _M :	0.147
S_{M1} :	0.154	F _{PGA} :	1.6
		I_e :	1.25

Seismic Design Category B



Data Accessed:

Mon Oct 07 2019

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Mon Oct 07 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Attachment 4 – Wetlands Inspection Report



WETLAND INSPECTION

February 6, 2020

APT Project No. CT578100

Prepared For: Eversource Energy
107 Selden Street
Berlin, Connecticut 06037

Site Name: Farmington 1C

Site Address: 29 Old Mountain Road, Farmington, Connecticut

Date(s) of Investigation: 1/16/2020

Field Conditions: **Weather:** partly cloudy, mid 40's
Soil Moisture: dry to moist

Wetland/Watercourse Delineation Methodology¹²:

- Connecticut Inland Wetlands and Watercourses
- Connecticut Tidal Wetlands
- Massachusetts Wetlands
- U.S. Army Corps of Engineers

Municipal Upland Review Areas: Wetlands: 150 feet **Watercourses:** 150 feet

The wetlands inspection was performed by:

Matthew Gustafson, Registered Soil Scientist

Enclosures: Wetland Delineation Field Form & Wetland Inspection Map

This report is provided as a brief summary of findings from APT's wetland investigation of the referenced Study Area that consists of proposed development activities and areas generally within 200 feet.³ If applicable, APT is available to provide a more comprehensive wetland impact analysis upon receipt of site plans depicting the proposed development activities and surveyed location of identified wetland and watercourse resources.

¹ Wetlands and watercourses were delineated in accordance with applicable local, state and federal statutes, regulations and guidance.

² All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.

³ APT has relied upon the accuracy of information provided by Eversource Energy and its contractors regarding the proposed Study Area for the purposes of identifying wetlands and watercourses.

Attachments

- Wetland Delineation Field Form
- Wetland Inspection Map

Wetland Delineation Field Form

Wetland I.D.:	Wetland 1	
Flag #'s:	WF 1-01 to 1-18	
Flag Location Method:	Site Sketch <input checked="" type="checkbox"/>	GPS (sub-meter) located <input checked="" type="checkbox"/>

WETLAND HYDROLOGY:

NONTIDAL

Intermittently Flooded <input type="checkbox"/>	Artificially Flooded <input type="checkbox"/>	Permanently Flooded <input type="checkbox"/>
Semipermanently Flooded <input type="checkbox"/>	Seasonally Flooded <input type="checkbox"/>	Temporarily Flooded <input type="checkbox"/>
Permanently Saturated <input type="checkbox"/>	Seasonally Saturated/seepage <input type="checkbox"/>	Seasonally Saturated/perched <input checked="" type="checkbox"/>
Comments: None		

TIDAL

Subtidal <input type="checkbox"/>	Regularly Flooded <input type="checkbox"/>	Irregularly Flooded <input type="checkbox"/>
Irregularly Flooded <input type="checkbox"/>		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine <input type="checkbox"/>	Riverine <input type="checkbox"/>	Palustrine <input checked="" type="checkbox"/>
Lacustrine <input type="checkbox"/>	Marine <input type="checkbox"/>	
Comments: None		

CLASS:

Emergent <input checked="" type="checkbox"/>	Scrub-shrub <input checked="" type="checkbox"/>	Forested <input checked="" type="checkbox"/>
Open Water <input type="checkbox"/>	Disturbed <input checked="" type="checkbox"/>	Wet Meadow <input type="checkbox"/>
Comments: As a result of historic and regular vegetation management required for the electrical transmission system, vegetation classes range from edge forest, to transitional scrub/shrub, and pockets of interior emergent vegetation.		

WATERCOURSE TYPE:

Perennial <input type="checkbox"/>	Intermittent <input type="checkbox"/>	Tidal <input type="checkbox"/>
Watercourse Name: None		
Comments: None		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Potential <input type="checkbox"/>	Other <input type="checkbox"/>
Vernal Pool Habitat Type: None	
Comments: None	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
---	---	-----------------------------

DOMINANT PLANTS:

Red Maple (<i>Acer rubrum</i>)	Silky Dogwood (<i>Cornus amomum</i>)
Common Reed* (<i>Phragmites australis</i>)	Sphagnum moss (<i>Sphagnum</i> spp.)
Sensitive Fern (<i>Onoclea sensibilis</i>)	Purple Loosestrife* (<i>Lythrum salicaria</i>)
Multiflora Rose* (<i>Rosa multiflora</i>)	Asiatic Bittersweet* (<i>Celastrus orbiculatus</i>)
Bush Honeysuckles* (<i>Lonicera</i> spp.)	Golden Rod (<i>Solidago</i> sp.)
Brambles (<i>Rubus</i> spp.)	

* denotes Connecticut Invasive Species Council invasive plant species

GENERAL COMMENTS:

All-Points Technology Corp., P.C. ("APT") understands that Eversource proposes to install a communications antenna on a proposed 60-foot tall wooden pole located at the Farmington substation. The location of the proposed wood pole communication facility consists of maintained lawn and a gravel access drive along the south exterior side of the substation's security fence.

No wetlands are located within or immediately adjacent to the proposed work activities. The nearest wetland area, Wetland 1, is located off the southwest corner of the substation security fence within an electrical transmission corridor. This wetland generally drains north and its boundary is characterized by fill material associated with a gravel transmission structure pad. Portions of the wetland are dominated by invasive species including Asiatic bittersweet, purple loosestrife, common reed, and multiflora rose indicative of the historic disturbances within and proximate to this wetland/upland area.

The proposed communication facility development activities are located ±110 feet northeast of the nearest location to Wetland 1's boundary. Therefore, the project would not likely adversely impact Wetland 1 due to the separating distance and the intervening substation gravel access road, provided appropriate erosion controls are installed and maintained in accordance with the *2002 Connecticut Guidelines For Soil Erosion and Sediment Control*.



Legend

-  Proposed 60' Wood Pole
-  Proposed Chainlink Fence
-  Proposed Ice Bridge and Coax Cables
-  Wetland Flag
-  Delineated Wetland Boundary
-  Approximate Wetland Area
-  Subject Property
-  Approximate Parcel Boundary

Wetland Inspection Map

Proposed Wireless
Telecommunications Facility
Farmington 1C
29 Old Mountain Road
Farmington, Connecticut

Map Notes:
Base Map Source: 2019 CT Aerial Imagery (CTECO)
Map Scale: 1 inch = 100 feet
Map Date: January 2020



EVERSOURCE
ENERGY

ALL-POINTS
TECHNOLOGY CORPORATION

Attachment 5 - DEEP Correspondence



Connecticut Department of
 Energy & Environmental Protection
 Bureau of Natural Resources
 Wildlife Division

CPPU USE ONLY	
App #:	_____
Doc #:	_____
Check #: No fee required	
Program: Natural Diversity Database Endangered Species	
Hardcopy _____	Electronic _____

Request for Natural Diversity Data Base (NDDB) State Listed Species Review

Please complete this form in accordance with the [instructions](#) (DEEP-INST-007) to ensure proper handling of your request.

There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening & Request Type

<p>Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the DEEP website. These maps are updated twice a year, usually in June and December.</p> <p>Does your site, including all affected areas, fall in an NDDB Area according to the map instructions: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Enter the date of the map reviewed for pre-screening: <u>December 2019</u></p>	
This form is being submitted for a :	
<input checked="" type="checkbox"/> <i>New NDDB request</i> <input type="checkbox"/> <i>Renewal/Extension of a NDDB Request, without modifications and within one year of issued NDDB determination (no attachments required)</i>	<input type="checkbox"/> <i>New Safe Harbor Determination (optional) must be associated with an application for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities</i> <input type="checkbox"/> <i>Renewal/Extension of an existing Safe Harbor Determination</i> <input type="checkbox"/> <i>With modifications</i> <input type="checkbox"/> <i>Without modifications (no attachments required)</i>
<small>[CPPU Use Only - NDDB-Listed Species Determination # 1736]</small>	<small>[CPPU Use Only - NDDB-Safe Harbor Determination # 1736]</small>
Enter NDDB Determination Number for Renewal/Extension:	Enter Safe Harbor Determination Number for Renewal/Extension:

Part II: Requester Information

If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated **exactly as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD. (www.concord-sots.ct.gov/CONCORD/index.jsp)*

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the [Request to Change company/Individual Information](#) to the address indicated on the form.

1. Requester*

Company Name: **Eversource Energy Service Company**

Contact Name: **Michelle Ford**

Address: **107 Selden Street**

City/Town: **Berlin**

State: **CT**

Zip Code: **06037**

Business Phone: **860-665-3183**

ext.

E-mail: **michelle.ford@eversource.com

**By providing this email address you are agreeing to receive official correspondence from the department, at this electronic address, concerning this request. Please remember to check your security settings to be sure you can receive emails from "ct.gov" addresses. Also, please notify the department if your e-mail address changes

a) Requester can best be described as:

Individual Federal Agency State agency Municipality Tribal

business entity (if a business entity complete i through iii):

i) Check type corporation limited liability company limited partnership
 limited liability partnership statutory trust Other:

ii) Provide Secretary of the State Business ID #: 0033981 This information can be accessed at the

Secretary of the State's database (CONCORD). (www.concord-sots.ct.gov/CONCORD/index.jsp)

iii) Check here if your business is **NOT** registered with the Secretary of State's office.

b) Acting as (Affiliation), pick one:

Property owner Consultant Engineer Facility owner Applicant

Biologist Pesticide Applicator Other representative:

2. List Primary Contact to receive Natural Diversity Data Base correspondence and inquiries, if different from requester.

Company Name:

Contact Person:

Title:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.

**E-mail:

Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used. Include a description of steps that will be taken to minimize impacts to any known listed species.

Eversource proposes to install one (1) new 60-foot tall wooden pole with one (1) omni-directional whip antenna mounted at the top, bringing the overall height of the proposed facility to 82' AGL. The wood pole will be installed on the existing, maintained lawn area immediately adjacent to the south side of the Farmington substation.

Typical equipment used to construct this facility include excavator, crane, various sized trucks and support vehicles. Typical methods include, excavation to direct bury the wooden pole, erection of wood pole and antenna equipment, construction of gravel compound and security fence and installation of supporting electrical equipment.

Erosion control measures will follow the CTDEEP 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. No increase in stormwater runoff is anticipated with the proposed development as the compound will be underlain with crushed stone.

4. If this is a renewal or extension of an existing Safe Harbor request *with* modifications, explain what about the project has changed.

5. Provide a contact for questions about the project details if different from Part II primary contact.

Name:

Phone:

E-mail:

Part V: Request Requirements and Associated Application Types

Check *one* box from either Group 1, Group 2 *or* Group 3, indicating the appropriate category for this request.

Group 1. If you check one of these boxes, complete Parts I – VII of this form and submit the required attachments A and B.

- Preliminary screening was negative but an NDDB review is still requested
- Request regards a municipally regulated or unregulated activity (no state permit/certificate needed)
- Request regards a preliminary site assessment or project feasibility study
- Request relates to land acquisition or protection
- Request is associated with a *renewal* of an existing permit, with no modifications

Group 2. If you check one of these boxes, complete Parts I – VII of this form and submit required attachments A, B, *and* C.

- Request is associated with a *new* state or federal permit application
- Request is associated with modification of an existing permit
- Request is associated with a permit enforcement action
- Request regards site management or planning, requiring detailed species recommendations
- Request regards a state funded project, state agency activity, or CEPA request

Group 3. If you are requesting a **Safe Harbor Determination**, complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

If you are filing this request as part of a state or federal permit application(s) enter the application information below.

Permitting Agency and Application Name(s):

Connecticut Siting Council Petition for Declaratory Ruling _____

State DEEP Application Number(s), if known: **N/A** _____

State DEEP Enforcement Action Number, if known: **N/A** _____

State DEEP Permit Analyst(s)/Engineer(s), if known: **N/A** _____

Is this request related to a previously submitted NDDB request? Yes No

If yes, provide the previous NDDB Determination Number(s), if known: _____

Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and Safe Harbor renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

<input checked="" type="checkbox"/> Attachment A:	Overview Map: an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site.
<input checked="" type="checkbox"/> Attachment B:	Detailed Site Map: fine scaled map showing site boundary and area of work details on aerial imagery with relevant landmarks labeled. (Site and work boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document)
<input checked="" type="checkbox"/> Attachment C:	Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C) <input checked="" type="checkbox"/> Section i: Supplemental Site Information and supporting documents <input checked="" type="checkbox"/> Section ii: Supplemental Project Information and supporting documents
<input type="checkbox"/> Attachment D:	Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D)

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

<p>"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief."</p>	
 <hr/> Signature of Requester (a typed name will substitute for a handwritten signature)	January 16, 2020 <hr/> Date
Michelle Ford <hr/> Name of Requester (print or type)	Environmental Specialist <hr/> Title (if applicable)
 <hr/> Signature of Preparer (if different than above)	January 16, 2020 <hr/> Date
Dean Gustafson, All-Points Technology Corp. <hr/> Name of Preparer (print or type)	Sr. Environmental Scientist <hr/> Title (if applicable)

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
 DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
 79 ELM STREET
 HARTFORD, CT 06106-5127

Or email request to: deep.nddbrequest@ct.gov

Attachment C: Supplemental Information, Group 2 requirement

Section i: Supplemental Site Information

1. Existing Conditions

Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted and labeled on the site plan that must be submitted. Photographs of current site conditions may be helpful to reviewers.

There are no natural features which will be impacted by the project as all work will take place within maintained lawn immediately adjacent to the Farmington substation.

Site Photographs (optional) attached

Site Plan/sketch of existing conditions attached

2. Biological Surveys

Has a biologist visited the site and conducted a biological survey to determine the presence of any endangered, threatened or special concern species Yes No

If yes, complete the following questions and submit any reports of biological surveys, documentation of the biologist's qualifications, and any NDDDB survey forms.

Biologist(s) name: _____

Habitat and/or species targeted by survey: _____

Dates when surveys were conducted: _____

Reports of biological surveys attached

Documentation of biologist's qualifications attached

[NDDDB Survey forms](#) for any listed species observations attached

Section ii: Supplemental Project Information

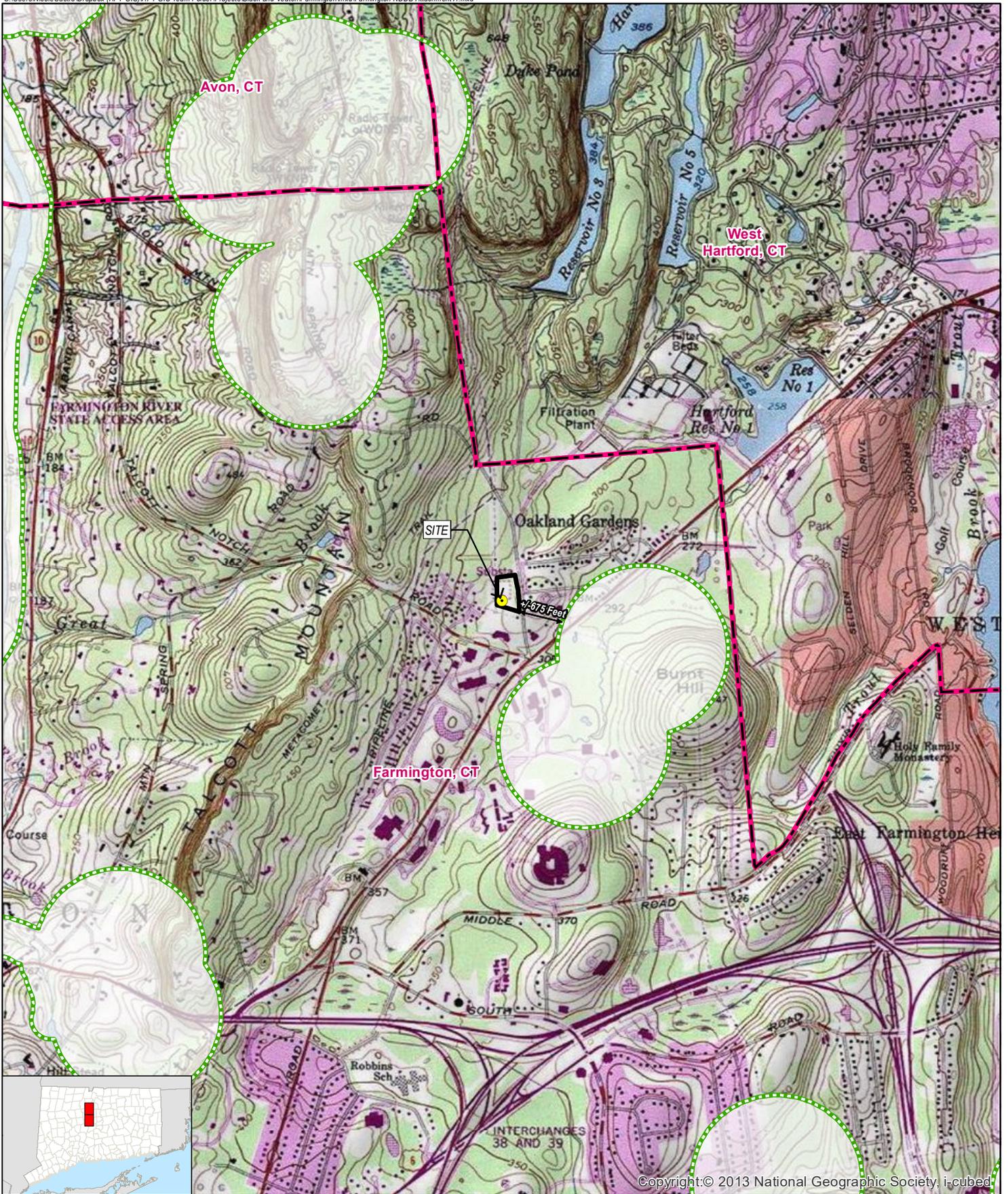
1. Provide a schedule for all phases of the project including the year, the month and/or season that the proposed activity will be initiated and the duration of the activity.

Pole installation and compound work is anticipated to start July 2020 following authorization from the Connecticut Siting Council and will endure for about 2 weeks.

2. Describe and quantify the proposed changes to existing conditions and describe any on-site or off-site impacts. In addition, provide an annotated site plan detailing the areas of impact and proposed changes to existing conditions.

The minor changes converting ±363 square feet of maintained lawn to crushed stone (for the fenced compound) will not impact any natural habitat potentially used by wildlife.

Annotated Site Plan attached



Copyright © 2013 National Geographic Society, i-cubed

- Legend**
-  Proposed 60' Wood Pole
 -  Subject Property
 -  Natural Diversity Database (updated 12/2019)
 -  Municipal Boundary

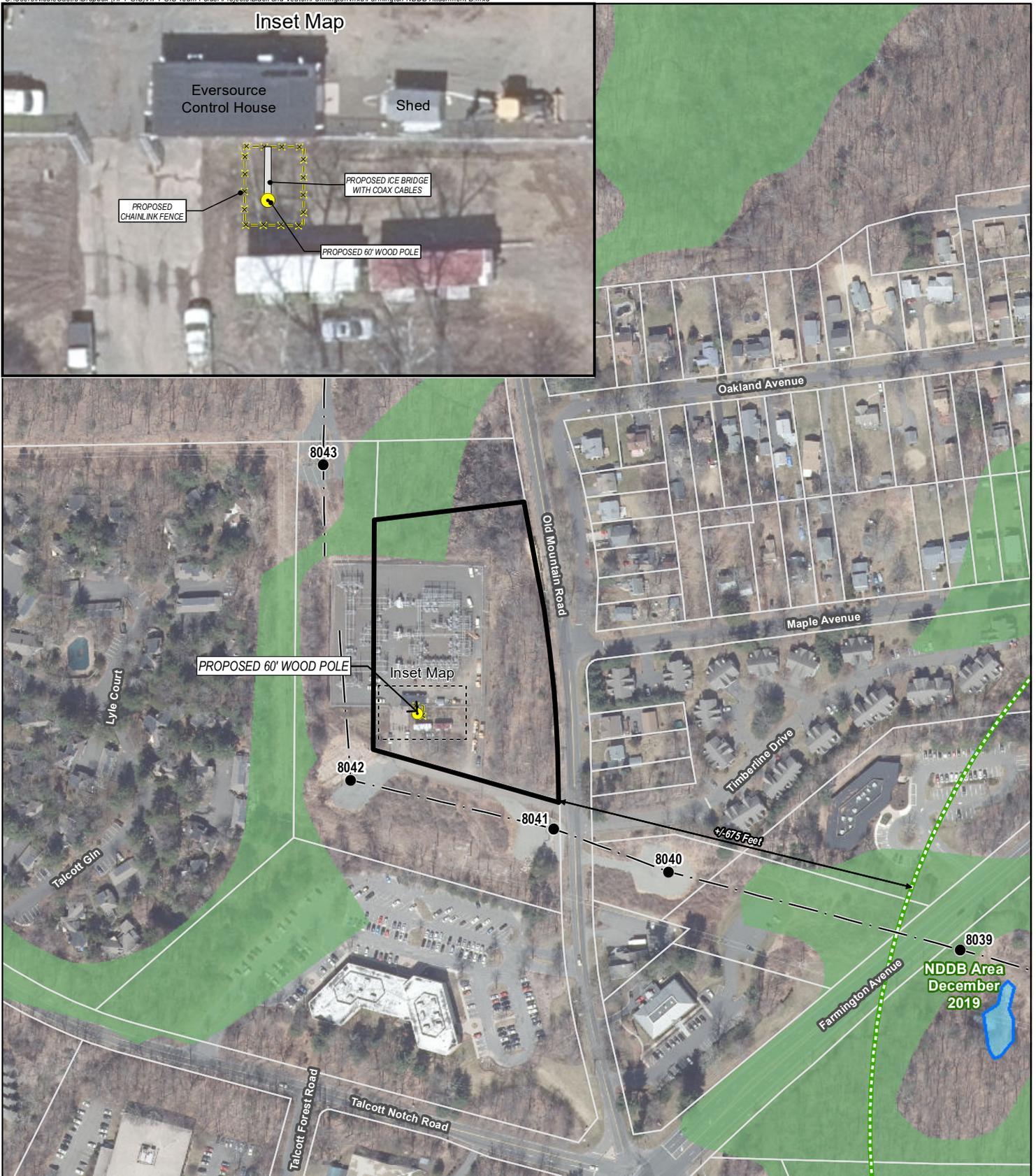
Map Notes:
 Base Map Source: USGS 7.5 Minute Topographic
 Quadrangle Maps, Avon (1984) and New Britain (1992), CT
 Map Scale: 1:24,000
 Map Date: January 2020



**Attachment A:
 Overview Map**

Proposed Wireless
 Telecommunications Facility
 Farmington 1C
 29 Old Mountain Road
 Farmington, Connecticut





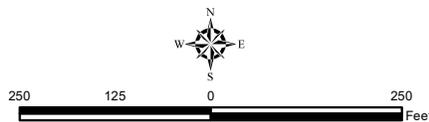
Legend

- Proposed 60' Wood Pole
- Detail_Map
- Proposed Chainlink Fence
- Proposed Ice Bridge and Coax Cables
- Existing Transmission Structure
- Overhead Everource Line
- Subject Property
- Natural Diversity Database (updated 12/2019)
- Approximate Wetland (not delineated; CTDEEP)
- Open Water (CTDEEP)
- Parcel Boundary

**Attachment B:
Detailed Site Map**

Proposed Wireless
Telecommunications Facility
Farmington 1C
29 Old Mountain Road
Farmington, Connecticut

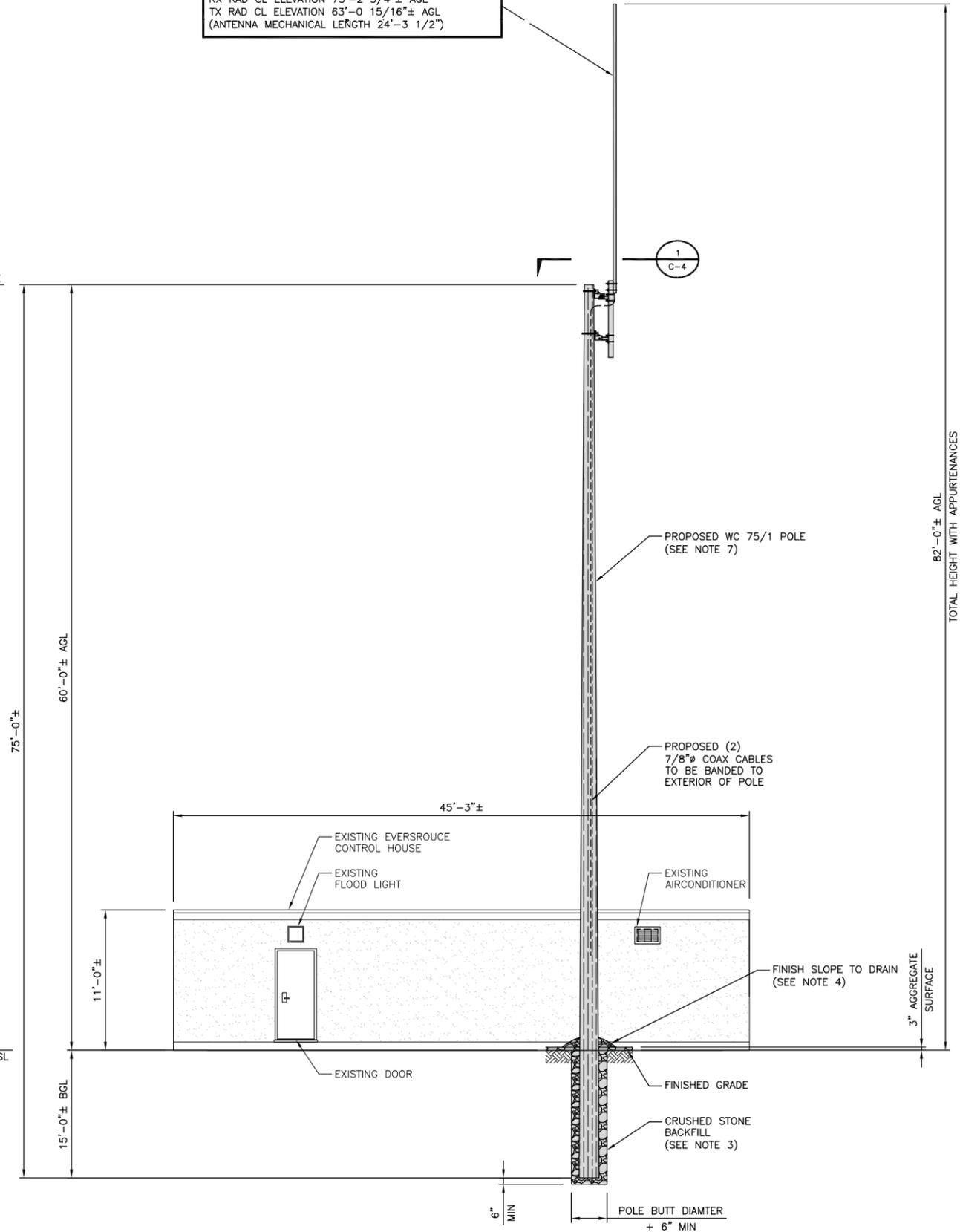
Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 250 feet
Map Date: January 2020



TOP OF PROPOSED EVERSOURCE OMNI/WHIP ANTENNA
 ELEVATION 82'-0"± AGL
 RX RAD CL ELEVATION 75'-2 3/4"± AGL
 TX RAD CL ELEVATION 63'-0 15/16"± AGL
 (ANTENNA MECHANICAL LENGTH 24'-3 1/2")

TOP OF PROPOSED POLE
 ELEVATION 60'-0"± AGL

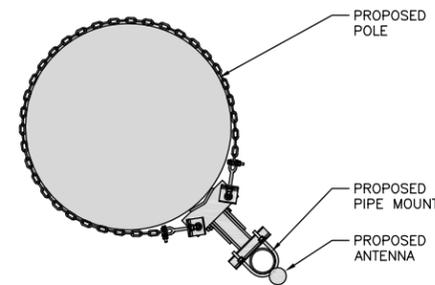
FINISHED GRADE
 ELEVATION 336'-0"± AMSL



TOWER ELEVATION
 NO SCALE

NOTES

1. ALL COAXIAL CABLE TO BE SECURED TO THE SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" OC.
2. CONTRACTOR MUST FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING THE INSTALLATION OF COAXIAL CABLES, CONNECTORS AND ANTENNAS.
3. CRUSHED STONE BACKFILL SHALL HAVE A MAXIMUM PARTICLE SIZE OF 1" AND SHALL BE COMPACTED WITH A PNEUMATIC TAMPER IN A MAXIMUM OF 12" LIFTS.
4. CRUSHED STONE BACKFILL SHALL BE PLACED AND WELL TAMPED 12" TO 18" ABOVE GROUND IN A CONICAL SHAPE TO ALLOW PROPER WATER DRAINAGE.
5. TREAT ALL FIELD DRILLED HOLES AND CUTS WITH PRESERVATIVE FLUID BEFORE INSTALLING HARDWARE.
6. DESIGN OF THE FOUNDATION WAS BASED ON SUB012 EVERSOURCE SUBSTATION STANDARDS, SECTION 6.D., FOUNDATION STABILITY AND SOIL BEARING CAPACITY. NO SUBGRADE SOIL CONDITIONS WERE AVAILABLE OR ARE KNOWN.
7. POLE SHALL CONFORM TO ANSI-05.1



SECTION 1
 NO SCALE



EVERSOURCE
 ENERGY

107 SELDEN STREET
 BERLIN, CT 06037
 PHONE: (800) 286-2000



BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
 OVERLAND PARK, KS 66211
 PHONE: (913) 458-3595

PROJECT NO:	403093
DRAWN BY:	TYW
CHECKED BY:	JR

REV	DATE	DESCRIPTION
A	11/28/19	ISSUED FOR REVIEW

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

FARMINGTON 1C
 29 OLD MOUNTAIN RD
 FARMINGTON, CT 06032

SHEET TITLE
 TOWER ELEVATION &
 ANTENNA EQUIPMENT

SHEET NUMBER

C-4



Photo 1: Proposed communications pole in maintained lawn to left of control house (brick building) and substation, looking west.



Photo 2: Proposed communications pole in maintained lawn to right of control house and substation, looking east.



Photo 3: Proposed communications pole in maintained lawn in front of control house looking north with substation in background.



Photo 4: Overview of project area looking northwest with substation in background.



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

February 14, 2020

Michelle Ford
Eversource Energy Service Company
107 Selden Street
Licensing & Permitting
Berlin, CT 06037-1616
michelle.ford@eversource.com

NDDB DETERMINATION NUMBER: 202001013

Project: Install Farmington 1C communications wood pole with one omni-directional whip antenna at the top; 29 Old Mountain Rd. in Farmington

Expiration: February 14, 2022

I have reviewed Natural Diversity Database (NDDB) maps and files regarding this project. I do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site. **This determination is good for 2 years.**

Natural Diversity Database information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Database should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Database as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at shannon.kearney@ct.gov . Thank you for consulting the Natural Diversity Database.

Sincerely,

/s/ Shannon B. Kearney
Wildlife Biologist

Attachment 6 – Calculated Radio Frequency Emissions Report



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
603-644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions Report



ES-234 Farmington 1C

29 Old Mountain Road

Farmington, CT 06032

July 13, 2020

Table of Contents

1. Introduction.....	1
2. FCC Guidelines for Evaluating RF Radiation Exposure Limits.....	1
3. Power Density Calculation Methods	2
4. Calculated % MPE Results	3
5. Conclusion	4
6. Statement of Certification.....	4
Attachment A: References	5
Attachment B: FCC Limits for Maximum Permissible Exposure (MPE).....	6
Attachment C: Eversource Antenna Data Sheets and Electrical Patterns.....	8

List of Tables

Table 1: Proposed Facility % MPE	3
Table 2: FCC Limits for Maximum Permissible Exposure (MPE)	6

List of Figures

Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE).....	7
---	---

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Eversource installation to be located at 29 Old Mountain Road in Farmington, CT. Eversource is proposing to install a wood-pole with one omnidirectional antenna as part of its 220 MHz communications system.

This report considers the antenna configuration as detailed by Eversource to calculate the % MPE (Maximum Permissible Exposure) of the proposed facility at ground level.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached “FCC Limits for Maximum Permissible Exposure (MPE)” in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. Power Density Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power = 1.64 x ERP

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and full power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the calculated power density and corresponding % MPE levels reported below are much higher than the actual levels will be from the final installation.

4. Calculated % MPE Results

Table 1 below outlines the power density information for the site. The Eversource omnidirectional antenna has a narrow vertical beamwidth of 30°; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C, for the vertical pattern of the proposed Eversource antenna. The calculated result in Table 1 includes a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas. Any inactive or receive-only antennas are not included in the table, as they are irrelevant in terms of the % MPE calculations.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	% MPE
Eversource	66	217	4	124	0.0050	0.2000	2.48%
						Total	2.48%

Table 1: Proposed Facility % MPE ¹

¹ Transmit antenna height listed for Eversource is based upon information the Black & Veatch Structural Analysis Report dated June 25, 2020. Please note the proposed antenna consists on one internal receive-only antenna in the upper portion, and a transmit-only antenna in the bottom portion. The antenna height listed is in reference to the center of the specific transmitting elements, rather than the physical antenna centerline.

5. Conclusion

The above analysis concludes that RF exposure at ground level with the proposed antenna installation will be below the maximum power density limits as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods discussed herein, the highest expected percent of Maximum Permissible Exposure at ground level with the proposed installation is **2.48% of the FCC General Population/Uncontrolled limit**.

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual levels will be from the finished installation.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, IEEE Std. C95.1, and IEEE Std. C95.3.



Report Prepared By: Cory Goulet
Associate RF Engineer
C Squared Systems, LLC

November 21, 2019

Date



Reviewed/Approved By: Keith Vellante
Director of RF Services
C Squared Systems, LLC

July 13, 2020

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure²

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure³

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

² Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

³ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

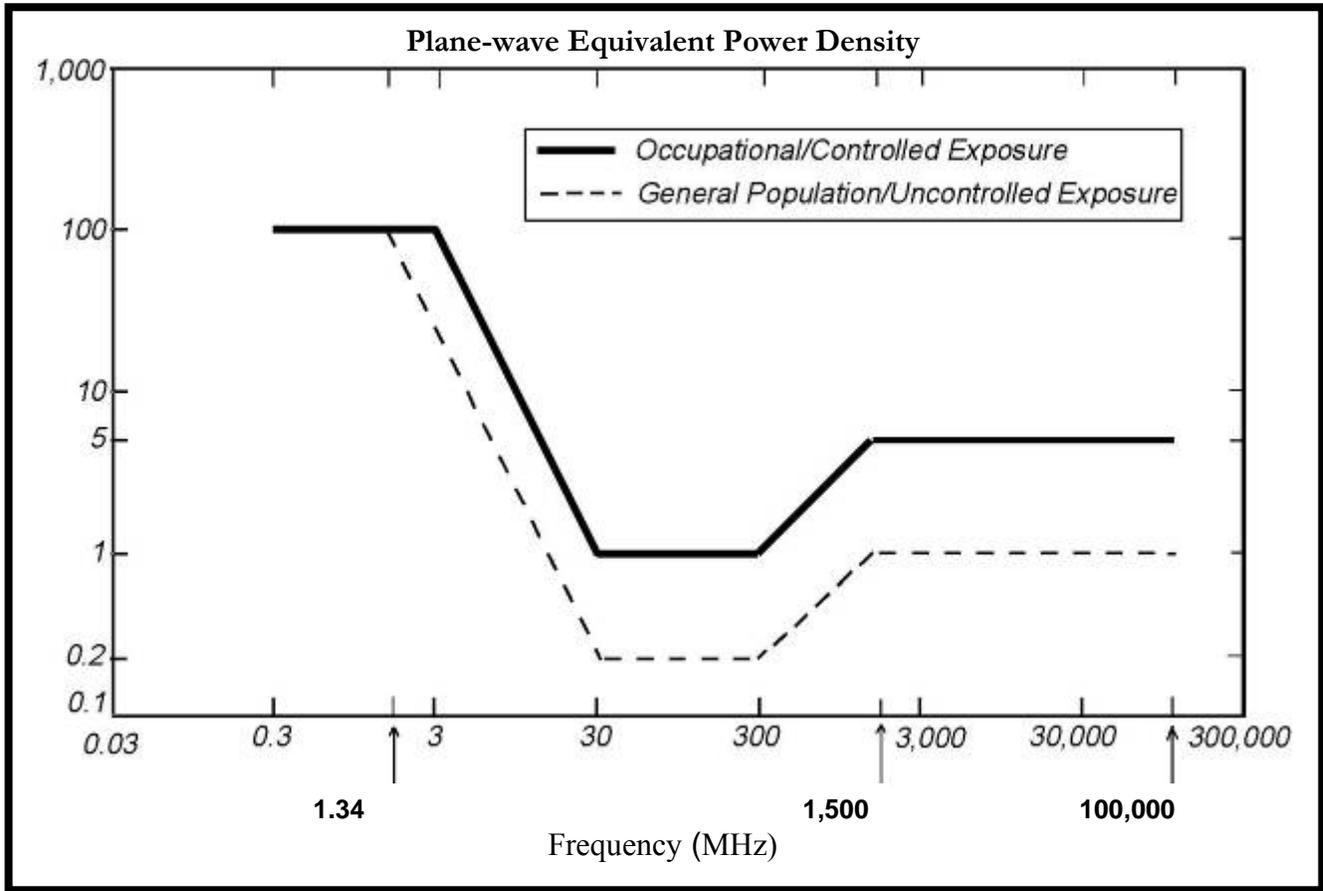
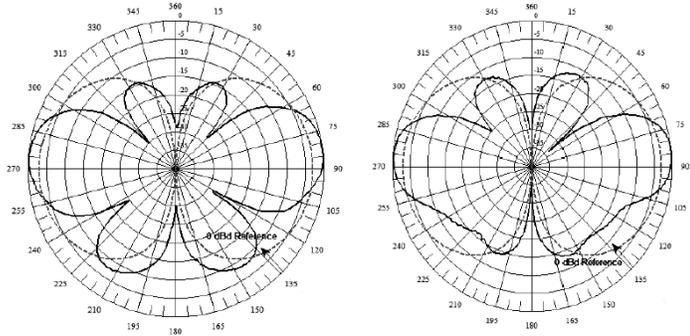


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Eversource Antenna Data Sheets and Electrical Patterns

<p>217 MHz</p> <p>Manufacturer: dbSpectra Model #: DS2C03F36D Frequency Band: 217-222 MHz Gain: 3.0 dBd Vertical Beamwidth: 30° Horizontal Beamwidth: 360° Polarization: Vertical Length: 24.3'</p>	<p style="text-align: center;">DS2C03F36D-N DS2C03F36D-D</p>  <p style="text-align: center;">Top Bottom</p>
---	---

Attachment 7 – Photographic Simulations



EXISTING

PHOTO

1

LOCATION

**29 OLD MOUNTAIN ROAD
FARMINGTON, CT**

ORIENTATION

WEST



PROPOSED

PHOTO

1

LOCATION

**29 OLD MOUNTAIN ROAD
FARMINGTON, CT**

ORIENTATION

WEST



EXISTING

PHOTO

2

LOCATION

**OLD MOUNTAIN ROAD
FARMINGTON, CT**

ORIENTATION

NORTHWEST





PROPOSED

PHOTO

2

LOCATION

**OLD MOUNTAIN ROAD
FARMINGTON, CT**

ORIENTATION

NORTHWEST



EXISTING

PHOTO

3

LOCATION

**29 OLD MOUNTAIN ROAD
FARMINGTON, CT**

ORIENTATION

EAST





PROPOSED

PHOTO

3

LOCATION

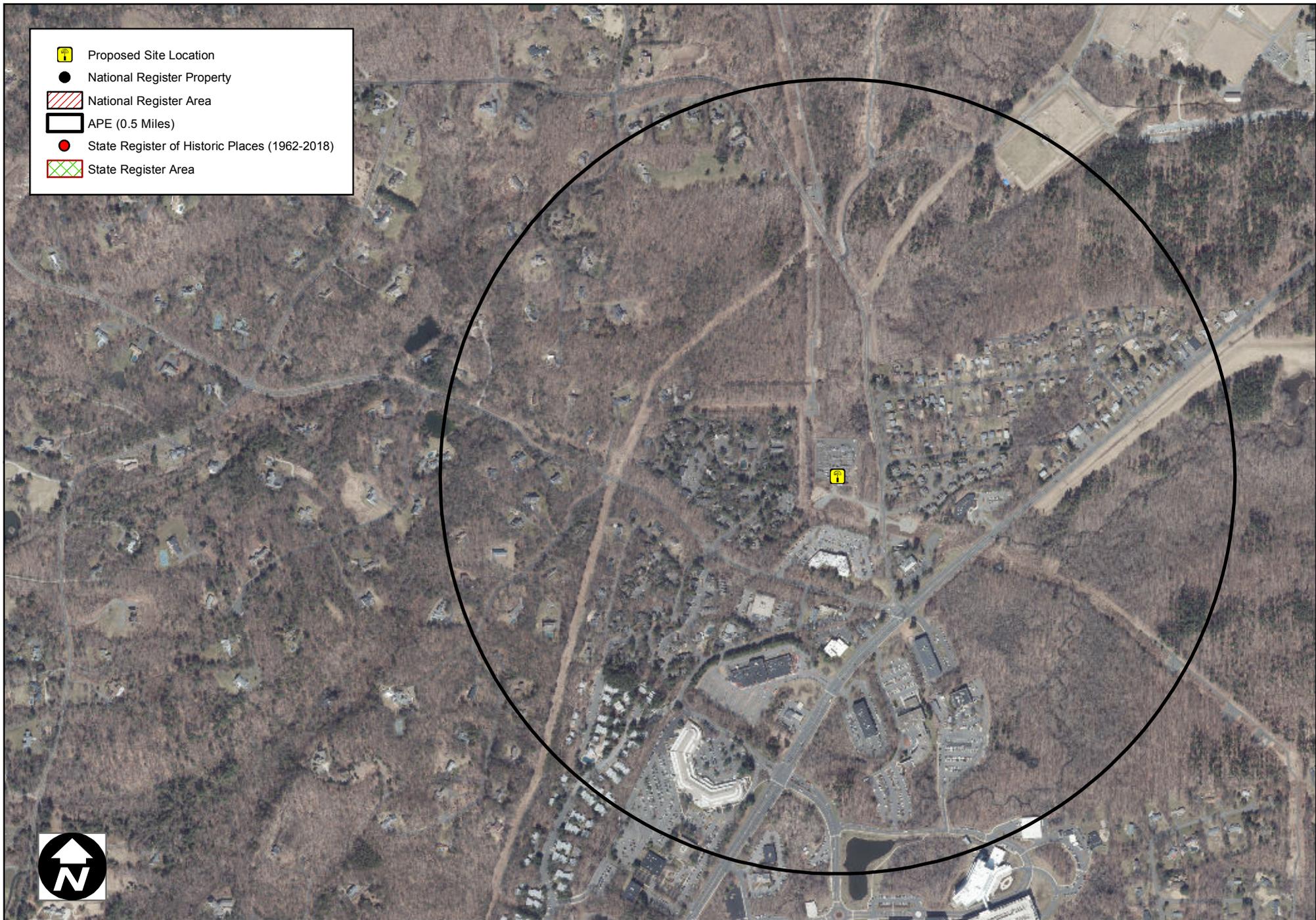
**29 OLD MOUNTAIN ROAD
FARMINGTON, CT**

ORIENTATION

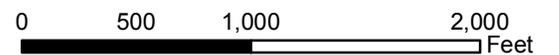
EAST



Attachment 8 – Cultural Resources Screen



Cultural Resources Screen
 CT578100 - Black & Veatch - ES-234 Farmington CT
 January 31, 2020 \ USGS QUAD: New Britain



Attachment 9 – TOWAIR Determination Results

TOWAIR Determination Results

A routine check of the coordinates, heights, and structure type you provided indicates that this structure does not require registration.

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7877.86 MTRS (7.87790 KM) AWAY

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	41-41-39.00N	072-51-51.00W	ROBERTSON FIELD	HARTFORD PLAINVILLE, CT	57.5	1117.0999999999999

PASS SLOPE(100:1): NO FAA REQ-RWY MORE THAN 10499 MTRS & 7087.81 MTRS (7.08779 KM) AWAY

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	B	41-41-25.00N	072-51-53.00W	ROBERTSON FIELD	HARTFORD PLAINVILLE, CT	57.5	1117.0999999999999

Your Specifications

NAD83 Coordinates

Latitude: 41-44-29.1 north
 Longitude: 072-47-36.8 west

Measurements (Meters)

Overall Structure Height (AGL): 25
 Support Structure Height (AGL): 18.3
 Site Elevation (AMSL): 102.4

Structure Type

POLE - Any type of Pole

Tower Construction Notifications

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW

Attachment 11 – Certification of Notice



56 Prospect Street,
P.O. Box 270
Hartford, CT 06103

Kathleen M. Shanley
Manager – Transmission Siting
Tel: (860) 728-4527

September 29, 2020

VIA COURIER

RE: Eversource Energy (“Eversource”)
Installation of Wireless Communications Facility
29 Old Mountain Road, Farmington, Connecticut

Dear Chairman Thomas:

We are writing to you with respect to the above referenced matter and our intent to file a Petition for a declaratory ruling with the State of Connecticut Siting Council (the “Siting Council”) for approval of the installation of a wireless communications facility at our existing Old Mountain Road Substation (the “Facility”) at the above referenced property.

Included with this letter please find a copy of the Petition for your review. In accordance with Siting Council requirements, abutting landowners were also sent notice of this filing.

If you have any questions concerning this Petition, please contact the Siting Council or the Kathleen M. Shanley after September 30, 2020, the date that the Petition is expected to be on file.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kathleen M. Shanley", with a stylized flourish at the end.

Kathleen M. Shanley
Manager – Transmission Siting

Enclosure



56 Prospect Street,
P.O. Box 270
Hartford, CT 06103

Kathleen M. Shanley
Manager – Transmission Siting
Tel: (860) 728-4527

September 29, 2020

VIA COURIER

RE: Eversource Energy (“Eversource”)
Installation of Wireless Communications Facility
29 Old Mountain Road, Farmington, Connecticut

Dear Shannon Rutherford, P.E.:

We are writing to you with respect to the above referenced matter and our intent to file a Petition for a declaratory ruling with the State of Connecticut Siting Council (the “Siting Council”) for approval of the installation of a wireless communications facility at our existing Old Mountain Road Substation (the “Facility”) at the above referenced property.

Included with this letter please find a copy of the Petition for your review. In accordance with Siting Council requirements, abutting landowners were also sent notice of this filing.

If you have any questions concerning this Petition, please contact the Siting Council or the Kathleen M. Shanley after September 30, 2020, the date that the Petition is expected to be on file.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kathleen M. Shanley", with a stylized flourish at the end.

Kathleen M. Shanley
Manager – Transmission Siting

Enclosure

Ref: CT578100 ES-234 Date: 29Sep20
Dep: BL GRAPHICS Wgt: 1.35 LBS

SHIPPING: 0.00
SPECIAL: 0.00
HANDLING: 0.00
TOTAL: 0.00

Svcs: PRIORITY OVERNIGHT
TRCK: 9151 3346 4405

ORIGIN ID:RSPA (800) 301-3077

BL COMPANIES
355 RESEARCH PARKWAY

MERIDEN, CT 06450
UNITED STATES US

SHIP DATE: 29SEP20
ACTWGT: 1.35 LB
CAD: 0765627/CAFE3311

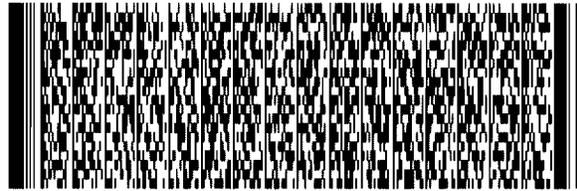
BILL THIRD PARTY

TO **MR. C.J. THOMAS, CHAIR**
FARMINGTON TOWN COUNCIL
1 MONTEITH DRIVE

FARMINGTON CT 06032

REF: CT578100 ES-234

DEPT: BL GRAPHICS



FedEx
Express



56SC2/AE7E/0542

J191219082001uv

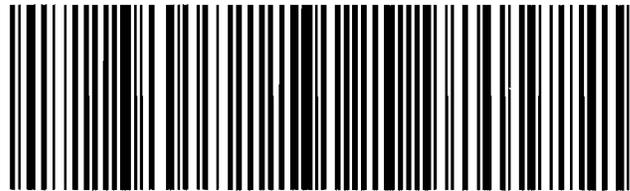
TRK# 9151 3346 4405
0201

WED - 30 SEP 10:30A
PRIORITY OVERNIGHT

00 KXAA

06032
CT-US BDL

091117 06450 R72 EAC 01224



September 29, 2020

At Eversource, we're always working to serve you better. We are submitting a petition to the Connecticut Siting Council (CSC) to install a new communication system at our existing Farmington Substation facility located at 29 Old Mountain Rd., Farmington, Connecticut.

Proposed Project Information

The project, called the Connecticut Voice Radio Project, is in the process of reconfiguring its communication system throughout Connecticut. In Farmington, this reconfiguration involves the installation of a new communications system at the Farmington Substation property located at 29 Old Mountain Rd., Farmington, Connecticut. The proposed upgrades would enhance the communication system and would provide critical radio communications for Eversource field crews that operate in Farmington and the surrounding towns, thereby increasing the reliability of the electrical distribution system. The proposed improvements include:

- Installation of a new 63-foot tall wood pole within a new approximately 20'x34'6" fenced gravel compound approximately 15 feet south of the existing control house and adjacent to the fenced substation property.
- Installation of one new antenna that would extend approximately 22 feet above the top of the new pole 63-foot tall, raising the total height to approximately 85 feet above ground level.
- Installation of an ice bridge and associated cabling from the wood pole to the control house which will house the radio equipment.

If approved, the work is scheduled to begin and expected to be complete in the fourth quarter of 2020. This schedule is subject to change due to weather delays or unexpected circumstances.

The safety of our employees, our customers, and the public is our top priority during the ongoing coronavirus public health crisis. Our commitment to safety, first and always, is continuous.

At the same time, Eversource must fulfill its foundational mission to deliver safe, reliable services to our customers. We continue to call on our employees and contractors to perform essential work, such as this proposed project, that maintains and improves the reliability of our networks, while also adapting our work practices to incorporate social distancing, heightened hygiene, and other best practices to protect their, and the public's, health.

We are committed to being a good neighbor and doing our work with respect for you and your property. If you have questions about this work, please contact Ryan Fitterman at (860) 657-6613 or send an email to ryan.fitterman@eversource.com

If you would like to send comments regarding Eversource's petition to the CSC, please send them via email to siting.council@ct.gov or send a letter to the following address: Melanie Bachman, Executive Director, Connecticut Siting Council, Ten Franklin Square, New Britain, CT 06051

Thank you.

Sincerely,



Ryan Fitterman
Eversource Telecommunication Engineering

NOTICE

Notice is hereby given, pursuant to Section 16-50j-40(a) of the Regulations of Connecticut State Agencies, of a Petition being filed with the Connecticut Siting Council (“Siting Council”) on or after September 30, 2020 by Eversource Energy (“Eversource”). Eversource seeks a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) to install a new communications pole at its Farminton Old Mountain Road substation.

The communications facility is located adjacent to an existing Substation owned by Eversource at 29 Old Mountain Road in the Town of Farmington (the “Property”). Eversource’s proposed modifications consist of installing one (1) new 63-foot tall steel pole with one (1) 24 foot-3-inch-tall omnidirectional antenna to be mounted at the top of the pole. A new ice bridge will be installed from the pole to an existing control house within the substation. The new pole will be located in a new approximately 20-foot by 34-foot-6-inch fenced equipment compound. The proposed modifications are designed to modernize Eversource’s communication services to enable the highest level of voice communications under all operating conditions, including during critical emergency and storm restoration activities.

The Petition provides a detailed description of the proposed activities and explains why the proposed modification presents no significant adverse environmental effects. The location, height and other features of the proposal are subject to review and potential change under the provisions of Connecticut General Statutes Sections 16-50g et. seq.

Copies of the Petition will be available for review during normal business hours on or after September 30, 2020 at the following:

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Town Clerk of Farmington
Paula B. Ray, Town Clerk
Town Clerk’s Office
1 Monteith Drive
Farmington, CT 06032

A copy of the Petition will also be available on the Connecticut Siting Council website: <https://www.ct.gov/csc/site/default.asp> under Pending Matters. All inquiries should be addressed to the Connecticut Siting Council or to the undersigned.

Ryan Fitterman
Eversource Energy
56 Prospect Street
Hartford, CT 06103
(860) –657-6613
Ryan.fitterman@eversource.com



Certificate of Mailing — Firm

Name and Address of Sender		TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here Postmark with Date of Receipt.			
USPS® Tracking Number Firm-Specific Identifier		5 Postmaster, per (name of receiving employee)		<p>U.S. POSTAGE PAID WESTERLY, RI SEP 29 20 AMOUNT \$11.18 R2305H129979-02</p>			
Address (Name, Street, City, State, and ZIP Code™)		Hon. Derek Slap State Senator, District S05 Legislative Office Building, Room 1000 Hartford, CT 06106-1591					
Hon. Mike Demicco State House Representative, District 021 Legislative Office Building, Room 3201 Hartford, CT 06106-1591		Federal Aviation Administration 800 Independence Ave. SW Washington, DC 20591					
State Historic Preservation Office Dept. of Economic and Community Development 450 Columbus Blvd, 5th Floor Hartford, CT 06103		Lyle Wray Capitol Region Council of Governments 241 Main St. Hartford, CT 06106-5310					
Dept. of Economic and Community Development 450 Columbus Blvd, 5th Floor Hartford, CT 06103		Lyle Wray Capitol Region Council of Governments 241 Main St. Hartford, CT 06106-5310					
State Historic Preservation Office Dept. of Economic and Community Development 450 Columbus Blvd, 5th Floor Hartford, CT 06103		Lyle Wray Capitol Region Council of Governments 241 Main St. Hartford, CT 06106-5310					
State Historic Preservation Office Dept. of Economic and Community Development 450 Columbus Blvd, 5th Floor Hartford, CT 06103		Lyle Wray Capitol Region Council of Governments 241 Main St. Hartford, CT 06106-5310					
Postage	Fee	Special Handling	Parcel Airlift				





Certificate of Mailing — Firm

Name and Address of Sender

ES - B Gaudet
 All-Points Technology Corp., P.C.
 567 Vauxhall St. Ext., Suite 311
 Waterford, CT 06385

TOTAL NO. of Pieces Listed by Sender

6

TOTAL NO. of Pieces Received at Post Office™

Postmaster, per (name of receiving employee)

Sony M Gaudet

Affix Stamp Here
 Postmark with Date of Receipt.

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Honorable Richard Blumenthal U.S. Senator 90 State House Square, 10th Floor Hartford, CT 06103				
2.	Hon. Chris Murphy U.S. Senator 120 Huyshope Ave., Suite 401 Hartford, CT 06106				
3.	Hon. Jahana Hayes U.S. Congresswoman, 5th District 108 Bank St., Second Floor Waterbury, CT 06702				
4.	Hon. William Tong Attorney General 55 Elm St. Hartford, CT 06106				
5.	Katie Dykes, Commissioner Dept. of Energy & Environmental Protection 79 Elm St. Hartford, CT 06106-5127				
6.	Marissa Paslick Gillett, Chairman Public Utilities Regulatory Authority 10 Franklin Square New Britain, CT 06051				





Certificate of Mailing — Firm

Name and Address of Sender

ES - B Gaudet
 All-Points Technology Corp., P.C.
 567 Vauxhall St. Ext., Suite 311
 Waterford, CT 06385

TOTAL NO.
of Pieces Listed by Sender

5

TOTAL NO.
of Pieces Received at Post Office™

Postmaster, per (name of receiving employee)

Signatures

Affix Stamp Here
 Postmark with Date of Receipt.

USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airift
1.	Paula B. Ray Town Clerk 1 Monteith Dr. Farmington, CT 06032				
2.	Barbara A. Brennenman, Chair Town Plan & Zoning Commission 1 Monteith Dr. Farmington, CT 06032				
3.	Kathleen A. Blonski, Town Manager Town of Farmington 1 Monteith Dr. Farmington, CT 06032				
4.	Mark Devoe, Town Planner Town of Farmington 1 Monteith Dr. Farmington, CT 06032				
5.	C. J. Thomas Chair, Town Council 1 Monteith Dr. Farmington, CT 06032				
6.					





Certificate of Mailing — Firm

Name and Address of Sender

ES - B Gaudet
All-Points Technology Corp., P.C.
567 Vauxhall St. Ext., Suite 311.
Waterford, CT 06385

TOTAL NO.
of Pieces Listed by Sender

TOTAL NO.
of Pieces Received at Post Office™

Postmaster, per (name of receiving employee)

Ben M G

Affix Stamp Here
Postmark with Date of Receipt.

Postage

Fee

Special Handling

Parcel Airlift

USPS® Tracking Number
Firm-specific Identifier

Address
(Name, Street, City, State, and ZIP Code™)

1.	Deidre S. Gifford, MD, MPH, Acting Commissioner Department of Public Health 410 Capitol Ave. Hartford, CT 06134				
2.	Peter B. Hearn, Executive Director Council on Environmental Quality 79 Elm St., 6th Floor Hartford, CT 06106				
3.	Bryan P. Hurlbut, Commissioner Department of Agriculture 450 Columbus Blvd., Suite 701 Hartford, CT 06103				
4.	Melissa McCaw, Secretary Office of Policy and Management 450 Capitol Ave. Hartford, CT 06106				
5.	Joseph Giuliotti, Commissioner Department of Transportation 2800 Berlin Turnpike Newington, CT 06111				
6.	David Lehman, Commissioner Dept. of Economic and Community Development 450 Columbus Blvd Hartford, CT 06103				





Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here Postmark with Date of Receipt.			
UNITED STATES POSTAL SERVICE® ES - B Gaudet All-Points Technology Corp., P.C. 567 Vauxhall St. Ext., Suite 311 Waterford, CT 06385			Postage	Fee	Special Handling	Parcel Airlift
USPS® Tracking Number Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™) 1. Hon. Denise Merrill Secretary of the State 165 Capitol Ave. Hartford, CT 06106 2. Federal Communications 445 12th St SW Washington, DC 20554 3. 4. Robert J. Hannan, Chair Conservation & Inland Wetlands Commission 1 Monteith Dr. Farmington, CT 06032 5. James C. Rovella, Commissioner Dept of Emer Svs and Public Protection Div. of Emer. Mgmt and Homeland Security 1111 Country Club Rd. Middletown, CT 06457 6.					

