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 REPLACEMENT AND EXTENSION
OF AN EXISTING LATTICE TOWER IN THE CITY OF
NORWALK, CONNECTICUT

A. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A."), 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 replace an existing 120-foot tall lattice tower with a new 150-foot lattice tower on the same property as described herein.

B. Background

Eversource currently owns and operates a telecommunications tower located at 2 Tindall Avenue in Norwalk, Connecticut (the "Property"). The Property is an approximately 4.22-acre parcel owned by the Company and used as a service center and maintenance yard. See Figure 1, *Existing Conditions Map*. The Company has an existing 120-foot lattice tower at the Property that currently includes two operative radio communications antennas. The total height of the existing self-supporting lattice tower, including the top mounted antenna, is approximately 135 feet above ground level ("AGL"). The existing tower's overall height includes a 15 foot whip antenna mounted at the top of the tower. The two antennas would be relocated onto the proposed "Replacement Facility".

C:\GIS\Projects\Northeast Utilities\Norwalk Tower Replacement\mxd\Existing_Conditions.mxd

Legend

- Proposed Location Of Replacement Tower
- Approximate Site Property

Figure 1
Existing Conditions Map

Norwalk Area Work Center
2 Tindall Avenue
Norwalk, Connecticut

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Map Notes:
Base Map Source: Pictometry Oblique Imagery (12/28/2006)
Map Scale: 1 in = 100 ft
Map Date: October 2014

100 50 0 100 Feet

ALL-POINTS TECHNOLOGY CORPORATION

Eversource is in the process of consolidating its service centers throughout the State of Connecticut, which requires the reconfiguration of its communications system. In Norwalk, this reconfiguration includes relocating five existing Eversource antennas currently located on the roof of the building at the NRG generation facility ("Norwalk Harbor Generation Station") at One Manresa Island Road in Norwalk, a facility that is now closed. These antennas are all located at an elevation of 150 feet AGL and require a similar elevation at 2 Tindall Avenue. In addition, two Yankee Gas Service Company (doing business as Eversource Energy) antennas located at 9 Harbor Avenue in Norwalk would be relocated onto the Replacement Facility for consolidation. The existing lattice tower is not structurally capable of handling the Company's system reconfiguration and anticipated equipment upgrades. Although some reinforcement of the foundation may be possible, there is no practical way of adequately reinforcing the existing tower structure to support the reconfiguration and equipment upgrades.

The existing tower and antennas provide critical radio communications for Eversource field crews that operate in Norwalk and the surrounding areas, paging services for local employees, and load management.[1] This tower will serve as a microwave hub in the future to provide the backhaul (the intermediate wireless link to the control center or core network[2]) for a number of remote locations for the Company. In order to address the structural deficiencies of the existing tower and allow for the system reconfiguration and potential future expansion, the Company has developed its proposal to replace the existing tower with a self-supporting lattice tower capable of supporting the planned system reconfiguration and potential future expansion.

Locating the replacement tower on the northeast corner of the Property provides Eversource with additional flexibility at the Property with respect to its service center consolidation program.

[1] This includes System Control and Data Acquisition (SCADA) systems for both electric and gas Distribution operations to allow control and monitoring of switching devices from a remote location.

[2] Wireless backhaul is the use of wireless communications systems to get data from an end user to a node in the company's network. In a hierarchical telecommunications network the backhaul portion of the network comprises the intermediate links between the core network, or backbone network and the small subnetworks at the "edge" of the entire hierarchical network. The term can also refer to the transmission of network data over an alternative wireless route when the normal route is unavailable or overtaxed. The most common method of wireless backhaul involves microwave systems.

C. Description of the "Project"

The Company proposes to remove the existing 120-foot, three-legged self-supporting lattice tower and replace it with a 150-foot, three-legged self-supporting lattice tower that would be erected on the Property and located approximately 325 feet east of the location of the existing tower. See Figure 2, *Proposed Conditions Map*. The ground elevation in this portion of the Property is similar to the existing tower site, approximately 57 feet above mean sea level.

On the replacement lattice tower, Eversource would swap out its existing antennas and install new antennas and coaxial cables to meet its system needs. The topmost whip antennas would extend approximately 20 feet above the proposed 150-foot tower. The total height of the proposed tower including the top-mounted antennas would be approximately 170 feet AGL. The Replacement Facility has been designed to accommodate the Company's proposed system modifications and with excess structural capacity so that new facilities (including commercial service providers) or further modifications to existing facilities can be accommodated. Eversource would own the replacement tower. After the new tower is constructed and existing equipment relocated, the existing 120-foot lattice tower would be removed.

The Company proposes to install ten (10) omnidirectional antennas and (in the future) two (2) microwave dishes at various levels on the replacement tower. Specifications for the Company's new antennas are included in Attachment 1. The Company would maintain its radio equipment inside an 11-foot high, 12-foot by 20-foot shelter and use a 100-kVA natural gas emergency standby generator to provide back-up power to the Facility; a new underground connection would extend from an existing natural gas line beneath Grand Street.

The Replacement Facility compound would be surrounded by a six-foot security fence and two locked entrances, including a 12-foot wide gate off the compound's northwest corner and a separate 4-foot wide gate on the southwest side. (See *Project Plans* included in Attachment 2).

Legend

Approximate Site Property

Figure 2
Proposed Conditions Map

Norwalk Area Work Center
2 Tindall Avenue
Norwalk, Connecticut

EVERSOURCE ENERGY

Map Notes:
Base Map Source: Pictometry Oblique Imagery (12/28/2006)
Map Scale: 1 in = 100 ft
Map Date: October 2014

100 50 0 100 Feet

ALL-POINTS TECHNOLOGY CORPORATION

Several elevations on the proposed replacement tower would be available to accommodate wireless service providers' antennas in the future, including commercial carriers. Table 1, *Antenna Schedule* summarizes the antenna types and vertical locations proposed on the new tower.

TABLE 1 - ANTENNA SCHEDULE

Antenna Type	Antenna Make/Model	Antenna Center Line Elevation (ft AGL)	Comments	Frequency
21-ft. Omni	Telewave ANT150F6	159'-0"	Paging	154.46 MHz
21-ft. Omni	DB - DS9A09F36D-N	159'-0"	DSCADA	900 MHz
15-ft. Omni	RFS 1151-3N	156'-0"	EDACS	450 MHz
5-ft. Omni	Telewave ANT220F2	144'-0"	Smartzone	220 MHz
5-ft. Omni	Telewave ANT150F2	144'-0"	Gas Ops. Voice	158 MHz
6-ft. Microwave Dish w/ radome	RFS PAD6-59BC	135'-0"	Future Microwave	6 GHz
15-ft. Omni	Kreco CO-36A	139'-0"	Norwalk Line Ops.	37.74 MHz
5-ft. Omni	Telewave ANT150F2	129'-0"	Gas Ops. SCADA	173 MHz
15-ft. Omni	Kreco CO36A	130'-0"	Electric Meter & Service	48.34 MHz
6-ft. Microwave Dish w/ radome	RFS PAD6-59BC	120'-0"	Future Microwave	6 GHz
5-ft. Omni	Telewave ANT220F2	121'-0"	Smartzone	220 MHz
15-ft. Omni	Kreco CO36A	123'-0"	Norwalk CT&M	47.76 MHz
TBD	TBD	110'-0"	Verizon Wireless	Multiple
TBD	TBD	100'-0"	Future Carrier	Multiple
TBD	TBD	90'-0"	Future Carrier	Multiple
TBD	TBD	80'-0"	Future Carrier	Multiple
(2) ANT150F2		70'-0"		

For elevation and location drawings of the proposed installation, please see Attachment 2: *Project Plans*, which were completed by the Company on February 8, 2015.

A structural loading analysis has been performed to ensure that the proposed self-supporting lattice tower and foundation would be structurally capable of supporting the loading from the proposed antenna systems. A review of the design and structural analysis for the proposed tower is included in Attachment 3: *Independent Structural Engineer's Review*, which was completed by Centek Engineering on July 31, 2014.

D. Environmental Discussion

The proposed installation would not have a substantial adverse environmental effect because:

1) Wetlands and Watercourses

There are no wetlands or watercourses located on or near the location of the proposed installation; therefore, the Project would not have an adverse effect on wetlands or watercourses.

2) Soil Erosion, Sediment Control, and Soil Remediation

To the extent needed during construction activities associated with the Project, the Company would apply soil erosion and sediment control practices pursuant to the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

3) Wildlife and Vegetation

The Project would not have a significant adverse effect on wildlife or vegetation because the proposed tower and appurtenant equipment and the Project construction work would be confined to the fenced-in area of the Norwalk service center and maintenance yard. This area has no significant vegetation or other adequate habitat characteristics. No migratory bird species are anticipated to be impacted by the Project and the proposed tower. The proposed Facility is not proximate to any Important Bird Area ("IBA"); the nearest Important Bird Area, Cove Island Park in Stamford, is located approximately 6 miles to the southwest. Further, the design and siting of the proposed replacement tower would comply with the USFWS guidelines for minimizing potential impacts to migratory birds.

4) Noise

Noise emitted by the proposed facility would comply with State regulations. The components of telecommunication equipment in the proposed shelter would not be substantially different from what exists at the Property. As a result, noise emissions would be consistent with present day levels.

5) Safety and Health

The proposed installation 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 Property or equipment and materials delivery. Subsequent to completion of construction, the proposed installation 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 Property 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 (10 antennas) would be 1.95% of the FCC Standard for public exposure to RF emissions. Please refer to Attachment 4: *Calculated Radio Frequency Emissions Report*, dated September 11, 2014, for a copy of the methodology and calculations.

6) Visual

The Project 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 urban nature of the area results in few unobstructed views of the tower. Several existing views would change slightly in character due to the shift in tower location (325± feet to the east) but the overall visual impact of the new tower would not be significant. For a visual comparison of the existing and proposed tower, please refer to Attachment 5: *Visibility Analysis*, dated October 2014.

7) Forests and Parks

The Property contains no areas of recreation or public interest administered by any federal, state, local, or private agencies.

8) Physical Environmental Effects

Eversource respectfully submits that the construction of a replacement tower, approximately 325 feet to the east of the existing Eversource tower would not involve a significant alteration in the physical or environmental characteristics of the Property or the surrounding area. To accommodate the tower relocation and the Company's service center consolidation plans, a remote area in the northeast portion of the Property was selected for the replacement tower. Portions of an existing loading dock would need to be removed to accommodate the Project construction; however no significant earthwork or re-grading would be necessary for development of the replacement tower. No trees or vegetation would need to be removed to accommodate Project construction. Utilities would be re-routed to the new compound location (See Attachment 2, Project Plans). Vehicular access to the Company's service center would not change in any way.

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 less than eight months in duration. Eversource anticipates that construction would be completed in the summer of 2015. Disassembly and removal of the existing tower would be completed as soon as practical following the completion of installation of all antenna systems onto the replacement tower.

F. Conclusion

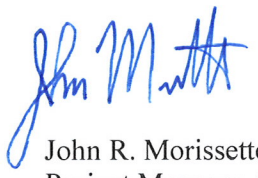
Connecticut General Statutes Section 16-50k(a) indicates that no Certificate of Environmental Compatibility and Public Need is needed for a proposed installation of a facility that the Council determines would not have a "substantial adverse environmental effect." Based on evaluation of the environmental effect of the proposed installation of the facility, Eversource respectfully submits that the installation of this replacement 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 installation would not have a substantial adverse environmental effect.

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

Mr. John R. Morissette
Project Manager -Transmission Siting-CT
Eversource Energy
56 Prospect Street
Hartford, CT 06103
Telephone: (860) 728-4532

EVERSOURCE ENERGY By:



John R. Morissette
Project Manager -Transmission Siting-CT

Attachment 1 – Antenna Specifications

Attachment 2 – Project Plans

Attachment 3 - Independent Structural Engineer's Review

Attachment 4 - Calculated Radio Frequency Emissions Report

Attachment 5 – Visibility Analysis

Product Data Sheet **1151-3N**

Super Stationmaster™ Omni Fiberglass Antenna, 450-460, 10.1dBi, N Female

Product Description

These fiberglass enclosed antennas offer significant advantages over most exposed element arrays and deliver equal or better electrical performance. Super Stationmaster Antennas employ multiple, large diameter copper radiating elements stacked collinearly, fed in phase and enclosed in a weather-proof fiberglass housing. These DC grounded units use low loss Teflon&#174 and insulated connectors. The Super Stationmaster provides 8.0 dBd gain and a full 10 MHz bandwidth. The Stationmaster provides 7.5 dBd omnidirectional gain and can withstand winds of 125 mph (200 km/hr). It is excellent for duplex systems with 8 MHz or less separation between Tx and Rx frequencies. Several mounting hardware options are available for these antennas.

1151 Series

Features/Benefits

• Weatherproof design assures system reliability, withstands winds of 125 mph.• Copper elements minimize possibility of intermod generation.• DC grounded – protects against damage from lightning strikes.

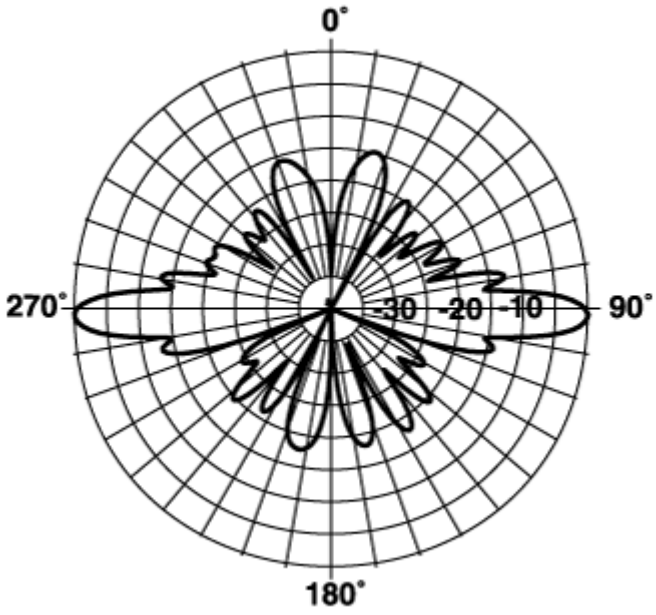
Technical Specifications

Frequency Band	300-699.9 MHz
Horizontal Pattern	OmniDirectional
Antenna Type	Fiberglass Omni
Electrical Down Tilt Option	Fixed
Gain, dBi (dBd)	10.1 (8)
Frequency Range, MHz	450-460
Connector Type	N Female
Connector Location	Bottom
Mount Type	Fixed
Electrical Downtilt, deg	0
Orientation	Upright
Mounting Hardware	46 Clamp Set
Rated Wind Speed, km/h (mph)	200 (125)
Gain (Omni), dBi (dBd)	10.14 (8)
VSWR	< 1.5:1
Vertical Beamwidth, deg	12
Polarization	Vertical
Maximum Power Input, W	250
Lightning Protection	Direct Ground
3rd Order IMP @ 2 x 43 dBm, dBc	-130
Impedance, Ohms	50
Overall Length, m (ft)	4.63 (15.2)
Element Housing Length, m (ft)	4.02 (13.2)
Mounting Pipe Diameter, m (in)	0.07 (2.75)
Support Pipe Length, m (ft)	0.61 (2)
Weight, kg (lb)	7 (16)
Radiating Element Material	Copper
Element Housing Material	Fiberglass
Support Pipe Material	Aluminum Alloy
Max Wind Loading Area, m² (ft²)	0.157 (1.69)
Bend Mom @ Rated Wind 1" Below Top of Mt Pipe, N m (ft lbf)	614 (453)
Wind Load - Side @ Rated Wind, N (lbf)	302 (68)
Shipping Weight, kg (lb)	21.8 (48)
Packing Dimensions, HxWxD, mm (in)	5120 x 100 x 100 (201.57 x 3.94 x 3.94)
Packing Dimensions - HxWxD, m (ft)	5.12 x 0.1 x 0.1 (16.8 x 0.33 x 0.33)
Shipping Dimensions of Accessory - HxWxD, m (ft)	Packed w/antenna
Shipping Mode	Common Carrier

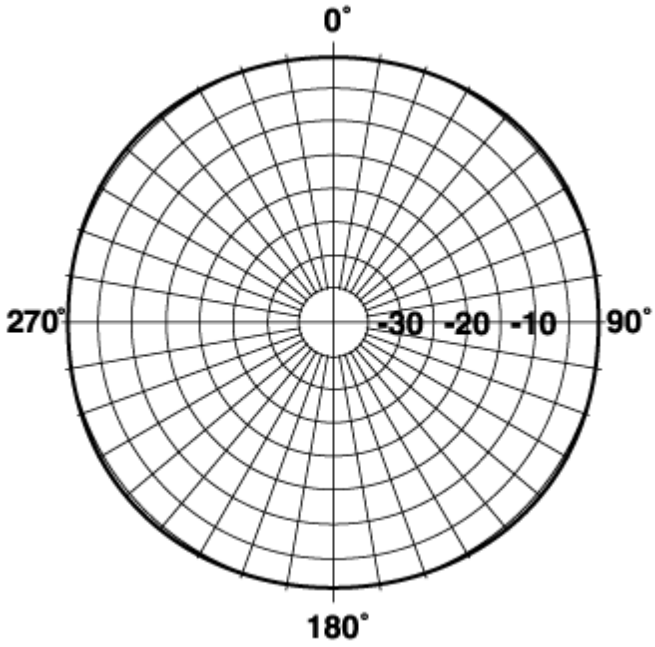
Notes

Other Documentation

Super Stationmaster™ Omni Fiberglass Antenna, 450-460, 10.1dBi, N Female



Vertical Pattern



Horizontal Pattern

TELEWAVE, INC.®

195 - 260 MHz

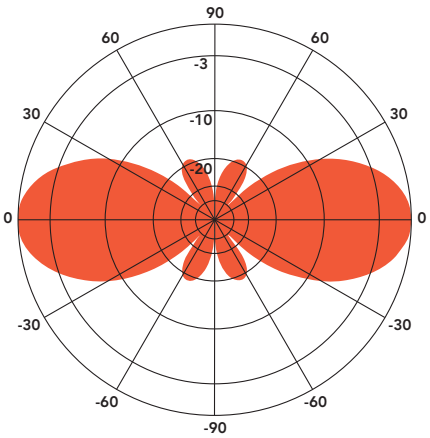
ANT220F2

FIBERGLASS COLLINEAR ANTENNA 2.5 dBd

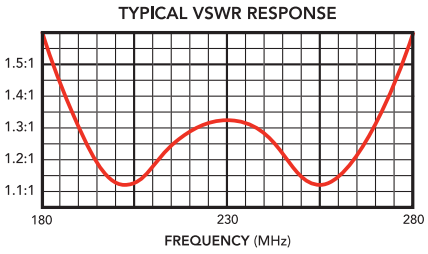
The Telewave ANT220F2 is an extremely rugged collinear antenna, with moderate gain and wide vertical beamwidth. This compact antenna produces 2.5 dBd gain, and is designed for operation in all environmental conditions. The antenna is constructed with brass and copper elements, with a path to ground potential for lightning impulse protection. The ANT220F2 is an excellent choice for wireless PTC systems in urban or rural areas.

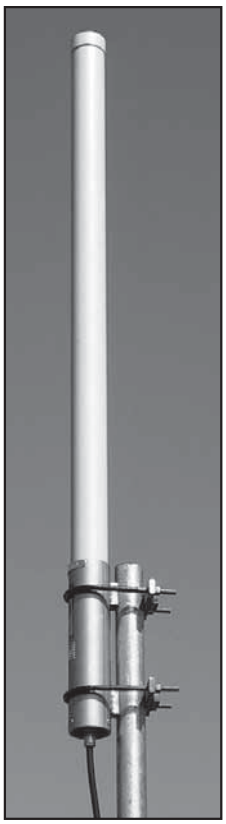
All junctions are fully soldered to prevent RF intermodulation, and each antenna is completely protected within a rugged, high-tech radome to ensure survivability in the worst environments. The "Cool Blue" radome provides maximum protection from corrosive gases, ultraviolet radiation, icing, salt spray, acid rain, and wind blown abrasives.

The ANT220F2 includes the ANTC485 dual clamp set for mounting to a 1.5" to 3" O.D. support pipe, and a 24" removable RG-213 N-Male jumper.



ANT220F2 - 230 MHz
Vertical Plane
Gain = 2.58 dBd





SPECIFICATIONS			
Frequency (continuous)	195-260 MHz	**Dimensions (L x base diam.) in.**	51 x 2.75
Gain	2.5 dBd	**Tower weight (antenna + clamps)**	11 lb.
Power rating (typ.)	500 watts	**Shipping weight**	14 lb.
Impedance	50 ohms	**Wind rating / with 0.5" ice**	200 / 150 MPH
VSWR	1.5:1 or less	**Maximum exposed area**	1.1 ft.²
Pattern	Omnidirectional	**Lateral thrust at 100 MPH**	44 lb.
Vertical beamwidth	38°	**Bending moment at top clamp**	47 ft. lb.
Termination	Recessed N Female 7-16 DIN-F opt.	**(100 MPH, 40 PSF flat plate equiv.)**	

TELEWAVE, INC.

138 - 175 MHz

ANT150F6

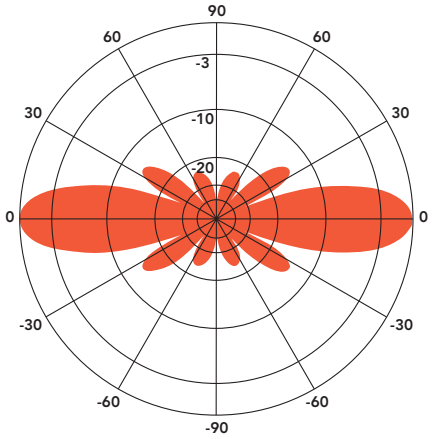
FIBERGLASS COLLINEAR ANTENNA 6 dBd

The Telewave ANT150F6 is an extremely rugged, medium-gain, fiberglass collinear antenna, designed for operation in all environmental conditions. The antenna is constructed with brass and copper elements, connected at DC ground potential for lightning impulse protection. All junctions are fully soldered to prevent RF intermodulation, and each antenna is completely protected within a high-tech, flexible radome to ensure survivability in the worst environments.

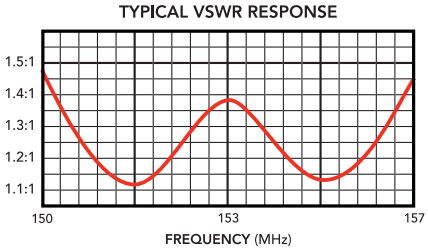
The "Cool Blue" radome provides maximum protection from corrosive gases, UV radiation, icing, salt spray, acid rain, and wind blown abrasives. Eight models cover the entire VHF band. Please specify exact frequency and band code (-1, -2, etc.) when ordering.

The ANT150F6 includes an ANTC482 dual clamp set for mounting to a 1.5" to 3.5" O.D. support pipe, and a 24" removable RG-213 N-Male jumper. Stand-off and top mounts are also available.

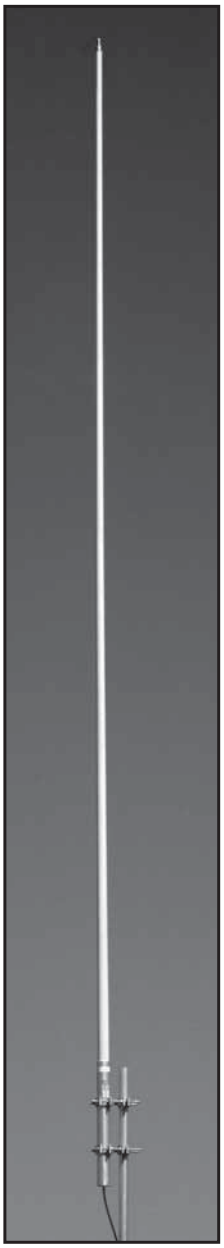
NOTE: THESE ANTENNAS ARE SHIPPED VIA TRUCK FREIGHT ONLY



ANT150F6 - 156 MHz
Vertical Plane
Gain = 6.41 dBd



FREQUENCY RANGES	
ANT150F6-1	138 - 144 MHz
ANT150F6-2	144 - 151 MHz
ANT150F6-3	150 - 157 MHz
ANT150F6-4	156 - 164 MHz
ANT150F6-5	158 - 166 MHz
ANT150F6-6	161 - 168 MHz
ANT150F6-7	167 - 172.5 MHz
ANT150F6-8	171 - 175 MHz



SPECIFICATIONS			138-151 MHz	150-175 MHz
Frequency range	138-175 MHz (8 bands)	**Dimensions (L x base diam.)**	256" x 2.75"	244" x 2.75"
Gain	6 dBd	**Tower weight** (Antenna + clamps)	43 lb.	41 lb.
Power rating (typ.)	500 watts	**Shipping weight**	65 lb.	62 lb.
Impedance	50 ohms	**Wind rating / 0.5" ice**	150 / 125 MPH	
VSWR	1.5:1 or less	**Maximum exposed area**	4.05 ft.²	3.97 ft.²
Pattern	Omnidirectional	**Lateral Thrust at 100 MPH**	162 lb.	159 lb.
Vertical beamwidth	20°	**Bending Moment - top clamp**	1090 ft. lb.	1010 ft. lb.
Termination	Recessed N Female 7-16 DIN-F opt.	**(100 MPH, 40 PSF flat plate equiv.)**		

TELEWAVE, INC.®

148 - 174 MHz

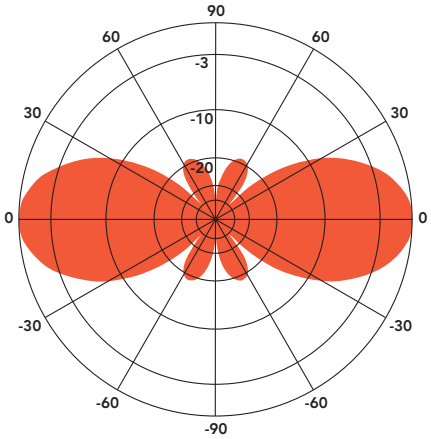
ANT150F2

FIBERGLASS COLLINEAR ANTENNA 2.5 dBd

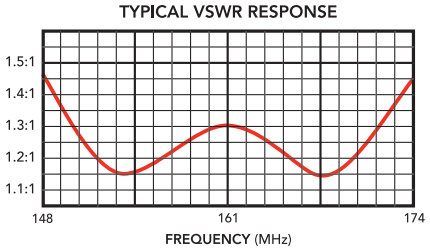
The Telewave ANT150F2 is an extremely rugged collinear antenna, with moderate gain and wide vertical beamwidth. This compact antenna produces 2.5 dBd gain, and is designed for operation in all environmental conditions. The antenna is constructed with brass and copper elements, with a path to DC ground for lightning impulse protection.

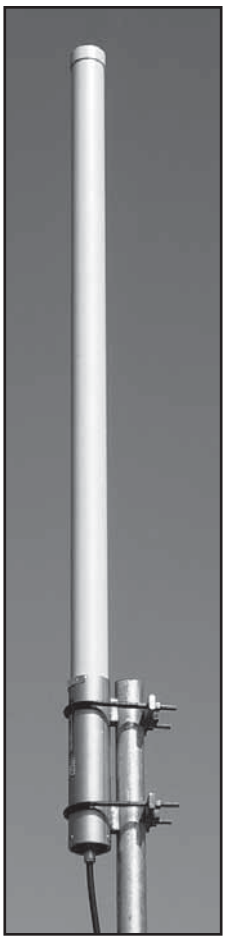
All junctions are fully soldered to prevent RF intermodulation, and each antenna is completely protected within a rugged, high-tech radome to ensure survivability in the worst environments. The "Cool Blue" radome provides maximum protection from corrosive gases, ultraviolet radiation, icing, salt spray, acid rain, and wind blown abrasives.

The ANT150F2 includes the ANTC485 dual clamp set for mounting to a 1.5" to 3" O.D. support pipe, and a 24" removable RG-213 N-Male jumper.



ANT150F2 156 MHz
Vertical Plane
Gain = 2.55 dBd





SPECIFICATIONS			
Frequency (continuous)	148-174 MHz	**Dimensions (L x base diam.) in.**	60 x 2.75
Gain	2.5 dBd	**Tower weight (antenna + clamps)**	12 lb.
Power rating (typ.)	500 watts	**Shipping weight**	16 lb.
Impedance	50 ohms	**Wind rating / with 0.5" ice**	200 / 150 MPH
VSWR	1.5:1 or less	**Maximum exposed area**	1.3 ft.²
Pattern	Omnidirectional	**Lateral thrust at 100 MPH**	50 lb.
Vertical beamwidth	38°	**Bending moment at top clamp**	67 ft. lb.
Termination	Recessed N Female 7-16 DIN-F opt.	**(100 MPH, 40 PSF flat plate equiv.)**	

Technical Data Sheet **PAD6-59BC**

Microwave Antenna, Standard (FCC 101, Cat A) , Single Polarized, 6 ft
5.925 - 6.425 GHz

Product Description
(Local product. Only in North America available. For further information contact Sales in North America)

RFS Microwave Antennas are designed for microwave systems in all common frequency ranges from 4 GHz to 24 GHz. Different options of survival windspeeds are available. This allows the use of antennas in areas where extreme wind conditions are normal. The antennas utilise a conventional feed system and are available in three performance classes offering complete flexibility when designing a network. Standard Performance antennas are economical solutions for systems where side lobe suppression is of less importance. These antennas are required for use in networks where there is a low interference potential. Antennas are available in 2 ft (0.6m) to 12 ft (3.7m) diameters. The Standard Performance antennas are available in single polarised version (PAL). The PAL version offers a low VSWR value for low echo distortion. Antennas from 4ft up to 12 ft (3.7m) can be equipped with a moulded radome to reduce wind load and to protect the feed against the accumulation of ice and snow.

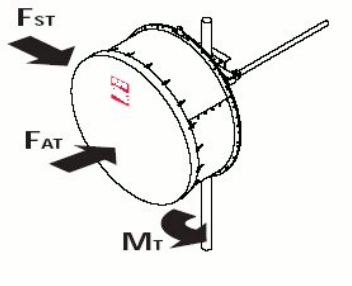
Antenna

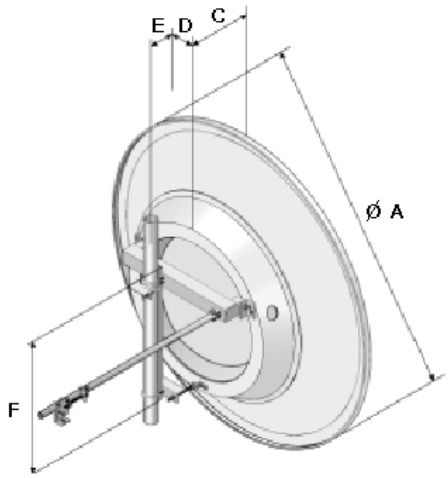
Technical Features

Product Type	Point to point antennas
Frequency, GHz	5.925 - 6.425
Diameter, ft (m)	6 (1.8)
Profile	Standard
Performance	Improved Performance
Polarization	Single
Regulatory Compliance	Standard, FCC
3dB beamwidth, (degrees)	1.8
Antenna Input	CPR137G
Low Band Gain, dBi	38.4
Mid Band Gain, dBi	38.7
High Band Gain, dBi	39.1
F/B Ratio, dB	55
XPD, dB	30
Max VSWR / R L, dB	1.06 / 30.7
FCC Standard	A
Elevation Adjustment, degrees	± 5
Azimuth Adjustment, degrees	± 5
Polarization Adjustment, degrees	± 5
Pressure, bar (psi)	0.3 (4.3)
Radome	Optional
Antenna color	White
Mounting Pipe Diameter minimum, mm (in)	114 (4.5)
Mounting Pipe Diameter maximum, mm (in)	114 (4.5)
Approximate Weight, kg (lb)	84 (185)
Survival Windspeed, km/h (mph)	200 (125)
Operational Windspeed, km/h (mph)	190 (118)

Microwave Antenna, Standard (FCC 101, Cat A) , Single Polarized, 6 ft
5.925 - 6.425 GHz

F_{ST} Side force max. at 110 km/h (68 mph), N (lb)	880 (197)
F_{AT} Axial force max. at 110 km/h (68 mph), N (lb)	2995 (670)
M Torque max. at 110 km/h (68 mph), Nm (ft lb)	925 (690)
F_{ST} Side force max. at 200 km/h (125 mph), N (lb)	2910 (651)
F_{AT} Axial force max. at 200 km/h (125 mph), N (lb)	9900 (2217)
M Torque max. at 200 km/h (125 mph), Nm (ft lb)	3055 (2270)





All dimensions in mm (in)

ØA	B	C	ØD for mounting pipe diam.				E	F
			219 (8.5)	114 (4.5)	89 (3.5)	51 (2.0)		
2000 (79)		364 (14.3)		175 (6.9)			283 (11.1)	590 (23.2)

Notes

includes 1 sway bar (2.0 m x Ø60 mm)

Documentation

Complete Antenna installation
NMT628-00.pdf

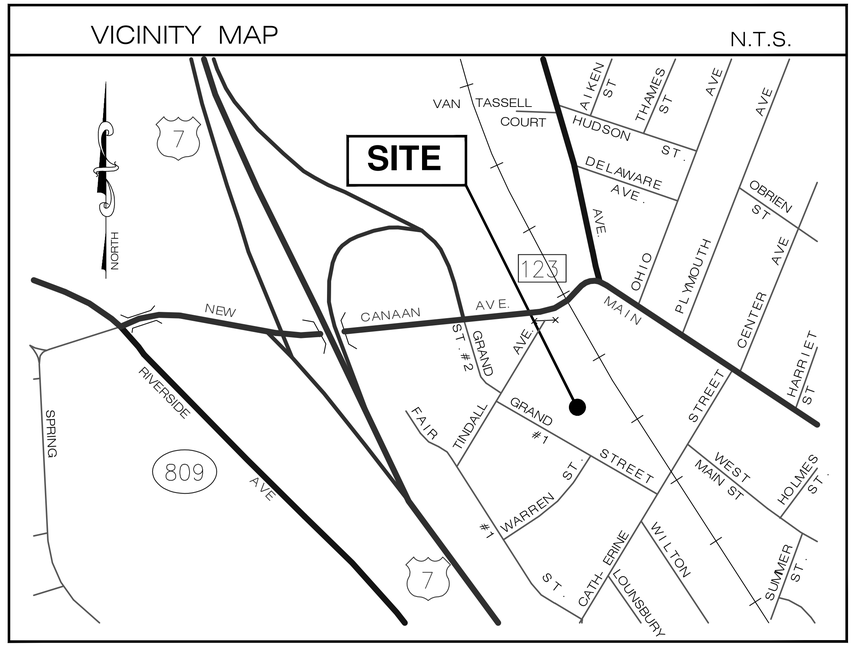
Radiation pattern: (NSMA format)
PAD6-59B, 000301.txt
Radiation pattern: (PDF Format)
PAD6-59B, 000301.pdf

EVERSOURCE ENERGY

NORWALK AREA WORK CENTER

2 TINDALL AVENUE
NORWALK, CONNECTICUT

VICINITY MAP N.T.S.



SITE DIRECTIONS

FROM BERLIN, CT:

1. HEAD NORTH ON SELDEN ST TOWARD CT-15 N/US-5 N/BERLIN TURNPIKE 0.3 MI
2. TURN LEFT ONTO CT-15 S/US-5 S/BERLIN TURNPIKE 1.8 MI
3. TAKE THE RAMP TO CONNECTICUT 9 S/MIDDLETOWN 0.1 MI
4. KEEP RIGHT AT THE FORK, FOLLOW SIGNS FOR U.S. 5S /CONNECTICUT 15 S/NEW HAVEN AND MERGE ONTO CT-15S /US-5 S/BERLIN TURNPIKE CONTINUE TO FOLLOW CT-15S 53.7 MI
5. TAKE EXIT 40A TOWARD US-7 S/NORWALK 413 FT
6. TURN RIGHT ONTO MAIN AVE 1.2 MI
7. TURN RIGHT ONTO NEW CANAAN AVE 0.1 MI
8. TURN LEFT TOWARD TINDALL AVE 361 FT
9. TURN LEFT ONTO TINDALL AVE DESTINATION WILL BE ON THE RIGHT 154 FT

2 TINDALL AVE

APPROVALS

CONSTRUCTION_____	DATE:_____
LEASING_____	DATE:_____
RF_____	DATE:_____
ZONING_____	DATE:_____
QC_____	DATE:_____
NETWORK ENG_____	DATE:_____
OWNER_____	DATE:_____

PROJECT SUMMARY

SITE NAME:	
SITE ADDRESS:	2 TINDALL AVENUE NORWALK, CT. 06850
CONTACT PERSON:	EVERSOURCE ENERGY 107 SELDEN STREET STEVE FLORIO OFFICE: (860) 665-5611 FAX. (860) 665-5585
GOVERNING CODE:	CONNECTICUT STATE BUILDING AND LIFE SAFETY CODE
APPLICANT:	EVERSOURCE ENERGY 107 SELDEN STREET BERLIN, CT. 06037
ARCHITECT:	EVERSOURCE ENERGY 107 SELDEN STREET BERLIN, CT. 06037
M/E/P ENGINEER:	EVERSOURCE ENERGY 107 SELDEN STREET BERLIN, CT. 06037
TOWN SITE ID#	P0506400

PROJECT DESCRIPTION

THE SCOPE OF THIS PROJECT INCLUDES THE REMOVAL OF AN EXISTING 120' HIGH SELF SUPPORT LATICE TOWER AND THE CONSTRUCTION OF AN NEW 150' HIGH SELF SUPPORT LATTICE TOWER LOCATED ON LAND OWNED BY THE CONNECTICUT LIGHT AND POWER COMPANY. ALL EXISTING ANTENNAS AND COAXIAL CABLES FROM THE EXISTING GUYED TOWER ARE TO BE RELOCATED TO THE NEW TOWER.

SHEET INDEX

LEGEND:

- STONE WALL
- EASEMENT LINE
- BUILDING LINE
- NU PROPERTY LINE
- UNGERGROUND TEL. —T—
- UNDERGROUND ELEC. —E—
- CHAIN LINK FENCE —X—X—

PRELIMINARY

MAP RFERENCES:

1. NEW YORK, NEW HAVEN & HARTFORD RAILROAD OFFICE OF ENGINEER – REAL ESTATE SURVEYS, LAND IN NORWALK TO BE CONVEYED TO THE CONNECTICUT LIGHT & POWER COMPANY, SCALE: 1"=100FT., DATED: APR.,1952, MAP NO. 22, FILE12161

2. THE CONNECTICUT LIGHT & POWER COMPANY–MAP SHOWING LOCATION OF SERVICE BUILDING & RR SIDING–TINDALL LANE & GRAND ST. NORWALK. SCALE: 1"=20FT., DATED: 8–16–28 MAP NO. 5792C

3. THE CONNECTICUT LIGHT & POWER COMPANY, NORWALK–SINGER STREET CITY OF NORWALK, PLAN AND PROFILE STAT.22+00 TO 29+00, DATE: 6–15–2006, DWG. NO. 01224–10001 PG.5

4. RR VAL MAP– SHEET NO. 22 OF TWENTY FIVE SHEETS OF THE NEW YORK, NEW HAVEN AND HARTFORD R.R. FORM SURVEY STATION 1108+80 TO SURVEY STATION 1161+60, DATED: MAR. 15,1960

5. COMPILATION PLAN SHOWING EASEMENT TO BE ACQUIRED FROM CLOCK TOWER CLOSE CONDOMINIUM ASSOCIATION, INC. BY THE CONNECTICUT LIGHT & POWER COMPANY, CITY OF NORWALK FAIRFIELD COUNTY, CONNECTICUT, SCALE: 1"=30', DATE: 3–9–07 BY: ERIC J. POREDA.

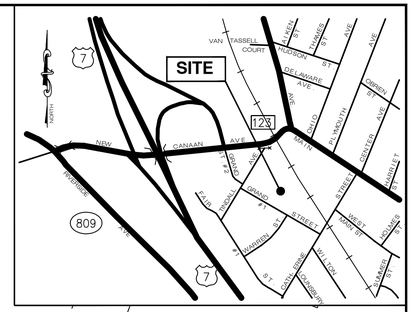
NOTES:

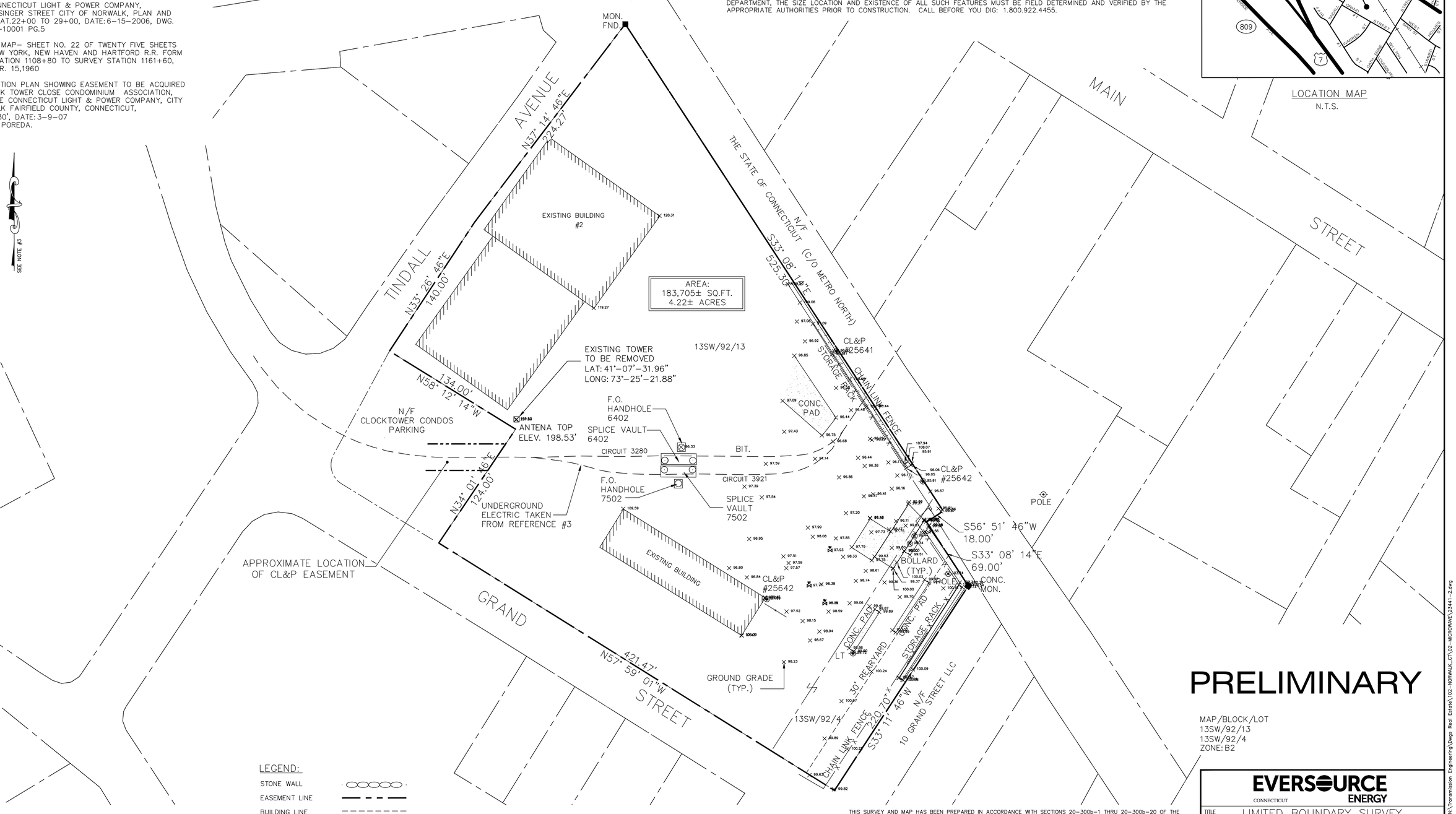
1. THE PURPOSE OF THE PLAN IS TO DEPICT EXISTING CONDITIONS AS OF THE DATE OF SURVEY.

2. BEARING, COORDINATES AND ELEVATIONS SHOWN ARE CONNECTICUT STATE PLANE NAD83 AND NAVD88 RESPECTIVELY, BASED ON GPS INFORMATION COLLECTED BY NORTHEAST UTILITIES SURVEY DEPARTMENT, UNLESS OTHERWISE NOTED.

3. LIMITED PLANIMETRIC FEATURES DEPICTED WERE FIELD SURVEYED IN MAY 2013 BY NORTHEAST UTILITIES SERVICES COMPANY SURVEY DEPARTMENT.

4. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES OR GOVERNMENTAL AGENCIES, FROM PAROL TESTIMONY AND FROM OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO NORTHEAST UTILITIES SERVICES COMPANY SURVEY DEPARTMENT, THE SIZE LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG: 1.800.922.4455.





LEGEND:

- STONE WALL
- EASEMENT LINE
- BUILDING LINE
- NU PROPERTY LINE
- UNGERGROUND TEL. —T—
- UNDERGROUND ELEC. —E—
- CHAIN LINK FENCE — X — X —

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY

MAP/BLOCK/LOT
13SW/92/13
13SW/92/4
ZONE: B2

THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20–300b–1 THRU 20–300b–20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES– MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS INC. IT IS A LIMITED BOUNDARY SURVEY, BOUNDARY DETERMINATION CATEGORY DEPENDANT RESURVEY, CONFORMING TO HORIZONTAL ACCURACY CLASS A–2 AND A LIMITED TOPOGRAPHIC SURVEY CONFORMING TO TOPOGRAPHIC ACCURACY CLASS T–2.

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

SHAWN A. SOUTHWORTH, CT LS #70288

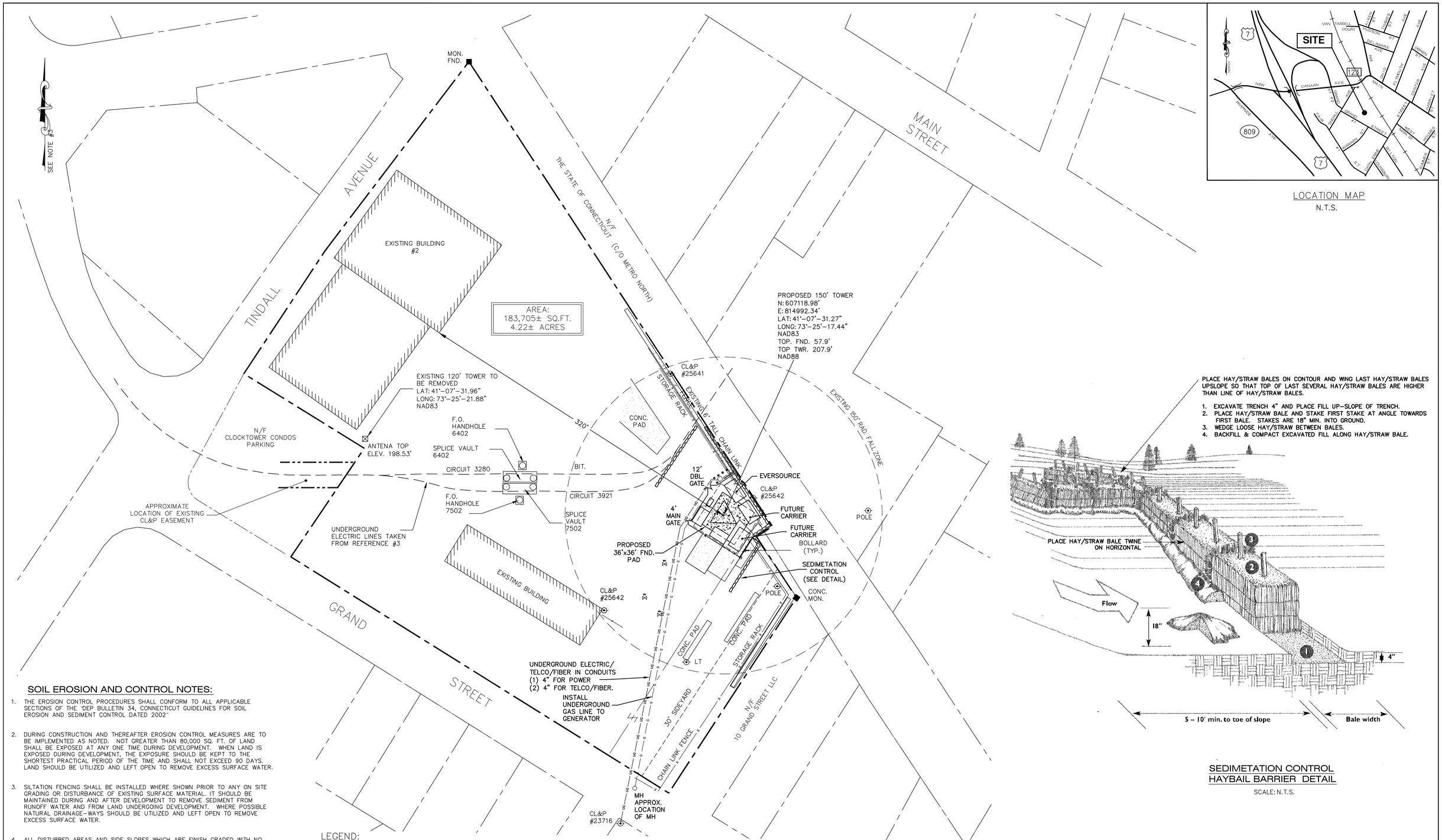
ANY ORIGINAL OR DUPLICATE OF THIS MAP IS NOT VALID UNLESS IT BEARS THE EMBOSSED SEAL OF THE SURVEYOR WHOSE REGISTRATION NUMBER APPEARS ABOVE. NO OTHER CERTIFICATION OR WARRANTY IS EXPRESSED OR IMPLIED.

EVERSOURCE ENERGY
CONNECTICUT

TITLE: LIMITED BOUNDARY SURVEY
NORWALK AREA WORK CENTER
2 TINDALL ROAD
NORWALK, CT.

BY	RMG	CHKD	SAS	APP	APP
DATE	12–6–2013	DATE	12–6–2013	DATE	DATE
H–SCALE	1"=40'	SIZE	ANSI D	SURVEY JOB #	C13–119
V–SCALE		V.S.	Z–1–2	R.E.DWG.	23441
R.E. PROJ. NUMBER		102–02.016		NUSCO	SH.2

03/05/2015 8:17am – toresta – N:\Transmission Engineering\Dwgs Real Estate\102–NORWALK_CT\02–MICROWAVE\23441–2.dwg



LOCATION MAP
N.T.S.

SEDIMETATION CONTROL
HAYBAIL BARRIER DETAIL
SCALE: N.T.S.

SOIL EROSION AND CONTROL NOTES:

1. THE EROSION CONTROL PROCEDURES SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE "DEP BULLETIN 34, CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL DATED 2002"
2. DURING CONSTRUCTION AND THEREAFTER EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. NOT GREATER THAN 80,000 SQ. FT. OF LAND SHALL BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF THE TIME AND SHALL NOT EXCEED 90 DAYS. LAND SHOULD BE UTILIZED AND LEFT OPEN TO REMOVE EXCESS SURFACE WATER.
3. SILTATION FENCING SHALL BE INSTALLED WHERE SHOWN PRIOR TO ANY ON SITE GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. IT SHOULD BE MAINTAINED DURING AND AFTER DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER AND FROM LAND UNDERGOING DEVELOPMENT. WHERE POSSIBLE NATURAL DRAINAGE-WAYS SHOULD BE UTILIZED AND LEFT OPEN TO REMOVE EXCESS SURFACE WATER.
4. ALL DISTURBED AREAS AND SIDE SLOPES WHICH ARE FINISH GRADED WITH NO FURTHER CONSTRUCTION TO TAKE PLACE SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4" OF LOAM SHALL BE INSTALLED. A SEED, LIME AND FERTILIZER PROGRAM SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE "DEP BULLETIN 34, CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL DATED 2002"
5. ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH SHALL BE REGARDED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION. HAY OR STRAW MULCH SHALL BE APPLIED TO ALL FRESHLY SEEDED AREAS AT A RATE OF 2 TONS PER ACRES. BALES SHALL BE UNSPOILED, AIR DRIED, AND FREE FROM WEEDS, SEEDS AND COARSE MATERIAL.
6. UPON ESTABLISHMENT OF VEGETATION OF ALL DISTURBED AREAS AND UPON COMPLETION OF CONSTRUCTION, ASS SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED FROM THE SITE.

LEGEND:

- STONE WALL
- EASEMENT LINE
- BUILDING LINE
- NU PROPERTY LINE
- PROPOSED UNGERGROUND GAS — G — G — G —
- PROPOSED UNDERGROUND ELEC/TELCO/FIBER — UG — UG — UG —
- CHAIN LINK FENCE — X — X —
- HAYBALES SEDIMETATION CONTROL

GRAPHIC SCALE

40 0 20 40 80 160

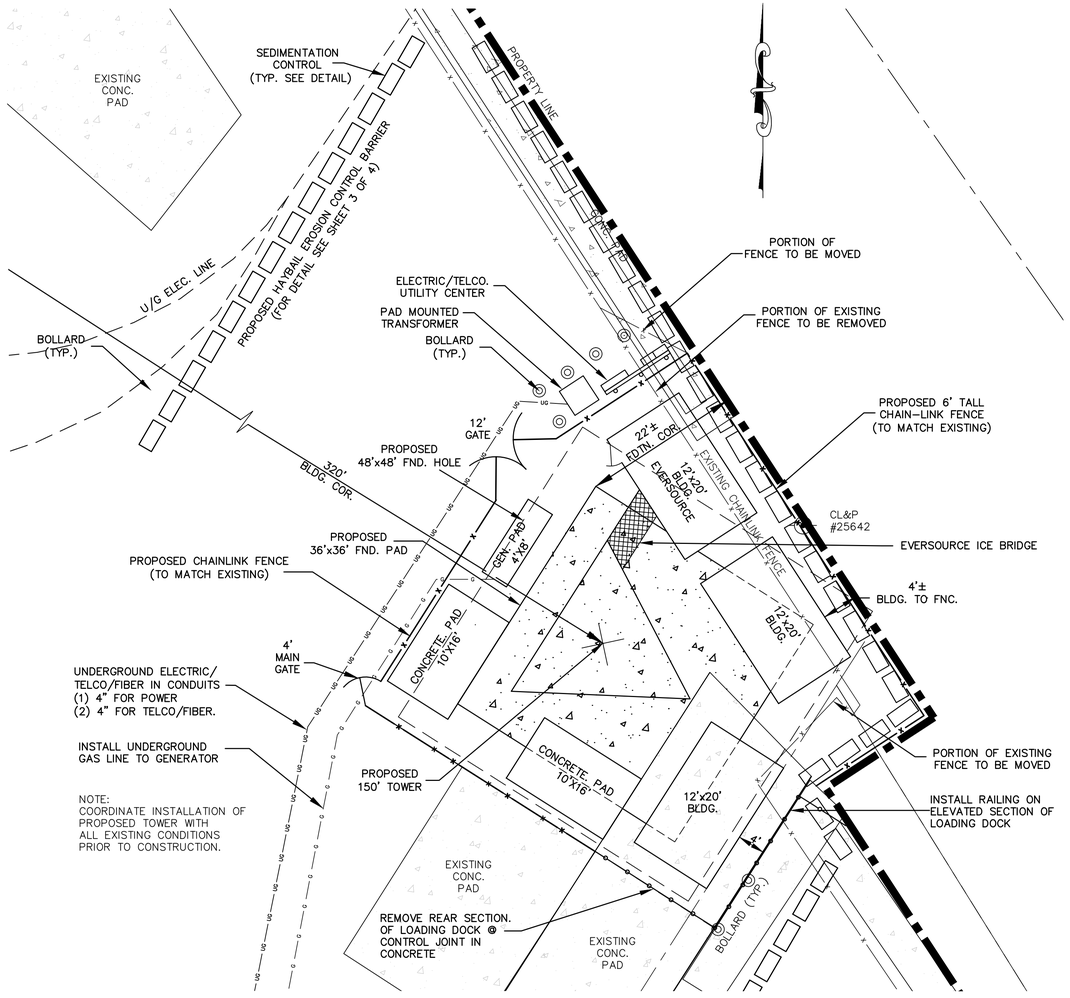
(IN FEET)
1 inch = 40 ft.

PRELIMINARY

EVERSOURCE ENERGY
CONNECTICUT

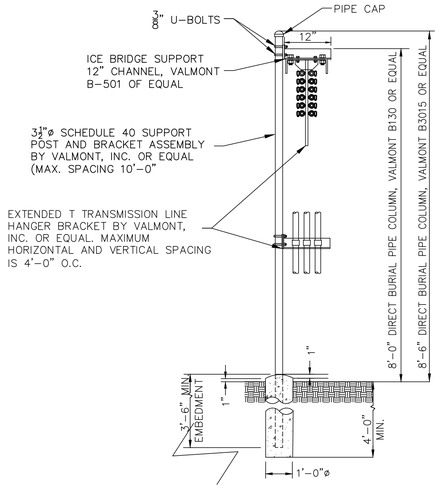
TITLE: SITE PLAN
NOTES AND DETAILS
MICROWAVE TOWER 2 TINDALL AVENUE
NORWALK CT.

BY RMG	CHKD SAS	APP	APP
DATE 2-18-2015	DATE 2-18-2015	DATE	DATE
H-SCALE 1"=40'	SIZE ARCH D	FIELD BOOK & PAGES	C13-119
V-SCALE	V.S. Z-1-2	R.E.DWG.	23441
R.E. PROJ. NUMBER 102-02.016		NUSCO	SH.3



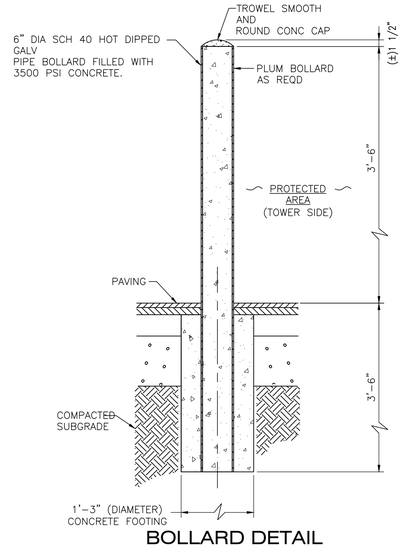
ENLARGED SITE PLAN

SCALE: 1"=10'



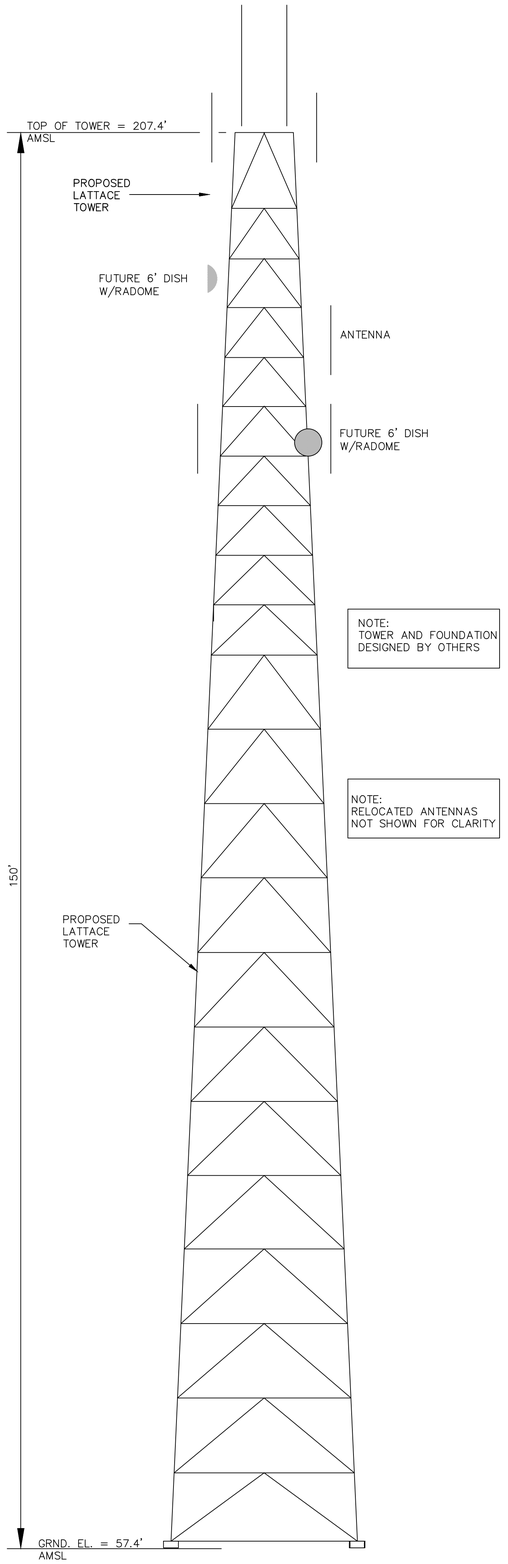
SECTION ICE BRIDGE TRAY

SCALE: N.T.S.



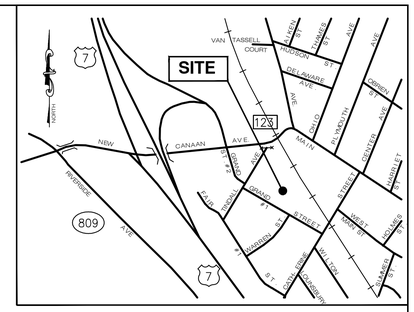
BOLLARD DETAIL

IN PAVED AREA WITH COMPACTED SUB BASE OR CONCRETE PAVED AREA
SCALE: N.T.S.



PROPOSED TOWER ELEVATION

SCALE: N.T.S.



LOCATION MAP

N.T.S.

LEGEND:

- STONE WALL
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- CHAIN LINK FENCE — X — X —
- HAYBALES SEDIMETATION CONTROL

PRELIMINARY

ZONE: B2

EVERSOURCE ENERGY
CONNECTICUT

TITLE: SITE PLAN
NOTES AND DETAILS
MICROWAVE TOWER 2 TINDALL AVENUE
NORWALK CT.

BY RMG	CHKD SAS	APP	APP
DATE 2-18-2015	DATE 2-18-2015	DATE	DATE
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V-SCALE	V.S. Z-1-2	R.E.DWG.	23441
R.E. PROJ. NUMBER	102-02.016	NUSCO	SH.4

CENTEK engineering

Centered on Solutions℠

July 31, 2014

Mr. William D. Ireland
Building Official
Town of Norwalk
125 East Ave., PO Box 5125
Norwalk, CT 06856

Re: Independent Structural Engineer's Review
Northeast Utilities – Site Ref: Norwalk Tindall
Tindall Avenue
Norwalk, CT 06851

Centek Project No. 14173.000

Dear Mr. Ireland,

Centek Engineering, Inc., has been authorized by Northeast Utilities to perform an independent structural review and evaluation of the proposed 150-ft tall self-supporting lattice tower, to be located at the above referenced emergency communications facility. Specifically, structural design calculations prepared by ROHN; File No. 210856, dated 07/15/2014 signed and sealed by David G. Brinker, PE (CT PE License No. 14002) were reviewed for compliance with the requirements of the 2005 Connecticut State Building Code, as amended by the 2009 Connecticut State Supplement and Northeast Utilities Substation Standard 090.

This review was conducted as stipulated in Section 106.1 of the 2005 Connecticut State Building Code and Section 29-276b of the Connecticut General Statue for independent structural analysis and evaluation.

APPROACH

The calculation and design documents referenced above were reviewed for compliance with Section 3108.0 of the International Building Code (IBC) and the 2005 Connecticut State Building Code as amended by the 2009 Connecticut State Supplement and Northeast Utilities Substation Standard 090. The applicable design standard for loading and analysis of steel antenna towers is ANSI/TIA-222-G entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures". The tower structure was also reviewed for compliance with the requirements of the ANSI/TIA/EIA-222-F standard currently in effect within the State of Connecticut.

Specifically, the following key items were considered:

- Construction Materials
- Tower Loading
- Material Design Strength
- Foundation and Anchors

CONSTRUCTION MATERIALS

IBC 2003/2005 CSBC Section 3108.3 is satisfied - the steel used is of corrosion resistant construction *[Bolts galvanized per ASTM A153 (hot dipped) or ASTM 695 (mechanical); all other structural materials hot dipped galvanized per ASTM A123]*.

Table 5-1 of the TIA-222-G standard is satisfied - *steel grades are as follows: solid round tower legs - ASTM A572-50; steel angle – ATSM A529-50, misc plates - ASTM A36, connection bolts ASTM A325; anchor bolts ASTM F1554 grade 105*.

TOWER LOADING

Tower loading is determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G, gravity loads of the tower structure and its components, and the application of 0.75" radial ice. The analysis prepared by ROHN was conducted utilizing the requirements of the ANSI/TIA-222-G standard. The tower structure was also reviewed for compliance with the requirements of the ANSI/TIA/EIA-222-F standard currently in effect within the State of Connecticut. The wind speed requirements for the TIA/EIA-222-F and TIA-222-G standards are provided below for comparison.

Basic Wind Speed:	Fairfield County; v = 85 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-1996]*
	Fairfield County; v = 90 -110 mph (3 second gust), a v = 110 mph was utilized in the design - equivalent to v = 90 mph (fastest mile)	*[Annex B of TIA-222-G]*
	Norwalk; v = 105 mph (fastest mile) equivalent to v = 85 mph (3 second gust)	*[Appendix K of the 2005 CT Building Code Supplement]*
Load Cases Used:	Load Case 1; 110 mph wind speed w/ no ice plus gravity load (Class III Structure Type, Exposure Category C) – used in calculation of tower stresses and rotation.	*[Annex B of TIA-222-G-2005]*
	Load Case 2; 50 mph wind speed w/ 0.75" radial ice plus gravity load (Class III Structure Type, Exposure Category C) – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*
	Load Case 3; Seismic – not checked	*[Section 1614.5 of 2005 CT State Bldg. Code] does not control in the design of this structure type*

MATERIAL DESIGN STRENGTH

The maximum tower steel usage was calculated as **0.82** (**82.0%**) utilizing the ANSI TIA-222-G design standard which is less than the maximum ratio of 1.00, as required by Section 9.4 of the ANSI/TIA-222-G standard.

FOUNDATION AND ANCHORS

The proposed foundation consists of three (3) 4.5-ft dia x 3.75-ft. long reinforced concrete piers and one (1) 30.00-ft square x 2.75-ft thick pad. The sub-grade conditions used in the design of the foundation were obtained from the geotechnical soils report prepared by Dr. Clarence Welti dated 4/21/2014. The tower is connected to the foundation by means of seven (7) 1.50" dia. ASTM F1554-GR105 anchor bolts embedded approximately 5.00-ft. into the concrete foundation structure.

Review of the foundation and anchor bolt design consisted of verification of the applied loads obtained from the tower design calculations and code checks of the available strength:

- The tower anchor bolts were found to be within allowable limits.
- The foundation was found to be within allowable limits.

CONCLUSION

Based on our review of structural analysis provided, it is our opinion that the proposed installation was engineered in conformance with the applicable structural requirements of the 2003 International Building Code (IBC); 2005 Connecticut State Building Code with 2009 Supplement, ANSI TIA/EIA 222-F, ANSI TIA-222-G and Northeast Utilities Substation Standard 090. It is noted that our review does not constitute a design, nor is it all-inclusive; the responsibility for the structural design remains with the Structural Engineer of Record.

This completes the independent structural engineering review for this project. Should you have any questions, please do not hesitate to contact us.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

Cc: Steve Florio ~ Northeast Utilities (via email)
Colt Jacobson ~ Northeast Utilities (via email)

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

Calculated Radio Frequency Emissions Report

Northeast Utilities

Norwalk AWC

2 Tindall Avenue, Norwalk, CT 06851

September 11, 2014

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for Northeast Utilities' proposed antenna additions to a new 150' lattice tower, to be located at 2 Tindall Avenue in Norwalk, CT. The coordinates of the tower will be 41° 07' 31.34" N, 73° 25' 17.61" W. An existing 120' lattice tower on the property will be removed once the new tower is constructed.

Northeast Utilities is proposing the following:

1) Install one 900 MHz omnidirectional antenna;
2) Install one 450 MHz omnidirectional antenna;
3) Install two 220 MHz omnidirectional antennas;
4) Install three 150-175 MHz omnidirectional antennas;
5) Install three 37-48 MHz omnidirectional antennas.

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. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

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 power, and that all 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 take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final site configuration.

4. Calculation Results

Table 1 below outlines the power density information for the site. The radiation patterns of the proposed Northeast Utilities antennas cause the majority of the RF power to be focused out towards the horizon, with respect to the vertical plane. As a result, there will be less RF power directed below the antenna relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical patterns of the proposed Northeast Utilities antennas. The calculated results for Northeast Utilities in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Northeast Utilities	159	935.3875	2	255	0.0007	0.6236	0.12%
Northeast Utilities	156	451.375	1	120	0.0002	0.3009	0.06%
Northeast Utilities	159	154.46	1	990	0.0014	0.2000	0.70%
Northeast Utilities	144	220	1	150	0.0003	0.2000	0.13%
Northeast Utilities	144	158	1	40	0.0001	0.2000	0.03%
Northeast Utilities	139	37.74	1	250	0.0005	0.2000	0.23%
Northeast Utilities	129	173	1	100	0.0002	0.2000	0.11%
Northeast Utilities	130	48.34	1	250	0.0005	0.2000	0.27%
Northeast Utilities	121	220	1	150	0.0004	0.2000	0.18%
Northeast Utilities	123	47.76	1	100	0.0002	0.2000	0.12%
						Total	**1.95%**

Table 1: Carrier Information[1] [2]

[1] Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2] The antenna heights listed for the proposed antennas are in reference to documents provided by Northeast Utilities received on August 21, 2014.

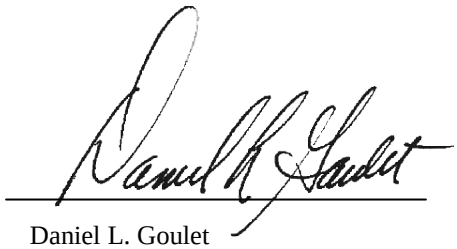
5. Conclusion

The above analysis verifies that RF emissions from the final site configuration will be well below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **1.95% of the FCC General Population/Uncontrolled limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the final site configuration.

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 ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

September 11, 2014
Date

Attachment A: References

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

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

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

(A) Limits for Occupational/Controlled Exposure[3]

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 Exposure[4]

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)

[3] 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.

[4] 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.

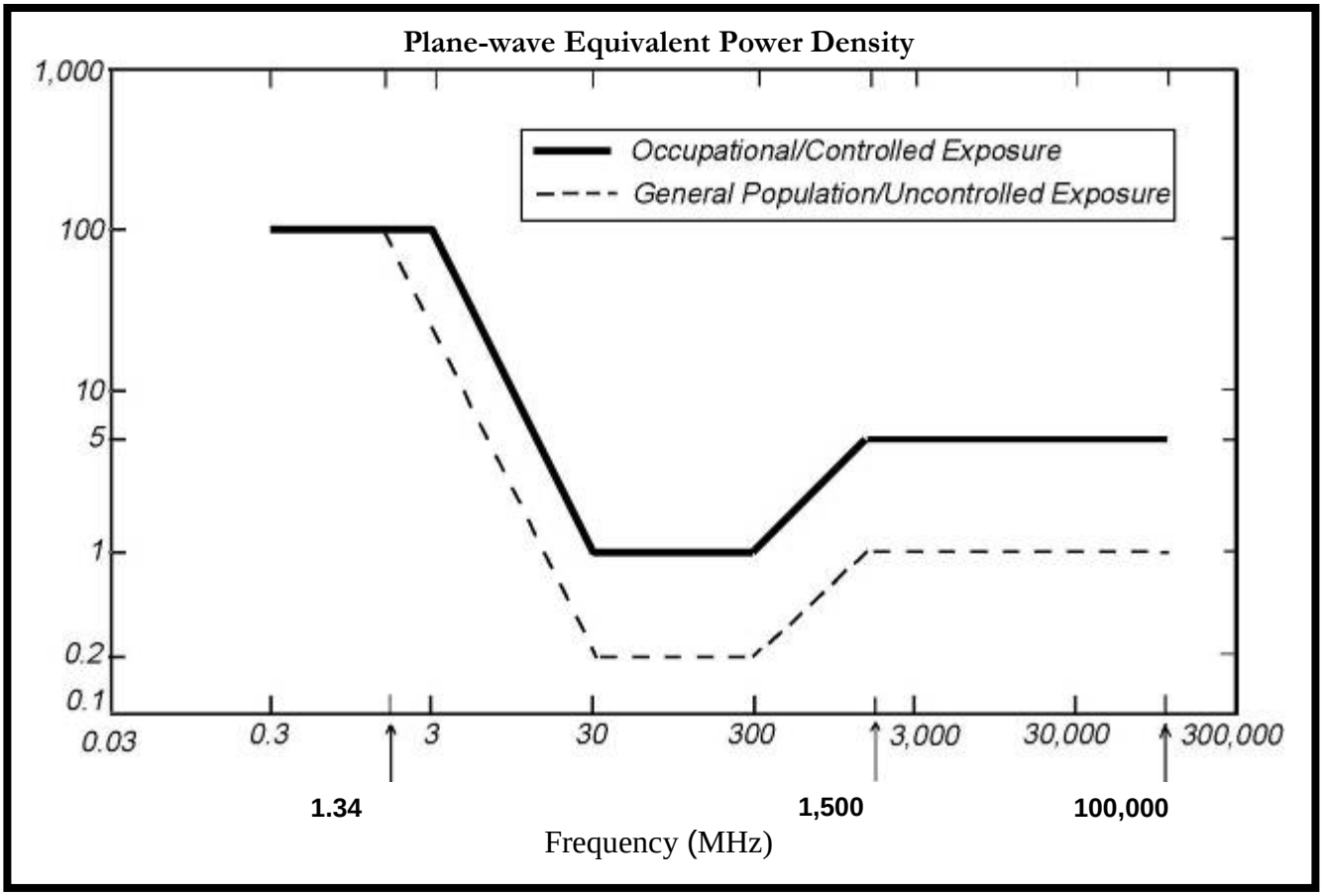
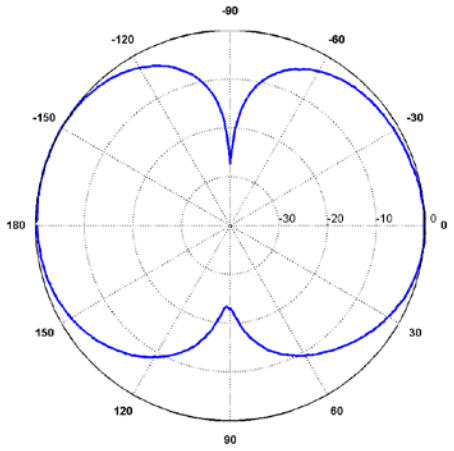
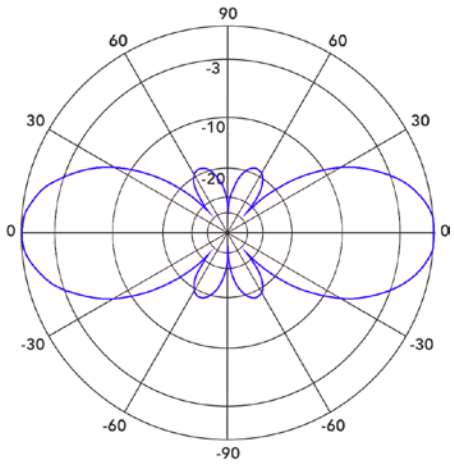
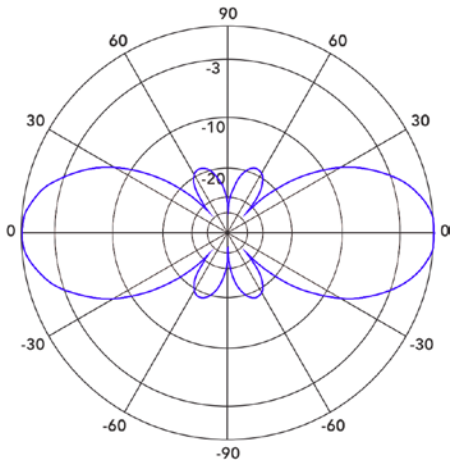


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

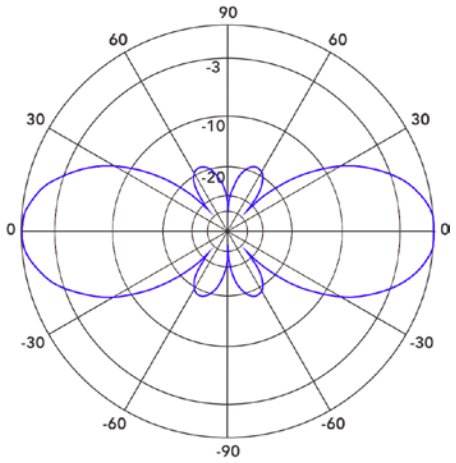
Attachment C: Antenna Data Sheets and Electrical Patterns[5]

37-47 MHz Manufacturer: Kreco Model #: CO-41A Frequency Band: 30-50 MHz Gain: 0.0 dBd Vertical Beamwidth: N/A Horizontal Beamwidth: 360° Polarization: Vertical Length: N/A	
150-175 MHz Manufacturer: Telewave Model #: ANT150F2 Frequency Band: 148-174 MHz Gain: 2.5 dBd Vertical Beamwidth: 38° Horizontal Beamwidth: 360° Polarization: Vertical Length: 5’	
150-175 MHz Manufacturer: Telewave Model #: ANT150F6-3 Frequency Band: 150-157 MHz Gain: 6.0 dBd Vertical Beamwidth: 20° Horizontal Beamwidth: 360° Polarization: Vertical Length: 20.3’	

[5] In the case where pattern data was unavailable from the manufacturer, vertical patterns shown are for antennas with similar specifications.

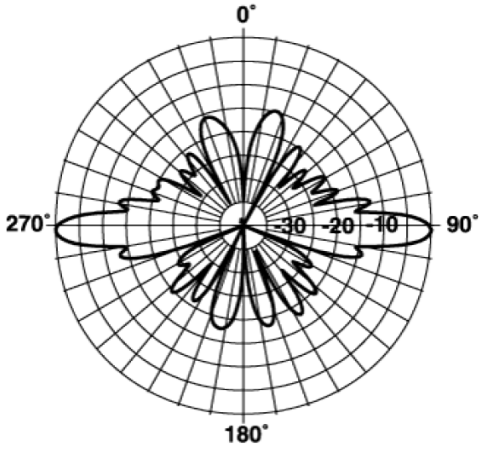
220 MHz

Manufacturer:	Telewave
Model #:	ANT220F2
Frequency Band:	195-260 MHz
Gain:	2.5 dBd
Vertical Beamwidth:	38°
Horizontal Beamwidth:	360°
Polarization:	Vertical
Length:	4.25’



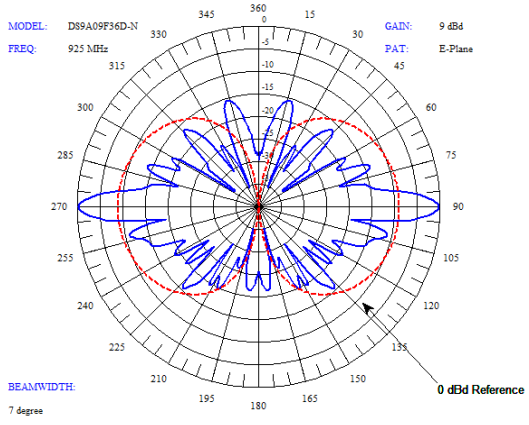
450 MHz

Manufacturer:	RFS
Model #:	1151-3N
Frequency Band:	450-460 MHz
Gain:	8.0 dBd
Vertical Beamwidth:	12°
Horizontal Beamwidth:	360°
Polarization:	Vertical
Length:	15.2’



935 MHz

Manufacturer:	DBSpectra
Model #:	DS9A09F36D-N
Frequency Band:	896-960 MHz
Gain:	9.0 dBd
Vertical Beamwidth:	8°
Horizontal Beamwidth:	360°
Polarization:	Vertical
Length:	21’



ALL-POINTS TECHNOLOGY CORPORATION

VISIBILITY ANALYSIS

TELECOMMUNICATIONS TOWER
2 TINDALL AVENUE
NORWALK, CONNECTICUT

Prepared for:

Eversource Energy
PO Box 270
Hartford, CT 06141-0270

Prepared by:

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3 Saddlebrook Drive
Killingworth, CT 06419

February 2015

Project Introduction

Northeast Utilities Service Company as agent for its corporate affiliate, The Connecticut Light and Power Company doing business as Eversource Energy ("Eversource" or the "Company") is pursuing a Petition that no Certificate of Environmental Compatibility and Public Need is required from the Connecticut Siting Council ("Council") for replacing an existing wireless communications facility ("Replacement Facility") at 2 Tindall Avenue in Norwalk, Connecticut ("Property"). At the request of Eversource, All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate the potential visibility of the proposed Replacement Facility within a one mile radius of the proposed site location ("Study Area").

Site Description and Setting

The 4.22-acre Property is located in downtown Norwalk immediately east of Tindall Avenue, south of a MetroNorth railroad corridor and north of Grand Street. The Property is used by Eversource as a service center and maintenance yard. A 120-foot tall, self-supporting lattice tower currently occupies an area in the eastern portion of the Property. The proposed 150-foot tall Replacement Facility would be located approximately 325 feet to the east of the existing tower at a ground elevation similar to that of the existing tower, approximately 57 feet Above Mean Sea Level ("AMSL"). The tower would be located within an approximately 50-foot by 50-foot fence-enclosed compound. The compound will include the Company's equipment shelter, emergency power generator, and associated utility backboard and demarc equipment. The Facility has been designed to accommodate additional service providers.

Land use within the immediate vicinity is primarily a mix of dense, urban commercial and residential development, surrounded by major transportation corridors associated with Route 123 and 7 and the MetroNorth rail line. The topography within the Study Area is characterized by the Norwalk River valley and gently rising hills to the east and west, with ground elevations ranging from approximately 10 feet AMSL to 230 feet AMSL.

Methodology

APT used the combination of a predictive computer model and in-field analysis to evaluate the visibility associated with the proposed Replacement Facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of potential visibility throughout the entire Study Area including private properties and other areas inaccessible for direct observations. The in-field analyses included a balloon float and reconnaissance of the Study Area to record existing conditions, verify results of the model, inventory visible and nonvisible locations, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

Preliminary Computer Modeling

Two computer modeling tools were used to calculate those areas from which at least the top of the tower is estimated to be visible: IDRISI image analysis program (developed by Clark Labs, Clark University) and ArcGIS®, developed by Environmental Systems Research Institute, Inc. Project- and Study Area-specific data were incorporated into the computer model, including the tower's location, height, and ground elevation, as well as the surrounding topography and existing vegetation which are two primary features that can block direct lines of sight. Information used in the model included LiDAR[1]-based digital elevation and land use data. The LiDAR-based Digital Elevation Model ("DEM") represents topographic information for the state of Connecticut that was derived through the spatial interpolation of airborne LiDAR-based data collected in the year 2000 and has a horizontal resolution of 1.5 to 2 feet, and was downloaded from the National Oceanic and Atmospheric Administration in 2011. In addition to the topographic information, this LiDAR data set contains all other recorded dimensional observations (or "returns") of land features including vegetation, buildings, and other infrastructure. The results of the LiDAR DEM analysis were compared with National Agricultural Imagery Program (USDA) aerial photography (1-foot resolution, flown in 2012) using IDRISI image processing tools, to confirm its general accuracy. The IDRISI tools develop light reflective classes defined by statistical analysis of individual pixels, which are then grouped based on common reflective values such that distinctions can be made automatically between deciduous and coniferous tree species, as well as grassland, impervious surface areas, water and other distinct land use features.

Once the data layers were entered, image processing tools were applied and overlaid onto USGS topographic base maps and aerial photographs to achieve an estimate of locations where the Replacement Facility might be visible. Additional data was reviewed and incorporated into the visibility analysis, including protected private and public open space, parks, recreational facilities, hiking trails, schools, and historic districts. The nearest trail system to the Property is associated with Riverside Cemetery, located approximately 0.3 mile to the southwest. Based on a review of publicly-available information, no designated state scenic roads exist within the Study Area.

[1] LiDAR is an acronym for Light Detection and Ranging. It is a technology that utilized lasers to determine the distance to an object or surface. LiDAR is similar to radar, but incorporates laser pulses rather than sound waves. It measures the time delay between transmission and reflection of the laser pulse.

Field Reconnaissance

To supplement and fine tune the results of the computer modeling efforts, APT completed in-field verification activities consisting of a balloon float, vehicular and pedestrian reconnaissance, and photo-documentation.

Balloon Float and Field Reconnaissance

A balloon float was conducted on July 10, 2014. The balloon float consisted of raising an approximately four-foot diameter, helium-filled red balloon, tethered to a string height of 150 feet above ground level ("AGL") at the proposed Replacement Facility location. At the time of the balloon float, weather conditions included partly cloudy skies with calm winds. Once the balloon was secured, a Study Area reconnaissance was performed by driving along the local and State roads and other publicly accessible locations to document and inventory where the balloon could be seen above/through the trees and canopy. Visual observations from the reconnaissance were also used to evaluate the results of the preliminary visibility mapping and identify any discrepancies in the initial modeling.

Photographic Documentation

APT drove the public roads within the Study Area during the balloon float and photo-documented representative areas where the balloon was and was not visible. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens, with lens set to 50 mm for all but two of the photographs. Photos 7 and 15 were taken using a 35 mm focal length in order to provide a greater depth of field for presentation in this report. Focal lengths ranging from 24 mm to 50 mm approximate views similar to that achieved by the human eye. However, two key aspects of an image can be directly affected by the specific focal length that is selected: field of view and relation of sizes between objects in the frame. A 35 mm focal length provides a wider field of view, representative of the extent the human eyes may see (including some peripheral vision), but the relation of sizes between objects at the edges of the photos can become minimally skewed. A 50 mm focal length has a narrower field of view than the human eye but the relation of sizes between objects is represented similar to what the human eye might perceive.

> *"The lens that most closely approximates the view of the unaided human eye is known as the normal focal-length lens. For the 35 mm camera format, which gives a 24x36 mm image, the normal focal length is about 50 mm.*[2]"

When taking photographs for these analyses, APT prefers a focal length of 50 mm; however there are times when wider views (requiring the use of the 35 mm lens setting, in this case) can better reflect "real world" viewing conditions by providing greater context to the scene. Regardless of the lens setting, the scale of the subject in the photograph (the balloon) and corresponding simulation (the tower) remains proportional to its surroundings.

[2] Warren, Bruce. Photography, West Publishing Company, Eagan, MN, c. 1993, (page 70).

Final Visibility Mapping

Information obtained during the field reconnaissance was incorporated into the mapping data layers, including observations of the balloon float, the photo locations, areas that experienced recent land use changes and those places where the initial model was found to over-predict visibility. Once the additional field data was integrated into the model, APT re-calculated the visibility of the proposed Replacement Facility from within the Study Area to assist in producing the final viewshed map.

Photographic Simulations

Photographic simulations were generated to portray scaled renderings from 24 representative locations where the proposed Replacement Facility would be visible year-round. Using field data, site plan information and 3-dimension (3D) modeling software, spatially referenced models of the site area and tower were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs[3]. For presentation purposes in this report, the photographs were produced in an approximate 7-inch by 10.5-inch format.

Photo-documentation of existing conditions and photo-simulations of the proposed Replacement Facility are presented in the attachment at the end of this report. Where visible in the existing conditions photos, the balloon provides visual reference points for the approximate height and location of the tower relative to the scene. The photo-simulations are intended to provide the reader with a general understanding of the different views that might be achieved of the Replacement Facility. Note that the existing tower is visible in eight (8) of the photographs (views 1-3, 8, 13, 15, 22, and 25); the existing tower has been removed from the corresponding photo-simulations of the Replacement Facility to provide a representation of proposed conditions once the project is complete.

It is important to consider that the publicly-accessible locations selected are typically representative of a "worst case" scenario. They were chosen to present unobstructed view lines (wherever possible), are static in nature and do not necessarily fairly characterize the prevailing views from all locations within a given area. From several locations, moving a few feet in any direction will result in a far different perspective of the tower than what is presented in the photographs. In several cases, a view of the tower may be limited to the immediate area of the specific photo location.

The simulations provide a representation of the Replacement Facility under similar settings as those encountered during the balloon float and reconnaissance. Views of the tower can change substantially throughout the season and are dependent on environmental conditions, including (but not necessarily limited to) weather, light conditions, seasons, time of day, and the viewer location.

[3] As a final step, the accuracy and scale of select simulations are tested against photographs of similar existing facilities with recorded camera position, focal length, photo location, and tower location.

Photograph Locations

The table below summarizes characteristics of the photographs and simulations presented in the attachment to this report including a description of each location, view orientation, the distance from where the photo was taken relative to the proposed Replacement Facility and the general characteristic of that view. The photo locations are depicted on the photolog and viewshed maps provided as attachments to this report.

Photo No.	Photo Location	View Orientation	Distance to Facility	View Characteristic
1	New Canaan Avenue	Southeast	±0.17 Mile	Year-round
2	Tindall Avenue	Southeast	±0.14 Mile	Year-round
3	Tindall Avenue	East	±0.10 Mile	Year-round
4	Fair Street	East	±0.18 Mile	Year-round
5	Fair Street	Northeast	±0.14 Mile	Year-round
6	Fair Street	North	±0.19 Mile	Year-round
7	Warren Street*	Northeast	±0.08 Mile	Year-round
8	Catherine Street at Grand Street	North	±0.10 Mile	Year-round
9	Wilton Avenue	Northwest	±0.18 Mile	Year-round
10	Wilton Avenue at Horton Street	Northwest	±0.29 Mile	Year-round
11	West Main Street	Northwest	±0.21 Mile	Year-round
12	Main Street	West	±0.18 Mile	Year-round
13	Center Avenue at Main Street	Southwest	±0.11 Mile	Year-round
14	Main Street	Southwest	±0.08 Mile	Year-round
15	Main Street at New Canaan Avenue*	South	±0.12 Mile	Year-round
16	New Canaan Way	Southeast	±0.11 Mile	Year-round
17	Center Avenue	Southwest	±0.17 Mile	Not visible
18	Ward Street	Southwest	±0.38 Mile	Not visible
19	Ohio Avenue	Southwest	±0.23 Mile	Year-round
20	Thames Street	South	±0.26 Mile	Year-round
21	Main Street	South	±0.26 Mile	Year-round
22	Main Street	South	±0.30 Mile	Year-round
23	Broad Street	South	±0.44 Mile	Year-round
24	Broad Street Cemetery	Southeast	±0.45 Mile	Year-round
25	New Canaan Avenue	East	±0.48 Mile	Year-round
26	Ponus Avenue	East	±0.59 Mile	Not visible
27	Ponus Avenue	East	±0.74 Mile	Not visible
28	Girardi Street	Northeast	±0.50 Mile	Not visible
29	Spring Hill Avenue	Northeast	±0.23 Mile	Year-round

*Photograph taken with 35 mm lens setting

Photo-documentation and simulations are presented in the attachment at the end of this report.

Visibility Analysis Results

Results of this analysis are graphically displayed on the visibility analysis maps provided in the attachment to the end of this report. The maps also include the locations of photographs and corresponding simulations.

Areas from where the Replacement Facility would be visible comprise 91± acres, or less than 5% of the Study Area. This is generally consistent with existing conditions associated with the 120-foot tower that resides on the site today.

As seen on the visibility maps, the majority of views of the Replacement Facility would occur from the areas within the immediate vicinity of the Property, extending about 0.25 mile to the south and east and up to nearly 0.5 mile to the north and west. The urban nature of the area results in few unobstructed views of the Facility. Several existing views would change slightly in character due to the shift in tower location (325± feet to the east) but the overall visual impact of the new tower would not be significant.

Based on the results of this analysis, development of the proposed Replacement 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.

Proximity to Schools and Commercial Child Day Care Centers

No school or commercial child day care facilities are located within 250 feet of the Property. The nearest school (Tracey Elementary School) is located at 20 Camp Street approximately 0.4 mile to the east. The nearest commercial child day care center (Carousel Preschool Day Nursery) is located at 20 France Street, approximately 0.6 mile to the east. Neither of these locations would have views of the Replacement Facility.

LIMITATIONS

The viewshed maps presented in the attachment to this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground through intervening topography, vegetation, buildings and other infrastructure. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2000 LiDAR data and 2012 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The simulations provide a representation of the Facility under similar settings as those encountered during the balloon float and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the balloon float included partly cloudy skies. The photo-simulations presented in this report provide an accurate portrayal of the Facility during comparable conditions.

ATTACHMENTS

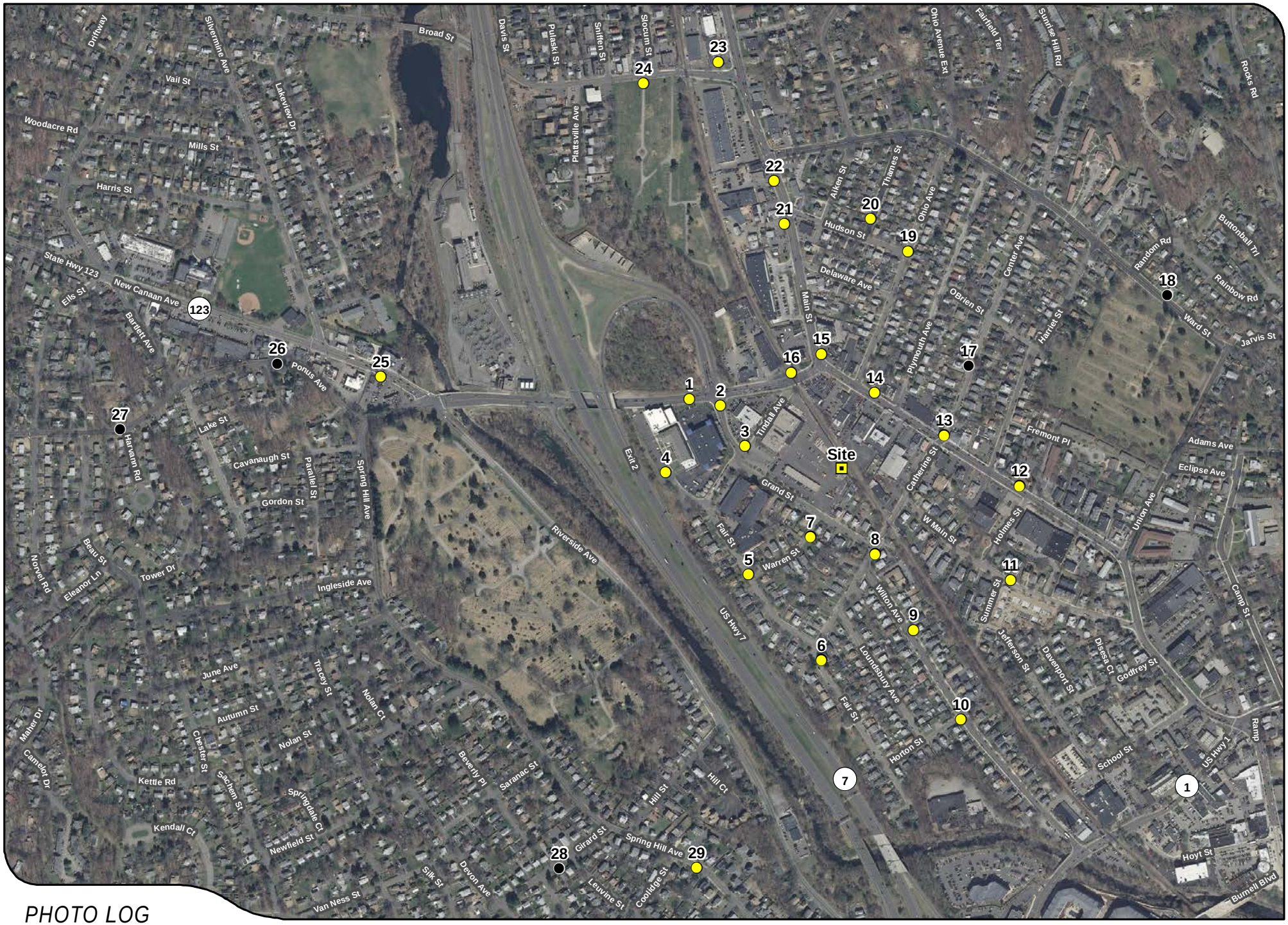

PHOTO LOG

Legend

Site ● Not Visible ○ Year-Round Visibility

N W E S

500 250 0 500 Feet

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EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**NEW CANAAN AVENUE**	**SOUTHEAST**	**+/- 0.17 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**NEW CANAAN AVENUE**	**SOUTHEAST**	**+/- 0.17 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**TINDALL AVENUE**	**SOUTHEAST**	**+/- 0.14 MILE**	**YEAR ROUND**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**TINDALL AVENUE**	**SOUTHEAST**	**+/- 0.14 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**TINDALL AVENUE**	**EAST**	**+/- 0.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**TINDALL AVENUE**	**EAST**	**+/- 0.10 MILE**	**YEAR ROUND**

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EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**FAIR STREET**	**EAST**	**+/- 0.18 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**FAIR STREET**	**EAST**	**+/- 0.18 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**FAIR STREET**	**NORTHEAST**	**+/- 0.14 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**FAIR STREET**	**NORTHEAST**	**+/- 0.14 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**FAIR STREET**	**NORTH**	**+/- 0.19 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**FAIR STREET**	**NORTH**	**+/- 0.19 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**WARREN STREET (35mm Focal Length)**	**NORTHEAST**	**+/- 0.08 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**WARREN STREET (35mm Focal Length)**	**NORTHEAST**	**+/- 0.08 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	**CATHERINE STREET AT GRAND STREET**	**NORTH**	**+/- 0.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
8	**CATHERINE STREET AT GRAND STREET**	**NORTH**	**+/- 0.10 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	**WILTON AVENUE**	**NORTHWEST**	**+/- 0.18 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
9	**WILTON AVENUE**	**NORTHWEST**	**+/- 0.18 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	**WILTON AVENUE AT HORTON STREET**	**NORTHWEST**	**+/- 0.29 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
10	**WILTON AVENUE AT HORTON STREET**	**NORTHWEST**	**+/- 0.29 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	**WEST MAIN STREET**	**NORTHWEST**	**+/- 0.21 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
11	**WEST MAIN STREET**	**NORTHWEST**	**+/- 0.21 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	**MAIN STREET**	**WEST**	**+/- 0.18 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
12	**MAIN STREET**	**WEST**	**+/- 0.18 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	**CENTER AVENUE AT MAIN STREET**	**SOUTHWEST**	**+/- 0.11 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
13	**CENTER AVENUE AT MAIN STREET**	**SOUTHWEST**	**+/- 0.11 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**MAIN STREET**	**SOUTHWEST**	**+/- 0.08 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
14	**MAIN STREET**	**SOUTHWEST**	**+/- 0.08 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	**MAIN STREET AT NEW CANAAN AVENUE (35mm Focal Length)**	**SOUTH**	**+/- 0.12 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
15	**MAIN STREET AT NEW CANAAN AVENUE (35mm Focal Length)**	**SOUTH**	**+/- 0.12 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**NEW CANAAN WAY**	**SOUTHEAST**	**+/- 0.11 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
16	**NEW CANAAN WAY**	**SOUTHEAST**	**+/- 0.11 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
17	**CENTER AVENUE**	**SOUTHWEST**	**+/- 0.17 MILE**	**NOT VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
18	**WARD STREET**	**SOUTHWEST**	**+/- 0.38 MILE**	**NOT VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	**OHIO AVENUE**	**SOUTHWEST**	**+/- 0.23 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
19	**OHIO AVENUE**	**SOUTHWEST**	**+/- 0.23 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**THAMES STREET**	**SOUTH**	**+/- 0.26 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
20	**THAMES STREET**	**SOUTH**	**+/- 0.26 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	**MAIN STREET**	**SOUTH**	**+/- 0.26 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
21	**MAIN STREET**	**SOUTH**	**+/- 0.26 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	**MAIN STREET**	**SOUTH**	**+/- 0.30 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
22	**MAIN STREET**	**SOUTH**	**+/- 0.30 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
23	**BROAD STREET**	**SOUTH**	**+/- 0.44 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
23	**BROAD STREET**	**SOUTH**	**+/- 0.44 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
24	**BROAD STREET CEMETERY**	**SOUTHEAST**	**+/- 0.45 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
24	**BROAD STREET CEMETERY**	**SOUTHEAST**	**+/- 0.45 MILE**	**YEAR ROUND**

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
25	**NEW CANAAN AVENUE**	**EAST**	**+/- 0.48 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
25	**NEW CANAAN AVENUE**	**EAST**	**+/- 0.48 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
26	**PONUS AVENUE**	**EAST**	**+/- 0.59 MILE**	**NOT VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
27	**PONUS AVENUE**	**EAST**	**+/- 0.74 MILE**	**NOT VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

EVERSOURCE ENERGY

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
28	**GIRARDI STREET**	**NORTHEAST**	**+/- 0.50 MILE**	**NOT VISIBLE**

ALL-POINTS TECHNOLOGY CORPORATION

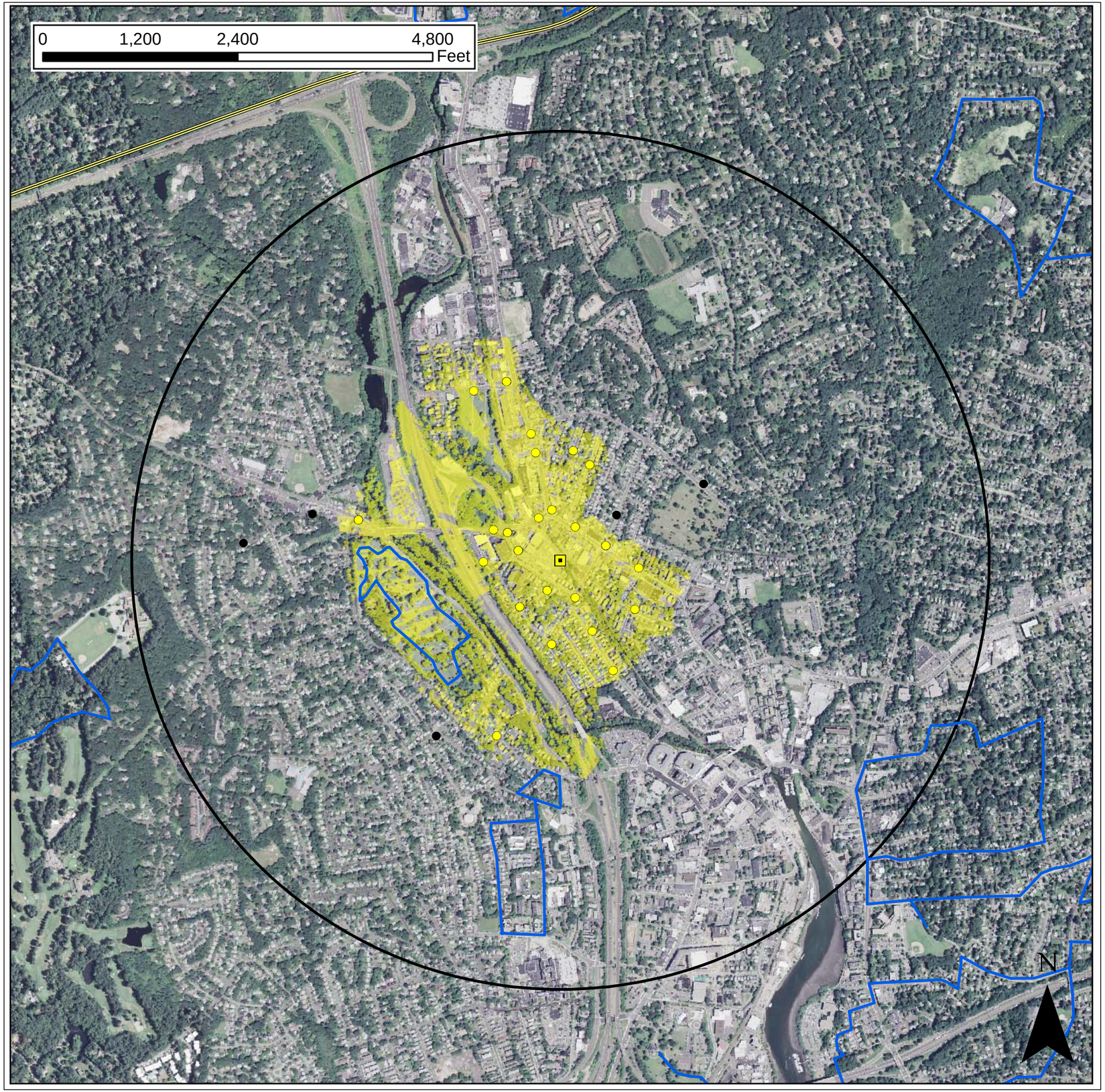
EVERSOURCE ENERGY

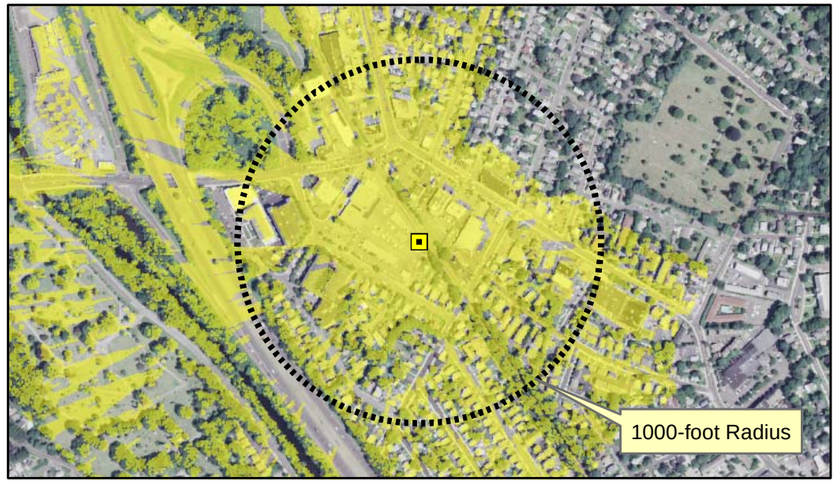
EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
29	**SPRING HILL AVENUE**	**NORTHEAST**	**+/- 0.23 MILE**	**YEAR ROUND**

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
29	**SPRING HILL AVENUE**	**NORTHEAST**	**+/- 0.23 MILE**	**YEAR ROUND**





Viewshed Map – Topo Base

Proposed Wireless Telecommunications Facility
2 Tindall Avenue, Norwalk, CT

Proposed facility height is 150 feet AGL.

Study area encompasses a one-mile radius and includes 2,010 acres of land.

Map compiled 9/24/2014

Map information field verified by APT on 7/10/2014.

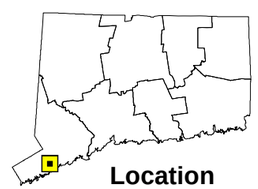
Only those resources located within the extent of the map are depicted. For a complete list of data sources consulted for this analysis, please refer to the Documentation Page.

Legend

- Proposed Tower

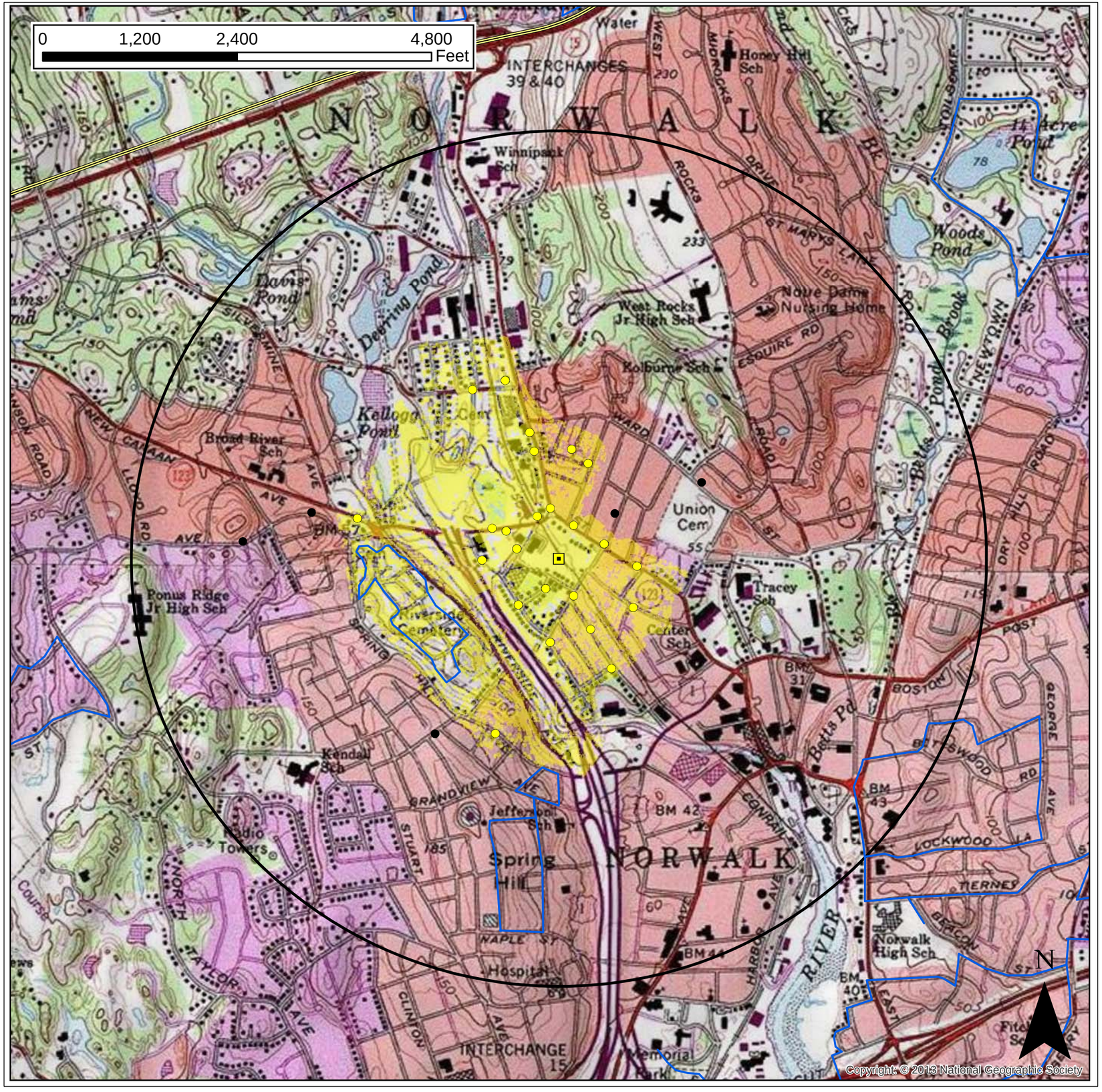
Photo Locations

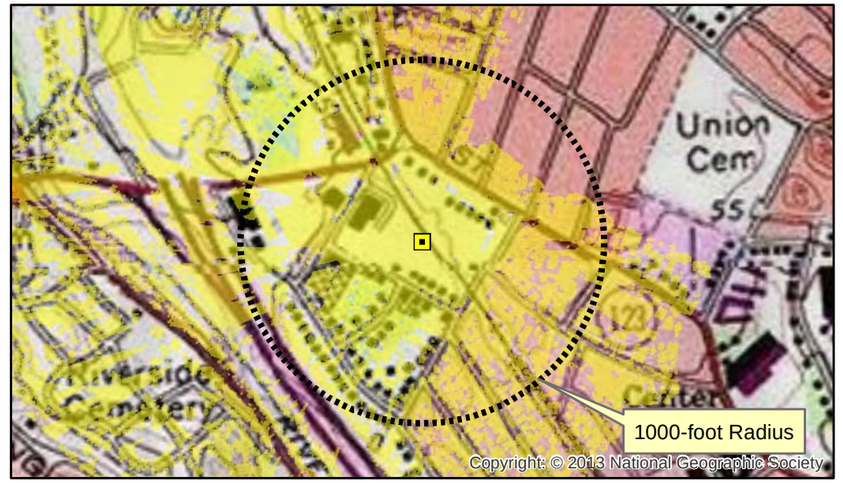
- Balloon Not Visible
- Balloon Visible
- Predicted Visibility (91 Acres)
- Towns
- 1-Mile Study Area
- Scenic Roads
- Trails



Location

ALL-POINTS TECHNOLOGY CORPORATION





Viewshed Map – Topo Base

Proposed Wireless Telecommunications Facility
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Legend

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Photo Locations

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- Towns
- 1-Mile Study Area
- Scenic Roads
- Trails

Location

ALL-POINTS TECHNOLOGY CORPORATION

DOCUMENTATION

SOURCES CONSULTED FOR VIEWSHED MAPS
2 Tindall Avenue
Norwalk, Connecticut

Physical Geography / Background Data

National Oceanic and Atmospheric Administration ^
- *LiDAR land use/land cover data – topography, vegetation, buildings and infrastructure (2000)

United States Geological Survey
- *USGS topographic quadrangle maps – Norwalk South, Norwalk North (1984)

National Resource Conservation Service
- *NAIP aerial photography (2012)

Department of Transportation data
- ^State Scenic Highways (updated monthly)

Heritage Consultants
- ^Municipal Scenic Roads

Cultural Resources

Heritage Consultants
- ^National Register
- ^ Local Survey Data

Dedicated Open Space & Recreation Areas

Connecticut Department of Energy and Environmental Protection (DEEP)
- *DEEP Property (May 2007)
- *Federal Open Space (1997)
- *Municipal and Private Open Space (1997)
- *DEEP Boat Launches (1994)

Connecticut Forest & Parks Association
- ^Connecticut Walk Book West – The Guide to the Blue-Blazed Hiking Trails of Western Connecticut, 19th Edition, 2006.

Other

- ^ConnDOT Scenic Strips (based on Department of Transportation data)

*Available to the public in GIS-compatible format (some require fees).
^ Data not available to general public in GIS format. Reviewed independently and, where applicable, GIS data later prepared specifically for this Study Area.

LIMITATIONS

The visibility analysis map(s) presented in this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography, vegetation, buildings and infrastructure. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2012 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties beyond the host Property was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The photo-simulations in this report are provided for visual representation only. Actual visibility depends on various environmental conditions, including (but not necessarily limited to) weather, season, time of day, and viewer location.