



James Morrissey
Attorney

June 30, 2016

Chairman Stein
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Dear Chairman Stein:

Enclosed please find an original and fifteen copies of The United Illuminating Company's ("UI") petition to the Connecticut Siting Council requesting a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is necessary for the proposed modifications to UI's Ansonia Substation. The project will include the installation of two 115-kV 25 MVAR capacitor banks and associated equipment at the facility (the "Project").

Prior to the submittal of this Petition, UI representatives presented the Project to the City of Ansonia. Pursuant to the Regulations of Connecticut State Agencies § 16-50j-40, all required parties, including the appropriate municipal and governmental agencies and officials and all abutting property owners, are being notified contemporaneously with this submittal.

Should you have any questions, please contact me at 203-499-2864.

A check in the amount of \$625 for the required filing fee is also attached.

Very truly yours,


James R. Morrissey
Attorney
UIL Holdings Corporation
Counsel for The United Illuminating Company

Enclosures

cc: Amy Hicks, Analyst, The United Illuminating Company

CERTIFICATION

This is to certify that on this 30th day of June, 2016, an original and fifteen (15) copies of the foregoing was delivered by hand to the Connecticut Siting Council, 10 Franklin Square, New Britain, CT, and one (1) copy was delivered via U.S. mail, postage prepaid, to the chief elected official of the municipality in which the proposed facility shall be constructed, and notice of this filing was sent to all known property abutters, in accordance with § 16-50j-40 of the Regulations of Connecticut State Agencies.


James R. Morrissey

NAME	ADDRESS
Riverbend Site LLC	22 Maple Street Ansonia, CT 06401
Teodosio Properties LLC	6 Riverside Drive Ansonia, CT 06401
Valley Contractor and Supply Co LLC	8 Riverside Drive Ansonia, CT 06401
Joshua M. Dickinson	46 Franklin Street Ansonia, CT 06401
Carlos Esteves	40 Franklin Street Ansonia, CT 06401
Mayor David S. Casseti	253 Main Street Ansonia, CT 06401

**PETITION TO THE
CONNECTICUT SITING COUNCIL FOR DECLARATORY RULING
OF NO SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT**

for

**MODIFICATIONS
TO THE
ANSONIA SUBSTATION**

**in the
City of Ansonia, New Haven County, Connecticut**

Submitted By:

THE UNITED ILLUMINATING COMPANY

June 30, 2016



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- Attachment B – CT DEEP NDDB Correspondence
- Attachment C – All Points Visibility Analysis
- Attachment D – Noise Analysis
- Attachment E – Exponent EMF
- Attachment F – Wetland Determination and Regulatory Assessment Report
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EXECUTIVE SUMMARY

The United Illuminating Company (“UI” or the “Company”) hereby petitions the Connecticut Siting Council (“Council”) for a Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required pursuant to Section 16-50g et seq. of the Connecticut General Statutes for the UI’s proposed modifications to its existing Ansonia Substation located in the City of Ansonia (“Petition”). The proposed substation modifications are described herein (the “Project”). UI submits that no such Certificate is required because the proposed modifications would not have a substantial adverse environmental effect.

The Independent System Operator – New England (“ISO-NE”) identified the need for the Project as part of its study of the reliability performance and reliability-based transmission needs in the Southwest Connecticut (“SWCT”) electric system. ISO-NE’s analyses were published in the *SWCT Area Transmission 2022 Needs Assessment II* study (June 2014),¹ which determined that the 115-kilovolt (“kV”) system in the Frost Bridge -Naugatuck Valley sub-area² of SWCT is exposed to risks initiated by a single contingency transmission line failure event. If this event occurs during peak conditions, low voltage (e.g., brown outs) would occur in the area.

ISO-NE’s *SWCT Area Transmission 2002 Solutions Study Report* (2015; “Solutions Study”) subsequently identified and recommended solutions to remedy the transmission system issues in SWCT, including in the Frost Bridge – Naugatuck Valley sub-area. As part of the remedies identified for the transmission system in this sub-area, the *Solutions Study* identified the need for two 25 mega volt ampere reactive (“MVAR”) 115-kV transmission capacitor banks at UI’s Ansonia Substation.

Pursuant to ISO-NE’s recommended solution to improve the reliability of the 115-kV transmission system in the Frost Bridge – Naugatuck Valley sub-area, UI proposes to expand the Ansonia Substation by installing the two 25 MVAR capacitor banks and associated equipment. While the proposed Project will constitute “modifications” of the existing substation, no substantial adverse environmental impacts will result, for the following reasons:

¹ The report was prepared by a Working Group led by ISO-NE and including members from UI and Eversource Energy (“Eversource” or “ES”).

² The Frost Bridge – Naugatuck Valley sub-area, which extends from the Eversource’s Frost Bridge Substation in the Town of Watertown south to its Devon Substation in the City of Milford, includes UI’s Ansonia Substation and the two existing 115-kV transmission lines serving it.

- All Project work will be located either within the existing Ansonia Substation yard or on UI's adjacent, presently vacant property. The nearest residential uses are located approximately 145 feet to the west, upslope from the substation, and are screened by vegetation.
- The Ansonia Substation, which was initially developed in 1968, is situated in an industrial-commercial area near the Naugatuck River corridor. The site is zoned for heavy industrial use and is border principally by other heavy industrial uses.
- The proposed Project activities will be located entirely in upland areas; thus, there will be no adverse effects on wetlands, watercourses, floodplains, or vernal pools.
- The visual character of the substation will not adversely change because the new equipment will be visually similar to the existing equipment.
- Electric and magnetic fields ("EMF") levels will remain in compliance with the Council's EMF best management practices.
- Noise analysis results indicate that the potential increase to the ambient sound levels due to the substation expansion will be compliant with the sound level limits established by both the City of Ansonia and the State of Connecticut.

A. PROJECT BACKGROUND AND NEED

As part of a continuing effort to maintain a reliable electric power system in southwestern Connecticut, results generated from ISO-NE's *SWCT Area Transmission 2022 Needs Assessment II* study identified that, under certain contingency scenarios, low voltages can occur in the Frost Bridge – Naugatuck Valley sub-area. In order to mitigate the low voltages that can occur at the Ansonia Substation, UI proposes to upgrade and expand the substation by installing two 115-kV 25 MVAR capacitor banks and related equipment.

The existing substation is located on a 1.5-acre parcel of UI-owned property at 24 Franklin Street in the City of Ansonia, New Haven County. However, another UI-owned property, comprising 1.7 acres, located at 4 Riverside Drive, abuts this parcel; UI presently uses this area principally for materials storage and laydown. Together, these UI-owned properties are referred to herein as “the Site.” Figure A-1 provides an aerial photograph of the existing Ansonia Substation and UI's adjacent property.

Figure A-1: Existing Ansonia Substation



Source: The United Illuminating Company (2016)

The need for the proposed Project was identified by the ISO-NE in its *SWCT 2022 Needs Assessment* study (2014),³ which determined that the 115-kV transmission equipment in the Frost Bridge - Naugatuck Valley sub-area, as well as other sub-areas of SWCT, are exposed to the risks of low voltage and overload conditions. ISO-NE's *SWCT Area Transmission 2022 Solutions Study Report* (February 2015) identified and evaluated several solution alternatives to address these reliability issues. The *Solutions Study* found this proposed Project to be a necessary part of the final suite of recommended system upgrades required to mitigate the identified transmission reliability needs in the Frost Bridge - Naugatuck Valley sub-area.

In particular, along with other projects identified by ISO-NE, the Project will help mitigate reliability issues associated with several contingencies in the southern portion of the Frost Bridge - Naugatuck Valley sub-area, by providing both thermal and voltage support for critical area contingencies. At present, numerous contingencies create conditions under which UI's 115-kV transmission lines and/or buses are subject to overloads, as well as voltage collapse conditions.

B. TECHNICAL DESCRIPTION

The modifications to the Ansonia Substation will be located entirely on UI's existing properties at 24 Franklin Street and 4 Riverside Drive. The existing properties are bounded to the north, south, and east by industrial / commercial uses that front on Riverside Drive and to the west by vacant land (characterized by a steep, wooded slope) and State Route 334 (Franklin Street / Maple Street), which in the vicinity of the substation is bordered by residential dwellings.

The Ansonia Substation is connected to the transmission system via two overhead 115-kV transmission lines that extend into the substation from the northwest. These two 115-kV lines are located within a 100-foot wide transmission line right-of-way ("ROW"). The proposed modifications to the substation will be situated primarily on the northern portion of the substation yard and will extend easterly into UI's adjacent property.

The land is generally flat within the existing substation. The area of the proposed expansion slopes gently away from the substation to the southeast. A variety of low growth vegetation and trees are

³ The *Needs Assessment* study was prepared by the SWCT Working Group, comprised of representatives of ISO-NE, UI, and Eversource Energy.

adjacent to the existing substation along the western and southern boundaries; however, no forested vegetation will be removed for the proposed substation modifications.

B.1. EXISTING FACILITY

The 115-kV Ansonia Substation consists of a combination of mainly low-profile rigid bus, with two overhead air-insulated transmission lines (1594 and 1560-1 lines) connecting inside the substation. Access to the site is provided by an access road that extends across the eastern portion of the property from Riverside Drive. The Site is bounded on the west by a steep slope and to the north by undeveloped property that is zoned for industrial use. The eastern portion of the Site (consisting of UI-owned land that is open or presently used for material storage and laydown) abuts industrial / commercial uses that front on Riverside Drive. Industrial / commercial buildings also border the Site to the south.

The existing 115-kV part of the substation is a two line, one circuit breaker, two distribution transformers, radial bus configuration two transmission circuit disconnect switches, two transformer high side disconnect switches, and various potential transformers, current transformers and station service transformers. In addition, the station has two 13.8-kV distribution buses with a total of 18 feeder breakers, along with four main breakers and one bus tie breaker located inside the two existing Prefabricated Switchgear Enclosures (“PS”) and a control enclosure.

Figure B-1 depicts the substation site on a U.S. Geological Survey topographic map (Ansonia Quadrangle). Figure B-2 provides an aerial-photograph illustrating the existing substation in relation to surrounding land uses.

Figure B-1: Ansonia Substation: General Project Location

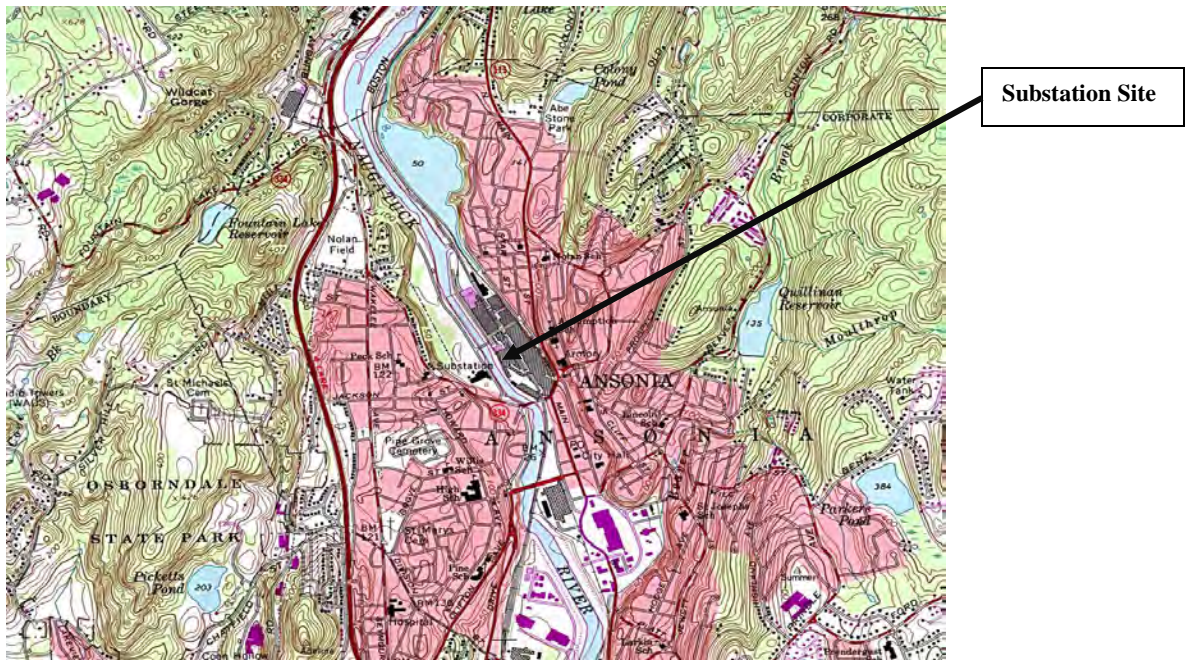
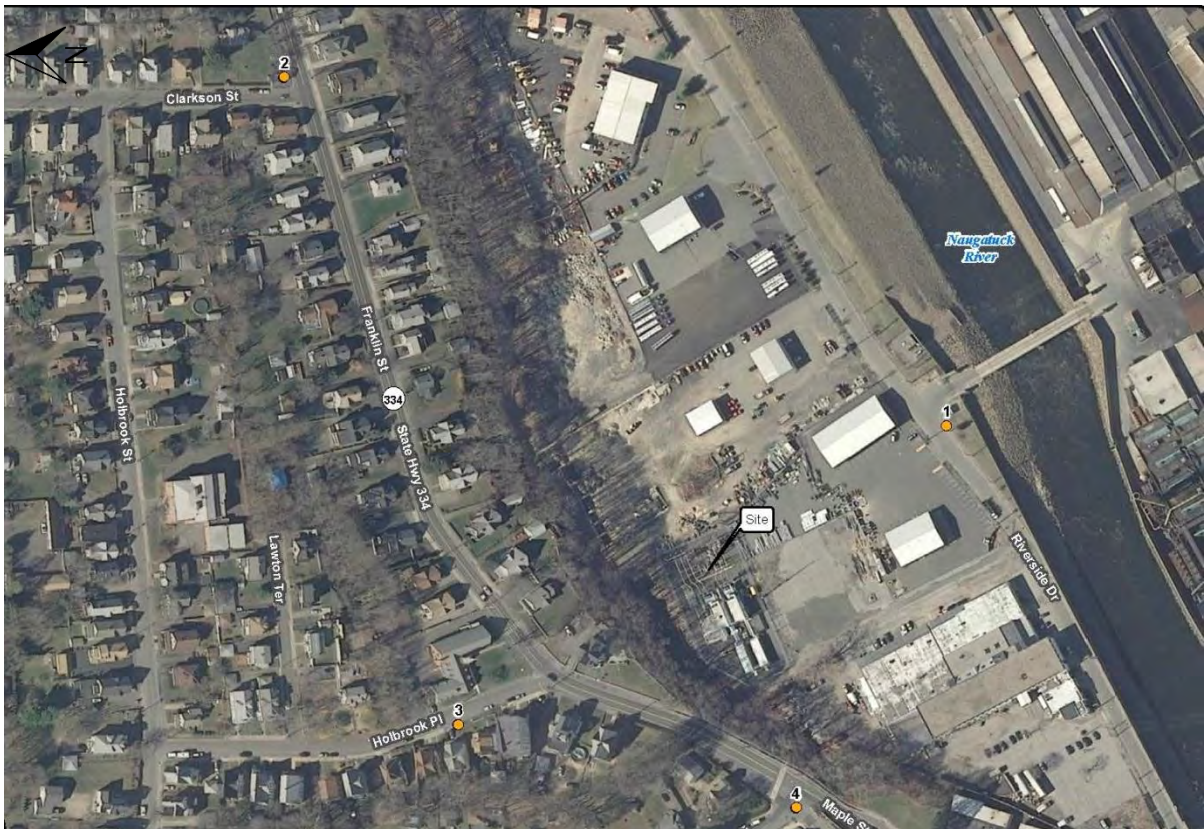


Figure B-2: Aerial Photograph of Ansonia Substation Site and Vicinity



Source: Visibility Analysis, Ansonia Substation (May 2016)

B.2. PROPOSED MODIFICATIONS

The proposed Project will consist of modifications to expand the existing air-insulated, low-profile 115-kV Ansonia Substation by adding the following equipment:

- Two 115-kV 25 MVAR capacitor banks
- Two 115-kV circuit switchers with integral disconnect and ground switches
- High profile 115-kV aluminum tubular bus work supported by station post insulators.
- 115-kV XLPE underground cable with cable terminators
- Two 115-kV SF6 gas insulated circuit breakers
- Two 115-kV vertical break disconnect switches
- Instrument transformers
- Six damping air core reactors
- Miscellaneous steel structures for equipment and bus work support to be installed on concrete spread footing foundations
- Eight shielding masts for lightning protection
- Replacement of existing chain link fence with new 14 feet tall fence with 1 foot of barbed wire

The lightning shielding masts will extend approximately 55 feet above grade. The switchyard low bus will be 16 feet above grade.

The proposed substation modifications will require an expansion of the existing substation fence line to the east, as depicted on the Site Plan in Attachment A. This expansion will require the removal of 16 trees less than six inches in diameter and four trees less than 12 inches in diameter. The locations of the tree removal areas are depicted on drawing SK-04082016 in Attachment A. The expansion will be located entirely on UI-owned property that is presently used for material storage and laydown.

No existing major overhead or underground utilities will require removal or relocation as a result of the construction and operation of the Project.

Figure B-3 provides a visual rendering that depicts the Ansonia Substation, as proposed for expansion with the above-grade Project modifications.

Figure B-3: Visual Rendering of Ansonia Substation with Proposed Project Modifications



Source: Visibility Analysis, Ansonia Substation (May 2016)

C. CONSTRUCTION

C.1. CONSTRUCTION PROCEDURES

The Project will be constructed in accordance with UI engineering and construction specifications, established industry practices, and any conditions of the ruling on the Petition issued by the Council. In general, Project construction activities will take place on approximately 1.3 acres.

C.2. CONSTRUCTION SEQUENCE AND ACTIVITIES

The construction sequence for the proposed modifications to the Ansonia Substation is expected to be as follows:

- Establish field construction areas and prepare staging and lay-down areas;
- Prepare the substation site by installing erosion and sedimentation control measures;
- Perform site development activities, removal of existing paved material and cut and fill of soil to bring site to proper grade;
- Install temporary fencing;
- Install duct banks for underground cable;
- Install substation foundations, conduits, and grounding grid;
- Install high voltage circuit breakers;
- Install steel structures and substation equipment;
- Install underground transmission line interconnections;
- Install fence and gates;
- Commission the substation;
- Install asphalt access drives;
- Complete site restoration activities; and
- Remove temporary erosion and sedimentation control measures after site stabilization is achieved.

Temporary erosion and sediment controls will be installed during the earthwork and construction phases of the Project in accordance with the Connecticut Department of Energy & Environmental

Protection (“CT DEEP”) *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* (“General Permit”), the *Stormwater Pollution Control Plan* (“SWPCP”) that will be prepared for the Project in conjunction with the General Permit, and the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. The anticipated locations of erosion and sedimentation controls are depicted on the approved Project Site Plans. On a weekly basis throughout the Project construction, UI’s environmental compliance inspector will inspect the temporary erosion control measures. UI’s construction contractor will be responsible for maintaining these erosion and sedimentation control devices; for example, any sediment build up generated during construction activities around the erosion control measures will be removed by the contractor and managed appropriately per UI’s Soil, Groundwater & Stormwater Management Plan. In addition, inspections may occur within 24 hours after each qualifying storm event, assessing turbidity and the stability of sediment and erosion controls.

Further, UI’s contractor will be responsible for sequencing construction activities such that earth materials are exposed for a minimum of time before being covered, seeded, or otherwise stabilized to prevent or minimize the potential for erosion. Upon completion of construction, including the restoration and stabilization of areas disturbed by work activities, the contractor will remove and dispose of all erosion-control measures and remove sediment and debris from areas where control measures were used. Any excess sediment will be managed in accordance with UI’s Project specific Soil, Groundwater & Stormwater Management Plan. Portions of the Site that are not otherwise graveled or paved will be stabilized with topsoil, seeded, and mulched.

All construction activities will be conducted in accordance with the D&M Plan as approved by the Council.

The Project Site will be graded to direct post construction stormwater runoff to catch basins along the northeastern fence line. Runoff will be conveyed through a pipe system to an outlet at the Naugatuck River.

C.3. CONSTRUCTION SCHEDULE

The installation and testing of the new substation equipment are expected to occur over an eight-to-nine month period commencing in March 2017. An in-service date of November 2017 is anticipated.

In general, construction hours will be scheduled from 7:00 AM to 5:00 PM, Monday through Friday, although certain critical tasks will require extended work hours. Site preparation, including minor grading and installation of foundations, will take place during the initial three months of construction and will involve the use of excavators and construction vehicles. The installation and testing of substation equipment will take approximately five to six months.

D. ENVIRONMENTAL EFFECTS

The environmental impacts from the Project will be minor, localized to the Site and vicinity, and limited principally to the construction phase(s). The Project, which will be located on upland properties already dedicated to utility use, has been designed and will be constructed to avoid impacts to environmental and cultural resources. UI has performed the necessary environmental due diligence regarding the Project and is confident that the proposed modifications will result in no significant adverse impacts to the environment. Any minor impacts will be mitigated by adherence to UI's Soil, Groundwater, & Stormwater Management Plan, Project-specific SWPCP, and the substation's site specific Spill Prevention Control and Countermeasure Plan.

D.1. SURFACE AND STORMWATER MANAGEMENT DURING CONSTRUCTION ACTIVITIES

Based on the proposed scope of work at the Site (involving a construction footprint of approximately 1.3 acres), UI will register with the CT DEEP under the General Permit for the Discharge of Stormwater and Remediation Wastewaters from Construction Activities (DEEP-WPED-GP-015) and will develop a Project-specific SWPCP. The General Permit registration and SWPCP will detail the control measures and preventative maintenance techniques to be used during Project construction. Attachment A includes Site Plan(s) that illustrate where these measures and techniques are to be installed.

All sediment and erosion controls will be installed and maintained, throughout the Project construction, by UI's construction contractor. Inspections of the sediment and erosion controls will be conducted by a third-party environmental compliance inspector. Inspections will occur once within the first 30 days of installation, weekly during Project construction until disturbed sites have been stabilized, and within 24 hours of a qualifying rain event. In addition to the inspections, after each qualifying rain event, the inspector will monitor for turbidity at the sampling point identified within UI's SWPCP.

Sites disturbed by construction activities will be stabilized to standards outlined in the SWPCP or otherwise restored after the installation of the Project facilities. After these sites have been deemed to be stabilized, inspections will be performed once a month for a period of three months to confirm stabilization has been achieved.

Due to the concentration of certain constituents within the soils on the substation Site, UI will also apply for and will obtain a registration under CT DEEP's General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer. UI will require its construction contractor to adhere to the requirements of this General Permit in order to avoid or minimize the potential for on-site contaminants, which may be encountered in on-site soils or groundwater, to migrate off-site to water resources from construction activities through stormwater. Therefore, groundwater encountered in excavations or stormwater that that accumulates in construction areas will be pumped first to an on-site treatment unit (e.g., a frac tank, carbon vessel(s), bag filter(s), etc.) and then discharged to Ansonia's sanitary sewer infrastructure.

D.2. INLAND WETLANDS, WATERCOURSES, VERNAL POOL, FLOODPLAINS AND OTHER REGULATED AREAS

The Project Site is in an upland area. The closest water resource area is the Naugatuck River, approximately 250 feet to the east of the Site. In the Project vicinity, the Naugatuck River is bordered by a levee system, which protects adjacent lands from flooding. The Site is located within an area designated by the Federal Emergency Management Agency ("FEMA") as "Zone X", which is defined as areas of 2% annual chance of flood; areas of 1% annual chance of flood with average depths less than 1 foot or with drainage areas protected by levees from 1% annual chance of flood (FEMA Flood Insurance Rate Map, City of Ansonia, Map 09009C0402J, October 16, 2013).

On March 3, 2016, a certified soil scientist from Fuss & O'Neill ("F&O") of Manchester, Connecticut conducted a field assessment of wetlands, watercourses, and vernal pools at the Site. Based on the observations during the field assessment no characteristics of wetlands, watercourses, or vernal pools were observed on or adjacent to the Site. In addition to the field assessment, the following resources were reviewed to assist in the determinations:

- USGS 7.5 Minute Topographic Mapping (Ansonia 1984)
- NRCS Web Soil Survey (Release 3.0) (<http://websoilsurvey.nrcs.usda.gov/>)
- Environmental GIS Data for Connecticut (CTECO 2016)

- U.S. Fish and Wildlife National Wetlands Inventory (USFWS 2016)

Attachment F includes the *Wetlands Determination and Regulatory Assessment Report* prepared for the Project.

D.3. SOIL AND GROUNDWATER

From May 16 through May 18, 2016 representatives of UI and F&O assessed both the soil and groundwater conditions at the Site. Results were compared to the CT DEEP Remediation Standard Regulations and the requirements of the U.S. Environmental Protection Agency (“EPA”); 40 CFR 261) to determine the appropriate management techniques for waste soils generated during construction. Attachment J includes the results of these analyses.

Based on these analyses, soils excavated during construction will be handled in accordance with the techniques described in UI’s Soil, Groundwater & Stormwater Management Plan and will be disposed of off-site. The specific off-site disposal locations will depend on the locations of the excavations, with materials disposed of at approved off-site Subtitle D or Subtitle C landfills. (In the non-shaded area depicted on the maps in Attachment J, all material will be disposed of at an approved off-site Subtitle D landfill in accordance with the appropriate solid waste regulations. In the shaded area as depicted on Attachment J maps, all material will be disposed of at an approved Subtitle C landfill in accordance with the appropriate solid waste regulations.)

In addition to soil investigations, UI and F&O personnel also assessed groundwater conditions at the Site. Groundwater was identified at 19 feet below grade. To assess water quality, analytical tests also were performed on samples of groundwater collected at the Site. These analyses showed that contaminants, if any, in the groundwater were below both the laboratory and CT DEEP regulatory detection limits.

D.4. VEGETATION

The majority of the Site is presently either occupied by the existing Ansonia Substation or vacant land used by UI for materials storage and laydown. As a result, the Site encompasses minimal vegetated areas, apart from the transmission line ROW and the vegetated areas that abut the existing substation fence line to the south, west, and north.

To construct the proposed substation modifications, UI will perform certain cutting, trimming, and removal of vegetation on the western and northern portions of the Site. A more detailed description of UI's proposed activities is included in Attachment A, drawing SK-04082016. Based on the historic use of the substation and associated overhead transmission lines, the existing vegetation is characterized by low-growing species, as promoted by UI through its Line Clearance & Vegetation Management Specification. No pesticides or herbicides will be used to remove vegetation during Project construction. If needed, UI will add vegetation to provide visual screening of the substation expansion from the adjacent property located directly to the north.

After the installation of Project facilities, as part of restoration, in areas outside the substation fence that are not otherwise paved or graveled, UI will promote re-vegetation by seeding and mulching (as appropriate) areas affected by the Project.

D.5. LAND USES AND VISUAL RESOURCES

The proposed Project will be developed entirely on UI-owned property, which has been used, in part, for utility purposes for many years. Both of the UI properties are zoned for industrial/commercial uses, including utility structures. Surrounding land uses consist primarily of industrial and commercial uses along River Street. The closest residence is approximately 145 feet from the existing (western) substation fence line and is located along Franklin Street, west of and upslope from the substation. The area between the substation and Franklin Street is sloped and is characterized by woody and other vegetation that forms a visual screen.

To assess the potential visual effects of the Project, UI retained All-Points Technology Corporation (“All-Points”) to perform a visual analysis of the proposed Project area. Attachment C includes All-Points’ before (existing conditions) and after (with the proposed Project modifications) photographs and visual simulations of the Ansonia Substation, the ROW, and vicinity.

Based on the results of the visual simulations, All-Points concluded that the proposed Project facilities will not adversely affect the overall visual character of the Site and surrounding areas. In general, the effects of the proposed Project will represent incremental modifications to views of the Site, which is screened in part by vegetation and is located in an area zoned and used principally for heavy industrial uses.

D.6. NOISE AND AIR QUALITY

The construction of the Project will result in temporary and highly localized (to the Site and immediate vicinity) increases in fugitive dust and noise levels attendant with typical civil construction activities. Ansonia Substation is located in an industrial area where noise levels are presently influenced by various activities. Further, construction work will be scheduled principally during the daytime, when human sensitivity to noise is less than at night. The results of a noise study conducted of the Project area are included in Attachment D.

D.7. CONNECTICUT NATURAL DIVERSITY DATABASE

On February 19, 2016, UI submitted a “Project Screening Form” to the CT DEEP – Bureau of Natural Resources Wildlife Division. On March 14, 2016, CT DEEP responded with a determination that a state-listed species of special concern was identified in the general vicinity of the Project.

Based on further research, UI determined that the species of special concern was a riverine species found in the Naugatuck River. Therefore, UI and F&O conducted additional consultations with the CT DEEP - Inland Fisheries Division, noting that the proposed Project will be located entirely with uplands to the west of the Naugatuck River levee system; will involve no in-water work or other activities near the river; and thus will have no potential for impacting the species of special concern. On March 31, 2016, CT DEEP provided written confirmation that no impact would occur to the species based on the characteristics of the proposed Project. Attachment B includes the correspondence between CT DEEP, UI, and F&O.

D.8. CULTURAL REVIEW AND STUDY

In January 2016, UI retained Heritage Consultants Inc. (“Heritage”) to perform a *Cultural Resource Review/Study* of the proposed Project area. Based on this review, one Area of Potential Effect (“APE”) was identified. However, based on the location of the APE in relation to the Project no impacts would occur. In addition to the Cultural Resource Review, on February 19, 2016 UI & Heritage submitted a “Project Review Form” to the State Historic Preservation Officer (“SHPO”). On April 20, 2016 UI received correspondence from SHPO that no historic properties would be impacted by the Project. The *Cultural Resource Review* and SHPO letter are included in in Attachments G and H.

E. ELECTRIC AND MAGNETIC FIELDS

To assess the potential effects of the proposed Project on EMF, UI retained Exponent, Incorporated (“Exponent”) to model the EMF levels associated with the existing and proposed configurations of the Ansonia Substation and existing 115-kV transmission lines. Exponent’s report is provided in Attachment E; the following summarizes the key findings of the Exponent report.

The effect of the new equipment on existing magnetic-field levels was evaluated by modeling magnetic fields for pre- and post-Project conditions. For the pre-Project conditions, the loading was calculated for the in-service year of 2017 and later in 2023 but without the effect of the proposed substation equipment on the transmission system. Pre-Project magnetic fields were also measured around the substation on April 1, 2016. The post-Project condition uses loadings calculated for the same years, but with the Project in operation, and includes magnetic-field contributions from new equipment. In each condition, two load cases were studied corresponding to 2016 annual peak load and 2023 annual average load.

Comparing pre-Project and post-Project conditions, the calculated magnetic-field level remains the same at the majority of locations around the Ansonia Substation. Project-related increases in the calculated magnetic field occur over a 50-100 feet interval at two locations: (1) beneath the conductors of the existing overhead transmission lines; and (2) above underground feeder circuits on the south side of the substation.

Beneath the existing 115-kV transmission lines, the calculated magnetic field under average load increases from 1.3 milligauss (“mG”) (pre-Project) to 1.8 mG (post-Project) at the edge of the

existing ROW. Within 50 feet of the ROW edge, the calculated magnetic field for post-Project conditions falls within 0.2 mG of pre-Project levels at average load.

Above the underground feeder lines on the south side of the substation, the maximum calculated magnetic field under average load increases from 31 mG (pre-Project) to 32 mG (post-Project). The calculated increase in the magnetic field is evident for 20-30 feet on either side of the centerline of the feeder circuits, falling within 0.2 mG of pre-Project levels at greater distances. Even at peak load, which might occur for a few hours or days in the year, the increase in the post-construction magnetic field is just 4 mG at the centerline, falling to within 0.2 mG of pre-Project levels at greater distances.

Around the proposed fence of the Ansonia Substation, an increase in magnetic field at the southern edge correlated to the underground feeder lines and dropped off within 100 feet. The addition of the capacitors and the proposed Project had little or no discernible effect on the calculated magnetic-field levels on eastern boundaries of the proposed substation fence.

The average magnetic-field values for profiles perpendicular to the proposed fence show increases of <1.5 mG between pre- and post-Project conditions to the east and to the south. The average magnetic-field values for profiles to the west increase by 2.6 mG at the western interior substation fence, but fall to within 0.3 mG of the pre-Project value within 100 feet corresponding to the boundary of an adjacent residence. For comparison, magnetic fields were also measured at the closest residence at 40 Franklin Street. On the sidewalk in front of the residence, a maximum field of about 9 mG attributed to overhead feeder lines was recorded.

Outside the substation fence, the highest calculated measured electric field was 0.18 kilovolts per meter (kV/m) near the northwest corner of the substation fence yard where the conductors rise from the bus work to the transmission tower. Electric-field levels from transmission-line sources will not change significantly with operation of the Project, since the voltage of the overhead 115-kV line will not increase and the electric field is effectively shielded by the substation fence and surrounding vegetation.

In summary, the existing Ansonia Substation is not a significant source of EMF outside the boundaries of the Site or at the connecting transmission line ROW. Modeling of the operation of the substation with and without the proposed addition of capacitor banks and related buswork showed little effect of the Project on magnetic-field levels at the interior fence line within the substation

property. Specifically, the magnetic field at the eastern boundary fence, which corresponds to the property line of the substation, closest the additional capacitors exhibit no meaningful increase. Furthermore, the average magnetic-field from the westernmost interior fence line is calculated to decrease to within 0.3 mG of the pre-Project levels before reaching the property line of the nearest residence, which is about 145 feet away. Both calculated magnetic-field levels and measured electric-field levels around the perimeter of the Ansonia Substation are a small fraction of those recommended for the general public by international health-based standards (ICES and ICNIRP) and are comparable to fields that may be found in homes near major appliances.

F. MUNICIPAL AND COMMUNITY OUTREACH

As a part of the Project planning process, UI consulted with representatives of the City of Ansonia on several occasions. On March 16, 2016, UI representatives met with Mayor David Cassetti to discuss the proposed modifications to the Ansonia Substation. Subsequently, on April 26, 2016, UI sent Mayor Cassetti a copy of a letter sent to abutters of the Ansonia Substation, which described UI's intent to file a Petition with the Council, along with an FAQ document regarding the proposed Project. UI received a Project endorsement from both the Mayor's and the Planning and Zoning offices.

UI also provided notice of the proposed Project to abutters of the Project Site. Attachment I includes a list of the abutters notified, along with a map identifying the abutters' properties.

G. CONCLUSION

Based on the foregoing, UI respectfully submits that the Project will not have a substantial adverse environmental effect and, therefore, does not require a Certificate of Environmental Compatibility and Public Need pursuant to Conn. Gen. Stat. § 16-50k(a).

The name, title, address and telephone number of the person to whom correspondence and communication in regard to this petition are to be addressed is:

Amy S. Hicks
Analyst – Public Outreach & Permitting
The United Illuminating Company
180 Marsh Hill Road
M/S AD-1C
Orange, CT 06477
Telephone: 203.499.2586
Email: amy.hicks@uinet.com

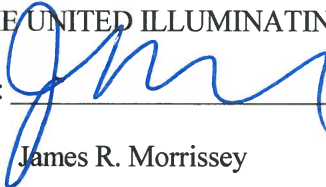
The name, address, and telephone of UI's attorney is:

James R. Morrissey
Attorney
UIL Holdings Corporation
157 Church Street
P.O. Box 1564
New Haven, CT 06506-0901
Telephone: 203.499.2864
Email: james.morrissey@uinet.com

Very truly yours,

THE UNITED ILLUMINATING COMPANY

By: _____



James R. Morrissey

Attachment A

Engineering Drawings

ZONING INFORMATION

ITEM	ITEM	B DISTRICT	HI DISTRICT	REAR LOT
1	MINIMUM LOT AREA	7,500 SQ. FT.	NONE REQUIRED	20,000 SQ. FT.
2	MINIMUM LOT WIDTH	75 FEET	NONE REQUIRED	125 FEET
3	MINIMUM LOT DEPTH	100 FEET	NONE REQUIRED	125 FEET
4	MINIMUM FRONT YARD	20 FEET	NONE REQUIRED	PER DISTRICT, PLUS 10 FEET
5	MINIMUM SIDE YARD	10 FEET	NONE REQUIRED*	PER DISTRICT
6	MINIMUM REAR YARD	25 FEET	NONE REQUIRED**	PER DISTRICT
7	MAXIMUM BUILDING HEIGHT	2 1/2 STORIES 35 FEET	4 STORIES 80 FEET	PER DISTRICT
8	MAXIMUM BUILDING COVERAGE	35 PERCENT	60 PERCENT	PER DISTRICT
9	MAXIMUM IMPERVIOUS COVERAGE	60 PERCENT	NONE REQUIRED	PER DISTRICT

* A 25 FOOT WIDE BUFFER AREA IS REQUIRED WHERE THE DISTRICT ABUTS A RESIDENTIAL DISTRICT WITHOUT AN INTERVENING STREET. NO SIDE YARD IS REQUIRED. IF PROVIDED, SIDE YARDS SHALL HAVE A DEPTH OF NOT LESS THAN 5 FEET.

** A 25 FOOT WIDE BUFFER AREA IS REQUIRED WHERE THE DISTRICT ABUTS A RESIDENTIAL DISTRICT WITHOUT AN INTERVENING STREET. NO REAR YARD IS REQUIRED. IF PROVIDED, REAR YARDS SHALL HAVE A DEPTH OF NOT LESS THAN 12 FEET.

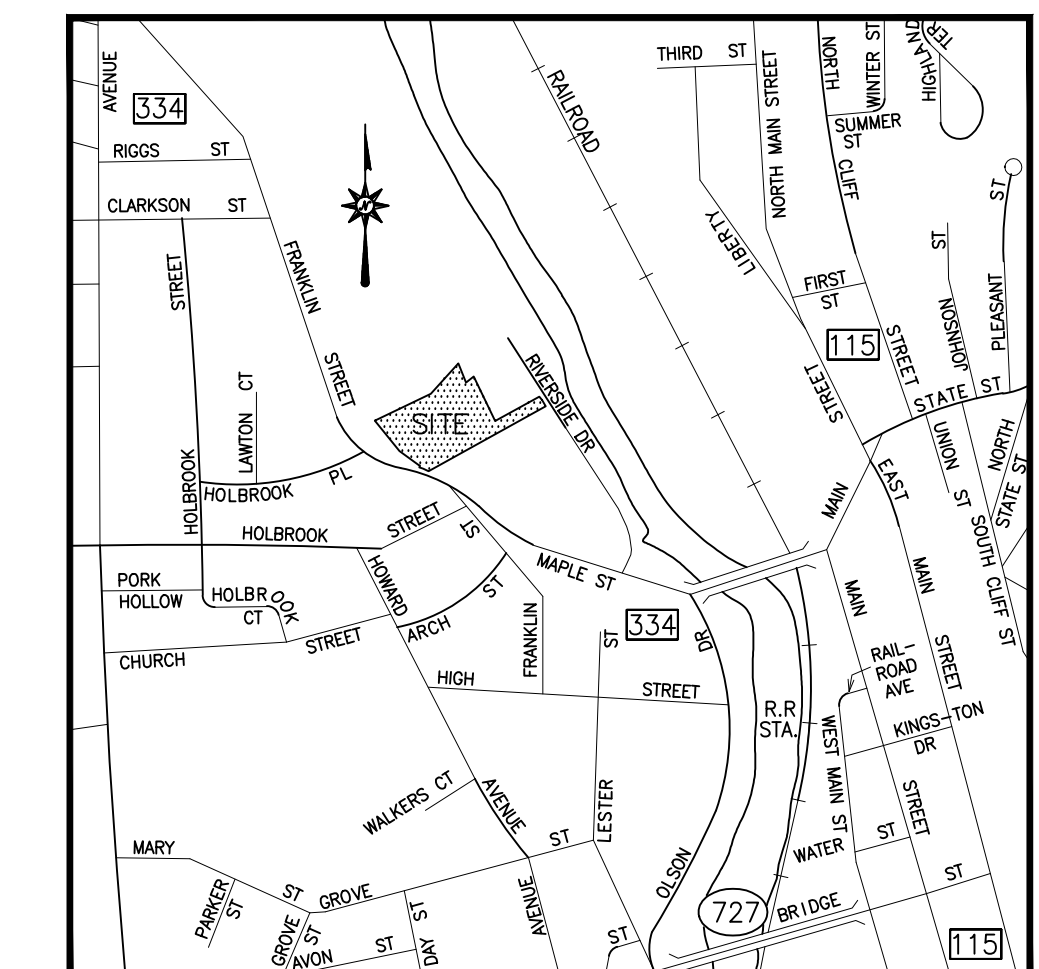
THE COMMISSION MAY WAIVE OR MODIFY THE BUFFER REQUIREMENT, PROVIDED THAT THE COMMISSION FINDS THAT EMBANKMENTS, WALLS, VEGETATION, OR FENCING SERVE AS A SUITABLE SUBSTITUTE.

LEGEND

- Property Line
- Easement Line
- Stone Wall
- Guide Rail
- Chain Link Fence
- Overhead Wires
- Underground Electric Duct
- Underground Electric Line
- Gas Line
- Sanitary Sewer
- Storm Sewer
- Water Line
- Utility Pole
- Utility Pole w/ Light
- Gas Valve
- Catch Basin
- Manhole
- Bollard

REFERENCE MAPS

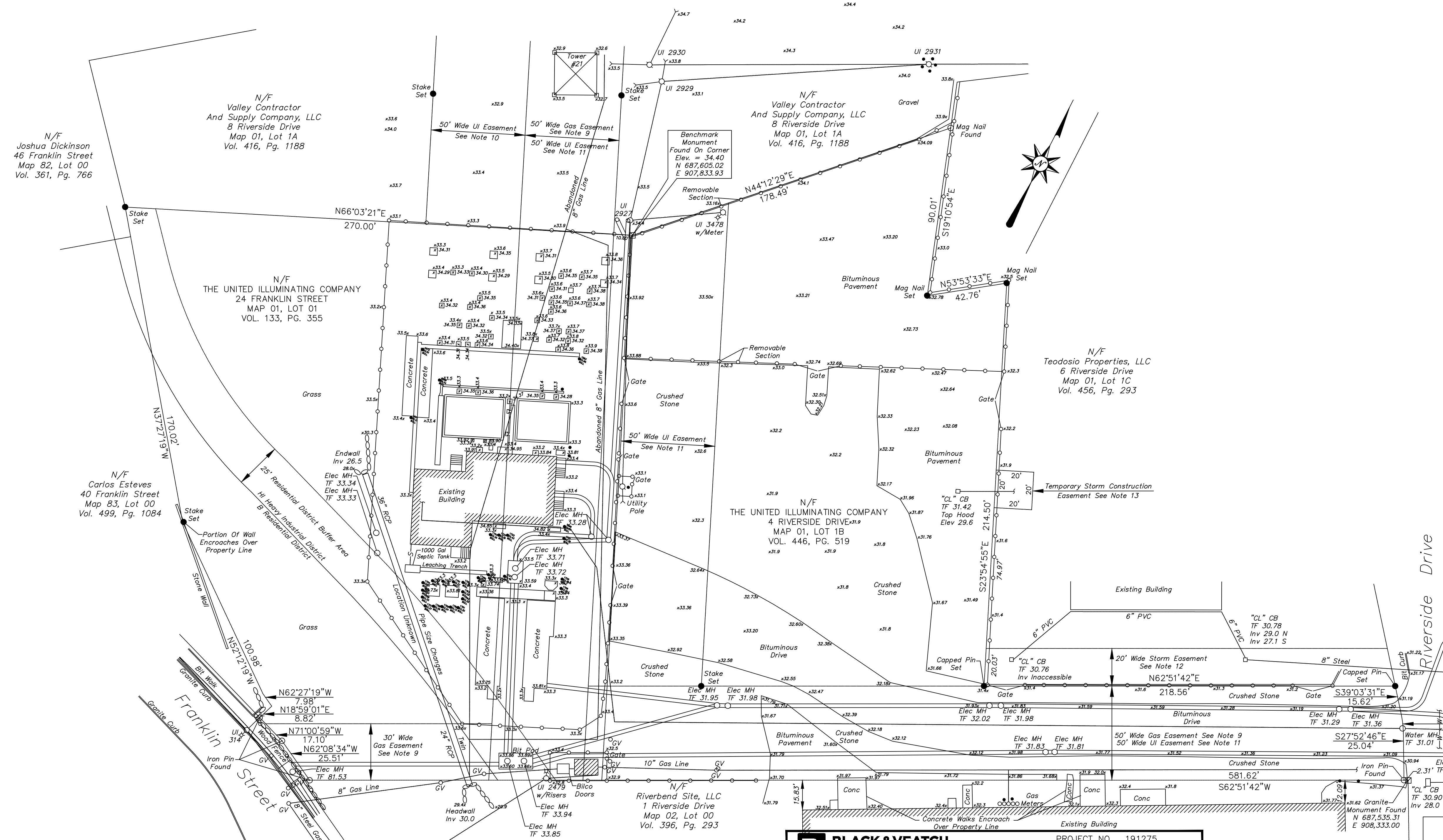
- A. "THE UNITED ILLUMINATING CO. MAP SHOWING PROPERTY ACQUIRED FROM AMERICAN BRASS CO. ANSONIA, CONNECTICUT", SCALE: 1"=40', DATE: FEBRUARY 9, 1967, PREPARED BY BILDES & DISBROW.
- B. "SITE MAP ANSONIA SUBSTATION 24 FRANKLIN STREET ANSONIA, CONNECTICUT", SCALE: 1"=20', DATE: MARCH 20, 1992, PREPARED BY GORDON BILDES.
- C. "SITE GRADING AND UTILITY PLAN ANSONIA SUBSTATION", SCALE: 1"=20', DATE: JULY 15, 1994, PREPARED BY BLACK & VEATCH.
- D. "WOODLOT SUBDIVISION ANSONIA, CONNECTICUT PREPARED FOR CLARENCE STREET, LLC BRIDGEPORT, CONNECTICUT 06608-2225", SCALE: 1"=100', DATE: JULY 10, 1998, PREPARED BY DIVERSIFIED TECHNOLOGIES CORPORATION, ON FILE IN THE ANSONIA LAND RECORDS, MAP 14-21.
- E. "PROPERTY SURVEY - ALTA/ACSM LAND TITLE SURVEY DEPICTING SUBJECT AREAS OF DECLARATION OF ENVIRONMENTAL LAND USE RESTRICTION TDY INDUSTRIES, INC. 1 RIVERSIDE DRIVE ANSONIA, CONNECTICUT", SCALE: 1"=40', DATE: OCTOBER 16, 2000, REVISED THROUGH MARCH 20, 2002, PREPARED BY MILONE & MACBROOM.
- F. "PROPERTY TO BE CONVEYED FROM ANSONIA COPPER AND BRASS, INC. TO VALLEY CONTRACTOR AND SUPPLY COMPANY, LLC", SCALE: 1"=40', DATE: NOVEMBER 11, 2004, PREPARED BY D'AMICO ASSOCIATES, ON FILE IN THE ANSONIA LAND RECORDS, MAP 15-60.
- G. "RECORD MAP PROPERTY BOUNDARY DEPENDENT RESURVEY RE-SUBDIVISION OF LOT 1 ANSONIA COPPER & BRASS, INC. ANSONIA, CONNECTICUT", SCALE: 1"=40', DATE: MAY, 2005, PREPARED BY CLARKE & PEARSON ASSOCIATES, INC., ON FILE IN THE ANSONIA LAND RECORDS, MAP 15-72.
- H. "SITE DEVELOPMENT MAP EDWARD TEODOSIO & SONS LLC RIVERSIDE DRIVE ANSONIA, CONNECTICUT", SCALE: 1"=30', DATE: AUGUST 16, 2006, PREPARED BY CLARKE & PEARSON ASSOCIATES, INC.
- I. "EXHIBIT C: DECLARATION OF ENVIRONMENTAL LAND USE RESTRICTION AND GRANT OF EASEMENT 14 RIVERSIDE DR. RIVERSIDE DRIVE ANSONIA, CT.", SCALE: 1"=50', DATE: OCTOBER 2, 2013, PREPARED BY STANTEC.



VICINITY MAP
NOT TO SCALE

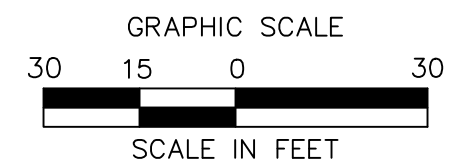
GENERAL NOTES

1. THIS MAP HAS BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
2. THIS PLAN CONFORMS TO HORIZONTAL ACCURACY CLASS A-2 AND VERTICAL ACCURACY CLASS V-2.
3. BOUNDARY DETERMINATION IS A RESURVEY.
4. THE TYPE OF SURVEY PERFORMED IS A PROPERTY SURVEY AND IS INTENDED TO DEPICT THE POSITION OF THE BOUNDARIES WITH RESPECT TO MONUMENTATION FOUND, STRUCTURES, EASEMENTS, ENCROACHMENTS, VISIBLE UTILITIES, AND ROADWAYS.
5. NORTH ARROW, BEARINGS, AND COORDINATES ARE BASED UPON THE CONNECTICUT STATE PLANE COORDINATE SYSTEM, NAD 83, ADJUSTMENT 96, USING GPS.
6. ELEVATIONS ARE BASED UPON NAVD 88, ADJUSTMENT 96, USING GPS.
7. PARCEL IS LOCATED IN B (RESIDENCE DISTRICT) AND HI (HEAVY INDUSTRIAL DISTRICT) AS DEPICTED ON MAP ENTITLED, "OFFICIAL ZONING MAP CITY OF ANSONIA CONNECTICUT FEBRUARY, 1990, REVISED JANUARY 30, 2001.
8. PARCEL IS LOCATED IN FLOOD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AND FLOOD ZONE X (AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD) AS DEPICTED ON THE FIRM FLOOD INSURANCE RATE MAP NUMBER 090900402J, EFFECTIVE DATE: 10/16/2013.
9. PARCEL AREA = 139,252 SQUARE FEET = 3.196 ACRES.
10. THERE ARE NO VISIBLE ENCROACHMENTS OTHER THAN THOSE DEPICTED OR NOTED HEREON. A SUBTERRANEAN SURVEY WAS NOT PERFORMED, THEREFORE THE SURVEYOR HAS NO KNOWLEDGE OF ANY INVISIBLE ENCROACHMENTS.
11. THE UNDERGROUND UTILITIES DEPICTED HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES DEPICTED ARE IN THE EXACT LOCATION INDICATED THOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION.
12. PARCEL IS SUBJECT TO A 30 FOOT WIDE EASEMENT AND RIGHT OF WAY FOR GAS MAINS, RECORDED IN VOLUME 98, PAGE 229 OF THE ANSONIA LAND RECORDS.
13. PARCEL IS TOGETHER WITH A 50 FOOT WIDE EASEMENT, RECORDED IN VOLUME 133, PAGE 357 OF THE ANSONIA LAND RECORDS.
14. PARCEL IS TOGETHER WITH A 50 FOOT WIDE EASEMENT, RECORDED IN VOLUME 255, PAGE 836 OF THE ANSONIA LAND RECORDS.
15. PARCEL IS TOGETHER WITH A 20 FOOT WIDE PERMANENT EASEMENT FOR STORM WATER RUNOFF INTO THE EXISTING STORM WATER SEWER RECORDED IN VOLUME 446, PAGE 519 OF THE ANSONIA LAND RECORDS.
16. PARCEL IS TOGETHER WITH A TEMPORARY CONSTRUCTION EASEMENT FOR STORM WATER RUNOFF INTO THE RELOCATED CATCH BASIN, RECORDED IN VOLUME 446, PAGE 519 OF THE ANSONIA LAND RECORDS.



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PROJECT NO. 191275



No	Date	Revision	By	Chkd.	Engr.	Supr.
B	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191272-ANSONIA CAPACITOR BANK ADDITION	SLG	-	SMR	ALL
A	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191272-CAP BANK ADDITION	DCL	-	SMR	ALL

SEQUENCE No. _____ DRAWING NUMBER
55210-003A

PRELIMINARY

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

JENNIFER MARKS L.S. #17939

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SIGNATURE AND EMPLOYED SEAL OF THE ABOVE NAMED LAND SURVEYOR.



355 Research Parkway
Meriden, CT 06450
(203) 630-6408
(203) 630-2615 Fax

ANSONIA SUBSTATION
4 RIVERSIDE DRIVE
24 FRANKLIN STREET
ANSONIA, CONNECTICUT

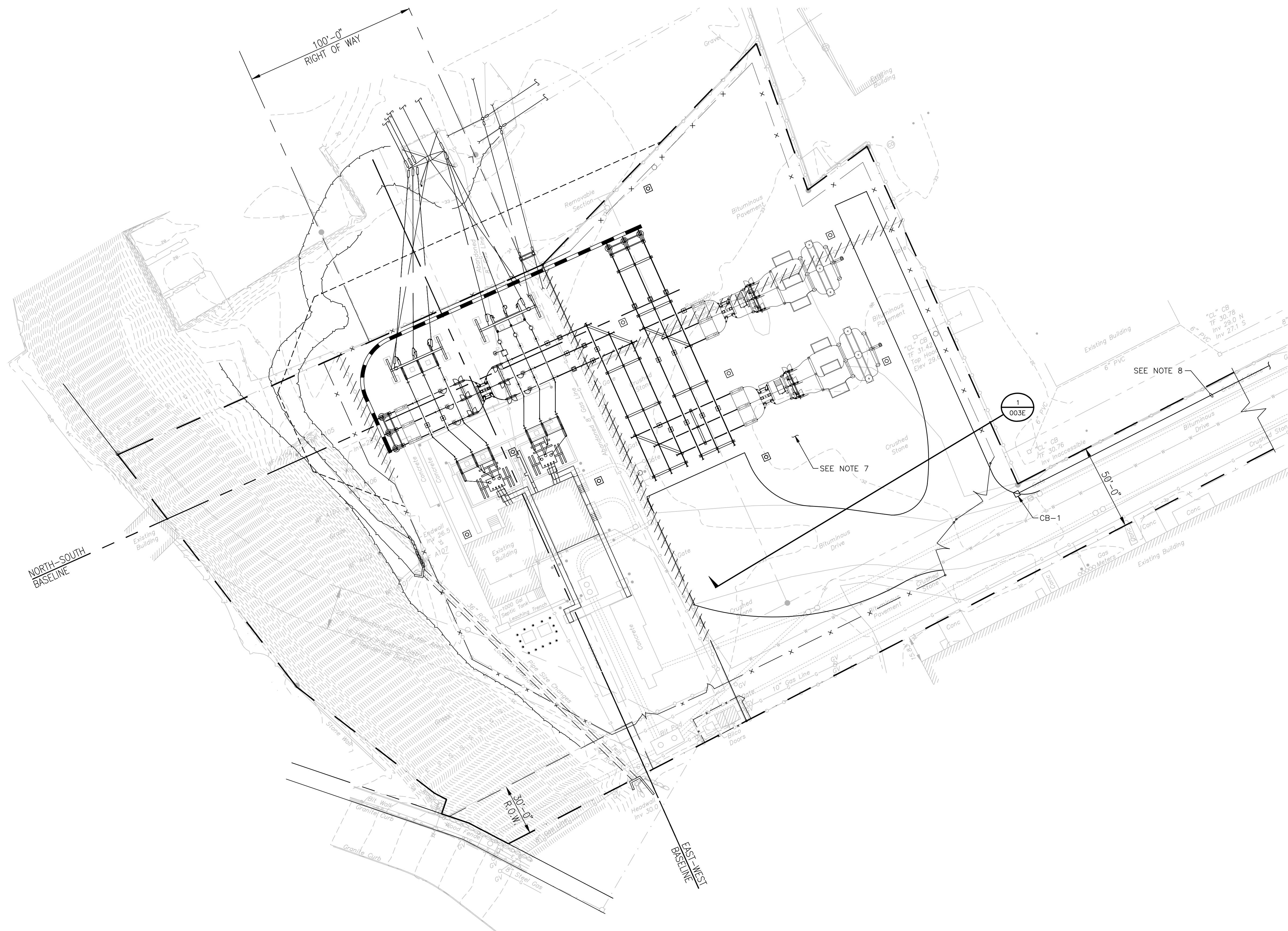
Revised	Date	Desc.

Surveyed D.F.L.
Drawn D.C.L.
Checked J.M.
Approved J.M.
Scale 1"=30'
Project No. 1652866
Date 03/02/16
CAD File: EX165286601

PROPERTY/
TOPOGRAPHIC
SURVEY

Sheet No.

EX-1



LEGEND

	PROPERTY LINE
	EASEMENT LINE
	STONE WALL
	GUIDE RAIL
	CHAIN LINK FENCE
	OVERHEAD WIRES
	UNDERGROUND ELECTRIC DUCT
	UNDERGROUND ELECTRIC LINE
	GAS LINE
	SANITARY SEWER
	STORM SEWER
	WATER LINE
	UTILITY POLE
	UTILITY POLE W/ LIGHT
	GAS VALVE
	CATCH BASIN
	MANHOLE
	BOLLARD
	FENCE TO BE REMOVED
	SUBSTATION FENCE
	TEMPORARY SUBSTATION FENCE

GENERAL NOTES

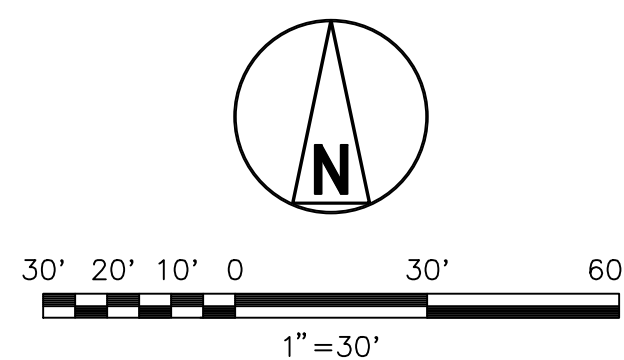
- GRADE SHALL SLOPE UNIFORMLY BETWEEN FINISH SPOT ELEVATIONS AND CONTOURS SHOWN ON THE PLANS.
- SLOPES SHALL BE 3(H):1(V) OR FLATTER, UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS RESPONSIBLE FOR TYING FINISHED CONTOURS INTO EXISTING CONTOURS IN AREAS WHERE THERE IS INSUFFICIENT SURVEY DATA OF THE EXISTING GRADE.
- EXISTING CONTOURS AND SPOT ELEVATIONS ARE BASED ON THE 03/25/2016 PROPERTY/TOPOGRAPHIC SURVEY PRODUCED BY XXXXXX. COORDINATES ARE BASED ON THE CONNECTICUT STATE PLANE COORDINATE SYSTEM NAD 83, ADJUSTMENT 96 AND ELEVATIONS REFER TO DATUM NAVD 88, ADJUSTMENT 96.
- ALL AREAS OUTSIDE OF THE SUBSTATION THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITIONS, AND STABILIZED, UNLESS NOTED OTHERWISE.
- THE GENERAL CONSTRUCTION CONTRACTOR SHALL REMOVE ASPHALT OR BITUMINOUS PAVEMENT AND CRUSHED STONE UNIFORMLY THROUGHOUT AREA OF SITE EXPANSION. REMOVED CRUSHED STONE MAY BE UNIFORMLY SPREAD ACROSS EXPANSION AREA. SEE DRAWING 5210-003D FOR BASE AND SURFACE COURSE INFORMATION.
- THE GENERAL CONSTRUCTION CONTRACTOR SHALL REMOVE ALL ASPHALT OR BITUMINOUS PAVEMENT WITHIN THE AREA OF SITE EXPANSION. ALL PAVEMENT SHALL BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
- THE GENERAL CONSTRUCTION CONTRACTOR SHALL INSTALL A CATCH BASIN AND STORMWATER PIPING TO CONNECT TO CITY STORM SEWER SYSTEM.
- REMOVE EXISTING FENCE AS SHOWN ON DRAWING. SEE DRAWING 5210-003D FOR FENCE ALIGNMENT AND INFORMATION.

REFERENCE DRAWINGS

EXISTING SITE SURVEY PLAN	55210-003A
EROSION AND SEDIMENT CONTROL PLAN	55210-003C
SURFACING AND FENCING PLAN	55210-003D
GRADING AND DRAINAGE DETAILS	55210-003E
EROSION AND SEDIMENT CONTROL DETAILS	55210-003F
15 FT SUBSTATION FENCE DETAILS	55210-003G
CONSTRUCTION FACILITIES PLAN	55210-801
9 FT SUBSTATION TEMPORARY FENCE DETAILS	55210-801A

**NEW DRAWING
PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION



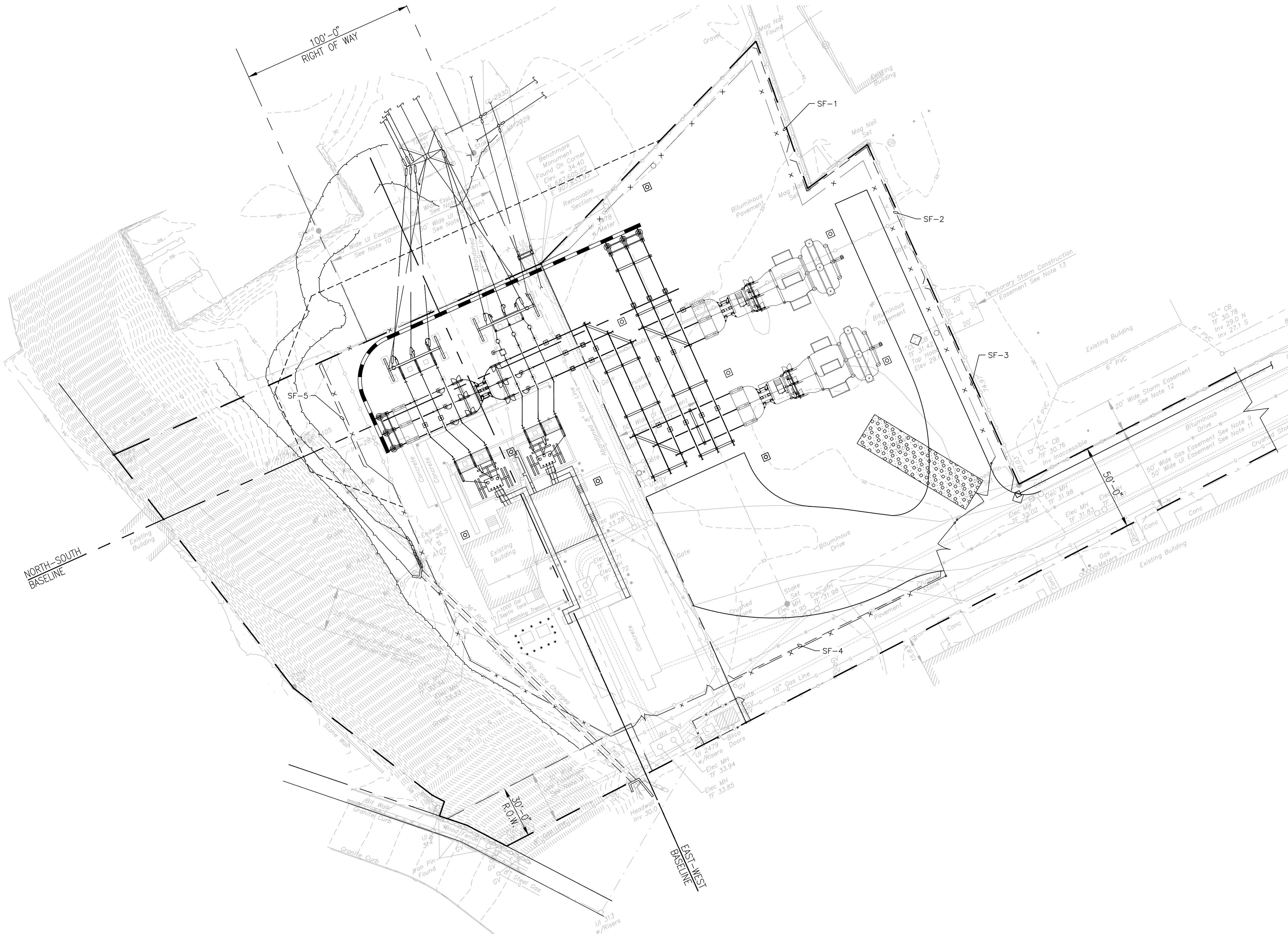
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CHECKED	-	DATE	-				
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	A	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-CAPACITOR BANK ADDITION	JPH	-	SMR	BB
	NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.

1	05/2016	ANSONIA CAPACITOR BANK ADDITION	JPH	-	SMR	BB	
No	Date	Revision	By	Chkd.	Engr.	Supv.	

The United Illuminating Company

GRADING AND DRAINAGE
PLAN
ANSONIA SUBSTATION

CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
-	-	55210-003B



LEGEND

- PROPERTY LINE
- - - EASEMENT LINE
- ○ ○ ○ ○ STONE WALL
- ○ — GUIDE RAIL
- ○ - ○ - CHAIN LINK FENCE
- ○ — OVERHEAD WIRES
- ○ - ○ - UNDERGROUND ELECTRIC DUCT
- ○ - ○ - UNDERGROUND ELECTRIC LINE
- ○ — GAS LINE
- ○ - SANITARY SEWER
- - - STORM SEWER
- - - WATER LINE
- UTILITY POLE
- ○ UTILITY POLE W/ LIGHT
- ○ ○ ○ ○ GAS VALVE
- CB
- MH
- BOLLARD
- ○ — SILT FENCE
- ◇ INLET PROTECTION
- [Pattern] TRACK PAD
- x - SUBSTATION FENCE
- - - TEMPORARY SUBSTATION FENCE

NOTES

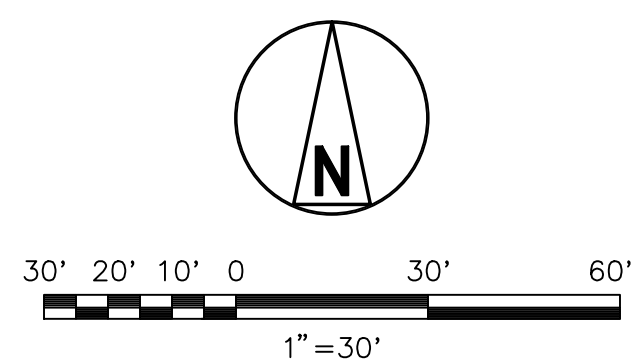
- SEE DRAWING 5210-003B FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
- SEE DRAWING 55210-003F FOR EROSION AND SEDIMENT CONTROL DETAILS.
- SUBSTATION LIMIT OF DISTURBANCE AREA IS 76,000 SF.
- SEE STORMWATER POLLUTION CONTROL PLAN DEVELOPED BY LTR FOR ADDITIONAL CONSTRUCTION STORMWATER INFORMATION.
- LOCATION OF CONCRETE WASHOUT AND MATERIAL STOCKPILE SHALL BE CONFIRMED BY CONSTRUCTION MANAGER.

REFERENCE DRAWINGS

EXISTING SITE SURVEY PLAN	55210-003A
GRADING AND DRAINAGE PLAN	55210-003B
SURFACING AND FENCING PLAN	55210-003D
GRADING AND DRAINAGE DETAILS	55210-003E
EROSION AND SEDIMENT CONTROL DETAILS	55210-003F
15' FT. SUBSTATION FENCE DETAILS	55210-003G
CONSTRUCTION FACILITIES PLAN	55210-801
9' FT. SUBSTATION TEMPORARY FENCE DETAILS	55210-801A

NEW DRAWING PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION



DESIGNER	SMR	DRAWN	JPH				
CHECKED		DATE					
PROJECT #	191275						
NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.	
B	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	JPH		SMR	BB	
A	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-CAPACITOR BANK ADDITION	JPH		SMR	BB	

1	05/2016	ANSONIA CAPACITOR BANK ADDITION	JPH		SMR	BB											
No	Date	Revision	By	Chkd.	Engr.	Supv.	Chkd.										



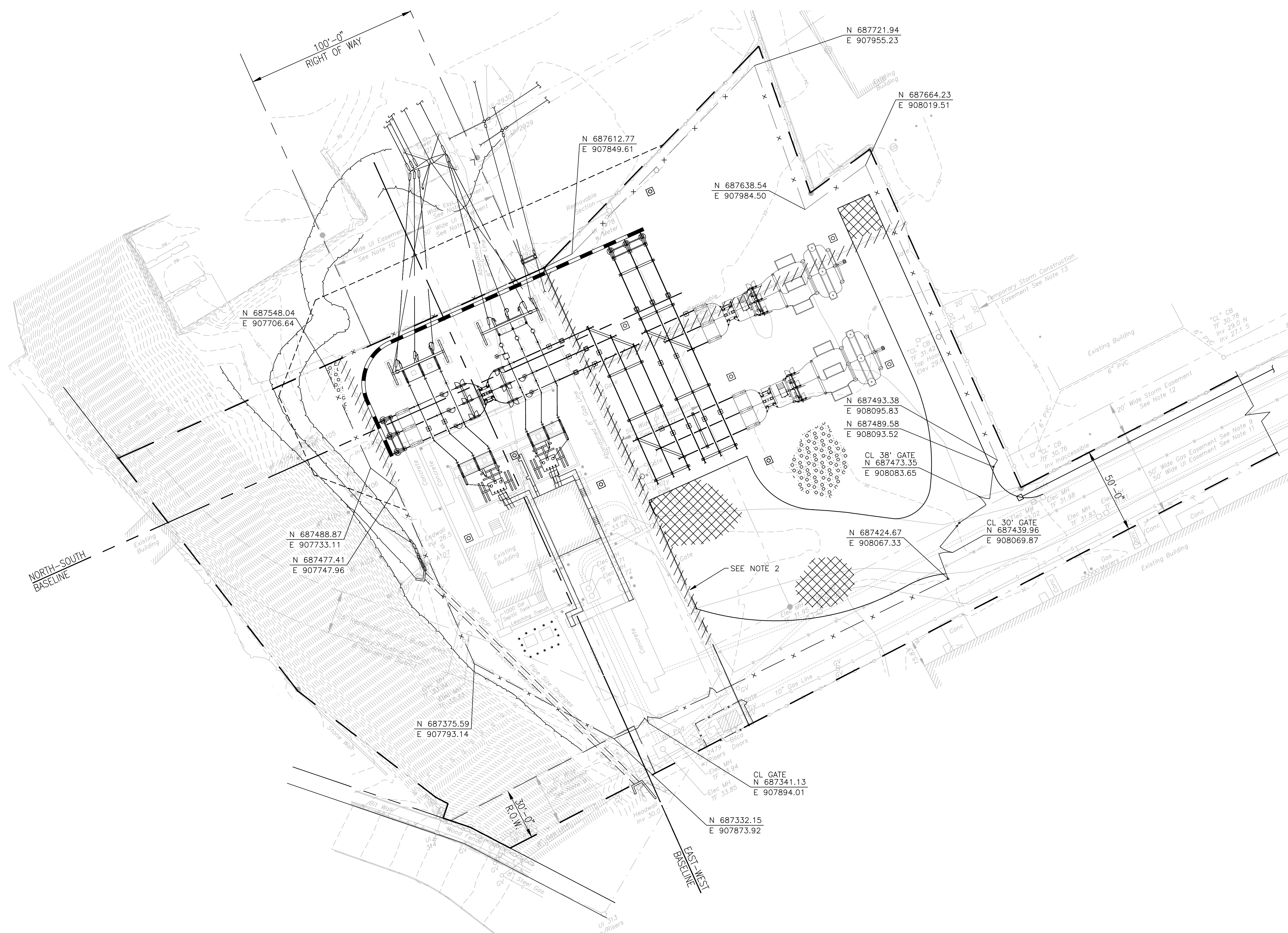
The United Illuminating Company

Drawn	JPH	Date	02/22/2016	Scale:	1"=30'
Design Engr.		Design Supv.			

EROSION AND SEDIMENT CONTROL PLAN

ANSONIA SUBSTATION

CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
-	-	55210-003C



LEGEND

	PROPERTY LINE
	EASEMENT LINE
	STONE WALL
	GUIDE RAIL
	CHAIN LINK FENCE
	OVERHEAD WIRES
	UNDERGROUND ELECTRIC DUCT
	UNDERGROUND ELECTRIC LINE
	GAS LINE
	SANITARY SEWER
	STORM SEWER
	WATER LINE
	UTILITY POLE
	UTILITY POLE W/ LIGHT
	GAS VALVE
	CATCH BASIN
	MANHOLE
	BOLLARD
	FENCE TO BE REMOVED
	AGGREGATE SURFACING
	ASPHALT PAVEMENT
	SUBSTATION FENCE
	TEMPORARY SUBSTATION FENCE

NOTES

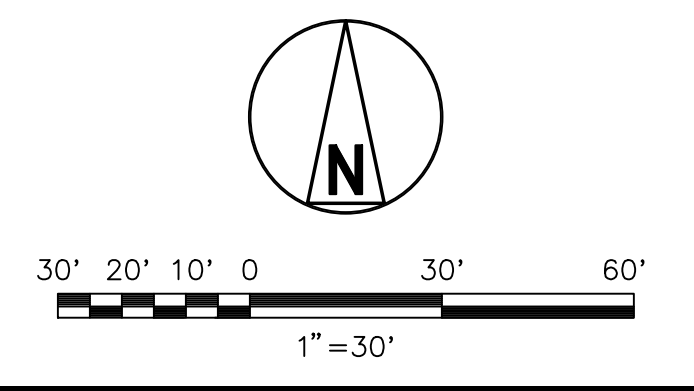
1. SEE DRAWING 55210-003G AND 55210-801A FOR FENCING DETAILS.
2. EXISTING FENCE TO BE REMOVED AS SHOWN ON DRAWING.
3. ANY EXISTING TREES WITHIN PROPOSED FENCE LINE SHALL BE REMOVED.

REFERENCE DRAWINGS

EXISTING SITE SURVEY PLAN	55210-003A
GRADING AND DRAINAGE PLAN	55210-003B
EROSION AND SEDIMENT CONTROL PLAN	55210-003C
EROSION AND DRAINAGE DETAILS	55210-003E
EROSION AND SEDIMENT CONTROL DETAILS	55210-003F
15' FT. SUBSTATION FENCE DETAILS	55210-003G
CONSTRUCTION FACILITIES PLAN	55210-801
9' FT. SUBSTATION TEMPORARY FENCE DETAILS	55210-801A

**NEW DRAWING
PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION



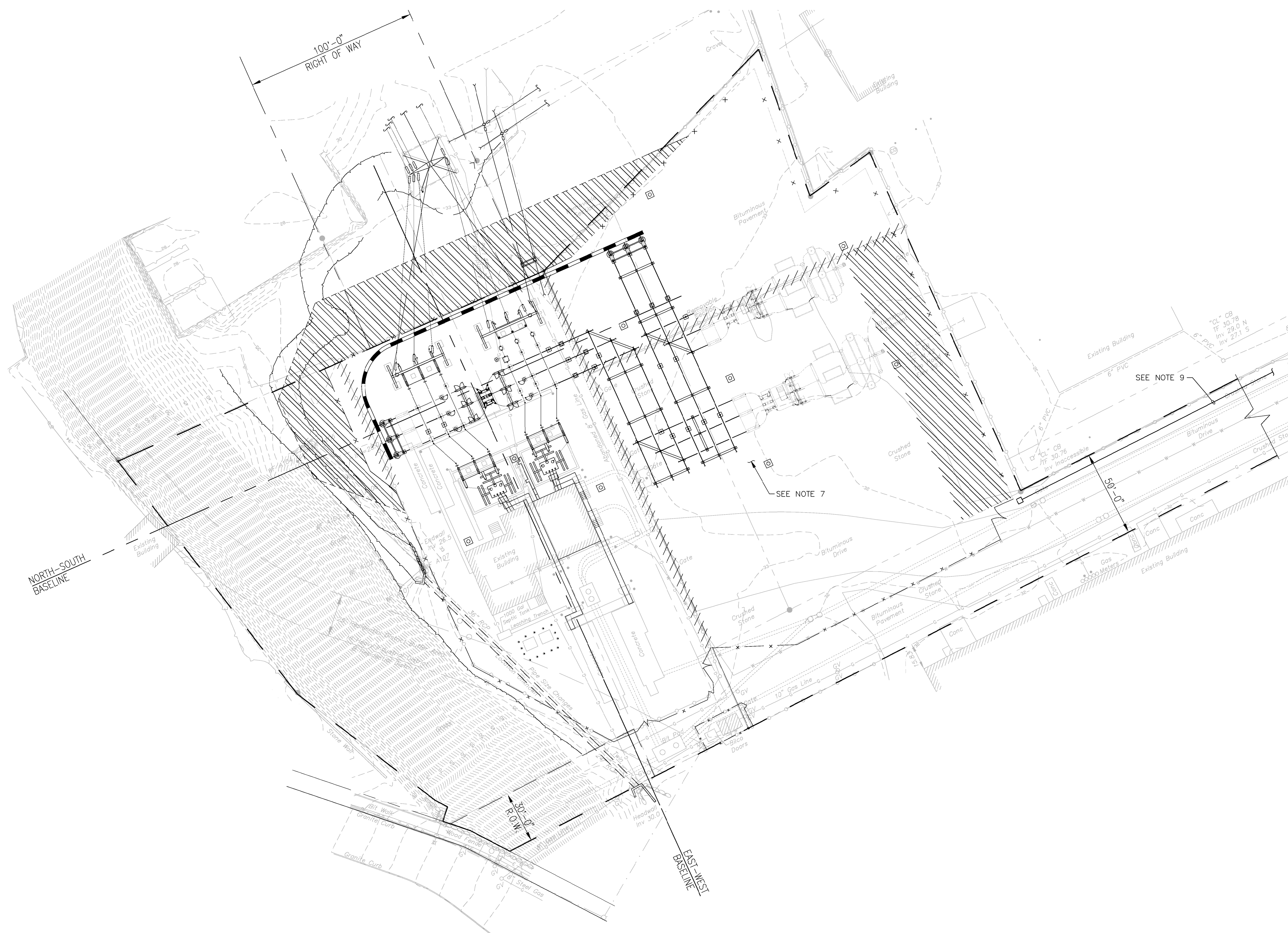
BLACK & VEATCH Building a world of difference®	
DESIGNER SMR	DRAWN JPH
CHECKED	DATE
PROJECT # 191275	
B 05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION
A 04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-CAPACITOR BANK ADDITION
NO	DATE REVISION
JPH	SMR BB
JPH	SMR BB
DRN	CHKD DESN SUPR.

1	05/2016	ANSONIA CAPACITOR BANK ADDITION	JPH	SMR	BB
No	Date	Revision	By	Chkd.	Engr. Supv.

The United Illuminating Company

Drawn JPH	Date 02/22/2016	Scale: 1" = 30'
Chkd. -	Design Engr. -	Design Supv. -

SURFACING AND FENCING PLAN	
ANSONIA SUBSTATION	
CAD FILE NAME	SEQUENCE No.
---	---
DRAWING NUMBER	55210-003D



LEGEND

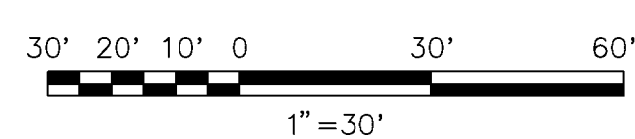
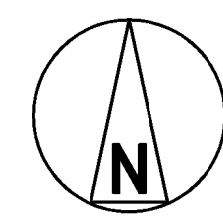
- PROPERTY LINE
- EASEMENT LINE
- STONE WALL
- GUIDE RAIL
- CHAIN LINK FENCE
- OVERHEAD WIRES
- UNDERGROUND ELECTRIC DUCT
- UNDERGROUND ELECTRIC LINE
- GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER LINE
- UTILITY POLE
- UTILITY POLE W/ LIGHT
- GAS VALVE
- CATCH BASIN
- MANHOLE
- BOLLARD
- FENCE TO BE REMOVED
- SUBSTATION FENCE
- TEMPORARY SUBSTATION FENCE
- TREE REMOVAL AREA

REFERENCE DRAWINGS

- EXISTING SITE SURVEY PLAN 55210-005A
- GRADING AND DRAINAGE PLAN 55210-0033
- POSITION AND DIMENSION CONTROL PLAN 55210-0050
- SURFACING AND FINISH PLAN 55210-0030
- GRAVING AND DRAINAGE DETAILS 55210-0058
- POSITION AND DIMENSION CONTROL DETAILS 55210-0037
- 15' - SUBSTATION FENCE DETAILS 55210-0056
- CONSTRUCTION FACILITIES PLAN 55210-80
- 3' - 1' SUBSTATION TEMPORARY FENCE DETAILS 55210-80'A

**NEW DRAWING
PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION



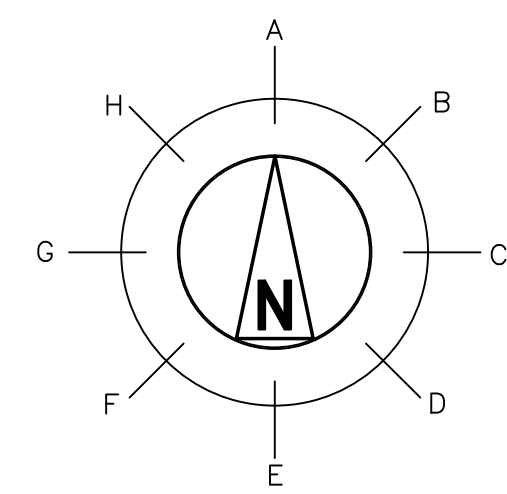
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CHECKED	-	DATE	-						
PROJECT #	19275								
NO	DATE	ISSUED FOR UI 30% REVIEW-PROJECT 191275-CAPACITOR BANK ADDITION	JPH	-	SMR	BB			
		REVISION	DRN	CHKD	DES	SUPR.			

1	03/2016	ANSONIA CAPACITOR BANK ADDITION	JPH	-	SMR	BB	Drawn	JPH	Date	02/22/2016	Scale:	1"=30'
No	Date	Revision	By	Chkd.	Engr.	Supv.	Chkd.	-	Design Engr.	-	Design Supv.	-



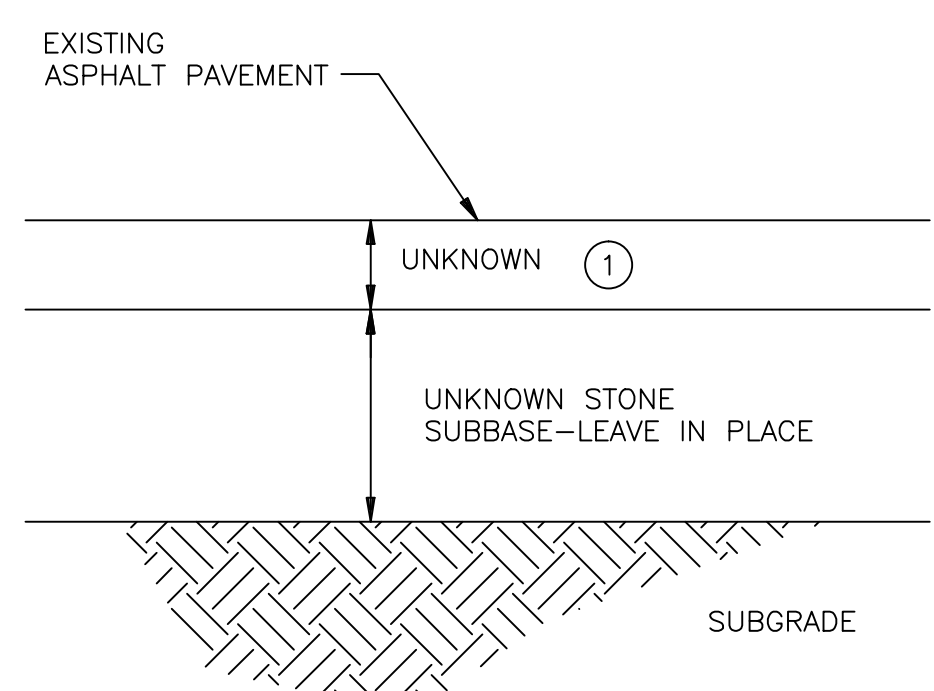
TEMPORARY FENCE
TREE REMOVAL PLAN
ANSONIA SUBSTATION

CAUTION NAME	SEQUENCE NO.	DRAWING NUMBER
-	-	SK-04082016



CATCH BASIN TABLE																								REMARKS
STRUCTURE NO.	DRAWING NO.	CENTERLINE COORDINATES		STRUCTURE SIZE ID	TOP OF GRATE ELEVATION	BOTTOM OF CATCH BASIN ELEVATION	INLET & OUTLET PIPE INFORMATION																	
							A		B		C		D		E		F		G		H			
		INV EL	DIA				INV EL	DIA	INV EL	DIA	INV EL	DIA	INV EL	DIA	INV EL	DIA	INV EL	DIA	INV EL	DIA	INV EL	DIA		
CB-1	003B	687469.82	908108.93	--	LTR	LTR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		

ALL DIMENSIONS ARE IN FEET, EXCEPT DIAMETER, WHICH IS IN INCHES FOR PIPELINE MATERIAL SEE PIPELINE LIST



1. REMOVE ASPHALT PAVEMENT THROUGHOUT EXPANSION AREA TO UNIFORM DEPTH.
2. PLACE ANY CRUSTED STONE UNIFORMLY ACROSS EXPANSION AREA.

SECTION 1
NO SCALE
SEE DWG 003B

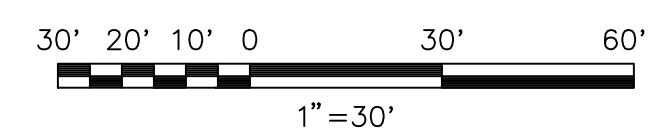
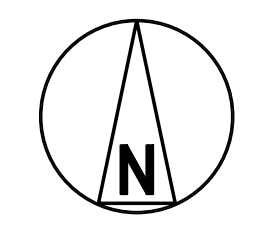
NOTES
1. SEE DRAWING 55210-003B FOR GRADING AND DRAINAGE PLAN.

REFERENCE DRAWINGS

EXISTING SITE SURVEY PLAN	55210-003A
GRADING AND DRAINAGE PLAN	55210-003B
EROSION AND SEDIMENT CONTROL PLAN	55210-003C
SURFACING AND FENCING PLAN	55210-003D
EROSION AND SEDIMENT CONTROL DETAILS	55210-003F
15' FT. SUBSTATION FENCE DETAILS	55210-003G
CONSTRUCTION FACILITIES PLAN	55210-801
9' FT. SUBSTATION TEMPORARY FENCE DETAILS	55210-801A

**NEW DRAWING
PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION



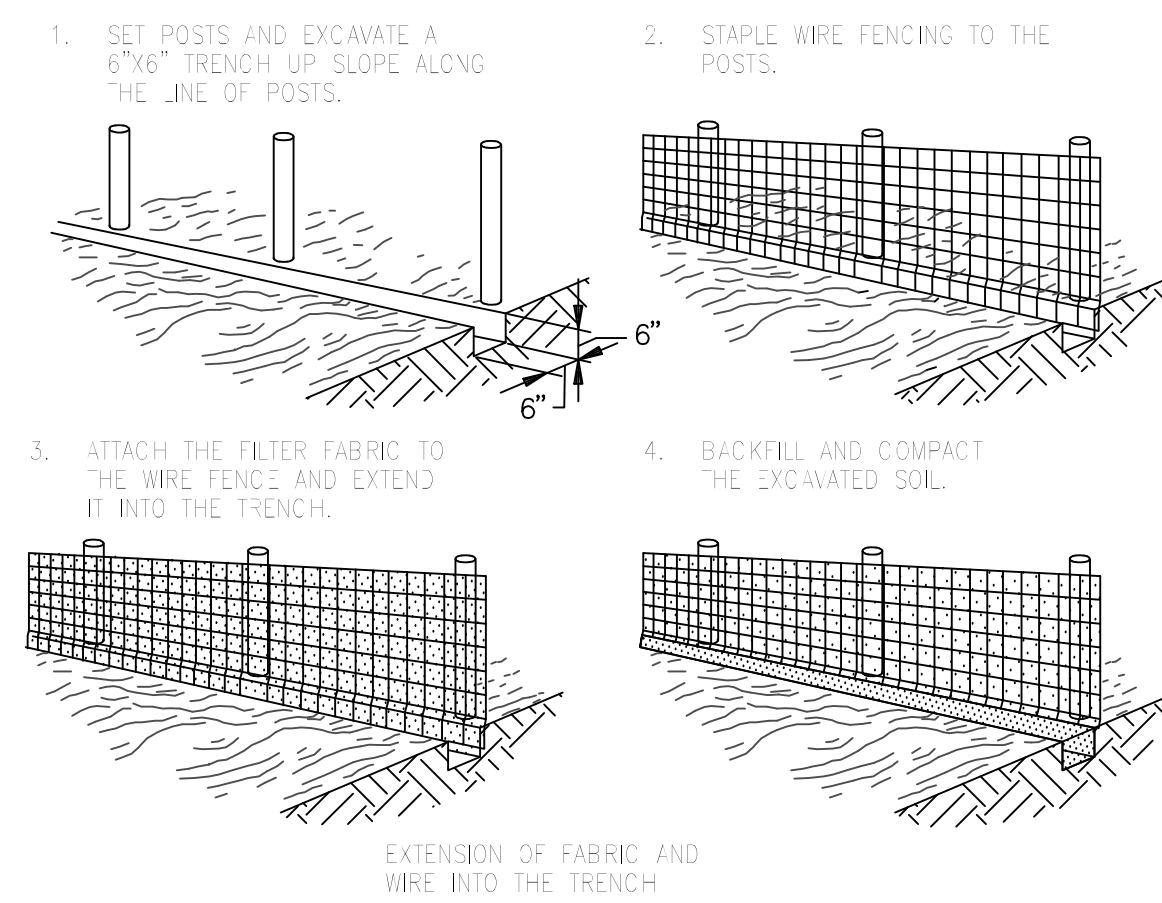
BLACK & VEATCH Building a world of difference®	
DESIGNER SMR	DRAWN JPH
CHECKED -	DATE -
PROJECT # 191275	

NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.
01	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	DCL	--	SMR	ALL
02	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJ. SGT. 131275-CAPACITOR BANK ADDITION	JPH	--	SMR	BB

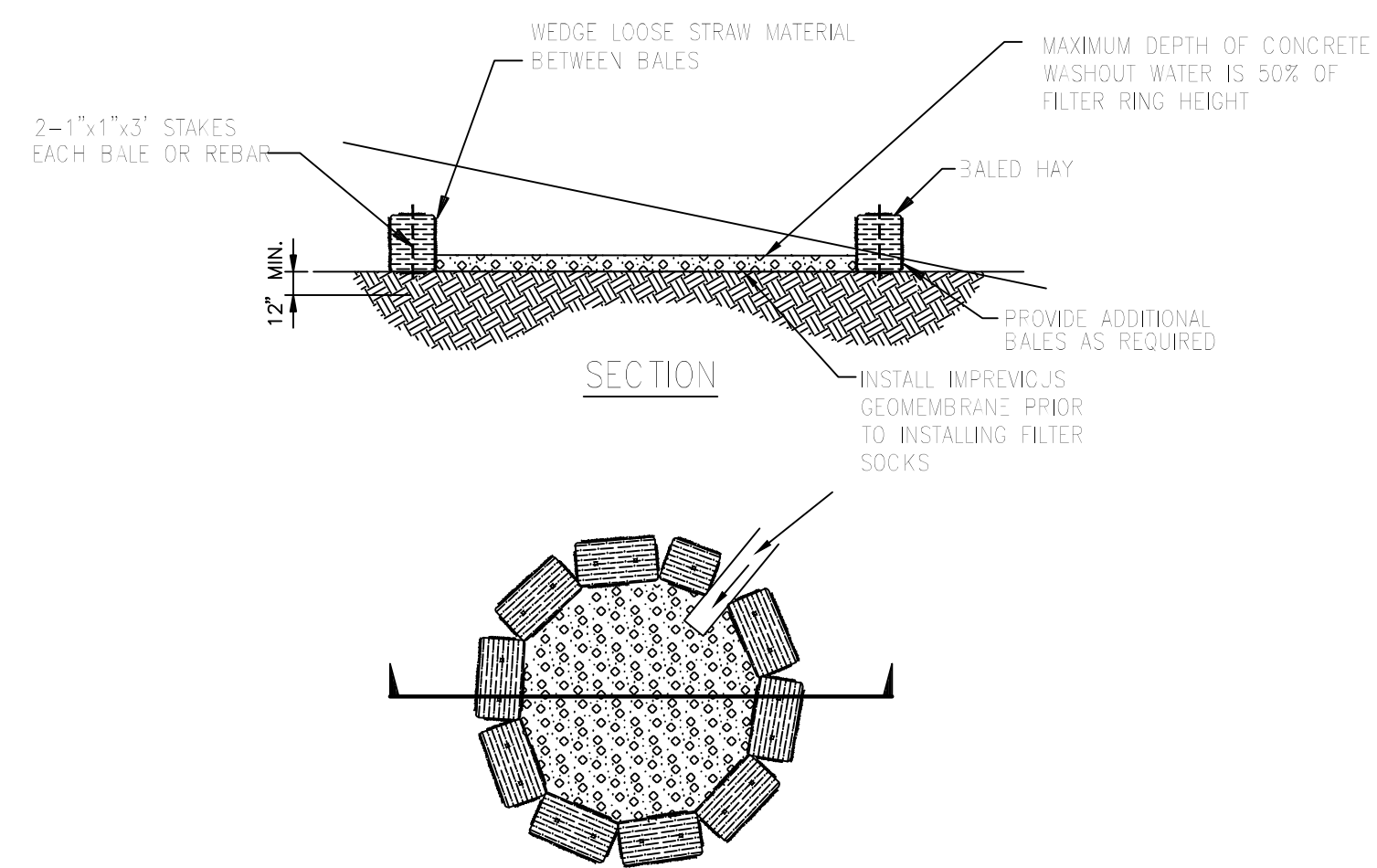
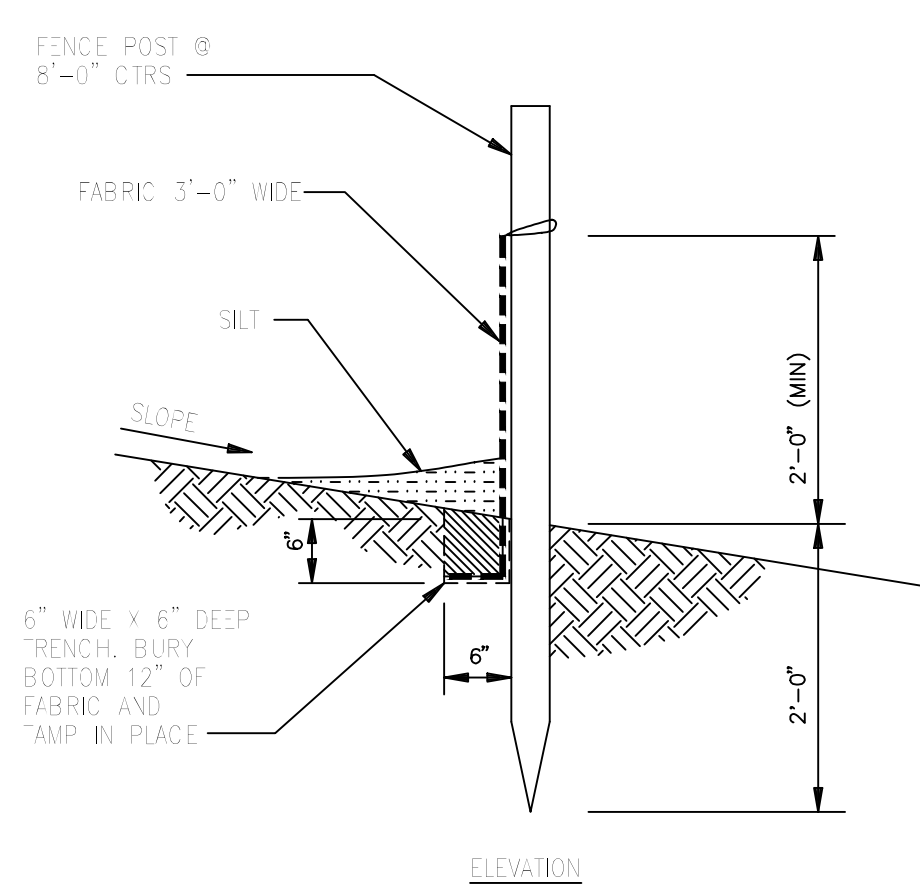
No	Date	Revision	By	Chkd.	Engr.	Supv.
1	03/2016	ANSONIA CAPACITOR BANK ADDITION	JPH	--	SMR	BB



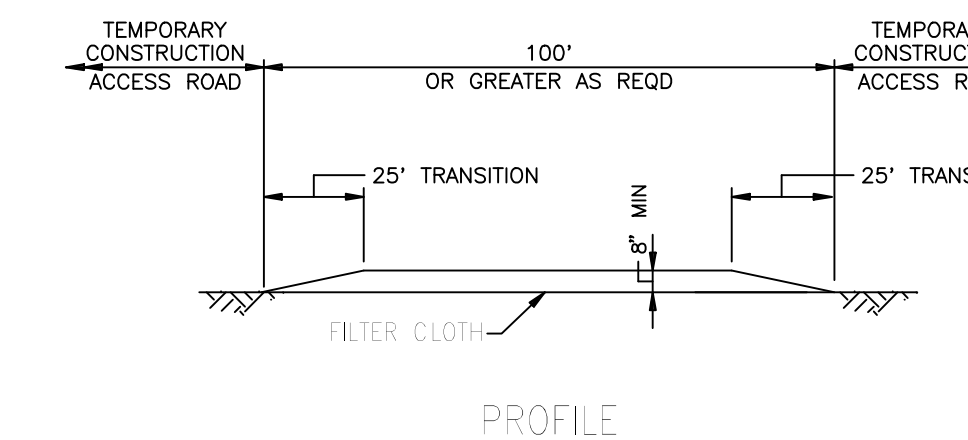
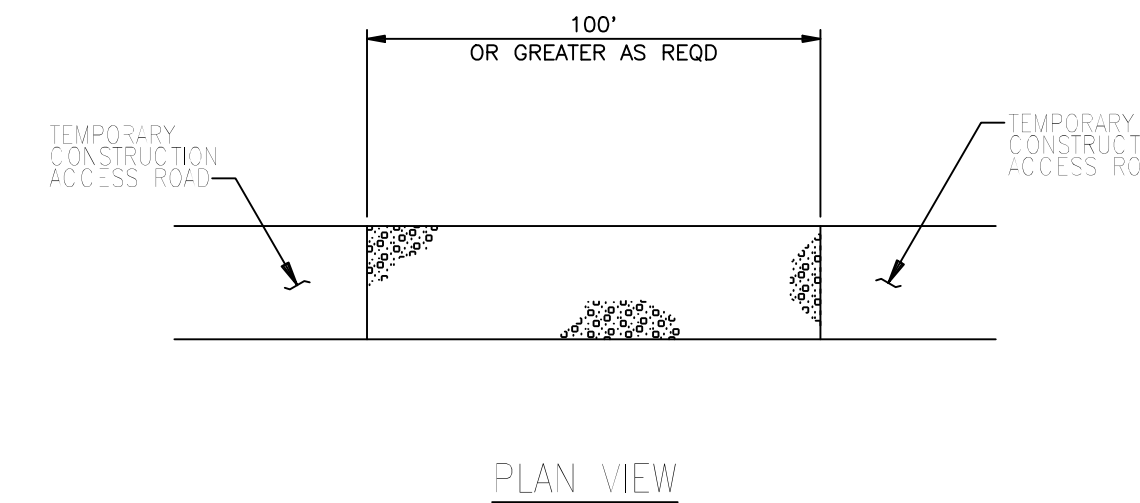
GRADING AND DRAINAGE DETAILS		
ANSONIA SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
-	-	55210-003E



SILT FENCE DETAIL
NO SCALE

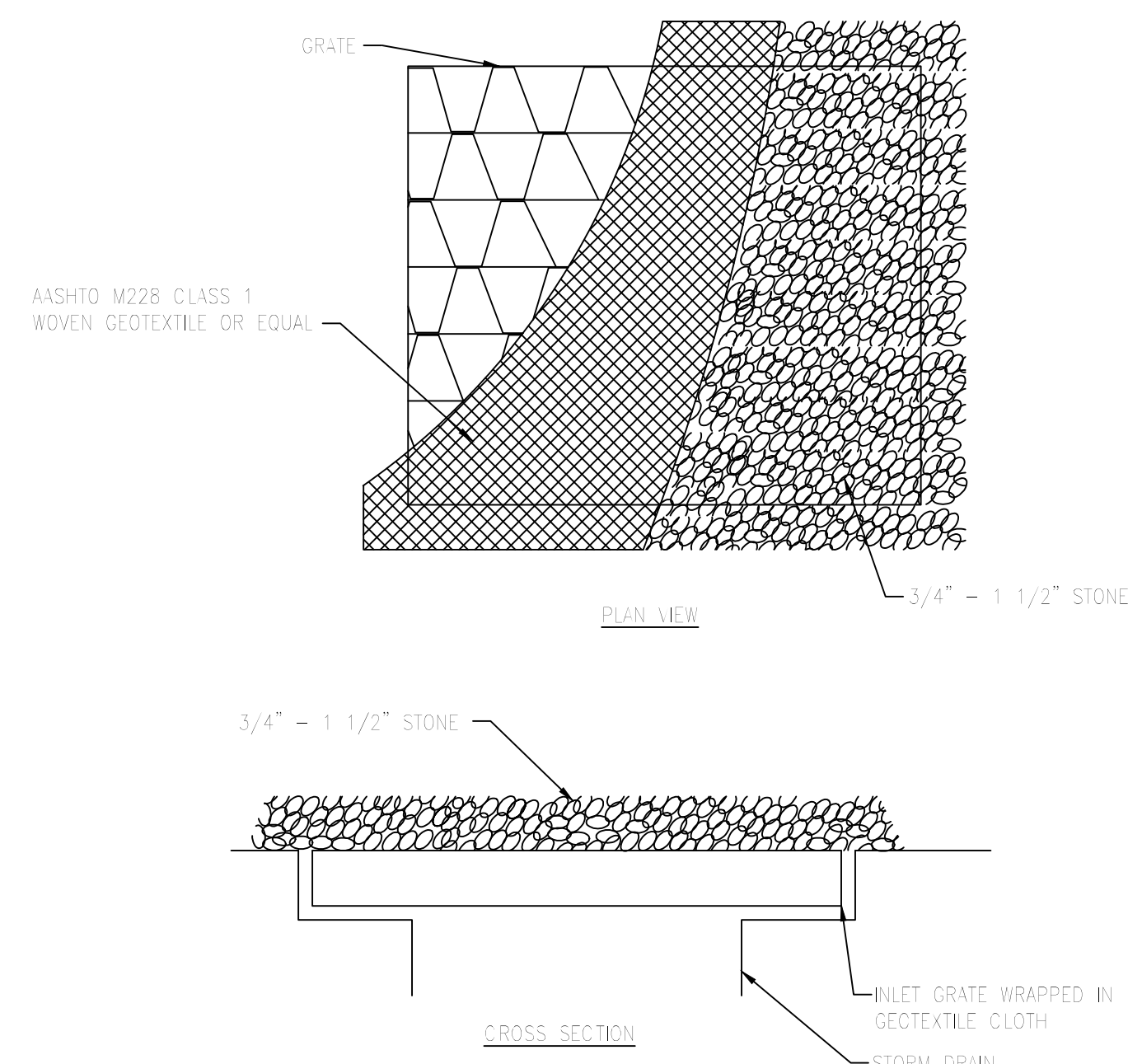


TYPICAL WASHOUT INSTALLATION WITH HAY BALES
NO SCALE
SEE NOTE 7

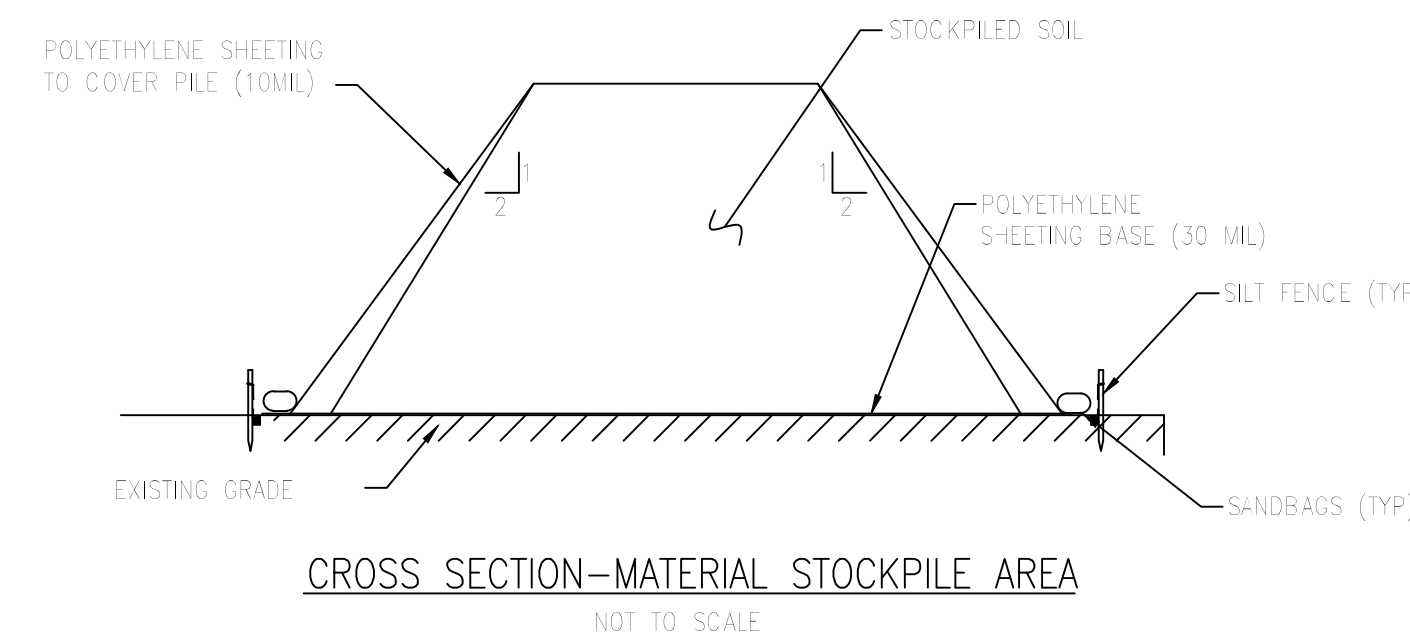


TRACK PAD
NO SCALE
SEE NOTES 5 & 6

LOCATION OF SILT FENCE		
ID NO.	NORTH	EAST
SF-1	68°729.28	90°955.79
	68°728.90	90°958.09
	68°674.99	90°977.01
	68°669.01	90°975.50
SF-2	68°664.70	90°977.27
	68°663.47	90°981.05
	68°646.57	90°986.98
	98°671.92	908021.55
SF-3	68°596.66	908055.17
	68°593.19	908054.03
	68°590.78	908055.19
	68°590.01	908058.14
SF-4	68°481.96	908106.41
	68°473.74	908105.07
	68°427.81	908064.31
	68°424.09	908094.13
SF-5	68°365.35	90°994.67
	68°367.42	90°941.64
	68°421.56	908037.11
	68°417.85	908037.00
	68°398.13	90°998.85
	68°401.33	90°989.24



GRATE INLET PROTECTION DETAIL
NOT TO SCALE



CROSS SECTION-MATERIAL STOCKPILE AREA
NOT TO SCALE

NOTES

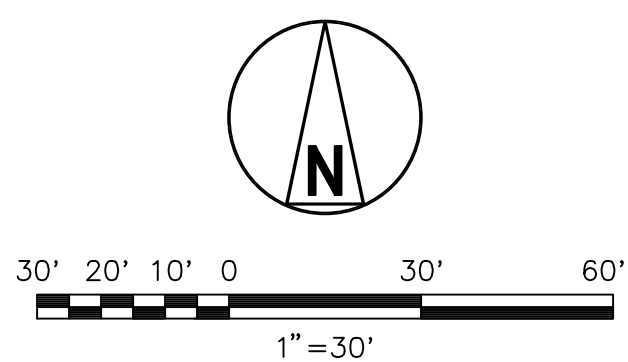
- 1. SEE DRAWING 55210-003C FOR EROSION AND SEDIMENT CONTROL PLAN.

REFERENCE DRAWINGS

EXISTING SITE SURVEY PLAN	55210-003A
GRADING AND DRAINAGE PLAN	55210-003B
EROSION AND SEDIMENT CONTROL PLAN	55210-003C
SURFACING AND FENCING PLAN	55210-003D
GRADING AND DRAINAGE DETAILS	55210-003E
15 FT SUBSTATION FENCE DETAILS	55210-003F
CONSTRUCTION FACILITIES PLAN	55210-801
9 FT SUBSTATION TEMPORARY FENCE DETAILS	55210-801A

**NEW DRAWING
PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION

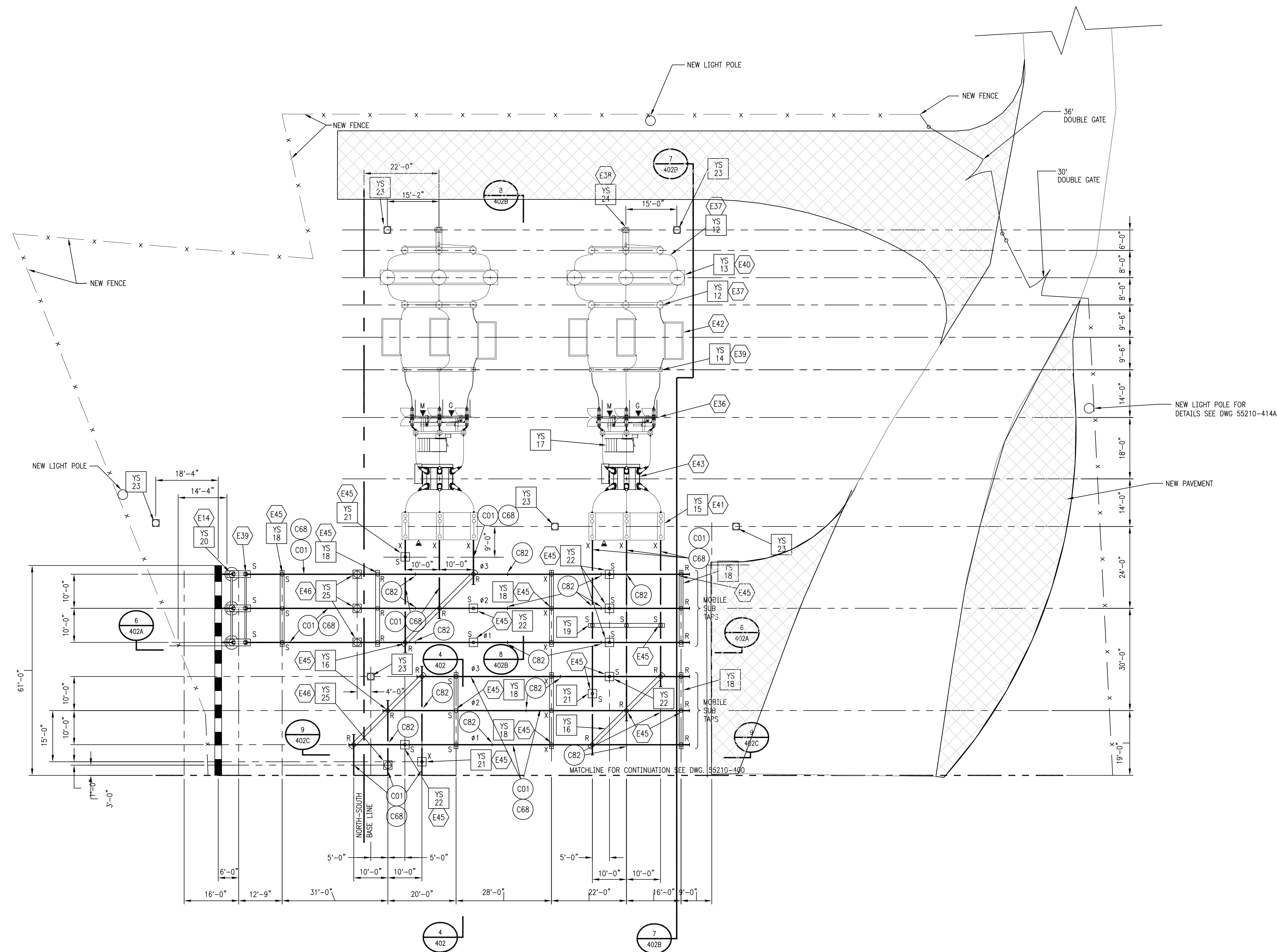


BLACK & VEATCH Building a world of difference®									
DESIGNER	SMR	DRAWN	JPH						
CHECKED	-	DATE	-						
PROJECT #	191275								
NO.	DATE	REVISION	DRN	CHKD	DESN	SUPR.			
B	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	JPH	-	SMR	BB			
A	04/08/2016	ISSUED FOR UJ 30% REVIEW-PROJECT 191275-CAPACITOR BANK ADDITION	JPH	-	SMR	BB			

No.	Date	Revision	By	Chkd.	Engr.	Supv.	Chkd.	Design Engr.	Design Supv.
1	05/2016	ANSONIA CAPACITOR BANK ADDITION	JPH	-	SMR	BB			



EROSION AND SEDIMENT CONTROL DETAILS		
ANSONIA SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
-	-	55210-003F



GENERAL NOTES:

- 336.4 MCM ACSR (ITEM C68) VIBRATION DAMPING CONDUCTOR SHALL BE INSTALLED INSIDE EACH HORIZONTAL RUN OF TUBULAR BUS LONGER THAN 15 FEET.
- SEE DWGS 55210-402 THRU 402C (ELEVATION DWGS) FOR ADDITIONAL FITTING CALLOUTS.
- FOR CONDUIT, CABLE TRENCH, AND GROUNDING LAYOUTS SEE DWGS 55210-411 AND 55210-412.

LEGEND:

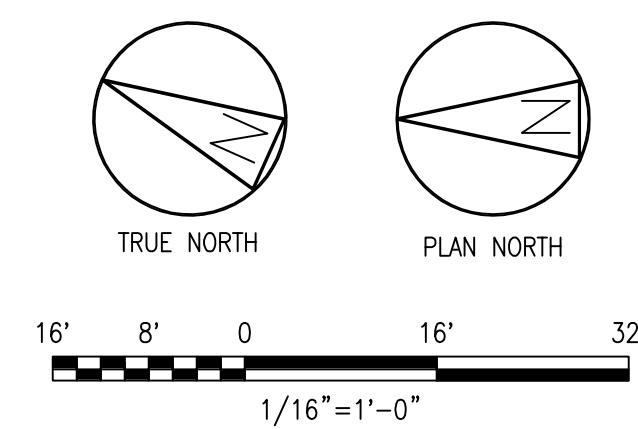
- X EXPANSION BUS FITTING
- R RIGID (DMC) BUS FITTING
- S SLIP (COMPRESSION) BUS FITTING
- LOW BUS
- BUS CROSSING, NO CONNECTION
- HIGH BUS
- HIGH BUS TO LOW BUS CONNECTION WITH "X" FRAME
- - - 14' CHAIN LINK FENCE
- ▲ MANUAL SWITCH OPERATOR LOCATION
- ▲ M MOTORIZED SWITCH OPERATOR LOCATION
- ▲ G GROUND SWITCH OPERATOR LOCATION

REFERENCE DRAWINGS

- ELECTRICAL SITE PLAN 55210-001
- SWITCHYARD BUS AND EQUIPMENT PLAN 55210-400
- SUBSTATION SECTIONS 55210-402, 402A, 402B, 402C
- RACEWAY PLAN 55210-412, 412A
- ILLUMINATION PLAN 55210-414, 414A
- GROUNDING PLAN 55210-425, 425A
- BILL OF MATERIALS 55210-499 SH1, 499 SH2

CONDUCTOR LEGEND

- (C01) 4" ALUMINUM BUS, 40' SPANS
- (C68) 336.4 MCM ACSR
- (C82) BUS SPLICE/COUPLER



PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

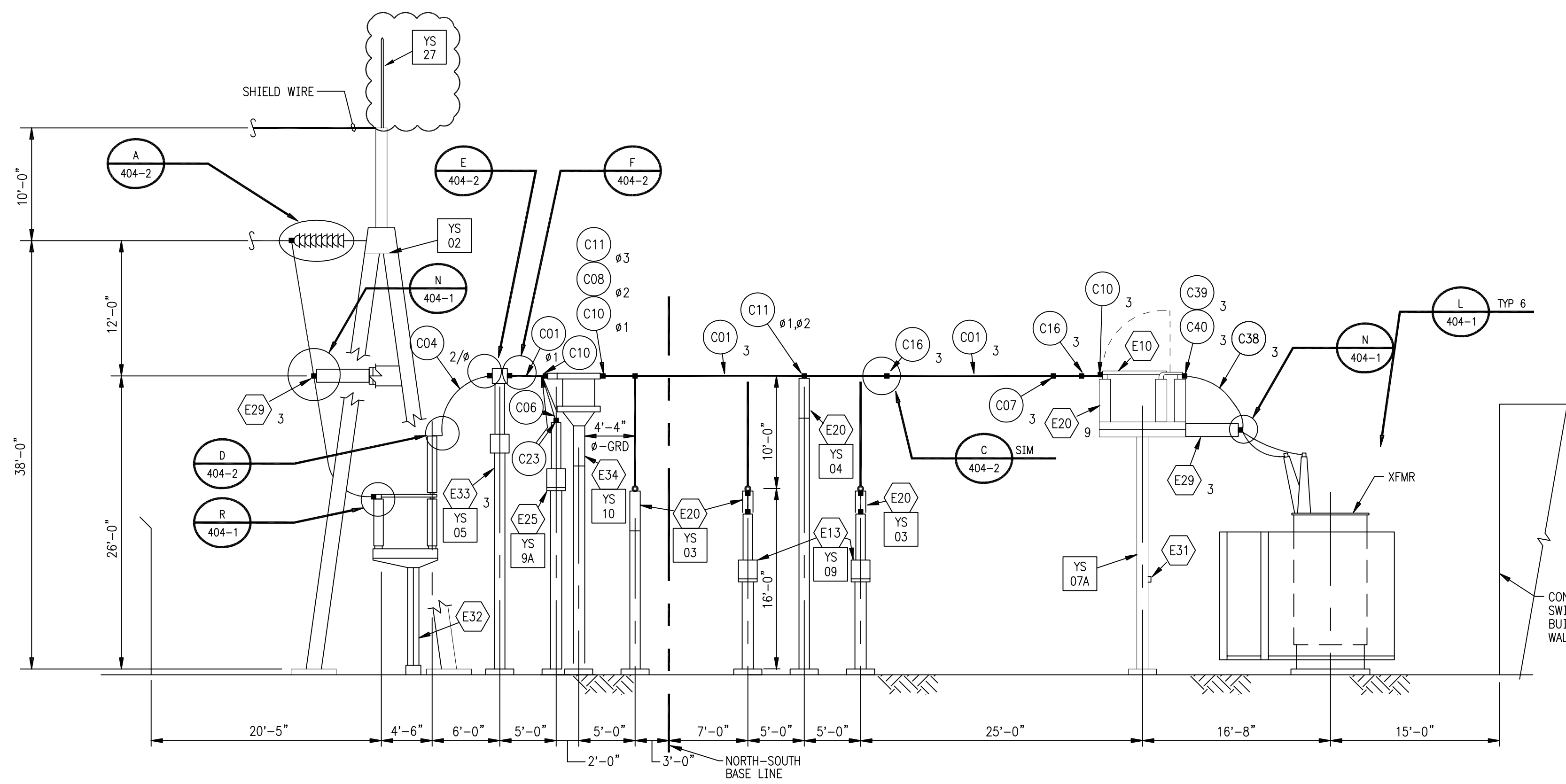
BLACK & VEATCH Building a world of difference®							
DESIGNER	CDS	DRAWN	KMM				
CHECKED	---	DATE	--/--/----				
PROJECT #	191275						
NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.	
C	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH	CDS	WB	
B	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-ANSONIA CAP BANK ADDITION	KMM/CRE	RJH	CDS	WB	
A	03/14/2016	ISSUED FOR EMF STUDY-PROJECT 191275-ANSONIA CAP BANK ADDITION	KMM	RJH	CDS	WB	

NEW DRAWING

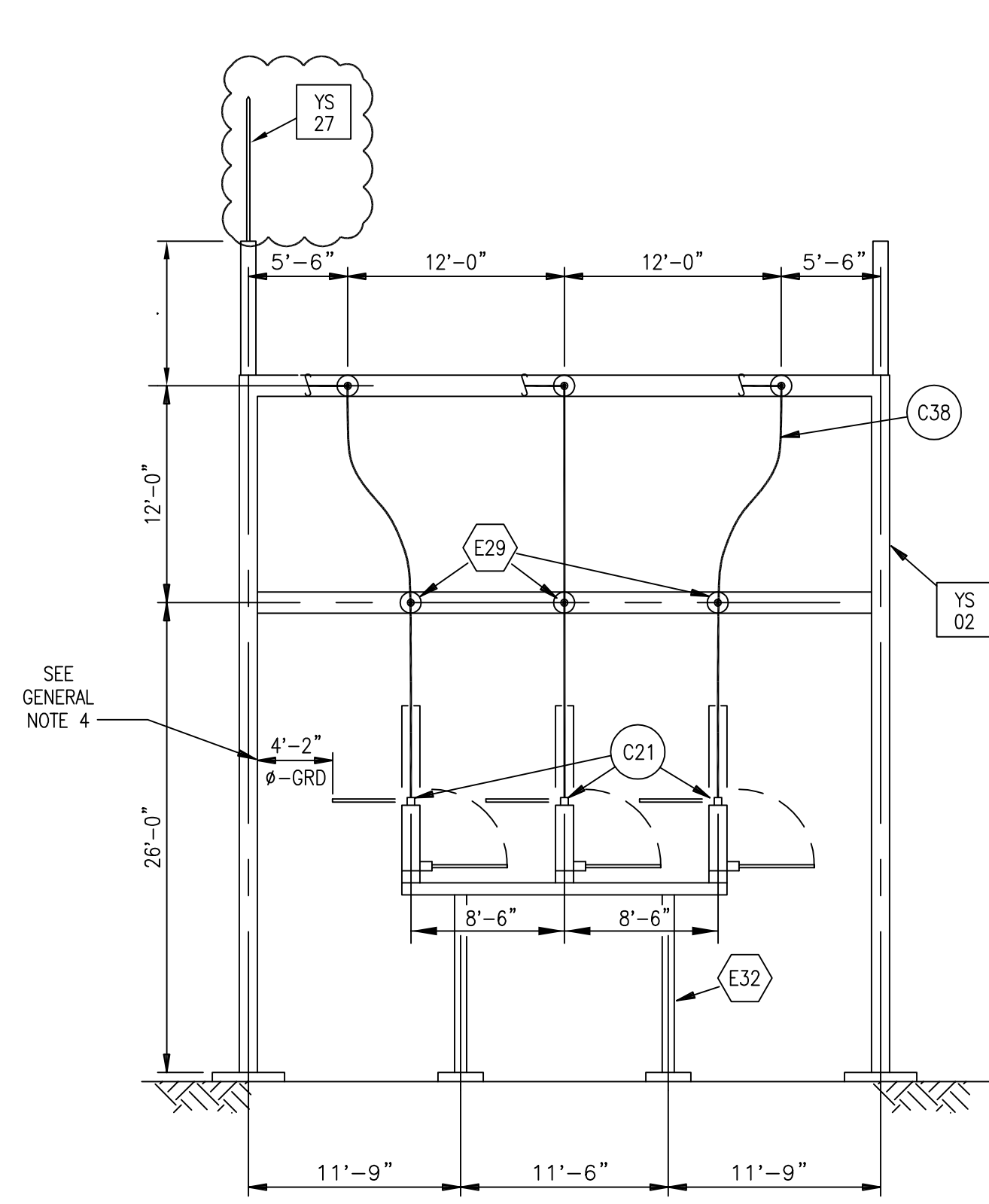
1	05/2016	CAPACITOR BANK ADDITION	CRE	-	CDS	-	
No	Date	Revision	By	Chkd.	Engr.	Supr.	

			Drawn	Date 02/19/2016	Scale: 1/16"=1'-0"
			Chkd.	Design Engr.	Design Supr.

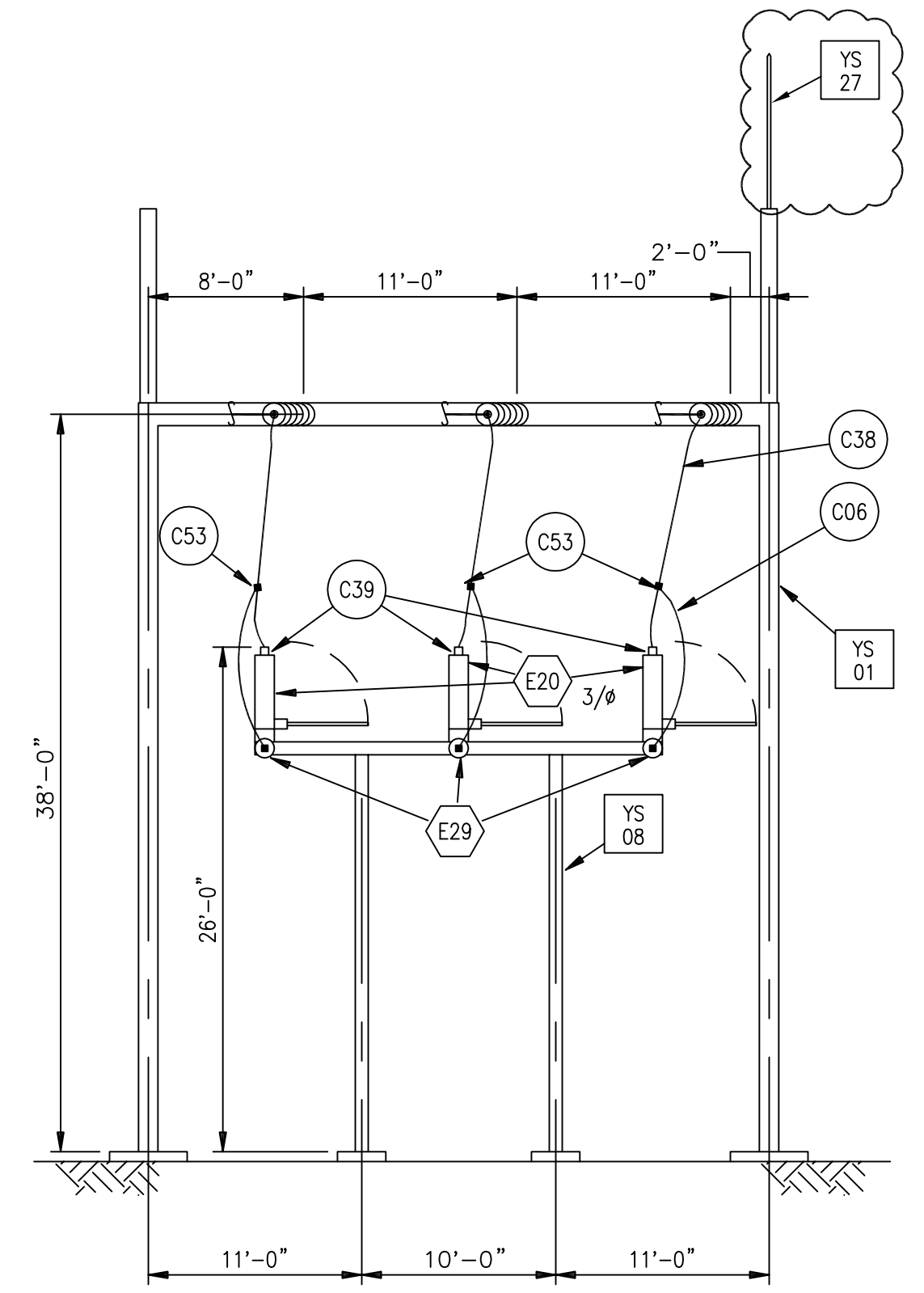
CAPACITOR BANK PLAN		
ANSONIA SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
		55210-400A



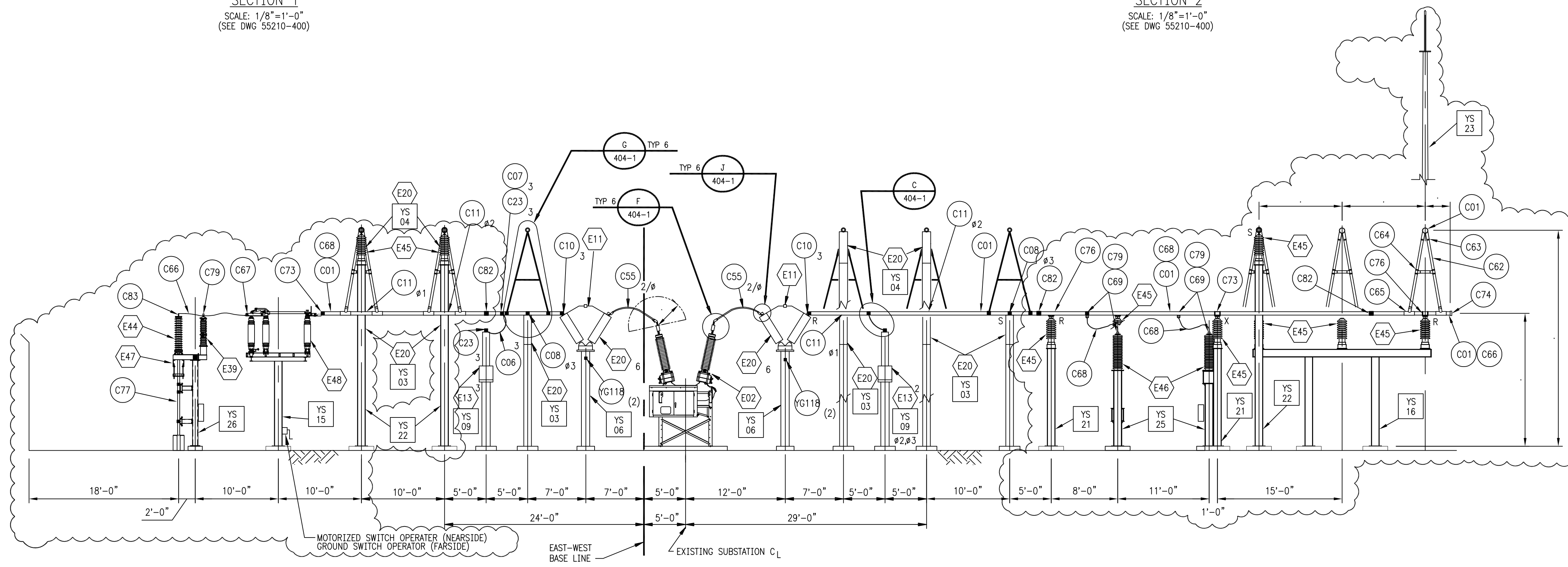
SECTION 1
SCALE: 1/8"=1'-0"
(SEE DWG 55210-400)



SECTION 2
SCALE: 1/8"=1'-0"
(SEE DWG 55210-400)



SECTION 3
SCALE: 1/8"=1'-0"
(SEE DWG 55210-400)



SECTION 4
SCALE: 1/8"=1'-0"
(SEE DWG 55210-400)

- GENERAL NOTES**
1. THIS DRAWING PREVIOUSLY NUMBERED 54202-7.
 2. SEE MATERIAL LISTS FOR DESCRIPTIONS OF EQUIPMENT STRUCTURES AND FITTINGS.
 3. SEE DWG 55210-400 & 400A FOR ADDITIONAL NOTES AND LEGEND.
 4. PHASE TO GROUND DISTANCE SHOWN IS THE SMALLEST CLEARANCE ANTICIPATED DURING THE OPERATION OF THE DISCONNECT BLADE.
 5. FOR PCB PLATFORM ELEVATION SEE DWG 55210-426.
 6. THE ENTIRE LIGHTNING MAST IS NOT SHOWN FOR CLARITY.
 7. BUS SUPPORT NOT SHOWN FOR CLARITY.

AREAS BACKCIRCLED ON THIS DRAWING INDICATE WORK ASSOCIATED WITH ANSONIA CAPACITOR BANK ADDITION PROJECT 191275

REFERENCE DRAWINGS

SWITCHYARD BUS AND EQUIPMENT PLAN	55210-400 & 400A
115KV SWITCHYARD DETAILS	55210-404SH1 & 404SH2
BILL OF MATERIALS	55210-499SH1 & 499SH2

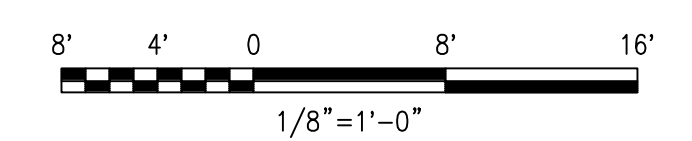
LEGEND

X	EXPANSION BUS FITTING
R	RIGID (WELDED/DMC) BUS FITTING
S	SLIP (NON-WELDED/COMPRESSION) BUS FITTING

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

BLACK & VEATCH Building a world of difference®		PROJECT NO. 191275	
C 05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH CDS WB
B 04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH CDS WB
A 03/14/2016	ISSUED FOR EMF STUDY-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM	RJH CDS WB
No	Date	Revision	By Chkd. Engr. Supr.



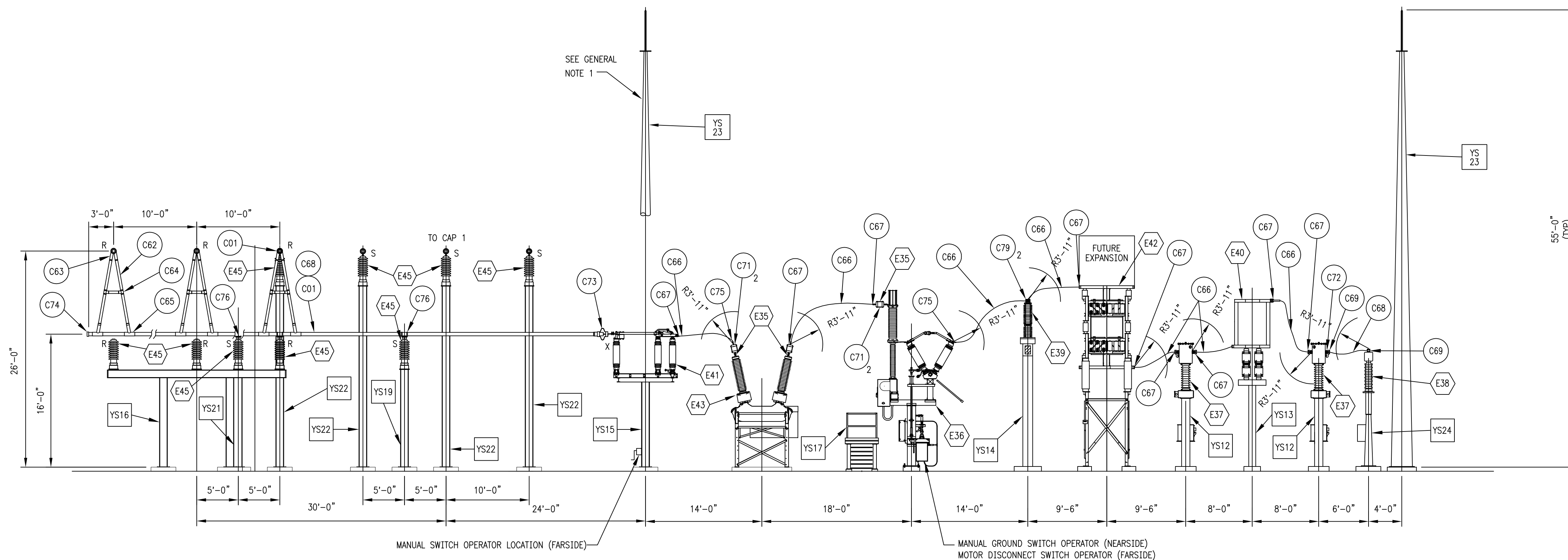
DOES NOT CONTAIN
CRITICAL ENERGY INFRASTRUCTURE INFORMATION
DATE OF REVIEW 2/5/2016 BY SMR

BLACK & VEATCH		PROJECT NO. 19023	
DRAWN	JSF	6	05/2016
DESIGNED	TJH	5	2/5/2016
APPROVED	JRL	4	07-15-94
CHECKED	VLH	No	Date
			Revision
			By Chkd. Engr. Supr.

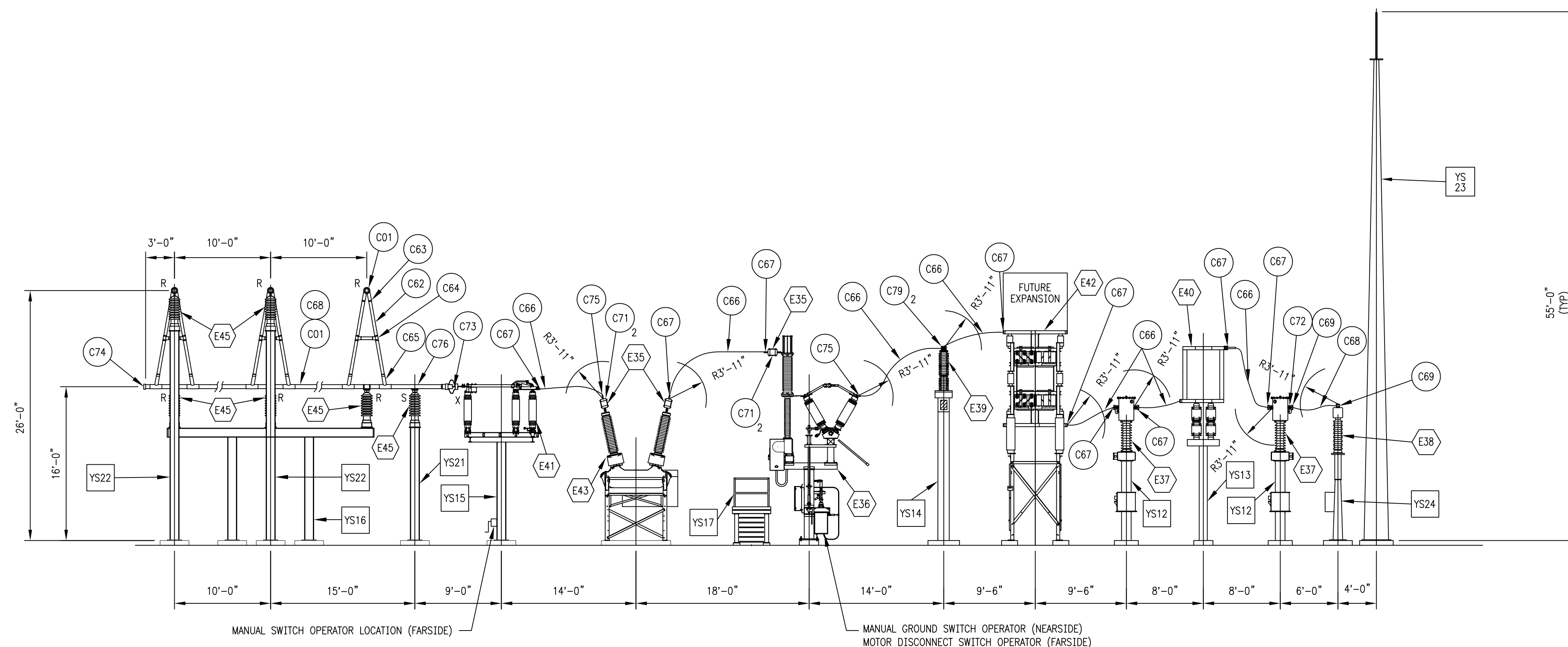
ui
The United Illuminating Company

Drawn: _____ Date: 06-22-92 Scale: 1/8"=1'-0"
Design Engr.: _____ Design Supv.: _____

115KV SWITCHYARD SECTIONS SECTIONS 1-4		
ANSONIA SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
	052392	55210-402



SECTION 7
SCALE: 1/8"=1'-0"



SECTION 8
SCALE: 1/8"=1'-0"

GENERAL NOTES:

1. THE ENTIRE LIGHTNING MAST IS NOT SHOWN FOR CLARITY.

LEGEND

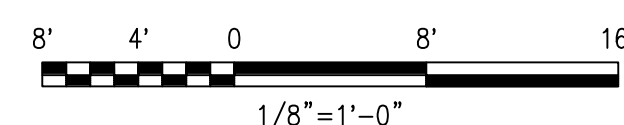
- X EXPANSION BUS FITTING
- R RIGID (DMC) BUS FITTING
- S SLIP (COMPRESSION) BUS FITTING

REFERENCE DRAWINGS

SWITCHYARD BUS AND EQUIPMENT PLAN 55210-400 & 400A
BILL OF MATERIALS 55210-499SH1 & 499SH2

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION



NEW DRAWING

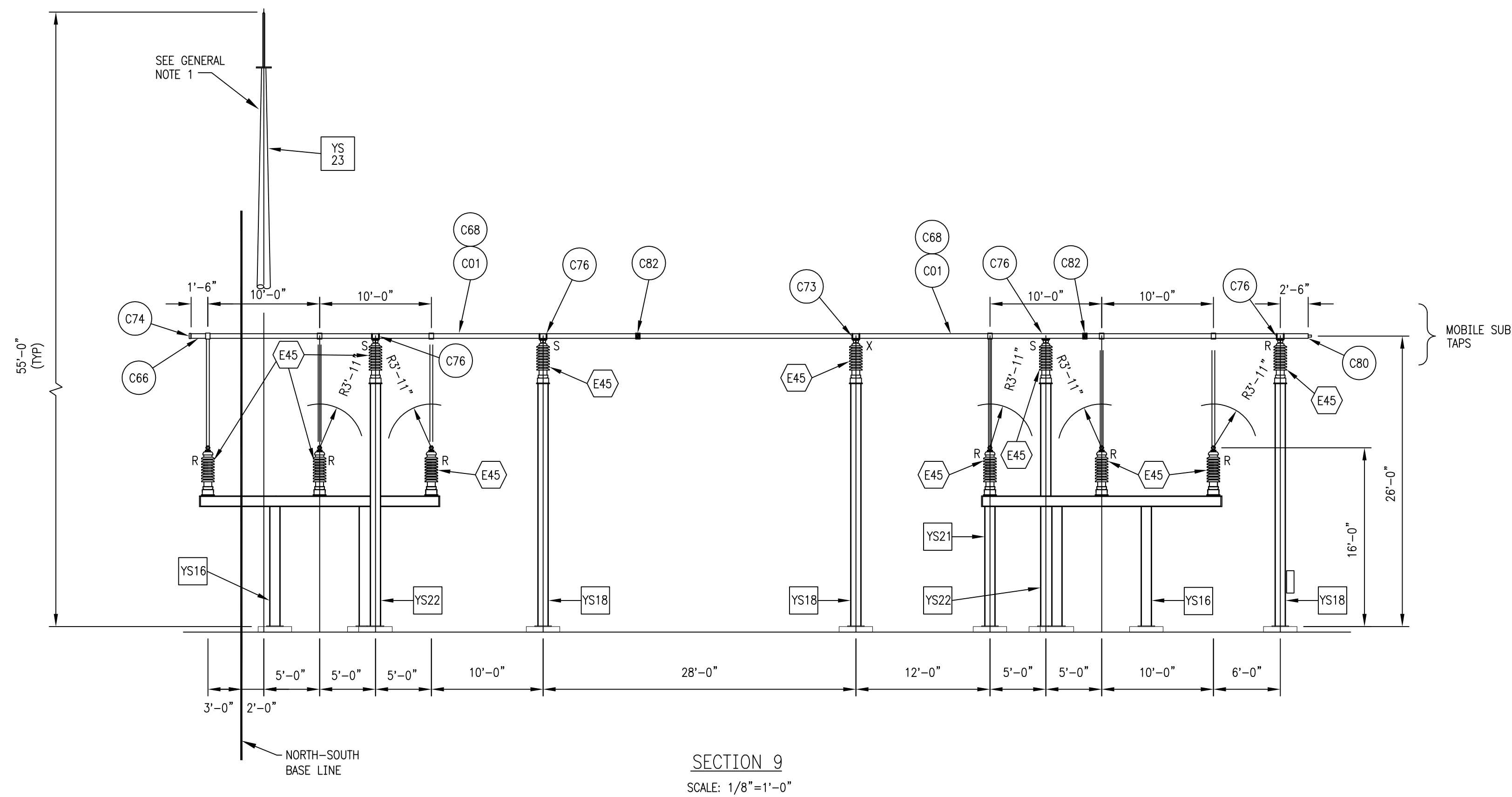
BLACK & VEATCH Building a world of difference®									
DESIGNER	CDS	DRAWN	KMM						
CHECKED	-	DATE	-						
PROJECT #	191275								
NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.			
C	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH	CDS	WB			
B	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH	CDS	WB			
A	03/14/2016	ISSUED FOR EMF STUDY-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM	RJH	CDS	WB			

No	Date	Revision	By	Chkd.	Engr.	Supv.
1	05/2016	CAPACITOR BANK ADDITION	CRE	-	CDS	-

ui
The United Illuminating Company

Drawn _____ Date 03/02/2016 Scale: 1/8"=1'-0"
Chkd. _____ Design Engr. _____ Design Supv. _____

115KV SWITCHYARD SECTIONS SECTIONS 7 & 8		
ANSONIA SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
	052392	55210-402B



GENERAL NOTES:

1. THE ENTIRE LIGHTNING MAST IS NOT SHOWN FOR CLARITY.

LEGEND:

- X EXPANSION BUS FITTING
- R RIGID (DMC) BUS FITTING
- S SLIP (COMPRESSION) BUS FITTING

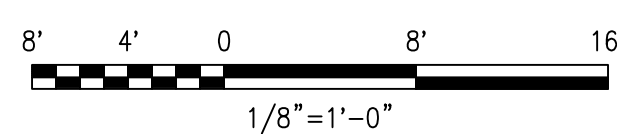
REFERENCE DRAWINGS:

- SUBSTATION PLAN 55210-400 & 400A
- BILL OF MATERIALS 55210-499SH1 & 499SH2

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

BLACK & VEATCH Building a world of difference®							
DESIGNER	CDS	DRAWN	KMM				
CHECKED	-	DATE	-				
PROJECT #	191275						
NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.	
C	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH	CDS	WB	
B	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM/CRE	RJH	CDS	WB	
A	03/14/2016	ISSUED FOR EMF STUDY-PROJECT 191275-ANSONIA CAPACITOR BANK ADDITION	KMM	RJH	CDS	WB	



NEW DRAWING

No	Date	Revision	By	Chkd.	Engr.	Supv.
1	05/2016	CAPACITOR BANK ADDITION	CRE	-	CDS	-

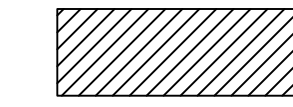
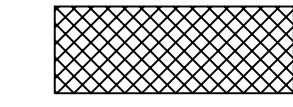
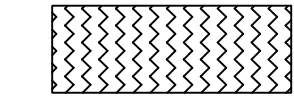


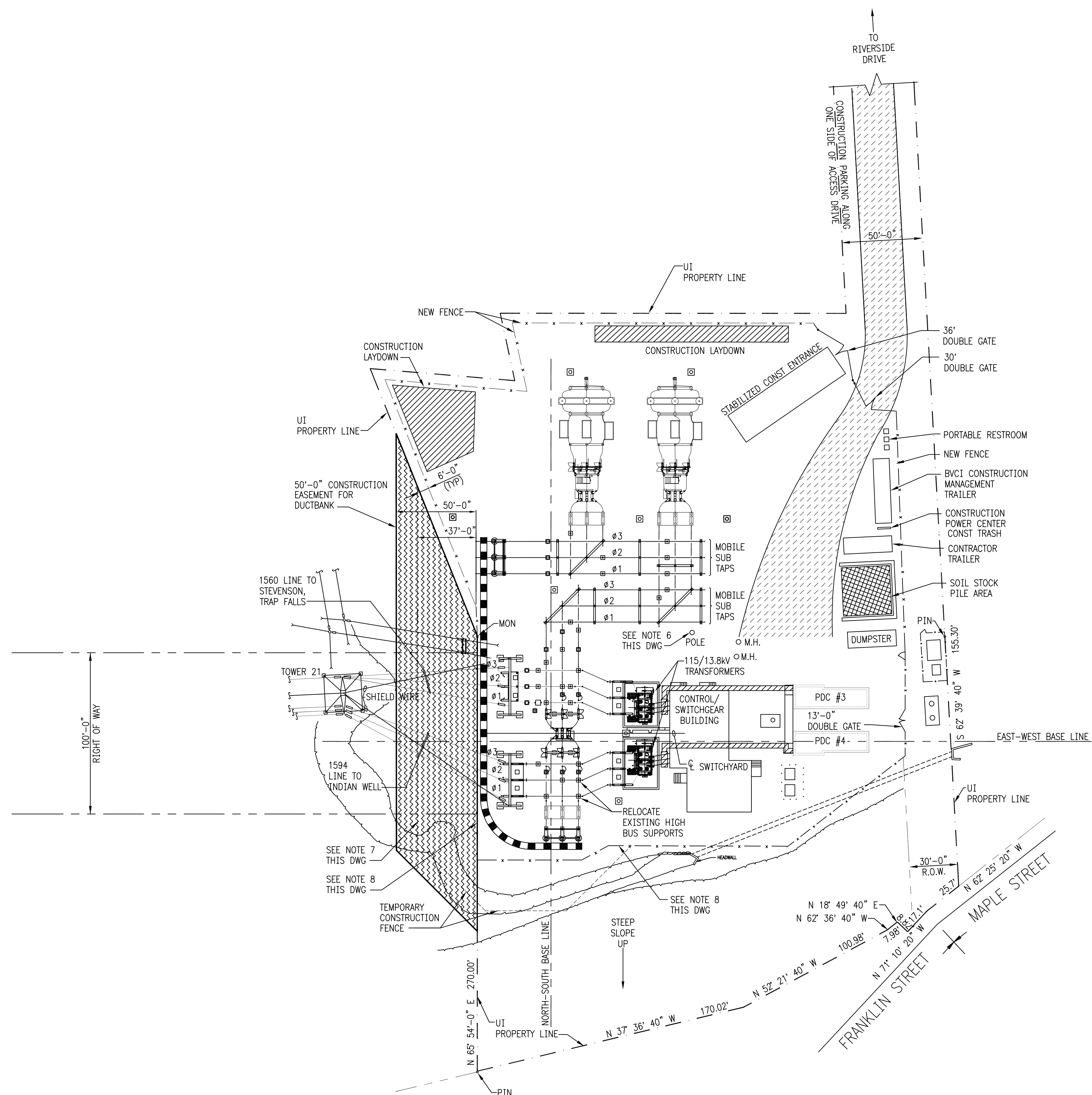
115KV SWITCHYARD SECTIONS
SECTION 9

ANSONIA SUBSTATION

Drawn	Date	Scale	CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
_____	02/19/2016	1/8"=1'-0"	_____	_____	55210-402C
Chkd.	Design Engr.	Design Supv.	_____	_____	_____

LEGEND

- EXISTING CHAIN LINK FENCE
- NEW CHAIN LINK FENCE
- CONSTRUCTION CHAIN LINK FENCE
- - - - - PROPERTY LINE
- ==== CONSTRUCTION EASEMENT
-  CONSTRUCTION LAYDOWN
-  SOIL STOCK PILE AREA
-  CONSTRUCTION EASEMENT



NOTES:

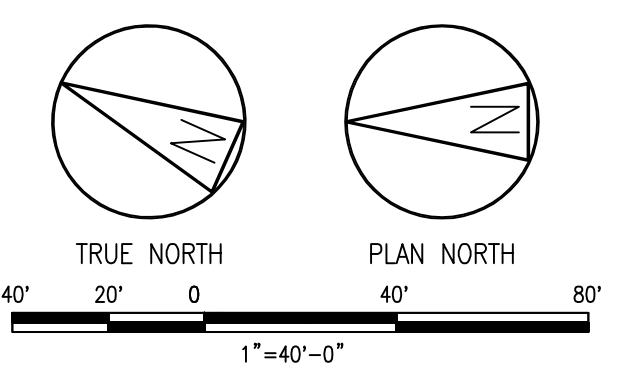
1. PER CONNECTICUT STATE LAW THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF EXCAVATION. CALL BEFORE YOU DIG 1-800-922-4455.
2. DELIVERIES FOR THE ANSONIA SUBSTATION AT 31 RIVERSIDE DR., ANSONIA, CONNECTICUT WILL BE RECEIVED BETWEEN THE HOURS OF 8:00 AM AND 4:00 PM, MONDAY THRU FRIDAY.
3. ALL WORK SHOWN ON THIS DRAWING SHALL BE FURNISHED AND INSTALLED BY THE GENERAL CONSTRUCTION CONTRACTOR, UNLESS NOTED OTHERWISE.
4. EROSION CONTROL SHALL BE INSTALLED AND MAINTAINED BY THE GENERAL CONSTRUCTION CONTRACTOR, UNLESS NOTED OTHERWISE. FOR PLAN AND DETAILS SEE DWGS 55210-003C AND 003F.
5. FENCING SHALL BE FURNISHED AND INSTALLED BY THE GENERAL CONSTRUCTION CONTRACTOR, UNLESS NOTED OTHERWISE. SEE DRAWINGS 55210-003D AND 55210-801A.
6. THE EXISTING COMMUNICATION POLE ALONG WITH THE JUNCTION BOX WILL BE MOVED OUT OF THE SUBSTATION FENCE. UI TO DETERMINE THE FINAL LOCATION.
7. THE TEMPORARY CONSTRUCTION FENCE WILL BE INSTALLED BY THE GENERAL CONSTRUCTION CONTRACTOR BEFORE THE EXISTING FENCE ON THE NORTH SIDE IS REMOVED. SEE DWG 55210-801A FOR TEMPORARY FENCE DETAILS.
8. THE EXISTING SUBSTATION FENCE BETWEEN THE LIMITS OF TEMPORARY FENCE SHALL BE REMOVED BY THE GENERAL CONSTRUCTION CONTRACTOR. THIS SECTION OF FENCE CAN BE ONLY REMOVED AFTER THE TEMPORARY FENCE IS INSTALLED.
9. THE EXISTING FENCE ON THE EAST SIDE OF THE STATION SHALL BE REPLACED BY THE GENERAL CONSTRUCTION CONTRACTOR BEFORE THE INTERCONNECTION BETWEEN EXISTING AND NEW BUS TAKES PLACE.

REFERENCE DRAWINGS

DRAWING TITLE	DRAWING NUMBER
EXISTING SITE PLAN	55210-001
EXISTING SITE SURVEY PLAN	55210-003A
GRADING AND DRAINAGE PLAN	55210-003B
EROSION AND SEDIMENT CONTROL PLAN	55210-003C
15 FT SECURITY FENCE PLAN	55210-003G
9 FT TEMPORARY FENCE SECTION AND DETAILS	55210-801A
CONSTRUCTION POWER AND GROUNDING DETAILS	55210-801B

PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION



NEW DRAWING

BLACK & VEATCH Building a world of difference®							
DESIGNER	SMR	DRAWN	BD				
CHECKED	-	DATE	-				
PROJECT #	191275						
NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.	
B	05/17/2016	ISSUED FOR CSC APPLICATION-PROJECT 191275-CAP BANK ADDITION	BD	-	SMR	ALL	
A	04/08/2016	ISSUED FOR UI 30% REVIEW-PROJECT 191275-CAP BANK ADDITION	BD	-	SMR	ALL	

1	03/2016	ANSONIA CAPACITOR BANK ADDITION	BD	-	SMR	ALL
No	Date	Revision	By	Chkd.	Engr.	Supv.



CONSTRUCTION FACILITIES
PLAN
115kV CAPACITOR BANK ADDITION
ANSONIA SUBSTATION

Drawn	Date 02/24/2016	Scale: 1"= 40'-0"	CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
Chkd.	Design Engr.	Design Supv.		096630	55210-801

Attachment B

CT DEEP NDDB Correspondence



Attachment B - CT DEEP NDDB Correspondence

Connecticut Department of

ENERGY & ENVIRONMENTAL PROTECTION

March 14, 2016

Mr. Josh Wilson
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040
jwilson@fando.com

Project: Substation Improvements for United Illuminating Ansonia Capacitor Bank Project Located at 4-8 Riverside Drive in Ansonia, Connecticut
NDDB Determination No.: 201602548

Dear Josh,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for the substation improvements for United Illuminating Ansonia Capacitor Bank Project located at 4-8 Riverside Drive in Ansonia, Connecticut. According to our information, there are records for State Special Concern blueback herring (*Alosa aestivalis*) in the vicinity of this project.

Please be advised that a DEEP Fisheries Biologist will review the permit applications you may submit to DEEP regulatory programs to determine if your project could adversely affect blueback herring. DEEP Fisheries Biologists are routinely involved in pre-application consultations with regulatory staff and applicants in order to identify potential fisheries issues and work with applicants to mitigate negative effects, including to endangered species. If you have not already talked with a Fisheries Biologist about your project, you may contact the Permit Analyst assigned to process your application for further information, including the contact information for the Fisheries Biologist assigned to review your application. This determination is good for one year. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project March 14, 2017.

Natural Diversity Data Base 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 Data Base 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 Data Base 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 (860) 424-3592, or dawn.mckay@ct.gov. Thank you for consulting the Natural Diversity Data Base.

Sincerely,

Dawn M. McKay
Environmental Analyst 3

Amy S Hicks

From: Joshua H. Wilson <JWilson@fando.com>
Sent: Thursday, March 31, 2016 9:00 AM
To: Shawn Crosbie
Subject: Fwd: UI Ansonia Substation Capacitor Bank (DEEP NDDDB#201602548)
Attachments: image001.png; image004.gif

Hi Shawn

This is the info we needed. I'll revise the report and send it to you tomorrow.

Best,
Josh

Josh Wilson ,PWS
Senior Ecologist | Risk Assessor
Fuss & O'Neill, Inc
[146 Hartford Road | Manchester, CT 06040](#)
[860.646.2469 x5303](#) | jwilson@fando.com
cell: [203.915.2888](tel:203.915.2888) | www.fando.com

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[Sent from my phone. Pardon the typos.]

Begin forwarded message:

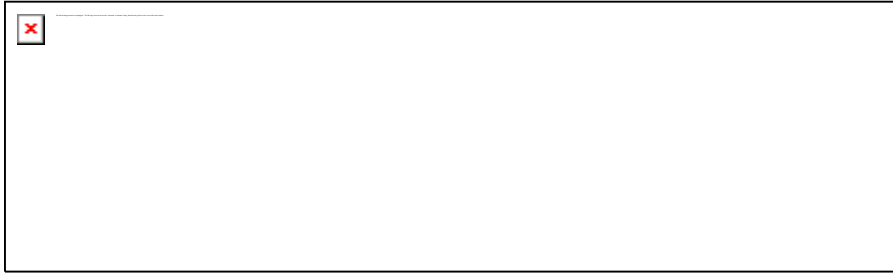
From: "Johnson, Mark" <Mark.Johnson@ct.gov>
Date: March 31, 2016 at 8:44:31 AM EDT
To: "'Joshua H. Wilson'" <JWilson@fando.com>
Cc: "McKay, Dawn" <Dawn.McKay@ct.gov>
Subject: RE: UI Ansonia Substation Capacitor Bank (DEEP NDDDB#201602548)

Josh-

I reviewed the project information you sent and as you described there is no inwater work proposed for this project or work that would somehow affect water quality in the Naugatuck River. Therefore the project will not affect blueback herring.

Thanks for the consultation,

Mark Johnson
Senior Fisheries Biologist (Coastal)
Habitat Conservation/Enhancement Program, Inland Fisheries Division
Connecticut Department of Energy and Environmental Protection
Marine Headquarters
P.O. Box 719, 333 Ferry Rd, Old Lyme, CT 06371
P: 860.447-4342 (direct line)
Mark.johnson@ct.gov



www.ct.gov/deep

***Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.***

From: Joshua H. Wilson [<mailto:JWilson@fando.com>]
Sent: Thursday, March 31, 2016 8:14 AM
To: Johnson, Mark
Cc: Shawn Crosbie (shawn.crosbie@uinet.com)
Subject: UI Ansonia Substation Capacitor Bank (DEEP NDDDB#201602548)

Hi Mark

I got your voicemail from yesterday and am following up with some details regarding the Ansonia Substation Capacitor Bank Project at 4-8 Riverside Drive, Ansonia (NDDDB #201602548).

Ultimately, if you are able to do so based on the attached information, I'm looking for a final determination that the proposed activity will not affect the listed species (blueback herring). My sense is that it will not, given the wholly upland activity and no stormwater (construction or otherwise) discharge from the site to the Naugatuck River. However, if you cannot make this determination based on the information provided, then please let me know what you would need to help facilitate the review and make a final determination.

Please email or call me at the number below if you would like to discuss the proposed project further.

Many thanks and best regards,

Josh



Josh Wilson, PWS
Senior Ecologist | Risk Assessor

Fuss & O'Neill, Inc | 146 Hartford Road | Manchester, CT 06040
860.646.2469 x5303 | jwilson@fando.com
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Attachment C

All Points Visibility Analysis



VISIBILITY ANALYSIS

PROPOSED FACILITY MODIFICATIONS ANSONIA SUBSTATION ANSONIA, CONNECTICUT



Prepared for:

The United Illuminating Company
180 Marsh Hill Road
Orange CT 06477

Prepared by:

All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

MAY 2016

Project Introduction

The United Illuminating Company ("UIC") proposes to modify an existing electrical Substation at 8 Riverside Drive in Ansonia, Connecticut (the "Site"). The Project requires expansion of the existing Substation yard and includes a new 115-kV capacitor bank, as well as the installation of new lightning masts.

At the request of UIC, All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate potential views associated with the proposed Substation from.

The Site is currently developed with the existing Ansonia Substation. The Site is located in a mixed industrial and residential area west of the Naugatuck River and east of Franklin Street (State Route 334).

Methodology

APT personnel conducted field reconnaissance on April 14 and May 7, 2016 to determine where the Substation is visible today, photo-document existing conditions and assess the potential visibility of the proposed modifications. The geographic coordinates of the camera's position at each photo location were logged via GPS. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens, with the lens set to 50 mm to present a consistent field of view.

Three-dimensional computer models were developed for the existing building and components of the proposed installation from AutoCAD information. Photographic simulations were then generated to portray scaled renderings of the proposed installation from five representative locations where it would be visible. Using field data, site plan information and image editing software, the proposed Facility was scaled to the correct location and height, relative to the existing building and surrounding area. For presentation purposes in this report, all of the photographs were produced in an approximate 7-inch by 10.5-inch format. A photolog map and copies of the existing conditions and photo-simulations are attached.

The simulations provide a representation of the Substation under similar settings as those encountered during the reconnaissance. Views of the Substation 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 April 14th included mostly sunny skies; on May 7th the skies were mostly cloudy. The photo-simulations presented in this report provide an accurate portrayal of the proposed facility modifications under comparable conditions.

Conclusions

Based on our understanding of the Project, the tallest new structures (lightning masts) will rise to similar heights as the existing A-frame structures (48 to 50 feet above grade) and will include lighting rods extending another 5 to 8 feet. As such, components associated with the modified Substation will not be visible from any new locations in the area. The addition of the new capacitor bank will extend eastward, towards Riverside Drive and the Naugatuck River, away from the residential development to the west.

Year-round views of the Substation would continue to be limited to areas immediately surrounding the Site by the combination of the relatively short heights of the existing and proposed infrastructure and the existing intervening vegetation. Properties along Franklin Street to the west lie at higher elevations than the Site. With the exception of abutting land, where views of the existing Substation can be gained through trees looking down into the Site, most lines of sight are both obstructed and towards the tops of taller infrastructure.

The results of this analysis demonstrate that the proposed modifications to the Ansonia Avenue Substation will not have a substantial adverse visual effect on the surrounding environment nor be detrimental to the general visual character of the area.

ATTACHMENTS



EXISTING



PROPOSED CHANGES



FINAL CONFIGURATION

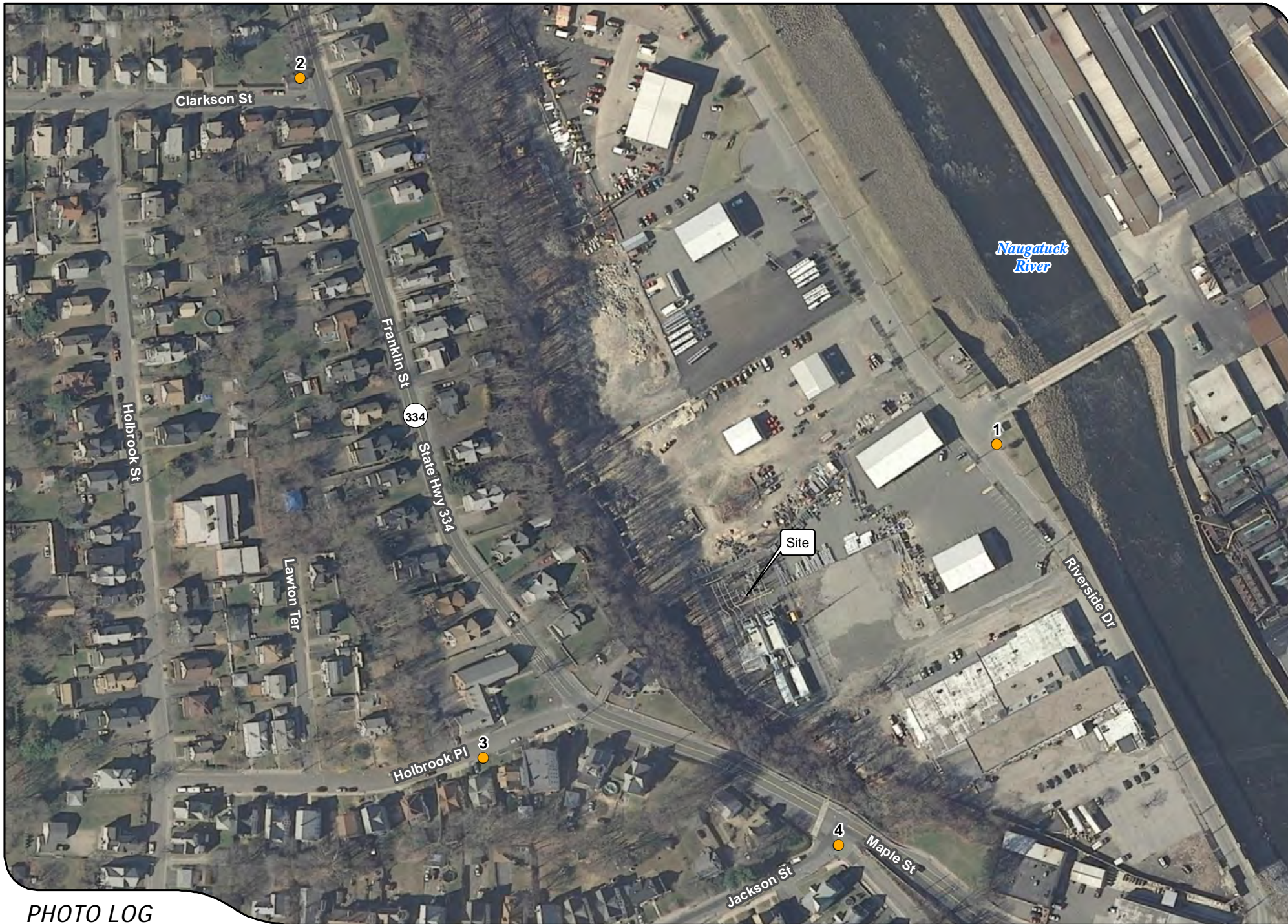
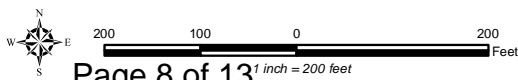


PHOTO LOG

Legend

- Photo Location





EXISTING

PHOTO

1

LOCATION
RIVERSIDE DRIVE

ORIENTATION
SOUTHWEST



PROPOSED

PHOTO

1

LOCATION

RIVERSIDE DRIVE

ORIENTATION

SOUTHWEST



NOT VISIBLE FROM THIS LOCATION

EXISTING

PHOTO

2

LOCATION
FRANKLIN STREET

ORIENTATION
SOUTHEAST



EXISTING

PHOTO

3

LOCATION
HOLBROOK PLACE

ORIENTATION
NORTHEAST



NOT VISIBLE FROM THIS LOCATION

EXISTING

PHOTO

4

LOCATION

FRANKLIN STREET AT JACKSON STREET

ORIENTATION

NORTHWEST

Attachment D

Noise Analysis

DRAFT

ANSONIA SUBSTATION ACOUSTICAL ASSESSMENT

B&V PROJECT NO. 191275

PREPARED FOR



The United Illuminating Company

20 APRIL 2016



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Executive Summary

The United Illuminating Company (UI) is proposing an expansion of the existing Ansonia Substation located at 24 Franklin Street, Ansonia, Connecticut (Substation). The expansion will include the installation of two (2) 115 KV, 25 MVAR capacitor bank assemblies and two (2) three phase air core reactors.

In order to characterize the existing acoustical environment surrounding the Substation site, an ambient sound level survey was conducted. The sound level survey was conducted at three (3) locations. Measured ambient sound levels in the vicinity of the Substation ranged from 30 to 54 dBA. During the early morning hours when non-Substation sound sources had subsided, the measured ambient sound levels along the Substation property boundary, including contributions from the Substation, were as low as 35 dBA.

The Substation is subject to state and local regulations regarding sound emissions. However, due to an earlier nighttime designation and later daytime designation the City of Ansonia regulations are more restrictive than those specified by the State of Connecticut. As such, the regulations set forth by the City of Ansonia have been used to determine regulatory compliance. Based on available zoning information the corresponding sound level limits establish by the City of Ansonia are as follows:

- The sound levels associated with the Substation should not exceed 51 dBA along the residential zoning boundary to the west.
- The sound levels associated with the Substation should not exceed 66 dBA along the commercial zoning boundaries to the north.
- The sound levels associated with the Substation should not exceed 70 dBA along the industrial zoning boundaries to the east and south.

An acoustical model was developed to predict the future Substation sound levels (i.e., after expansion) in order to evaluate future compliance with the applicable noise regulations. The primary noise sources associated with the future Substation that will remain are the two (2) existing transformers. The new expansion equipment will include two (2) 25 MVAR three phase capacitor banks and two (2) three phase air core reactors. The future Substation sound pressure levels along the adjacent boundaries will comply with applicable noise regulations.

1.0 Introduction

The United Illuminating Company (UI) is proposing an expansion of the existing Ansonia Substation located at 24 Franklin Street, Ansonia, Connecticut (Substation). The expansion will include the installation of two (2) 115 KV, 25 MVAR capacitor bank assemblies and two (2) three phase air core reactors. For reference, an aerial view of the existing Substation and surrounding vicinity is shown in Figure 1-1.

In support of the Substation expansion, an acoustical assessment has been completed to address the following questions:

- *What are the current existing ambient sound levels in the vicinity of the Substation?*
- *What noise regulations are applicable to the Substation?*
- *What are the predicted sound levels associated with the future Substation?*
- *What (if any) acoustical mitigation measures are anticipated to be necessary for the future Substation to support compliance with the applicable noise regulations?*



Figure 1-1 Aerial view of the Existing Substation and surrounding properties

2.0 Existing Acoustical Environment

An ambient sound level survey was conducted in order to characterize the existing acoustical environment in the area surrounding the Substation. This section describes the results of the survey and the nature of the existing acoustical environment.

2.1 SUBSTATION OPERATING CONDITIONS

Substation operating conditions and transformer loading fluctuates based on seasonal changes. During the survey, the Substation operation could be characterized as normal, steady-state conditions typical of springtime operation.

2.2 SURVEY PROCEDURE AND CONDITIONS

The ambient sound level survey was conducted March 23 through 24, 2016. The survey procedure was based on relevant portions of general industry standards including, but not limited to, ANSI S1.13, ANSI S12.9, and ANSI S12.18. Sound level measurements were conducted using Type 1 sound level meters that meet the requirements of ANSI S1.4. The sound level meters were field calibrated immediately before and after each measurement period and the maximum variation was ± 0.3 dB. All equipment had been laboratory calibrated within the last 12 months. A list of the measurement equipment utilized during the survey and copies of corresponding calibration certificates are included in Appendix A.

During the survey period, meteorological conditions were suitable for environmental noise monitoring. Temperatures ranged from approximately 41 to 70 °F. Wind speeds were calm ranging from 0 to 5 mph with occasional gust up to 16 mph. The temperature, humidity, and wind speed trends during the hours of the ambient sound level survey are detailed in Appendix B.

In order to effectively quantify and qualify the existing daily sound levels surrounding the Substation, the ambient survey included continuous sound level monitoring and short-term (attended) sound level measurements. Geographic coordinates and the location of each measurement are summarized in Table 2-1 and identified on Figure 2-1.

Several sound level metrics were used to quantify the fluctuating environmental noise. These metrics included the statistical L_{10} , L_{50} , and L_{90} sound levels. The L_{90} sound level is the sound level exceeded 90 percent of the time and is generally considered representative of the residual or background sound level (i.e., excluding effects of discrete noise events such as occasional traffic, aircraft, etc.). Similarly, the L_{50} sound level is the median sound level, and the L_{10} sound level is generally considered the “intrusive” sound level (i.e., including effects of occasional discrete events such as traffic, aircraft, etc.). For a more detailed discussion regarding the acoustical terminology referenced within this report please refer to Appendix C.

Table 2-1 Sound Measurement Locations (SMLs)

MEASUREMENT LOCATION	UTM COORDINATES ZONE 18 (m E/m N)	LOCATION DESCRIPTION	TYPE OF MONITORING
SML1	660136 / 4579122	North Substation fence line approx. 100 feet north of the existing substation transformers.	Short-term
SML2	660126 / 4579038	Southwest property line, same elevation as street, approx. 175 feet southwest of the existing substation transformers.	Continuous
SML3	660058 / 4579060	North corner of the intersection of Franklin and Holbrook, approx. 290 feet west of the existing substation transformers.	Short-term



Figure 2-1 Sound measurement locations (SMLs)

2.3 SURVEY RESULTS

The ambient sound level survey included continuous sound level monitoring and short-term (attended) sound level measurements. Continuous sound level monitors were deployed to collect sound level data at SML2 throughout the survey period. Short-term, 10- to 20-minute sound levels were measured periodically at SML1 and SML3 to qualify the existing overall conditions and quantify the existing spectral conditions during various daytime and nighttime hours. The subsequent sections detail the survey results at each measurement location.

2.3.1 SML1: Substation Northern Boundary

Short-term sound levels were measured at SML1 to capture the Substations acoustical contribution along the north property line. Sound levels measured during both daytime and nighttime hours are shown in Figure 2-2. Influential sound sources observed during the short-term measurements included Substation transformers, distant and local (Franklin Street) traffic, air traffic, transmission line crackle, power washer operating at an industrial property on Riverside Drive, church bells, and birds. Additionally, a tonal characteristic from a truck idling in an adjacent parking lot was observed and can be seen in Figure 2-2 as a peak in the 40 and 80 Hz one-third-octave bands.

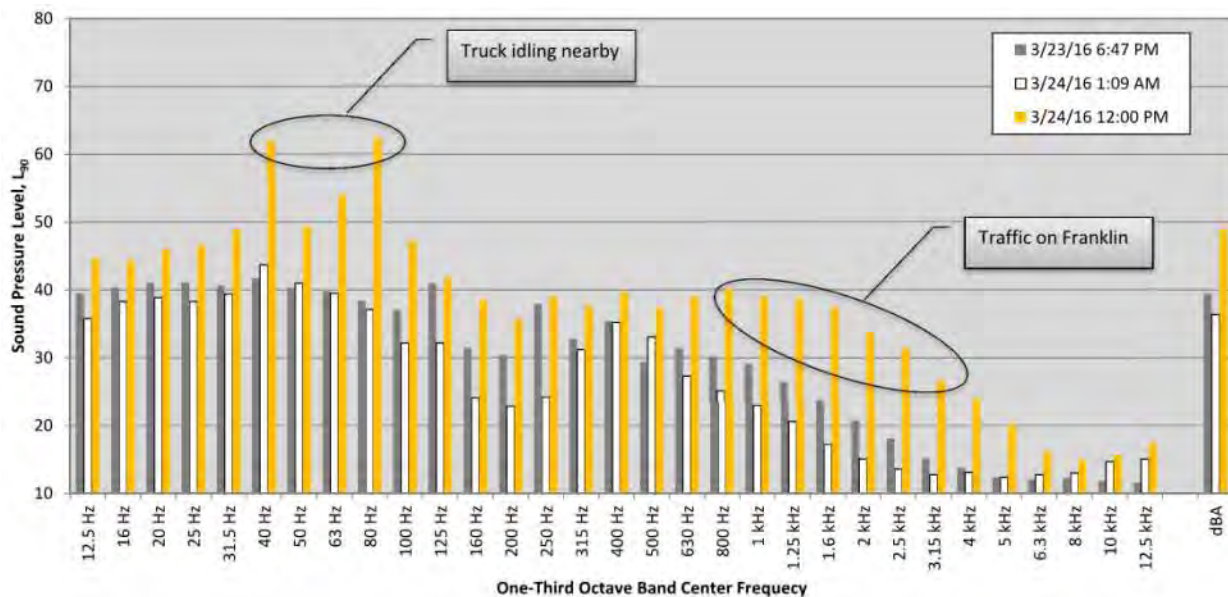


Figure 2-2 SML1 short-term measurement results (L₉₀)

2.3.2 SML2: Substation West Property Line

Sound levels were measured at SML2 to assess the Substation’s acoustical contribution along the western boundary. The continuous sound level monitoring results are detailed in Figure 2-3 and provide an indication of the sound level trends measured during the hours of the survey. The background sound levels (L₉₀) ranged from 47 to 54 dBA during the daytime hours (7:00 AM to 9:00 PM) and 35 to 48 dBA during the nighttime hours (9:00 PM to 7:00 AM).

It is important to note that the L₉₀ sound levels represent the background conditions without the influence of discrete events such as dogs barking, aircraft flyovers, etc. The L₁₀ sound levels, shown in Figure 2-3, are generally representative of the higher sound levels that occurred during noisy discrete events.

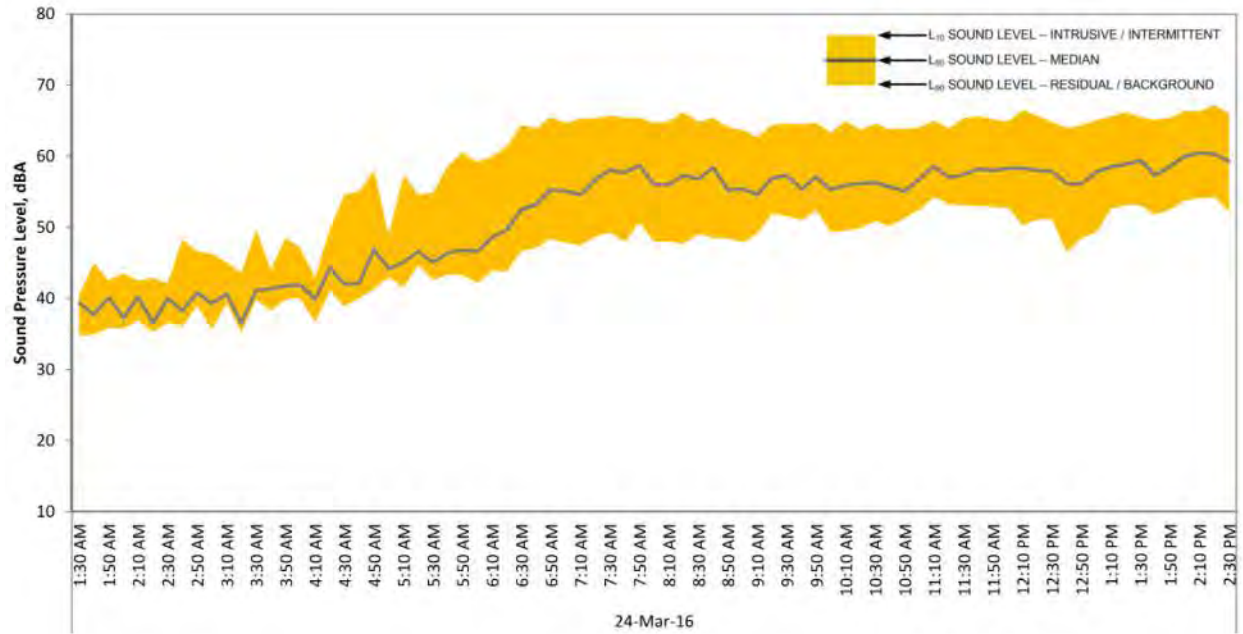


Figure 2-3 SML2 continuous monitoring results (10-min measurement interval).

2.3.3 SML3: Substation South Boundary

Short-term sound levels were measured at SML3 to capture the acoustical environment experienced by the residential properties west of the Substation. Sound levels measured during both daytime and nighttime hours are shown in Figure 2-4. Influential sound sources observed during the short-term measurements included distant and local (Franklin Street) traffic, air traffic, power washer operating at an industrial property on Riverside Drive, construction backup beeper, leaves blowing in the wind, and birds. The existing Substation was not audible at this measurement location.

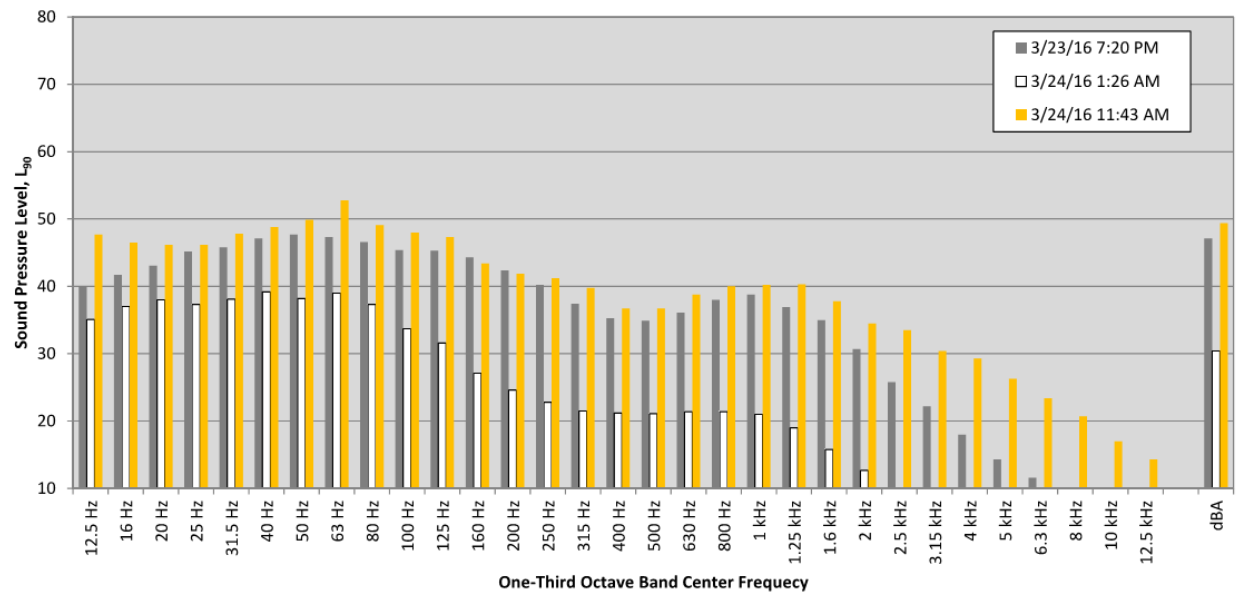


Figure 2-4 SML3 short-term measurement results (L_{90})

2.4 SURVEY RESULTS SUMMARY

As summarized in Table 2-2, the existing ambient sound levels in the vicinity of the Substation ranged from 30 to 54 dBA at the three survey locations. In general, the existing ambient conditions are influenced by existing Substation transformers, distant and local (Franklin Street) traffic, air traffic, transmission line crackle, activities in nearby industrial areas (truck idling and power washer), construction activities, leaves blowing in the wind, and birds.

Table 2-2 Summary of Survey Results

LOCATION	RANGE OF DAYTIME BACKGROUND SOUND LEVELS (10 min L ₉₀), dBA	RANGE OF NIGHTTIME BACKGROUND SOUND LEVELS (10 min L ₉₀), dBA	OBSERVED NOISE SOURCES
SML1	40 dBA (3/23/2016 6:47PM) 49 dBA (3/24/2016 12:00PM)	36 dBA (3/24/2016 1:09AM)	Truck idling, Substation transformers, distant and local traffic, air traffic, t-line crackle, power washer, church bells, and birds
SML2	47 to 54	35 to 48	Local traffic
SML3	47 dBA (3/23/2016 7:20PM) 49 dBA (3/24/2016 11:43AM)	30 dBA (3/24/2016 1:26AM)	Distant and local traffic, air traffic, power washer, construction backup beeper, leaves blowing in the wind, and birds; Substation was not audible.

3.0 Applicable Noise Regulations

Regulations, standards, and guidelines related to environmental sound were investigated and reviewed to determine applicability to the Substation. No quantifiable noise requirements or guidelines in Fairfield County were identified. However, the following sections summarize the noise regulations established by the State of Connecticut and the City of Ansonia and the applicability of each.

3.1 STATE OF CONNECTICUT

The state regulation governing noise is contained in the Regulations of Connecticut State Agencies (RCSA) Title 22a, Section 22a-69-1 to 22a-69-7.4. The statutes provide limits that are based on the noise zone and time of day. Noise zones are established based on the Standard Land Use Classification Manual of Connecticut.

- Class A noise zone generally includes residential areas where human beings sleep or areas where serenity and tranquility are essential to the intended use of the land such as residential areas (single and multi-family), hotels, hospitals, and religious facilities.
- Class B noise zone generally includes commercial areas where human beings converse and such conversation is essential to the intended use of the land such as retail business, professional services, and recreational activities.
- Class C noise zone generally includes industrial areas where protection against damage to hearing is essential and the necessity for conversation is limited such as manufacturing facilities, utility uses, and agricultural activities.

In accordance with these designations, property bordering the Substation to the north aligns with a Class B noise zone, east and south with a Class C noise zone, and west with a Class A noise zone. Considering these designations and the noise limits detailed in RCSA Section 22a-69-3.5 the noise zone boundaries and corresponding noise limits adjacent to the Substation (Class C noise zone) are shown in Figure 3-1. For reference, daytime and nighttime hours are defined as the hours between 7:00 AM and 10:00 PM and 10:00 PM and 7:00 AM, respectively.

Compliance with the specified limits is determined by measuring the A-weighted sound pressure level at one (1) foot beyond the emitter's boundary inside the receptor's noise zone. The emitter's zone includes contiguous rights of way for streets, highways, railroads, and waters of the state.

In addition to these limits, there is a 5 dB penalty when a prominent discrete tone is present. Per the statute, a prominent discrete tone is "the presence of acoustic energy concentrated in a narrow frequency range". The determination of the tone is relative to the sound pressure levels in the adjacent frequency bands as specified in RCSA Section 22a-69-1.2 (r). Ambient sound level measurements conducted in the vicinity of the Substation do not indicate the presence of a prominent discrete tone nor is the Substation expansion equipment expected to introduce tonal characteristics. As such, the 5 dB penalty does not apply.

3.2 CITY OF ANSONIA

The City of Ansonia identifies noise limits in Chapter 17 of the Code of Ordinances (https://www.municode.com/library/ct/ansonia/codes/code_of_ordinances) effective June 18, 2015). The City of Ansonia noise level standards are specified for the zoning designations of the

emitting and receiving land and time of day. For reference, daytime hours are defined as the hours between 7:00 AM to 9:00 PM and nighttime hours between 9:01 PM to 6:59 AM.

In accordance with the City of Ansonia Geographic & Property Information Application (<http://ansoniamapxpress.net>) the Substation property and adjacent properties to the east and south are zoned industrial while adjacent properties to the north and west are zoned commercial and residential, respectively. Based upon these zoning designations and the noise level standards specified in Chapter 17, the sound level limits and corresponding zone boundaries adjacent to the Substation are shown in Figure 3-1.

3.3 NOISE REGULATION APPLICABILITY

Since the Substation operates during both daytime and nighttime hours, it will need to comply with the more restrictive nighttime limits. Based on the regulations reviewed, the State of Connecticut and City of Ansonia sound level limits are identical. However, due to the earlier nighttime hour's designation the sound level limits established by the City of Ansonia have been deemed more stringent and have been used as the design basis for the Substation. Regulatory compliance with the City of Ansonia limits will also result in compliance with the limits specified by the State of Connecticut.

As such, to ensure compliance with the most restrictive sound level limits the Substation related sound levels must not exceed the following limits:

- The sound levels associated with the Substation should not exceed 51 dBA along the residential zoning boundary to the west (refer to Figure 3-1).
- The sound levels associated with the Substation should not exceed 66 dBA along the commercial zoning boundaries to the north (refer to Figure 3-1).
- The sound levels associated with the Substation should not exceed 70 dBA along the industrial zoning boundaries to the east and south (refer to Figure 3-1).



Figure 3-1 Substation sound level limits

4.0 Future Substation Sound Emissions

The environmental sound emissions from the future Substation (after expansion) have been predicted in order to evaluate compliance with the applicable regulations. This section discusses sound contributions solely from the Substation and considers equipment currently installed that will remain in service and new equipment associated with the Substation expansion. The Substation sound emissions are based on existing transformer sound levels provided by the manufacturer (Appendix D) and the site arrangement drawing provided by the design team (Appendix E).

4.1 PROJECT SOUND MODELING

The environmental sound emissions associated with the Substation have been modeled using prediction software (DataKustik Cadna/A version 4.6.155), which implements the calculation methodologies specified in ISO 9613. The model simulates the outdoor propagation of sound from each source and accounted for sound wave divergence, atmospheric and ground sound absorption, and sound shielding due to interceding barriers, buildings, and terrain. A database was developed which specified the location, and octave-band sound levels of each noise source. A receptor grid was specified which covered the entire area of interest. The sound pressure levels within the receptor grid were calculated based on the octave-band sound level contribution of each sound source. Finally, a sound level contour plot was produced based on the overall sound pressure levels within the receptor grid, including at specific receptor locations.

To account for increased transformer sound levels associated with peak loading conditions, modeling was based on normal operation consistent with summer months which included sound contributions from the transformer cooling fans. Abnormal or upset Substation operating conditions were not considered in the acoustical model. Various structures associated with the Substation were included in the model to account for their shielding effect.

4.2 SUBSTATION EQUIPMENT SPECIFICATIONS

The primary noise sources associated with the future Substation will be the two (2) existing transformers. New equipment to be installed as part of the Substation expansion will include two (2) 25 MVAR three phase capacitor banks and two (2) three phase air core reactors. Existing and expansion equipment sound levels used to develop the acoustical model are shown in Table 4-1 and are based on manufacturer submitted data and in-house and empirical data from similar equipment.

Please note that any deviations from the current site arrangement, the assumed equipment specifications, or the acoustical design elements outlined herein, may affect the overall Substation sound emissions and thus the modeling results presented below. If such design or specification changes occur, the Substation acoustical model should be re-evaluated to determine the impacts of the proposed design change.

Table 4-1 Substation Equipment Sound Levels

EQUIPMENT	QTY	EQUIPMENT SOUND LEVELS	BASIS
GE Power Transformer (existing)	2	74 dBA per IEEE C57.12.90 (fans operating)	GE Test Report
6 Ton HVAC Unit (existing)	2	75 dBA at 3 ft	In-house ¹

EQUIPMENT	QTY	EQUIPMENT SOUND LEVELS	BASIS
25 MVAR Three Phase Cap Bank	2	56 dBA at 3 ft	In-house ¹
Three Phase Air Core Reactor	2	53 dBA at 3 ft	In-house ¹

Notes:

1. In-house data is based on a combination of measured data of similar substation installations and information received from past equipment suppliers.

4.3 REGULATORY COMPLIANCE

The calculated octave-band sound pressure levels associated with the future Substation are presented in Figure 4-1. It is important to note that the calculated sound emissions only include contributions from the Substation and are exclusive of any other sound sources, including background sound. As shown, the future Substation sound pressure levels along the adjacent zoning boundaries are calculated to be:

- Less than 50 dBA along the residential zoning boundary to the west
- Less than 55 dBA along the commercial zoning boundary to the north.
- Less than 50 dBA along the industrial zoning boundaries to the east and south.

Therefore the future Substation will be compliant with the sound level limits established by both the City of Ansonia and the State of Connecticut.



Figure 4-1 Future Substation sound pressure levels, operation consistent with summer months.

Appendix A. Ambient Survey Test Equipment

Table A-1 Ambient Survey Test Equipment

MODEL	SERIAL NUMBER	LAST CALIBRATION DATE
Rion Model NA-27	01191119	21 July 2015
Rion Model NL-52	01232541	21 July 2015
Rion NC-73 Acoustical Calibrator	105277795	20 July 2015



Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540-1994 Part 1
ACCREDITED by NVLAP (an IAC NTRA signatory)



NVLAP Lab Code: 200925-0

Calibration Certificate No. 34306

Instrument: Acoustical Calibrator
Model: NC-75
Manufacturer: Rion
Serial Number: 10527795
Class (IEC 60942): 2
Barometer type:
Barometer s/n:
Customer: Black & Veatch
City/State: 913-458-7823 / 913-458-7823

Date Calibrated: 7/20/2015 **Cal Dur:** 7/20/2016
Status:

Received	Sent
X	X

In tolerance:

Yes	No
X	X

Out of tolerance: See comments:
Contains non-accredited tests: ___ Yes ___ No

Address: 11481 Lamar Avenue
Overland Park, KS 66211

Tested in accordance with the following procedures and standards:
Calibration of Acoustical Calibrators, Scantek Inc., Rev. 1/16/2015

Instrumentation used for calibration: Nor-1504 Metasonic Test System:

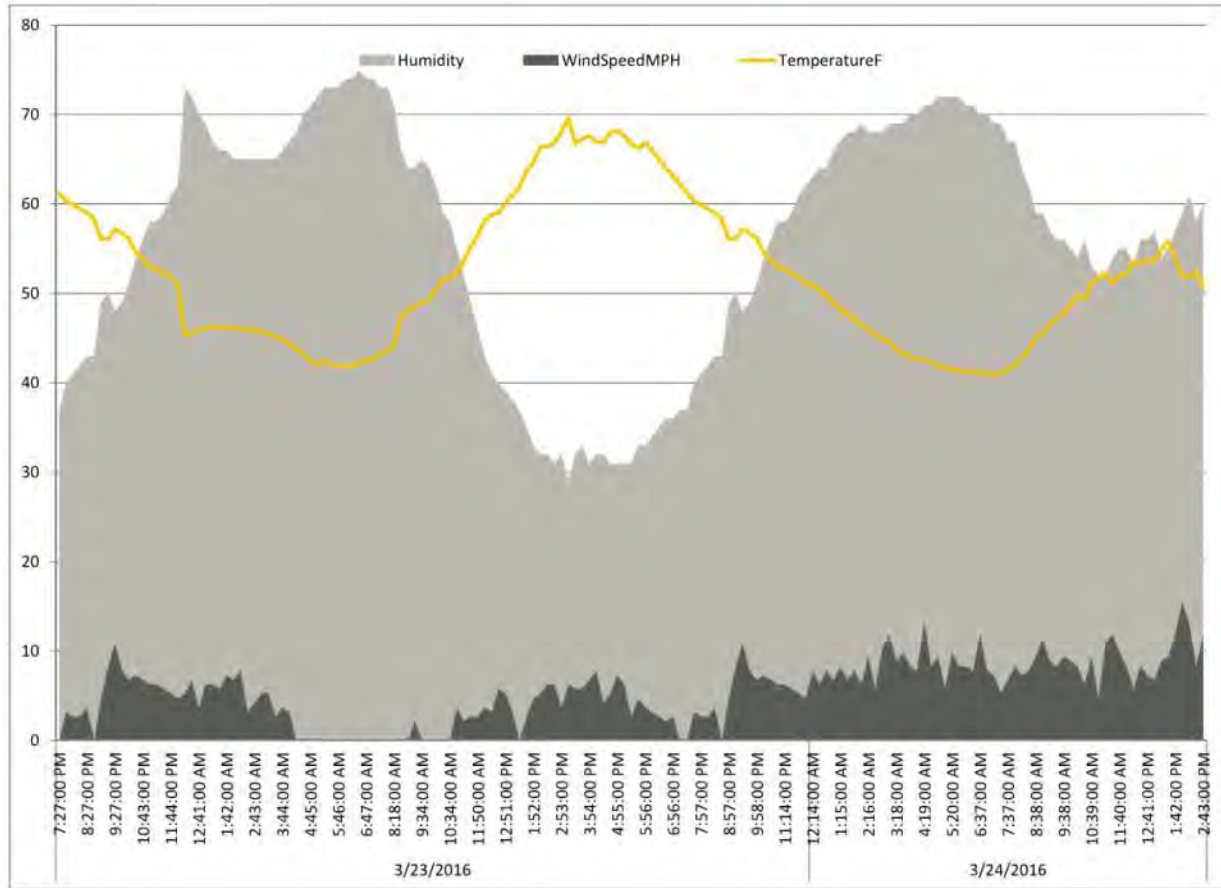
Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab. / Accreditation	Cal. Due
483B Serrano	SMT Cal Unit	11072	Oct 9, 2014	Scantek Inc. / NVLAP	Oct 7, 2015
DS 263.14E	Precision Gauge mfr	33334	Sep 20, 2013	ACR Env. / A2LA	Sep 30, 2015
3440LA Agilent Technologies	Signal Voltmeter	U13110711	Oct 1, 2014	ACR Env. / A2LA	Oct 1, 2015
H540 Thruwell	Meter Station	054017079603	Oct 1, 2014	ACR Env. / A2LA	Oct 1, 2015
8903 mfr	Audio Analyzer	2534405991	Dec 11, 2013	ACR Env. / A2LA	Dec 11, 2014
PC Program 2014	Liberation software	v.4.11	Validation Nov 2014	Scantek Inc.	
4184 BruelKjaer	Microphone	172369	Nov 20, 2014	Scantek Inc. / NVLAP	Nov 20, 2015
1203 Bopprecht	Pre-amplifier	14012	Aug 22, 2014	Scantek Inc. / NVLAP	Aug 22, 2015

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by: <i>J Lydon Dawkins</i>	Authorized signatory: <i>Valentin Rodriguez</i>	
Signature: <i>J Lydon Dawkins</i>	Signature: <i>Valentin Rodriguez</i>	
Date: 7/20/2015	Date: 7/22/2015	

Calibration Certificates or Test Reports shall only be reproduced, copied or full, without written approval of the Laboratory.
This Calibration Certificate or Test Report shall not be used to make another certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal government.
Document stored in: Z:\Calibration Certs\Cal 2015\KXN00013_10527795_BV1.doc Page 1 of 1

Appendix B. Ambient Survey Meteorological Conditions



<https://www.wunderground.com>
Weather Station ID: KCTANSON3

Appendix C. Acoustical Terminology

SOUND ENERGY

Sound is generated by the propagation of energy in the form of pressure waves. Being a wave phenomenon, sound is characterized by amplitude (sound level) and frequency (pitch). Sound amplitude is measured in decibels, dB. The decibel is the logarithmic ratio of a sound pressure to a reference sound pressure. Typically, 0 dB corresponds to the threshold of human hearing. A 3 dB change in a continuous broadband noise is generally considered "just barely perceptible" to the average listener. A 5 dB change is generally considered "clearly noticeable" and a 10 dB change is generally considered a doubling (or halving) of the apparent loudness (Bies and C.H. Hansen, Engineering Noise Control, 2009). For reference, the sound pressure levels and subjective loudness associated with common noise sources are shown in Table C-1.

Frequency is measured in hertz, Hz (cycles per second). Most sound sources (except those with pure tones) contain sound energy over a wide range of frequencies. In order to analyze sound energy over the range of frequencies, the sound energy is typically divided into sections called octave bands. Octave bands are identified by their center frequencies including 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz. For more detailed analyses, narrow bands such as 1/3-octave bands or 1/12-octave bands are employed. The sum of the sound energy in all of the octave bands for a source represents the overall sound level of the source.

The normal human ear can hear frequencies ranging from 20 Hz to 20,000 Hz. At typical sound pressure levels, the human ear is more sensitive to sounds in the middle and high frequencies (1,000 to 8,000 Hz) than sounds in the low frequencies. Various weighting networks have been developed to simulate the frequency response of the human ear. The A-weighting network was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighting network emphasizes sounds in the middle to high frequencies and de-emphasizes sounds in the low frequencies. Most sound level instruments can apply these weighting networks automatically. Any sound level to which the A-weighting network has been applied is expressed in A-weighted decibels, dBA. To characterize sound that contains relatively more low frequency energy—and to approximate the ear's response to relatively high sound levels—the C-weighting network was developed. C-weighting places more equal emphasis on low and high frequencies relative to A-weighting. Any sound level to which the C-weighting network has been applied is expressed in C-weighted decibels, dBC.

SOUND LEVEL METRICS

Noise in the environment is constantly fluctuating, such as when a car drives by, a dog barks, or a plane passes overhead. Therefore, noise metrics have been developed to quantify fluctuating environmental noise levels. These metrics include the equivalent-continuous sound level and the exceedance sound levels.

The equivalent-continuous sound level, L_{eq} , is used to represent the equivalent sound pressure level over a specified time period. The L_{eq} metric is the sound level of a steady-state sound that has the same (equivalent) total energy as the time-varying sound of interest, taken over a specified time period and covering a specified set of conditions. Thus, L_{eq} is a single-value level that expresses the time-averaged total energy of a widely varying or fluctuating sound level.

The exceedance sound level, L_x , is the sound level exceeded "x" percent of the sampling period and is referred to as a statistical sound level. The most common L_x values are L_{90} , L_{50} , and L_{10} . L_{90} is the

sound level exceeded 90 percent of the sampling period. The L_{90} sound level represents the sound level without the influence of loud, transient noise sources and is therefore often referred to as the residual or background sound level (ANSI S12.9, Quantities and Procedures for Description and Measurement of Environmental Sound, 2003). The L_{50} sound level is the sound level exceeded 50 percent of the sampling period or the median sound level. The L_{10} sound level is the sound level exceeded 10 percent of the sampling period. The L_{10} sound level represents the occasional louder noises and is often referred to as the intrusive sound level. As previously discussed, the L_{90} environmental sound level typically represents the background (residual) sound level.

The variation between the L_{90} , L_{50} , and L_{10} sound levels can provide an indication of the variability of the acoustical environment. If the acoustical environment is perfectly steady, all values are identical. A large variation between the values indicates the environment experiences highly fluctuating sound levels. For instance, measurements near a roadway with frequent passing vehicles may cause a large variation in the statistical sound levels.

TYPICAL COMMUNITY SOUND LEVELS

Typical background (residual) sound levels in various types of communities are outlined in Table C-2 for reference. However, it is important to remember that each community is unique with regard to the sources of noise that contribute to the background sound levels.

HUMAN RESPONSE TO SOUND

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise will generally increase as environmental sound levels increase. However, many other factors will also influence people's response to noise. These factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the noise and those associated with it, and the predictability of the noise can also influence people's response. Response to noise varies widely from one person to another and with any particular noise, individual responses will range from "highly annoyed" to "not annoyed".

Table C-1 Typical Sound Pressure Levels Associated with Common Noise Sources

SOUND PRESSURE LEVEL, dBA	SUBJECTIVE EVALUATION	COMMON OUTDOOR ENVIRONMENT OR SOURCE	COMMON INDOOR ENVIRONMENT OR SOURCE
140	Deafening	Jet aircraft at 75 ft	
130	Threshold of pain	Jet aircraft during takeoff at a distance of 300 ft	
120	Threshold of feeling	Elevated Train	Hard rock band
110	Extremely loud	Jet flyover at 1000 ft	Inside propeller plane
100	Very loud	Power mower, motorcycle at 25 ft, auto horn at 10 ft	
90	Very loud	Propeller plane flyover at 1000 ft, noisy urban street	Full symphony or band, food blender, noisy factory
80	Moderately loud	Diesel truck (40 mph) at 50 ft	Inside auto at high speed, garbage disposal, dishwasher
70	Loud	B-757 cabin during flight	Close conversation, vacuum cleaner, electric typewriter
60	Moderate	Air-conditioner condenser at 15 ft, near highway traffic	General office
50	Quiet		Private office
40	Quiet	Farm field with light breeze, birdcalls	Soft stereo music in residence
30	Very quiet	Quiet residential neighborhood	Bedroom, average residence (without TV and stereo)
20	Just audible		Human breathing
10	Threshold of hearing		
0			

Source: Adapted by Black & Veatch from *Architectural Acoustics*, by David M. Egan (1988) and *Architectural Graphic Standards*, by Ramsey and Sleeper (1994).

Table C-2 Typical Daytime Background Sound Levels in Various Types of Communities

TYPE OF COMMUNITY	TYPICAL DAYTIME BACKGROUND SOUND PRESSURE LEVEL, dBA
Very Quiet Rural Areas	31 to 35
Quiet Suburban Residential	36 to 40
Normal Suburban Residential	41 to 45
Urban Residential	46 to 50
Noisy Urban Residential	51 to 55
Very Noisy Urban Residential	56 to 60
Adjacent Freeway or Major Airport	n/a

Source: Adapted by Black & Veatch from *Community Noise*, by the U.S. Environmental Protection Agency, (December 1971).

Appendix D. Existing Transformer Sound Levels



Test Department


Purchaser: United Illuminating Co.	Serial No.: G1662-01
Inspector:	Date: Nov./15/2005

MEASUREMENTS FOR SOUND LEVEL TEST

Tap Position H.V. (3) / L.V. (Nom)

60 Hz

PHASE	W	I rms	V rms	V avg
A	9818	1.406	14886	14885
B	4808	0.942	14998	14975
C	8218	1.722	14885	14885
AVERAGE	22844	1.357	14923	14915



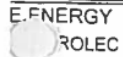
 Test Engineer



 Design Engineer

 Inspector

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 Apodaca, N.L. 66500 México



Test Department

Purchaser: United Illuminating Co.	Serial No.: G1662-01
Inspector:	Date: Nov./15/2005

SOUND LEVEL TEST (ONAN)

Tap Position H.V.(3) / L.V.(Nom)

A weighted sound pressure level measurement

pos	2.-Ambient + transformer		5.-Corrected transformer	
	1/3rd Height	2/3rds Height	1/3rd Height	2/3rds Height
0	71.6	72.3	70.3	71.0
1	70.9	71.7	69.3	70.4
2	71.9	71.8	70.6	70.5
3	72.1	71.4	70.8	69.8
4	71.6	71.9	70.3	70.6
5	71.7	71.4	70.4	69.8
6	71.3	71.6	69.7	70.3
7	71.3	71.4	69.7	69.8
8	71.6	72.1	70.3	70.8
9	71.4	71.9	69.8	70.6
10	71.3	71.8	69.7	70.5
11	71.6	71.8	70.3	70.5
12	71.4	71.9	69.8	70.6
13	71.3	71.6	69.7	70.3
14	71.9	71.8	70.6	70.5
15	71.4	71.6	69.8	70.3
16	71.7	71.8	70.4	70.5
17	71.9	71.4	70.6	69.8
18	71.6	71.3	70.3	69.7
19	71.8	71.9	70.5	70.6

1.-Before:	
pos	Ambient
A	66.7
B	66.8
C	66.5
D	66.6
E	
F	
G	
H	

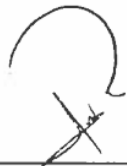
3.-After	
pos	Ambient
A	66.6
B	66.5
C	66.6
D	66.4
E	
F	
G	
H	

4.- Ave Ambient
66

6.- Ave Corrected
70

Average transformer sound pressure level at ANSI surface (Lp)
 Height of the transformer tank (H)
 Length of the prescribed contour (Pm)
 Measurement Surface Area (S)
 Sound Power Level (Lw)

70	dB(A)
3.25	m
19.5	m
79	m²
89	dB(A)


 Test Engineer

Inspector

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Test Department

Purchaser:	United Illuminating Co.	Serial No.:	G1662-01
Inspector:		Date:	Nov./15/2005

SOUND LEVEL TEST (ONAF1)

Tap Position H.V.(3) / L.V.(Nom)

A weighted sound pressure level measurement

pos	2.-Ambient + transformer		5.-Corrected transformer	
	1/3rd Height	2/3rds Height	1/3rd Height	2/3rds Height
0	72.6	73.9	71.6	72.9
1	74.1	73.4	73.3	72.4
2	74.4	73.8	73.6	72.8
3	73.6	74.1	72.8	73.3
4	74.9	74.7	74.3	73.9
5	74.2	75.1	73.4	74.5
6	74.4	73.9	73.6	72.9
7	73.6	73.4	72.8	72.4
8	73.1	73.7	72.1	72.7
9	73.8	73.6	73.0	72.6
10	73.9	73.7	73.1	72.7
11	73.8	73.9	73.0	72.9
12	73.7	73.6	72.9	72.6
13	73.7	73.9	72.9	72.9
14	74.0	73.6	73.2	72.6
15	73.8	74.2	73.0	73.4
16	74.1	74.4	73.3	73.6
17	74.6	74.7	74.0	73.9
18	74.8	74.1	74.2	73.3
19	73.6	73.9	72.8	72.9
20	73.7	73.8	72.9	72.8
21	73.1	73.6	72.1	72.6
22	73.1	73.4	72.1	72.4
23	73.7	73.7	72.9	72.7

1.-Before:	
pos	Ambient
A	66.7
B	66.8
C	66.5
D	66.6
E	
F	
G	
H	


3.-After	
pos	Ambient
A	66.6
B	66.5
C	66.6
D	66.4
E	
F	
G	
H	

4.- Ave Ambient
66

6.- Ave Corrected
73

Average transformer sound pressure level at ANSI surface (Lp)
 Length of the prescribed contour (Pm)
 Measurement Surface Area (S)
 Sound Power Level (Lw)

73 dB(A)
 23.5 m
 132 m²
 94 dB(A)



 Test Engineer

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Test Department

Purchaser:	United Illuminating Co.	Serial No.:	G1662-01
Inspector:		Date:	Nov./15/2005

SOUND LEVEL TEST (ONAF2)

Tap Position H.V.(3) / L.V.(Nom)

A weighted sound pressure level measurement

pos	2.-Ambient + transformer		5.-Corrected transformer	
	1/3rd Height	2/3rds Height	1/3rd Height	2/3rds Height
0	74.7	74.8	74.1	74.0
1	75.2	74.4	74.6	73.6
2	75.1	74.3	74.5	73.5
3	74.8	74.6	74.2	73.8
4	74.4	74.2	73.6	73.4
5	74.5	74.6	73.9	73.8
6	74.8	74.4	74.2	73.6
7	74.9	75.3	74.3	74.7
8	74.4	74.8	73.6	74.0
9	74.3	74.6	73.5	73.8
10	74.4	74.9	73.6	74.1
11	74.9	75.4	74.3	74.8
12	74.3	75.1	73.5	74.5
13	75.2	74.8	74.6	74.0
14	74.4	74.1	73.6	73.3
15	73.9	74.4	73.1	73.6
16	74.6	74.9	74.0	74.1
17	75.0	75.0	74.4	74.4
18	74.4	74.9	73.6	74.1
19	74.8	74.6	74.2	73.8
20	74.7	74.9	74.1	74.1
21	74.6	74.8	74.0	74.0
22	74.7	74.9	74.1	74.1
23	74.9	74.8	74.3	74.0

1.-Before:	
pos	Ambient
A	66.7
B	66.8
C	66.5
D	66.6
E	
F	
G	
H	


3.-After	
pos	Ambient
A	66.6
B	66.5
C	66.6
D	66.4
E	
F	
G	
H	

4.- Ave Ambient
66

6.- Ave Corrected
74

Average transformer sound pressure level at ANSI surface (Lp)
 Length of the prescribed contour (Pm)
 Measurement Surface Area (S)
 Sound Power Level (Lw)

74	dB(A)
23.5	m
132	m²
95	dB(A)



 Test Engineer

 Inspector

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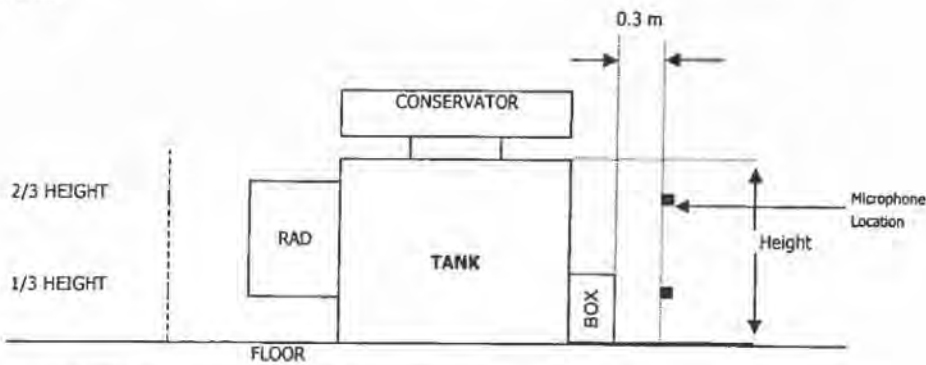
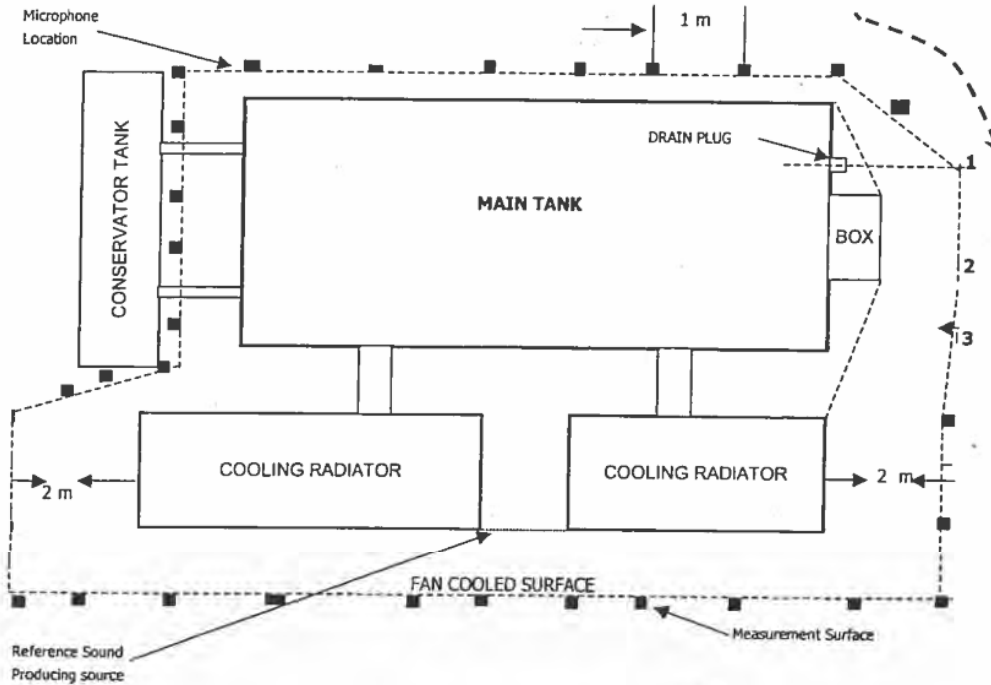


Test Department

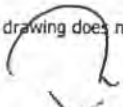
Purchaser: United Illuminating Co.
Inspector:

Serial No.: G1662-01
Date: Nov./15/2005

MICROPHONE LOCATION SKETCH FOR SOUND LEVEL TEST



NOTE: this drawing does not match the unit testes, it is just for interpretation purposes.


Test Engineer


Design Engineer

Inspector

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Purchaser: United Illuminating Co.	Serial No.: G1662-02
Inspector:	Date: Nov./15/2005

MEASUREMENTS FOR SOUND LEVEL TEST

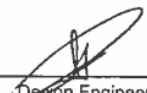
Tap Position H.V. (3) / L.V. (Nom)

60 Hz

PHASE	W	I rms	V rms	V avg
A	9507	1.278	14971	14976
B	5017	0.759	14975	14964
C	7368	1.258	14906	14914
AVERAGE	21892	1.098	14951	14951



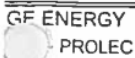
 Test Engineer



 Design Engineer

 Inspector

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Test Department

Purchaser:	United Illuminating Co.	Serial No.:	G1662-02
Inspector:		Date:	Nov./15/2005

SOUND LEVEL TEST (ONAN)

Tap Position H.V.(3) / L.V.(Nom)

A weighted sound pressure level measurement

pos	2.-Ambient + transformer		5.-Corrected transformer	
	1/3rd Height	2/3rds Height	1/3rd Height	2/3rds Height
0	71.4	71.5	69.8	70.2
1	71.6	71.7	70.3	70.4
2	71.3	71.9	69.7	70.6
3	72.2	71.7	70.9	70.4
4	71.9	71.4	70.6	69.8
5	71.4	71.6	69.8	70.3
6	71.7	71.9	70.4	70.6
7	71.3	71.6	69.7	70.3
8	71.8	71.9	70.5	70.6
9	71.6	71.7	70.3	70.4
10	71.8	71.9	70.5	70.6
11	71.7	71.6	70.4	70.3
12	71.5	71.8	70.2	70.5
13	72.3	72.6	71.0	71.6
14	72.4	72.8	71.1	71.8
15	72.3	72.2	71.0	70.9
16	72.6	71.4	71.6	69.8
17	71.6	71.3	70.3	69.7
18	71.4	71.2	69.8	69.6
19	71.9	71.6	70.6	70.3

1.-Before:	
pos	Ambient
A	67.1
B	66.8
C	66.6
D	66.7
E	
F	
G	
H	

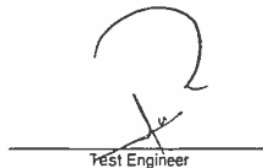
3.-After	
pos	Ambient
A	66.9
B	66.7
C	66.8
D	66.6
E	
F	
G	
H	

4.- Ave Ambient
66

6.- Ave Corrected
70

Average transformer sound pressure level at ANSI surface (Lp)
 Height of the transformer tank (H)
 Length of the prescribed contour (Pm)
 Measurement Surface Area (S)
 Sound Power Level (Lw)

70	dB(A)
3.25	m
19.5	m
79	m ²
89	dB(A)



Test Engineer

Inspector

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GE ENERGY
 GE- PROLEC

Bldv. Carlos Salinas de Gortari km 9.25
 Apodaca, N.L. 66600 México



Test Department

Purchaser: United Illuminating Co.	Serial No.: G1662-02
Inspector:	Date: Nov./15/2005

SOUND LEVEL TEST (ONAF1)

Tap Position H.V.(3) / L.V.(Nom)

A weighted sound pressure level measurement

pos	2.-Ambient + transformer		5.-Corrected transformer	
	1/3rd Height	2/3rds Height	1/3rd Height	2/3rds Height
0	74.7	74.9	74.1	74.1
1	74.1	74.2	73.3	73.4
2	74.0	74.0	73.2	73.2
3	73.6	73.1	72.8	72.1
4	73.7	73.4	72.9	72.4
5	73.1	73.6	72.1	72.6
6	73.4	73.7	72.4	72.7
7	73.8	73.9	73.0	72.9
8	73.6	73.7	72.8	72.7
9	74.0	74.1	73.2	73.3
10	73.7	73.9	72.9	72.9
11	73.6	73.8	72.8	72.8
12	73.9	73.2	73.1	72.2
13	73.6	73.4	72.8	72.4
14	73.7	73.6	72.9	72.6
15	73.2	73.8	72.2	72.8
16	73.4	73.6	72.4	72.6
17	73.1	74.1	72.1	73.3
18	73.9	73.6	73.1	72.6
19	74.4	74.1	73.6	73.3
20	73.8	73.6	73.0	72.6
21	73.7	73.9	72.9	72.9
22	73.4	73.8	72.4	72.8
23	73.2	73.6	72.2	72.6

1.-Before:	
pos	Ambient
A	67.1
B	66.8
C	66.6
D	66.7
E	
F	
G	
H	


3.-After	
pos	Ambient
A	66.9
B	66.7
C	66.8
D	66.6
E	
F	
G	
H	

4.- Ave Ambient
66

6.- Ave Corrected
73

Average transformer sound pressure level at ANSI surface (Lp)
 Length of the prescribed contour (Pm)
 Measurement Surface Area (S)
 Sound Power Level (Lw)

73	dB(A)
23.5	m
132	m²
94	dB(A)



 Test Engineer

 Inspector

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GE ENERGY
 GE-PROLEC

Blvd. Carlos Salinas de Gortari km 9.25
 Apodaca, N.L. 66600 México



Test Department

Purchaser: United Illuminating Co.	Serial No.: G1662-02
Inspector:	Date: Nov./15/2005

SOUND LEVEL TEST (ONAF2)

Tap Position H.V.(3) / L.V.(Nom)

A weighted sound pressure level measurement

pos	2.-Ambient + transformer		5.-Corrected transformer	
	1/3rd Height	2/3rds Height	1/3rd Height	2/3rds Height
0	74.6	74.9	74.0	74.1
1	75.0	74.4	74.4	73.6
2	74.7	74.8	74.1	74.0
3	74.9	74.7	74.3	73.9
4	74.6	74.8	74.0	74.0
5	74.9	74.7	74.3	73.9
6	74.5	75.1	73.9	74.5
7	74.8	75.6	74.2	75.0
8	74.7	74.9	74.1	74.1
9	75.0	74.8	74.4	74.0
10	74.7	74.8	74.1	74.0
11	74.6	74.9	74.0	74.1
12	74.8	74.7	74.2	73.9
13	74.8	75.1	74.2	74.5
14	74.7	75.3	74.1	74.7
15	75.1	75.0	74.5	74.4
16	74.4	74.8	73.6	74.0
17	74.7	74.8	74.1	74.0
18	74.3	74.6	73.5	73.8
19	74.4	74.9	73.6	74.1
20	74.7	74.8	74.1	74.0
21	74.6	74.6	74.0	73.8
22	74.4	74.8	73.6	74.0
23	74.3	74.6	73.5	73.8

1.-Before:	
pos	Ambient
A	67.1
B	66.8
C	66.6
D	66.7
E	
F	
G	
H	

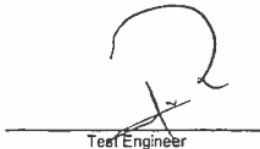
3.-After	
pos	Ambient
A	66.9
B	66.7
C	66.8
D	66.6
E	
F	
G	
H	

4.- Ave Ambient
66

6.- Ave Corrected
74

Average transformer sound pressure level at ANSI surface (Lp)
 Length of the prescribed contour (Pm)
 Measurement Surface Area (S)
 Sound Power Level (Lw)

74 dB(A)
 23.5 m
 132 m²
 95 dB(A)



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Inspector
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 Apodaca, N.L. 66600 México



Test Department

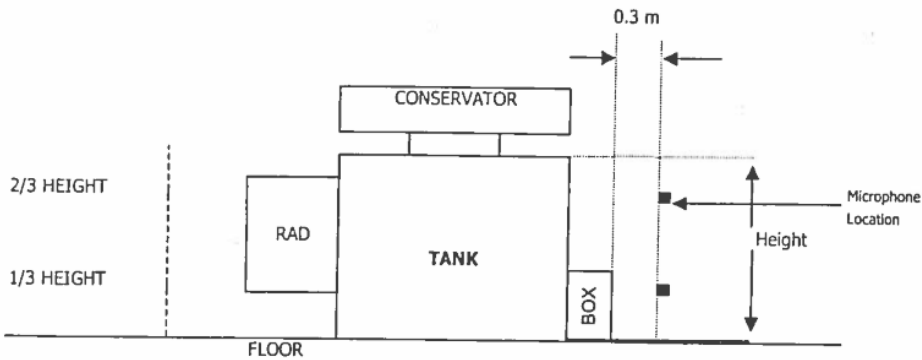
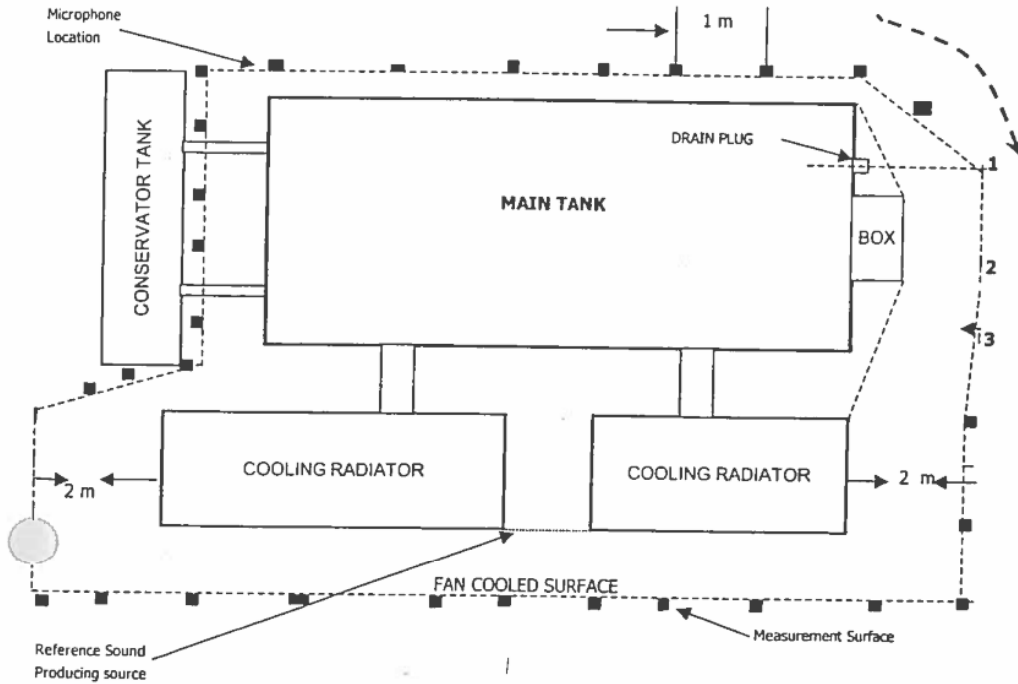
Purchaser: United Illuminating Co.

Serial No.: G1662-02

ns/Dr:

Date: Nov/15/2005

MICROPHONE LOCATION SKETCH FOR SOUND LEVEL TEST



NOTE: this drawing does not match the unit testes, it is just for interpretation purposes.

[Signature]
Test Engineer

[Signature]
Design Engineer

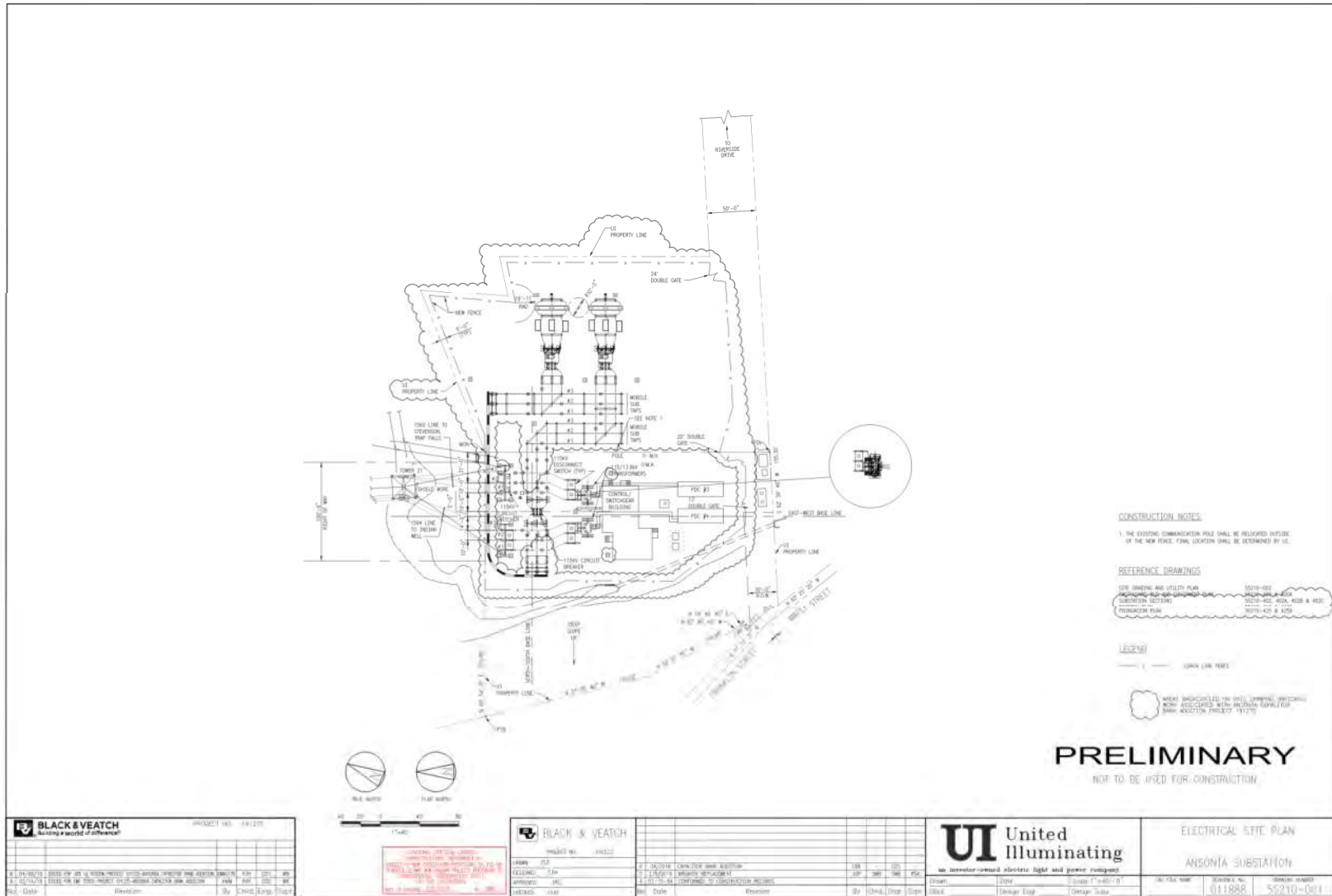
Inspector

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Apodaca, N.L. 66600 México

Appendix E. Site Arrangement Drawing



Attachment E
Exponent EMF Study



**Electric and Magnetic Field
Assessment: Ansonia
Substation Capacitor Bank
Project**

**Electric and Magnetic Field
Assessment:
Ansonia Substation Capacitor
Bank Project**

Prepared for

The United Illuminating Company
180 Marsh Hill Rd.
Orange, CT 06477

Prepared by

Exponent
420 Lexington Ave.
Suite 1740
New York, NY 10170

May 17, 2016

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Notice

At the request of The United Illuminating Company, Exponent, Inc. (Exponent) modeled the electric and magnetic fields associated with the addition of 115-kilovolt capacitor banks at the Ansonia Substation in Ansonia, Connecticut. This report summarizes work performed to date and presents the findings resulting from that work. In the analysis, we have relied on geometry, material data, usage conditions, specifications, and various other types of information provided by the client. The United Illuminating Company has confirmed to Exponent that the summary of data provided to Exponent contained herein is not subject to Critical Energy Infrastructure Information restrictions. We cannot verify the correctness of this input data, and we rely on the client for the data's accuracy. Although Exponent has exercised usual and customary care in the conduct of this analysis, the responsibility for the design and operation of the project remains fully with the client.

The findings presented herein are made to a reasonable degree of engineering and scientific certainty. Exponent reserves the right to supplement this report and to expand or modify opinions based on review of additional material as it becomes available, through any additional work, or review of additional work performed by others.

The scope of services performed during this investigation may not adequately address the needs of other users of this report, and any re-use of this report or its findings, conclusions, or recommendations presented herein other than for permitting purposes are at the sole risk of the user. The opinions and comments formulated during this assessment are based on observations and information available at the time of the investigation. No guarantee or warranty as to future life or performance of any reviewed condition is expressed or implied.

Executive Summary

The United Illuminating Company (UI) proposes the installation of two 115-kilovolt (kV) capacitor banks and one three-phase reactor at the Ansonia Substation on Riverside Drive in Ansonia, Connecticut (the “Project”). The new equipment will be connected to the terminal buses of the existing 115-kV overhead transmission lines that exit the substation to the northwest and proceeds along the adjoining right-of-way (ROW). To accommodate the new equipment, the substation boundary will expand approximately 120 feet east onto UI property.

The effect of the new equipment on existing magnetic-field levels was evaluated by modeling magnetic fields for pre- and post-Project conditions. For the pre-Project conditions, the loading was calculated for the in-service year of 2016 and later in 2023 but without the effect of the proposed substation equipment on the transmission system. Pre-Project magnetic fields were also measured around the substation on April 1, 2016. The post-Project condition uses loadings calculated for the same years but with the Project in operation, and includes magnetic-field contributions from new equipment. In each condition, two load cases were studied, corresponding to 2016 annual peak load and 2023 annual average load.

Comparing pre-Project and post-Project conditions, the calculated magnetic-field level remains the same at the majority of locations around the Ansonia Substation. Project-related increases in the calculated magnetic field occur over a 50-100 feet interval at two locations: (1) beneath the conductors of the existing overhead transmission lines; and (2) above underground feeder circuits on the south side of the substation.

Beneath the existing 115-kV transmission lines, the calculated magnetic field under average load increases from 1.3 milligauss (mG) (pre-Project) to 1.8 mG (post-Project) at the edge of the existing ROW. Within 50 feet of the ROW edge, the calculated magnetic field for post-Project conditions falls within 0.2 mG of pre-Project levels at average load.

Above the underground feeder lines on the south side of the substation, the maximum calculated magnetic field under average load increases from 31 mG (pre-Project) to 32 mG (post-Project). The calculated increase in the magnetic field is evident for 20-30 feet on either side of the centerline of the feeder circuits, falling within 0.2 mG of pre-Project levels at greater distances. Even at peak load, which might occur for a few hours or days in the year, the increase in the post-construction magnetic field is just 4 mG at the centerline, falling to within 0.2 mG of pre-Project levels at greater distances.

Around the proposed fence of the Ansonia Substation, an increase in magnetic field at the southern edge correlated to the underground feeder lines and dropped off within 100 feet. The addition of the capacitors and the proposed Project had little not or no discernible effect on the calculated magnetic-field levels on eastern boundaries of the proposed substation fence.

The average magnetic-field values for profiles perpendicular to the proposed fence show increases of <1.5 mG between pre- and post-Project conditions to the east and to the south. The average magnetic-field values for profiles to the west increase by 2.6 mG at the western interior

substation fence, but fall to within 0.3 mG of the pre-Project value within 100 feet corresponding to the boundary of an adjacent residence.

For comparison, magnetic fields were also measured at the adjacent residence at 40 Franklin Street. On the sidewalk in front of the residence, a maximum field of about 9 mG attributed to overhead feeder lines was recorded.

Outside the substation fence, the highest calculated measured electric field was 0.18 kilovolts per meter (kV/m) near the northwest corner of the substation fence yard where the conductors rise from the bus work to the transmission tower. Electric-field levels from transmission-line sources will not change significantly with operation of the Project, since the voltage of the overhead 115-kV line will not increase and the electric field is effectively shielded by the substation fence and surrounding vegetation.

Existing and Proposed Configurations

Under certain dispatch and line-out contingency scenarios, low voltages and overloads can occur at the Ansonia Substation. To mitigate these conditions, The United Illuminating Company (UI) proposes to install two 115-kilovolt (kV) capacitor banks and one three-phase reactor at the Ansonia Substation located on Riverside Drive in Ansonia, Connecticut (the Project). The substation will expand east into an existing UI-owned lot to accommodate the new equipment. *See* Figure 1.

As shown in the single-line diagram in Figure 2, two 115-kV circuits terminate at the Ansonia Substation:

- an overhead 115-kV circuit between the Indian Well Substation and Ansonia Substation and (Line A); and
- an overhead 115-kV circuit between the Derby Junction Substation and Ansonia Substation (Line B).

A tie breaker is connected between the terminal buses of the two overhead circuits. The new equipment to be installed to the east of the tie breaker and will expand the perimeter of the substation into an adjacent UI-owned lot. The new equipment includes:

- two three-phase capacitor banks having an ungrounded wye configuration;
- one 115-kV gas circuit breaker connecting both capacitor banks to the terminal bus of the overhead transmission line;
- three reactors for each capacitor bank; and
- one three-phase reactor in series with the overhead line termination.

As shown in Figure 1, no changes will be made to the transmission lines. Proposed connections to the new capacitor banks (both on the east side of the substation) will be made by bus work to the west for Line A (with cables running along the northern fence to the east) and new bus work to the east for Line B. The site is surrounded by commercial and residential neighborhoods. The nearest existing or proposed equipment is approximately 100 feet away from property line of the closest residence to the west.

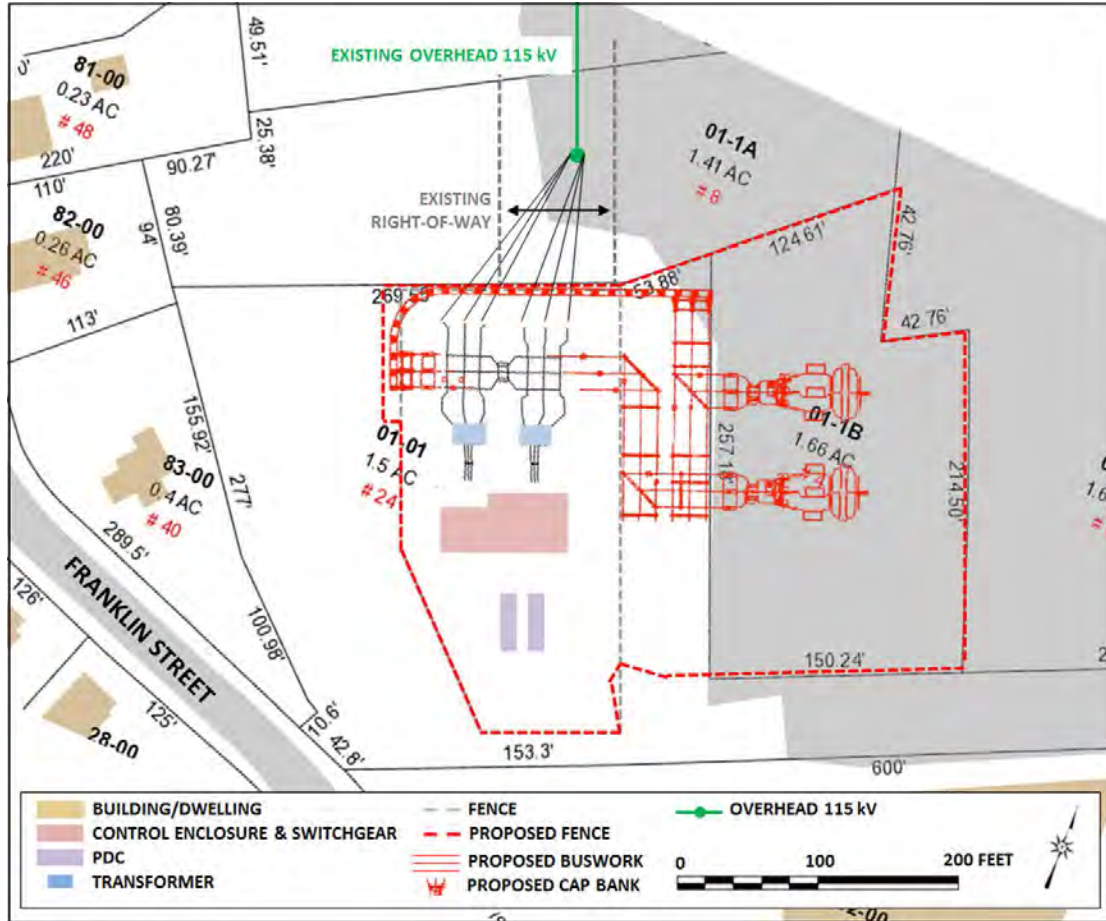


Figure 1. Plan view of the existing and proposed expansion of the Ansonia Substation. The numbers over the buildings/dwellings indicate the plot number and acreage from the City of Ansonia (<http://ansoniamapxpress.net/>). The residence closest to the substation is located on lot # 40.

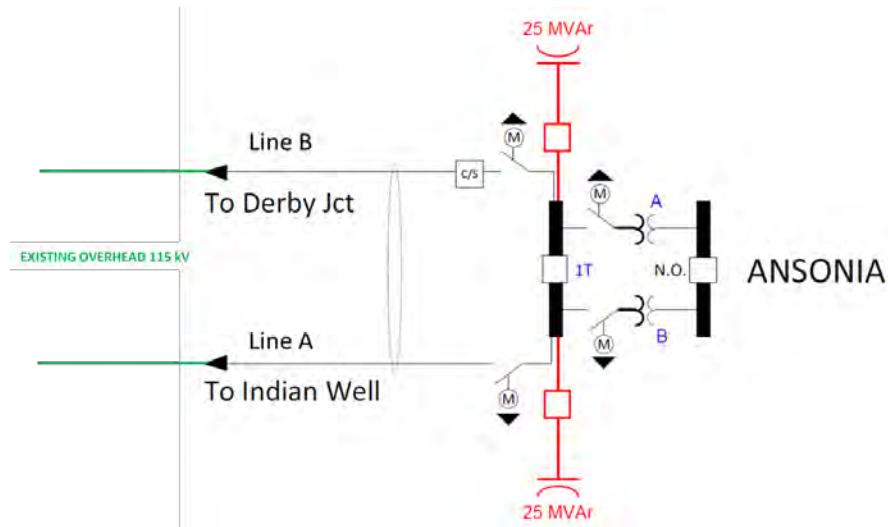


Figure 2. Diagram of the 115-kV transmission system showing the proposed capacitor banks connected to the overhead terminal bus. Capacitor banks and new bus work shown in red.

“A” and “B” refer to substation transformers, “M” shows motorized disconnects, and “c/s” indicates circuit switcher.

Exponent calculated the magnetic fields along the existing and proposed fence of the Ansonia Substation. In addition Exponent calculated magnetic fields along seven profiles perpendicular to the existing substation fence, directed outward onto adjoining property as shown below. The location of each profile is shown below in Figure 3.

- **Profile 1a** runs northeast and crosses below the overhead 115kV circuits (Line A and Line B)
- **Profile 1b** runs northeast crosses below the overhead 115kV circuits (Line A and Line B) as they exit the substation
- **Profile 2** runs from the northern most boundary of the proposed fence toward the northeast
- **Profile 3** runs from the northeast of the proposed capacitor banks toward the northeast
- **Profile 4** runs southeast and across access road from the proposed fence
- **Profile 5** runs southeast and across access road from the proposed fence
- **Profile 6** runs southwest from the current/proposed fence
- **Profile 7** runs southwest from the current/proposed fence and proposed cable tray

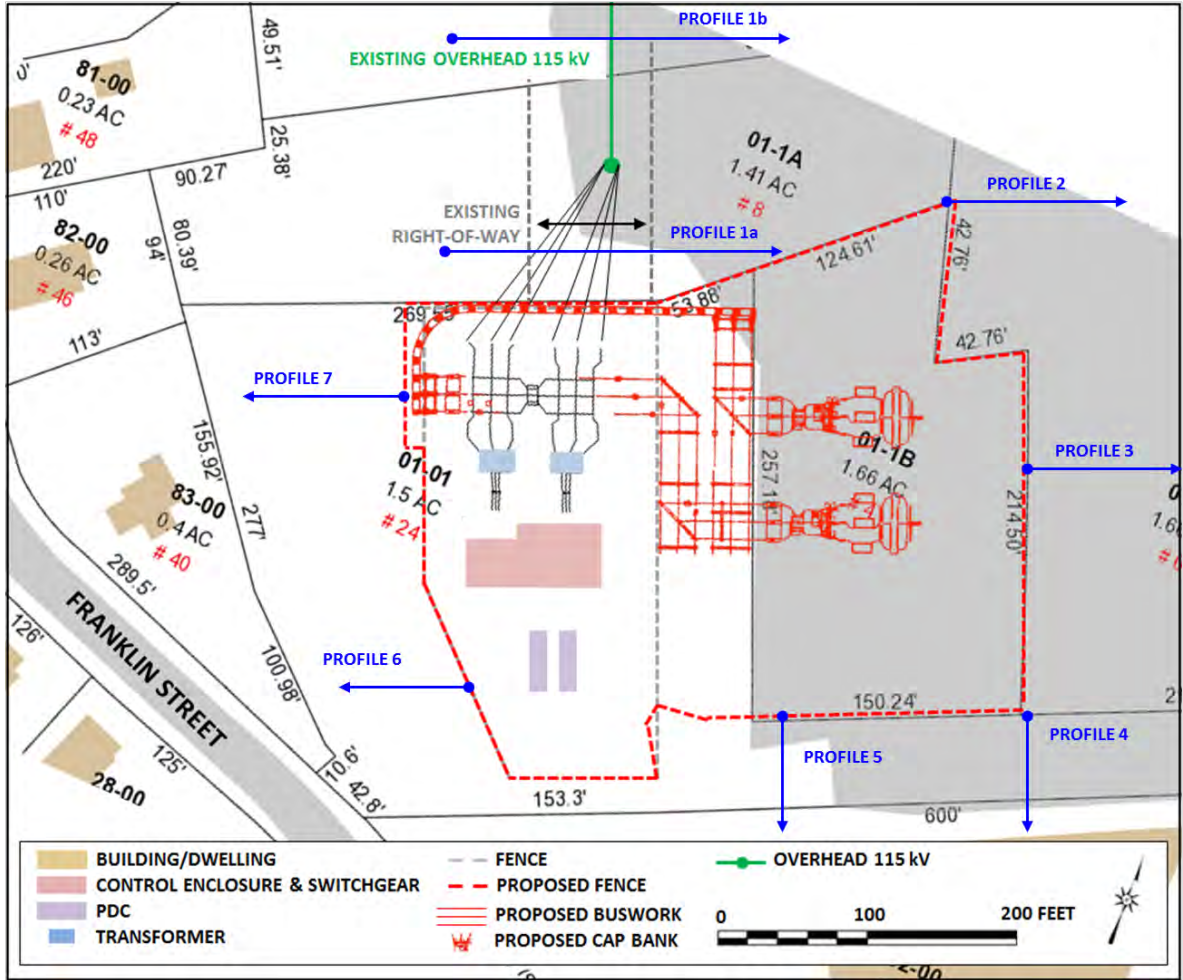


Figure 3. Plan view of the proposed Ansonia Substation, showing the proposed substation fence and the location of calculated profiles.

Profiles 1a and 1b model the overhead circuits (Line A and Line B) entering the Ansonia Substation. Structure dimensions for the overhead circuits at tangent locations are shown in Figure 4. In Profile 1a, the modeled height of the phase conductors above ground ranges from 40 to 60 feet, as they rise from the buswork at 26 feet, to the towers where they create a vertical configuration. In Profile 1b, the modeled height of the phase conductors above ground is 30 feet.

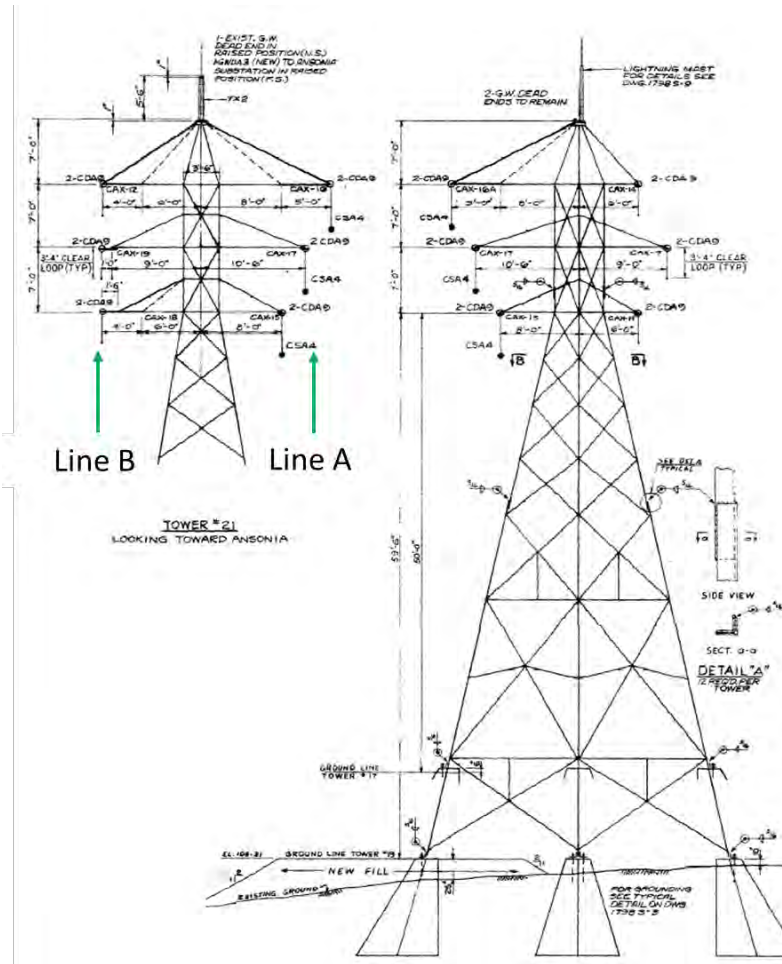


Figure 4. Profile view of the lattice structures where the existing 115-kV overhead transmission lines (Line A and Line B) terminate at the Ansonia Substation. View facing north.

Measurements of magnetic fields were also performed around the nearest residence to the Ansonia Substation at 40 Franklin Street as shown in Figure 5.

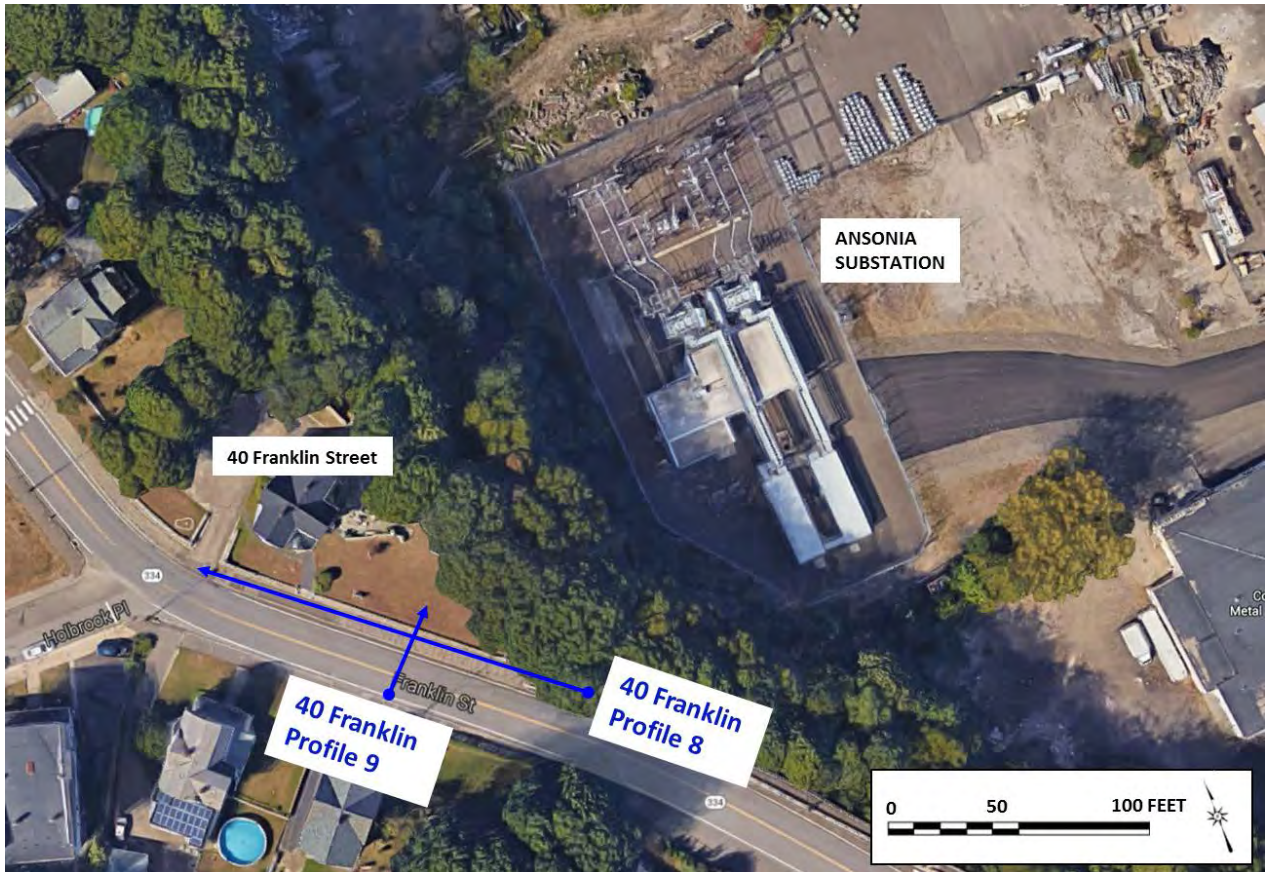


Figure 5. Magnetic field measurements at 40 Franklin Street.

Methods

Measurements

In order to characterize electric- and magnetic-field (EMF) levels for the existing configuration of the Ansonia Substation, magnetic and electric fields were measured outside the existing substation fence on April 1, 2016. The measurements were taken at a height of 1 meter (3.28 feet) above ground in accordance with the standard methods for measuring near power lines (IEEE Std. 644-1994). Both electric and magnetic fields were expressed as the total field computed as the resultant of field vectors measured along vertical, transverse, and longitudinal axes.¹ The electric field was measured in units of kV/m with a single-axis field sensor and meter manufactured by Enertech Consultants. The magnetic field was measured in units of mG by orthogonally-mounted sensing coils whose output was logged by a digital recording meter (EMDEX II) manufactured by Enertech Consultants. These instruments meet the Institute of Electrical and Electronics Engineers (IEEE) instrumentation standard for obtaining accurate field measurements at power line frequencies (IEEE Std.1308-1994). The meters were calibrated by the manufacturer by methods like those described in IEEE Std. 644-1994.

Magnetic Field Modeling

Exponent modeled EMF levels associated with the existing and proposed configurations of the Ansonia Substation and the existing 115-kV transmission lines using two methods:

- (1) Three-dimensional modeling of magnetic fields, accounting for the arrangement of buswork, transmission-line interconnections, and other equipment inside the substation fence; and
- (2) Two-dimensional modeling of EMF, accounting only for the conductors of the existing transmission lines.

Magnetic field levels were calculated for peak loading conditions anticipated in 2016, as well as average loading conditions anticipated in 2023. In addition, electric and magnetic field measurements were recorded outside the existing perimeter of the substation.

Substation modeling

Magnetic fields along the fence perimeter of the Ansonia Substation and along perpendicular profiles at the overhead transmission line (1a, 1b) as well as on locations walking away from the proposed fence (profiles 2-7) were modeled using SUBCALC. SUBCALC, which was developed by Enertech Consultants is part of the Electric Power Research Institute's EMF Workbench Suite, is designed to model the magnetic fields in and around substation equipment,

¹ Measurements along the vertical, transverse, and longitudinal axes were recorded as root-mean-square magnitudes. Root mean square refers to the common mathematical method of defining the effective voltage, current, or field of an AC system.

accounting for the three-dimensional arrangement of breakers, transformers, reactors, capacitors, buswork, and transmission lines.

Two SUBCALC models were constructed using the substation plan and profile data, and each accounted for the grade west of the substation's proposed internal fence line. The inputs to the program included data regarding voltage, current flow, circuit phasing, and conductor configurations, which were provided by UI.

The first SUBCALC model was used to calculate magnetic fields for the existing configuration of the Substation (Figure 6). The second SUBCALC model includes the proposed capacitors, reactors, breakers and buswork on the east side of the expanded substation perimeter (Figure 7). The average-load conditions in 2023 and peak-load conditions in 2016 were used to calculate magnetic fields for both models, as discussed further below. Changes in the calculated magnetic fields associated with the operation of the Project based on these two models are provided in the Results section, below.

Based on the measurements taken on April 1, 2016, Exponent noted magnetic fields indicating the presence of underground feeder lines exiting the Ansonia Substation to the southeast. Therefore, underground feeder circuits were also included in the model based on the transformers and the loads entering the substation on Lines A and B.

Along each profile and perimeter, magnetic-field levels were calculated at 1 meter (3.28 feet) above ground as the root-mean-square value of the field in accordance with IEEE Std. C95.3.1-2010 and IEEE Std. 644-1994. Calculated magnetic-field levels are reported as resultant of these values in units of milligauss (mG).²

² The resultant magnetic field is the Euclidian norm (square root of the sum of the squares) of the component magnetic-field vectors calculated along vertical, transverse, and longitudinal axes.

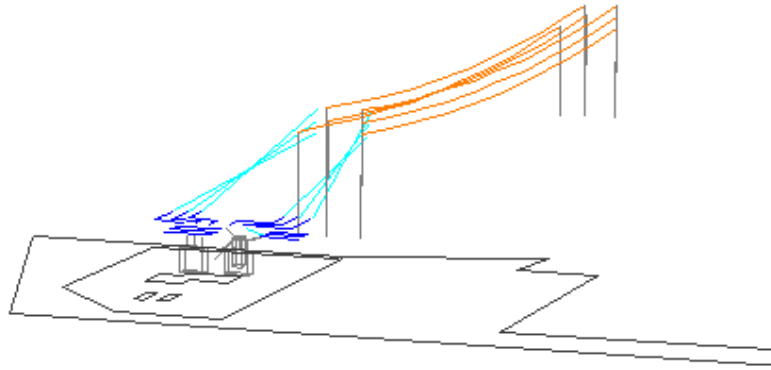


Figure 6. Overview of the three-dimensional SUBCALC model used to calculate magnetic fields for the existing configuration of the Ansonia Substation.

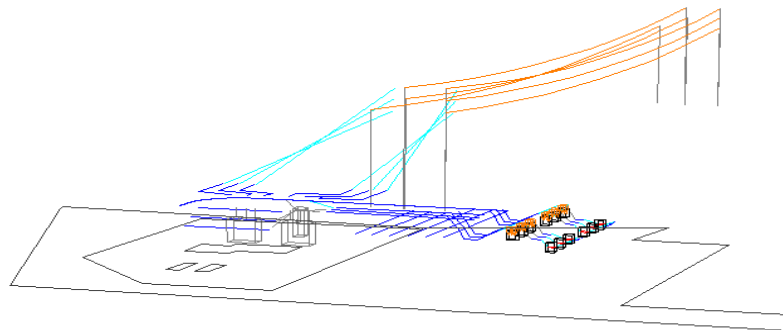


Figure 7. Overview of the three-dimensional SUBCALC model used to calculate magnetic fields for the proposed configuration of the Ansonia Substation showing added capacitor banks.

Transmission line modeling

Project-related changes in magnetic fields north of the proposed site were found to reflect loading changes on the lines bringing power in and out of the Ansonia Substation and therefore two-dimensional computational models of EMF on transects perpendicular to the overhead 115-kV circuit (Profile 1a and 1b) also were constructed. The magnetic and electric fields on Profile 1a and 1b were calculated using computer algorithms developed by the Bonneville Power

Administration, an agency of the U.S. Department of Energy (BPA, 1991). These algorithms have been shown to accurately predict EMF levels measured near transmission lines. The magnetic- and electric-field levels in Profile 1a and 1b were calculated at 1 meter (3.28 feet) above ground as the root mean square value of the field in accordance with IEEE Std. C95.3.1-2010 and IEEE Std. 644-1994. The conductors were assumed to be located on flat terrain and at uniform height for the entire distance between structures. Balanced currents were modeled on all three phase conductors. As with SUBCALC, the inputs to the BPA algorithm are data regarding voltage, current flow, phasing, and conductor configurations, and were provided by UI.

Loading

UI Transmission Planning provided the pre- and post-Project loadings for the 115-kV transmission lines and transformers involved in the Project. UI selected dispatches in such a way as to reflect maximum potential current flows on the two transmission lines that connect to the Ansonia Substation. The current flows used for modeling are summarized in a table that is available from Exponent upon request consistent with Critical Energy Infrastructure Information restrictions.

UI is required by the Connecticut Siting Council's (CSC) Electric and Magnetic Best Management Practices (CSC, 2014) to provide line loadings for "pre-project and post-project conditions, under 1) peak load conditions at the time of the application filing, and 2) projected seasonal maximum 24-hour average current load on the line anticipated within five years after the line is placed into operation.

For peak-load analysis, UI modeled the system to reflect the topology of New England's transmission system in the year (including projects with in-service date of December 2016 or earlier). This included both Ansonia Substation capacitors and series reactors to be in-service for the peak-load analysis. In addition, the 2023 study year was used to measure the average daily peak-load levels to satisfy the CSC requirement for obtaining EMF data within a five-year horizon. The average daily peak-load cases simulated a shoulder-load scenario, and therefore one of the two capacitor banks was assumed offline. In order to determine the scenario with the highest line loadings, generation dispatches were chosen that caused the highest projected flows.

In the average-load conditions provided by UI Transmission Planning for this report, power is transferred from the Derby and Indian Well Substations to the Ansonia Substation.

Results and Discussion

Figure 8 and Figure 9 depict the calculated magnetic field levels along Profiles 1a and 1b. Table 1 summarizes the calculated magnetic fields in Profiles 1a and 1b at several locations on the existing ROW.

Profile 1a is located at the transition between the substation buswork and the transmission line tower as shown in Figure 3. In this area the conductors are closer to the ground than along other spans of the transmission line. The maximum increase in calculated magnetic field under average load is 0.5 mG at the western ROW edge. Project-related changes in the calculated magnetic field are lower at greater distances from the ROW. At 50 feet from the ROW edge, for instance, the calculated magnetic field drops to within 0.2 mG of pre-Project values.

Profile 1b is located north of the first transmission line pole (Figure 3). The maximum increase in the calculated magnetic field level along this profile under average load is 0.5 mG at the edge of the ROW and falls off quickly to about 0.2 mG within 50 ft of the ROW. Therefore the Project has little effect on the magnetic fields generated by the existing transmission lines.

Table 1. Summary of calculated magnetic fields (mG) for Profiles 1a and 1b

Profile	Modeling condition	Location				
		-50 ft beyond ROW edge	-ROW edge	Max on ROW	+ROW edge	+50 ft beyond ROW edge
1a	Pre-Project, average load	0.7	1.3	3.5	1.8	0.8
	Post-Project, average load	0.9	1.8	4.1	1.6	1.0
	Pre-Project, peak load	1.8	2.8	8.5	3.2	1.8
	Post-Project, peak load	1.9	5.4	8.6	3.5	1.2
1b	Pre-Project, average load	0.7	2.0	3.1	2.1	0.6
	Post-Project, average load	0.9	2.4	3.7	2.6	0.8
	Pre-Project, peak load	1.6	3.8	11.3	4.0	1.9
	Post-Project, peak load	2.0	4.4	11.3	4.3	2.2

Figure 10 depicts the calculated magnetic fields for existing and proposed conditions, and measured magnetic-fields along the existing fence line of the Ansonia Substation. The magnetic field was modeled for average-load conditions in 2023, with only existing equipment in service.

The calculated profile proceeds clockwise around the existing fence line when viewed from above as shown in the lower panel of Figure 11. The x-axis in the upper panel of Figure 10 is labeled with the cumulative distance along the fence. The maximum magnetic fields calculated for existing and proposed configurations of the substation remain unchanged.

The measured magnetic fields were lower than the values calculated beneath the conductors of the overhead transmission circuit, and above the underground feeder lines. This is explained by the much lower loading of these lines at the time of the measurements.

Figure 11 depicts the calculated magnetic-field levels around the proposed inner fence line on the property for average-load conditions in 2023 with the new capacitor banks in service. The results show only a slight increase in the maximum magnetic field from 30 to 32 mG over underground feeder lines that exit to the south of the substation.³

Figure 12 depicts the calculated magnetic-field levels on the same path as Figure 11, but for peak-load conditions in 2016. The results show only a slight increase in the maximum magnetic field from 39 to 43 mG over underground feeder lines that exit to the south of the substation.

Table 2 summarizes the calculated magnetic-field levels from Profile 2-7 at several distances beyond the substation fence for average loading in 2023. Table 3 summarizes calculated magnetic-fields for peak loading in 2016. Profile locations are shown in Figure 3. Figures 11-17 plot the calculated magnetic field levels along perpendicular Profiles 2-7 for average-load conditions in 2023.

Table 2. Summary of calculated magnetic fields (mG) for Profiles 2-7 for average load conditions in 2023

Profile	Heading	Modeling condition	Distance from proposed substation perimeter (ft)			
			0	50	100	150
2	East	Pre-Project	0.3	0.3	0.2	0.1
		Post-Project	0.3	0.3	0.2	0.1
3	East	Pre-Project	0.3	0.2	0.2	0.1
		Post-Project	0.5	0.4	0.3	0.2
4	South	Pre-Project	10.1	5.1	0.5	0.3
		Post-Project	11.5	7.2	1.5	0.3
5	South	Pre-Project	10.1	5.1	0.1	0.1
		Post-Project	11.5	6.5	0.1	0.1
6	West	Pre-Project	0.4	0.3	0.6	0.4
		Post-Project	3.0	1.1	0.5	0.3
7	West	Pre-Project	5.5	0.9	0.3	-
		Post-Project	7.4	1.4	0.6	-

³ Two sets of distribution lines leaving Ansonia Substation to the south and east along the access road were included in both SUBCALC models based on the loading of the transmission lines and our field measurements. See Figure 11.

Table 3. Summary of calculated magnetic fields (mG) for Profiles 2-7 for peak load conditions in 2016

Profile	Heading	Modeling condition	Distance from proposed substation perimeter (ft)			
			0	50	100	150
2	East	Pre-Project	0.3	0.3	0.2	0.1
		Post-Project	0.3	0.3	0.2	0.1
3	East	Pre-Project	0.3	0.2	0.2	0.1
		Post-Project	0.5	0.4	0.3	0.2
4	South	Pre-Project	38.2	10.2	5.2	0.4
		Post-Project	38.0	25.0	8.6	0.3
5	South	Pre-Project	38.1	10.0	5.2	0.4
		Post-Project	38.3	25.2	8.6	0.3
6	West	Pre-Project	0.4	0.3	0.6	0.4
		Post-Project	4.0	2.1	1.4	0.3
7	West	Pre-Project	0.4	0.3	0.6	0.3
		Post-Project	7.4	1.4	0.6	0.2

The calculated magnetic fields for the existing and proposed configurations along Profiles 2 and 3 (heading east) are all within 0.2 mG for both average loads in 2023 and peak loads in 2016.

The maximum calculated magnetic fields for the existing and proposed configurations along Profiles 4 and 5 (heading south) are all within 0.2 mG for both average loads in 2023 and peak loads in 2016.

The maximum calculated magnetic fields for the existing and proposed configurations along Profile 6 (heading west) increased by 2.6 mG under average loads in 2023 and by 3.6 mG under peak loading in 2016. In both cases the magnetic fields fall to <1 mG of the pre-Project value within 100 ft which corresponds to the boundary of the adjacent property (40 Franklin Street).

The maximum calculated magnetic fields for the existing and proposed configurations along Profile 7 (heading west) increased by 1.9 mG under average loads in 2023 and by 7 mG under peak loading in 2016. In both cases the magnetic fields fall to within 0.3 mG of the pre-Project value within 100 ft which corresponds to the property line of the residence at 40 Franklin Street.

Figure 19 shows the magnetic fields measured adjacent to the nearest property to the Ansonia Substation. These fields are generated by the above ground distribution lines which run up Franklin Street. Peak magnetic field values of 8-9 mG were recorded.

The electric field was measured around the Ansonia Substation in three orthogonal axes. These values and the calculated resultants are summarized in Table 4. Figure 20 depicts the location of these electric-field measurements recorded on April 1, 2016. The highest measured electric

field (0.18 kV/m) was recorded near the outgoing cables connecting the buswork to the transmission lines. The second highest electric field (0.13 kV/m) was recorded directly below the overhead transmission line. Away from overhead 115-kV transmission-line conductors, measured electric fields were very low (less than 0.01 kV/m).

Modeling of the operation of the substation with and without the proposed addition of capacitor banks and related buswork showed little effect of the Project on magnetic-field levels at the proposed fence line of the substation. Specifically the magnetic field at the eastern boundary fence closest to the added capacitors exhibited no meaningful increase. Furthermore, the fields at the westernmost fence line decrease to within 0.8 mG of pre-Project levels before reaching the property lines of the neighboring residences.

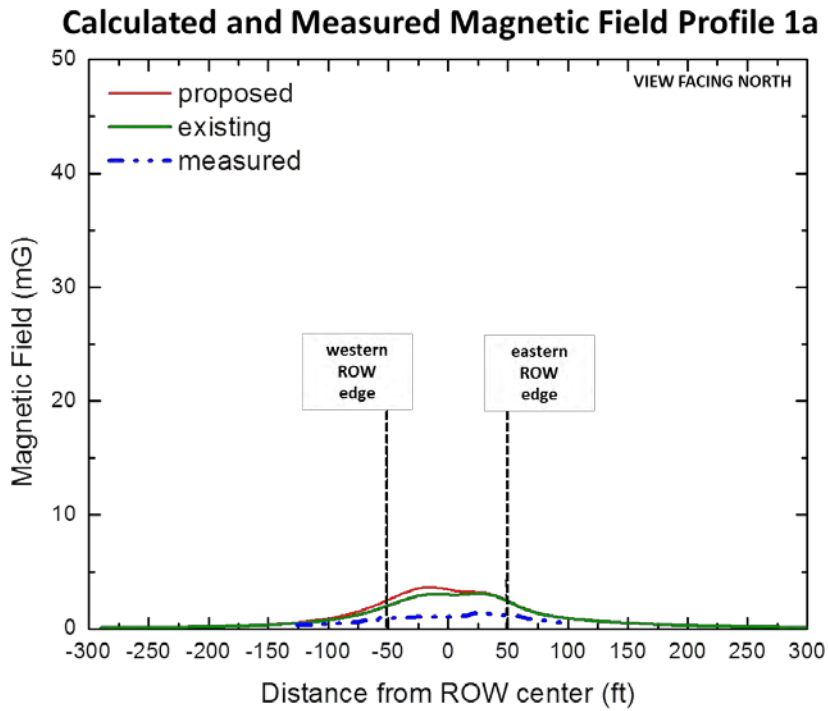


Figure 8. Calculated magnetic-field levels along Profile 1a for **average-load** conditions in **2023**. Measured magnetic fields reflect existing substation and loading on **April 1, 2016**.

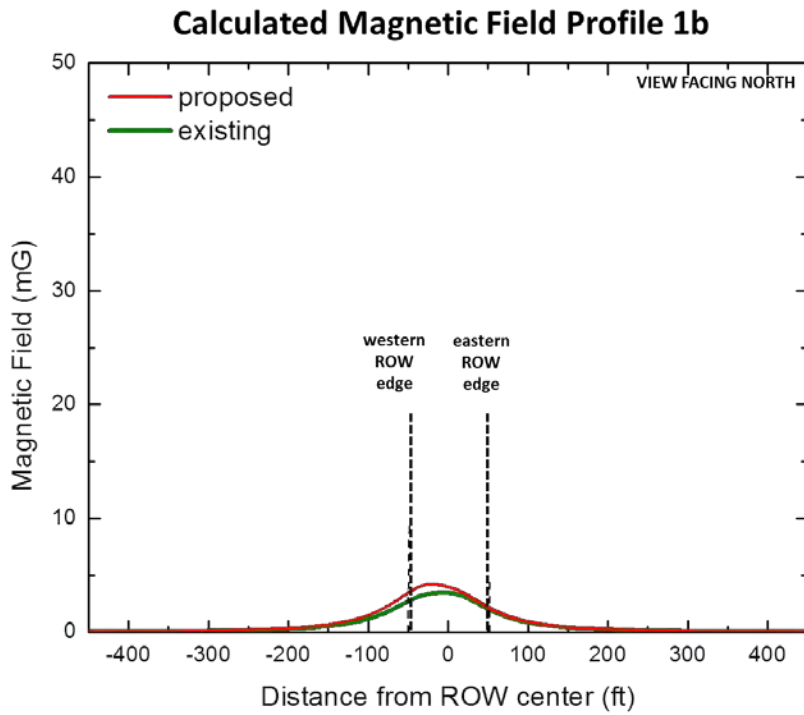


Figure 9. Calculated magnetic-field levels along Profile 1b for **average-load** conditions in **2023**.

Calculated and Measured Magnetic Field Along Existing Fence

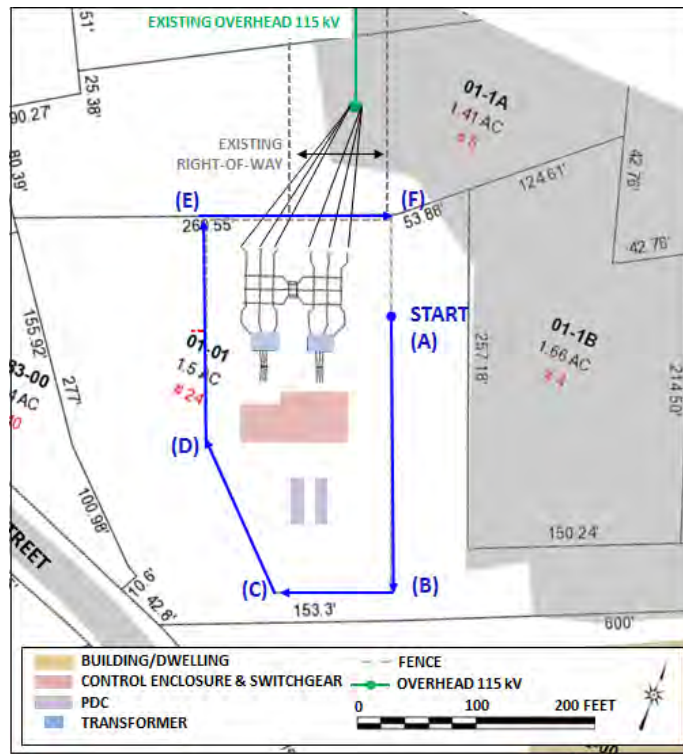
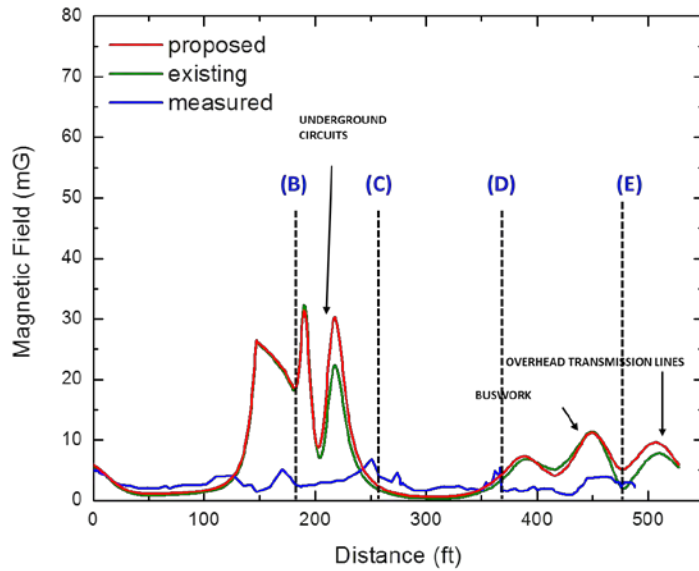


Figure 10. Existing Fence. Calculated magnetic-field profiles for **average-load** conditions in the year **2023** around existing fence line and magnetic field levels measured on April 1, 2016 (upper panel). The path along which the magnetic field was calculated and measured is shown in the lower panel. Letters A – F indicate the start, turns, and end of the path.

Calculated Average Magnetic Field Along Proposed Fence

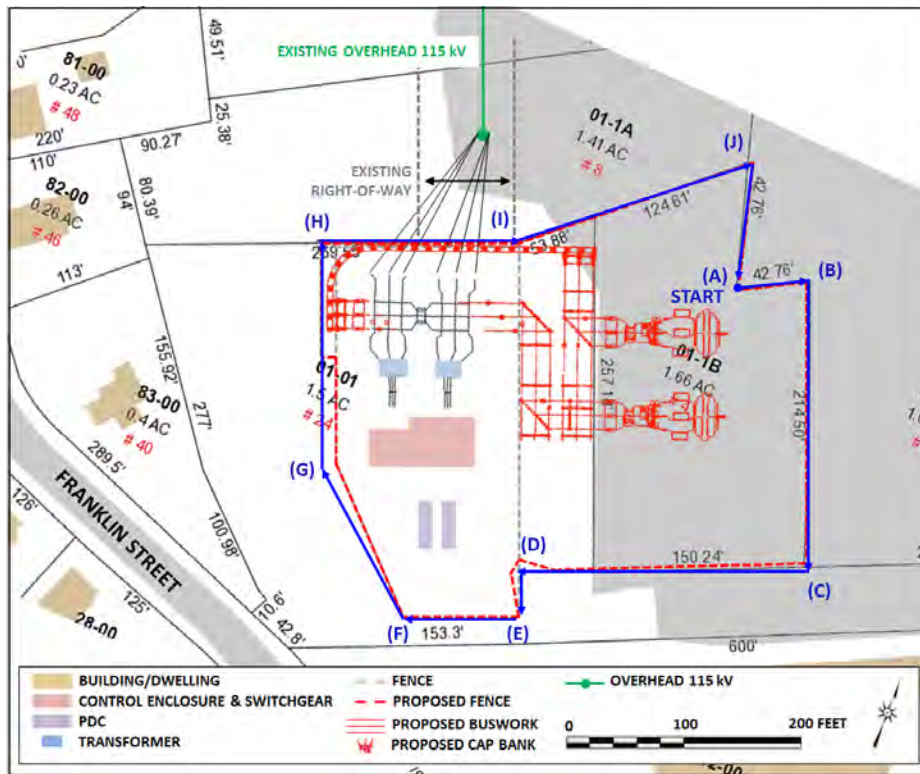
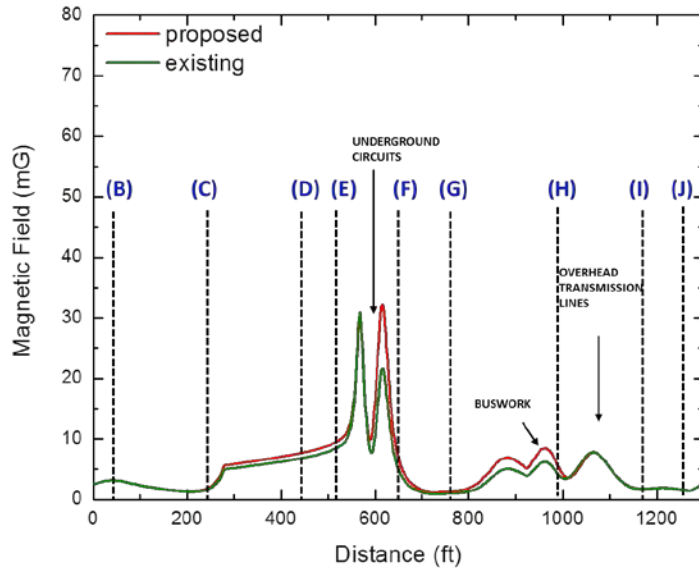


Figure 11. Proposed Fence. Calculated magnetic-field profiles around proposed fence line of the Ansonia Substation for **average-load** conditions in the year **2023** (upper panel). The path along which the magnetic field was calculated is shown in the lower panel. Letters (A-J) indicate the starting point and subsequent turns.

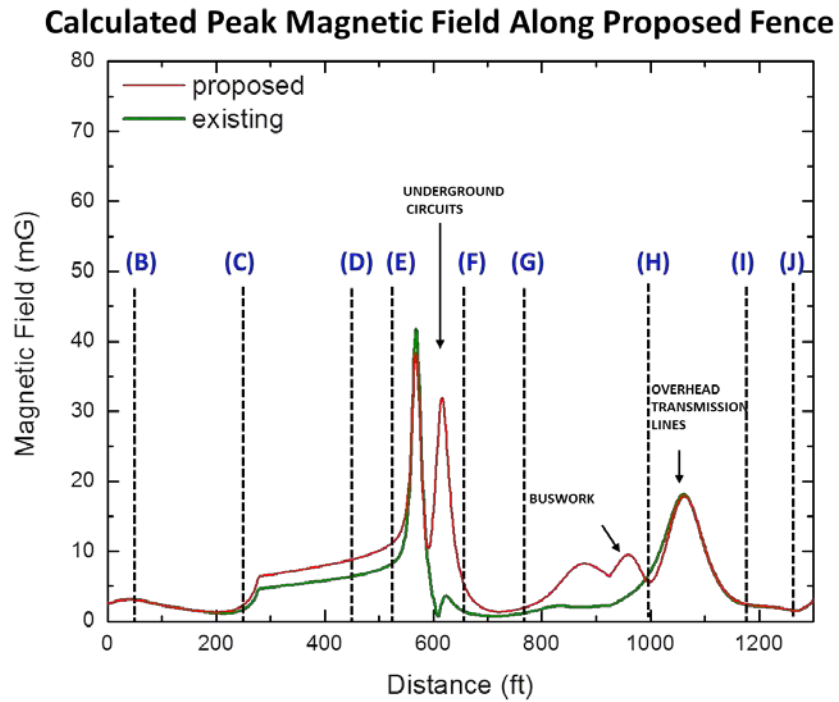


Figure 12. Calculated magnetic-field profiles around proposed fence line of the Ansonia Substation for **peak-load** conditions in the year **2016**. Letters (B-J) indicate the turns corresponding to the plan view of Figure 12.

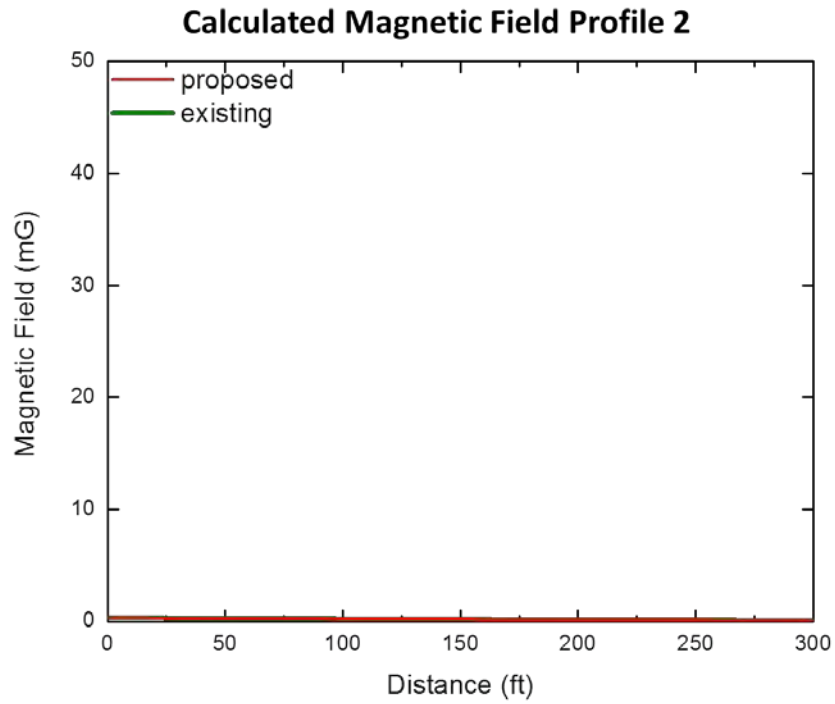


Figure 13. Calculated magnetic-field levels along Profile 2.

The calculated magnetic-field levels are for existing and proposed configurations of the Ansonia Substation under average-load conditions in 2023.

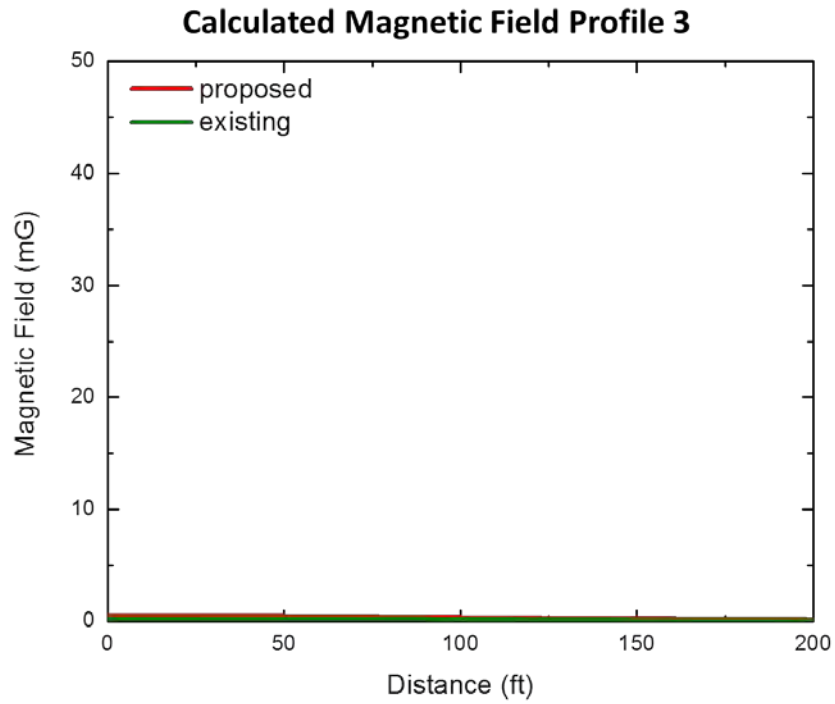


Figure 14. Calculated magnetic-field levels along Profile 3.

The calculated magnetic-field levels are for existing and proposed configurations of the Ansonia Substation under average-load conditions in 2023.

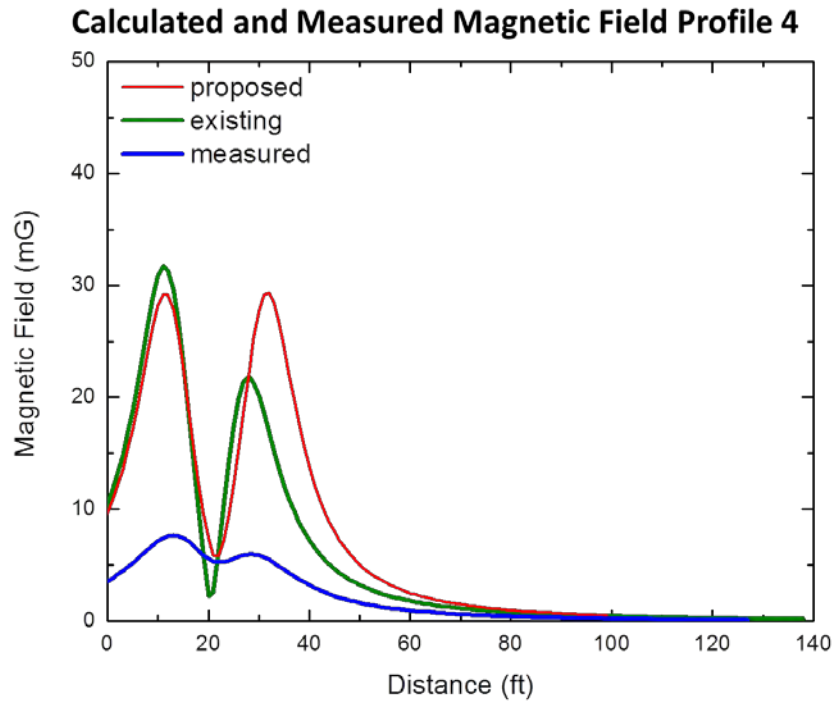


Figure 15. Calculated and measured magnetic-field levels along Profile 4.

The calculated magnetic-field levels are for existing and proposed configurations of the Ansonia Substation under average-load conditions in 2023. Measured magnetic fields reflect existing substation and loading on April 1, 2016.

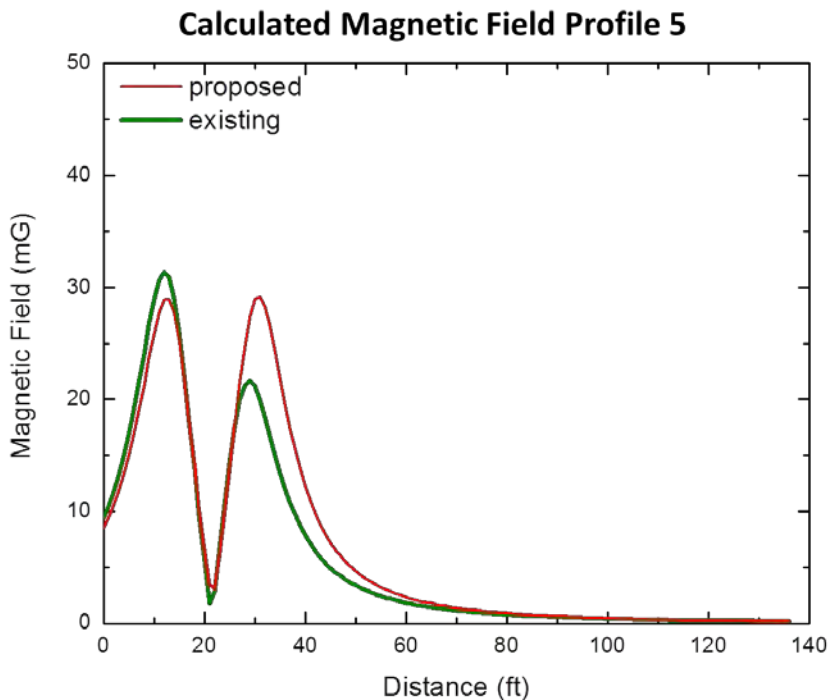


Figure 16. Calculated magnetic-field levels along Profile 5.

The calculated magnetic-field levels are for existing and proposed configurations of the Ansonia Substation under average-load conditions in 2023.

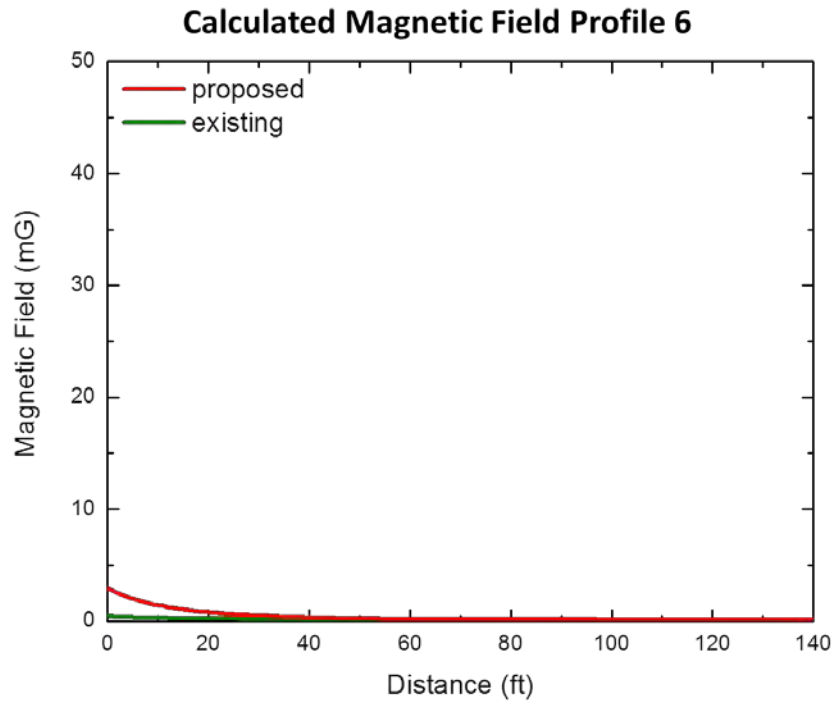


Figure 17. Calculated magnetic-field levels along Profile 6.

The calculated magnetic-field levels are for existing and proposed configurations of the Ansonia Substation under average-load conditions in 2023.

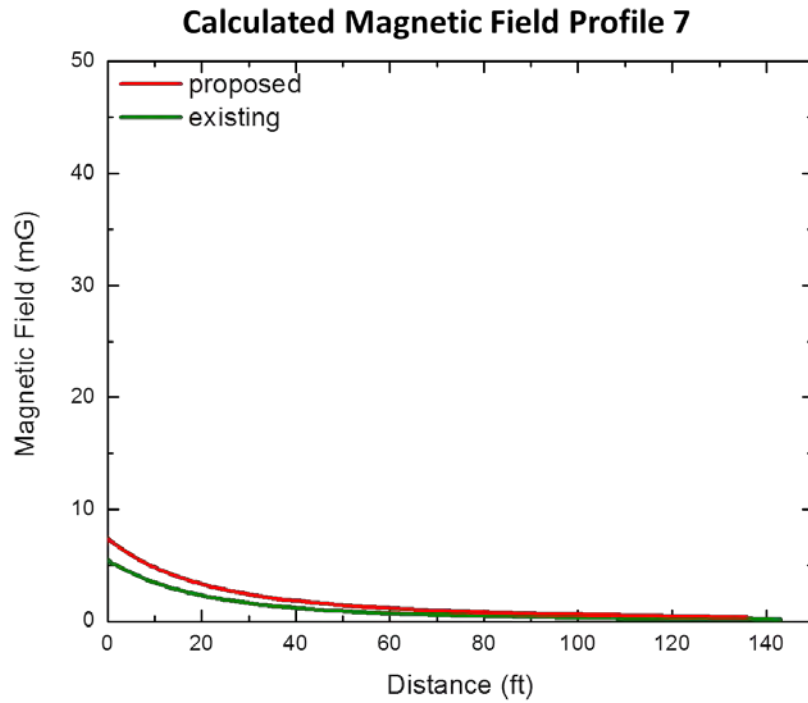


Figure 18. Calculated magnetic-field levels along Profile 7.

The calculated magnetic-field levels are for existing and proposed configurations of the Ansonia Substation under average-load conditions in 2023.

Measured Magnetic Fields at 39 Franklin Street

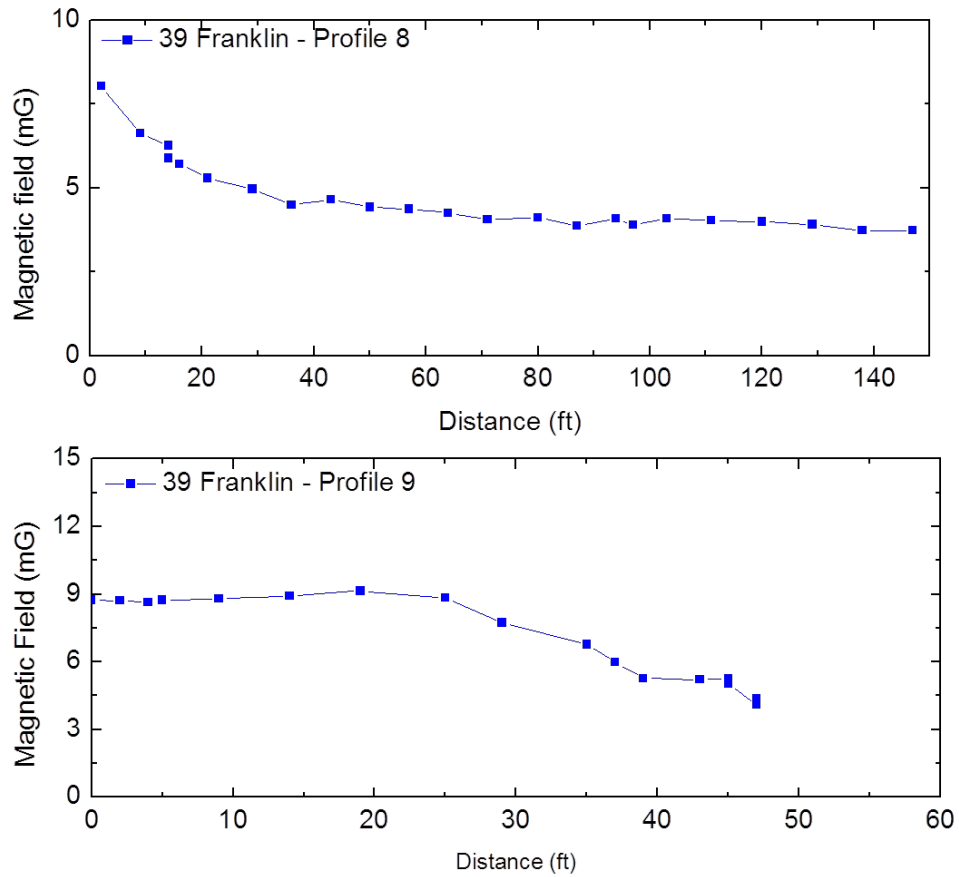


Figure 19. Measured magnetic fields outside 40 Franklin Street on April 1, 2016.

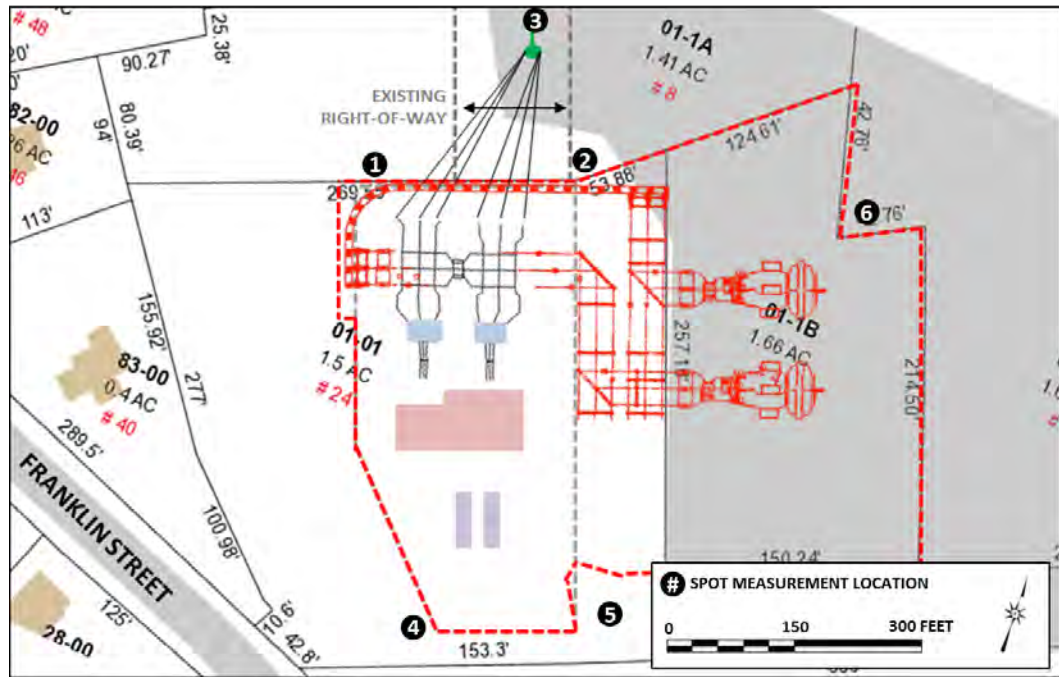


Figure 20. Location of electric field-measurements.

Table 4. Summary of measured electric fields

Location (Figure 20)	Electric field (kV/m)			
	Vertical	North-South	East-West	Resultant
1	0.107	0.101	0.101	0.18
2	0.037	0.075	0.026	.09
3	0.021	0.123	0.037	.13
4	0.005	0.005	0.005	0.01
5	0.005	0.005	0.005	0.01
6	0.005	0.005	0.005	0.01

Summary

At the request of UI, Exponent modeled EMF associated with the addition of 115-kV capacitor banks at the Ansonia Substation. The effect of the new equipment on existing magnetic-field levels was evaluated by modeling magnetic fields for pre- and post-Project conditions at both average and peak load. Exponent also measured EMF at the Ansonia Substation as well as at surrounding locations on April 1, 2016.

Beneath the existing 115-kV transmission lines, the calculated magnetic field under average load increases from 1.3 mG (pre-Project) to 1.8 mG (post-Project) at the edge of the ROW. Within 50 feet of the ROW edge, the calculated magnetic field for post-Project conditions falls within 0.2 mG of pre-Project levels at average load.

Above the underground feeder lines on the south side of the substation, the maximum calculated magnetic field under average load increases from 31 mG (pre-Project) to 32 mG (post-Project). The calculated increase in the magnetic field is evident for 20-30 feet on either side of the centerline of the feeder circuits, falling within 0.2 mG of pre-Project levels at greater distances. Even at peak load, which might occur for a few hours or days in the year, the increase in the post-construction magnetic field is just 4 mG at the centerline falling within 0.2 mG of pre-Project levels at greater distances.

Around the proposed fence of the Ansonia Substation, an increase of the magnetic field at the southern edge correlated to the underground feeder lines and dropped off within 100 feet. The addition of the capacitors and the proposed Project had little or no discernible effect on the calculated magnetic-field levels on the eastern boundaries of the proposed substation fence.

The average magnetic-field values for profiles perpendicular to the proposed fence show increases of <1.5 mG between pre- and post-Project conditions to the east and to the south. The average magnetic-field values for profiles to the west increase by 2.6 mG at the western interior substation fence, but fall to within 0.3 mG of the pre-Project value within 100 feet corresponding to the boundary of an adjacent residence.

Magnetic fields were also measured near the residence at 40 Franklin Street that is closest to the substation. On the sidewalk in front of the residence, a maximum magnetic field of about 9 mG was recorded. These magnetic fields are derived from the feeder line under the street, not the substation. Around the Town of Ansonia a maximum magnetic field of 5 mG was recorded in this case also generated by an above ground feeder line.

Outside the substation fence, the highest calculated measured electric field was 0.18 kilovolts per meter (kV/m) near the northwest corner of the substation fence yard where the conductors rise from the buswork to the transmission tower. Electric-field levels from transmission-line sources will not change significantly with operation of the Project since the voltage of the overhead 115-kV line will not increase and the electric field is effectively shielded by the substation fence and surrounding vegetation.

The results of this assessment of the proposed additions to the Ansonia Substation are consistent with the IEEE Standard 1127 that states “[i]n a substation, the strongest fields near the perimeter fence come from the transmission and feeder lines entering and leaving the substation. The strength of fields from equipment inside the fence decreases rapidly with distance, reaching very low levels at relatively short distances beyond substation fences.” (IEEE Std 1127-2013, p. 26).

In conclusion, the existing Ansonia Substation is not a significant source of EMF outside the boundaries of the site or at the connecting transmission line ROW. Modeling of the operation of the substation with and without the proposed addition of capacitor banks and related buswork showed little effect of the Project on magnetic-field levels at the interior fence line within the substation property. Specifically, the magnetic field at the eastern boundary fence, which corresponds to the property line of the substation, closest the additional capacitors exhibit no meaningful increase. Furthermore, the average magnetic-field from the westernmost interior fence line is calculated to decrease to within 0.3 mG of the pre-Project levels before reaching the property line of the nearest residence which is about 100 ft away. Both calculated magnetic-field levels and measured electric-field levels around the perimeter of the Ansonia Substation are a small fraction of those recommended for the general public by international health-based standards (ICES and ICNIRP) and are comparable to fields that may be found in homes near major appliances. (REF)

The EMF assessment was performed in concordance with the CSC’s BMPs for transmission lines and the Project is consistent with “no-cost/low-cost designs that do not compromise system reliability or worker safety, or environmental and aesthetic project goals” as called for in the BMPs.

References

Connecticut Siting Council (CSC). Electric and Magnetic Fields Best Management Practices for the Construction of Transmission Lines in Connecticut. New Britain, CT.CSC: December 14, 2014.

Corona and Field Effects Computer Program. Portland, Oregon: Bonneville Power Administration, 1991.

Institute of Electrical and Electronics Engineers (IEEE). IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines (ANSI/IEEE Std. 644-1994). New York: IEEE, 1994.

Institute of Electrical and Electronics Engineers (IEEE). IEEE Recommended Practice for Instrumentation: Specifications for Magnetic Flux Density and Electric Field Strength Meters – 10 Hz to 3 kHz (IEEE Std. 1308-1994). New York: IEEE, 1994.

Institute of Electrical and Electronics Engineers (IEEE). IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 100 kHz (IEEE Std. C95.3.1-2010). New York: IEEE, 2010.

Institute of Electrical and Electronics Engineers (IEEE). IEEE Guide for the Design, Construction, and Operation of Electric Power Substations for Community Acceptance and Environmental Compatibility. (IEEE Std 1127-2013). New York: IEEE 2013.

International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 3 kHz C95. 6-2002. Piscataway, NJ: IEEE, 2002. Reaffirmed 2007.

International Commission on Non-ionizing Radiation Protection (ICNIRP). ICNIRP Statement—Guidelines for limiting exposure to time-varying electric and magnetic fields (1Hz to 100 KHz). Health Physics 99:818-836, 2010.

Attachment F

Wetland Determination and Regulatory Assessment Report



TECHNICAL MEMORANDUM

Wetland Delineation & Regulatory Assessment United Illuminating Ansonia Substation Ansonia, Connecticut

April 1, 2016

On March 3, 2016 Fuss & O'Neill conducted an on-site wetland and watercourse investigation at the United Illuminating Ansonia Substation located off of Riverside Road in Ansonia, Connecticut (the Site) (*Figure 1*).

The purpose of this investigation, as discussed in this Technical Memorandum (TM), was to determine the State and Federal jurisdictional wetlands and watercourse (or waters of the US) on or adjacent to the Site and the proposed area of expansion. We understand that The United Illuminating Company (UI) will be expanding the capacitor bank at this substation.

Regulatory Framework

A wetland soil, regulated under the Connecticut Inland Wetland and Watercourses Act, is, in general, defined as a soil that is saturated to within 20 inches of the surface during a portion of the growing season. These soils have redoximorphic features, a deficiency of oxygen near the surface, and/or ponded water during the growing season. They are poorly drained, very poorly drained, alluvial, or fluvial as specified by the USDA Natural Resource Conservation Service (NRCS). Depth to seasonal high water table is determined by low-chroma mottling or wetness indicators. Hydric soils have a similar definition.

Watercourses are also regulated under the Connecticut Inland Wetland and Watercourses Act. Watercourses are rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water including natural or artificial, vernal or intermittent, public or private. A defined permanent channel and bank, and the occurrence of two or more of the following characteristics delineate intermittent watercourses:

- Evidence of scour or deposits of recent alluvium or detritus
- Presence of standing or flowing water for a duration longer than a particular storm incident
- Presence of hydrophytic vegetation

The Army Corps of Engineers (Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as:

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.



Wetlands are generally identified and delineated through the positive evidence of the following diagnostic environmental characteristics: 1) hydrophytic vegetation, 2) hydric soil, and 3) evidence of hydrological indicators. The 1987 USACE Wetland Delineation Manual (TR-Y-87-1) and *the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (ERDC/EL TR-12-1) provides the specific guidelines and methodology required to complete federal wetland delineations.

Wetland Delineation

To prepare for the field investigation, the following current literature and mapping were reviewed:

- USGS 7.5 Minute Topographic Mapping (Ansonia, 1984)
- NRCS Web Soil Survey (Release 3.0) (<http://websoilsurvey.nrcs.usda.gov/>)
- Environmental GIS Data for Connecticut (CTECO, 2016)
- U.S. Fish and Wildlife National Wetlands Inventory (USFWS, 2016)
- Site mapping and aerial imagery from United Illuminating.

The project limits for the Site include the existing substation and the open lots to the east and north. The Site is nearly level, sloping gently to the east. The Naugatuck River is approximately 250 feet to the east of the Site and is contained by an existing flood-control wall. Along the western boundary of the site is a steep, wooded embankment. There are several drainage features along the southern and western edges of the Site that required detailed investigation.

The soil series mapped by the NRCS at the Site are largely disturbed and consist of human-altered and human-transported material (HAHT). The soils are classified as well drained Urban land and Udorthents. To the west of the site, soils are classified as excessively drained Hinckley series. These soils were confirmed during the field investigation. Fuss & O'Neill also inspected the existing drainage features along the southern and western edges of the Site to determine if they would be classified as jurisdictional wetlands.

The small depression at the southern edge appears to have been designed to collect stormwater from the adjacent developed parcels to the east and the steep embankment to the west. Two 24-inch RCP are located at the northern end of the depression and appears to serve the purpose of conveying stormwater. However, during the field investigation there was no standing water in the depression or water within 24 inches of the soil surface. The soil was classified in this depression as an Udorthent.

A second depression is located at the western edge of the Site and also appears to collect stormwater from the adjacent developed parcels to the north and east, and the steep embankment to the west. One 36-inch RCP is located at the southern end of the depression and appears to serve the purpose of conveying stormwater from the depression. During the field investigation there was no standing water in the depression or water within 36 inches of the soil surface. The soil was classified in this depression as an Udorthent.

Ecological Assessment

As part of the field investigation unique or critical ecological habitats were assessed. These unique or critical ecological habitats include potential vernal pools and other amphibian breeding habitats, potential fish-supporting streams, and unique upland habitats. In addition, this ecological evaluation



included a query of the Natural Diversity Database (NDDB as managed by the Wildlife Division of the Connecticut Department of Energy and Environmental Protection).

Natural Diversity Database

The Site is located within a designated Natural Diversity Database area (attached). A formal request for additional information regarding the protected species mapped in that area was submitted to DEEP. On March 14, 2016 DEEP responded to the request indicating that the listed species is the State Special Concern blueback herring (*Alosa aestivalis*). This species is a diadromous fish associated with the Naugatuck River and its tributaries. Because the project site is not immediately adjacent to the Naugatuck River nor is there a direct hydrologic connection to the Naugatuck River, it is unlikely that the proposed capacitor bank expansion will have an adverse effect on the blueback herring.

On March 31, 2015 Mark Johnson, Senior Fisheries Biologist at DEEP reviewed the project information and determined that the will not affect the water quality in the Naugatuck River nor will the activity affect the listed blueback herring.

Vernal Pools or Other Amphibian Breeding Habitats

No official regulatory definition of a vernal pool currently exists for the State of Connecticut. However, the United States Army Corps of Engineers Connecticut General Permit (CT GP) defines a vernal pool as:

[A]n often temporary body of water occurring in a shallow depression of natural or human origin that fills during spring rains and snow melt and typically dries up during summer months. Vernal pools support populations of species specially adapted to reproducing in these habitats (obligate species). Such species may include wood frogs, mole salamanders (*Ambystoma* sp.), fairy shrimp, fingernail clams, and other amphibians, reptiles and invertebrates. Vernal pools lack breeding populations of fish.

For the purposes of this project, the definition provided in the CT GP was used, to the extent possible, to assess the presence of vernal pools on site. This determination was based on information and data gathered from field investigations and considering the time of year and site conditions.

No vernal pools were identified within the project limits on or adjacent to the Site. The two drainage depressions located to the south and east of the site do not detain water of sufficient depth or duration to support wetland soil development or breeding amphibians.

Fish Habitat

The Naugatuck River, located approximately 250 feet to the east of the Site, is capable of supporting fisheries of varying diversity and community structure. The Naugatuck River is not classified as Essential Fish Habitat (NOAA Essential Fish Habitat Mapper, 2015). Fish runs downstream and upstream of the nearby reach of the river are unobstructed and are considered potential diadromous fish habitat, including blueback herring. The project site is not immediately adjacent to the Naugatuck River nor is there a direct hydrologic connection to the Naugatuck River. Therefore, it is unlikely that the proposed capacitor bank expansion will have an adverse effect on the blueback herring.



Regulatory Implications & Permits

State and Federal Permitting

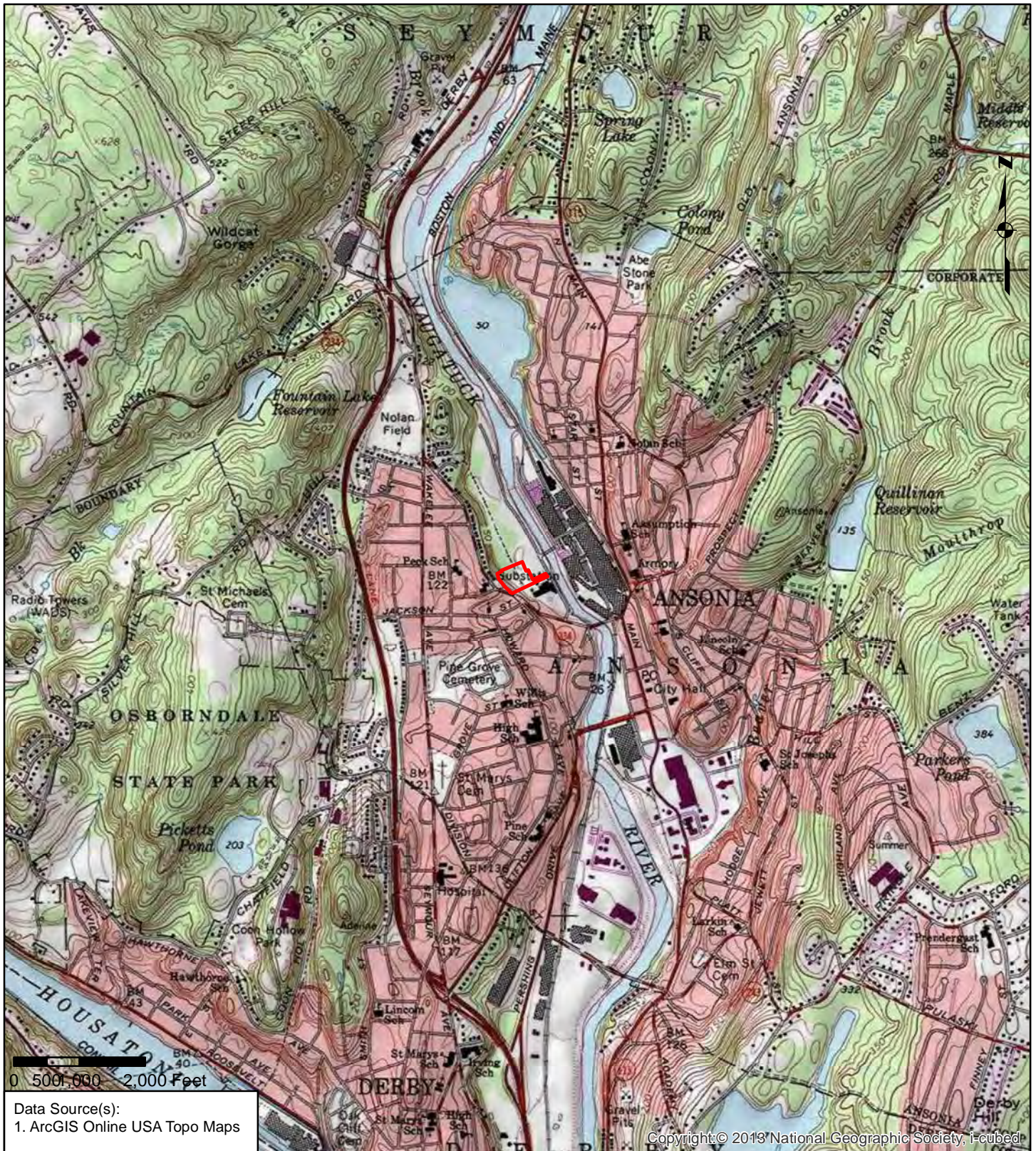
There are no wetlands, watercourses or waters, including but not limited to vernal pools, located on or adjacent to the Site. As such, there are no direct, temporary impacts and no permanent impacts to wetland, watercourses or waters on or adjacent to the Site. Based on the absence of resource areas mapped, the proposed improvements will not require State or Federal permitting.

Local Permitting

Ansonia is responsible for administering permits for regulated activities in accordance with the Connecticut Inland Wetlands and Watercourses Act. Regulated activities are defined as “any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution of such wetlands or watercourses.” The Upland Review Area (URA) in Ansonia is 100 feet. Typically, any activity within the URA or a regulated area (wetland or watercourse) requires local permits. However, Connecticut General Statutes (CGS) 16-235, as clarified by the Department of Public Utility Control (DPUC) Docket 95-08-34, provides the regulatory jurisdiction of towns and cities with regard to public utilities. Under Order 2 of DPUC Docket 95-08-34, routine maintenance does not require UI to obtain local permits. Rather, UI is compelled to “make local authorities or their designated agent or staff aware of such ongoing activities” (p. 25). Therefore, the proposed improvements are considered “routine” and do not require permits from the Town of Ansonia.

Figures & Attachments

- Figure 1: USGS Location Map
- Figure 2: USFWS National Wetland Inventory Mapping
- NRCS Soil Map
- NDDB Request and Correspondence



Legend

Affected Parcels

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Site Location Map
United Illuminating
Ansonia Capacitor Bank Expansion
Ansonia Connecticut


 **FUSS & O'NEILL**

Figure 1



Data Source(s):
 1. ArcGIS Online World Imagery
 2. National Wetlands Inventory data provided by CTECO.

USFWS, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

- Affected Parcels
- Freshwater Emergent Wetland
- Freshwater Forest and Shrub Wetlands
- Lakes
- Riverine

Disclaimer: This map is not the product of a Professional Land Survey. It was created by Fuss & O'Neill, Inc. for general reference, informational, planning and guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. Fuss & O'Neill, Inc. makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

USFWS NAT'L WETLANDS INVENTORY

United Illuminating
 Ansonia Capacitor Bank Expansion
 Ansonia Connecticut




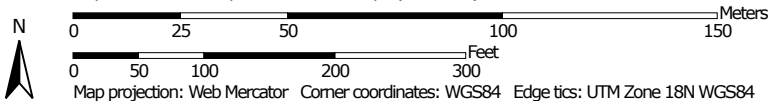
Figure 2

Attachment F - Wetland Determination and Regulatory Assessment Report

Soil Map—State of Connecticut
(Ansonia Capacitor Bank Project - 20140761.A20)



Map Scale: 1:1,760 if printed on A landscape (11" x 8.5") sheet.



Attachment F - Wetland Determination and Regulatory Assessment Report

Soil Map—State of Connecticut
 (Ansonia Capacitor Bank Project - 20140761.A20)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot

- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
 Survey Area Data: Version 14, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 27, 2014—Jul 22, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38E	Hinckley loamy sand, 15 to 45 percent slopes	3.7	22.9%
229B	Agawam-Urban land complex, 0 to 8 percent slopes	2.6	15.7%
307	Urban land	6.3	38.7%
308	Udorthents, smoothed	3.0	18.1%
W	Water	0.7	4.5%
Totals for Area of Interest		16.3	100.0%



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 (NDDDB) 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No Enter the date of the map reviewed for pre-screening: <u>September 2015</u></p>	
<p>This form is being submitted for a :</p>	
<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"/> With modifications <input type="checkbox"/> Without modifications (no attachments required)
<p><small>[CPPU Use Only - NDDB-Listed Species Determination # 1736]</small></p> <p>Enter NDDB Determination Number for Renewal/Extension:</p>	<p><small>[CPPU Use Only - NDDB-Safe Harbor Determination # 1736]</small></p> <p>Enter Safe Harbor Determination Number for Renewal/Extension:</p>

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: **Fuss & O'Neill, Inc.**

Contact Name: **Josh Wilson**

Address: **146 Hartford Road**

City/Town: **Manchester**

State: **CT**

Zip Code: **06040**

Business Phone: **860-646-2469**

ext. **5303**

E-mail: **jwilson@fando.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 #: 0069164 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 III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

1. SITE NAME AND LOCATION

Site Name or Project Name: **United Illuminating Ansonia Capacitor Bank Project**

Town(s): **Ansonia**

Street Address or Location Description:
4-8 Riverside Drive

Size in acres, or site dimensions: **6.25 acres**

Latitude and longitude of the center of the site in decimal degrees (e.g., 41.23456 -71.68574):

Latitude: **41.34774** Longitude: **-73.08653**

Method of coordinate determination (check one):

GPS Photo interpolation using [CTECO map viewer](#) Other (specify):

2a. Describe the current land use and land cover of the site.

The majority of the site is paved and contains the substation equipment, parking areas, and a driveway. The western-most portion of the site consists of overgrown, forested land sloping steeply to the west.

b. Check all that apply and enter the size in acres or % of area in the space after each checked category.

<input checked="" type="checkbox"/> Industrial/Commercial <u>75%</u>	<input type="checkbox"/> Residential _____	<input checked="" type="checkbox"/> Forest <u>25%</u>
<input type="checkbox"/> Wetland _____	<input type="checkbox"/> Field/grassland _____	<input type="checkbox"/> Agricultural _____
<input type="checkbox"/> Water _____	<input type="checkbox"/> Utility Right-of-way _____	
<input type="checkbox"/> Transportation Right-of-way _____	<input type="checkbox"/> Other (specify): _____	

Part IV: Project Information

1. PROJECT TYPE:

Choose Project Type: Utility construction/modification , If other describe: _____

2. Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? Yes No If yes, explain.

Substation improvement construction activities are planned to the east and north of the existing substation, remaining entirely within the paved existing footprint of the project site.

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.

United Illuminating intends to expand the Ansonia Substation within the existing, developed parcel and into the adjacent developed parcels to the north and east. The purpose of the improvements is to install new capacitor banks and appurtenances to improve the quality of the electrical supply and the efficiency of the power system operation.

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.

<p>Group 1. If you check one of these boxes, complete Parts I – VII of this form and submit the required attachments A and B.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Preliminary screening was negative but an NDDDB review is still requested <input type="checkbox"/> Request regards a municipally regulated or unregulated activity (no state permit/certificate needed) <input type="checkbox"/> Request regards a preliminary site assessment or project feasibility study <input type="checkbox"/> Request relates to land acquisition or protection <input type="checkbox"/> Request is associated with a <i>renewal</i> of an existing permit, with no modifications
<p>Group 2. If you check one of these boxes, complete Parts I – VII of this form and submit required attachments A, B, and C.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Request is associated with a <i>new</i> state or federal permit application <input type="checkbox"/> Request is associated with modification of an existing permit <input type="checkbox"/> Request is associated with a permit enforcement action <input checked="" type="checkbox"/> Request regards site management or planning, requiring detailed species recommendations <input type="checkbox"/> Request regards a state funded project, state agency activity, or CEPA request
<p><input type="checkbox"/> 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</p>
<p>If you are filing this request as part of a state or federal permit application(s) enter the application information below.</p> <p>Permitting Agency and Application Name(s): _____</p> <p>State DEEP Application Number(s), if known: _____</p> <p>State DEEP Enforcement Action Number, if known: _____</p> <p>State DEEP Permit Analyst(s)/Engineer(s), if known: _____</p>
<p>Is this request related to a previously submitted NDDDB request? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If yes, provide the previous NDDDB Determination Number(s), if known: _____</p>

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 type="checkbox"/> Attachment C:	Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C) <input type="checkbox"/> Section i: Supplemental Site Information and supporting documents <input 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>	
<p>_____</p> <p>Signature of Requester (a typed name will substitute for a handwritten signature)</p>	<p>2/19/16</p> <p>_____</p> <p>Date</p>
<p>Joshua H. Wilson</p> <p>_____</p> <p>Name of Requester (print or type)</p>	<p>Sr. Ecologist</p> <p>_____</p> <p>Title (if applicable)</p>
<p>_____</p> <p>Signature of Preparer (if different than above)</p>	<p>_____</p> <p>Date</p>
<p>_____</p> <p>Name of Preparer (print or type)</p>	<p>_____</p> <p>Title (if applicable)</p>

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.

The entire project site is located within a FEMA flood hazard zone and is identified by FEMA as an "area with reduced risk due to levee." The portion of the project area within the mapped NDDB area is entirely paved. All construction activities will take place within the open, paved areas to the north and east of the existing substation structures and equipment. Therefore, the potential for the subject activity to affect the on-site natural features (which includes the overgrown, forested area on the western slope, outside of the NDDB area) is not anticipated.

- 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 NDDB survey forms.

Biologist(s) name: N/A

Habitat and/or species targeted by survey: N/A

Dates when surveys were conducted: N/A

- Reports of biological surveys attached
 Documentation of biologist's qualifications attached
 [NDDB Survey forms](#) for any listed species observations attached

Section ii: Supplemental Project Information

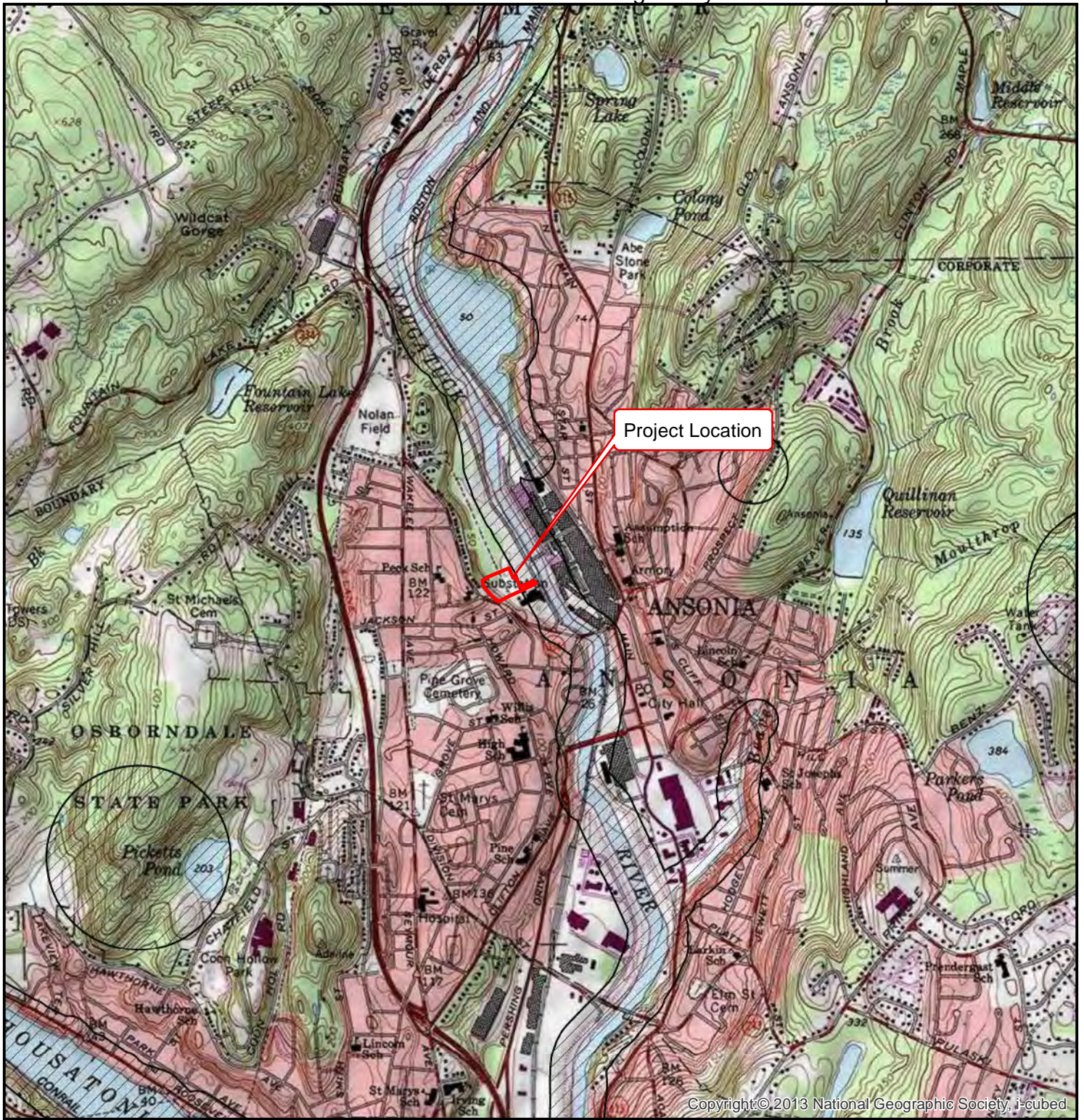
1. Provide a schedule for all phases of the project including the year, the month and/or season that the proposed activity will be initiated and the duration of the activity.

Construction scheduling for this project has not yet been determined. Consideration will be taken regarding time-of-year requirements for species identified within the on-site NDDB areas.

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.

Construction activities will occur within the paved areas to the north and east of the substation structures and equipment, using the paved driveway for access from Riverside Drive. Neither on-site impacts to the wooded area on the western slope, nor offsite impacts are anticipated.

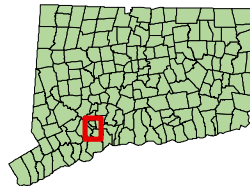
- Annotated Site Plan attached



Copyright © 2013 National Geographic Society, i-cubed

Legend

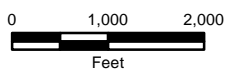
- Affected Parcels
- Natural Diversity Database Area



MAP REFERENCES:

"State and Federal Listed Species and Significant Natural Communities Map" Prepared By: Connecticut Department of Energy and Environmental Protection Date: September 2015

USGS 7.5 Minute Topographic Map
Ansonia Quadrangle



1 inch = 2,000 feet



FUSS & O'NEILL

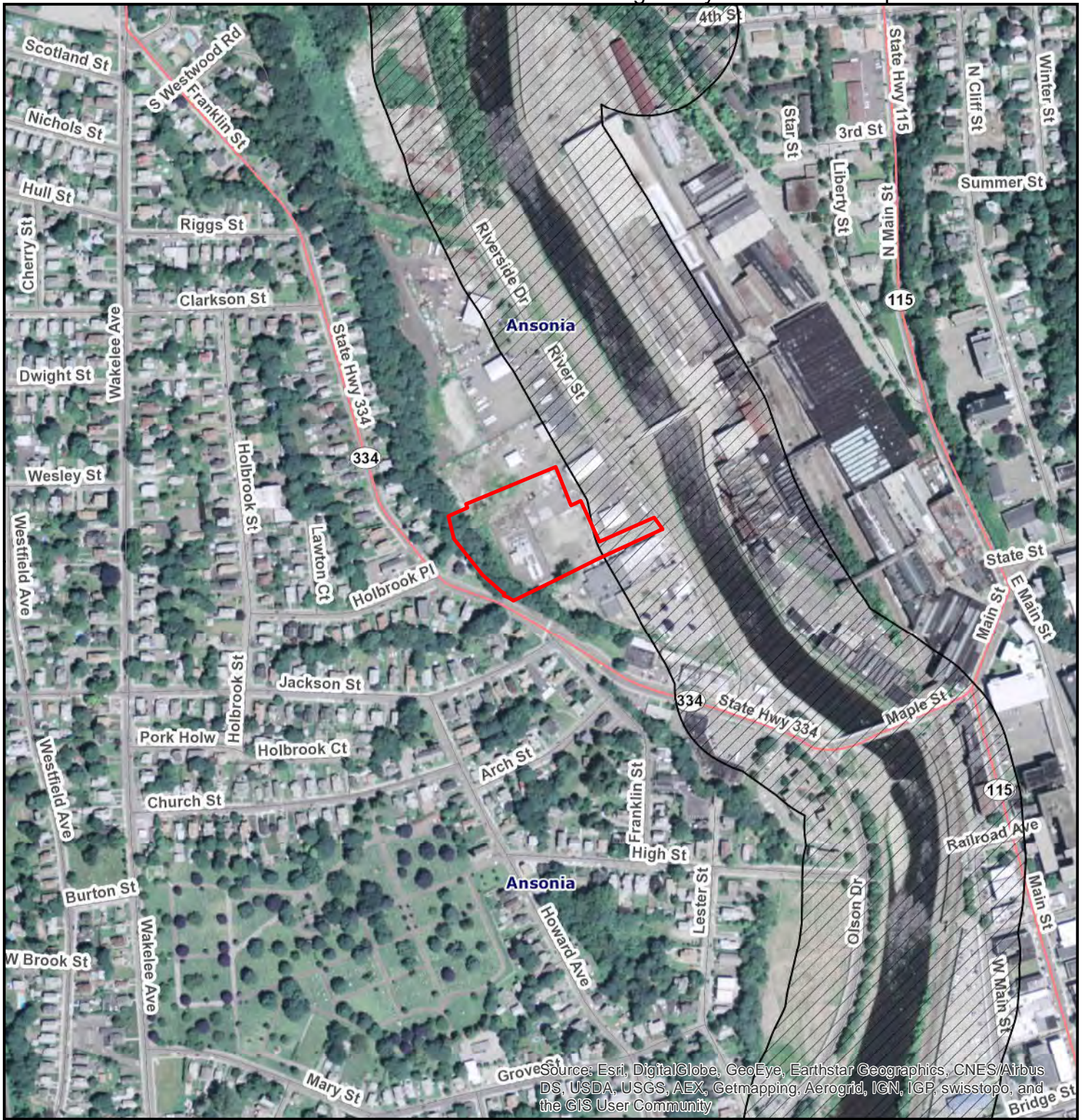
www.FandO.com

146 Hartford Road Manchester, CT 06424

Natural Diversity Database Areas
United Illuminating
Ansonia Capacitor Bank Project
Ansonia, Connecticut

Attachment A

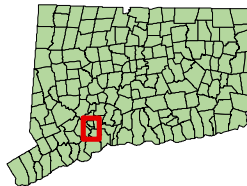
February 2016



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

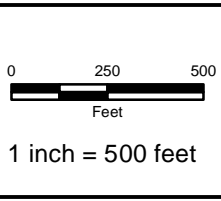
Legend

- Affected Parcels
- Natural Diversity Database Area



MAP REFERENCES:

Base map data courtesy CTECO, 2005. Orthophoto data courtesy ArcGIS Online World Imagery. Town and Quadrangle data courtesy CT DEEP, 2005.



146 Hartford Road Manchester, CT 06424 860.646.2469

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Natural Diversity Database Areas
 United Illuminating
 Ansonia Capacitor Bank Project
 Ansonia, Connecticut

Attachment B

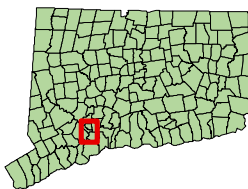
February 2016

K:\P2014\0761\A20\MXD\NDDDB_Attachment_B.mxd



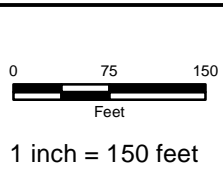
Legend

- Affected Parcels
- Natural Diversity Database Area



MAP REFERENCES:

Base map data courtesy CTECO, 2005. Orthophoto data courtesy ArcGIS Online World Imagery. Town and Quadrangle data courtesy CT DEEP, 2005.



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Natural Diversity Database Areas
 United Illuminating
 Ansonia Capacitor Bank Project
 Ansonia, Connecticut

Attachment C

February 2016

K:\P2014\0761\A20\MXD\NDDDB_Attachment_C.mxd



Attachment F - Wetland Determination and Regulatory Assessment Report

Connecticut Department of

ENERGY & ENVIRONMENTAL PROTECTION

March 14, 2016

Mr. Josh Wilson
Fuss & O'Neill, Inc.
146 Hartford Road
Manchester, CT 06040
jwilson@fando.com

Project: Substation Improvements for United Illuminating Ansonia Capacitor Bank Project Located at 4-8 Riverside Drive in Ansonia, Connecticut
NDDDB Determination No.: 201602548

Dear Josh,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for the substation improvements for United Illuminating Ansonia Capacitor Bank Project located at 4-8 Riverside Drive in Ansonia, Connecticut. According to our information, there are records for State Special Concern blueback herring (*Alosa aestivalis*) in the vicinity of this project.

Please be advised that a DEEP Fisheries Biologist will review the permit applications you may submit to DEEP regulatory programs to determine if your project could adversely affect blueback herring. DEEP Fisheries Biologists are routinely involved in pre-application consultations with regulatory staff and applicants in order to identify potential fisheries issues and work with applicants to mitigate negative effects, including to endangered species. If you have not already talked with a Fisheries Biologist about your project, you may contact the Permit Analyst assigned to process your application for further information, including the contact information for the Fisheries Biologist assigned to review your application. This determination is good for one year. Please re-submit an NDDDB Request for Review if the scope of work changes or if work has not begun on this project March 14, 2017.

Natural Diversity Data Base 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 Data Base 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 Data Base 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 (860) 424-3592, or dawn.mckay@ct.gov. Thank you for consulting the Natural Diversity Data Base.

Sincerely,

Dawn M. McKay
Environmental Analyst 3

Joshua H. Wilson

From: Johnson, Mark <Mark.Johnson@ct.gov>
Sent: Thursday, March 31, 2016 8:45 AM
To: Joshua H. Wilson
Cc: McKay, Dawn
Subject: RE: UI Ansonia Substation Capacitor Bank (DEEP NDDDB#201602548)

Josh-

I reviewed the project information you sent and as you described there is no inwater work proposed for this project or work that would somehow affect water quality in the Naugatuck River. Therefore the project will not affect blueback herring.

Thanks for the consultation,

Mark Johnson
Senior Fisheries Biologist (Coastal)
Habitat Conservation/Enhancement Program, Inland Fisheries Division
Connecticut Department of Energy and Environmental Protection
Marine Headquarters
P.O. Box 719, 333 Ferry Rd, Old Lyme, CT 06371
P: 860.447-4342 (direct line)
Mark.johnson@ct.gov



www.ct.gov/deep

***Conserving, improving and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.***

From: Joshua H. Wilson [<mailto:JWilson@fando.com>]
Sent: Thursday, March 31, 2016 8:14 AM
To: Johnson, Mark
Cc: Shawn Crosbie (shawn.crosbie@uinet.com)
Subject: UI Ansonia Substation Capacitor Bank (DEEP NDDDB#201602548)

Hi Mark

I got your voicemail from yesterday and am following up with some details regarding the Ansonia Substation Capacitor Bank Project at 4-8 Riverside Drive, Ansonia (NDDDB #201602548).

Attachment F - Wetland Determination and Regulatory Assessment Report

Ultimately, if you are able to do so based on the attached information, I'm looking for a final determination that the proposed activity will not affect the listed species (blueback herring). My sense is that it will not, given the wholly upland activity and no stormwater (construction or otherwise) discharge from the site to the Naugatuck River. However, if you cannot make this determination based on the information provided, then please let me know what you would need to help facilitate the review and make a final determination.

Please email or call me at the number below if you would like to discuss the proposed project further.

Many thanks and best regards,

Josh



Josh Wilson, PWS
Senior Ecologist | Risk Assessor

Fuss & O'Neill, Inc | 146 Hartford Road | Manchester, CT 06040

860.646.2469 x5303 | jwilson@fando.com

www.fando.com | [twitter](#) | [facebook](#) | [linkedin](#)

This e-mail message and any files transmitted with it are the exclusive intellectual property of Fuss & O'Neill. This message and any attached files may be privileged and confidential. If you have received this message in error, please delete this e-mail and attached files and immediately notify Fuss & O'Neill by sending a reply e-mail to the sender of this message. Thank you.

Attachment G

State Historic Preservation Office Letter



Department of Economic and Community Development



MAR 08 2015

State Historic Preservation Office

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

PROJECT REVIEW COVER FORM

1. This information relates to a previously submitted project.

You do not need to complete the rest of the form if you have been previously issued a SHPO Project Number. Please attach information to this form and submit

SHPO Project Number _____
(Not all previously submitted projects will have project numbers)

Project Address 3 Riverside Drive in Ansonia, Connecticut
(Street Address and City or Town)

2. This is a new Project.

If you have checked this box, it is necessary to complete ALL entries on this form .

Project Name Ansonia Cap Ring Project

Project Location 3 Riverside Drive, Ansonia, Connecticut
Include street number, street name, and or Route Number. If no street address exists give closest intersection.

City or Town Ansonia, Connecticut
In addition to the village or hamlet name (if appropriate), the municipality must be included here.

County New Haven
If the undertaking includes multiple addresses, please attach a list to this form.

Date of Construction (for existing structures) _____

PROJECT DESCRIPTION SUMMARY (include full description in attachment):

United Illuminating plans to make upgrades and an expansion to an existing substation in Ansonia, Connecticut.

TYPE OF REVIEW REQUESTED

a. Does this undertaking involve funding or permit approval from a State or Federal Agency?

Yes No

Agency Name/Contact	Type of Permit/Approval	State	Federal
<u>CT SHPO</u>	_____	<input checked="" type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

b. Have you consulted the SHPO and UCONN Dodd Center files to determine the presence or absence of previously identified cultural resources within or adjacent to the project area?

Yes No

If yes:
Was the project site wholly or partially located within an identified archeologically sensitive area? Yes No

Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the CT State or National Registers of Historic Places? Yes No

Does the project involve the rehabilitation, renovation, relocation, demolition or addition to any building or structure that is 50 years old or older? Yes No



Department of Economic and Community Development



State Historic Preservation Office

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

PROJECT REVIEW COVER FORM

The Historic Preservation Review Process in Connecticut Cultural Resource Review under the National Historic Preservation Act – Section 106 <http://www.achp.gov/106summary.html> involves providing technical guidance and professional advice on the potential impact of publicly funded, assisted, licensed or permitted projects on the state's historic, architectural and archaeological resources. This responsibility of the State Historic Preservation Office (SHPO) is discharged in two steps: (1) identification of significant historic, architectural and archaeological resources; and (2) advisory assistance to promote compatibility between new development and preservation of the state's cultural heritage.

Project review is conducted in two stages. First, the SHPO assesses affected properties to determine whether or not they are listed or eligible for listing in the Connecticut State or National Registers of Historic Places. If so, it is deemed "historic" and worthy of protection and the second stage of review is undertaken. The project is reviewed to evaluate its impact on the properties significant materials and character. Where adverse effects are identified, alternatives are explored to avoid, or reduce project impacts; where this is unsuccessful, mitigation measures are developed and formal agreement documents are prepared stipulating these measures. For more information and guidance, please see our website at: <http://www.cultureandtourism.org/cct/cwp/view.asp?a=3933&q=293820>

ALL PROJECTS SUBMITTED FOR REVIEW MUST INCLUDE THE FOLLOWING MATERIALS*:

PROJECT DESCRIPTION Please attach a full description of the work that will be undertaken as a result of this project. Portions of environmental statements or project applications may be included. The project boundary of the project should be clearly defined**

PROJECT MAP This should include the precise location of the project – preferably a clear color image showing the nearest streets or roadways as well as all portions of the project. Tax maps, Sanborn maps and USGS quadrangle maps are all acceptable, but Bing and Google Earth are also accepted if the information provided is clear and well labeled. The project boundary should be clearly defined on the map and affected legal parcels should be identified.

PHOTOGRAPHS Clear, current images of the property should be submitted. Black and white photocopies will not be accepted. Include images of the areas where the proposed work will take place. May require: exterior elevations, detailed photos of elements to be repaired/replaced (windows, doors, porches, etc.) All photos should be clearly labeled.

For Existing Structures	Yes	N/A	Comments
Property Card	<input type="checkbox"/>	<input type="checkbox"/>	
For New Construction	Yes	N/A	Comments
Project plans or limits of construction (if available)	<input type="checkbox"/>	<input type="checkbox"/>	
If project is located in a Historic District include renderings or elevation drawings of the proposed structure	<input type="checkbox"/>	<input type="checkbox"/>	
Soils Maps http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm	<input type="checkbox"/>	<input type="checkbox"/>	
Historic Maps http://magic.lib.uconn.edu/	<input type="checkbox"/>	<input type="checkbox"/>	
For non-building-related projects (dams, culverts, bridge repair, etc)	Yes	N/S	Comments
Property Card	<input type="checkbox"/>	<input type="checkbox"/>	
Soils Map (see above)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Historic Maps (see above)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
STAFF REVIEW AREA	Above	Date	Below Date
Indicate date of Review and Initials of Reviewer			

PROJECT CONTACT

Name Mr. Shawn Crosbie Title Environmental Analyst
 Firm/Agency United Illuminating Holdings Corporation
 Address 180 Marsh Hill Road
 City Orange State CT Zip 06477
 Phone 203.926.4595 Cell 203.915.2573 Fax _____
 Email shawn.crosbie@uinet.com

*Note that the SHPO's ability to complete a timely project review depends largely on the quality of the materials submitted.

** Please be sure to include the project name and location on *each page* of your submission.



State Historic Preservation Office

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

PROJECT REVIEW COVER FORM

SHPO USE ONLY

Based on our review of the information provided to the State Historic Preservation Office, it is our opinion that:

- No historic properties will be affected by this project. No further review is requested.
Ansonia Cap Ring Project
- This project will cause no adverse effects to the following historic properties. No further review is requested:
- This project will cause no adverse effects to the following historic properties, conditional upon the stipulations included in the attached letter:
- Additional information is required to complete our review of this project. Please see the attached letter with our requests and recommendations.
- This project will adversely affect historic properties as it is currently designed or proposed. Please see the attached letter for further details and guidance.

Catherine Labadia
Catherine Labadia
Deputy State Historic Preservation Officer

4/20/16
Date

Attachment H

Heritage Cultural Resource Review



INTEGRATED HISTORIC PRESERVATION PLANNING

February 27, 2016

Mr. Shawn C. Crosbie
Environmental Analyst
UIL Holdings Corporation
180 Marsh Hill Rd.
Orange, Connecticut 06477

RE: Cultural Resources Review of the Ansonia Cap Bank Project; 3 Riverside Drive in Ansonia, Connecticut

Mr. Crosbie:

Heritage Consultants, LLC, is pleased to have this opportunity to provide United Illuminating with the following cultural resources review of a parcel of land at 3 Riverside Drive in Ansonia, Connecticut (Figure 1). The current project entailed completion of an existing conditions cultural resources summary based on the examination of cultural resources data obtained from the Connecticut State Historic Preservation Office, as well as GIS data, including historical mapping, aerial photographs, and topographic quadrangles, maintained by Heritage Consultants, LLC. This investigation is based upon project location information provided to Heritage Consultants, LLC by United Illuminating. The objectives of this study were to gather and present data regarding previously identified cultural resources situated within the vicinity of the proposed project location and to investigate the Area of Potential Effect in terms of its natural and historical characteristics so that the need for completing additional cultural resources investigations could be evaluated.

Figures 2, which is an excerpt from an 1856 map of Ansonia, Connecticut, shows that the proposed project parcel lies adjacent to the western bankline of the Naugatuck River. This map also indicates that while the project area itself appears to not have been settled, a well-developed roads system and a moderate amount of residences and commercial buildings existed in this portion of Ansonia by the middle of the nineteenth century. Figure 3, an excerpt from a map dating from 1868, indicates that while some of the ownership of the buildings in the area has changed and additional buildings had been erected, the proposed project area itself remained undeveloped. Based on the nature of the project parcel and its location adjacent to the Naugatuck River, it is likely that it was used for agricultural production during the early part of the historic era. A review of Figure 4, an aerial image dating from 1934, shows that the proposed project area had become hemmed in by development, including numerous houses and commercial buildings. In fact, an industrial building, now a United Illuminating substation, had been built to the north of and adjacent to the proposed project parcel. Figure 5, an aerial image dating from 1972, shows that the proposed project parcel had been paved by the middle of the twentieth century for use as a parking lot. Figures 6 and 7, aerial images taken in 1990 and 2014, respectively, show that the Area of Potential Effect remained in use as a parking area. It is clear in the all of the above-referenced aerial images that the proposed project area has been severely impacted throughout the twentieth century.

Attachment H - Heritage Cultural Resource Review

Shawn Crosbie
February 27, 2016
Page 2

A review of previously recorded cultural resources on file with the Connecticut State Historic Preservation Office revealed that no archaeological sites or National Register of Historic Places properties are located within or immediately adjacent to the Area of Potential Effect (Figures 8 and 9). The closest cultural resource is the Upper Main Street Historic District in downtown Ansonia. This district was listed on the National Register of Historic Places in 1982, and it is considered significant due to its integrity and that it offers an "accurate record of the important contributions made by Main Streets to the commercial and social fabric of small New England cities during the late-19th century and the first half of the 20th century" www.livingplaces.com/CT/New_Haven_County/Ansonia_City/Upper_Main_Street_Historic_District.html. Despite its location in the general area of the proposed project parcel, the Upper Main Street Historic District will not be impacted by the proposed construction effort. Finally, Figure 10, which consists of a map of soil types present within the vicinity of the Area of Potential Effect, demonstrates that the proposed project area consists entirely of Urban Land. Urban Land results from heavy disturbances to original soils coupled with the admixture of soils from other locations. As a result, it retains little, if any, potential to yield intact archaeological deposits.

In sum, it is the professional opinion of Heritage Consultants, LLC that the Area of Potential Effect has been disturbed repeatedly throughout the twentieth century and no longer possesses any archaeological sensitivity. Thus, no additional archaeological research is recommended prior to construction of the proposed project. If you have any questions regarding this Technical Memorandum, or if we may be of additional assistance with this or any other projects you may have, please do not hesitate to call us at 860-667-3001 or email us info@heritage-consultants.com. We are at your service.

Sincerely,



David R. George, M.A., R.P.A.
Heritage Consultants, LLC

Shawn Crosbie
February 27, 2016
Page 3

References Cited

Living Places

2015 *Upper Main Street Historic District.* [http://www.livingplaces.com/CT/
New_Haven_County/Ansonia_City/Upper_Main_Street_Historic_District.html](http://www.livingplaces.com/CT/New_Haven_County/Ansonia_City/Upper_Main_Street_Historic_District.html)

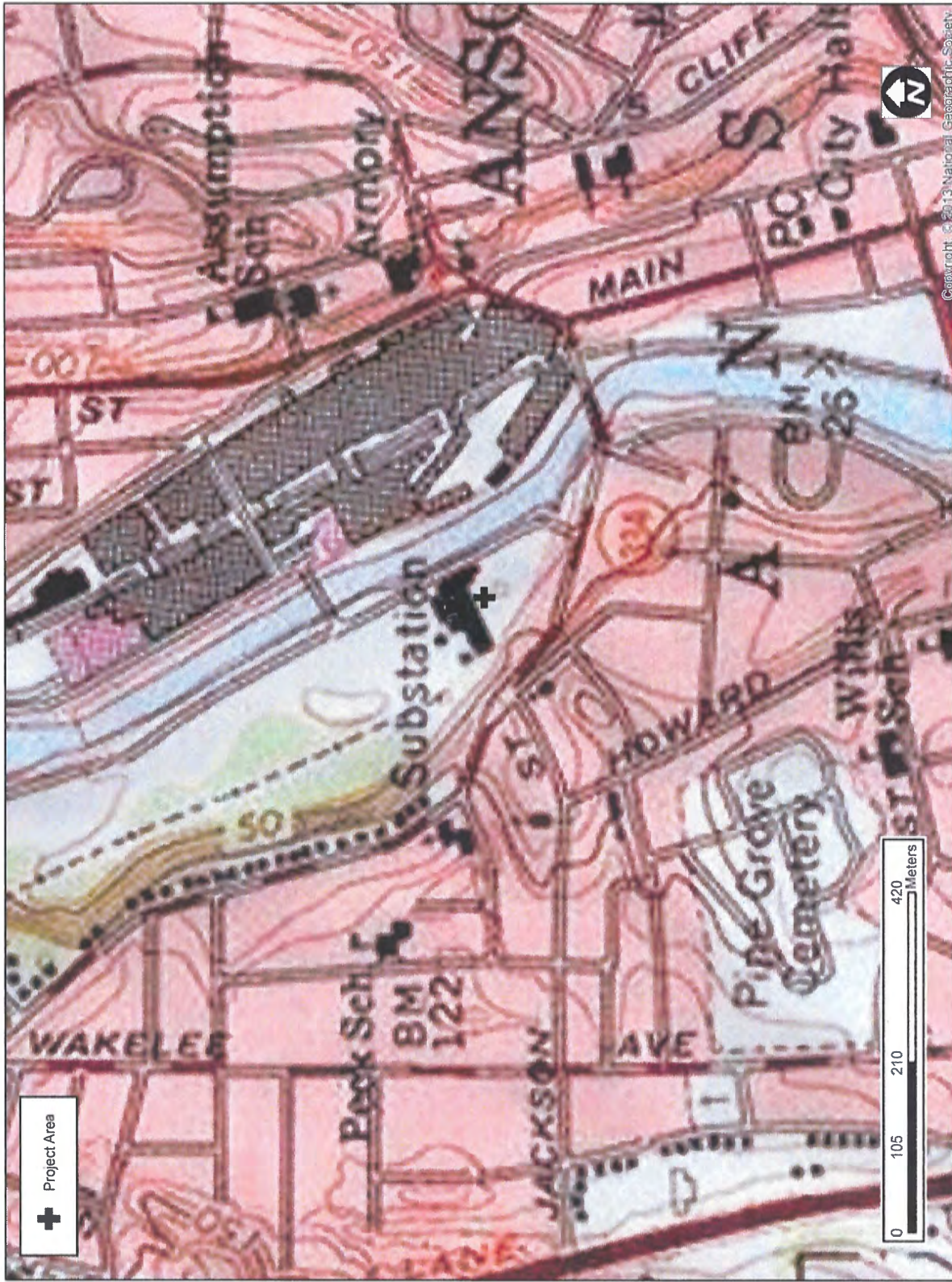


Figure 1. Excerpt from recent USGS topographic quadrangle map depicting the proposed project area in Ansonia, Connecticut.



Figure 2. Excerpt from a 1856 historic map depicting the proposed project area in Ansonia, Connecticut.

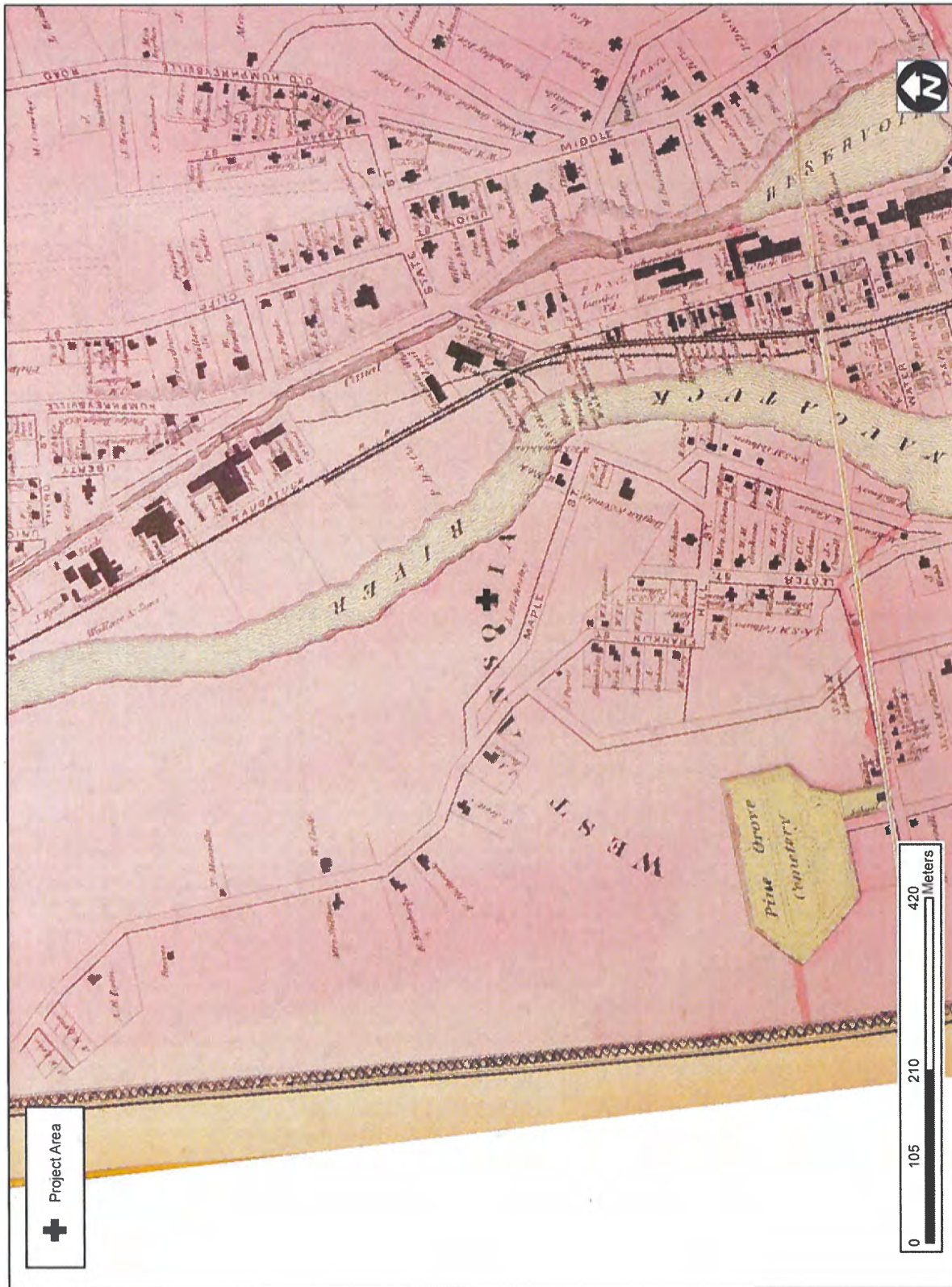


Figure 3. Excerpt from an 1868 historic map depicting the proposed project area in Ansonia, Connecticut.



Figure 4. Excerpt from a 1934 aerial image depicting the proposed project area in Ansonia, Connecticut.



Figure 5. Excerpt from a 1972 aerial image depicting the proposed project area in Ansonia, Connecticut.

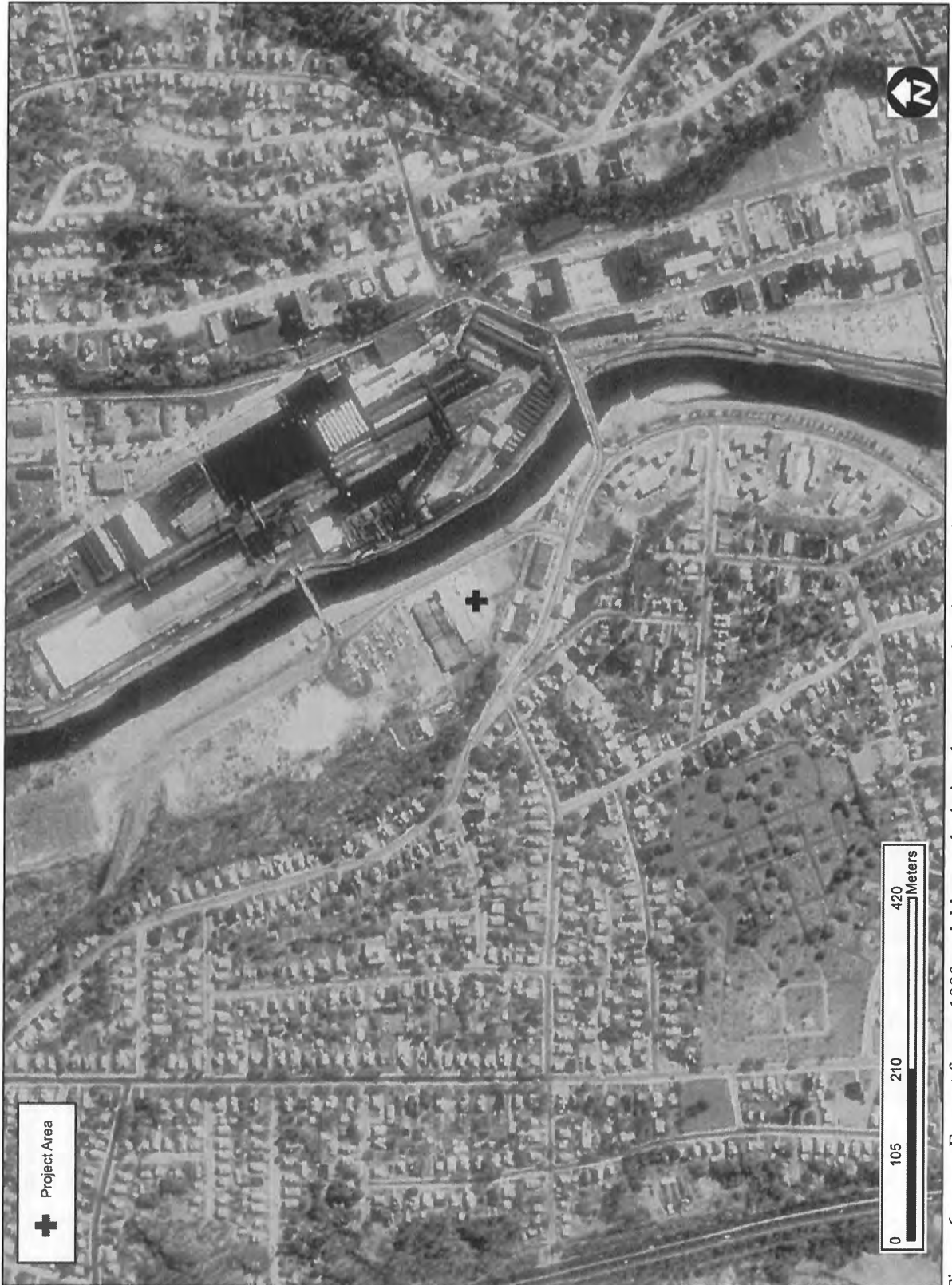


Figure 6. Excerpt from a 1990 aerial image depicting the proposed project area in Ansonia, Connecticut.



Figure 7. Excerpt from a 2014 aerial image depicting the proposed project area in Ansonia, Connecticut.



Figure 8. Digital map depicting the locations of previously recorded archaeological sites in the vicinity of the proposed project area in Ansonia, Connecticut.

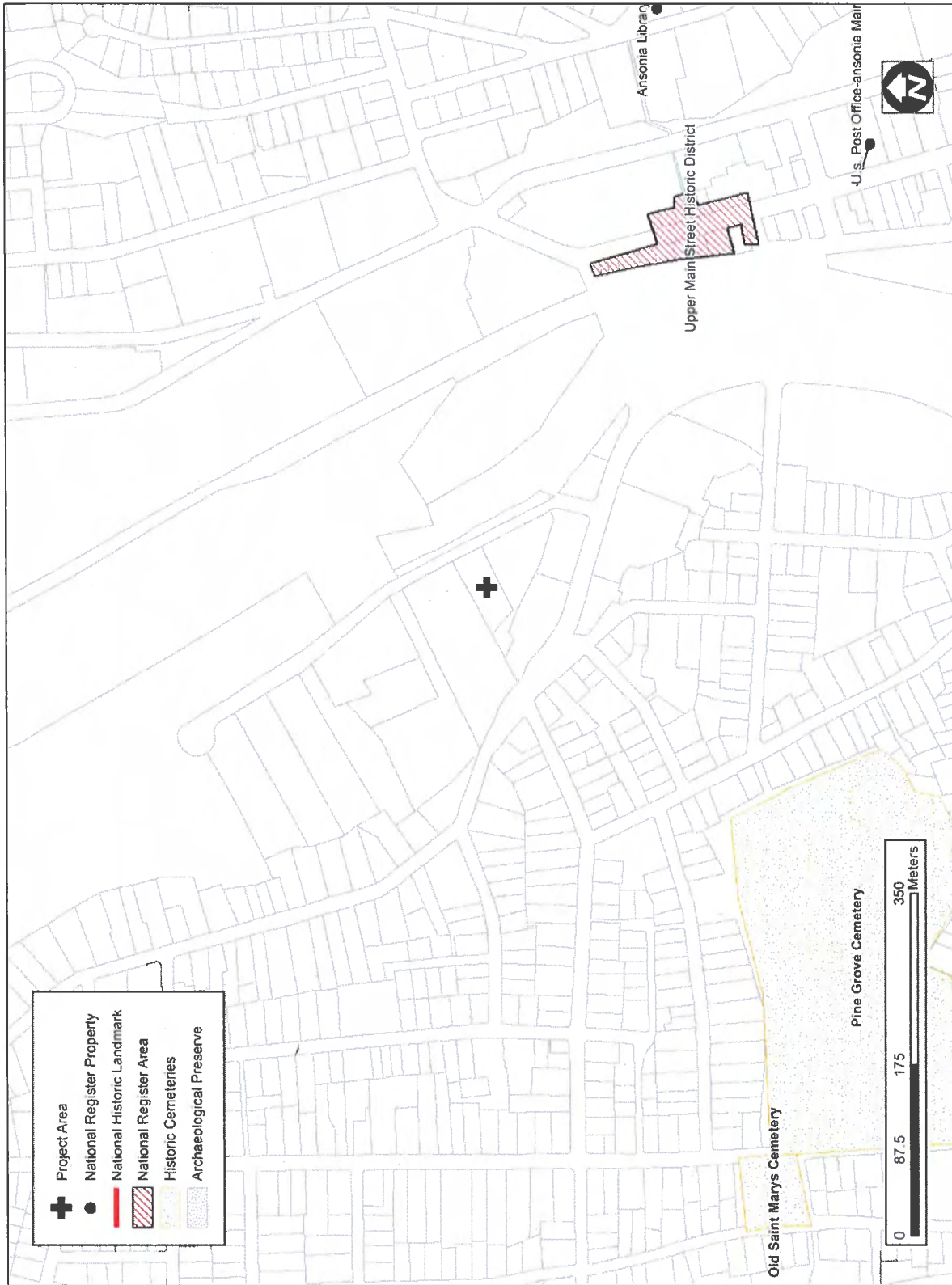


Figure 9. Digital map depicting the locations of previously National Register of Historic Places properties in the vicinity of the proposed project area in Ansonia, Connecticut.

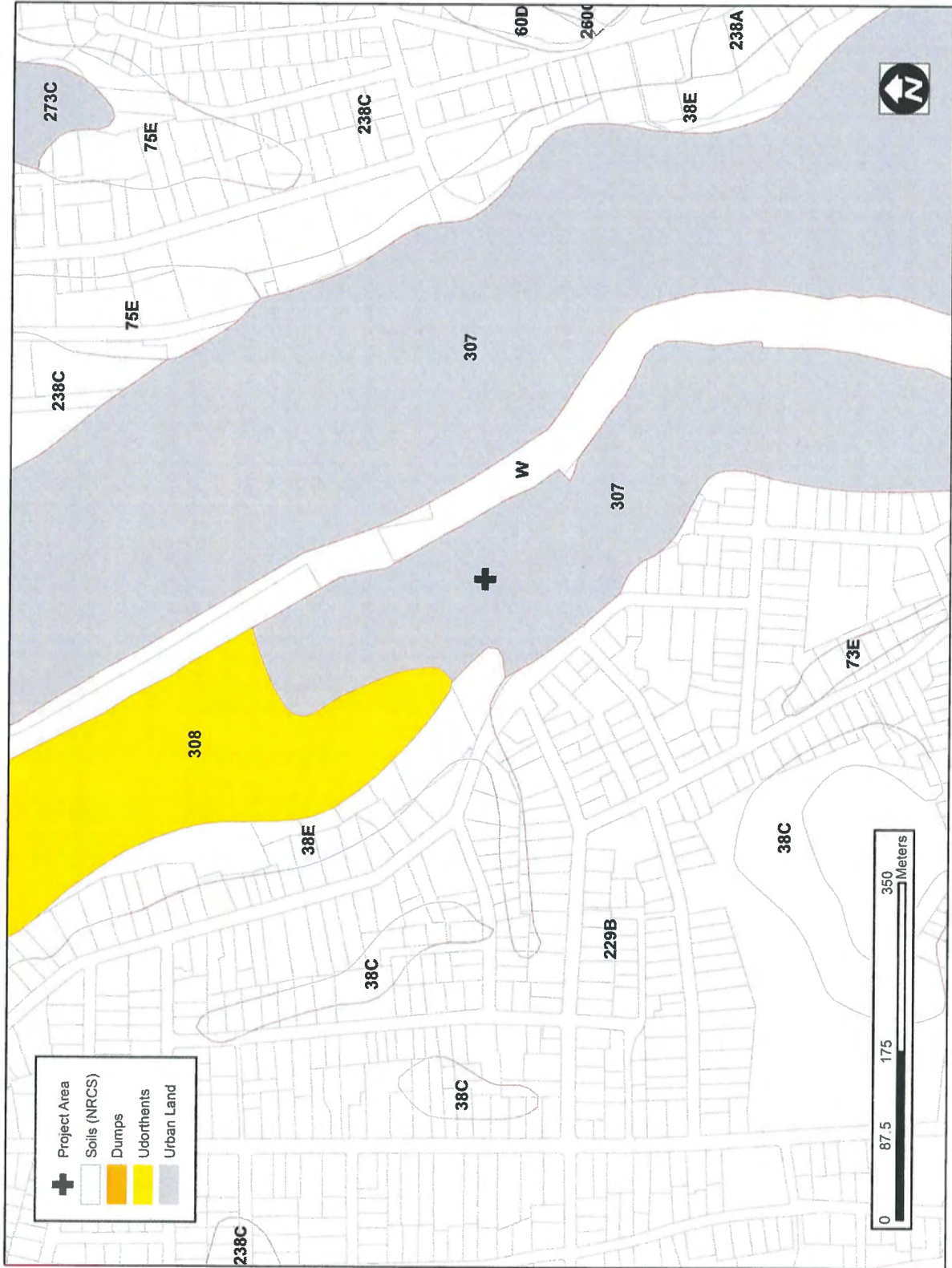


Figure 10. Digital map depicting soil types in the vicinity of the proposed project area in Ansonia, Connecticut (note soil code 307 is Urban Land, which has been disturbed in past through mechanical means).

Attachment I

Notice Letters and Abutters Map



Engineering & Project Excellence

June 30, 2016

The Honorable David S. Cassetti, Mayor
253 Main Street
Ansonia, CT 06401

Dear Mayor Cassetti:

The United Illuminating Company (“UI”) has filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI’s Ansonia Substation Project. The project will include the installation of two 115-kV 30 MVAR capacitor banks and associated equipment at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at theplanahead.uinet.com.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence

Enclosures





Engineering & Project Excellence

June 30, 2016

Dear Property Owner:

The purpose of this letter is to notify you that The United Illuminating Company (“UI”) is filing a petition with the Connecticut Siting Council (“Council”), proposing modifications to UI’s Ansonia Substation. The project will include the installation of two (2) 115-kV 30 MVAR capacitor banks and associated equipment at the facility.

The need for the proposed Project was identified by the southwest Connecticut (“SWCT”) Working Group, which included members from UI, Eversource (“ES”), and the Independent System Operator–New England (“ISO-NE”). This Needs Assessment found numerous reliability concerns throughout the 115 kV corridor in the Frost Bridge to Naugatuck Valley sub-area of SWCT.

With this letter, UI is providing notice to you of its filing with the Council. You have 30 days from the date of this letter to send any comments or concerns to the Council at the following address:

Attorney Melanie Bachman
Acting Executive Director/Staff Attorney
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
Email: siting.council@ct.gov

Please do not hesitate to contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at <http://www.uinet.com/wps/portal/uinet/about/theplanahead>.

Sincerely,

Richard J. Reed
VP Engineering & Project Excellence



Attachment I - Ansonia Substation adjacent owners and abutter map

Ansonia Substation and Annex - adjacent owners

<u>Owner ID</u>	<u>Address</u>	<u>Parcel ID</u>	<u>Owner Name</u>	<u>Mailing Address</u>	<u>Note</u>
1	1 Riverside Drive	0300020000	Riverbend Site LLC	22 Maple Street Ansonia 06401	warehouse
2	6 Riverside Drive	0330001001C	Teodosio Properties LLC	same (06401)	Construction company
3	8 Riverside Drive	0330001001A	Valley Contractor and Supply Co LLC	same (06401)	Construction company
4	46 Franklin Street	02100820000	Joshua M. Dickinson	same (06401)	private home
5	40 Franklin Street	02100830000	Carlos Esteves	same (06401)	private home (contractor)
UI	4 Riverside Street	0330001001B	The United Illuminating Company	Annette Potasz 180 Marsh Hill Road Orange, CT 06477	Substation Annex property
UI	24 Franklin Street	03300010001	The United Illuminating Company	Annette Potasz 180 Marsh Hill Road Orange, CT 06477	Existing Substation

Ansonia Substation and Annex Parcel - Adjacent Owners



UI Property –

Ansonia Substation – 24 Franklin Street

Ansonia “Annex” – 4 Riverside Drive





City of Ansonia
OFFICE OF THE MAYOR
CITY HALL
253 MAIN STREET
ANSONIA, CONNECTICUT 06401

David S. Cassetti
Mayor

Office: (203) 736-5900
Fax: (203) 734-3853
Email: dcassetti@ansoniacct.org

May 9, 2016

Samantha Marone
United Illuminating Company
180 Marsh Hill Road
Orange, CT 06477-3629

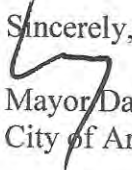
Dear Ms. Marone:

On March 16, 2016, representatives from The United Illuminating Company (UI) met with the City of Ansonia to discuss the proposed modifications to its substation located at 24 Franklin Street.

The proposed project is made necessary by UI's obligation to provide reliable service to its customers and to meet the reliability standards mandated by national and regional authorities responsible for the reliability of the transmission system. The Southwest Connecticut Study focused in the Naugatuck Valley / Frost Bridge Corridor of the 115kV electric transmission lines identified low voltage conditions under several contingencies. In order to mitigate these conditions UI has identified a need to add two (2) 115kV, 30-50 MVAR capacitor banks, one on each of the 1594 and 1560-1 line terminals, at Ansonia Substation.

My priority for the residents of the City of Ansonia has been tax relief and economic development. In particular, I have focused our efforts on the retention, expansion and attraction of new businesses. This addition will provide greater and continued reliability for our region. These efforts to strengthen the electrical system in Ansonia will benefit the needs of our residents and businesses. I strongly support this project.

Sincerely,


Mayor David S. Cassetti
City of Ansonia



City of Ansonia
CITY HALL
253 MAIN STREET
ANSONIA, CONNECTICUT 06401

Telephone: 203-736-5990
Fax: 203-736-5995
dblackwell@ansoniacct.org

Zoning Enforcement Officer
Blight Officer

May 2, 2016

Connecticut Sitting Council
10 Franklin Square
New Britain CT 06051

To Whom It May Concern:

On March 16, 2016, representatives from The United Illuminating Company (UI) met with the City of Ansonia to discuss the proposed modifications to its substation located at 24 Franklin Street. The proposed project is made necessary by UI's obligation to provide reliable service to its customers and to meet the reliability standards mandated by national and regional authorities responsible for the reliability of the transmission system.

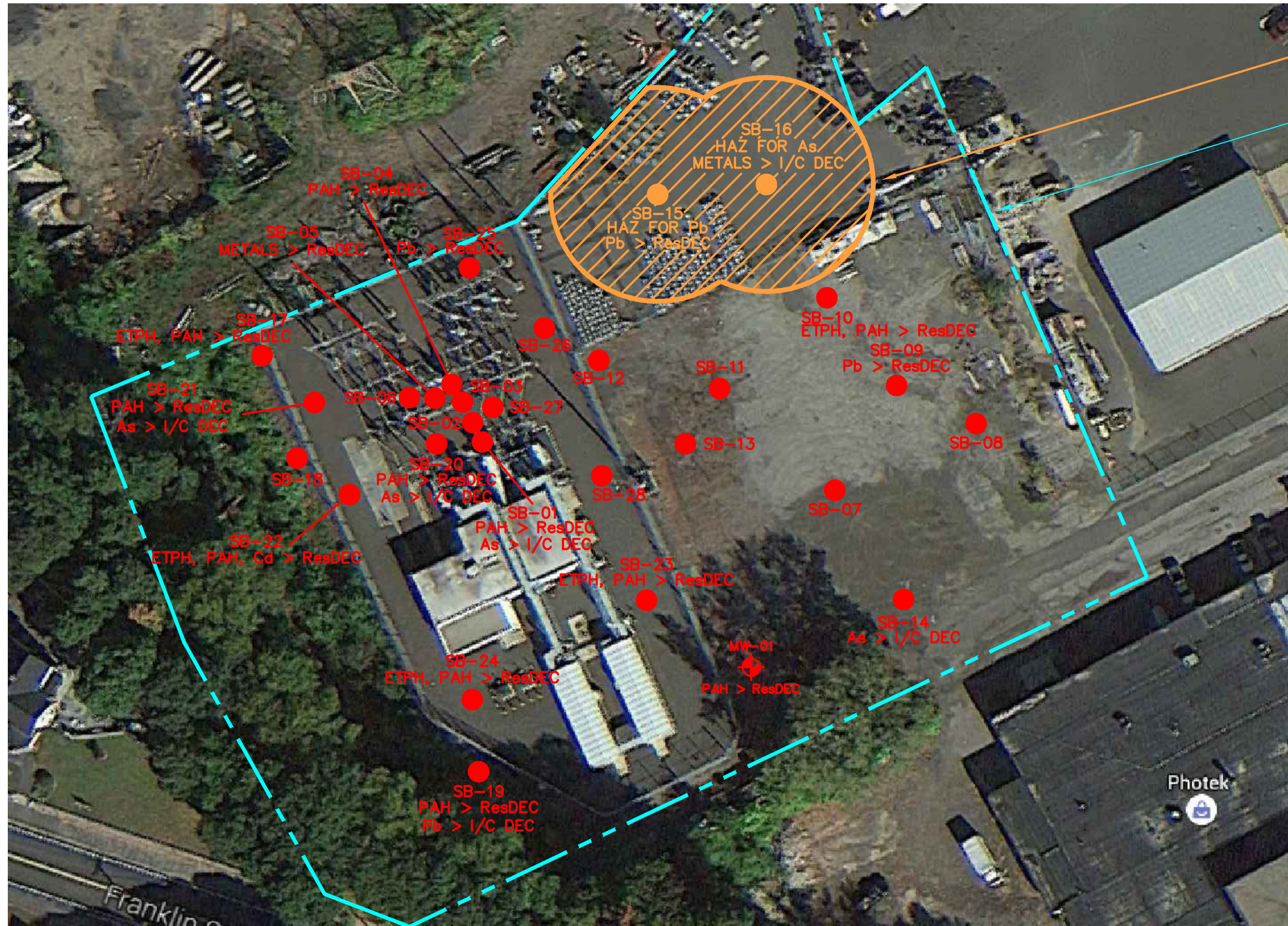
The Southwest Connecticut Study focused in the Naugatuck Valley/Frost Bridge Corridor of the 11 5kV electric transmission lines identified low voltage conditions under several contingencies. In order to mitigate these conditions UI has identified a need to add two (2) 115kV, 30-50 MVAR capacitor banks, one on each of the 1594 and 1560-1 line terminals, at Ansonia Substation. This addition will provide greater and continued reliability for our region. These efforts to strengthen the electrical system in Ansonia will benefit the needs of our residents and businesses.

Very truly yours,

David Blackwell, Sr.
Zoning Enforcement Officer

Attachment J

Soil Boring Test Location Site Plan



PRESUMED HAZARDOUS SOIL
(50 FT RADIUS)

APPROXIMATE SITE BOUNDARY



LEGEND

- MW-01**
 TEMPORARY MONITORING WELL
(SOIL CRITERIA EXCEEDED)
- PAH > ResDEC**
 SOIL BORING EXCEEDING RSR CRITERIA (CONTAMINATED)
- SB-15**
 SOIL BORING EXCEEDING RCRA CRITERIA (HAZARDOUS)
- SB-01**
 SOIL BORING EXCEEDING RSR CRITERIA (CONTAMINATED)

**EXCEEDANCES IN RSR GA
PMC FOR VARIOUS METALS
OBSERVED SITEWIDE

File Path: J:\DWG\20140761\A40\EnvironmentalPlan\Ansonia Substation Aerial.dwg Layout: 11X17-L Plotted: Tue, June 07, 2016 - 1:10 PM User: kgeanwar
MS VIEW: Layer: DWG TO PDF.PC3 CTB File: FO.STB

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.				

MAP REFERENCE:
AERIAL IMAGERY SHOWN WAS OBTAINED FROM GOOGLE
EARTH ON 10/08/2015.

SCALE:
HORIZ.: 1"=50'
VERT.:
DATUM:
HORIZ.:
VERT.:
0 25 50
GRAPHIC SCALE

FUSS & O'NEILL
56 QUARRY ROAD
TRUMBULL, CONNECTICUT 06611
203.374.3748
www.fando.com

UNITED ILLUMINATING COMPANY
SITE PLAN WITH SAMPLING LOCATIONS
ANSONIA SUBSTATION
ANSONIA CONNECTICUT

PROJ. No.: 20140761.A40
DATE: JUNE 2016
FIGURE 2