

March 6, 2015

Ms. Barcy F. McNeal
Secretary
Docketing Division
The Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215-3793

**Application For A Certificate of Environmental Compatibility and Public Need
Lake Avenue Substation Project
Case No. 14-2162-EL-BSB**

Dear Ms. McNeal:

On behalf of American Transmission Systems, Incorporated ("ATSI"), a FirstEnergy company, please find enclosed one (1) original hardcopy, six (6) hardcopies and thirteen (13) copies on CD of an Application to the Ohio Power Siting Board (Board) for a Certificate of Environmental Compatibility and Public Need for the Lake Avenue Substation Project, Case No. 14-2162-EL-BSB. The scope of the overall proposed project involves making improvements to the operation of the transmission and sub-transmission systems in the Project area to strengthen the transmission system under numerous planning contingencies and improve overall efficiency and flexibility in the operation of the transmission system in Lorain County, Ohio.

ATSI is proposing the following electric transmission system projects to improve overall system operations and reliability in the Project area:

1. Installing a new Lake Avenue Substation, the Project proposed in this Application.
2. Looping the existing Black River-Johnson No.1 and No.2 138 kV transmission lines into the Lake Avenue Substation, thus creating Black River-Lake Avenue No.1 and No.2 138 kV lines and Johnson-Lake Avenue No.1 and No.2 138 kV lines, which will be the subject of a companion filing with the Board.
3. Looping the Avon-Beaver No.1 and No.2 345 kV lines into the Lake Avenue Substation, thus creating new Avon-Lake Avenue No.1 and No.2 345 kV lines and Beaver-Lake Avenue No.1 and No.2 345 kV lines, which will be the subject of a companion filing with the Board.
4. Re-conductor and structure replacement of an approximately 1.95 mile segment of the Black River-Johnson No.2 138 kV Transmission Line, which will be the subject of a companion filing with the Board.

This Application is submitted simultaneously with a request for a limited waiver of Rule 4906-

15-06(E)(2)(a) of the Ohio Administrative Code to develop data on electric and magnetic fields ("EMF") data on the Alternate Site. The motion to waive has been filed in this Docket.

In accordance with the requirements of Admin. Code 4906-5-02(A)(3), please be advised of the following:

Applicant's Name & Address:

American Transmission Systems, Incorporated
76 South Main Street
Akron, OH 44308-1890

Name & Location of Proposed Facility:

Lake Avenue Substation

The proposed Preferred Site of the Lake Avenue Substation is located within the City of Elyria and adjacent to Elyria Township, Lorain County, Ohio. The proposed Alternate Site of the Lake Avenue Substation is located within Elyria Township and adjacent to the City of Elyria, Lorain County, Ohio.

Applicant's Representative

Nataliya Bryksenkova
Engineer
Energy Delivery Technical Services
FirstEnergy Service Company
76 South Main Street
Akron, OH 44308-1890
Phone: 330-761-4473

Also enclosed is the original and six (6) copies of the signed executive officer statement required by Admin. Code 4906-1-10. A copy of this statement has also been placed in the front cover of each application. Due to the size of this filing, this Application will be delivered in multiple packages.

Should the Ohio Power Siting Board desire further information or discussion of this submittal, please contact me at (330) 761-4473.

Sincerely,

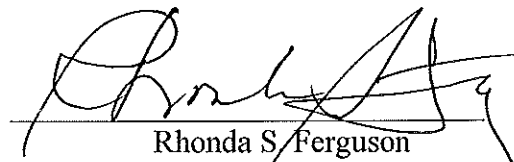


Nataliya Bryksenkova
Engineer
Energy Delivery Technical Services
FirstEnergy Service Company


APPLICATION FOR
A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED
FOR THE
LAKE AVENUE SUBSTATION PROJECT
SUBMITTED TO THE
OHIO POWER SITING BOARD
AFFIDAVIT
Case No. 14-2162-EL-BSB

STATE OF OHIO)
 SS.
SUMMIT COUNTY)

On March 5, 2015, before me, a Notary Public in and for the State and County Aforesaid, personally appeared Rhonda S. Ferguson, who after being duly sworn according to law, deposed and said that she is Vice President and Corporate Secretary of AMERICAN TRANSMISSION SYSTEMS, INCORPORATED, an Ohio Corporation, that in such capacities she is authorized to make this Affidavit; and that the within information of AMERICAN TRANSMISSION SYSTEMS, INCORPORATED, to the Ohio Power Siting Board is true and correct to the best of her knowledge, information, and belief.


Rhonda S. Ferguson

Sworn to and subscribed before
me this 5th day of March 2015.



Notary

SAMANTHA B. SARAH
NOTARY PUBLIC • STATE OF OHIO
Recorded in Portage County
My commission expires Dec. 21, 2019



Lake Avenue Substation Project

Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need

**Prepared for
American Transmission Systems, Incorporated,
a FirstEnergy Company**

Ohio Power Siting Board Case Number 14-2162-EL-BSB

BMcD Project No. 65085

March 2015

Lake Avenue Substation Project

Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need

prepared for

**American Transmission Systems, Incorporated,
a FirstEnergy Company**

Ohio Power Siting Board Case Number 14-2162-EL-BSB

March 2015

prepared by

**Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri
BMcD Project No. 65085**

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4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW**4906-15-01 Project Summary and Facility Overview**

- (A) An applicant for a certificate to site a major electric power, gas, or natural gas transmission facility shall provide a project summary and overview of the proposed project. In general, the summary should be suitable as a reference for state and local governments and for the public. The summary and overview shall include the following:
- (1) A statement explaining the general purpose of the facility.
 - (2) A description of the proposed facility.
 - (3) A description of the site or route selection process, including descriptions of the major alternatives considered.
 - (4) A discussion of the principal environmental and socioeconomic considerations of the preferred and alternate routes or sites.
 - (5) An explanation of the project schedule (a bar chart is acceptable).
- (B) Information filed by the applicant in response to the requirements of this section shall not be deemed responses to any other section of the application requirements.
- (C) If the applicant has prepared the required hard copy maps using digital, geographically referenced data, an electronic copy of all such data, excluding data obtained by the applicant under a licensing agreement which prohibits distribution, shall be provided to the board staff on computer disk concurrent with submission of the application.

Effective: 1/25/2009

R.C. 119.032 review dates: 11/10/2008 and 11/30/2013

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.03, 4906.06

Prior Effective Dates: 12/27/76, 10/10/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW**(A) PROJECT SUMMARY AND FACILITY OVERVIEW**

American Transmission Systems, Incorporated (“ATSI” or “Applicant”), a FirstEnergy company, is submitting this Application for a Certificate of Environmental Compatibility and Public Need (“Certificate”) from the Ohio Power Siting Board (“Board”) to obtain approval for the construction and operation of the Lake Avenue Substation Project (“Project”).

The proposed Project consists of installing a new transmission substation with 345 kilovolt (“kV”) to 138 kV transformation. The Project will be supported by extending two loops from the existing Avon-Beaver No.1 and No.2 345 kV transmission lines approximately 0.05 mile to the new Lake Avenue Substation (“Substation”), creating Avon-Lake Avenue No.1 and No.2 345 kV circuits and Beaver-Lake Avenue No.1 and No.2 345 kV circuits that will be proposed to the Board in a separate Construction Notice (“CN”). The substation will also connect to two loops from the existing Black River-Johnson No.1 and No.2 138 kV transmission lines extending approximately 0.3 mile to the new Lake Avenue Substation, creating Black River-Lake Avenue No. 1 and No.2 138 kV circuits and Johnson-Lake Avenue No.1 and No.2 138 kV circuits that will be proposed to the Board in a separate Letter of Notification (“LON”).

The Board has jurisdiction over major utilities, including substation installations located wholly within the State of Ohio. As such, ATSI is required to file this Application with the Board for a Certificate for the proposed Project, which has been assigned Docket No. 14-2162-EL-BSB. This Application contains specific Project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters that are required by Chapter 4906-15 of the Ohio Administrative Code. The Application, for ease of review and presentation, is organized to present the required information in the same order as in that Administrative Code Chapter, with the exception of figures that are provided at the end of each Section of the Application.

(1) General Purpose of the Proposed Facility

The proposed Lake Avenue Substation is needed to support electric system load requirements for residential, industrial and commercial customer operations and enhance overall system reliability for all customers in the greater Lorain area. Based on current system load and projected growth, combined with a 110 megawatt (“MW”) load addition planned at an industrial facility in the area, the Project would provide the necessary enhancements to meet system operating and reliability criteria by adding a new Substation and associated transmission line interconnections in the greater Lorain area.

(2) Description of the Proposed Facility

The proposed Project is a new substation with 345 kV to 138 kV transformation capabilities. Applicant is proposing both a Preferred and Alternate Site for the Project.

Based on preliminary engineering for the Preferred Site, the Preferred Site layout would require an approximately 300-foot by 738-foot fenced area with a storm water detention basin located outside the fence line. The access to the Preferred Site would be from Freedom Court, a dead end street.

The preliminary layout for the Alternate Site requires an estimated fenced area of 486 feet by 460 feet. The Alternate Site would contain two storm water detention basins located outside of the fenced area. A new access road from Lorain Boulevard (State Route 57) would be required for the Alternate Site.

(3) Site Selection Process

ATSI studied the Project study area to identify potentially sensitive areas and land uses, and it has evaluated multiple locations for the Substation in an effort to identify the site with the fewest total impacts. A siting study conducted for the Project, which is included as an attachment to this Application, has identified Preferred and Alternate Sites, which are shown in Figure 01-1. The Site Selection Study is summarized below and is part of this Application.

The Preferred Site is located on land owned by ATSI/FirstEnergy located within the City of Elyria, Lorain County, Ohio. The Preferred Site is located northeast of a dead end street named Freedom Court, from where Site access is proposed, and east of a light manufacturing facility operated by the Shalmet Corporation.

The Alternate Site is located on land owned by Quarry Development, Inc. (“Quarry”) located within Elyria Township. The Alternate Site is located on the west side of Lorain Boulevard (also named State Route 57). An active quarry, including soil storage activities, exists on portions of the Quarry property, and, therefore, a new access driveway would need to be constructed from Lorain Boulevard to the Alternate Site. The southern portion of the Alternate Site is crossed by the existing Avon-Beaver No.1 and No.2 345 kV transmission lines.

The Preferred Site was ultimately selected due to its proximity to the existing 345 kV transmission lines and its closer proximity to the existing 138 kV transmission lines, the availability of a large portion of the Site for sale, and the fact that it is currently not developed. Other impacts at the Preferred Site were similar to those at the Alternate Site.

The Site Selection Study was performed by Burns & McDonnell Engineering Company, Inc. (“Burns & McDonnell”) for ATSI and was designed to identify a Preferred and Alternate Site for the Project. The Site Selection Study is provided in Appendix A of this Application. The Site Selection Study was iterative and evaluated potential sites based on their location, size, availability and other characteristics. All potential sites were located within a defined Project study area that was approximately 9 square miles in size. The Project study area was located in the general vicinity of the intersection of the existing ATSI Avon-Beaver No.1 and No.2 345 kV and Black River-Johnson No.1 and No.2 138 kV transmission lines due to the identification of this area as meeting the load support requirements of the Project.

As discussed in the Site Selection Study, twelve candidate sites were identified within the Project study area. The candidate sites initially considered were identified because they lacked significant development and were primarily open space, forested areas, or previously disturbed areas (brownfield sites). Characteristics for each candidate site were reviewed, and based on that assessment, six preliminary sites were selected for further review

Based on visual surveys and analysis of potential routing and interconnection capabilities/constraints, including availability of the sites for acquisition, two of the preliminary sites were selected as final sites for the Substation. These sites are identified as Sites #7 and #12 in the Site Selection Study (Site #7 is the Alternate Site and Site #12 is the Preferred Site).

As can be seen in the Site Selection Study, the availability of three of the preliminary sites was analyzed prior to the final identification of the Preferred and Alternate Sites. The review of the preliminary sites included initial discussions with landowners regarding site acquisition for the Project. One preliminary site was removed from consideration due to issues identified during these initial property availability discussions.

Additionally, when it became evident that the negotiations related to the acquisition of what is presented in this Application as the Alternate Site were going to be complicated by the current use of the property as a quarry, ATSI reevaluated the preliminary sites based on the projected difficulties associated with property acquisition. As discussed in more detail in the Site Selection Study, ATSI used site availability as a means of distinguishing between sites that were otherwise similar in overall impacts. This ultimately led to a more detailed assessment of Site #12 and its designation as the Preferred Site. Site #12, the proposed Preferred Site has been acquired by ATSI for this Project.

(4) Principal Environmental and Socioeconomic Considerations

The site selection process for the Project included an evaluation of potential impacts to the following resources within the study area:

- Land use
- Transportation corridors
- Utility corridors
- Noise sensitive areas
- Agricultural land
- Regional development
- Visual impacts
- Cultural resources
- Floodplains
- Wetlands
- Vegetation
- Protected species and other wildlife

In addition to the reviews conducted as part of the site selection process, field studies were conducted for both the Preferred and Alternate Sites. These additional studies included wetland delineations, cultural resources surveys, sensitive species reviews, and geotechnical investigations. Multiple substation design layouts were evaluated at both the Preferred and Alternate Sites to minimize impacts to resources identified during these studies and to neighboring properties.

(a) Preferred Site

The Preferred Site is Site #12 in the Site Selection Study. The Preferred Site is owned by ATSI and is located within the City of Elyria, Lorain County, Ohio. The Site can be accessed from Freedom Court, which is a dead end street. According to the City of Elyria, Ohio Zoning Map (dated December 5, 2006) and the Elyria Township Zoning Map (dated May 11, 2009), the Preferred Site and most of the land surrounding is designated as light-industrial (L-I), with exception of the area located to the southeast of the Site that is within Elyria Township that is zoned R1-2 (Low Density Residential). Based on available Federal Emergency Management Agency (“FEMA”) floodplain maps (Map No. 39093C0136D), the Preferred Site is not located within a 100-year floodplain. The Preferred Site primarily contains early successional growth woodland and is crossed by two ephemeral drainages. The property to the west is owned by Shalmet Corporation, while the property to the north is owned by The Norfolk and Western Railroad (“NW”). The NW property contains an abandoned railroad bed and tracks, which are located between the Preferred Site and the existing 345 kV transmission lines and associated maintained right-of-way (“ROW”). The properties to the east and south are privately owned parcels containing woodlands. Multiple residential parcels containing single-family homes are located to the southeast. The Substation may be visible from a few of these residential properties, however, woodlands remaining on the portions of the Preferred Site outside of the

Project footprint would help screen the Substation from view from other areas around the Preferred Site. Construction of the Substation at the Preferred Site would require approximately 0.05 mile of new 345 kV transmission line extensions to interconnect to the existing 345 kV transmission lines. Approximately 0.3 mile of new 138 kV transmission line extensions to interconnect to the existing 138 kV transmission lines would also be required. The proposed new 345 kV transmission line extensions are described in a separate CN that is being filed separately in Case No. 15-0289-EL-BNR, and the 138 kV transmission line extensions are described in a separate LON that is being filed separately in Case No. 15-0288-EL-BLN.

Burns & McDonnell conducted a series of ecological and cultural resource reviews and surveys at the Preferred Site, including a review of pertinent published literature, digital data, and maps, along with a field survey for wetlands, sensitive habitats, and cultural resources. Wetland delineations were completed during multiple site visits between July 2012 and November 2014. Delineated wetlands and streams are shown on Figure 07-1, as well as in the wetland delineation reports in Appendix B. The Preferred Site would impact approximately 0.275 acre of a Category 2 wetland and require the relocation of approximately 636 feet (0.058 acre) of a low quality, approximately 4-foot-wide ephemeral drainage. This drainage appeared to have been man-made or man-modified to accommodate storm water flow away from the Preferred Site. This storm water drainage extends northeast from Freedom Court, then east through the southern portion of the Preferred Site. Based on property records, a 20-foot-wide storm water drainage easement is recorded on this property for this stream. Another ephemeral stream (another apparent storm water drainage) extends north-south along the western property line of the Preferred Site, but it is not anticipated to be impacted by the Project. The preliminary Substation layout for the Preferred Site was designed to avoid stream and wetland impacts to the extent possible. In total, approximately 0.333 acre of potential jurisdictional waters may be impacted.

According to Natural Heritage data obtained from the Ohio Department of Natural Resources (“ODNR”) - Division of Wildlife (“DOW”) on August 19, 2014, no known locations of Federal or State sensitive species are within 1,000 feet of the Preferred Site. The Preferred Site would require tree clearing prior to construction and would include approximately 8 acres of early successional woodland clearing. Because the Project at the Preferred Site could potentially impact suitable habitat for sensitive bat species, the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*), Burns & McDonnell performed a bat-mist net survey, in

coordination with the U.S. Fish and Wildlife Service (“USFWS”) and ODNR-DOW, in August 2014. Neither Indiana nor northern long-eared bats were captured during the survey.

Burns & McDonnell conducted a desktop review of archaeological and historical resources related to the Project area. The review included information on properties listed on the National Register of Historic Places (“NRHP”), historic districts, previously identified archaeological sites and architectural resources, and cemeteries, as well as information on previous cultural resource investigations conducted in the area. The review did not identify previously identified sites or cultural resource investigation reports within 1,000 feet of the Preferred Site. In addition to desktop reviews, Burns & McDonnell conducted a Phase I cultural resources field survey for the Site in November 2013. The majority of the Preferred Site was previously disturbed, and no cultural resources were identified during the surveys.

(b) Alternate Site

The Alternate Site is Site #7, as identified from the site selection process. The Alternate Site is currently owned by the Quarry and still partially being used for quarry operations. The Alternate Site contains the existing 345 kV transmission lines and associated maintained ROW. To minimize impacts to the active quarry, a new access driveway would be needed to the Alternate Site from Lorain Boulevard (State Route 57). According to available FEMA floodplain maps (Map No. 39093C0117D), the Alternate Site is not in a 100-year floodplain. The Alternate Site is bordered to the south by woodlands on land owned by NW, to the east by Lorain Boulevard, and to the north and west by additional Quarry property. Lorain Boulevard separates the Alternate Site from a few residential properties located east of the Alternate Site, while woodlands separate the Alternate Site from residential properties to the south and northwest. Most of the Alternate Site has been disturbed and is relatively uneven as a result of quarry operations.

Burns & McDonnell conducted a wetland delineation for the Alternate Site in July 2012. Delineated wetlands and streams are shown on Figure 07-1, as well as in the wetland delineation report in Appendix B. The preliminary Substation layout for the Alternate Site was designed to avoid wetland impacts to the extent possible. In total, approximately 0.096 acre of potential jurisdictional wetlands would be impacted.

According to the ODNR-DOW Natural Heritage data obtained, no known locations of Federal or State sensitive species are within 1,000 feet of the Alternate Site. The Alternate Site would

require tree clearing prior to construction, which would include approximately 4 acres of early successional woodlands.

Burns & McDonnell's background research of the NRHP, historic districts, previously identified archaeological sites and architectural resources, and cemeteries, as well as information on previous cultural resource investigations conducted in the area did not reveal any previously identified sites or cultural resource investigation reports within 1,000 feet of the Alternate Site. Burns & McDonnell also conducted a Phase I cultural resources field survey for the Alternate Site in November 2013. The majority of the Alternate Site was previously disturbed, and no cultural resources were identified.

(5) Project Schedule

Construction of the Lake Avenue Substation is proposed to begin in August 2015 in order to meet the planned in-service date of December 1, 2016.



0 200 400
Feet



- Alternate Substation Site
- Preferred Substation Site
- Existing 69kV Line
- Existing 138kV Line
- Existing 345kV Line

- Road
- State Highway
- Railroad
- City/Township Boundaries

ATSI[®]

American Transmission Systems, Inc.
a subsidiary of FirstEnergy Corp.

Figure 01-1
Preferred and Alternate
Site Locations
Lake Avenue Substation Project
Lorain County, Ohio

4906-15-02 REVIEW OF NEED FOR PROPOSED PROJECT**4906-15-02 Review of Need for Proposed Project**

- (A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable). The statement shall also include but not be limited to, the following:
- (1) A statement of the purpose of the proposed facility.
 - (2) Specific projections of system conditions, local requirements or any other pertinent factors that impacted the applicant's opinion on the need for the proposed facility.
 - (3) Relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvement.
 - (4) For electric power transmission facilities, load flow data shall be presented in the form of transcription diagrams depicting system performance with and without the proposed facility.
 - (5) For gas or natural gas transmission projects, one copy in electronic format of the relevant base case system data on diskette, in a format acceptable to the board staff, with a description of the analysis program and the data format.
- (B) Expansion plans.
- (1) For the electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.
 - (c) Reference to regional expansion plans, including East Central Area Reliability Coordination Agreement bulk power plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).
 - (2) For gas transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term gas forecast report, including the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term gas forecast report, an explanation as to why none was filed in the most recent long-term gas forecast report.

- (C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.
- (D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.
- (E) The applicant shall describe why the proposed facility was selected to meet the projected need.
- (F) Facility schedule.
 - (1) Schedule. The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:
 - (a) Preparation of the application.
 - (b) Submittal of the application for certificate.
 - (c) Issuance of the certificate.
 - (d) Acquisition of rights-of-way and land rights for the certified facility.
 - (e) Preparation of the final design.
 - (f) Construction of the facility.
 - (g) Placement of the facility in service.
 - (2) Delays. The applicant shall describe the impact of critical delays on the eventual in-service date.

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4906-15-02 REVIEW OF NEED FOR THE PROPOSED FACILITY**(A) NEED FOR THE PROPOSED FACILITY**

This section of the Application provides:

- An explanation of why it is necessary to construct the Project
- A description of how the Project fits into the Applicants' recent long-term forecast and regional plans for the electric system
- A description of how the Project serves the interest of system economy and reliability
- A schedule for Project certification and construction

(1) Purpose of the Proposed Facility

Industrial and commercial customers in the Project area have been adding new equipment to their manufacturing processes, which has increased the total system load. Specifically, Republic Steel added a new electric arc furnace to its facilities in Lorain, Ohio in late 2014. The arc furnace and associated equipment added 110 MW of new load. Prior to the addition of the new arc furnace and associated equipment the existing combined peak load for Republic Steel's and USS KOBE's operations was 105 MW. The addition of 110 MW of Republic Steel's new load raises the total peak load from these two industrial customers to 215 MW. Due to the electrical characteristics associated with new load, the need to satisfy power quality requirements through the addition of a new substation was increased.

The Project is needed to enhance the reliability of the system specifically with respect to overall power quality and to reduce power flows on facilities in the area. The Project increases the available short circuit values in the greater Lorain area, which ensures reliable operation of the Republic Steel electric arc furnace without causing voltage flicker (power quality) problems. Specifically, power system flicker that can be generated by an electric arc furnace is inversely proportional to the available short circuit current. That is, the higher the available short circuit current, the less voltage flicker will likely be produced by a given arc furnace. The addition of the Lake Avenue substation will increase the available short circuit current at Black River by 35 to 40 percent, depending on system conditions. Under normal conditions (base case), the proposed Lake Avenue Substation will also support transmission system operations in the area by unloading the Black River-Beaver 138 kV Line (by 29 percent), the Henrietta-Johnson 69 kV Line (by 17 percent), and the Avon 345-138 kV transformers (by 10 percent), which provides additional capacity for future load growth.

Under single contingency outage conditions (N-1), the Lake Avenue Substation would reduce the loading on the Black River-Beaver 138 kV Line for over 100 different 138 kV line outages by as much as 33 percent (loss of the Beaver-Johnson 138 kV Line). It also would provide relief to the Henrietta-Johnson 69 kV Line by as much as 24 percent. For the loss of one of the Avon 345-138 kV transformers, Lake Avenue Substation would lower the loading on the Avon 345-138 kV transformers by as much as 14.3 percent and on the Beaver-Black River 138 kV Line by as much as 31.4 percent for five contingency conditions.

Under Category C contingency conditions (N-1-1; which include breaker failures, bus faults, and similar contingencies.), the Lake Avenue Substation would lower the load on the 138-69 kV transformers at Wellington, Carlisle, and Henrietta Substations and the corresponding 69 kV lines into the Lorain area by as much as 12.3 percent. For various breaker failures at Beaver, Black River and Carlisle Substations, the Project would unload the Avon 345-138 kV transformers by as much as 13.4 percent. Under 28 different breaker failures and 7 different tower outages, Lake Avenue Substation would unload the Beaver-Black River 138 kV Line by as much as 39.8 percent.

The installation of the Lake Avenue Substation as proposed in this Application will significantly improve the operation of the transmission and sub-transmission systems in the Project area, strengthen the entire transmission system under numerous planning contingencies and improve overall efficiency and flexibility in the operation of the transmission system.

(2) System Conditions and Local Requirements

The Lorain, Sheffield Lake, and Vermilion areas are served by four 138 kV transmission lines:

1. The Beaver-Black River 138 kV Transmission Line
2. The Black River-Lorain 138 kV Transmission Line
3. The Black River-Johnson No.1 138 kV Transmission Line
4. The Black River-Johnson No.2 138 kV Transmission Line

These four lines are owned by ATSI. ATSI's affiliate, the Ohio Edison Company ("Ohio Edison"), owns the distribution voltage lines and facilities that serve distribution voltage level customers in Lorain and the surrounding areas. The general locations of the ATSI and Ohio Edison transmission lines and facilities in the area are shown on Figure 01-1.

Republic Steel added 110 MW of new load at its site in the City of Lorain, Ohio in late 2014. The existing electric transmission and distribution system (with the Black River Substation in service) is adequate to serve this new large and dramatic increase in load under normal conditions, however, the system requires

significant support under many contingency conditions. ATSI's proposal to construct the Lake Avenue Substation will expand the electric transmission system to better serve this new large load under most system conditions.

Overall, ATSI is proposing the following electric transmission system expansions to improve overall system operations and reliability in the Project area:

1. Installing a new Lake Avenue Substation, the Project in this Application.
2. Looping the existing Black River-Johnson No.1 and No.2 138 kV transmission lines into the Lake Avenue Substation, thus creating Black River-Lake Avenue No.1 and No.2 138 kV lines and Johnson-Lake Avenue No.1 and No.2 138 kV lines, which will be the subject of a companion filing with the Board.
3. Looping the Avon-Beaver No.1 and No.2 345 kV lines into the Lake Avenue Substation, thus creating new Avon-Lake Avenue No.1 and No.2 345 kV lines and Beaver-Lake Avenue No.1 and No.2 345 kV lines, which will be the subject of a companion filing with the Board.
4. Re-conductor and structure replacement of an approximately 1.95 mile segment of the Black River-Johnson No.2 138 kV Transmission Line, which will be the subject of a companion filing with the Board.

(3) Transmission Planning Requirements – Methodology and Criteria

ATSI's evaluation of the requirements necessary to reliably operate and maintain its transmission system and provide adequate energy delivery to customers is based on ATSI's Transmission Planning Criteria. ATSI's Transmission Planning Criteria is consistent with applicable requirements in PJM tariffs and in North American Electric Reliability Corporation ("NERC") Reliability Standards, and can be summarized as follows:

Contingency Planning

The general contingency planning concept used in ATSI's transmission planning is the "N-1" philosophy, often referred to as first contingency planning. In first contingency planning, "n" is the total number of transmission components in the network under study, and "-1" reflects conditions where one of the transmission components (a transmission line, transformer, or other element of the network) is out of service. A number of components can be simulated as being removed from service, provided they are removed one at a time. In a network study in which local generation is present, a transmission component outage may be simulated simultaneously with the outage of a local generating unit. Of concern in this power flow simulation are modeled power flows, voltage levels, and generating unit stability following the transmission component outage. The computer model of the network under study includes those

simultaneous inter-utility system power transactions that have been agreed upon by various transmitting and receiving utilities in NERC.

Also considered in the planning process are NERC Category C contingencies, defined as two transmission components out of service at the same time, “N-1” then a second “N-1” or “N-1-1” planning. This includes stuck breakers, bus faults, and lines on a common tower. For example, one transmission component (a transmission line, transformer, or other element of the network) is out for maintenance and then a second component fails.

Power Quality Criteria: Flicker

Certain electrical equipment located at a customer facility (arc furnaces, cyclo-converters, etc.) may generate flicker that can negatively impact the ATSI system and other facilities connected to such system. Flicker is defined as the sensation that is experienced by human subjects when fast changes occur in the illumination intensity of light sources. In general, flicker is a measure used to determine the potential impact of a customer facility on overall system power quality (“PQ”). Under normal operating conditions, the electric transmission system must meet flicker limits to ensure appropriate PQ. Customer loads may need to be curtailed under contingency operation to ensure appropriate PQ.

In addition, facilities must measure flicker as described in IEEE Standard 1453-2004, “IEEE Recommended Practice for Measurement and Limits of Voltage Fluctuations and Associated Light Flicker on AC Power Systems.” When measuring flicker, Pst is defined as a measure of short-term perception of flicker over a 10-minute interval. Plt is a measure of long-term perception of flicker over a 2-hour period calculated from 12 consecutive Pst values. Based on current operating criteria for the transmission system, any facility that is connected to the transmission system is required to be designed and operated such that Pst does not exceed 0.8 and Plt does not exceed 0.6 for more than 1 percent of the time (99 percent probability level) using a minimum assessment period of 1 week.

These flicker limits must be met during normal (N-0) system conditions including a generating unit outage. The Interconnection or Operating Agreement for the connected facility must recognize that for scheduled outages of transmission or generation facilities, a flicker causing connected facility must curtail operation as necessary so that these flicker levels do not result in Power Quality (“PQ”) complaints. It is recognized that excursions of flicker levels beyond these required limits might occur during unscheduled forced outages, resulting in PQ complaints.

Base Case Model Data

The base case model used in the study of the existing transmission system is based on the 2011 summer case of the NERC equivalent 2010 series cases. This case showed many problems by adding the electric

arc furnace to this part of the ATSI transmission system. For the model used to determine the required improvements to serve this load addition, a 2016 PJM Regional Transmission Expansion Plans (“RTEP”) BASECASE was employed. The reliability analysis was performed on a 2012 Series, ERAG/MMWG Base Case with the loads projected to the 2019 Summer Peak. This case also modeled all the RTEP projects. The format is in General Electric's positive sequence load flow data.

(4) System Studies – Pre- and Post-Construction of the Project

ATSI conducted studies of the Lorain, Sheffield Lake, and Vermilion Area’s 138 kV transmission system under present system conditions with the load from Republic Steel’s new arc furnace with and without the proposed Lake Avenue Substation Project. As noted above, the four transmission lines that comprise the Lorain, Sheffield Lake, and Vermilion area 138 kV transmission system are:

1. The Beaver-Black River 138 kV Transmission Line
2. The Black River-Lorain 138 kV Transmission Line
3. The Black River-Johnson No.1 138 kV Transmission Line
4. The Black River-Johnson No.2 138 kV Transmission Line

The purpose of the analysis conducted by ATSI was to determine the impact of available short circuit values in the area with multiple contingency conditions. This can then be used to approximate the effect of the project on possible flicker Pst values in the area. The studies include the load from Republic Steel’s new arc furnace, the Black River Substation in service, the construction and operation of the Lake Avenue Substation Project, construction and operation of the 345 kV and 138 kV transmission lines project associated with the construction of the Lake Ave Substation, re-conductor a structure replacement of an approximately 1.95 miles segment of the 138 kV transmission line (to be filed with the Board under separate LON and CN filings).

As noted above, the proposed associated 345 kV and 138 kV transmission lines and re-conductor and structure replacement of a segment of the 138 kV line are described as:

1. Looping the existing Avon-Beaver No.1 and No.2 345 kV transmission lines into the Lake Avenue Substation, thus creating Avon-Lake Avenue 345 kV No.1 and No.2 lines and Beaver-Lake Avenue No.1 and No.2 345 kV lines.
2. Looping the existing Black River-Johnson No.1 and No.2 138 kV lines into the Lake Avenue Substation, thus creating new Black River-Lake Avenue No.1 and No.2 138 kV lines and Johnson-Lake Avenue No.1 and No.2 138 kV lines.

3. Re-conductor and structure replacement of an approximately 1.95 miles segment of the Black River-Johnson No.2 138 kV transmission line.

This analysis shows that the addition of the Lake Avenue Substation would increase the available short circuit current at Black River Substation by 35 to 40 percent, depending on system conditions.

Calculations using these short circuit currents indicate a decrease in Pst of between 25 percent and 33 percent can be expected by this short circuit increase. Overall, the studies confirm that the Project, as proposed, is needed to improve overall electric system operation, reduce the potential for PQ issues resulting under normal and contingency operations from the Republic Arc Furnace, and improve overall efficiency and reliability of the transmission system in the Project Area.

Conclusion

Construction and operation of the Project would improve the local power quality under NERC Category B (single element) with local generation unavailable. This Project also would significantly reduce loading on the Black River-Beaver 138 kV Transmission Line, the Henrietta-Johnson 69 kV Transmission Line, and the Avon 345-138 kV transformers. The Project would reduce potential flicker, increase available capacity, and improve reliability in the Lorain area.

(5) Base Case Data for Natural Gas Transmission Line

As the proposed Project is an electric substation project, this section does not apply.

(B) EXPANSION PLANS

(1) Long-Term Forecast

The proposed Project is described on page 102 of the confidential portion of FirstEnergy Corp.'s 2014 Long-Term Forecast Report ("LTFR") submitted to the Public Utility Commission ("PUC") of Ohio in Case Number 14-0625-EL-FOR. The projected need date for the Lake Avenue Substation in the LTFR is 2016.

(2) Gas Transmission Lines and Associated Facilities

As the proposed Project is an electric substation, this section does not apply.

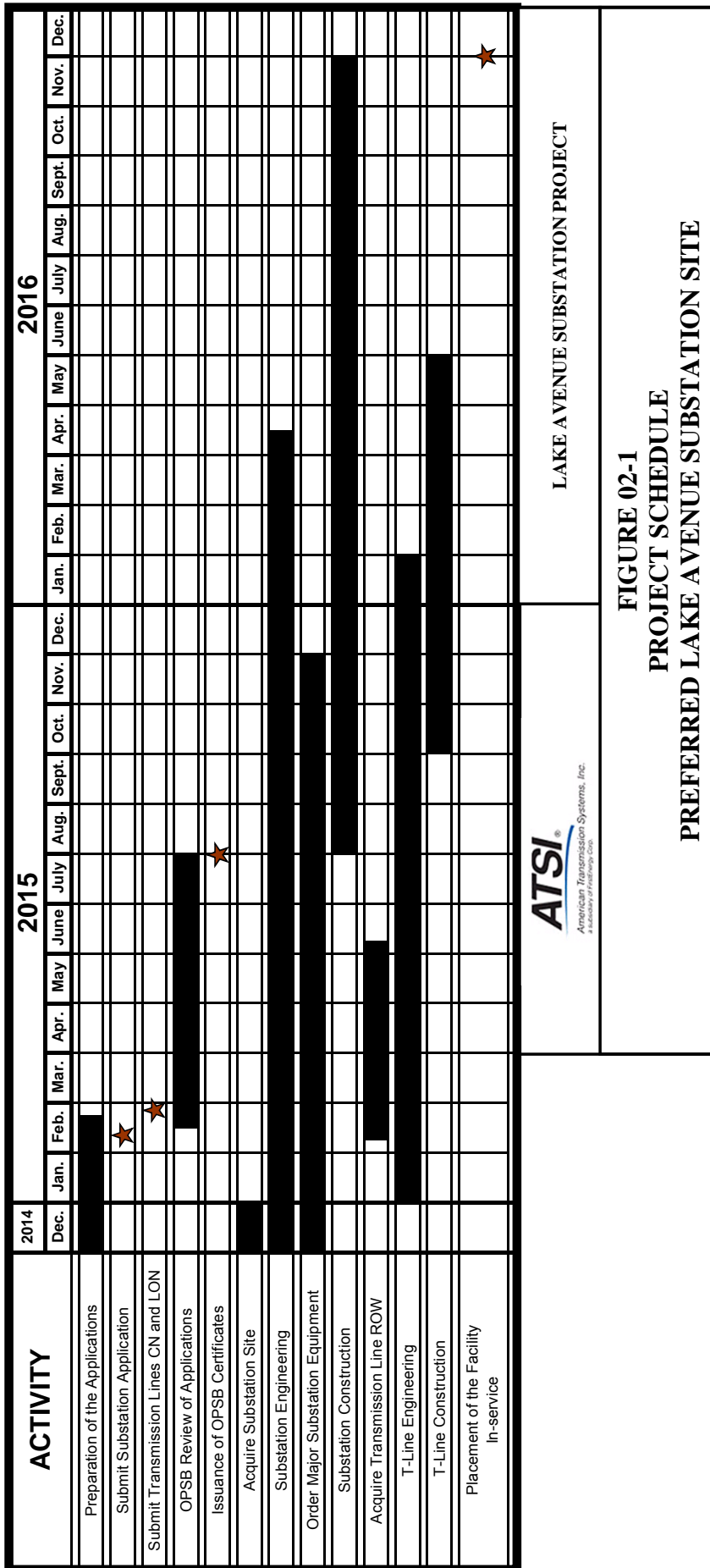
(C) FACILITY SCHEDULE

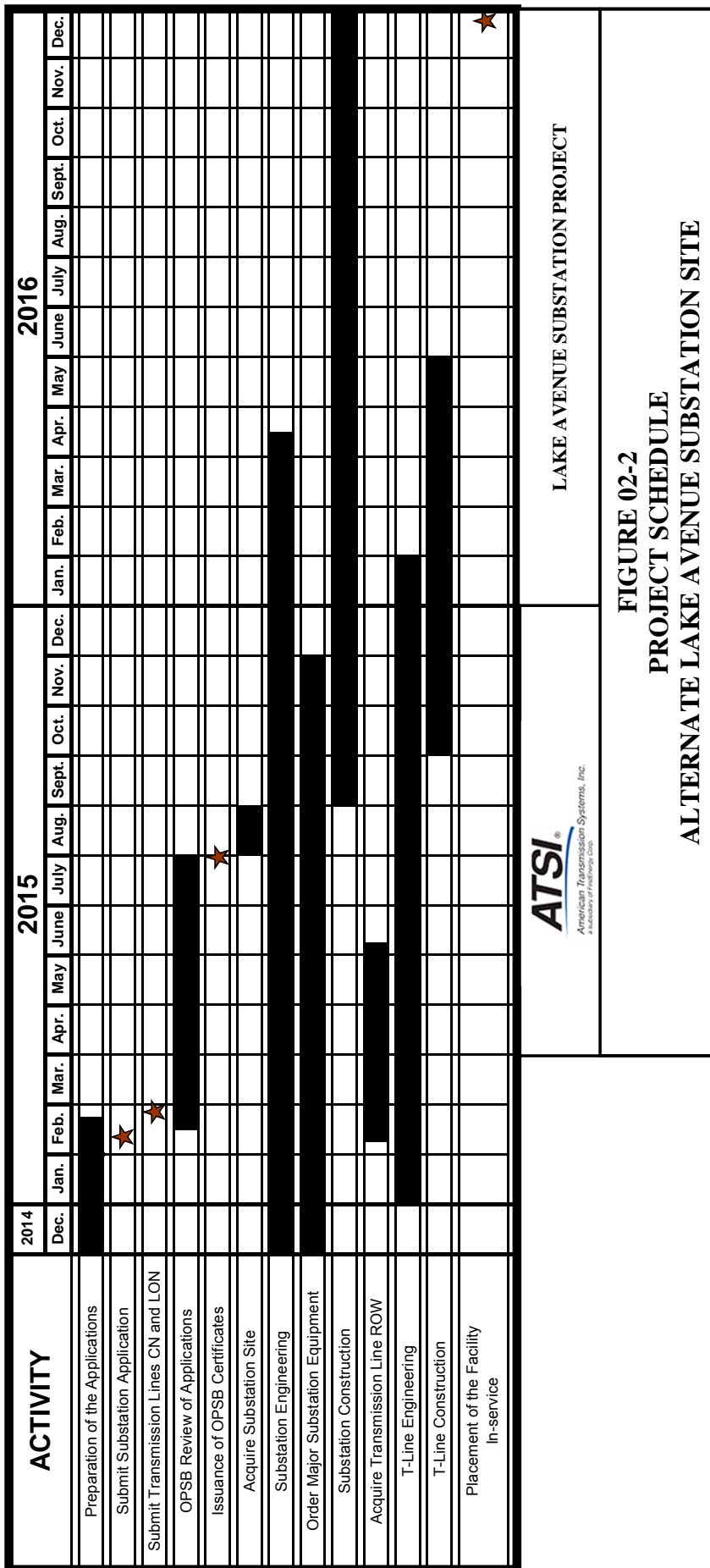
(1) Schedule Bar Chart

The major scheduled activities associated with the Preferred and Alternate Sites are shown in the bar chart on Figures 02-1 and 02-2.

(2) Delays

Delaying this Project would result in the inability to meet the planned in-service date of December 1, 2016, and would increase risk of service interruptions of energy delivery to area customers.





4906-15-03 SITE AND ROUTE ALTERNATIVE ANALYSIS**4906-15-03 Site and Route Alternative Analysis**

- (A) The applicant shall conduct a site and route selection study prior to submitting an application for an electric power transmission line, electric power transmission substation, gas or natural gas transmission line, or a gas compressor station. The study shall be designed to evaluate all practicable sites, routes, and route segments for the proposed facility identified within the project area.
- (1) The applicant shall provide the following:
- (a) A description of the study area or geographic boundaries selected, including the rationale for the selection.
 - (b) A map of suitable scale which includes the study area and which depicts the general routes, route segments, and sites which were evaluated.
 - (c) A comprehensive list and description of all qualitative and quantitative siting criteria, factors, or constraints utilized by the applicant, including any evaluation criteria or weighting values assigned to each.
 - (d) A description of the process by which the applicant utilized the siting criteria to determine the preferred and alternate routes and sites.
 - (e) A description of the routes and sites selected for evaluation, their final ranking, and the factors and rationale used by the applicant for selecting the preferred and alternate routes and sites.
- (2) The applicant shall provide one copy of any constraint map utilized for the study directly to the board staff for review.
- (B) The applicant shall provide a summary table comparing the routes, route segments, and sites, utilizing the technical, financial, environmental, socioeconomic, and other factors identified in the study. Design and equipment alternatives shall be included where the use of such alternatives influenced the siting decision.
- (C) The applicant may provide a copy of any route and site selection study produced by or for the applicant for the proposed project as an attachment to the application. The study may be submitted in response to paragraphs (A) and (B) of this rule, provided that the information contained therein is responsive to the requirements of paragraphs (A) and (B) of this rule.

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4906-15-03 SITE AND ROUTE ALTERNATIVE DATA**(A) SITE SELECTION****(1) Site Selection Study**

A Site Selection Study, that addresses the criteria in Section 4906-15-03 of the Administrative Code, was prepared by Burns & McDonnell and identified the Preferred and Alternate Sites for this Project. The Site Selection Study was an iterative process that developed over a period of time. The Site Selection Study is provided in Appendix A and includes figures showing the study area (Appendix A, Figure 1) and constraints (Appendix A, Figure 2), along with a site characteristics summary table (Appendix A, Table 1). A brief summary of the site selection process is provided below.

Potential sites were originally selected based on their location, size, availability and characteristics within a defined Project study area that was approximately 9 square miles in size. The Project study area was determined to be in the general vicinity of the intersection of existing ATSI Avon-Beaver No.1 and No.2 345 kV and Black River-Johnson No.1 and No.2 138 kV transmission lines due to Project need requirements. Twelve candidate sites were identified within the Project study area. Candidate sites initially considered were primarily in areas that were not significantly developed, such as open space and forested areas, and previously disturbed areas (brownfield sites). Characteristics for each site were reviewed, and based on that assessment, six preliminary sites were selected for further review.

Based on visual surveys and potential routing and interconnection capabilities/constraints, two of the preliminary sites were selected as the Preferred and Alternate Sites for the Substation (Sites #7 and #12). Property availability and acquisition were considered as part of the Site Selection Study and was ultimately used to distinguish between sites with relatively similar overall impacts. Site #12, the Preferred Site, has been acquired by ATSI for the Project, while Site #7, the Alternate Site, is anticipated to be available if needed, but has not been acquired by ATSI.

Based on its proximity to the existing 138 and 345 kV transmission lines and availability of the property for acquisition, Site #12 was selected as the Preferred Site for construction of the Project. Due to the uncertainty of the property acquisition timeline and further distance from the existing 138 kV lines, Site #7 was selected as the Alternate Site.

(B) SUMMARY TABLE

Table 1 within the Lake Avenue Site Selection Study, provided in Appendix A, lists site characteristics for each of the 12 candidate sites that were considered in the site selection process.

4906-15-04 TECHNICAL DATA**4906-15-04 Technical Data**

- (A) Site/route alternatives. Information on the location, major features, and the topographic, geologic, and hydrologic suitability of site/route alternatives shall be submitted by the applicant. If this information is derived from reference materials, it shall be derived from the best available and current reference materials.
- (1) Geography and topography. The applicant shall provide map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission line alignment, and the area within the immediate vicinity of a substation site or compressor station site, which shall include the following features:
- (a) The proposed transmission line alignments, including proposed turning points.
 - (b) The proposed substation or compressor station site locations.
 - (c) Major highway and railroad routes.
 - (d) Identifiable air transportation facilities, existing or proposed.
 - (e) Utility corridors.
 - (f) Proposed permanent access roads.
 - (g) Lakes, ponds, reservoirs, streams, canals, rivers, and swamps.
 - (h) Topographic contours.
 - (i) Soil associations or series.
 - (j) Population centers and legal boundaries of cities, villages, townships, and counties.
- (2) Slope and soil mechanics. The applicant shall:
- (a) Provide a brief, but specific description of the soils in the areas depicted on the above map(s) where slopes exceed twelve percent. This information may be extracted from published sources.
 - (b) Discuss the rationales as to suitability of the soils for foundation construction.
- (B) Layout and construction. The applicant shall provide information on the proposed layout and preparation of route/site alternatives, and the description of the proposed major structures and their installation as detailed below.
- (1) Site activities. The applicant shall describe the proposed site clearing, construction methods and reclamation operations, including:
- (a) Surveying and soil testing.
 - (b) Grading and excavation.

- (c) Construction of temporary and permanent access roads and trenches.
 - (d) Stringing of cable and/or laying of pipe.
 - (e) Post-construction reclamation.
- (2) Layout for associated facilities. The applicant shall:
 - (a) Provide a map of 1:2,400 scale of the site of major transmission line associated facilities such as substations, compressor stations and other stations, showing the following proposed features:
 - (i) Final grades after construction, including the site and access roads.
 - (ii) Proposed location of major structures and buildings.
 - (iii) Fenced-in or secured areas.
 - (iv) Estimated overall dimensions.
 - (b) Describe reasons for the proposed layout and any unusual features.
 - (c) Describe plans for any future modifications in the proposed layout, including the nature and approximate timing of contemplated changes.
- (C) Transmission equipment. The applicant shall provide a description of the proposed transmission lines, as well as switching, capacity, metering, safety and other equipment pertinent to the operation of the proposed electric power and gas transmission lines and associated facilities. Include any provisions for future expansion.
 - (1) Provide the following data for electric power transmission lines:
 - (a) Design voltage.
 - (b) Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.
 - (c) Base and foundation design.
 - (d) Cable type and size, where underground.
 - (e) Other major equipment or special structures.
 - (2) Provide a description for electric power transmission substations that includes a single-line diagram and a description of the proposed major equipment, such as:
 - (a) Breakers.
 - (b) Switchgear.
 - (c) Bus arrangement and structures.
 - (d) Transformers.

- (e) Control buildings.
 - (f) Other major equipment.
 - (3) Provide the following data for gas transmission lines:
 - (a) Maximum allowable operating pressure.
 - (b) Pipe material.
 - (c) Pipe dimensions and specifications.
 - (d) Other major equipment.
 - (4) Provide a description of gas transmission facilities such as:
 - (a) Control buildings.
 - (b) Heaters, odorizers, and above-ground facilities.
 - (c) Any other major equipment.
- (D) Environmental and aviation compliance information. The applicant shall provide:
- (1) A list and brief discussion of all permits that will be required for construction of the facility.
 - (2) A description, quantification and characterization of debris that will result from construction of the facility, and the plans for disposal of the debris.
 - (3) A discussion of the process that will be used to control storm water and minimize erosion during construction and restoration of soils, wetlands, and streams disturbed as a result of construction of the facility.
 - (4) A discussion of plans for disposition of contaminated soil and hazardous materials generated or encountered during construction.
 - (5) The height of tallest anticipated above ground structures. For construction activities within the vicinity of airports or landing strips, provide the maximum possible height of construction equipment as well as all installed above ground structures.
 - (6) A description of the plans for construction during excessively dusty or excessively muddy soil conditions.
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4906-15-04 TECHNICAL DATA**(A) SITE ALTERNATIVES DATA**

Of the two proposed Sites that were selected for the Project, one is proposed as the Preferred Site (Site #12) and one is proposed as the Alternate Site (Site #7). These two Sites were selected based on a site selection process that is described in the Lake Avenue Site Selection Study provided in Appendix A of this Application. For purposes of this Application, the Preferred and Alternate Sites only include a portion of their original site areas from the site selection process. Following preliminary engineering, both the Preferred and Alternate Sites, as presented in this Application, were refined to smaller areas than originally evaluated in the Site Selection Study. The following sections provide information on the location, major features, and topographic and geologic suitability of the Preferred and Alternate Sites.

(1) Geography and Topography

A 1:24,000 or greater scale map that depicts the Preferred and Alternate Sites, including the area 1,000 feet around the proposed Sites is provided in this Application as Figure 04-1.

Detail regarding the Preferred and Alternate Sites was provided by review of digital data, US Geologic Survey (“USGS”) maps, aerial photographs, and soil survey data as well as field reconnaissance and geotechnical studies conducted during various site visits in 2012, 2013, and 2014.

(a) *Transmission Line Alignments*

The general locations of the existing 345 kV and 138 kV transmission lines where the new Substation would interconnect are shown on Figure 04-1. The location of transmission line extensions to the Substation in the immediate vicinity of the Substation, are shown in Figure 04-2 for the Preferred Site and Figure 04-3 for the Alternate Site. The proposed Preferred Routes associated with the Preferred Site to be provided to the Board in greater detail separately in an LON Application, Case No. 15-0289-EL-BLN and a CN Application, Case No. 15-0288-EL-BNR.

(b) *Proposed Substation Locations*

The Preferred Site is located on land owned by ATSI/FirstEnergy located within the City of Elyria, Lorain County, Ohio. The Alternate Site is located on land privately owned located within Elyria Township, also in Lorain County, Ohio. The Preferred Site is located northeast of a dead end street named Freedom Court, from where Site access is proposed. The Alternate Site is located on the west side of Lorain Boulevard (State Route 57), partially on property where an

active quarry exists. Due to the quarry being active, a new access driveway would have to be constructed from Lorain Boulevard to gain access to the Alternate Site. These Sites are each shown on Figure 04-1.

(c) Major Highway and Railroad Routes

The Preferred Site is located approximately 1,700 feet west of Lorain Boulevard (State Route 57), approximately 2,100 feet north of Interstate-90 (“I-90”), approximately 2,600 feet south of State Route 254, and approximately 1.25 miles north of Interstate-80 (“I-80”, Ohio Turnpike). An active CSX railroad is located approximately 1,200 feet west of the Preferred Site.

The Alternate Site is located along the west side and adjacent to Lorain Boulevard (State Route 57), approximately 2,200 feet north of I-90 and Lorain Boulevard interchange, approximately 1,700 feet south of N. Ridge Road (State Route 254), and approximately 1.38 miles north of I-80 (Ohio Turnpike). The active CSX railroad is located approximately 3,000 feet west of the Site.

(d) Air Transportation Facilities

No existing public air transportation facilities were identified within 1,000 feet of either the Preferred or Alternate Sites. Richards Airport, a private airstrip, is the nearest airport and is approximately 4,900 feet southeast of the Preferred Site and approximately 4,000 feet southeast of the Alternate Site. This airport is a privately owned grass airstrip that appears to be oriented east to west on the south side of I-90. Based on Federal Aviation Administration (“FAA”) criteria for obstructions, the proposed Preferred and Alternate Sites would not present a conflict with the Richards Airport, FAA regulated airports, or navigable airspace. The tallest structures within the Substation are anticipated to be the 345 kV dead end structures and the shield masts (if deemed necessary through engineering) at approximately 90 feet tall.

(e) Utility Corridors

Many electrical transmission lines (Figure 04-1) owned and operated by ATSI and/or Ohio Edison (i.e., FirstEnergy) are located adjacent to and in the vicinity of both Sites. The Preferred Site includes two, 20-foot-wide storm drainage easements, both containing storm water drainage ditches/streams. One of the drainage ditches extends north-south along the western edge of the Preferred Site, but impacts to this ditch are not anticipated. This ditch appears to drain part of the Preferred Site and adjacent properties and conveys storm water southward to where it connects to a storm water drainage system at the end of Freedom Court. This system

empties into the other onsite ditch that is located in the southern portion of the Preferred Site. The drainage ditch in the southern portion of the Site would be relocated to extend west-east closer to the southern edge of the Site, while maintaining the storm water capacity of the ditch.

(f) *Proposed Permanent Access Roads*

A new driveway (permanent access road) would need to be constructed as part of the Project at both Sites. The new driveway for the Preferred Site would extend northward from Freedom Court (Figure 04-2). The Alternate Site would require a new driveway to be located on the west side of the southbound lanes of Lorain Boulevard (Figure 04-3). Due to Lorain Boulevard being a divided highway at this location, the Alternate Site can only be accessed by heading south on Lorain Boulevard. Likewise, the exiting traffic would also be limited to turning right (heading south) when leaving the Alternate Site. No other permanent access roads are planned or anticipated for either Site.

(g) *Water Bodies (Lakes, Ponds, Reservoirs, Streams, Canals, Rivers, Swamps, etc.)*

A description of water bodies within 1,000 feet of either Site is provided in Section 7 (4906-15-07(B)(3)) of this Application and shown on Figures 04-1 and 07-1. Wetland delineations (Appendix B) were completed for the original larger versions of both the Preferred and Alternate Sites from 2012 to 2014. Based on background information collected and the wetland delineations, the Preferred Site contains one wetland that is approximately 0.275 acre in size, along with two low-quality, human-manipulated storm water-type drainage ditches/streams, each containing a 20-foot-wide storm water easement. One of the drainages extends along the western edge of the parcel; the other drainage extends west-east through the southern portion of the parcel. Other wetlands are also located within 1,000 feet of this Site and are shown on Figures 04-1 and 07-1.

The Alternate Site contains four wetlands, or portions thereof, totaling approximately 0.447 acre. No other streams or water resources were identified onsite. Other wetlands are also located within 1,000 feet of this Site and are shown on Figures 04-1 and 07-1.

(h) *Topographic Contours*

The proposed Preferred and Alternate Sites are located within the Lake Erie portion of the Great Lakes Plain. The Preferred Site elevations range from about 712 feet above mean sea level (“AMSL”) in the northern portion of the Site to about 697 feet AMSL in the southeast corner of the Site (Figure 04-2). The elevation of the Alternate Site varies from approximately 720 feet

AMSL in the northwest portion of the Site to approximately 685 AMSL along the eastern side of the Site that is adjacent to Lorain Boulevard. As a result of past quarry activities at the Alternate Site, the terrain is significantly uneven across the Site (Figure 04-3).

(i) Soil Associations

According to the Natural Resources Conservation Service (“NRCS”) Soil Survey of Lorain County, Ohio (<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>), the Preferred Site contains multiple soils, as follows:

- Haskins loam (HsA), 0 to 2 percent slopes
- Jimtown sandy loam (JsA), 0 to 2 percent slopes
- Mahoning-Tiro silt loams (MkA), 0 to 2 percent slopes
- Mahoning-Tiro silt loams (MkB), 2 to 6 percent slopes

Other soil types within 1,000 feet around the Preferred Site include:

- Dekalb very channery loam (DkB), 1 to 6 percent slopes
- Fitchville silt loam (FcA), 0 to 2 percent slopes
- Mermill loam (Mo)
- Quarry (Qu)

The area where the Substation would be located on the Alternate Site is almost entirely designated as Quarry (Qu) soil. Other soil types within 1,000 feet of the Alternate Site include:

- Dekalb very channery loam (DkB), 1 to 6 percent slopes
- Jimtown sandy loam (JsA), 0 to 2 percent slopes
- Jimtown loam (JtA), 0 to 2 percent slopes
- Haskins loam (HsA), 0 to 2 percent slopes
- Fitchville silt loam (FcA), 0 to 2 percent slopes
- Oshtemo sandy loam (OtB), 2 to 6 percent slopes
- Oshtemo sandy loam (OtA), 0 to 2 percent slopes
- Mahoning-Tiro silt loams (MkA), 0 to 2 percent slopes
- Mermill loam (Mo)
- Jimtown urban land complex (JuA), nearly level
- Orrville silt loam (Or)

- Udorthents (Cz)

No soil conditions were found that would potentially limit construction of the proposed Project at either Site. Soils within 1,000 feet of each Site are also shown on Figure 04-1.

(j) *Population Centers and Legal Boundaries of Cities, Townships, and Counties*

As shown on Figure 04-1, the Preferred Site is located within the City of Elyria, while a portion of the south side of the site abutting Elyria Township. The Alternate Site is located within Elyria Township, while the southern side of the site abutting the City of Elyria. Both sites are in Lorain County, Ohio.

(2) *Slope and Soil Mechanics*

(a) *Soils Descriptions*

The majority of the Preferred Site contains relatively level topography with less than 12 percent slopes; however, the two onsite drainages contain slopes that range from 33 to 77 percent. The north-south drainage ditch would not be impacted, while the west-east drainage ditch would be relocated onsite. The abandoned railroad located on adjacent property north of the Site also contains slopes greater than 12 percent, but this area is not expected to be graded as part of this Project. Due to the Alternate Site being used for quarrying and stockpiling operations, slopes greater than 12 percent within and surrounding the Site are common.

(b) *Soil Suitability*

No slope or soil conditions were found that would potentially limit construction of the proposed Project at the Preferred Site as these types of soils occur in areas where buildings, structures, facilities, etc. are commonly placed. It is not expected that the Project at this location would either impact or be impacted by steep slopes.

As indicated previously, the terrain at the Alternate Site is extremely uneven due to being used for quarry and stockpiling operations. As a result, cut and fill activities would need to be completed to bring the Site to the designed grade and make it suitable for construction.

(B) LAYOUT AND CONSTRUCTION**(1) Site Activities****(a) *Surveying and Soil Testing***

Aerial photographs and available elevation contour data were used to aid in the initial site design process. To further support land acquisition efforts and Project design, topographic land surveys and geotechnical studies were completed for both Sites. A geotechnical study was performed for the Preferred Site in June 2014 and for the Alternate Site in April 2013. Both studies used a series of geotechnical borings to examine subsurface soils and conditions. The Preferred Site consists largely of clay and low permeable soils, while the Alternate Site contained evidence of previously disturbed soils that contained brick, wood, and other organics, likely as a result of past and current land uses. The Preferred Site has a much larger bearing capacity than the Alternate Site; thus, the Preferred Site has the potential for shorter drilled shafts and subsequent cost savings.

(b) *Grading and Excavation*

Prior to grading either Site, tree clearing would be required. At the Preferred Site, approximately 8 acres of early successional growth woodland would need to be cleared, while approximately 4 acres of early successional growth woodland would need to be cleared at the Alternate Site. Grading would be required to construct the Project at either Site; however, grading activities are expected to be much more significant at the Alternate Site than the Preferred Site because of recent quarrying and stockpiling operations at the Alternate Site. Each Site is of adequate size to allow for onsite balancing of the necessary grade; however, the Alternate Site may require excavation and replacement of some of the soils containing brick, wood, and other organics.

Once balanced, the immediate Substation footprint would be graded and compacted in preparation for construction and installation of the necessary equipment. Aggregate surfacing would be placed within the new Substation pad site and extend approximately 3 feet beyond the fence line. Aggregate surfacing would be comprised of a 3-inch bottom course and 3-inch top course, creating a total aggregate surface of 6 inches. The approximate final grades of the Preferred and Alternate Sites are shown in Figures 04-2 and 04-3, respectively.

(c) Temporary and Permanent Access Road Construction

A new driveway (permanent access road) would need to be constructed as part of the Project at both Sites. The new driveway for the Preferred Site would extend northward from Freedom Court, a dead end street (Figure 04-2). A new driveway would also be required for the Alternate Site and would be located on the west side of the southbound lanes of Lorain Boulevard (Figure 04-3). Due to Lorain Boulevard being a divided highway at this location, the Alternate Site can only be accessed by heading south on Lorain Boulevard. Likewise, the exiting traffic would also be limited to turning right (heading south) when leaving the Alternate Site. At this time, no other temporary or permanent access roads are planned or anticipated for either Site.

(d) Stringing of Cable

Stringing of cable associated with the Project is primarily associated with construction of the transmission line connections to the Substation. The 138 kV transmission line extensions will be included separately in an LON Application, under Case No. 15-0289-EL-BLN and the 345 kV transmission line extensions will be included in a CN Application, under Case No. 15-0288-EL-BNR. These applications will be submitted to the Board under separate covers. Conductor installation for these transmission lines is typically accomplished by using the tension stringing method. Lightweight guy cables or ropes would be fed through the stringing sheaves of the sections of line that require stringing. Conductors would then be pulled through under sufficient tension to keep the conductor “in the air.” This protects the conductor from surface damage.

(e) Post-Construction Reclamation

The Project area will be kept clean of rubbish and debris during and following construction. Refuse and cleared vegetation will be properly disposed of in an approved landfill or other appropriate location. As construction progresses and upon completion, exposed soils will be reseeded with an appropriate seed mixture and/or stabilized with appropriate erosion control measures. The Site will be monitored until the vegetation becomes established and the Site achieves final stabilization. Other disturbed areas that will not be reseeded would be covered with crushed rock. After construction, the fenced area of the Substation would be marked with “high voltage” signage.

(2) Layout of Facilities

Brief descriptions and illustrations regarding the general layout of the facilities at each Site are provided in the sections below. Associated figures are presented at the end of this Chapter.

(a) Map of Associated Facilities

Figures 04-2 and 04-3 show the preliminary site plans for the Substation at the Preferred and Alternate Sites, respectively. These figures show the approximate Project boundary, general exits of the associated 345 kV and 138 kV transmission lines, fenced area of the Substation, general arrangement of the Substation equipment and the access roads to the Substation, along with proposed storm water ponds. Plan and profile views of the Preferred Site are provided in Figures 04-4 and 04-5, respectively. Plan and profile views of the Alternate Site are provided in Figures 04-6 and 04-7, respectively. These plan and profile figures show the major equipment that would be installed as part of the Project, along with their estimated heights.

(The 8.5 inch by 11 inch and 11-inch by 17-inch-sized copies of Figures 04-2 through 04-7 included in the Application have been produced in accordance with OAC § 4906-5-03(C) which allows the scale to be reduced by a factor not to exceed four times. Full size copies of these at the scale required in OAC § 4906-15-04(B)(2)(a) have been provided separately to the Board's Staff and included in copies of the Application provided to persons referenced by OAC §4906-5-06. Full size copies of these figures are available and may be obtained by contacting the Project hotline at 1-800-589-2837, or send your written request to FirstEnergy Corp., Attention Lake Avenue Substation Project Team, 76 South Main Street, Akron, Ohio 44308; or via e-mail at transmissionprojects@firstenergycorp.com.)

The locations where the 345 kV and 138 kV transmission lines enter/exit the Substation for the Preferred and Alternate Sites are shown on Figures 04-2 and 04-3, respectively. A more detailed description of these transmission line interconnections at the Preferred Site will be included in a separate LON Application, Case No. 15-0289-EL-BLN, and a separate CN Application, Case No. 15-0288-EL-BNR, to be submitted to the Board.

It should be noted that the layout and dimensions provided on Figures 04-2, 04-3, 04-5 and 04-7, as well as the approximate dimensions from roads and property boundaries to the Substation at both Sites provided throughout the Application, represent ATSI's current best estimate of the details of the Substation. These details have been significantly refined for the Preferred Site from the approximate details used in the initial stages of the Project and are based on the preliminary Substation engineering layout and design work of Burns & McDonnell, which has been retained by FirstEnergy Service Company on behalf of ATSI to design the Substation. It is expected that the final engineering design of the Substation would incorporate minor refinements to the layout and facilities of the Substation. ATSI intends to submit the final

engineering layout drawings of the Substation to the Board staff for their review prior to starting construction on the Project, and would provide the Board staff with the opportunity to confirm that the constructed Substation is consistent with this Application.

Final Grades – Preliminary final grades for the Preferred Site are provided in Figure 04-2 and are estimated to range between approximately 699 and 712 feet AMSL. The pad site would range approximately from 707 to 708 feet AMSL; the detention basin would range from approximately 699 to 710 feet AMSL; and the relocated drainage ditch would range from approximately 697 to 700 feet AMSL.

Preliminary final grades for the Alternate Site are provided in Figure 04-3 and are estimated to range between approximately 685 and 719 feet AMSL. The pad site would range approximately from 701 to 706 feet AMSL, while the detention basins would range from approximately 698 to 703 feet AMSL.

Major Structures and Buildings - Major structures and buildings are shown on Figures 04-4 and 04-6, for the Preferred and Alternate Sites, respectively. The Substation equipment is the same for either Site; however, the general arrangement of the equipment varies between the Sites.

Structure Height - The tallest structures within the Substation are anticipated to be the 345 kV dead end structures and the shield masts (if deemed necessary through engineering) at approximately 90 feet in height. (Figures 04-5 and 04-7).

Fenced-In Areas - Security fencing is shown on Figures 04-2 and 04-3 for each Site, respectively. The security fence dimensions of the Preferred Site are estimated to be 300 feet by 738 feet, while the fenced area at the Alternate Site is estimated to be approximately 486 feet by 460 feet.

Estimated Overall Dimensions - As indicated on Figures 04-2 and 04-3, the dimensions of the Project at the Preferred Site, including the pad site and storm water detention basin, are estimated to be 800 feet by 330 feet. The estimated dimensions of the Project at the Alternate Site, including the pad site and storm water detention basins, are approximately 470 feet by 495 feet.

(b) Reasons for Proposed Layout and Any Unusual Features

The proposed layout for the Preferred Site is driven by the size and orientation of the Site, the desired 345 kV and 138 kV interconnection opportunities, as well as the preference to locate the transformers and access road as far away from residences as possible. The proposed layout for the Alternate Site is not ideal because it is located under the existing 345 kV transmission line, which could require long outages of the 345 kV transmission systems during construction. This location and design were largely developed in order to minimize impacts to the existing Quarry.

(c) Plans for Future Modifications

FirstEnergy's planning engineers, on behalf of ATSI, generally forecast future transmission projects in a 5-year planning window. The planning engineers currently have no plans for future modifications of the Lake Avenue Substation.

(C) TRANSMISSION EQUIPMENT

Transmission equipment is not applicable to this Application; however, details regarding the electric transmission line connections to the Lake Avenue Substation will be provided to the Board under separate covers as an LON Application, Case No. 15-0289-EL-BLN and as a CN Application, Case No. 15-0288-EL-BNR.

(1) Electric Transmission Line Data**(a) Design Voltages**

As the proposed Project is an electric substation, this section does not apply.

(b) Structure Design, Conductor Size and Number, and Insulator Arrangement

As the proposed Project is an electric substation, this section does not apply.

(c) Foundation Design

As the proposed Project is an electric substation, this section does not apply.

(d) Cable Type and Size When Underground

As the proposed Project is an electric substation, this section does not apply.

(e) Other Major Equipment

As the proposed Project is an electric substation, this section does not apply.

(2) Substation Data

The proposed Project would contain the following major equipment within the fence-line.

(a) Breakers

There will be six (6) 345 kV circuit breakers and six (6) 138 kV circuit breakers installed at the proposed Lake Avenue Substation.

(b) Disconnect Switches

There will be six (6) 345 kV double-end break switches, six (6) 345 kV vertical reach semi-pantograph switches and two (2) 345 kV double-end break motor operated switches. There will also be twelve (12) 138 kV “V” switches and two (2) 138 kV “V” motor operated switches.

(c) Bus Arrangement and Structures

The Lake Avenue Substation will be a 345/138 kV facility consisting of breakers in a six (6) breaker-and-a-half bus arrangement for the 345 kV yard and a six (6) breaker-and-a-half bus arrangement for the 138 kV yard. There will be connections for four (4) 345 kV and four (4) 138 kV transmission lines. Transmission lines will terminate at the following structures: four (4) 345 kV single-bay structures, one (1) 138 kV three-bay structure, and one (1) 138 kV single-bay structure. Additionally, five (5) 90' shield masts will be included for lightning protection. Equipment support steel structures will be designed using hot-rolled structural steel shapes such as wide flange, tubing, channels, and angles or a folded plate, tapered, tubular structures. Dead end structures will be made of tapered, tubular steel. All yard structures will be ASTM A36, ASTM A500, or ASTM A572 steel that is hot-dip galvanized for corrosion protection.

(d) Transformers

The Project will include two (2) 345-138 kV, 448 MVA transformers.

(e) Control Enclosure

The electrical control enclosure will consist of a pre-engineered or factory fabricated metal control enclosure to contain all Lake Avenue Substation control and relay panels and miscellaneous equipment. This will include a Remote Terminal Unit (“RTU”) system, AC and DC distribution panels, batteries, battery chargers, and other miscellaneous equipment. The control enclosure will include building HVAC and internal lighting. Plumbing facilities are not required. A self-contained eye-wash station will be installed near the battery area.

(f) Other Major Equipment

One Human-machine Interface (“HMI”) system, one Digital Fault Recorder (“DFR”) system, one fiber communication system, one security system, one 125 VDC auxiliary power system, and two 120,240 VAC auxiliary power systems will be installed.

(3) Gas Transmission Facilities

This section is not applicable as the proposed Project does not install gas transmission facilities.

(4) Gas Transmission-Line Data

This section is not applicable as the proposed Project does not install gas transmission facilities.

(D) ENVIRONMENTAL AND AVIATION COMPLIANCE INFORMATION

(1) List and Discussion of Permits Required

For either Site, the Applicant anticipates submitting a Notice of Intent (“NOI”) for Ohio Environmental Protection Agency (“Ohio EPA”) authorization of storm water discharges associated with construction activity under the National Pollutant Discharge Elimination System (“NPDES”) program.

At the Preferred Site, approximately 0.275 acre of a Category 2 wetland would be impacted, along with relocating approximately 0.058 acre of a low quality drainage ditch (that may be under jurisdiction of the U.S. Army Corps of Engineers (“USACE”), which totals approximately 0.333 acre of potential impact to USACE jurisdictional waters. It is anticipated that based on these impacts, the Project would be authorized by the USACE under a Nationwide Permit 12 (“NWP12”), which is available for projects with minimal impacts to waters of the U.S. and which are generally less than 0.5 acre of impact. Since the wetland being impacted at the Preferred Site is a Category 2 wetland, based on the Ohio EPA wetland classification system, the Project will qualify under the Section 401 Water Quality Certification (“WQC”) issued by Ohio EPA for NWP12. Likewise, the Alternate Site will also likely be permitted under a NWP12 and receive the automatic Section 401 WQC as impacts are approximately 0.096 acres of two Category 1 wetlands.

To the extent local permits are required following certification of the Project by the Board, for a permanent access driveway off of Freedom Court at the Preferred Site, it is possible that the City of Elyria may request a Driveway Permit. Likewise, the Ohio Department of Transportation (“ODOT”) or Elyria Township may request a Driveway Permit for access from Lorain Boulevard for the Alternate Site.

(2) Debris

A variety of debris is associated with construction of the Project; however, debris generated during construction would be disposed of in accordance with local regulations. It is estimated that approximately 150 cubic yards of construction debris could be generated from the Project.

(3) Storm Water and Erosion Control Plans

A Storm Water Pollution Prevention Plan ("SWP3") would be prepared and implemented in accordance with the Ohio EPA General Permit (General Permit Number OHC000004) for storm water discharges associated with construction activities. Implementation of best management practices ("BMPs") during construction and operation should adequately manage storm water runoff.

(4) Disposition of Contaminated Soil and Hazardous Materials

The following general conditions would also be included in the SWP3 to address management of contaminated soil or hazardous materials generated or encountered during construction:

- All onsite vehicles during construction would be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products would be stored in tightly sealed containers, which are clearly labeled. Secondary containment shall be provided for all onsite fuel storage tanks.
- Sanitary wastes would be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.
- All spills would be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup would be followed. Materials and equipment necessary for spill cleanup would be kept in a designated storage area onsite. Spills would be reported to the appropriate government agency as required. Any suspected hazardous materials encountered during construction shall be reported to the FirstEnergy Environmental Department.

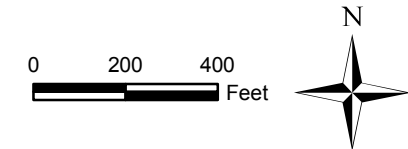
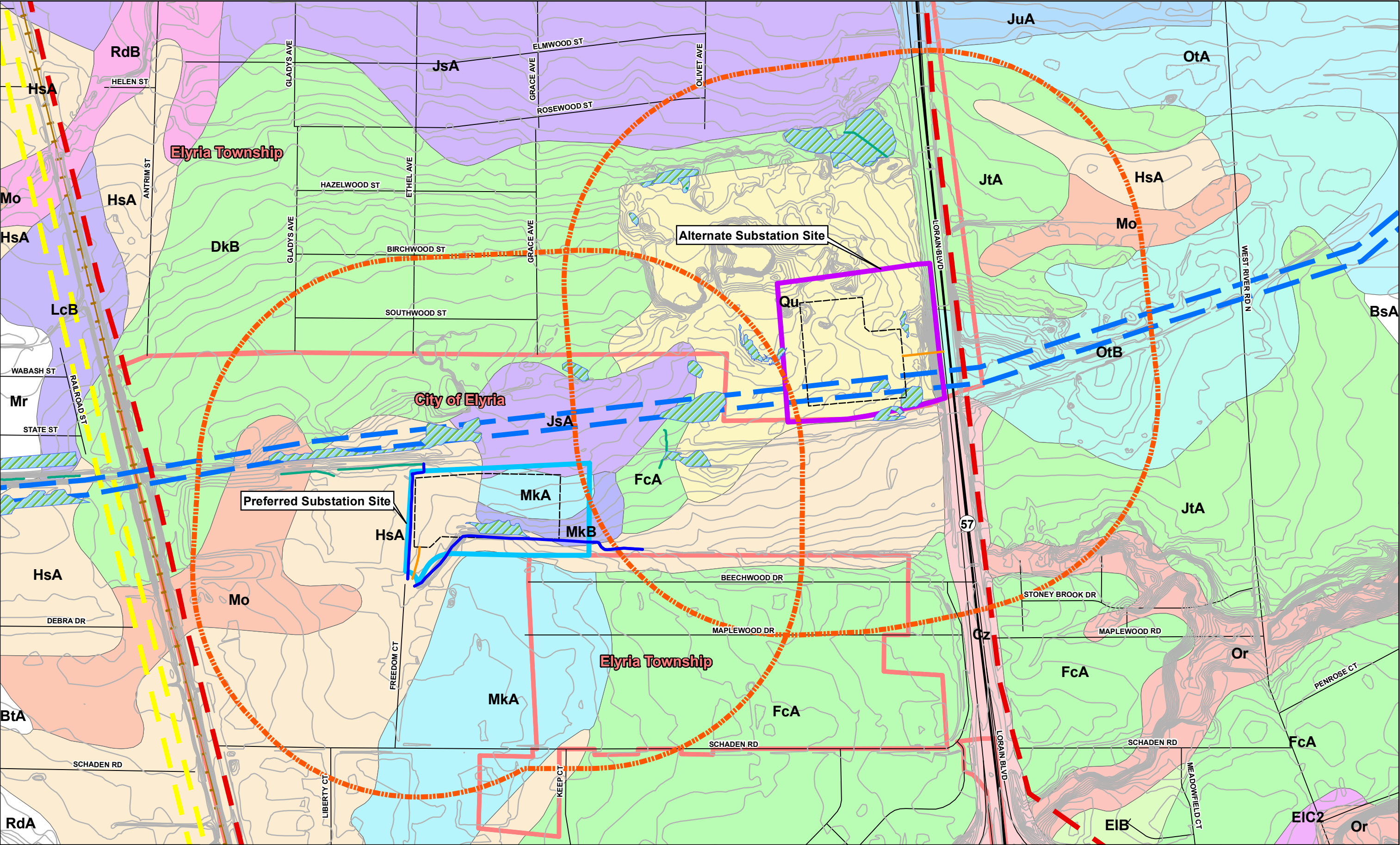
(5) Height of Tallest Structures

The tallest Substation structures at either Site would be the 90-foot tall dead end structures associated with the 345 kV component of the Substation or the shield masts at 90 feet in height (if deemed necessary through engineering design). The closest public air transportation facility, Lorain County Regional Airport, is located approximately 4.9 miles southwest of the Preferred Site and approximately 5.1 miles southwest of the Alternate Site. According to the FAA Notice Criteria Tool for obstructions at <https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm>, the proposed Project at either Site would not require an FAA Notification (Form 7460-1) under 14 CFR Part

77 Notice of Proposed Construction or Alteration, considering approximate ground elevations and estimated structure heights.

(6) Plans for Construction During Dusty or Muddy Soil Conditions

The Project area and surrounding areas would be kept free from nuisance dust resulting from construction activities. During excessively dry periods of active construction, dust suppression would be implemented where necessary through irrigation, mulching, or application of tackifier resins. To address extreme muddy conditions, construction entrances would be established and maintained to a condition that would minimize tracking or flowing of sediment onto public road ROW. Any sediment spilled, washed, or tracked onto public ROW shall be removed during construction.



- Preferred Substation Site
- Alternate Substation Site
- Fenceline
- Substation 1000' Buffer
- City/Township Boundaries

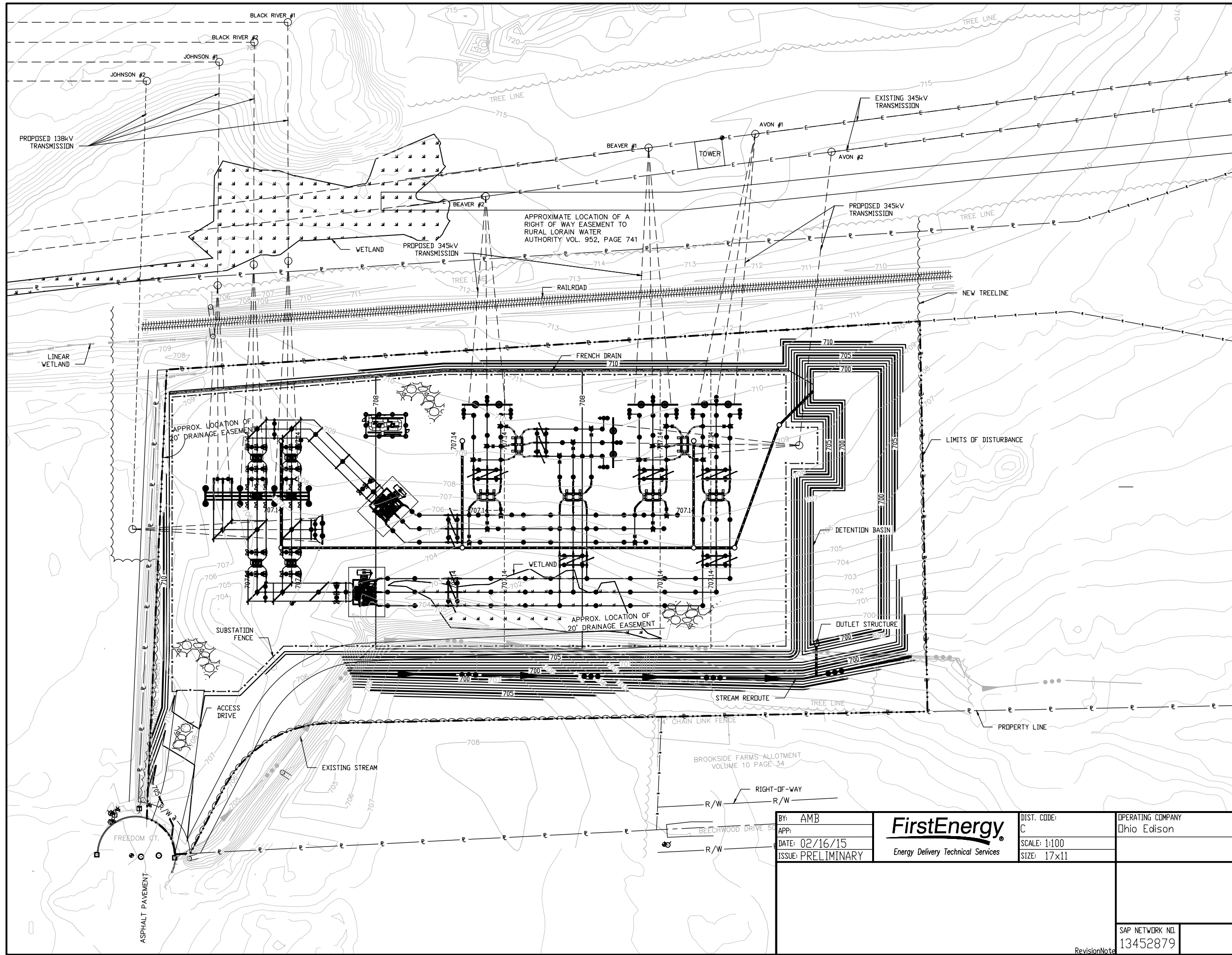
- Access Road
- Stream
- Delineated Wetland
- Delineated Wetland

- Contour Line
- Road
- State Highway
- Railroad

- Existing 69kV Line
- Existing 138kV Line
- Existing 345kV Line



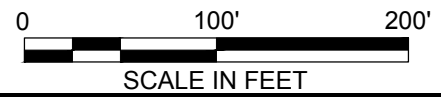
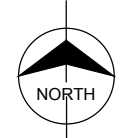
Figure 04-1
Topographic/Geologic Map
Lake Avenue Substation Project
Lorain County, Ohio



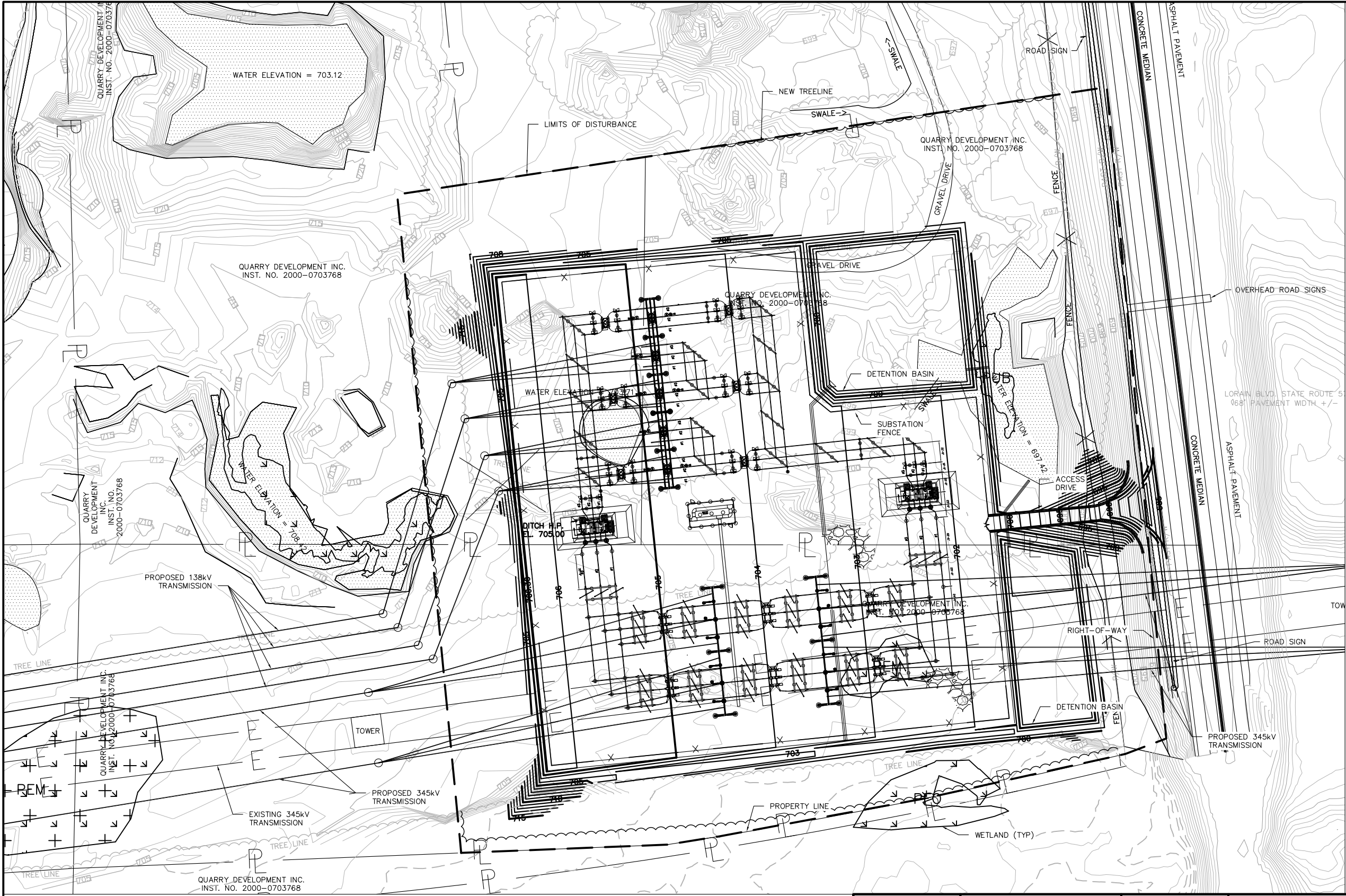
- NOTES:**
1. SURVEY INFORMATION WITHIN DEFINED LIMITS OF SURVEY PROVIDED BY HAMMONTREE & ASSOCIATES, LIMITED. SURVEY SUBMITTED ON JANUARY 7, 2014. HAMMONTREE & ASSOCIATES, LIMITED
5233 STONEHAM RD.
NORTH CANTON, OH 44720
PHONE: (330)-499-8817
 2. INFORMATION SHOWN OUTSIDE LIMITS OF SURVEY INDICATED FROM AVAILABLE USGS MAPPING.
 3. SUBSTATION CRUSHED ROCK SHALL EXTEND 3'-0" OUTSIDE OF NEW SUBSTATION FENCE.
 4. ELECTRICAL WORK TO BE COMPLETED BY OTHERS.
 5. TRANSMISSION CONSTRUCTION AND DESIGN BY OTHERS. LOCATIONS SHOWN ARE APPROXIMATE.

LIMITS OF DISTURBANCE:
LIMITS OF DISTURBANCE: 8.27 ACRES

- LEGEND:**
- 1000 — EXISTING MAJOR CONTOUR
 - 1001 — EXISTING MINOR CONTOUR
 - x — PROPOSED SUBSTATION FENCE
 - 1000 — NEW MAJOR CONTOUR
 - — — NEW MINOR CONTOUR
 - P — PROPERTY LINE
 - TOWER — EXISTING TRANSMISSION STRUCTURE
 - — — NEW TRANSMISSION LINES
 - E — EXISTING TRANSMISSION LINE
 - WETLANDS
 - RIP RAP
 - CRUSHED ROCK
 - LIMITS OF DISTURBANCE
 - LIMITS OF SURVEY
 - NEW TREE LINE
 - EXISTING TREE LINE
 - R/W — EXISTING RIGHT-OF-WAY
 - RAILROAD
 - EXISTING STREAM
 - STREAM REROUTE
 - BASELINE
 - SITE STORM PIPE
 - SURVEY BENCHMARK
 - STORM SEWER PIPE
 - WATER VALVE
 - FIRE HYDRANT
 - STORM CATCH BASIN
 - STORM MANHOLE
 - GAS LINE MARKER
 - TELEPHONE BOX



BY: AMB		<div>FirstEnergy®</div> <div>Energy Delivery Technical Services</div>	DIST. CODE: C		OPERATING COMPANY Ohio Edison		REGION OH-CE		AREA East	
APP:			SCALE: 1:100		FACILITY LAKE AVENUE					
DATE: 02/16/15			SIZE: 17x11							
ISSUE: PRELIMINARY					TITLE SITE PLAN PREFERRED FIGURE 04-2					
				SAP NETWORK NO. 13452879						
RevisionNote										



- NOTES:**
1. SURVEY INFORMATION WITHIN DEFINED LIMITS OF SURVEY PROVIDED BY HAMMONTREE & ASSOCIATES, LIMITED. SURVEY SUBMITTED ON JANUARY 7, 2014; HAMMONTREE & ASSOCIATES, LIMITED 5233 STONEHAM RD. NORTH CANTON, OH 44720 PHONE: (330)-499-8817
 2. INFORMATION SHOWN OUTSIDE LIMITS OF SURVEY INDICATED FROM AVAILABLE USGS MAPPING.
 3. SUBSTATION CRUSHED ROCK SHALL EXTEND 3'-0" OUTSIDE OF NEW SUBSTATION FENCE.
 4. ELECTRICAL WORK TO BE COMPLETED BY OTHERS.
 5. TRANSMISSION CONSTRUCTION AND DESIGN BY OTHERS. LOCATIONS SHOWN ARE APPROXIMATE.

LIMITS OF DISTURBANCE:
LIMITS OF DISTURBANCE: 11.06 ACRES

- LEGEND:**
- 1000 — EXISTING MAJOR CONTOUR
 - 1001 — EXISTING MINOR CONTOUR
 - x — PROPOSED SUBSTATION FENCE
 - 1000 — NEW MAJOR CONTOUR
 - NEW MINOR CONTOUR
 - P — PROPERTY LINE
 - TOWER — EXISTING TRANSMISSION STRUCTURE
 - NEW TRANSMISSION LINES
 - E — EXISTING TRANSMISSION LINE
 - WETLANDS
 - SURVEY WATER LINE
 - CRUSHED ROCK
 - NEW TREE LINE
 - EXISTING TREE LINE
 - R/W — EXISTING RIGHT-OF-WAY
 - STORM SEWER PIPE
 - LIMITS OF DISTURBANCE



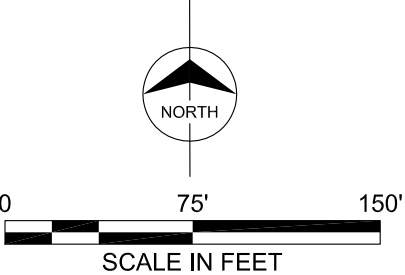
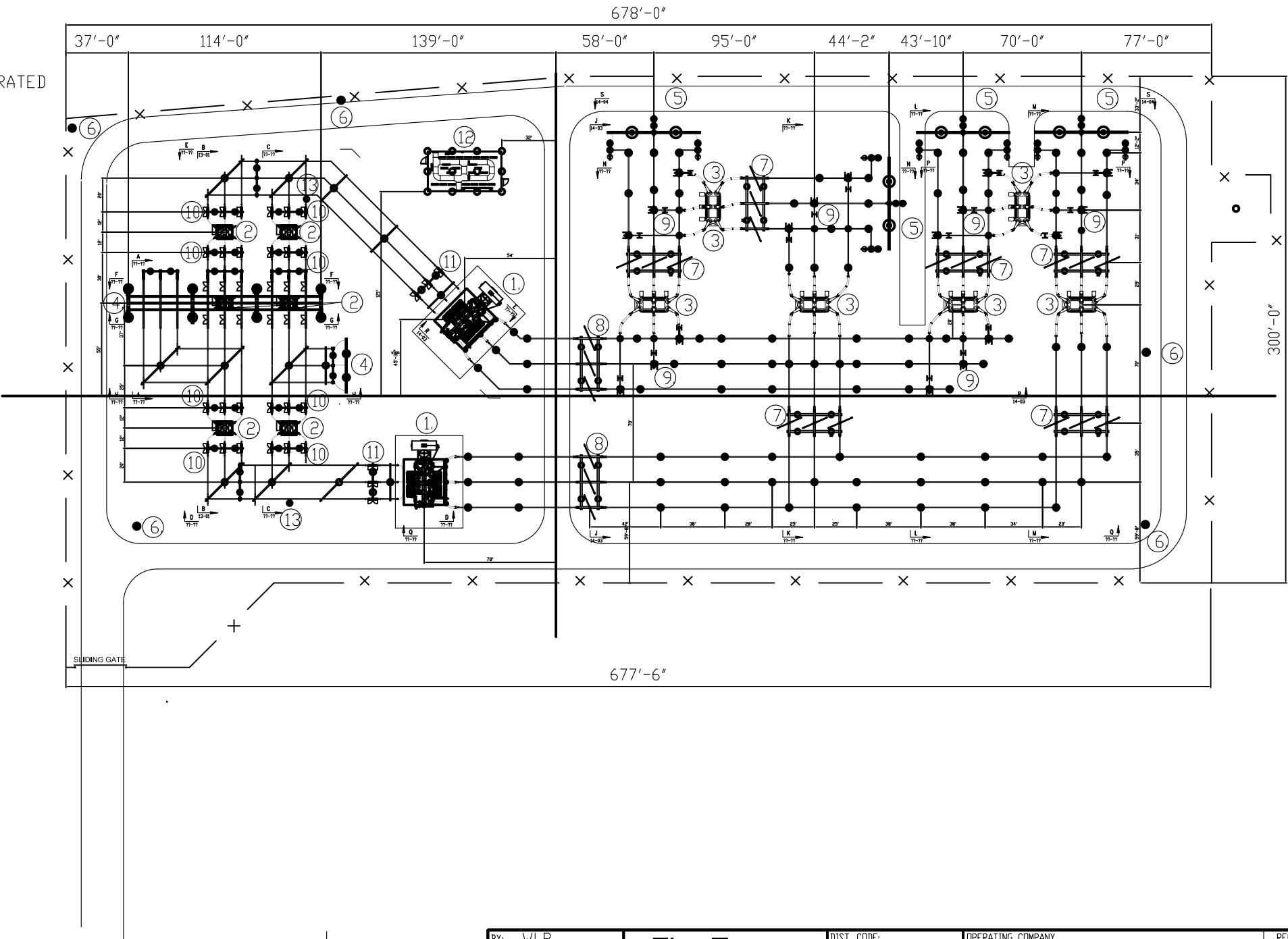
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SCALE IN FEET

BY: AMB	FirstEnergy Energy Delivery Technical Services	DIST. CODE: C	OPERATING COMPANY Ohio Edison		REGION OH-CE	AREA East
APP:		SCALE: 1:100	FACILITY LAKE AVENUE TITLE SITE PLAN ALTERNATIVE FIGURE 04-3			
DATE: 02/09/15		SIZE: 17x11				
ISSUE: PRELIMINARY						
			SAP NETWORK NO. 13452879	DOC. ID 0-1181-04-01 (ALT)		REV.

RevisionNote

EQUIPMENT LEGEND:

- ① 345/138kV TRANSFORMER
- ② 138kV CIRCUIT BREAKER
- ③ 345kV CIRCUIT BREAKER
- ④ 138KV DEADEND 60'
- ⑤ 345kV DEADEND 90'
- ⑥ SHIELD MAST 90'
- ⑦ 345kV DOUBLE END BREAK DISCONNECT SWITCH
- ⑧ 345kV DOUBLE END BREAK DISCONNECT SWITCH MOTOR OPERATED
- ⑨ 345kV PANTOGRAPH DISCONNECT SWITCH MOTOR OPERATED
- ⑩ 138kV VEE DISCONNECT SWITCH
- ⑪ 138kV VEE DISCONNECT SWITCH MOTOR OPERATED
- ⑫ CONTROL BUILDING
- ⑬ AC STATION SERVICE TRANSFORMER



BY: WLR	<div>FirstEnergy[®]</div> <div>Energy Delivery Technical Services</div>	DIST. CODE:	OPERATING COMPANY		REGION	AREA
APP: RJM		SCALE: 1" = 75'-0"	Ohio Edison		OH-CE	East
DATE: 02/11/15		SIZE: 17x11	FACILITY			
ISSUE: Preliminary			LAKE AVENUE			
		TITLE				
		ELECTRICAL PLAN				
		PREFERRED				
		FIGURE 04-4				
		SAP NETWORK NO.				DOC. ID
		13452879	□-1181-14-01			

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

3/6/2015 3:40:16 PM

in

Case No(s). 14-2162-EL-BSB

Summary: Application for Certificate of Environmental Compatibility and Public Need for Lake Avenue Substation (Part 1 of 11) electronically filed by Mr. Robert J Schmidt on behalf of American Transmission Systems Inc.