



American Electric Power  
700 Morrison Road  
Gahanna, OH 43230  
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October 20, 2014

Mr. Thomas W. Johnson, Chairman  
Ohio Power Siting Board  
State of Ohio  
Public Utilities Commission of Ohio  
180 East Broad Street  
Columbus, Ohio 43215-3793

RE: Gable Station Project  
Case No. 14-1280-EL-BSB

Dear Mr. Johnson:

In accordance with the rules and regulations of the Ohio Power Siting Board, AEP Ohio Transmission Company, Inc. submits an Application for a Certificate of Environmental Compatibility and Public Need for the Gable Station Project.

The following information is included as per the requirements of the Code of Rules and regulations, 4906-5-03(A)(3) as contained in the Ohio Administrative Code;

(a) Applicant:

AEP Ohio Transmission Company, Inc.  
c/o American Electric Power  
Energy Transmission  
700 Morrison Road  
Gahanna, Ohio 43230

(b) Facility to be Certified:

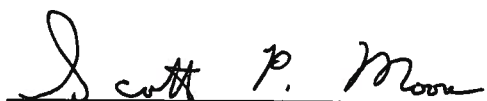
Gable Station Project

(c) Applicant's authorized representative with respect to this application is:

Mr. Todd Sides  
Project Manager  
American Electric Power  
700 Morrison Road  
Gahanna, Ohio 43230

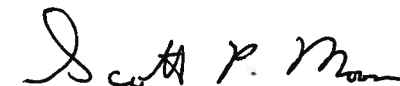
Sincerely,

AEP Ohio Transmission Company, Inc.



Scott P. Moore  
Vice President – Transmission Engineering and Project Services  
American Electric Power Service Corporation,  
as agent for AEP Ohio Transmission Company, Inc.  
an Ohio corporation, ("Owner").

Now comes Scott Moore and says that the information and material contained in the attached Application is true to the best of his knowledge and belief.



Scott P. Moore

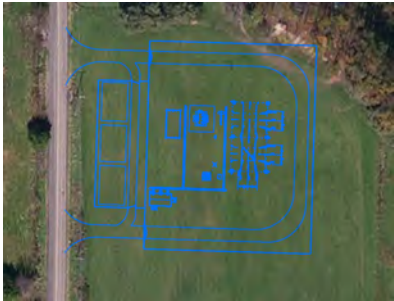
Sworn to and subscribed before me this 20<sup>th</sup> day of October, 2014.

  
Notary

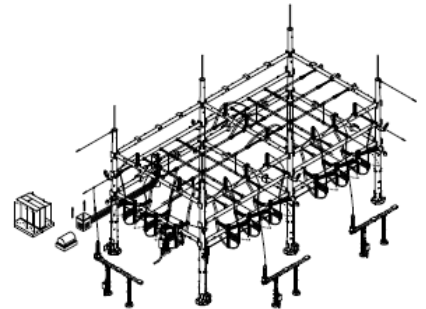
Nancy Spencer  
Notary Public, State of Ohio  
My Commission Expires 05-10-2016

# **APPLICATION TO THE OHIO POWER SITING BOARD FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED**

**OPSB CASE NO.  
14-1280-EL-BSB**



**Gable Station Project  
November 2014**



**Prepared by:  
URS Corporation**

**URS**

**Prepared for:  
American Electric Power –  
Ohio Transmission Company**

**AEP OHIO  
TRANSMISSION  
COMPANY**

## Chapter 4906-15

### Instructions for the Preparation of Certificate Applications for Electric Power, Gas and Natural Gas Transmission Facilities

4906-15-01	Project summary and facility overview.
4906-15-02	Review of need for proposed project.
4906-15-03	Site and route alternatives analyses
4906-15-04	Technical data
4906-15-05	Financial data.
4906-15-06	Socioeconomic and land use impact analysis
4906-15-07	Ecological impact analysis

#### **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.

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Effective: 1/25/09

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

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

#### **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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Effective: 1/25/09

Replaces: part of 4906-15-04

119.032 review dates: 11/30/13

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Statutory Authority: 4906.03

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Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

#### **4906-15-03      Site and route alternatives analyses**

- (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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#### **4906-15-04     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 per cent. 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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Effective: 1/25/09

119.032 review dates: 11/30/13

Promulgated Under: 111.15

Statutory Authority: 4906.03

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**4906-15-05     Financial data.**

- (A) Ownership. The applicant shall state the current and proposed ownership status of the proposed facility, including sites, rights-of-way, structures, and equipment. The information shall cover sole and combined ownerships, any leases, options to purchase, or franchises, and shall specify the extent, terms, and conditions of ownership, or other contracts or agreements.
- (B) Electric capital costs. The applicant shall submit estimates of applicable capital and intangible costs for the various components of electric power transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for the utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
- (1) Land and land rights.
  - (2) Structures and improvements.
  - (3) Substation equipment.
  - (4) Poles and fixtures.
  - (5) Towers and fixtures.
  - (6) Overhead conductors.
  - (7) Underground conductors and insulation.
  - (8) Underground-to-overhead conversion equipment.
  - (9) Right-of-way clearing and roads, trails, or other access.
- (C) Gas capital cost. The applicant shall submit estimates of applicable capital and intangible costs for the various components of gas transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
- (1) Land and land rights.
  - (2) Structures and improvements.
  - (3) Pipes.
  - (4) Valves, meters, boosters, regulators, tanks, and other equipment.
  - (5) Roads, trails, or other access.

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119.032 review dates: 9/30/13

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**4906-15-06      Socioeconomic and land use impact analysis**

- (A) The applicant shall conduct a literature search and map review for the area within one thousand feet on each side of each proposed transmission line centerline and within one thousand feet of the perimeter of each substation or compressor station designed to identify specific land use areas as required in paragraph (B)(3) of this rule. On-site investigations shall be conducted within one hundred feet of each side of each proposed transmission line centerline and within one hundred feet of the perimeter of each substation or compressor station to characterize the potential effects of construction, operation, and maintenance of the proposed facility.
- (B) The applicant shall provide, for each of the site/route alternatives and adjacent areas, map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission alignment, and the area within the immediate vicinity of a substation site, which map(s) shall include the following features:
  - (1) Proposed approximate centerline for each transmission line alternative being proposed.
  - (2) Proposed substation or compressor station locations.
  - (3) General land use, depicted as areas on the maps, including, but not limited to:
    - (a) Residential use.
    - (b) Commercial use.
    - (c) Industrial use.
    - (d) Cultural use (as identified in paragraph (F) of this rule).
    - (e) Agricultural use.
    - (f) Recreational use.
    - (g) Institutional use (e.g., schools, hospitals, churches, government facilities, etc.).
  - (4) Transportation corridors.
  - (5) Existing utility corridors.
  - (6) Noise-sensitive areas.
  - (7) Agricultural land (including agricultural district land) existing at least sixty days prior to submission of the application located within each transmission line right-of-way or within each site boundary.
- (C) The applicant shall provide for each of the site/route alternatives, a description of the impact of the proposed facility on each land use identified in paragraph (B)(3) of this rule. As it relates to agricultural land, the description shall include the acreage impacted and the applicant's evaluation of impacts to cultivated land, permanent pasture land, managed wood lots, orchards, nurseries, and agricultural-related structures.

- (1) Provide the number of residential structures within one thousand feet of the proposed facility, and identify all residential structures for which the nearest edge of the structure is within one hundred feet of the proposed facility.
  - (2) Construction: The applicant shall estimate the probable impact of the proposed facility on each land use (including: (a) buildings that will be destroyed, acquired, or removed as the result of the planned facility and criteria for owner compensation; and (b) field operations [such as plowing, planting, cultivating, spraying, and harvesting], irrigation, and field drainage systems).
  - (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on each land use.
  - (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize impact to land use, such as effects on subsurface field drainage systems.
- (D) The applicant shall provide the following public interaction information for each of the site/route alternatives:
- (1) A list of counties, townships, villages, and cities within one thousand feet on each side of the centerline or facility perimeter.
  - (2) A list of the public officials contacted regarding the application, their office addresses, and office telephone numbers.
  - (3) A description of the program or company/public interaction planned for the siting, construction, and operation of the proposed facility, i.e. public information programs.
  - (4) A description of any insurance or other corporate program, if any, for providing liability compensation for damages, if such should occur, to the public resulting from construction or operation of the proposed facility.
  - (5) A description of how the facility will serve the public interest, convenience, and necessity.
  - (6) An estimate of the increase in tax revenues as a result of facility placement.
  - (7) A description of the impact of the facility on regional development, referring to pertinent formally adopted regional development plans.
- (E) The applicant shall provide the following health, safety, and aesthetic information for each site/route alternative:
- (1) The applicant shall provide a description of how the facility will be constructed, operated, and maintained to comply with the requirements of applicable state and federal statutes and regulations, including the 2002 edition of the "National Electrical Safety Code", applicable occupational safety and health administration regulations, U.S. department of transportation gas pipeline safety standards, and Chapter 4901:1-16 of the Administrative Code.
  - (2) For electric power transmission facilities, the applicant shall discuss the production of electric and magnetic fields during operation of the preferred and alternate site/route. If more than one conductor configuration is to be used on the proposed facility, information shall be provided for each configuration that constitutes more than ten per cent of the total line length, or more than one mile of the total line length being certificated. Where an alternate structure design is submitted, information shall also be provided on the alternate structure. The discussion shall include:



- (a) Calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for:
  - (i) Winter normal conductor rating.
  - (ii) Emergency line loading.
  - (iii) Normal maximum loading.

Provide corresponding current flows, conductor ground clearance for normal maximum loading and distance from the centerline to the edge of the right-of-way. Estimates shall be made for minimum conductor height. The applicant shall also provide typical cross-section profiles of the calculated electric and magnetic field strength levels at the normal maximum loading conditions.
- (b) References to the current state of knowledge concerning possible health effects of exposure to electric and magnetic field strength levels.
- (c) Description of the company's consideration of electric and magnetic field strength levels, both as a general company policy and specifically in the design and siting of the transmission line project including: alternate conductor configurations and phasing, tower height, corridor location and right-of-way width.
- (d) Description of the company's current procedures for addressing public inquiries regarding electric and magnetic field strength levels, including copies of informational materials and company procedures for customer electric and magnetic field strength level readings.
- (3) The applicant shall discuss the aesthetic impact of the proposed facility with reference to plans and sketches, including the following:
  - (a) The views of the proposed facility from such sensitive vantage points as residential areas, lookout points, scenic highways, and waterways.
  - (b) Structure design features, as appropriate.
  - (c) How the proposed facility will likely affect the aesthetic quality of the site and surrounding area.
  - (d) Measures that will be taken to minimize any visual impacts created by the proposed facility.
- (4) For electric power transmission facilities, the applicant shall provide an estimate of the level of radio and television interference from operation of the proposed facility, identify the most severely impacted areas, if any, and discuss methods of mitigation.
- (F) The applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on cultural resources. This description shall include potential and identified recreational areas and those districts, sites, buildings, structures, and objects which are recognized by, registered with, or identified as eligible for registration by the Ohio historical society or the Ohio department of natural resources. It shall include but not be limited to the following:
  - (1) Location studies: The applicant shall describe studies used to determine the location of cultural resources within the study corridor. Correspondence with the Ohio historical preservation office shall be included.
  - (2) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on cultural resources.

- (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on cultural resources.
- (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the operation and maintenance of the proposed facility to minimize impact to cultural resources.
- (G) The applicant shall submit data and related information on noise emissions generated by the proposed transmission line and associated facilities. Construction noise information shall be submitted for only those portions of transmission line routes requiring more than four months of actual construction time to complete in residential, commercial, and other noise-sensitive areas.
  - (1) Construction: To assure noise control during construction, the applicant shall estimate the nature of any intermittent, recurring, or particularly annoying sounds from the following sources:
    - (a) Dynamiting or blasting activities.
    - (b) Operation of earth moving and excavating equipment.
    - (c) Driving of piles.
    - (d) Erection of structures.
    - (e) Truck traffic.
    - (f) Installation of equipment.
  - (2) Operation and maintenance: The applicant shall estimate the effect of noise generation due to the operation or maintenance of the transmission line and associated facilities.
  - (3) Mitigation procedures: The applicant shall describe any equipment and procedures designed to mitigate noise emissions during both the site clearing and construction phase, and during the operation and maintenance of the facility to minimize noise impact.
- (H) The applicant shall provide site-specific information that may be required in a particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impact. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

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Effective: 1/25/09

119.032 review dates: 11/30/13

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Prior Effective Dates: 10/10/78, 6/5/93, 8/28/98, 12/15/03

#### **4906-15-07     Ecological impact analysis.**

- (A) The applicant shall provide a summary of any studies that have been made by or for the applicant on the natural environment in which the proposed facility will be located. The applicant shall conduct and report the results of a literature search, including map review, for the area within one thousand feet on each side of a transmission line alignment and the area within the immediate vicinity of a substation or compressor station site. On-site investigations shall be conducted within one hundred feet on each side of a transmission line centerline or within one hundred feet of a substation or compressor station site to characterize the potential effects of construction, operation, or maintenance of the proposed facility.

- (B) The applicant shall provide for each of the site/route alternatives a map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of the transmission line alignment and the area within the immediate vicinity of a substation site or compressor station site. The map(s) shall include the following:
- (1) Proposed transmission line alignments.
  - (2) Proposed substation or compressor station locations.
  - (3) All areas currently not developed for agricultural, residential, commercial, industrial, institutional, or cultural purposes including:
    - (a) Streams and drainage channels.
    - (b) Lakes, ponds, and reservoirs.
    - (c) Marshes, swamps, and other wetlands.
    - (d) Woody and herbaceous vegetation land.
    - (e) Locations of threatened or endangered species.
  - (4) Soil associations in the corridor.
- (C) The applicant shall provide for each of the site/route alternatives a description of each stream or body of water (and associated characteristics including floodplain) that is present and may be affected by the proposed facility, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on streams and bodies of water. This shall include the impacts from route clearing.
  - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on streams and bodies of water. This shall include the permanent impacts from route clearing.
  - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on streams and bodies of water.
- (D) The applicant shall provide for each of the site/route alternatives a description of each wetland that is present and may be affected by the proposed facility. The applicant shall describe the probable impact on these wetlands, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on wetlands and wildlife habitat.
  - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on wetlands and wildlife habitat. This would include the permanent impacts from route clearing and any impact to natural nesting areas.
  - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on wetlands and wildlife habitat.
- (E) The applicant shall provide for each of the site/route alternatives a description of the naturally occurring vegetation that is present and may be affected by the proposed facility. The applicant shall describe the

probable impact to the environment from the clearing and disposal of this vegetation, including but not limited to the following:

- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on the vegetation. This would include the impacts from route clearing, types of vegetation waste generated, and the method of disposal or dispersal.
  - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
  - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (F) The applicant shall provide for each of the site/route alternatives a description of each major species of commercial or recreational value and species designated as endangered or threatened, in accordance with U.S. and Ohio species lists, that is present and may be affected. The applicant shall describe the probable impact to the habitat of the species described above, including but not limited to the following:
- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on commercial, recreational, threatened, or endangered species. This would include the impacts from route clearing and any impact to natural nesting areas.
  - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
  - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (G) The applicant shall provide for each of the site/route alternatives a description of the areas with slopes and/or highly erodible soils (according to the natural resource conservation service and county soil surveys) that are present and may be affected by the proposed facility. The applicant shall describe the probable impact to these areas, including but not limited to the following:
- (1) Construction: The applicant shall provide a description of the measures that will be taken to avoid or minimize erosion and sedimentation during the site clearing, access road construction, facility construction process, and any other temporary grading. If a storm water pollution prevention plan is required for the proposed facility, the applicant shall include the schedule for the preparation of this plan.
  - (2) Operation and maintenance: The applicant shall describe and estimate the probable impact of the operation and maintenance of the proposed facility after construction on the environment. This would include permanent impacts from sites where grading has taken place.
  - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during operation and maintenance of the proposed facility to minimize the impact on the environment due to erosion from storm water run-off.
- (H) The applicant shall provide site-specific information that may be required in this particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impacts. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

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Effective: 12/15/2003

119.032 review dates: 9/30/13

Promulgated Under: 111.15

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Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 10/10/78, 3/20/87, 8/28/98

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## **4906-15-01 Project Summary and Facility Overview**

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

This Application seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board (OPSB) for AEP Ohio Transmission Company, Inc.'s (AEP or Applicant) proposed Gable Station Project (Project). AEP is proposing to construct a 138 kV switching substation in Wells Township of Jefferson County, Ohio. A Preferred Site and an Alternate Site are proposed in this Application. The Preferred Site is located on an AEP-owned property east of County Road 15, approximately one mile southeast of the Village of Smithfield.

The OPSB has jurisdiction over major electric transmission line installations located wholly within the state of Ohio. Moreover, Ohio's Power Siting Law requires AEP to file this application with the OPSB for a Certificate of Environmental Compatibility and Public Need for the proposed Project. This Application contains required project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

**(1) General Purpose of the Facility**

The purpose of the Gable Station Project, related 138 kV line work, and substation improvements are to improve and maintain the quality of electric service and reliability to the eastern Ohio area, including AEP's load area. This area includes, but is not limited to, the communities of Cadiz, Carrollton and Brilliant. The 138kV line's length is approximately 50 miles. Within these 50 miles, there are no fault interrupting devices available to sectionalize this line. The loss of this 138kV line (N-1 contingency) would greatly jeopardize the system's ability to serve load in the area and could also result in system criteria violations.

**(2) Summary Description**

AEP proposes to construct a 138 kV switching substation in Wells Township of Jefferson County. The Preferred Site of the Gable Station is located on an approximately three-acre property situated adjacent to the east of County Road 15, approximately 400 feet south of County Road 17. AEP owns this predominantly agricultural property. The Alternate Site is located on the southern side of Township Road 154, approximately 0.7-mile east of County Road 15 and approximately 1.1 miles southeast of the Preferred Site. Access to the substation at the Preferred and Alternate Sites is proposed from County Road 15 and Township Road 154, respectively, using a new permanent access drive. The total fenced footprint of either the Preferred Site or Alternate Site will be approximately 1.6 acres. Interconnections to the existing Windsor-Canton and Tidd-South Cadiz 138 kV transmission lines to form Gable-Carrollton, Gable-Tidd, and Gable-South Cadiz 138 kV circuits will be submitted under separate cover to the OPSB as a Letter of Notification.

The Preferred and Alternate Sites, and associated transmission lines, are shown on Figures 01-1 and 01-2. Figure 04-1 shows the Preferred and Alternate Sites and surrounding vicinity. A detailed layout and grading plan of the Preferred Site and associated interconnections is included as Figure 04-2.

### **(3) Site Selection Process**

A Site Selection Study was conducted to identify and evaluate potential sites for the substation. The goal of the Site Selection Study was to identify viable locations based on the siting criteria, while avoiding or limiting impacts to sensitive land uses, ecological, and cultural features in the project vicinity. Based on the functional requirements for the proposed substation, a minimum fenced substation size was determined by AEP to be approximately three acres. Other priority site conditions include:

- Relatively flat terrain within an area characterized by high topographic relief.
- Minimal tree removal.
- Dry conditions on most of the site (few, if any, wetlands).
- No existing man-made obstructions.
- Location at or near the existing Windsor-Canton and Tidd-South Cadiz 138 kV transmission lines.
- Property adjacent to existing road to provide suitable site access
- Property available for purchase to avoid condemnation for a substation site.

The proposed substation will tap AEP's Windsor-Canton and Tidd-South Cadiz 138 kV lines. The Windsor-Canton 138 kV line extends generally from northwest to southeast through western Jefferson County and beyond. The Tidd-South Cadiz 138 kV line extends from northeast to southwest. These lines cross in Wells Township approximately two miles southeast of the Village of Smithfield. They are generally perpendicular and diverge from the intersection. Therefore, the study area was defined by a one-mile radius circle centered on the intersection of the source lines.

The results of the Site Selection Study suggested that Site 5 appeared to be the most suitable candidate. Since AEP owns the overall property, Site 5 was selected by AEP as one of the candidates to be further considered. In July, August, and September 2014, ecological and cultural resource field surveys were conducted on Site 5 to investigate the presence of sensitive resources on the overall property. No wetlands, streams, sensitive habitats, or cultural resources were identified.

The Site Selection Study suggested Site 4 is the next best potential candidate and preliminary discussion with the property owner indicated that the site might be available. Based on the results of the Site Selection Study and field surveys, AEP presented Site 5 (Blue Site) and Site 4

(Red Site) at a public meeting held September 23, 2014. Five members of the public attended the meeting and two comment cards were received. One comment card expressed concerns about property values and additional right-of-way in the vicinity of the Red Site. The other indicated that the meeting was informative. After the meeting, additional comment cards were mailed to AEP. In general, the few people that lived closer to the Blue Site preferred the Red Site. Those living closer to the Red Site preferred the Blue Site. AEP selected Site 5 (Blue Site) as the Preferred Site and Site 4 (Red Site) as the Alternate Site.

On October 14, 2014, AEP requested a waiver of Rule 4906-5-04 from the OPSB. This rule requires certificate applications for electric transmission facilities include fully developed information on two sites. Specifically, a grading plan and results of field surveys for the Alternate Site are not included in this Application. Based on the site selection study, results of the ecological and cultural resource field surveys, and AEP's ownership of the Preferred Site property, the waiver of these requirements is warranted.

#### **(4) Principal Environmental and Socioeconomic Considerations**

A general socioeconomic survey of the study area was performed and included preparation of a land use map, current population estimates and projections for the area, consideration of compatibility of the Project with local and regional development plans, and a qualitative assessment of the impact of the proposed substation on the surrounding community.

**(a) Land Use Impacts:** The Preferred and Alternate Sites, as well as the proposed access roads, are located on predominantly agricultural properties. Twenty-two residences were identified within 1,000 feet of the Preferred Site, the closest of which is approximately 200 feet north of the proposed fenced substation area. One residence was identified within 1,000 feet of the fenced substation area of the Alternate Site. This residence is approximately 60 feet away from the access road and 150 feet from the fenced substation area.

No commercial, industrial, cultural, recreational, or institutional land uses were identified within 1,000 feet of either site. Based on contacts with local officials and review of planning documents, no conflicts with zoning or development issues were identified. With the exception of converting agricultural land to use as the proposed substation, existing land use will not be altered by the Project as proposed.

**(b) Economic Impacts:** The proposed Project is necessary to ensure adequate and reliable electric service to eastern Ohio. By improving the transmission system, the Project will help meet the power requirements necessary to ensure continued business development and growth in the area. Approximately 30 construction jobs are anticipated at peak construction. The Project will also produce additional tax revenue for local schools and communities annually. AEP projects that the new substation will contribute approximately \$67,000 in yearly property taxes to Jefferson County and the local community.

(c) **Ecological Impacts:** An ecological study of the Preferred and Alternate Sites and associated interconnections was performed. The study included analysis of published literature and maps to assess the presence of endangered plant and animal species and wetlands. The Preferred Site was field surveyed for vegetation, habitat of endangered plants and animals, streams, and wetlands. The results of this survey are discussed in detail in Section 7 of this Application. The Alternate Site was observed from the adjacent road only due to access restrictions at the time of the field reconnaissance. No streams or wetlands were identified within 100 feet of the Preferred or Alternate Sites substation fence lines or access roads.

Based on a desktop review of United States Fish and Wildlife Service (USFWS) published documentation, records in Ohio Department of Natural Resources' (ODNR's) Biodiversity Database, and correspondence from the ODNR and USFWS, a total of three special status species are listed within Jefferson County. None of these species were observed during the field investigation. Based on no proposed in-water work, no potential impacts to threatened or endangered species were identified.

Storm water best management practices such as placement of silt fencing will be employed where necessary to mitigate potential erosion and degradation during construction.

(d) **Other Environmental Impacts:** No other potential environmental impacts beyond those discussed above are expected as a result of this project.

## **(5) Project Schedule Summary**

AEP plans to start construction of the substation in approximately April 2015, with an estimated in-service date around December 2015. Figure 02-2 provides additional details regarding the proposed Project schedule.

## **(B) INFORMATION FILED IN RESPONSE TO REQUIREMENTS**

The information filed in response to the requirements of section 4906-15-01 of the Gable Station Project Application for a Certificate of Environmental Compatibility and Public Need are not deemed to be responses to any other section of the Application for a Certificate of Environmental Compatibility and Public Need.

### **Ohio Power Siting Board Process**

The OPSB has jurisdiction over major substation installations located wholly within the state of Ohio. As such, AEP is required to file an application with the Board for a Certificate of Environmental Compatibility and Public Need. This Application contains specific project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

The Board process is initiated with a pre-application public information meeting to be held by the Applicant within the general project area. This meeting is intended to provide general project information to the local residents and to detail upcoming OPSB activities and was held on

September 23, 2014. Next, the Application is filed with the OPSB. The OPSB then has 60 days to either certify the application filing as complete, or identify the Application as incomplete, notifying the Applicant by mail of the specific grounds. Upon a certified completeness determination, the OPSB orders the Applicant to serve a copy of the certified Application on the chief executive officer of each municipal corporation and county, and the head of each public agency charged with the duty of protecting the environment or of planning land use in the area in which any portion of the project is to be located.

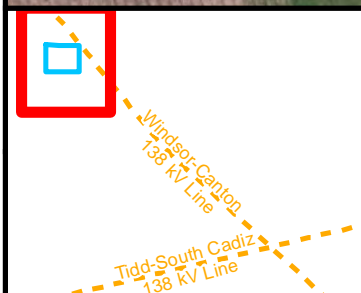
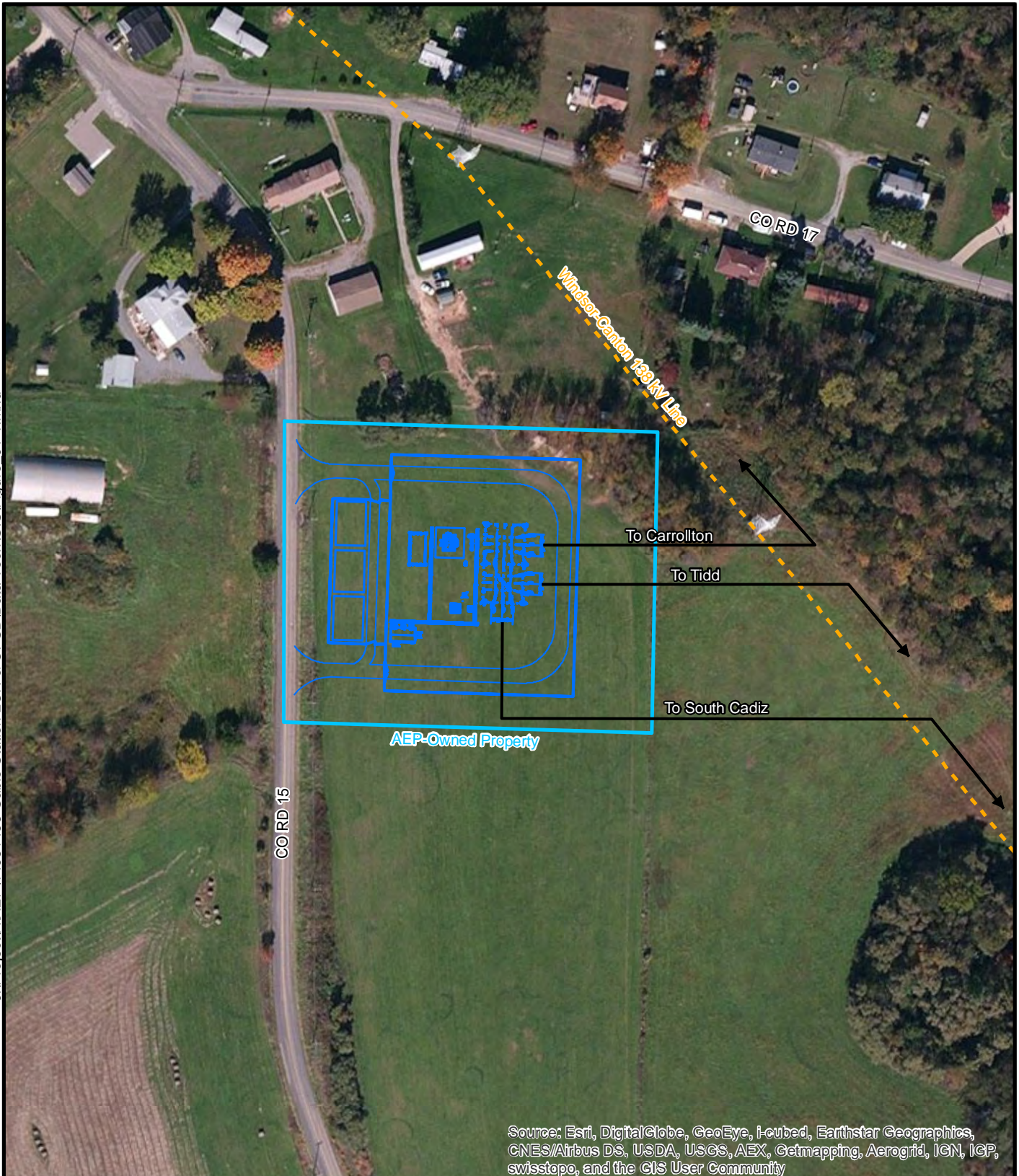
After certified applications have been served in the general project area, the Board schedules public hearings. The Applicant is then required to provide two separate public notices of the project and upcoming hearings in newspapers of general circulation within the project area. The first public notice is to be published within seven days of the certified Application service date, and the second public notice is to be published at least seven but not more than 21 days prior to the public hearing. In addition, the applicant shall send a letter describing the facility to each property owner within the planned site or right-of-way of the proposed facility and to each property owner who may be approached by the applicant for any additional easement necessary for the construction, operation, or maintenance of the facility. The OPSB Staff is to conduct an investigation of the certified Application and submit a written report not less than fifteen days prior to the beginning of public hearings.

One session of the Public Hearings for the project is usually held at a convenient location within the general project area with the other session(s) held at the principal office of the OPSB. An Administrative Law Judge appointed by the Chairman of the OPSB will preside over the hearings. The Administrative Law Judge will regulate the proceedings and provide members of the public opportunity during a portion of the hearing to offer testimony. Within a reasonable time after conclusion of the hearings, the Board shall issue a final decision based on the record of the proceedings.

### **(C) PREPARATION OF HARD COPY MAPS**

Digital, geographical referenced data used in the preparation of maps for the Project Application for a Certificate of Environmental Compatibility and Public Need will be provided under separate cover and submitted concurrent with the Application.





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Scale in Feet

**AEP** OHIO  
TRANSMISSION  
COMPANY

Gable Station  
Project

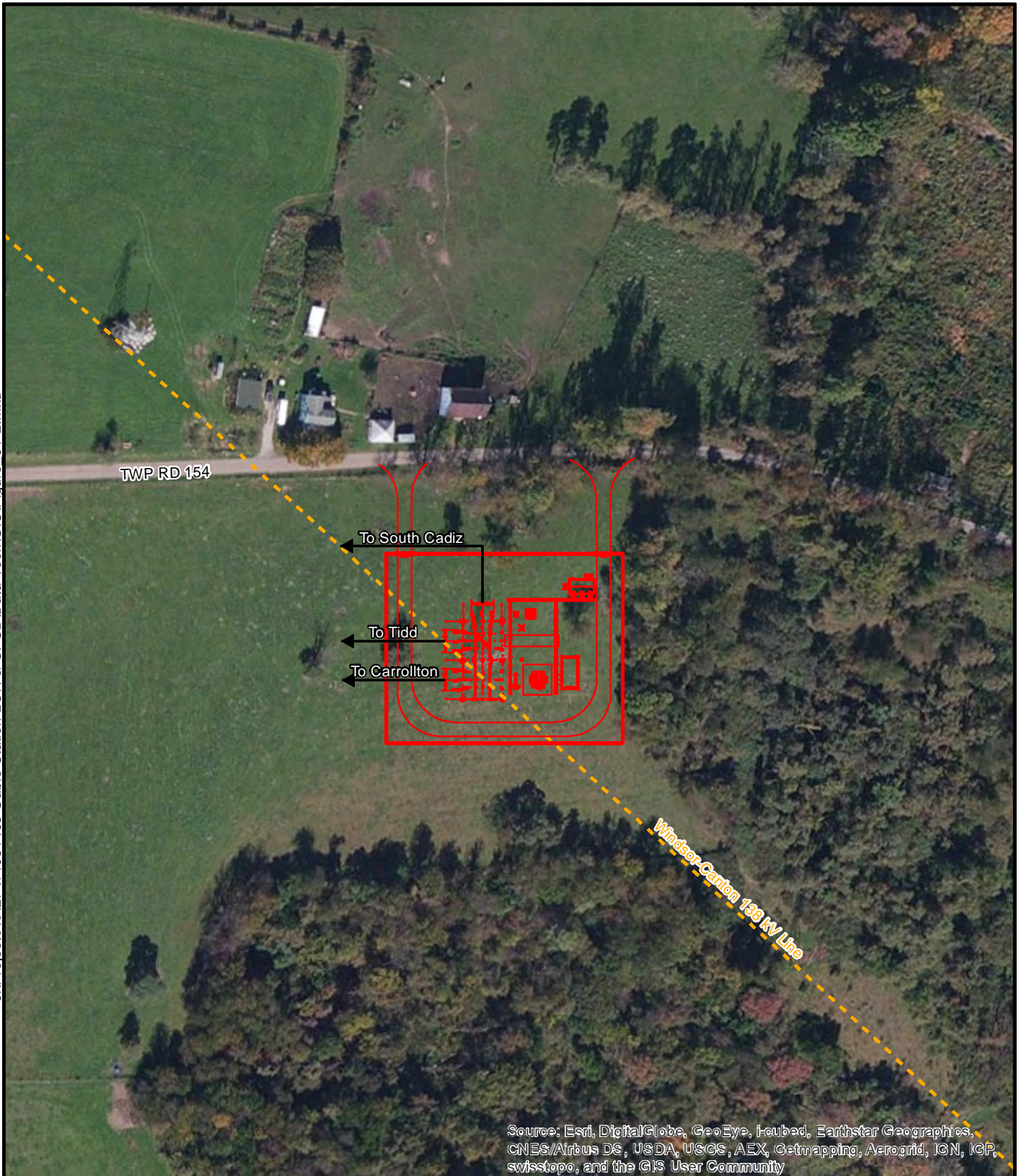
FIGURE 1-1  
PREFERRED SITE

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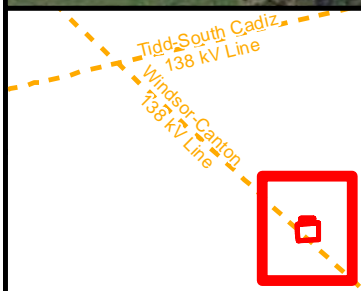
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J:\Project\AEP\14951468 Gable Station LON & OPSB\Data-Tech\GIS\Figure 01-2.mxd



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



0 150 300  
Scale in Feet

**AEP** OHIO  
TRANSMISSION  
COMPANY

Gable Station  
Project

FIGURE 1-2  
ALTERNATE SITE

JOB NO. 14951468

**URS**

## **4906-15-02 Review of Need for Proposed Project**

**4906-15-02 REVIEW OF NEED FOR PROPOSED PROJECT****(A) JUSTIFICATION OF NEED****(1) Purpose of the Proposed Facility**

The purpose of the Gable Station Project, related 138 kV line work, and station improvements are to improve and maintain the quality of electric service and reliability to the eastern Ohio area, including AEP's load area. This area includes, but is not limited to, the communities of Cadiz, Carrollton, and Brilliant.

**(2) System Conditions, Local Requirements and Other Pertinent Factors**

The Cadiz/Carrollton/Brilliant load area of the transmission system provides service to approximately 375 megawatts (MW) of peak summer electric demand, and also helps support other neighboring transmission systems. The area load mainly consists of residential and industrial customers.

The Cadiz/Carrollton/Brilliant load area is served primarily by a single 138 kV line originating from the Carrollton area and terminating in the Brilliant area, with a radial tap towards the Cadiz area. The subject 138kV line's length is approximately 50 miles. Within these 50 miles, no fault interrupting devices are available to sectionalize this line. The loss of this 138kV line (N-1 contingency) would greatly jeopardize the system's ability to serve load in the area and could also result in system criteria violations. The applicable criteria for this area include the following requirements:

- Voltage levels must be maintained between 95-105% of nominal for normal conditions.
- Voltage levels must be maintained between 92-105% of nominal for contingency conditions.
- Contingency-caused voltage changes of more than 8% are deemed unacceptable.
- No facility may exceed its normal rating under normal conditions.
- No facility may exceed its emergency rating under contingency conditions.

The loss of the subject 138 kV line results in voltage violations around the Cadiz area, with voltages going as low as 90% of nominal.

AEP proposes to improve the transmission reliability by constructing new transmission facilities in the eastern Ohio area as shown on Figure 02-1. This includes but is not limited to the following:

- Construct Gable 138 kV Switching Station utilizing three (3) 138 kV motorized switches. These switches will have the ability to sense faults on the system, isolate the affected sections, and restore unaffected portions of this 50-mile line. The station will be laid out for future breaker additions. This substation will be inserted into the Carrollton-South Cadiz-Tidd 138 kV line and will serve as a means of dividing this existing line into three shorter line sections. This will facilitate maintenance, outage coordination, and provide much needed flexibility. There will be three line exits from Gable Station:
  - Gable - Carrollton
  - Gable – Tidd
  - Gable – South Cadiz
- In addition, Gable 138kV Switching Station will have accommodations for a future distribution source into the Smithfield area.

### (3) Load Flow Studies

Power flow analysis was performed using the PTI PSS/E power system simulator. Load flow analysis identified scenarios for single contingency conditions that would result in low voltage criteria violations. Table 02-1 below summarizes the results of the load flow analysis depicting the summer 2015 peak load conditions. The most severe forecasted issues are summarized in this table. The table shows Eastern Ohio area facility voltage drop violations for credible double contingency outage conditions. In order to meet AEP Transmission Planning Criteria, system voltage must be maintained at or above 92% of nominal for contingencies, and equipment thermal loadings may not exceed 100% of the equipment's emergency rating. Furthermore, normal system voltages should not go below 95% for steady state conditions and should not change by more than 8% for any applicable contingency condition. If equipment is allowed to remain in service when loaded above its permissible loading, it may produce an unsafe operating condition and can lead to system/customer outages.

**TABLE 02-1**  
**Eastern Ohio Area Transmission System Performance**  
**Summer 2015 Conditions with Existing System**

**N-1 Contingency Description:**  
**Loss of Carrollton-South Cadiz-Tidd 138kV line**

Station	Contingency Voltage N-2	Base Voltage	Voltage Drop %	Violation (> or = 8%)
Freebyrd 138kV	0.9166	1.002	8.5	Low Voltage/Drop
Stone Plant 138 kV	0.9186	1.002	8.3	Low Voltage/Drop

The voltage performance in the Eastern Ohio area specified in the previous table was substantiated in load flow analysis. Analysis has shown that voltage levels after the specified single contingency would subject portions of the system to transmission voltages below the 0.92 per unit (PU) planning criteria level for emergency conditions, in some cases would produce voltage drops greater than 8%.

**(4) Base Case Model Data**

An electronic copy of the base case will be provided upon request of the OPSB staff.

**(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; and Regional Transmission Planning**

**(a) Reference in Long Term Forecast**

The proposed Gable Station is listed in the 2015 "Ohio Power Company Long Term Forecast report to the Public Utilities Commission of Ohio", Forms FE-T9 and FE-T10.

**(b) Explanation if Not Referenced**

Not applicable. The proposed facility is referenced in the aforementioned report.

**(c) Effect on Regional Expansion Plans**

This project is intended to address line sectionalizing and reliability voltage concerns in the Eastern Ohio AEP transmission system and thus should not adversely impact neighboring utilities or regional bulk transmission planning. PJM has approved this project as a Baseline Project (B1887) and has studied the impact of the new Gable Station on the Regional Transmission System. PJM has not identified any issues for other neighboring electric utilities.

**(2) Gas Transmission Lines and Associated Facilities**

This application is for an electric substation and associated transmission line interconnections. Therefore, this section is not applicable.

**(C) SYSTEM ECONOMY AND RELIABILITY**

The proposed improvements will enhance the reliability of the AEP transmission system in Eastern Ohio by vastly improving the sectionalizing capability on the existing 50 mile 138kV

transmission line between Carrollton, Tidd and South Cadiz stations. The new 138 kV switching station will utilize three (3) 138 kV motorized switches which will have the ability to sense faults on the system, isolate the affected sections and restore unaffected portions of this 50 mile line. Restoring unaffected portions of this line will aid in keeping system voltages within AEP Planning Criteria.

Table 02-2 compares the existing system (with credible single contingency outage conditions) to the same system incorporating the proposed transmission system facilities as recommended in this proposal. System voltages violations will be alleviated and not fall below the AEP Planning criteria levels with the proposed system upgrades.

**TABLE 02-2**  
**Proposed Eastern Ohio Area Transmission System Performance**  
**Summer 2015 Conditions with the Proposed Gable Station Improvements in Place**

**N-1 Contingency Description:**  
**Tidd-Gable 138kV line after MOAB operation**

Station	Contingency Voltage N-1	Base Voltage	Voltage Drop %	Violation (> or = 8%)
Freebyrd 138kV	0.9724	1.002	2.9	None
Stone Plant 138 kV	0.9731	1.002	2.8	None

#### **(D) OPTIONS TO ELIMINATE THE NEED FOR THE PROPOSED PROJECT**

AEP considered rebuilding the existing single circuit line from the Gable Hard Tap Point to South Cadiz station as a double circuit 138kV line and upgrading facilities at each terminal station to increase 138 kV through path capability instead of proposing the Gable Switching Station. While, this option would address the sectionalizing issue along the 50 miles of transmission line, it would have not fit with the long term plan AEP has for the area. Additionally, this option would require additional right-of-way acquisition, which would be difficult given the type of terrain present in the territory. This option would also be more challenging from a physical standpoint and more expensive.

#### **(E) FACILITY SELECTION RATIONALE**

The plan to establish a new 138 kV switching station (Gable) was selected over the other alternative considered because it is the most cost effective solution that will address the sectionalizing issues present on the Carrollton-South Cadiz-Tidd 138kV line. This solution can be built upon for future improvements as conditions warrant. The other alternative considered does not fit with the long term plan AEP has for the area.

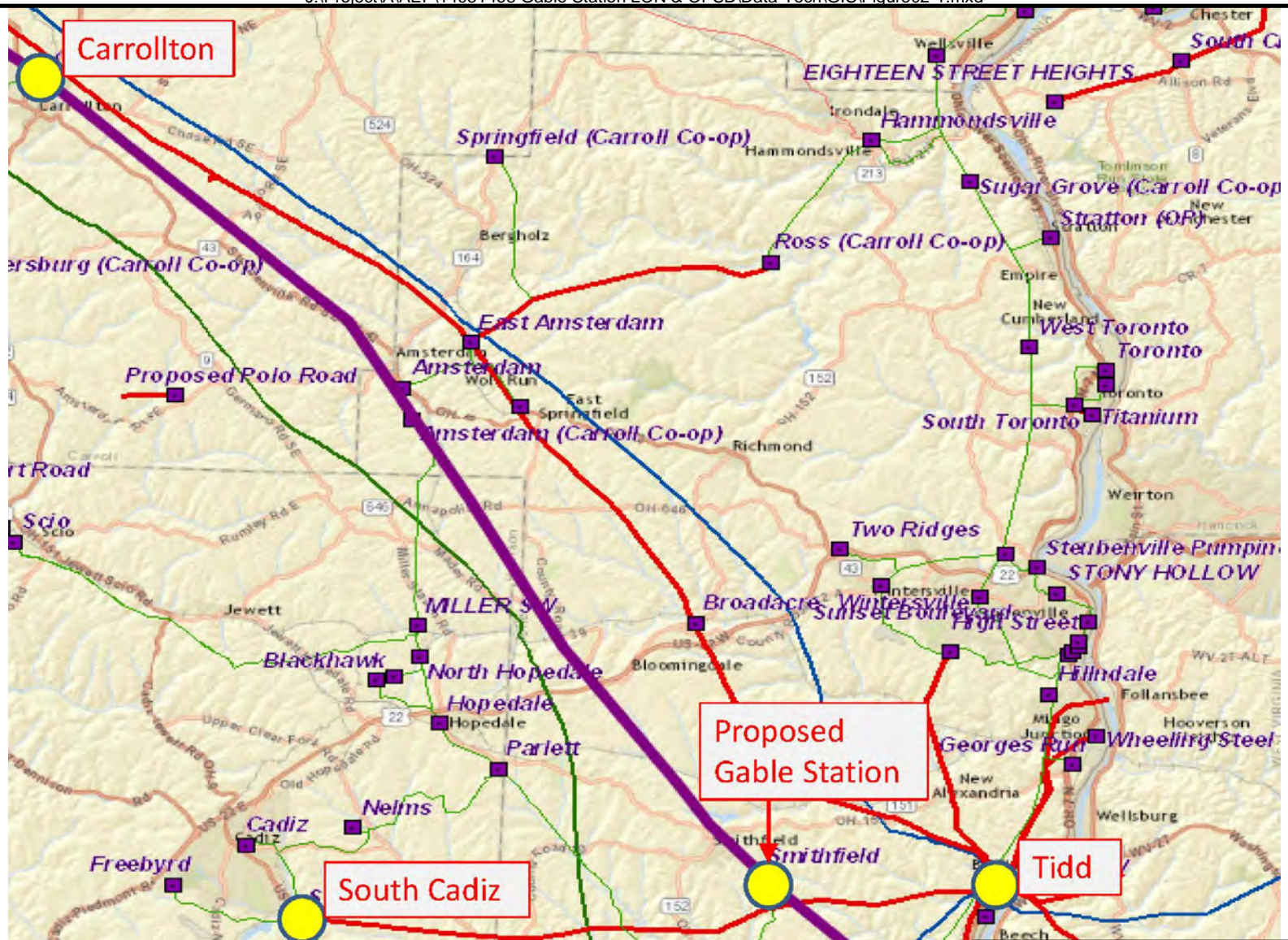
**(F) FACILITY SCHEDULE****(1) Schedule Bar Chart**

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

**(2) Delays**

Any critical delays that affect the major activities as outlined in the schedule would further delay the in-service date of the project. If the in-service date is delayed beyond December 2015, approximately 375 MW of load will continue to be at an increased risk of an area-wide extended service interruption and low voltages.





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Gable Station Project

FIGURE 02-1  
OVERVIEW OF GABLE STATION PROJECT  
AND MAJOR CONSTRUCTION ITEMS

JOB NO. 14951468

**URS**



**Figure 02-2 Project Schedule**

Activity Description	2014								2015											
	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Preparation of Application	■	■	■	■	■															
Public Information Meeting					★															
Submit Application						★														
OPSB Review Process						■	■	■	■	■										
Issue Certificate											★									
Acquisition of Rights-of-way	Not Applicable																			
Preparation of Final Design			■	■	■	■	■	■	■	■	■	■								
Construction												■	■	■	■	■	■	■	■	■
In Service																				★

## **4906-15-03 Site and Route Alternatives Analysis**

**4906-15-03 SITE AND ROUTE ALTERNATIVES ANALYSES****(A) SECTION SUMMARY**

This section of the Application provides the Site Selection Study for the proposed Gable Station Project, a 138 kV transmission switching substation in Jefferson County, Ohio. This includes a description of the study area with related maps, identification of evaluated sites, siting criteria and factors, evaluation process, and rationale for selecting the Preferred and Alternate Sites.

**(B) SITE SELECTION STUDY****(1) Study Area and Methodology**

A site selection study involves collection and evaluation of engineering, environmental, cultural, and socioeconomic data in order to identify potential sites for the substation. The study identifies major siting criteria and uses an evaluation process to compare alternatives that avoid or minimize adverse effects to the extent practical. AEP retained URS to assist with the evaluation of environmental, socio-economic, cultural, and engineering/construction issues during the study. Based on the functional requirements for the proposed substation, a minimum fenced substation size was determined by AEP to be approximately three acres. Other priority site conditions include:

- Relatively flat terrain within an area characterized by high topographic relief.
- Minimal tree removal.
- Dry conditions on most of the site (few, if any, wetlands).
- No existing man-made obstructions.
- Location at or near the existing Windsor-Canton and Tidd-South Cadiz 138 kV transmission lines.
- Property adjacent to existing road to provide suitable site access
- Property available for purchase to avoid condemnation for a substation site.

The Windsor-Canton and Tidd-South Cadiz 138 kV transmission lines intersect in Wells Township of Jefferson County, approximately two miles southeast of the Village of Smithfield. The project is located in a rural setting comprised predominantly by wooded hillsides with a mixture of scattered agricultural and residential land uses. Topography in the extended vicinity is rolling, with very few flat areas that are suitable for the proposed substation. Based on the nature of the study area, the options primarily involve placing the substation in one of the extremely limited flat areas of adequate size for the proposed facility. This site selection study

details the available options and evaluates them relative to one another by both quantitative and qualitative criteria.

Ultimately, six sites were identified with the potential to meet the project's technical requirements and other siting specifications listed above. Data simplification through scoring and weighting was not considered necessary, and could, in fact, unnecessarily hide data resolution. AEP and URS collected and tabulated land use, ecological, cultural, and technical data, and that data was used to compare the sites. Therefore, based on the limited number of practical sites, it was considered most appropriate to use relevant raw data counts in conjunction with qualitative assessments of each site to assess the final ranking.

**(a) Study Area:** The proposed substation will tap AEP's Windsor-Canton and Tidd-South Cadiz 138 kV lines. The Windsor-Canton 138 kV line extends generally from northwest to southeast through western Jefferson County and beyond. The Tidd-South Cadiz 138 kV line extends from east to west. These lines cross in Wells Township approximately two miles southeast of the Village of Smithfield. They are generally perpendicular and diverge from the intersection.

Theoretically, it would be possible to locate the new Gable Station anywhere in the vicinity of the existing electric transmission lines, although these electrical sources for the substation would remain the same. However, the only practical sites are those in close proximity to the intersection of these existing source lines because new transmission lines will be constructed from the source lines to the new substation and impacts associated with the new transmission lines are an important component of the total potential impact of the project, especially given the challenging terrain of Jefferson County. Therefore, the study area was defined by a one-mile radius circle centered on the intersection of the source lines. URS initially reviewed possible candidate sites beyond this study area to find suitable sites generally located along or near ridge crests where steep slopes are not as prevalent. However, these locations are also most suitable for residences and other structures which form additional constraints for siting a substation. Overall, the challenging terrain and diverging nature of the existing transmission lines quickly proved difficult to overcome both in terms of identifying candidate sites and envisioning potential transmission line corridors back to the source transmission lines.

**(b) Study Area Map:** The study area is shown in Figure 03-1, and is characterized by rolling and steep topography. Limited land suitable for the project was identified within the study area, and availability of the suitable land may be limited.

**(c) Siting Criteria:** For the site selection study, the proposed substation was assumed to require approximately three acres. The goal of the site selection study was to identify viable site locations based on the siting criteria, while avoiding or limiting impacts to sensitive land uses, ecological, and cultural features in the project vicinity. It is desirable to maximize certain criteria at a given site location, (e.g. available acreage). These criteria are known as attributes. Undesirable criteria, such as wetlands, historic properties, etc. are termed constraints and the study seeks to avoid/minimize their occurrence. Therefore, the goal of siting is to maximize

attributes while minimizing constraints. The criteria considered in the siting study are listed in Table 03-1.

<b>TABLE 03-1</b>	
<b>QUANTITATIVE SITING CRITERIA</b>	
<b>Criteria</b>	<b>Data Source</b>
<b>Ecological</b>	
Area of Woodlots (acres)	Woodlots as digitized from aerial photography
National Wetland Inventory (NWI) Areas on Site (acres)	NWI wetland areas as identified by the U.S. Fish and Wildlife Service (USFWS)
<b>Cultural</b>	
National Register of Historic Places and Districts within 1,000 feet	Ohio Historic Preservation Office (OHPO) online database
Known Archaeology Sites within 100 feet	OHPO online database
Cemeteries within 100 feet	OHPO online database
<b>Land Use</b>	
Residences within 100 feet	Jefferson County Auditor GIS data, aerial photography, and field observation
Residences within 1,000 feet	Jefferson County Auditor GIS data, aerial photography, and field observation
Institutional Land Uses within 100 feet	Schools and places of worship - USGS maps, ESRI GIS data layer, field observation
Institutional Land Uses within 1,000 feet	Schools and places of worship - USGS maps, ESRI GIS data layer, field observation
Other Sensitive Land Uses within 100 feet	Includes airports, air strips, parks, preserves, park district property, designated managed areas, conservation and observatory sites, and golf courses; sources: USGS, ESRI GIS data, and field observation
Other Sensitive Land Uses within 1,000 feet	Includes airports, air strips, parks, preserves, park district property, designated managed areas, conservation and observatory sites, and golf courses; sources: USGS, ESRI GIS data, and field observation
Number of Land Owners	Parcel data
<b>Engineering</b>	
Size of Overall Property (acres)	Calculated by GIS software
Distance to Existing Tidd-South Cadiz 138 kV Transmission Line (feet)	Calculated by GIS software
Distance to Existing Windsor-Canton 138 kV Transmission Line (feet)	Calculated by GIS software

In addition to the ecological, land use, cultural, and engineering constraints, several qualitative factors were considered. These issues include future development plans, land availability, and likely facility layout within the identified boundaries.

**(d) Site Selection Process:** Based on the identified needs and technical requirements of the project, the study area was evaluated to identify candidate locations for a substation. A constraint map of the study area was developed using ArcMap GIS software. Georeferenced data layers for the identified constraints, obtained from published State and Federal materials and local planning documents, were superimposed on available parcel boundaries and 2011 aerial photography obtained from 2011 United States Geological Survey (USGS) aerial photography. Based on the constraint map, potentially suitable substation sites consisting of relatively flat areas of at least three acres within the study area were identified. In general, slopes greater than 20% were considered unfavorable for development of a substation, although some relaxation of this restriction was necessary to provide adequate acreage in this study area. Sites closest to the potential interconnection locations were identified first.

Once initial site alternatives were selected, they were each quantitatively and qualitatively assessed based on their impacts and effects on the suite of evaluation criteria listed in Table 03-1. Both the quantitative and qualitative criteria were then considered for each site.

**(e) Identified Sites and Evaluation:** The project area is a rural setting with agricultural land interspersed with residences and rolling hills. Only six potential sites were identified. This number of sites represents viable locations within the rural project vicinity and is considered adequate to effectively identify potential Preferred and Alternate Sites. Figures 03-2 through 03-4 show the locations of the six sites evaluated. These sites were assigned an identification number based on the order in which they were identified. This number does not have any significance with respect to preference.

**Site 1:** Site 1 is located on the south side of Township Road 154, east of the County Road 15 and Township Road 154 intersection (See Figure 03-2). The overall property is primarily a large agricultural field with an associated residence. The candidate site portion of the property is located approximately 1,300 feet south of the existing Tidd-South Cadiz 138 kV transmission line and 1,300 feet southwest of the Windsor-Canton 138 kV transmission line. Several additional properties would need to be crossed to create the new rights-of-way to connect to the Windsor-Canton and Tidd-South Cadiz 138 kV lines. Potential impacts, primarily in the form of additional tree clearing for the new interconnection rights-of-way, are likely to be greater for Site 1 compared to other evaluated candidates. The availability of Site 1 is unknown, but the presence of a residence on the overall property suggests acquisition for the substation could be difficult. AEP did not pursue acquisition of Site 1 due to the apparent increased potential impacts relative to other candidates.

**Site 2:** Site 2 is located on the southwest side of County Road 15 (See Figure 03-2). It is 300 feet north of the existing Tidd-South Cadiz 138 kV transmission line and 1,100 feet southwest of the Windsor-Canton 138 kV transmission line. The overall property is an agricultural field. Site 2 is directly in the line of sight from the front of multiple residences located along County Road 15.

It would also require new rights-of-way to construct interconnections to the source transmission lines, which would likely cross the adjacent residential properties. The availability of Site 2 is unknown. Based on the proximity to the frontage of adjacent residences, AEP did not pursue acquisition of this candidate.

**Site 3:** Site 3 is located west of the County Road 15 and Township Road 154 intersection (See Figure 03-2). The overall property is primarily an agricultural field with an associated residence. It is located approximately 800 feet southeast of the existing Tidd-South Cadiz 138 kV transmission line and approximately 2,000 feet southwest of the Windsor-Canton 138 kV transmission line. The Tidd-South Cadiz 138 kV ROW is located on the overall property, but an interconnection would likely result in nearly surrounding the residence with electric transmission infrastructure. The availability of Site 3 is unknown. Based on the proximity to the frontage of adjacent residences, AEP did not pursue acquisition of this candidate.

**Site 4:** Site 4 is located on a large overall property on the south side of Township Road 154, and is crossed by the existing Windsor-Canton 138 kV transmission Line (see Figure 03-3). The Site is approximately 2,800 feet to the southeast of the Tidd-South Cadiz 138 kV transmission line, and it appears to be feasible to construct the interconnection to this line parallel to the existing Windsor-Canton 138 kV line. AEP approached the property owner regarding the potential purchase of the property for development of the proposed Gable Station. While no purchase or option has been formalized, it appears that the owner is potentially receptive.

**Site 5:** Site 5 is located southeast of the intersection of County Road 15 and County Road 17 and is adjacent to the southwest of the existing Windsor-Canton 138 kV line (see Figure 03-4). The Tidd-South Cadiz 138 kV transmission line is to the south of the site, approximately 2,600 feet away, but it appears to be feasible to construct the interconnection to this line parallel to the existing Windsor-Canton 138 kV line. The site is currently a hayfield, but was purchased by AEP in 2012. The previous property owner, who still owns the adjacent property to the south, was only willing to sell the three-acre portion of the previous overall property. At the time of the acquisition of the property, AEP intended to install a switch pole to increase reliability of the electrical infrastructure in the vicinity. However, subsequent evaluations suggested that installation of only a switch pole was inadequate for the electrical reliability needs of the surrounding vicinity. The dimensions of the property remain suitable for the currently proposed project based on the preliminary design layout of Gable Station.

**Site 6:** Site 6 is located on the south side of Township Road 154, just before it dead ends (see Figure 03-3). The property is a large agricultural field with a residence. The Site is approximately 700 feet northeast of the Windsor-Canton 138 kV transmission line and 2,500 feet to the southeast of the Tidd-South Cadiz 138 kV transmission line. The overall property is crossed by a

portion of the Windsor-Canton 138 kV line. The availability of Site 6 is unknown, but the presence of a residence on the overall property suggests acquisition for the substation could be difficult.

Table 03-2 provides a quantitative comparison of the sites evaluated.

<b>TABLE 03-2 QUANTITATIVE SITING COMPARISON</b>						
	<b>Site</b>					
<b>Criteria</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Ecological</b>						
Area of Woodlots (acres)	0	0	0	0.7	0.1	0
Area of NWI Wetlands on Site (acres)	0	0	0	0	0	0
<b>Cultural</b>						
National Register of Historic Places and Districts within 1,000 feet	0	0	0	0	0	0
Known Archaeology Sites within 100 feet	0	0	0	0	0	0
Cemeteries within 100 feet	0	0	0	0	0	0
<b>Land Use</b>						
Residences within 100 feet	0	1	1	0	0	0
Residences within 1,000 feet	7	12	12	1	22	1
Institutional Land Uses within 100 feet	0	0	0	0	0	0
Institutional Land Uses between 100 and 1,000 feet of substation	0	0	0	0	0	0
Other Sensitive Land Uses within 100 feet	0	0	0	0	0	0
Other Sensitive Land Uses between 100 and 1,000 feet	0	0	0	0	0	0
Number of Land Owners	1	1	1	1	1	1
<b>Engineering</b>						
Size of Overall Property (acres)	74.1	9.4	83.4	89.7	3.0	164.6
Distance to Existing Tidd-South Cadiz 138 kV Transmission Line (feet)	1,320	300	800	2,800	2,600	2,500
Distance to Existing Windsor-Canton 138 kV Transmission Line (feet)	1,300	1,100	2,000	0	40	700

## (2) Site Ranking and Selection of Preferred and Alternate Sites

The quantitative comparison suggests that constraints are limited in the study area. Due to general avoidance during selection of the candidates, potential impacts to most constraints are



expected to be minimal or non-existent independent of the site selected. Ultimately, feasibility of interconnecting to the source transmission lines, availability of land, and potential impacts to nearby residences appear to be the differentiating factors between the six candidate sites.

Interconnections to the existing Windsor-Canton and Tidd-South Cadiz 138 kV transmission lines appear to be challenging from Sites 2 and 3 based on adjacent residences. Sites 1 and 6 appear to offer slightly better potential interconnection corridors, but neither site is adjacent to the source transmission lines. Sites 4 and 5 clearly offer the best interconnection opportunities because they are adjacent or nearly adjacent to the Windsor-Canton 138 kV line and interconnections to the Tidd-South Cadiz 138 kV line could be accomplished by paralleling the Windsor-Canton line.

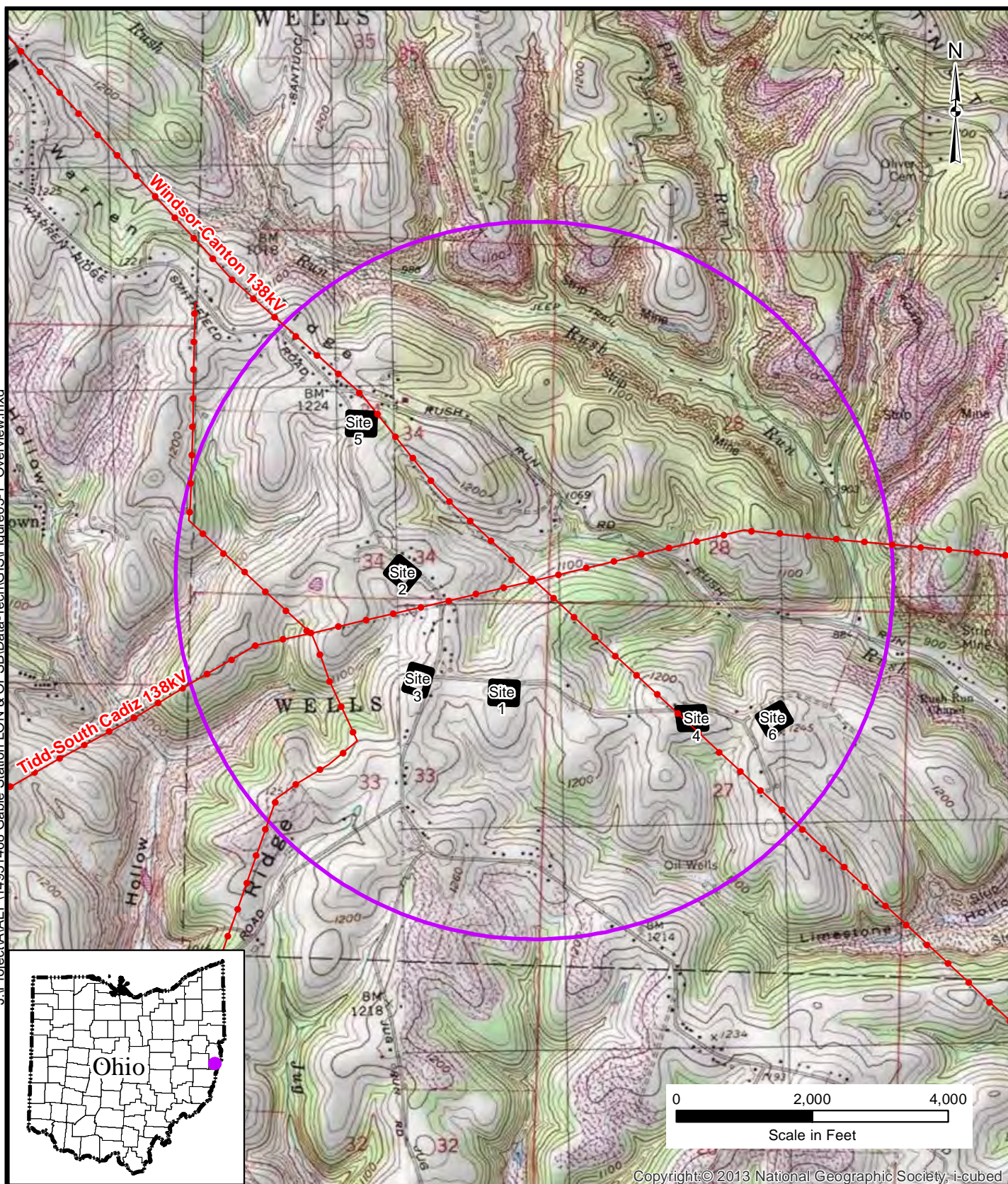
Site 5 has a clear advantage of already being owned by AEP. The owner of Site 4 also appears to be amenable to reasonable acquisition by AEP, although no deal has been reached regarding a purchase option or outright purchase. The availability of the other sites is unknown, but the size and land use of the overall properties suggests acquisition could prove difficult. In order to maintain the required schedule, AEP does not intend to appropriate land for the substation.

Sites 2, 3, and 4 all have a residence identified within 100 feet. While engineering adjustments are possible to slightly increase the distance between the residence and substation, these sites are all adjacent to the frontage of adjacent residential properties. Interconnections to the source transmission lines would also create potential impacts to these adjacent residences. Sites 1 and 6 are on overall properties with residences. Twenty-two residences were identified within 1,000 feet of Site 5, which is by far the most of any of the sites. However, all of these residences are situated to the north, northwest, and northeast of the site where trees, topography and the existing Windsor-Canton 138 kV line are expected to provide screening and reduce visual impacts. In the case of Site 5, the substation property is located over the topographic ridge from the closest residences, with the residences located generally at the toe of the slope. While the number of residences in close proximity to Site 5 are greater than other candidates, aesthetic impacts are expected to be minimal due to the visual plane and mitigating features.

Based on the results of the siting evaluation, AEP presented Site 4 (Red Site) and Site 5 (Blue Site) at a public information meeting held in the project vicinity on September 23, 2014. Five members of the public attended the meeting and two comment cards were received. One comment card expressed concerns about property values and additional right-of-way in the vicinity of the Red Site. The other indicated that the meeting was informative. After the meeting, additional comment cards were mailed to AEP. In general, the few people that lived closer to the Blue Site preferred the Red Site. Those living closer to the Red Site preferred the Blue Site. AEP selected Site 5 (Blue Site) as the Preferred Site and Site 4 (Red Site) as the Alternate Site.



J:\Project\AEP\14951468 Gable Station LON & OPS\GIS\Tech\GIS\Figure03-1 Overview.mxd



LEGEND:

- Candidate Site
- Study Area
- Existing Transmission Line

BASE MAP SOURCE:

ArcGIS Online, USA Topo Maps  
Smithfield, Steubenville West, Tiltonsville, and Dillonvale OH  
7.5' Topographic Quadrangles, 1982

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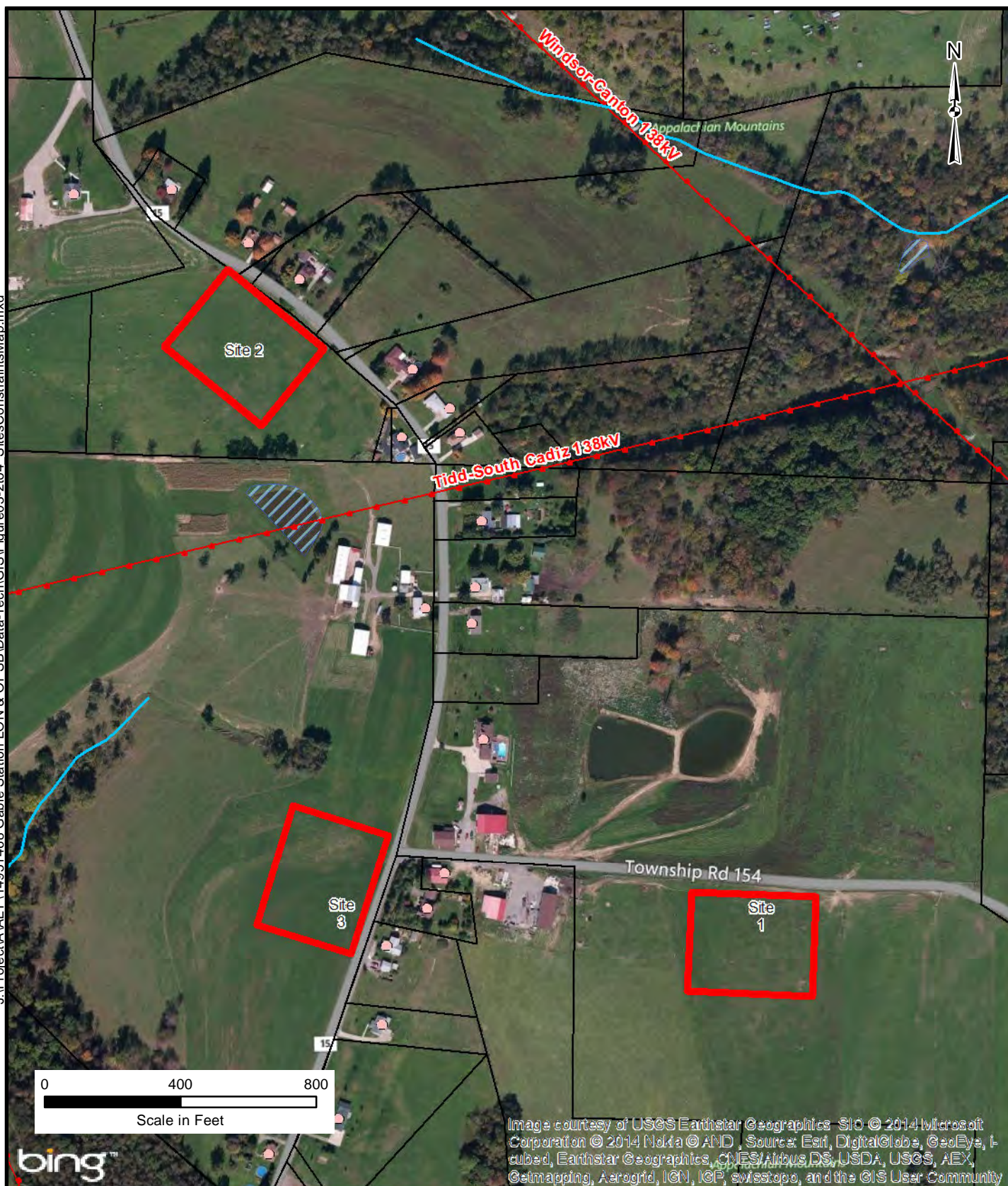
FIGURE 03-1  
SITE SELECTION STUDY AREA

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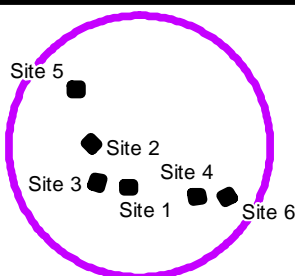


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LEGEND:

- Candidate Site
- Study Area
- Existing Transmission Line
- Residence
- Stream
- National Wetland Inventory Area
- Woodlot
- Approximate Property Boundary



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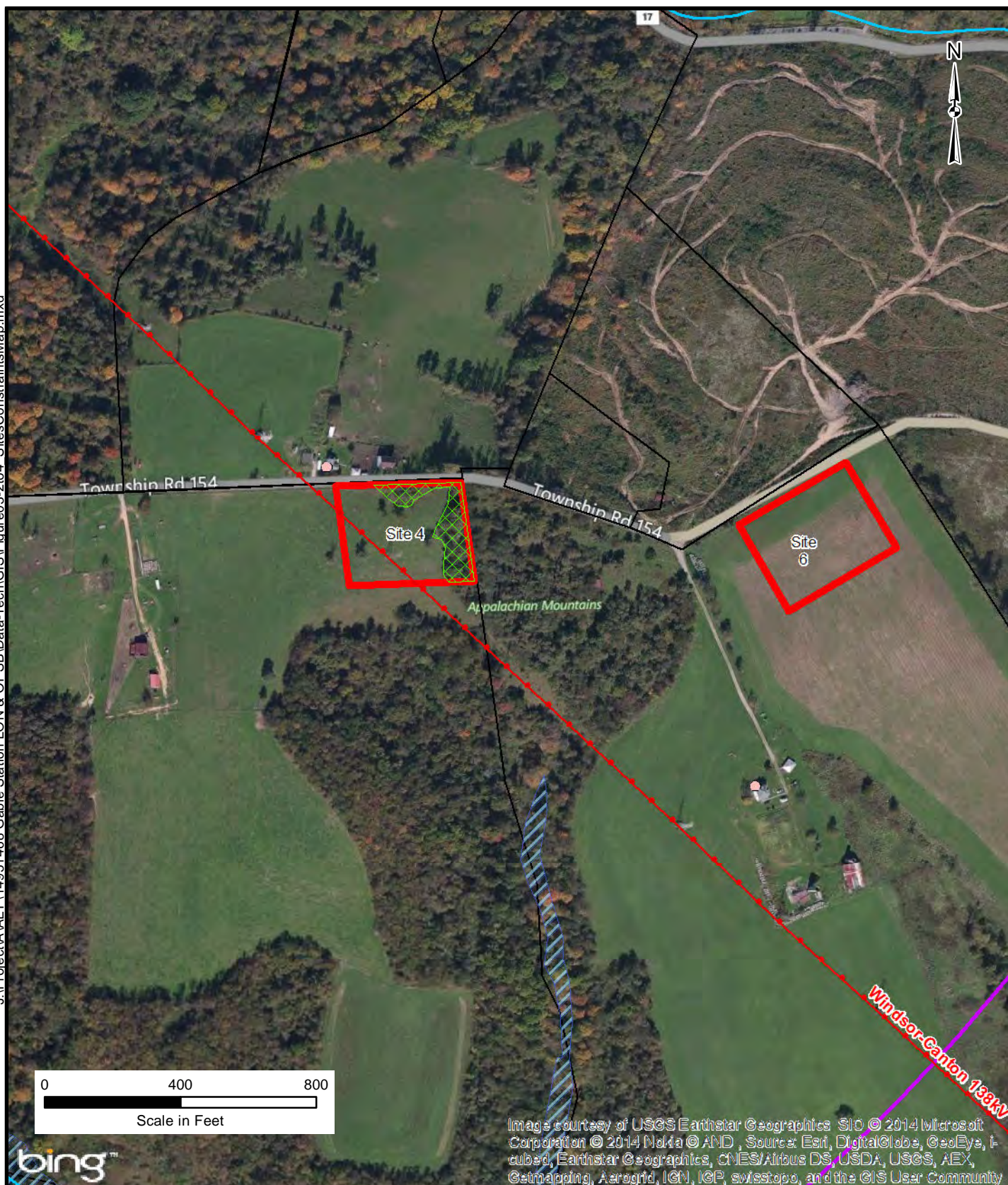
FIGURE 03-2  
CONSTRAINTS MAP  
SITES 1, 2, & 3

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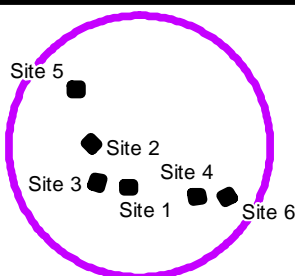


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LEGEND:

- Candidate Site
- Study Area
- Existing Transmission Line
- Residence
- Stream
- National Wetland Inventory Area
- Woodlot
- Approximate Property Boundary



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FIGURE 03-3  
CONSTRAINTS MAP  
SITES 4 & 6

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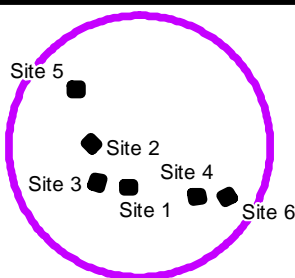
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LEGEND:

- Candidate Site
- Study Area
- Existing Transmission Line
- Residence
- Stream
- National Wetland Inventory Area
- Woodlot
- Approximate Property Boundary



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FIGURE 03-4  
CONSTRAINTS MAP  
SITE 5

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## 4906-15-04 Technical Data

**4906-15-04 TECHNICAL DATA****SECTION SUMMARY**

This section of the Application provides data on the proposed substation, including data on location, major features, and the topographic, geologic, and hydrologic suitability of the site alternatives of the Gable Station Project. This section also provides data on the layout and construction of the proposed substation, and provides information on the proposed substation equipment.

**(A) ALTERNATIVE SITES/ROUTES OF PROJECTS****(1) Geography and Topography**

A map at 1:24,000 scale, showing the proposed substation for the Project is presented as Figure 04-1. This map includes the area 1,000 feet around each of the proposed substation locations. The map was developed from the United States Geological Survey (USGS) 7.5-minute topographic maps of the Smithfield, Ohio (1982), Steubenville West, Ohio-West Virginia (1982), Tiltonville, Ohio-West Virginia (1982), and Dillonvale, Ohio (1982) quadrangles.

The information on the map was updated through review of aerial photography, property parcel data from the Jefferson County Auditor, and field reconnaissance conducted in July 2014. The aerial photographs are ortho-corrected color images that directly overlay the USGS electronic quadrangle maps in Geographical Information Systems (GIS) software packages.

**(a) *Proposed Transmission Line Alignments:*** Gable Station will be energized by interconnecting to the existing Windsor-Canton 138 kV transmission line, located nearly adjacent to the east and northeast of the Preferred Site, and the Gable-Tidd 138 kV transmission line, located approximately 0.5 mile to the south of the Preferred Site. These interconnections will form Gable-Carrollton, Gable-Tidd, and Gable-South Cadiz 138 kV circuits, and will be submitted under separate cover to the OPSB as a Letter of Notification.

**(b) *Proposed Substation Locations:*** The proposed locations for the Preferred and Alternate Sites for the substation can be seen on Figure 04-1.

**(c) *Major Highway and Railroad Routes:*** The Preferred Site is situated adjacent to the east of County Road 15, approximately 400 feet south of County Road 17. The Alternate Site is located adjacent to the south side of Township Road 154, approximately 3,000 feet east of County Road 15. State Route 151 is located approximately 1.8 miles to the north of the Preferred Site and 2.9 miles north of the Alternate Site. No railroads or other major highways are located within 1,000 feet of the Preferred and Alternate Sites.

(d) **Air Transportation Facilities:** According to the Federal Aviation Administration's Office of Aeronautical Information Services, four airports, landing strips, or heliports are located in Jefferson County. The closest of these facilities is the Jefferson County Airpark located approximately eight to nine miles to the north of the Preferred and Alternate Sites.

(e) **Utility Corridors:** AEP's Windsor-Canton 138 kV transmission line is located nearly adjacent to the east and northeast of the Preferred and Alternate Sites, and the Gable-Tidd 138 kV transmission line is located approximately 0.5 mile to the south of the Preferred Site and 0.5 mile north of the Alternate Site. The Dillonvale-Boich Mining 69 kV line is located approximately 0.4 mile to the west of the Preferred Site and 0.8 mile west of the Alternate Site. These utility corridors are shown on Figure 04-1. No other major utility corridors were identified within one mile of the sites.

(f) **Proposed Permanent Access Roads:** Access to the substation at the Preferred and Alternate Sites is proposed from County Road 15 and Township Road 154, respectively, using a new permanent access drive. The proposed locations of the access roads for the Preferred and Alternate Sites are shown on Figures 01-1 and 01-2.

(g) **Lakes, Ponds, Reservoirs, Streams, Canals, Rivers, and Swamps:** No streams, wetlands, ponds, or threatened and endangered species habitat areas were identified within 100 feet of the Preferred or Alternate Sites. A full description of the lakes, ponds, reservoirs, streams, canals, rivers, and swamps (i.e., wetlands) located within 1,000 feet of the proposed Preferred and Alternate Sites is provided in Section 4906-15-07(B)(3) of this Application. A map at 1:24,000 scale showing water bodies in the study area is included as Figure 04-1.

(h) **Topographic Contours:** Topographic contours of the study area, provided at 10 foot contour intervals, are shown on Figure 04-1. The topographic relief of the study area is gently sloping. Elevations range from 1,200 to 1,260 feet above mean sea level at the Preferred Site and 1,200 to 1,240 feet above mean sea level at the Alternate Site.

(i) **Soil Associations at the Preferred and Alternate Sites:** The Morristown-Lowell-Westmoreland soil association is mapped at the Preferred and Alternate Sites (U.S. Department of Agriculture [USDA], 1990). Figure 04-1 shows the soil associations in the study area. No soil conditions were found that would potentially limit construction of the proposed project.

(j) **Population Centers and Legal Boundaries:** Population centers and legal boundaries within the vicinity of the proposed substation locations are shown on Figure 04-1. Both of the proposed substation locations are located in Wells Township in Jefferson County.

## (2) Slope and Soil Mechanics

Slopes in the areas of the Preferred and Alternate Sites may exceed 12 percent slightly. Based on the civil survey, typical slopes on the overall property range from 10 to 15 percent. A grading



plan is provided as Figure 04-2. No soil conditions were identified that might cause problems for the project.

## **(B) LAYOUT AND CONSTRUCTION**

### **(1) Site Activities**

The following paragraphs provide data on the layout, engineering design process, and construction of the Project.

**(a) Surveying and Soil Testing:** Aerial photographs, Jefferson County maps, and USGS topographic maps have been used in selecting the Preferred and Alternate Sites and to prepare substation layouts. A contour map has been prepared using USGS contour data. Topographic features and man-made structures in the vicinity of the proposed substation that may affect the design were located during the survey. This survey work did not require the cutting or clearing of any trees and only minimal clearing of brush. Substation boundaries will be staked prior to construction.

A conventional ground survey will be performed on the existing and proposed transmission line interconnection corridors. The survey will identify the existing structure locations, and will include topographic information of the corridor. Other objects within the corridors will also be included in the survey to ensure the new line meets the current electrical clearance requirements. The proposed structure locations will be staked prior to construction.

Soil tests will be performed for the substation, as foundations for equipment and structures are necessary. Auger borings will be made by a machine driven auger at least four inches in diameter. Soil samples will be obtained at approximately 2.5-foot intervals for the first 10 feet and five-foot intervals below 10 feet, and at any identified change in strata. Sampling will include split barrel samples in non-cohesive soils and thin walled tube samples in cohesive soils. Typically, the testing will be performed to a depth of 30 to 50 feet. If rock is encountered, the rock coring will be performed with NX-size, double-tube rock coring techniques. An appropriate core bit will be selected with respect to rock types encountered to provide for optimum sample recovery. If auger refusal is encountered at a depth of 10 feet or less, a minimum of 20 feet of rock will be cored. If auger refusal is encountered between 11 feet and 20 feet, a minimum of 15 feet of rock will be cored. If rock is encountered deeper than 21 feet, a minimum of 10 feet of rock will be cored.

### **(b) Grading and Excavation:**

Both the Preferred and Alternate Sites are located on agricultural land currently used as hay fields. Grading will involve several steps. The first step in this grading process is the removal and stockpiling of the topsoil. The substation site will be graded to a 1.6% slope. The immediate substation vicinity will be graded and compacted in preparation for construction and installation of the necessary equipment.

Aggregate surfacing will be placed within the fence line of the new substation, extending to five feet outside the fence line. Aggregate surfacing will be comprised of washed limestone. Total thickness of aggregate surfacing will be five inches. The topsoil stockpiled earlier will then be spread around the remaining disturbed areas. Only areas directly around the substation fence and road will be seeded. All other areas will be returned to prior “farming” condition.

Reinforced concrete pier foundations in augered holes will be used for most of the substation structures. Other facilities, such as the circuit breakers, will be placed on reinforced concrete pads. The excess material from the augered holes will be hauled away and disposed of properly, or will be spread evenly around the site. The grading plan was designed to meet all local and state drainage requirements. The proposed grading of the Preferred Site of the substation is shown in Figure 04-2. A grading plan for the Alternate Site has not been developed due to the waiver of the fully developed alternative requirement.

**(c) Access Roads and Trenches:** The substation access road will be graded and compacted. The access road will be comprised of a five-inch thick base course layer of aggregate and a four-inch surface course layer of aggregate. At the Preferred Site, a 20-foot wide by approximately 450-foot long access road will be constructed between the substation and County Road 15. For the Alternate Site, the access road will be approximately 350 feet long. Space will be provided at the substation site for the cleaning of mud from equipment prior to entry onto any road.

**(d) Stringing of Cable:** Stringing of cable for the Project is primarily associated with construction of the transmission line connections to the substation, but also include some cables inside the substation fenced area. Conductor installation will be accomplished using the tension stringing method. Lightweight guy cables or ropes will be fed through the stringing sheaves of the sections of line that require stringing. Conductors will then be pulled through under sufficient tension to keep the conductor “in the air.” This protects the conductor from surface damage.

Temporary guard or clearance poles will be used as a safety precaution at locations where the conductors could create a hazard to either crew members or the general public. The locations and heights of clearance poles will be such that the conductors are held clear of power and communication circuits, vehicular traffic, and other structures. The stringing operation will be under the observation of crew members at all times. The observers will be in radio and/or visual contact with the operator of the stringing equipment.

**(e) Post Construction Reclamation:** As construction work proceeds, the construction area will be kept clean of all rubbish and debris resulting from the work. Refuse and cleared vegetation will be properly disposed of in an approved landfill or other appropriate location.

## **(2) Layout for Associated Facilities**

**(a) Map of Associated Facilities:** Figure 04-2 shows the preliminary grading plan of the Preferred Site. Figures 04-3A and 04-3B provide the engineering layout of the Preferred Site.

These figures show the property boundary, fenced area of the substation, general arrangement of the substation equipment, and the access roads to the substation. Figure 01-2 shows the preliminary layout of the Alternate Site. A grading plan for the Alternate Site is not provided, as the fully developed information for the Alternate Site has been waived. Figure 04-4 provides cross section views of the equipment to be installed at the Preferred Site and would be similar at the Alternate Site.

(The 11" by 17"-size copy of Figures 04-2, 04-3A, and 04-3B 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 this figure at the scale required in OAC § 4906-15-04(B)(2)(a) have been provided separately to the OPSB and are 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 Rebekah Hovermale in writing at AEP, 700 Morrison Road, Gahanna, Ohio 43230, or via phone at 614-552-1890 or via e-mail at rhovertime@aep.com)

It should be noted that the layout and dimensions provided on figures in this Application, as well as the approximate dimensions from roads and property boundaries to the substation at the Preferred and Alternate Sites provided throughout the Application, represent AEP's current best estimate of the details of the substation. These details have been significantly refined for the Preferred and Alternate Sites from the approximate details used in the initial stages of the project and are based on preliminary substation engineering layout and design work. It is expected that the final engineering design of the substation will incorporate minor refinements to the layout and facilities of the substation.

**(b) Reasons for Proposed Layout and Unusual Features:** There are no unusual features associated with construction of this project.

The Preferred and Alternate Sites are specifically engineered with due consideration to equipment types, manufacturer's specifications, adequate working clearances around equipment and structures, and safe engineering practices.

**(c) Future Modification Plans:** AEP's planning engineers generally forecast future transmission projects in a five-year planning window. AEP currently has no plans for future modifications of the proposed substation. Future modifications will not require any expansion to the fenced area of the substation.

## **(C) TRANSMISSION EQUIPMENT**

### **(1) Electric Transmission Line Data**

Gable Station will be energized by interconnecting to the existing Windsor-Canton 138 kV transmission line, located nearly adjacent to the east and northeast of the Preferred Site, and the Gable-Tidd 138 kV transmission line, located approximately 0.5 mile to the south of the Preferred

Site. These interconnections will form Gable-Carrollton, Gable-Tidd, and Gable-South Cadiz 138 kV circuits, and will be submitted under separate cover to the OPSB as a Letter of Notification.

## (2) Electric Transmission Substation Data

The equipment and facilities described below will be installed within the fenced area of the proposed substation at either the Preferred or Alternate Sites. A single-line diagram of the proposed substation is provided in Figure 04-5 for the Preferred and Alternate Sites. A description of the various components of the substation is provided below in Table 04-1.

(a) **Breakers:** No breakers are proposed as part of the substation.

(b) **Switchgear:** The 138 kV switchgear will consist of three group-operated three-phase disconnect switches.

(c) **Bus Arrangement and Structures:** The bus arrangement is shown in Figure 04-3A (layout plan) and Figure 04-5 (one line diagram).

The 138 kV yard will utilize a box bay configuration.

Equipment support steel structures will be designed using hot-rolled structural steel shapes such as wide flange, tubing, channels and angles or as folded plate tapered tubular structures. Box bay structures will be made of tapered tubular steel. All yard structures will be ASTM A36, ASTM A500, or ASTM A572 steel hot-dip galvanized for corrosion protection.

(d) **Transformers:** No transformers are proposed as part of the substation.

(e) **Control Buildings:** No control building is proposed as part of the substation at this time. The following equipment will be installed in an outdoor transclosure: RTU, DC distribution panels, battery chargers, and other miscellaneous equipment. DC batteries will be housed in a separate outdoor enclosure. This substation facility will not be manned. Plumbing facilities are not required.

(f) **Other Major Equipment:** Other equipment can include surge arresters, CVT's, and power PT.

TABLE 04-1 Transmission Substation Proposed Major Equipment	
Equipment	Specifications
Group-Operated Disconnect Switches	Voltage: 138kV Number: 3 Type: Slant V Vertical Break, Horizontal Upright Mounted Thermal: 3000A

**(3) Gas Transmission Line Data**

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

**(4) Gas Transmission Facilities**

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**

The Applicant anticipates submitting Notice of Intent (NOI) for coverage under Ohio EPA General NPDES Permit.

**(2) Description, Quantification, Characterization, Removal and Disposal of Construction Debris**

As construction work proceeds, the site will be kept clean of rubbish and debris resulting from the work. Debris associated with construction of the proposed substation is expected to consist of conductor scrap, construction material packaging including cartons, insulator crates, conductor reels and wrapping, and used stormwater erosion control materials. Clearance poles, conductor reels and other materials with salvage value will be removed from the construction area for reuse or salvage. It is estimated that approximately 50 cubic yards of construction debris could be generated from the project. Construction debris will be disposed of in accordance with state and federal requirements in an Ohio Environmental Protection Agency approved landfill or other appropriately licensed and operated facility.

Where vegetation must be cleared, the resulting brush will be removed. Generally, stumps will not be removed.

**(3) Storm Water and Erosion Controls during Construction and Restoration of Soils, Wetlands, and Streams Disturbed as a Result of Construction of the Facility**

A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and incorporated into the Construction Plans and Specifications, and will be made available on site during construction of the Project. The SWPPP will include the following General Conditions, at a minimum.

**(a) Erosion and Sediment Controls:** Implementation of erosion and sediment control practices will conform to the Ohio Department of Natural Resources Rainwater and Land Development Manual (2006), the Ohio EPA NPDES Permit Program for the discharge of storm water from construction sites, and any erosion and sediment control practices and standards required by the County.

No impacts to wetlands, streams and other environmentally sensitive areas are anticipated.

Grubbing activities are not anticipated. Sediment basins, traps and perimeter sediment controls will be implemented within seven days of any grubbing activities and will continue to function until disturbed areas are permanently stabilized.

Silt Fencing: Silt fencing and/or other appropriate best management practices for erosion control will be constructed before upslope land disturbance begins.

Silt fences will be placed to parallel the slope contour where appropriate so that water will not concentrate at low points in the fence and so that small swales or depressions which may carry concentrated flows to the silt fence are dissipated along its length.

Where possible, vegetation will be preserved for five feet upslope from the silt fence.

Silt fence will be placed so that eight inches of cloth are below the ground surface. Excess material will lie at the bottom of the six-inch deep trench and the trench will be backfilled and compacted.

Silt fence will allow runoff to pass only as diffuse flow through the geotextile fabric. If runoff overtops the silt fence or flows under or around the ends, one of the following will be performed, as appropriate: 1) the layout of the silt fence will be changed, 2) accumulated sediment will be removed, or 3) other practices will be installed.

Silt fence posts will be a minimum of 32 inches in length made by 2"x2" hardwood of sound quality.

Silt fence fabric will be ODOT Type C geotextile fabric or equivalent.

Reclamation of Disturbed Areas: Disturbed areas outside of the substation site and permanent access roads will return to a similar state as currently established.

Maintenance / Inspection: All erosion and sediment control practices will be inspected at least once every seven days and within 24 hours after any storm event greater than 0.5" of rain per 24-hour period.

Erosion controls will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of being reported. Silt fencing will be inspected for depth of sediment, for tears, for confirmation fabric is securely attached to the fence posts, and to check that the fence posts are firmly in the ground. Seeded areas will be inspected for evidence of bare spots or washouts. Permanent records of the maintenance and inspection must be maintained throughout the construction period. Records will include, at a minimum, the name of the Inspector, major observations, date of inspection, certification of compliance, and corrective measures taken.

**(b) *Materials Management:*** All materials stored on-site will be kept in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.

Products will be kept in their original containers with the original manufacturer's label.

Manufacturer's recommendations for proper use and disposal will be followed.

Material Safety Data Sheets (MSDS) will be retained and available on-site at all times.

**(4) Plans for Disposition of Contaminated Soil and Hazardous Materials Generated or Encountered During Construction:**

The following General Conditions will also be included in the SWPPP to address disposition of contaminated soil and hazardous materials generated or encountered during construction:

***Spill Prevention:*** All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled.

Secondary containment will be provided for all on-site fuel storage tanks.

All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor, as required by local regulations.

All spills will be cleaned up immediately after discovery. Manufacturer's recommended methods for spill cleanup will be followed. Materials and equipment necessary for spill cleanup will be kept in a designated storage area on-site.

Spills will be reported to the appropriate government agency, as required.

Any suspected hazardous materials encountered during construction will be reported to the AEP Regional Environmental Coordinator by the AEP Transmission Construction Representative. In addition, the AEP Project Manager will be notified, as well as the required levels of AEP Management.

AEP requires a Spill Prevention Plan to be created and available for review on-site for construction projects of this scope by its contractors. This Spill Prevention Plan will cover proper handling techniques for all electrical equipment, materials and construction equipment that require a MSDS. AEP also requires its employees and contractors to follow all Federal and State mandated material handling requirements.

AEP Transmission follows an internal Spill Prevention Notification Plan that is closely aligned to the AEP Spill Response and Cleanup – Field Guide. This Spill Response and Cleanup – Field Guide covers the following procedures:

**I. Oil/PCB Spill Response and Cleanup Procedure**

II. When to Report an Oil/PCB Spill to the Region Environmental Coordinator

III. Hazardous Substance Spill Response Procedure

IV. Region Environmental Coordinator Contact List

This Field Guide outlines spill response and cleanup procedures as well as the reporting that is required. This Spill Response and Cleanup – Field Guide will be available upon request.

**(5) Height of Tallest Anticipated Above Ground Structures and Construction Equipment within the Vicinity of Airports and Landing Strips.**

The height of the tallest anticipated above ground structure is designed to be approximately 60 feet. However, according to the Federal Aviation Administration's (FAA) Office of Aeronautical Information Services, four airports, landing strips, or heliports are located in Jefferson County. The closest of these facilities is one airport located approximately eight miles to the north of the Preferred and Alternate Sites. Coordinates for the tallest structures were submitted to the FAA via the Notice Criteria Tool. Based on the coordinates, elevations, and heights of these locations, no notice criteria were exceeded. Therefore, construction and operation at the Preferred or Alternate Site is not anticipated to impact any airports, landing strips, or heliports.

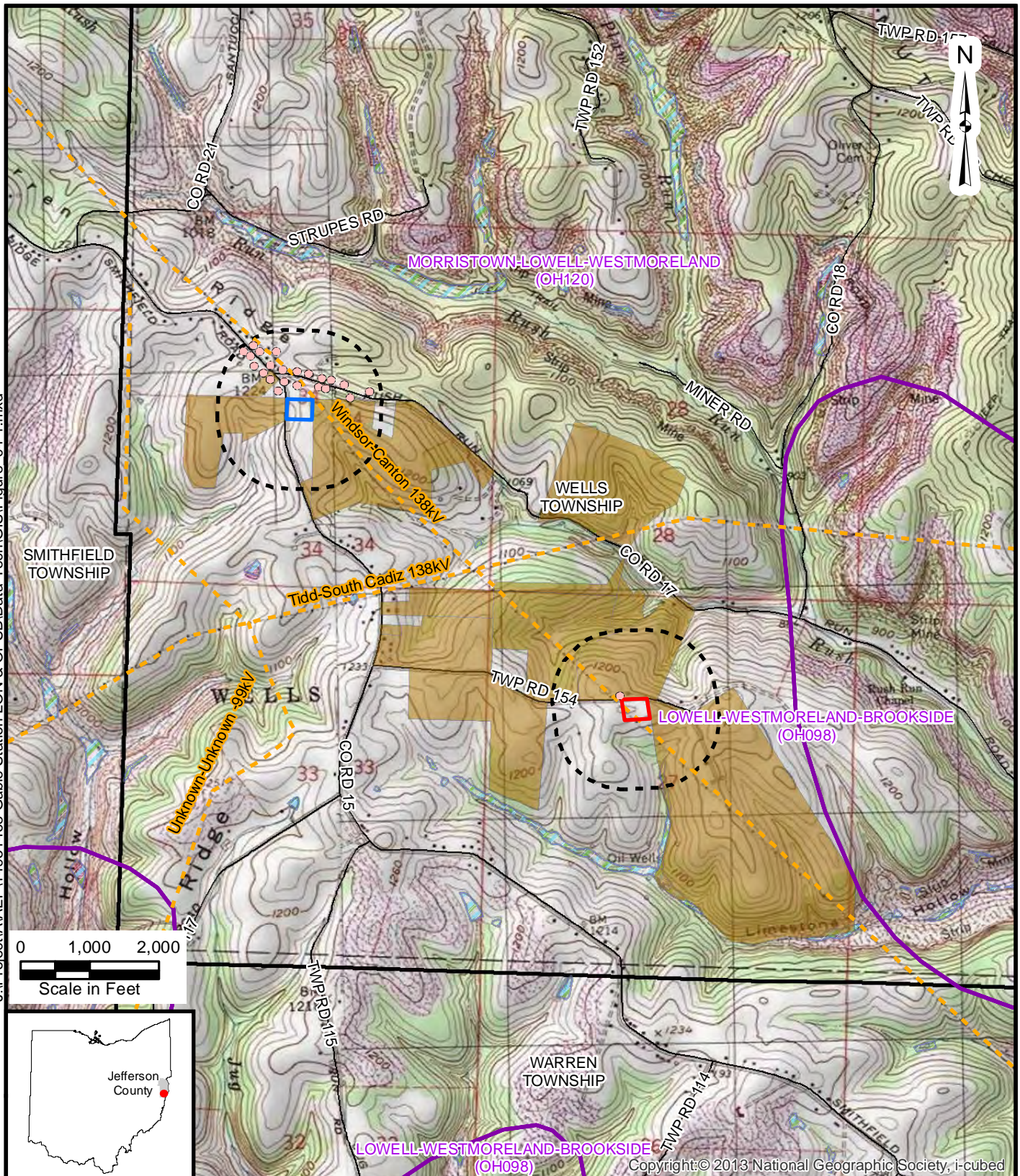
**(6) Construction During Excessively Dusty or Excessively Muddy Soil Conditions**

**(a) Dust Control:** The Site and surrounding areas will be kept free from dust nuisance resulting from Site activities. During excessively dry periods of active construction, dust suppression will be implemented where necessary through irrigation, mulching, or application of tackifier resins.

**(b) Excessive Muddy Soil Conditions:** Construction entrances will be established and maintained to a condition which will prevent tracking or flowing of sediment onto public rights of way. All sediment spilled, dropped, washed, or tracked onto public right of ways will be removed immediately.



J:\Project\AEP\14951468 Gable Station LON & OPSB\Data-Tech\GIS\Figure 04-1.mxd



LEGEND:

- |                                     |                                   |
|-------------------------------------|-----------------------------------|
| Preferred Site                      | Soil Association                  |
| Alternate Site                      | Agricultural District Land Parcel |
| 1000-foot Site Buffer               | NWI Area                          |
| Existing Electric Transmission Line | Township Boundary                 |
| Residence                           |                                   |



Gable Station  
Project

FIGURE 04-1  
CONSTRAINTS MAP

JOB NO. 14951468





DETENTION REQUIREMENTS

1. PRE-DEVELOPMENT CONDITION:

$Q_1 = cA$   
 $Q_1 = (0.16)(4.25 \text{ in/hr.})(3,000 \text{ Ac.})$   
 $Q_1 = 2.04 \text{ cfs}$

2. POST-DEVELOPMENT CONDITION

$Q_2 = cA$   
 $Q_2 = (0.07)(4.25 \text{ in/hr.})(0.800 \text{ Ac.}) +$   
 $(0.55)(4.25 \text{ in/hr.})(0.880 \text{ Ac.}) +$   
 $(0.68)(4.25 \text{ in/hr.})(1.340 \text{ Ac.})$   
 $Q_2 = 6.12 \text{ cfs}$

3. DETENTION REQUIREMENTS:

$D = Q_2 - Q_1$   
 $D = (6.12 - 2.04) \text{ cfs} = 3.90 \text{ cfs}$   
 $D = (4.08 \text{ cfs})(7.48 \text{ gal/cf})(60)(60) = 109,866.24 \text{ gal./24 hr.}$   
 $D (\text{PROVIDED}) = 152,360.12 \text{ gal. (STORAGE CAPACITY)}$

**BENCHMARK:**  
"O" in "Open",  
Top of Fire Hydrant  
Elev: 1228.89  
N:219267.93  
E:2456304.50  
LAT:40.2550891  
LON:-80.7522852

LEGEND

- CE CONSTRUCTION ENTRANCE\*  
CM CHANNEL MATTING  
EM EMBANKMENT MATTING  
GEO GEOTEXTILE MEMBRANE  
MU MULCH  
PS PERMANENT SEEDING  
RR RIP-RIP STONE  
RCD ROCK CHECK DAM  
SF SILT FENCE  
TP TOP SOIL  
TS TEMPORARY SEEDING

883 EXISTING CONTOUR  
919 PROPOSED CONTOUR

EARTHWORK / TRENCHING NOTES

- SATISFACTORY SOIL MATERIALS: ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP & SM. FREE OF ROCK OR GRAVEL LARGER THAN 2 INCHES IN ANY DIMENSION. DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION & OTHER DELETERIOUS MATTER.
- UNSATISFACTORY SOIL MATERIALS: ASTM D 2487 SOIL CLASSIFICATION GROUPS GC, SC, ML, MH, CL, CH, OL, OH & PT.
- BACKFILL & FILL MATERIALS: SATISFACTORY SOIL MATERIALS.
- SUBBASE & BASE MATERIAL: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE CONFORMING TO ASTM D 2484, WITH AT LEAST 85 PERCENT PASSING AN 1 1/2" SIEVE & NOT MORE THAN 8 PERCENT PASSING A NO. 200 SIEVE.
- ENGINEERED FILL: SUBBASE OR BASE MATERIALS.
- STATION PAD MATERIAL: EVENLY GRADED MIXTURE OF CRUSHED STONE AASHTO #57 WASHED LESTONE AGGREGATE.
- PROVIDE EROSION CONTROL MEASURES TO PREVENT EROSION OR DISPLACEMENT OF SOILS & DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES.
- PREVENT SURFACE WATER & SUBSURFACE OR GROUND WATER FROM ENTERING EXCAVATIONS. FROM PONDING ON PREPARED SUBGRADES & FROM FLOODING PROJECT SITE & SURROUNDING AREA. PROTECT SUBGRADES & FOUNDATION SOILS FROM SOFTENING & DAMAGE BY RAIN OR WATER ACCUMULATION.
- "UNCLASSIFIED EXCAVATION" EXCAVATION IS UNCLASSIFIED & INCLUDES EXCAVATION TO REQUIRED SUBGRADE ELEVATIONS REGARDLESS OF THE CHARACTER OF MATERIALS & OBSTRUCTIONS ENCOUNTERED.
- EXCAVATE SWALES TO INDICATED SLOPES, LINES, DEPTHS & INVERT ELEVATIONS AS INDICATED ON THE GRADING PLAN.
- DRAINAGE SWALE BOTTOMS: EXCAVATE & SHAPE SWALE BOTTOMS TO PROVIDE UNIFORM BEARING & SUPPORT. SHAPE SUBGRADE TO PROVIDE CONTINUOUS UNIFORMITY. REMOVE STONES & DEBRIS TO ALLOW THE UNIFORM FLOW OF ANY OVERLAND DRAINAGE SURFACE WATER THAT MAY BE PRESENT.
- STOCKPILE EXCAVATED MATERIALS ACCEPTABLE FOR BACKFILL AND FILL SOIL MATERIALS, INCLUDING ACCEPTABLE BORROW MATERIALS. STOCKPILE SOIL MATERIALS IN DESIGNATED AREA. PLACE, GRADE & SHAPE STOCKPILES TO DRAIN SURFACE WATER.
- PLACE AND COMPACT INITIAL BACKFILL OF SATISFACTORY SOIL MATERIAL OR SUBBASE MATERIAL, FREE OF PARTICLES LARGER THAN 1 INCH, TO FINAL GRADE. CAREFULLY COMPACT MATERIAL AT THE BOTTOM OF DRAINAGE SWALES AND BRING BACKFILL EVENLY UP ON BOTH SIDES AND ALONG THE FULL LENGTH OF DRAINAGE SWALE.
- PLACE AND COMPACT FINAL BACKFILL OF SATISFACTORY SOIL MATERIAL TO FINAL SUBGRADE.
- PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY APPROPRIATE COMPACTION EQUIPMENT AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS.
- PERFORM IN-PLACE DENSITY TESTING WITH A NUCLEAR MOISTURE DENSITY GAUGE IN ACCORDANCE WITH ASTM D 2922 AND D 3017. TESTS SHALL BE PERFORMED AT THE RATE OF ONE TEST FOR EVERY 2,000 SQUARE FEET, BUT NOT LESS THAN (5) TESTS FOR EACH SUBGRADE AND FOR EACH SUCCESSIVE LIFT.
- DRAINAGE SWALE BACKFILL: IN EACH COMPACTED INITIAL AND FINAL BACKFILL LAYER, PERFORM AT LEAST ONE FIELD IN PLACE DENSITY TEST FOR EACH 150 FEET OR LESS OF SWALE, BUT NO FEWER THAN TWO TESTS.
- DISPOSAL: REMOVE SURPLUS SATISFACTORY SOIL AND WASTE MATERIAL, INCLUDING UNSATISFACTORY SOIL, TRASH AND DEBRIS AND DISPOSE OF IT IN SOIL DISPOSAL AREA ON-SITE, UNLESS OTHERWISE AUTHORIZED BY TCR.

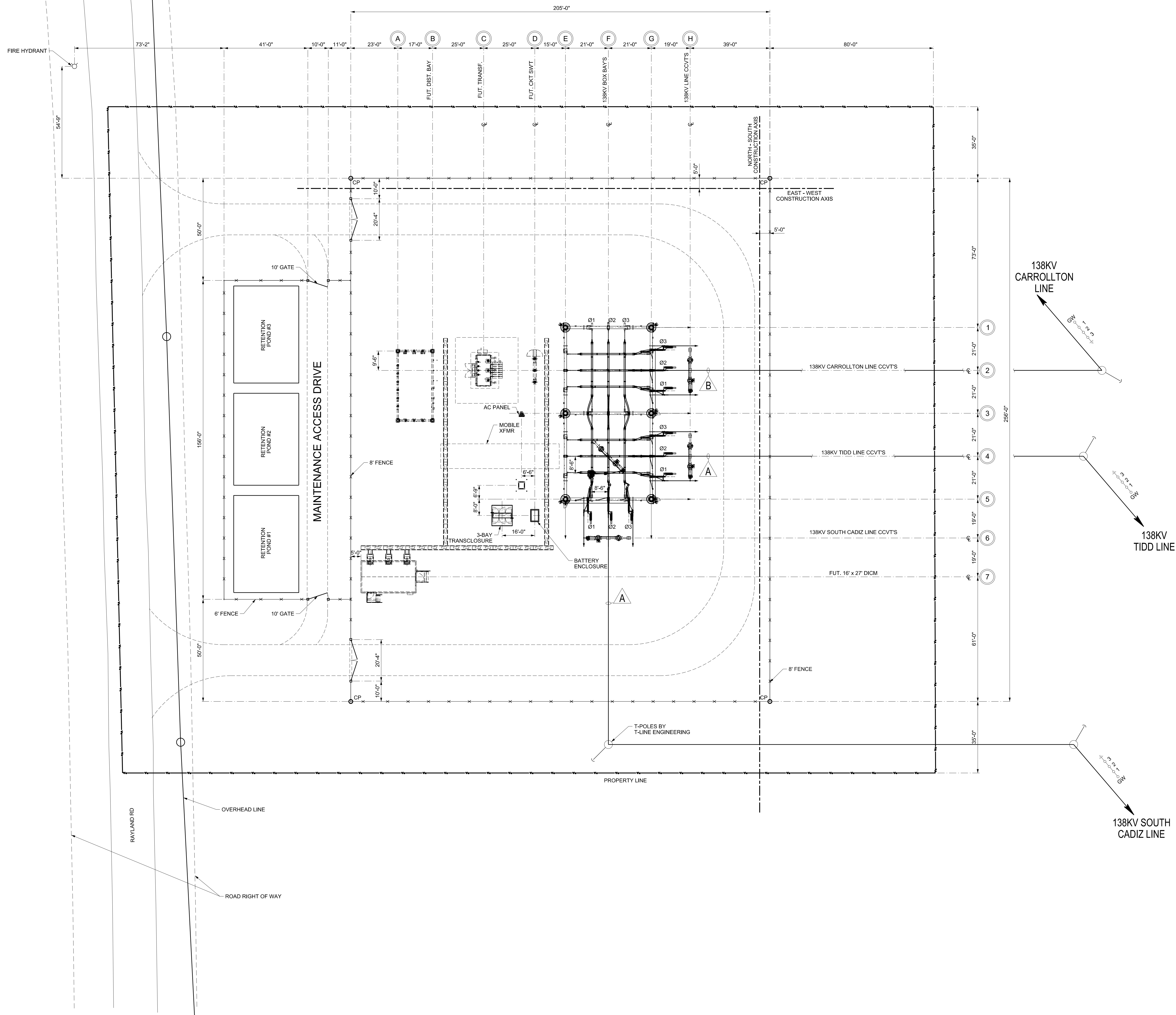
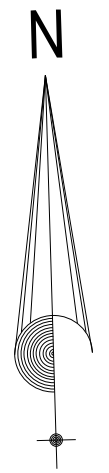
GRADING PLAN  
SCALE: 1" = 20'-0"

REFERENCE DRAWINGS

SITE LAYOUT PLAN E-1222  
EARTHWORK AND RETENTION DETENTION BASIN SECTIONS AND DETAILS E-1223  
MISC. SITE/CIVIL AND EROSION CONTROL DETAILS E-1224

OLD DWG #:	STD DWG #:
THIS DRAWING IS THE PROPERTY OF AMERICAN ELECTRIC POWER AND IS LOANED UPON CONDITION THAT IT IS NOT TO BE COPIED OR REPRODUCED IN WHOLE OR IN PART, OR USED FOR FURNISHING INFORMATION TO ANY PERSON WITHOUT THE WRITTEN CONSENT OF AMERICAN ELECTRIC POWER, OR FOR ANY PURPOSE DETRIMENTAL TO THEIR INTEREST, AND IS TO BE RETURNED UPON REQUEST.	
OHIO TRANSMISSION COMPANY	
GABLE SW STATION	
GAHANNA	OHIO
138KV STATION	
GRADING PLAN	
VERTICAL CONTROL AND EROSION CONTROL MEASURES	
SCALE: 1" = 20'	DR: LAM
WOB: 41909262	ENG: BLB
1 RIVERSIDE PLAZA COLUMBUS, OH 43215	CH: BLB
DATE: 10/10/2013	APPD: BLG
NO /	DATE
REVISION DESCRIPTION	APPR DR ENG CK ISSUE#
R 0	





## LINE SIZES &amp; TENSIONS

- A** 3- 1234 KCMIL T13 (38/19) ACSS/TW @ 4000# NESC M.T.H.L. TO HT. 40'-0"  
2- 159 KCMIL (12/7) ACSR S.W. @ 3000# NESC M.T.H.L. TO HT. 50'-0"  
1- 96 FIBER ADSS 0.67 DIA. 0.146 LBS/FT
- B** 3- 1234 KCMIL T13 (38/19) ACSS/TW @ 4000# NESC M.T.H.L. TO HT. 40'-0"  
1- 159 KCMIL (12/7) ACSR S.W. @ 3000# NESC M.T.H.L. TO HT. 50'-0"  
1- 96 FIBER ADSS 0.67 DIA. 0.146 LBS/FT

## GENERAL NOTES

DRIVE PATH TURN RADIUS DESIGNED FOR A  
MAXIMUM OF 50 FT TRACTOR TRAILER.

## BUS AMPACITY

138KV MAIN BUS DESIGNED FOR 3000A AMPACITY AND  
138KV JUMPERS DESIGNED FOR 3000A AMPACITY.

## LEGEND

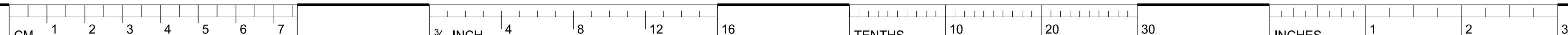
○ COLUMN LINE DESIGNATION

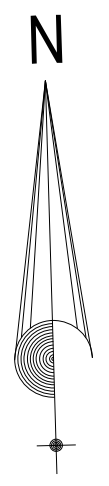
## REFERENCE DRAWINGS

ONE LINE DIAGRAM E-1200  
GRADING PLAN E-1222  
LIGHTING PLAN E-1251  
138KV ELECTRICAL ASSEMBLY PLAN E-1201  
FOUNDATION PLAN E-1301  
GROUNDING PLAN E-1302  
CONDUIT PLAN E-1301

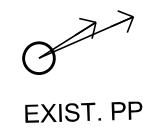
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OHIO TRANSMISSION COMPANY	
STUEBENVILLE	OHIO
138KV	
STATION LAYOUT PLAN	
SCALE: 1" = 20'	DR: LSP/PEI
WO#: 41909262	ENG: CWL/PEI
1 RIVERSIDE PLAZA COLUMBUS, OH 43215	CH: REY/PEI
APPD: RLM/PEI	DATE: 02/20/14
AMERICAN ELECTRIC POWER	R V 0

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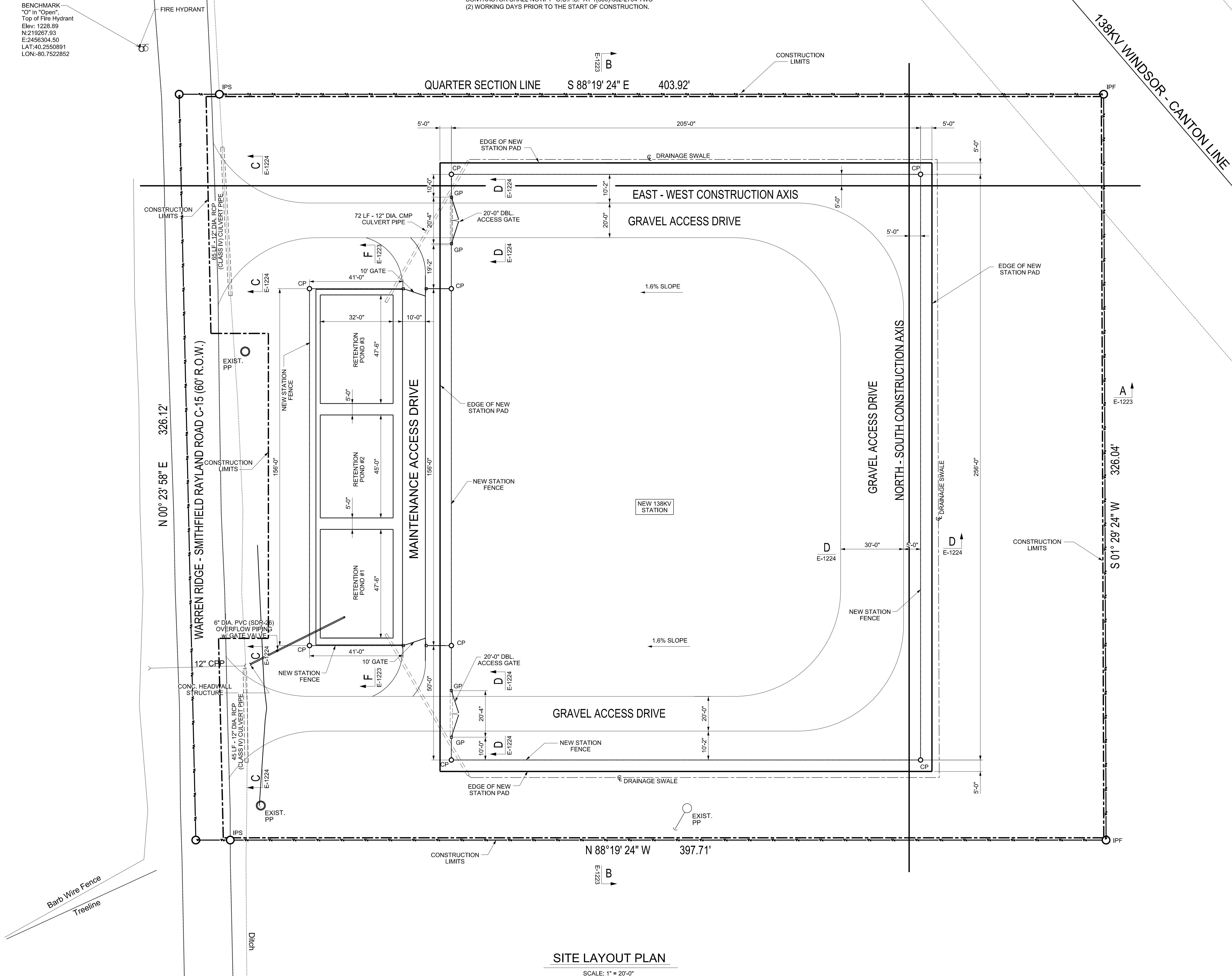
BENCHMARK  
"O" in "Open".  
Top of Fire Hydrant  
Elev: 1228.89  
N:219267.93  
E:2456304.50  
LAT:40.2550891  
LON:-80.7522852



## NOTIFY UTILITY COMPANIES BEFORE YOU DIG

THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVE-GROUND STRUCTURES. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATION AND DEPTH OF ALL EXISTING UTILITIES. THE OWNER AND THE SURVEYOR SHALL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATION FROM THE LOCATION SHOWN. THE CONTRACTOR SHALL NOTIFY "O.U.P.S." AT 1(800)-362-2764 TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.



## SITE LAYOUT PLAN

SCALE: 1" = 20'-0"

## ESTIMATE OF QUANTITIES

QUANTITY	UNIT	DESCRIPTION
		SUBSTATION SITE
3.00	AC	TOTAL DISTURBED AREA (CONSTRUCTION LIMITS)
33,819	CY	EARTHWORK: STRIPPING (ASSUME 12" DEPTH)
10,320	CY	EARTHWORK: FILL (ASSUME 30% COMPACTION)
1,910	TONS	WASHED, CRUSHED LIMESTONE AGGREGATE No. 57 (SUBSTATION PAD)
930	TONS	ODOT CLASS "D": SIZE NO. 8 CRUSHED AGGREGATE (CONST. ENTRANCE)
1,202	LF	SUBSTATION FENCE
12	EACH	ROCK CHECK DAM
1,933	SY	CHANNEL MATTING (RETENTION POND / SWALES)
1,450	LF	SILT FENCE
0.27	AC	SEEDING AND MULCHING
144	LF	12" DIA. CORRUGATED METAL (CMP) CULVERT PIPE
519	TON	5" THK. CRUSHED AGGREGATE (ODOT NO. 2)
411	TON	4" THK. CRUSHED AGGREGATE (ODOT NO. 57)
2,306	SY	MIRAFI 600X GEOTEXTILE FABRIC (ACCESS ROAD)
364	TON	RIP-RAP STONE AT RETENTION PONDS / CULVERT PIPING
50	LF	6" DIA. RETENTION POND OVERFLOW PIPE
605	SY	EMBANKMENT GEOTEXTILE FABRIC
1.0	AC	SEEDING AND MULCHING (HYDROMULCH)
1,460	LF	SILT FENCE
2	EACH	20'-0" DBL. ACCESS GATE w/ FDN.
2	EACH	10'-0" SWING GATES
110	LF	12" DIA. REINFORCED CONCRETE (RCP) CULVERT PIPE - CLASS IV
1	EACH	6" GATE VALVE w/ BOX
1	EACH	CONCRETE HEADWALL STRUCTURE

## SITE/CIVIL GENERAL NOTES

- 1.) ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN ELECTRIC POWER COMPANY DOCUMENT NO. SS-160102, "TECHNICAL SPECIFICATION FOR SUBSTATION AND SWITCHING STATION CONSTRUCTION". HEREINAFTER KNOWN AS THE "SPECIFICATION".
- 2.) THE BOUNDARY AND TOPOGRAPHIC (ALTA) SURVEY WAS PROVIDED BY BAIR, GOODIE AND ASSOCIATES, INC. (330) 343-3499 FOR USE IN DESIGN OF THE AEP ELECTRICAL SUBSTATION IN ACCORDANCE WITH OVERALL SITE DEVELOPMENT RULES/REGULATIONS. THE ELECTRICAL SUBSTATION PROPERTY CORNERS HAVE BEEN SET w/ 5/8" DIA. IRON PINS AND THE COORDINATES HAVE BEEN VERIFIED THROUGH NAD83-OH NORTH ZONE DATUM.
- 3.) THE EARTHWORK QUANTITIES SHOWN ARE BASED ON STRIPPING TO A DEPTH OF 12" BELOW FINISHED GRADE FOR THE SUBSTATION PAD. ALL EXISTING GRAVEL, TOPSOIL AND ORGANIC SHALL BE THOROUGHLY STRIPPED AND REPLACED WITH SUITABLE FILL MATERIAL COMPACTED IN ACCORDANCE WITH THE SPEC.
- 4.) ELEVATIONS SHOWN ON THE GRADING DRAWING ARE TOP OF FINISHED SUBGRADE (EARTH) ELEVATIONS. THE EXIST. CONTOUR INTERVAL IS ONE (1') FOOT. THE PROPOSED CONTOUR INTERVAL IS ONE (1') FOOT.
- 5.) SIDE SLOPES SHALL BE A MINIMUM OF THREE (3) HORIZONTAL TO ONE (1) VERTICAL, UNLESS OTHERWISE NOTED.
- 6.) ALL DISTURBED AREAS THAT ARE NOT STONED SHALL BE RESEEDING IN ACCORDANCE WITH THE ODOT CONSTRUCTION MANUAL, LATEST EDITION.


THE APPLICATION RATES FOR SEEDING, MULCHING, FERTILIZER, AND LIME SHALL BE AS FOLLOWS

SEEDING MIXTURE TYPE C-1 (SEE ATTACHED TABLE 652.5)	25 LBS. PER ACRE
MULCHING	4,000 LBS. PER ACRE
FERTILIZER	1,300 LBS. PER ACRE
LIME (MIXTURE D)	2,000 LBS. PER ACRE

- 7) UNDER ALL ROADWAY AND PARKING AREAS, A GEOTEXTILE FABRIC (MIAPAF 600X, OR APPROVED EQUIVALENT) SHALL BE INSTALLED ON THE PREPARED SUBGRADE AND FASTENED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 8) ALL RADII FOR THE GRAVEL ACCESS AND MAINTENANCE ACCESS ROAD SHALL BE 50'-0" TO ACCOMMODATE A LARGE VARIETY OF EQUIPMENT DELIVERY AND FLEET MAINTENANCE VEHICLES ENTERING / EXITING THE SUBSTATION.
- 9) THE SUBSTATION PAD SHALL BE STONED WITH 5" OF WASHED, CRUSHED LIMESTONE AGGREGATE ASTM C33, SIZE NO. 57 ATOP COMPACTED SUBGRADE.
- 10) SPOIL MATERIAL IS TO BE DISPOSED OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
- 11) CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING ALL CONSTRUCTION DRAINAGE APPURTENANCES, ALONG WITH ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE APPROVED SWPP PLAN.
- 12) FUELS, OILS AND OTHER BULK MATERIAL SHALL NOT BE STORED AT THE SITE FOR LONGER THAN A 24 HOUR PERIOD.

## REFERENCE DRAWINGS

SITE GRADING PLAN	E-1222
GRADING/RETENTION POND SECTION VIEWS	E-1223
MISC. SITE/CIVIL AND EROSION CONTROL DETAILS	E-1224

OLD DWG #: _____		STD DWG #: _____	
THIS DRAWING IS THE PROPERTY OF AMERICAN ELECTRIC POWER AND IS LOANED UNDER CONDITION THAT IT IS NOT TO BE COPIED OR REPRODUCED IN ANY MANNER OR IN ANY MANNER, OR FOR ANY PURPOSE, WITHOUT THE WRITTEN CONSENT OF AMERICAN ELECTRIC POWER, OR FOR IN ANY MANNER DETRIMENTAL TO THEIR INTEREST, AND IS TO BE RETURNED UPON REQUEST.			
OHIO TRANSMISSION COMPANY <b>GABLE SW STATION</b>			
GAHANNA	138KV STATION		OHIO
<b>STATION LAYOUT PLAN</b>			
HORIZONTAL CONTROL, BILL OF MATERIALS AND GENERAL NOTES			
SCALE: 1" = 20'	DWG. LAL REV. 4/10/2012	ENG: BJB APPD: BLG	CHK: BJB DATE: 10/10/2013
 1 RIVERSIDE PLAZA COLUMBUS, OH 43215			0

STRUCTURE TABLE			
ITEM #	STL DWG#	DESCRIPTION	MARK
7209	2SDU078U SH.B - F	138KV STL BOX BAY STRUCT. INITIAL BAY	BX138-4
7211	2SDU078U SH.G - K	138KV STL BOX BAY STR ADDER BAY	BX138-4E
7244	2SDU004U SHA	138KV STL CVT/TRAP STR 3PH 12" HI 10" PH SP	CC-1
7243	2SDU005U SHA	138KV STL 3Ø CVT/TRAP STR 7-3" HI	CC-2
7607	2SDX819U SHA	138KV STL PT & SURGE ARRESTER COMBO STR 10'-6 3/4" HT	PT/SA161/138-1CW
7797	2SDX041U SHA	OUTDOOR AC CABINET STRUCTURE	BM-W8

CONDUCTOR SCHEDULE

- 328 477 KCM STRANDED BARE ALUM. CABLE  
3015 7 #5 AWG COPPERWELD  
3333 2000 KCM STRANDED BARE ALUM. CABLE AAC  
3704 7 #8 ALUMOWELD S.W.

GENERAL NOTES

1. ELECTRICAL JOINTS: THE INSTALLER SHALL USE ELECTRICAL JOINT COMPOUND (ITEM #811H CID #0084721110, A CORROSION INHIBITOR) FOR THE FOLLOWING APPLICATIONS:  
a) BETWEEN ALL CONNECTOR CONTACT SURFACES.  
b) TO LUBRICATE UNLUBRICATED BOLTS MADE OF BRONZE, STAINLESS STEEL OR ALUMINUM USED WITH ELECTRICAL CONNS.  
c) TO IMPROVE CONNECTIONS AND PREVENT CORROSION OF GROUND BUS CONNECTIONS.  
DURONZE OR EVERDUR BOLTS SHALL BE USED FOR ALL COPPER-TO-COPPER CONNECTIONS USING BOLTS 0.375 INCH IN DIAMETER OR GREATER.  
BRONZE PAL NUTS OR LOCK WASHERS SHALL BE USED ON ALL COPPER BUS BAR CONNECTIONS AND CONNECTIONS SUBJECTED TO VIBRATIONS.  
ALUMINUM-TO-COPPER CONNECTIONS SHALL BE BUFFERED USING AN ALUMINUM-TO-COPPER BI-METAL TRANSITION PAD (CID #0050555500) AND STAINLESS STEEL BOLT ASSEMBLY (ITEM #732).  
GALVANIZED STEEL BOLTS MAY BE USED FOR FASTENING GROUND BUSES AND ASSOCIATED CONNECTIONS TO SUPPORT STEEL.  
ALL BOLTED CONNECTIONS SHALL BE MADE WITH BOLT TYPE, SIZE, AND LENGTH SPECIFIED ON THE CONSTRUCTION DRAWING. A MINIMUM OF TWO AND A MAXIMUM FOUR THREADS SHALL PROTRUDE BEYOND THE NUT AFTER THE BOLT HAS BEEN TIGHTENED. BOLT HEADS SHALL BE ORIENTED UPWARD OR TO THE OUTSIDE OF EQUIPMENT FRAMES. ALL BOLTS SHALL BE TIGHTENED TO THE TORQUE VALUES SPECIFIED IN THE TABLE BELOW.
- | TABLE OF RECOMMENDED TIGHTENING TORQUES |  |                          |
|---|--|--------------------------|
| BOLT DIAMETER IN INCHES                 | STAINLESS STEEL BOLTS WITH BRONZE NUTS |                          |
|   | LUBRICATED                             | UNLUBRICATED             |
| 3/8"                                    | NOT USED                               | NOT USED                 |
| 1/2"                                    | 30 FT. LBS.                            | 35 FT. LBS.              |
| 5/8"                                    | 40 FT. LBS.                            | 50 FT. LBS.              |
| 3/4"                                    | 60 FT. LBS.                            | 80 FT. LBS.              |
|   |  | DURONZE OR EVERDUR BOLTS |
|   |  | 20 FT. LBS.              |
|   |  | 40 FT. LBS.              |
|   |  | 55 FT. LBS.              |
|   |  | 80 FT. LBS.              |
|   |  | NOT USED                 |
2. THE INSTALLER SHALL DRILL 0.25 INCH DIAMETER WEEP HOLES IN ALL WELDED, OR COMPRESSION CONNECTORS AND AT LOWEST POINT OF TUBING BUS TO PREVENT THE COLLECTION OF MOISTURE. AFTER DRILLING, ALL BURRS SHALL BE REMOVED AND THE CONNECTION SHALL BE POLISHED SMOOTH.  
3. ALL ELECTRICAL EQUIPMENT SHALL BE CONSTRUCTED, INSTALLED AND MAINTAINED SO AS TO SAFEGUARD PERSONNEL. THE MINIMUM VALUES ALLOWED TO THE GUARDING OF LIVE PARTS (BOTTOM OF BUSHING) SHALL NOT BE LESS THAN 8FT 6 INCHES.



REFERENCE DRAWINGS

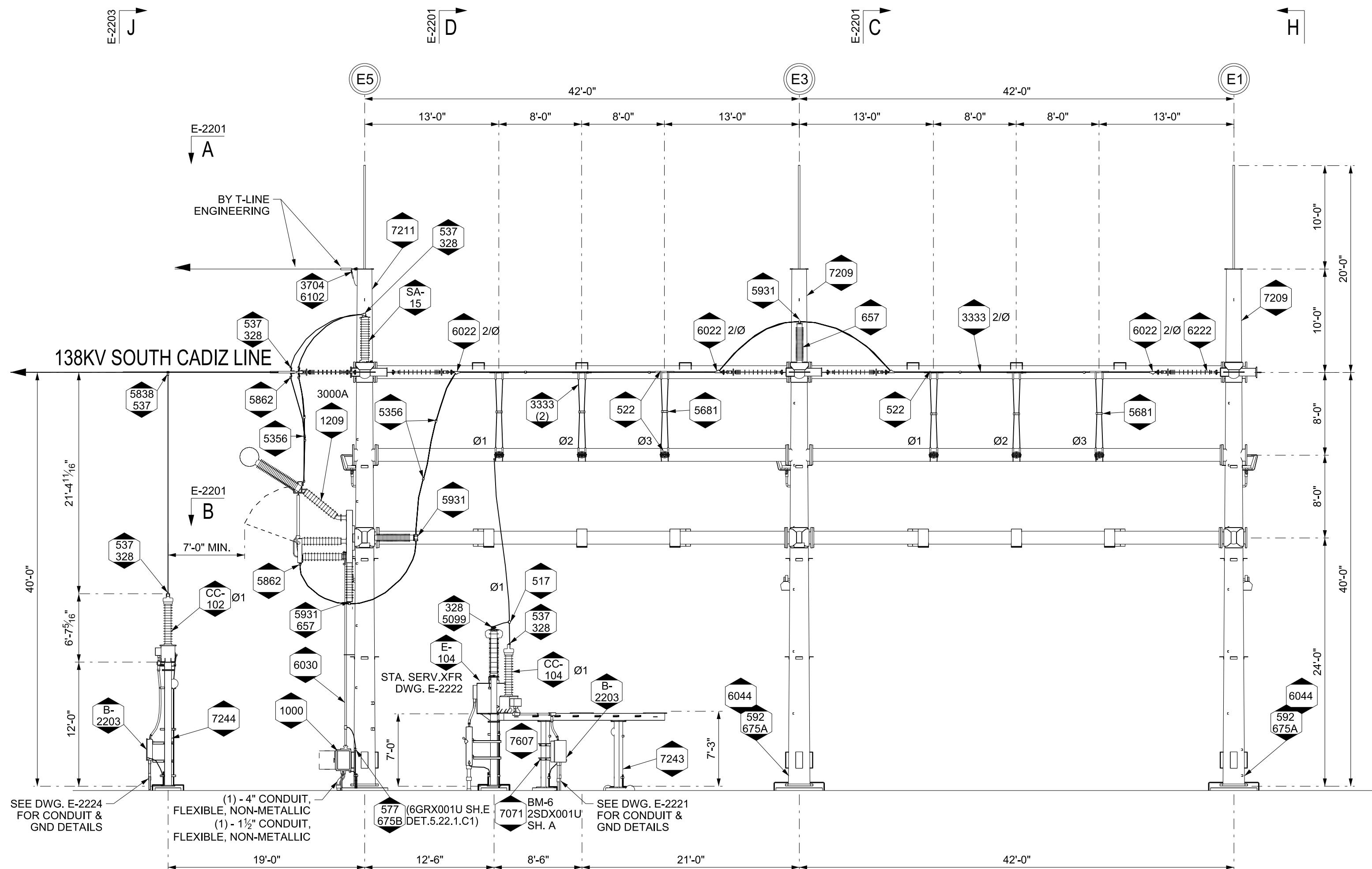
- ONE LINE DIAGRAM E-1200  
LAYOUT PLAN E-1201  
138KV ELECTRICAL ASSEMBLY E-2201, E-2203, E-2204  
138KV ELECTRICAL DETAILS E-2221 - E-2224  
STEEL DETAILS:  
INITIAL BAY 2SDU078U SH. B - F  
ADDER BAY 2SDU078U SH. G - K

BUS AMPACITY

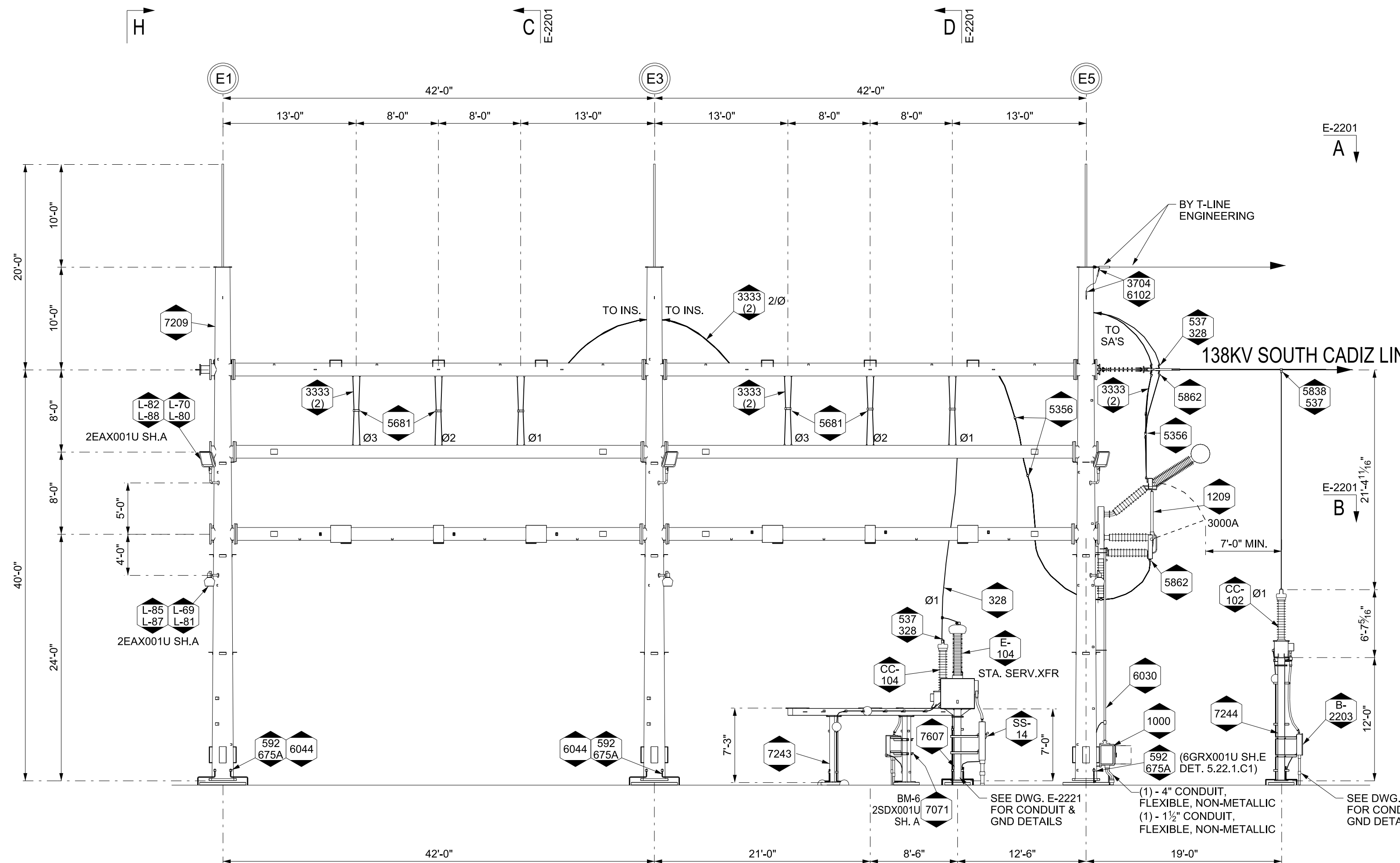
BUS DESIGNED FOR 3000 AMPS

LEGEND

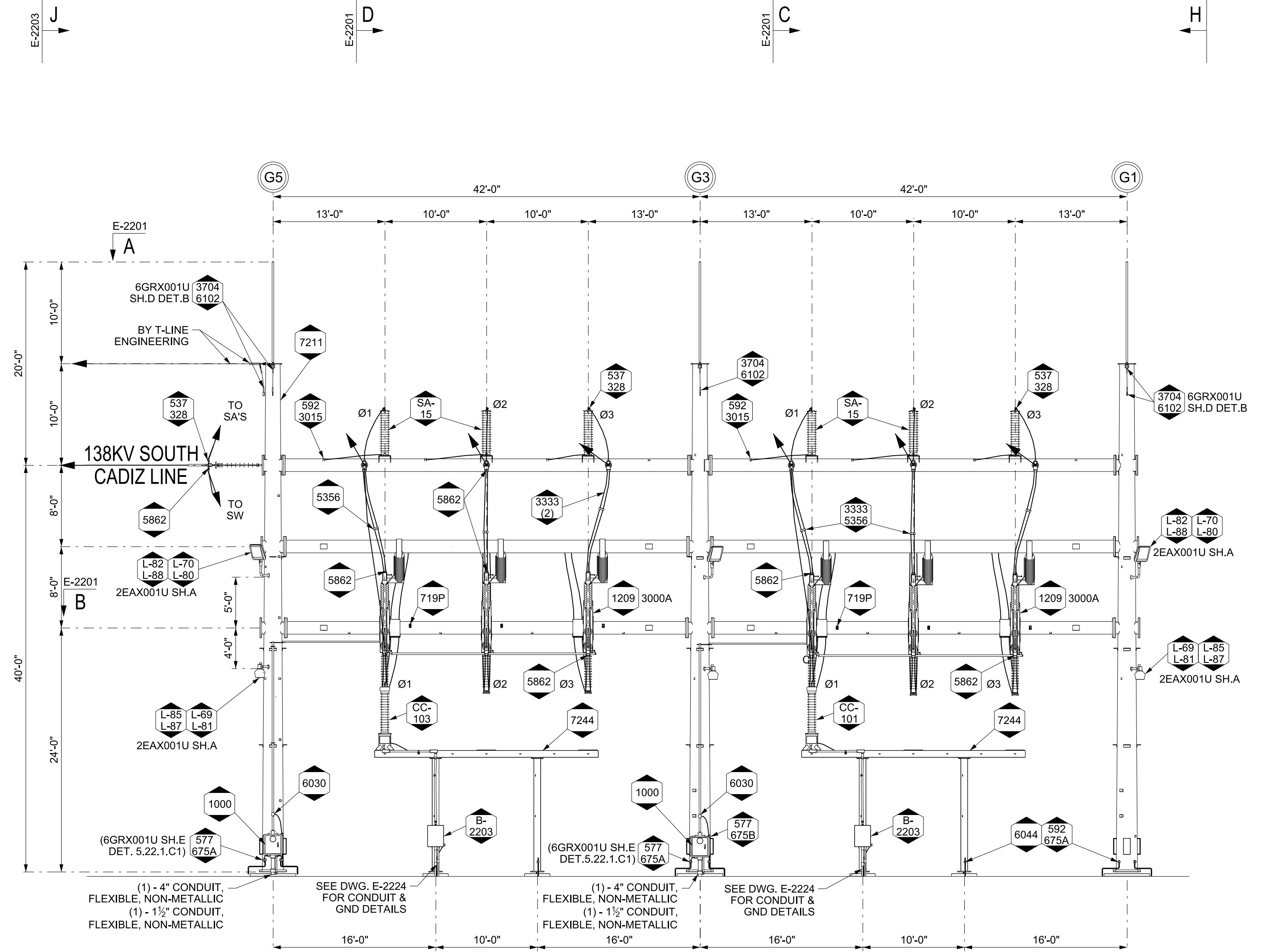
- LETTERS IN  REFER TO COLUMN LINES  
NUMBERS IN  REFER TO TRANSCO SEPORT BM



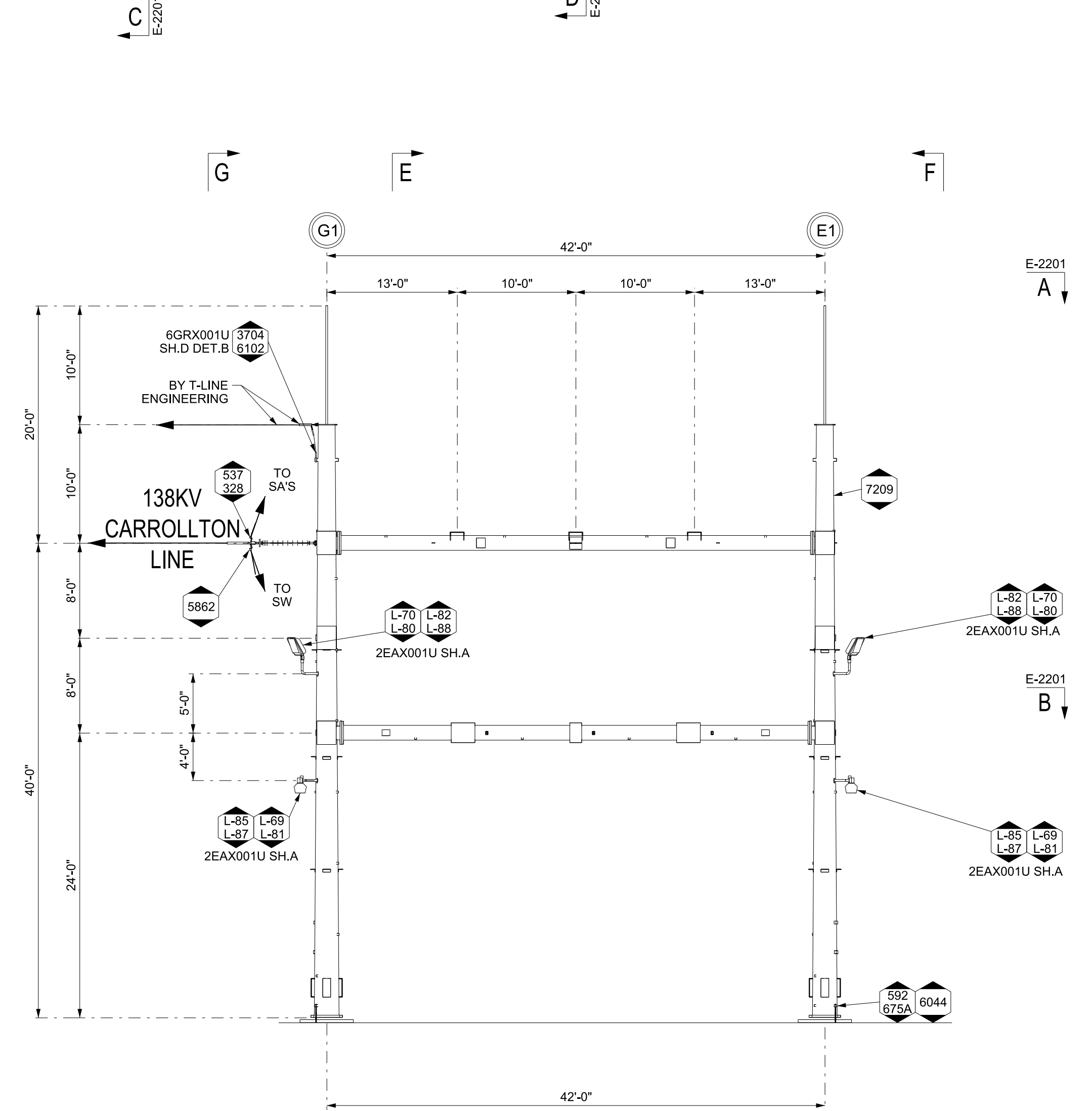
ELEVATION E-E

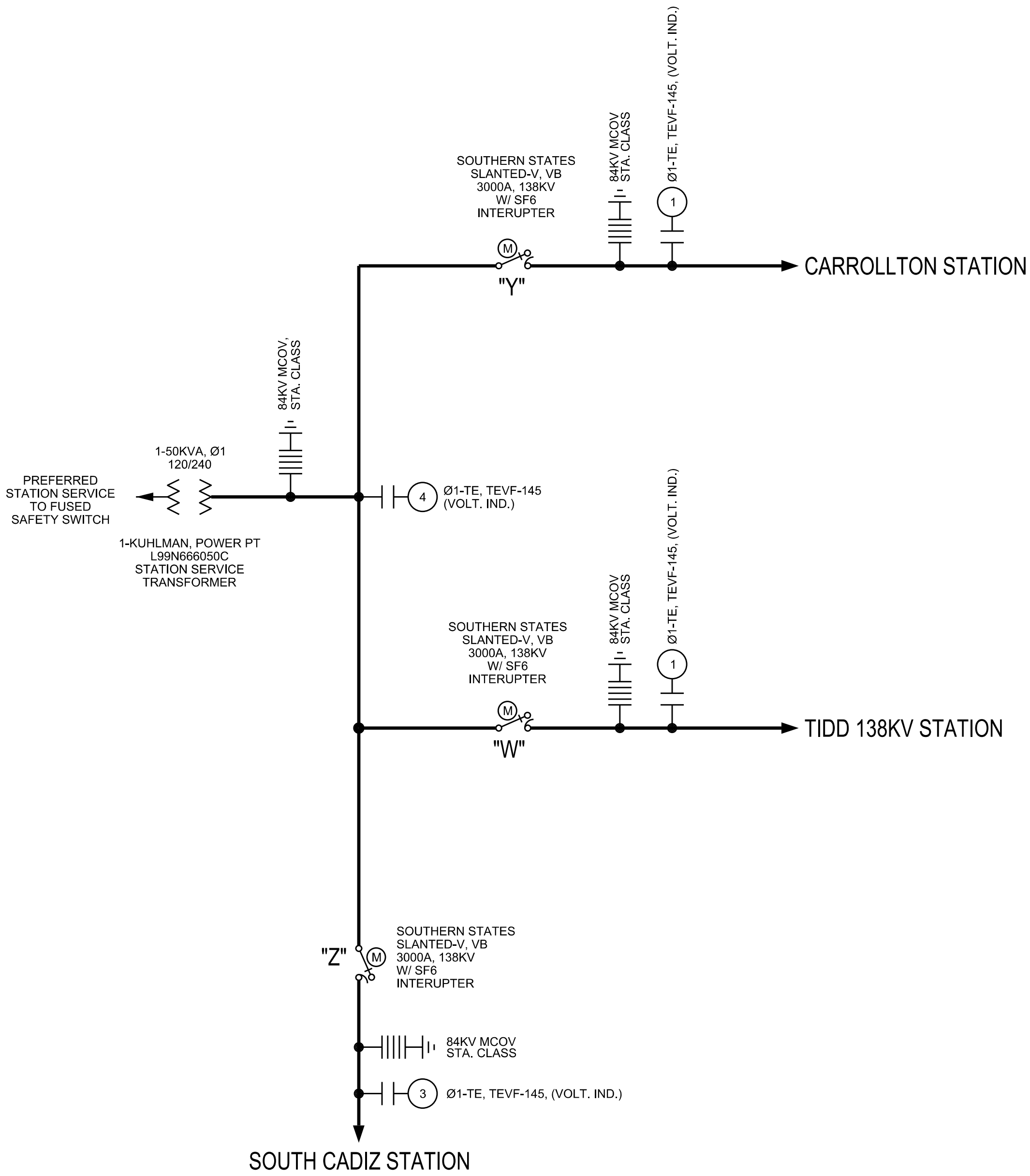


ELEVATION F-F



ELEVATION G-G







## 4906-15-05 Financial Data

**4906-15-05 FINANCIAL DATA****SECTION SUMMARY**

This section of the application provides information on the current and proposed ownership status of the proposed transmission line, and estimated costs for the proposed Project.

**(A) OWNERSHIP**

AEP will construct, own, operate, and maintain the proposed Gable Station.

**(B) ELECTRIC CAPITAL COST**

Estimates of applicable intangible and capital costs for both the Preferred and Alternate Sites of the Gable Station are identified in Table 05-1.

**TABLE 05-1  
ESTIMATES OF APPLICABLE INTANGIBLE AND CAPITAL COSTS  
FOR BOTH THE PREFERRED AND ALTERNATE SITES**

<b>FERC Account Number</b>	<b>Description</b>	<b>Preferred Site</b>	<b>Alternate Site</b>
350	Land and Land Rights	\$0	\$150,000
352	Structures & Improvement	\$0	\$0
353	Substation Equipment	\$1,225,600	\$1,225,600
354	Towers & Fixtures	Not Applicable	Not Applicable
355	Poles & Fixtures	\$100,000	\$100,000
356	Overhead Conductors & Devices	\$92,000	\$142,000
357	Underground Conductors & Devices	Not Applicable	Not Applicable
358	Underground-to-overhead Conversion Equipment	Not Applicable	Not Applicable
359	Right-of-way Clearing, Roads, Trails or Other Access	\$5,000	\$5,000
	<b>TOTAL</b>	<b>\$1,422,600</b>	<b>\$1,622,600</b>

**(C) GAS CAPITAL COST**

The Applicants do not propose to construct, own or operate any natural gas transmission lines or facilities as part of or in conjunction with the proposed Project. This section is not applicable.



## **4906-15-06 Socioeconomic and Land Use Impact Analysis**

**4906-15-06 SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS**

This section of the Application provides data on land use within 1,000 feet of the proposed Preferred and Alternate Sites for the Project, including data collected from literature searches and on-site investigations. This section also provides descriptions of the anticipated impacts of constructing the Project, the public interaction program for the Project, information on health, safety and aesthetic aspects of the Project, and data on noise emissions associated with constructing and operating the Project.

**(A) SOCIOECONOMIC CHARACTERISTICS**

A study of the general socioeconomic characteristics of the Project area was conducted as part of this Application. The study is summarized below and was based on review of available U. S. Census Bureau data and materials available from state and local governmental agencies.

The Preferred and Alternate Sites, as well as areas within 1,000 feet, are located within an unincorporated portion of Wells Township in Jefferson County. The socioeconomic characteristics are summarized in the following discussion.

The U.S. Census Bureau estimated that the population of Jefferson County in 2010 was 69,709, a 5.7 percent decrease since the 2000 Census and a 13.2 percent decrease since the 1990 Census. Wells Township saw a 9.4 percent decrease from 2000 to 2010 and a 12.7 percent decrease from 1990 to 2010. The 2010 estimated average household in Jefferson County consisted of 2.39 persons, and the 2010 estimated median household income was \$36,008.

Based on review of aerial photography, Jefferson County Auditor data, and field reconnaissance, Twenty-two residences were identified within 1,000 feet of the Preferred Site, the closest of which is approximately 200 feet north of the proposed fenced substation area. One residence was identified within 1,000 feet of the fenced substation area of the Alternate Site. This residence is approximately 50 feet away from the access road and 150 feet from the substation fence. Construction at the Preferred Site or Alternate Site will not require the removal of any residential structures, and no individuals are expected to be required to relocate. It is not expected that construction, operation, or maintenance of the proposed substation at either candidate site will broadly affect the general socioeconomic characteristics of the Project area.

Table 06-1 contains summary information regarding population estimates and projections for the project area.

**TABLE 06-1  
STUDY AREA DEMOGRAPHICS  
OF THE PREFERRED AND ALTERNATE SITES**

<b>Government Unit</b>	<b>1990 Census</b>	<b>2000 Census</b>	<b>2010 Census</b>
Jefferson County, Ohio	80,298	73,894	69,709
Wells Township	3,249	3,130	2,835

Sources U.S. Bureau of the Census, 1990 Census of Population and Housing  
U.S. Census Bureau, Census 2000 and 2010 Summary File 1

## **(B) SITE ALIGNMENTS AND LAND USE**

### **(1) Route Alignments**

Gable Station will be energized by interconnecting to the existing Windsor-Canton 138 kV transmission line, located nearly adjacent to the east and northeast of the Preferred Site, and the Gable-Tidd 138 kV transmission line, located approximately 0.5 mile to the south of the Preferred Site. These interconnections will form Gable-Carrollton, Gable-Tidd, and Gable-South Cadiz 138 kV circuits, and will be submitted under separate cover to the OPSB as a Letter of Notification.

### **(2) Substations**

A map at 1:24,000-scale, including the surrounding 1,000 feet from the Preferred and Alternate Sites, is presented as Figure 04-1.

**(a) Preferred Site:** The Preferred Site of the Gable Station is located on an approximately three-acre property situated adjacent to the east of County Road 15, approximately 400 feet south of County Road 17. AEP owns this predominantly agricultural property. Access to the substation site is proposed from County Road 15 using a new permanent access drive.

**(b) Alternate Site:** The Alternate Site is located on the southern side of Township Road 154, approximately 0.7-mile east of County Road 15 and approximately 1.1 miles southeast of the Preferred Site. Proposed access to the substation will be from Township Road 154 to the north via a new permanent access drive.

**(3) General Land Use****(a) Residential:**

Preferred Site: Twenty-two residences were identified within 1,000 feet of the Preferred Site, the closest of which is approximately 200 feet north of the proposed fenced substation area. No residences were identified within 100 feet.

Alternate Site: One residence was identified within 1,000 feet of the fenced substation area of the Alternate Site. This residence is located approximately 150 feet to the northwest of the proposed fenced substation area.

**(b) Commercial:** No commercial facilities were identified within 1,000 feet of the Preferred or Alternate Sites.

**(c) Industrial:** No industrial facilities were identified within 1,000 feet of the Preferred or Alternate Sites.

**(d) Cultural:** Data for known cultural resource landmarks were obtained on the Ohio Historic Preservation Office's (OHPO) Online Mapping System. No previously recorded archaeological sites, National Register of Historic Places (NRHP) structures or districts, or Ohio Historic Inventory (OHI) structures were identified within 1,000 feet of the Preferred or Alternate Sites.

**(e) Agricultural:**

The proposed fenced area of the Gable Station and interconnections at the Preferred and Alternate Sites and the overall properties are agricultural land used most recently as a hay field. Other properties within 1,000 feet of the sites are also agricultural.

**(f) Recreational:** No recreational areas such as parks, preserves, and athletic fields were identified within 1,000 feet of the Preferred or Alternate Sites.

**(g) Institutional:** No schools, churches, hospitals, or other institutional land uses were identified within 1,000 feet of the Preferred or Alternate Sites.

**(4) Transportation Corridors**

State Route 151 is located approximately 1.8 miles to the north of the Preferred Site. No railroads or other major highways are located within 1,000 feet of the Preferred and Alternate Sites.

**(5) Existing Utility Corridors**

AEP's Windsor-Canton 138 kV transmission line is located nearly adjacent to the east and northeast of the Preferred Site, and the Tidd-South Cadiz 138 kV transmission line is located approximately 0.5 mile to the south of the Preferred Site. The Dillonvale-Boich Mining 69 kV line

is located approximately 0.4 mile to the west of the Preferred Site. These utility corridors are shown on Figure 04-1. No other major utility corridors were identified within one mile of the sites.

## **(6) Noise Sensitive Areas**

Noise sensitive areas in the rural Project vicinity are limited to scattered residences. An assessment of noise impact during construction and operation of the substation is provided in Section 4906-15-06 (G).

Preferred Site: Noise sensitive areas within 1,000 feet of the Preferred Site include twenty-two residences, the closest of which is approximately 200 feet north of the fenced substation area. No noise sensitive area areas are located within 100 feet.

Alternate Site: One residence was identified within 1,000 feet of the fenced substation area of the Alternate Site. This residence is located approximately 150 feet to the northwest of the proposed fenced substation area.

## **(7) Agricultural Land (Agricultural District Land)**

URS contacted the Jefferson County Auditor to obtain information on agricultural district land. Five agricultural district land parcels were identified within 1,000 feet of the Preferred Site. Four agricultural district land parcels were identified within 1,000 feet of the Alternate Site, as shown on Figure 04-1. The data was received via fax from Jefferson County on September 5, 2014, which fulfills the requirement of OAC 4906-15-06 (B)(7) requiring this data to be collected not more than 60 days prior to submittal. The fax can be found in Appendix 06-1.

## **(C) LAND USE IMPACTS OF THE PROPOSED PROJECT**

### **(1) Number of Residential Structures**

Preferred Site: Based on review of Jefferson County Auditor parcel data and aerial photography supplemented by a windshield reconnaissance, twenty-two residences were identified within 1,000 feet of the Preferred Site, the closest of which is approximately 200 feet north of the proposed fenced substation area.

Alternate Site: One residence was identified within 1,000 feet of the fenced substation area of the Alternate Site. This residence is located approximately 150 feet to the northwest of the proposed fenced substation area.

**(2) Impact of Construction****(a) Residential:**

No residences are located on the Preferred or Alternate Sites. No residences will be removed in order to construct the proposed Project on either site. It is expected that some minimal incremental increase in noise will be audible during some portions of construction of the substation. However, the current ambient noise levels associated with local roads and the distance to the residences are likely to mitigate overall noise impacts during construction. Construction is expected to be limited to daylight hours.

**(b) Commercial:** No adverse impacts to commercial land uses are anticipated as a result of the Project.

**(c) Industrial:** No adverse impacts to industrial land uses are anticipated as a result of the Project.

**(d) Cultural:** A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover. No significant cultural resources were identified by Weller & Associates and no further investigation was recommended. Impacts to cultural land use areas associated with construction of the proposed Project are not anticipated at this time.

**(e) Agricultural:** The overall properties of the Preferred and Alternate Sites are predominately agricultural fields. Approximately three acres of currently fallow agricultural land would be affected on the Preferred or Alternate Site.

**(f) Recreational:** No adverse impacts to recreational land uses are anticipated as a result of the Project.

**(g) Institutional:** No adverse impacts to institutional land uses are anticipated as a result of the Project.

**(3) Impact of Operation and Maintenance**

**(a) Residential:** Operation and maintenance of the substation will have little impact on surrounding residences. As a switching substation, no transformers are proposed. Therefore, only a very slight increase in background noise from the substation equipment, if any, is likely during operation. However, the current ambient noise levels associated with adjacent roads and the distances to residences are expected to mitigate overall noise impacts during construction.

**(b) Commercial:** No impacts to commercial land uses are expected due to operation and maintenance of the substation.

(c) **Industrial:** Impacts to industrial land uses associated with operation and management of the proposed Project are not anticipated.

(d) **Cultural:** Impacts to cultural land use areas associated with operation and maintenance of the proposed Project are not anticipated.

(e) **Agricultural:** Impacts to agricultural tracts from operation and maintenance of the facility are not anticipated.

(f) **Recreational:** No impacts to recreational land uses are expected due to operation and maintenance of the substation.

(g) **Institutional:** Impacts to institutional land uses from operation and maintenance of the facility are not anticipated.

#### (4) Mitigation Procedures

The potential for project related erosion and sedimentation will be mitigated with the development and implementation of a Storm Water Pollution Protection Plan for the Project, which will include the use of silt fences or other appropriate best management erosion and sedimentation control techniques, as required. After construction and final grading are complete, disturbed surface areas will be re-vegetated, as appropriate.

The substation site will be fenced and secure to prevent public entry. Appropriate warning signs, as required, will be posted.

(a) **Residential:** Noise impacts associated with construction, operation, and maintenance of the substation are expected to be minimal. Noise will be mitigated by constructing predominantly during daytime hours.

(b) **Commercial:** No commercial facilities are expected to be impacted by the Project. Therefore, no mitigation is proposed for commercial properties.

(c) **Industrial:** No industrial sites are expected to be impacted by the Project. Therefore, no mitigation is proposed for industrial properties.

(d) **Cultural:** Based on OHPO Online Mapping System, no previously recorded archaeological sites, NRHP structures or districts, or OHI structures were identified within 1,000 feet of the Preferred or Alternate Sites. A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP for the Preferred Site, and submitted to OPSB Staff under separate cover. No significant cultural resources were identified by Weller & Associates and no further investigation was recommended. No mitigation of cultural resources is proposed at this time.

(e) **Agricultural:** After the initial conversion of agricultural land during construction, no additional agricultural land will be affected by the proposed Project. Therefore, no mitigation is proposed for agricultural land uses.

(f) **Recreational:** No recreational areas are expected to be impacted by the Project. Therefore, no mitigation is proposed for recreational areas.

(g) **Institutional:** No institutions are expected to be impacted by the Project. Therefore, no mitigation is proposed for institutional properties.

## (D) PUBLIC INTERACTION INFORMATION

### (1) Counties, Townships, Cities and Villages within 1,000 feet of the Site Alternatives

Jurisdictional areas within 1,000 feet of the Preferred and Alternate Sites and interconnections include Jefferson County and Wells Township.

### (2) Public Officials Contacted

AEP's project team has contacted several local officials to announce the Project and provide an opportunity to comment. Appendix 06-2 provides a list of the local public officials contacted. These public officials will also be served a copy of the Application.

### (3) Public Information Programs

To keep the public informed of the Gable Station Project, AEP created a public information program which included the following main elements:

1. On September 9, 2014, AEP issued a public notice regarding the Project. The public notice was published in the Steubenville Herald Star. A copy of the public notice can be found in Appendix 06-3. Letters were also sent to adjacent property owners to announce the Project.
2. On September 23, 2014, a public information meeting was held at the Wells Township Community Center in Brilliant, Ohio. Two sites (blue and red) were presented, along with other Project details. Based on the sign-in sheet, five members of the public attended this meeting. Attendees received project information, reviewed displays, and discussed the Project with AEP, OPSB Staff and URS representatives. The information contained a Project map, "Questions and Answers about Electric and Magnetic Fields" brochure, and a brief statement on Project need and the siting process. Two comment cards were received at the meeting. After the meeting, additional comment cards were mailed to AEP. Copies of the handouts provided to the attendees, and sign-in sheet are included in Appendix 06-3.
3. AEP has placed information about this project on the website (<http://aeptransmission.com/Ohio/Gable/>). AEP also has provided a Project telephone number (1-877-215-9261) at which callers can record questions concerning the project.



AEP will later respond to all recorded questions. Two public notices will be placed in the local newspapers after the application has been filed in accordance with OAC 4906-5-08.

#### **(4) Liability Compensation**

AEP's insurance program for construction and operation of the proposed facility is outlined below:

For bodily Injury and Property Damage, the Federal Insurance Company insures AEP for the first \$1,000,000 for each person or occurrence.

For Bodily Injury and Property Damage, AEP presently carries additional public liability insurance of \$649,000,000 as the result of any one occurrence or account of personal injury, property damage or advertising offense or combination thereof.

AEP is a self-insuring employer under the State of Ohio Worker's Compensation law. This insurance is renewed each year as required by the Industrial Commission of Ohio.

#### **(5) Serving the Public Interest**

The project will serve the public interest by helping to ensure that increased demands for electricity are met in the future and that existing and future electrical service reliability is enhanced throughout the project area and expanded region. A more detailed discussion of the need for this Project and how it will serve the public interest is included in Section 4906-02 of this Application.

#### **(6) Tax Revenues**

The Preferred and Alternate Sites are located within Jefferson County and Wells Township. The local school district, mental health district, health district, commission on aging, and public library will also receive tax revenue from the Project. AEP will pay property taxes on utility facilities in each jurisdiction. The approximate annual property taxes associated with both the Preferred and Alternate Sites over the first year after the Project is completed are \$67,000.

Based on the 2014 tax rates, the following is an estimated distribution of taxes by township and county:

Jefferson County	\$16,000
Wells Township	\$2,000
Wells Township Exc N Alex Inc. Brilliant	\$8,000
Buckeye Local School District	\$36,000
Jefferson County Joint Vocational School District	\$3,000
Eastern Gateway Community College	\$1,000
Public Library of Jefferson County and Steubenville	<u>\$1,000</u>
TOTAL	\$67,000

**(7) Impact on Regional Development**

This project will likely have a positive impact on regional development in the eastern and northeastern Ohio area through increased reliability and availability of electric power to residential, commercial, institutional and industrial users throughout the region. This project should also have a positive impact on the neighboring electric utility systems. No negative impacts on regional development are foreseen for this project. A more detailed discussion of the need for this Project and how it will impact regional development is included in Section 4906-02 of this Application.

A review of the Jefferson County Regional Planning Commission's website ([rpc.jeffersoncountyoh.com](http://rpc.jeffersoncountyoh.com)) was conducted to investigate compatibility with comprehensive plans in the area of the Project. The Jefferson County, Ohio Land Use Plan, dated 2013, revealed no proposed conflicting projects in the immediate vicinity of the Preferred and Alternate Sites nor specific policies restricting the proposed Project.

**(E) HEALTH AND SAFETY****(1) Compliance with Safety Regulations**

The construction and operation of the Project will comply with the requirements specified in the North American Electric Reliability Corporation (NERC) mandatory Reliability Standards, the National Electrical Safety Code, and the Public Utilities Commission of Ohio, and will meet all applicable safety standards established by the Occupational Safety and Health Administration (OSHA).

Safety is the highest priority for AEP. This priority of AEP towards employee and public safety is exemplified by Company policy as stated in the Company Safety Manual:

"The American Electric Power system holds in high regard the safety and health preservation of its employees. Accidents injure people, damage equipment, destroy materials, and cause needless personal suffering, inconvenience and expense. We believe, 'No operating condition or urgency of service can ever justify endangering the life of anyone.' " To this end, AEP will constantly work toward:

- The maintenance of safe and healthful working conditions.
- Consistent adherence to proper operating practices and procedures designed to prevent injuries and illnesses.
- Conscientious observance of governmental and company safety regulations.

AEP also administers a contractor safety program. Contractors working for AEP are required to maintain internal safety programs and to provide safety training.

## (2) Electric and Magnetic Fields

The following calculations provide an approximation of the electric and magnetic fields (EMF) associated with the transmission line interconnections required to integrate the proposed Gable Station with AEP's existing electric transmission system.

**(a) Calculated Electric and Magnetic Field Levels:** Gable Station will be energized by interconnecting to the existing Windsor-Canton 138 kV transmission line and the Gable-Tidd 138 kV transmission line. These interconnections will be submitted under separate cover to the OPSB as a Letter of Notification. However, since EMF associated with these lines is expected to exceed minimal, if any, EMF from the station, calculations associated with the extensions are provided in this Application. Calculations represent values at the edges of the 100-foot wide 138 kV interconnections rights-of-way as they cross the substation fence. The 138 kV extensions design and basis for the calculations is shown in Figure 06-1. The figure identifies both vertical and horizontal coordinates of conductors, including shield wire(s), corresponding to the loading conditions described below. EMF levels are computed across the right-of-way at the point of minimum ground clearance, where EMF is the highest. Lower EMF levels are expected beyond the right-of-way edge. EMF levels associated with all line extensions planned at the Preferred and Alternate Sites are expected to be the same.

Factors that affect EMF include the right-of-way width, operating voltage, current loading, phase configuration, conductor height above ground, electrical unbalance, and other nearby objects. Line designs involved in this analysis are based on preliminary engineering layouts.

Nominal voltages and balanced currents are assumed. No trees, shrubs, buildings or other objects that can block EMF are assumed in proximity to the proposed lines. All calculations are made at the height of 3.28 feet (one meter) above ground using the Electric Power Research Institute (EPRI) EMF Workstation "Enviro" computer program.

Three loading levels corresponding to the following conditions are modeled: (i) normal maximum loading, (ii) emergency line loading, and (iii) winter normal conductor rating. Normal maximum loading represents the peak load expected to be carried when all system facilities are in service; daily/hourly power flows fluctuate below this loading. Emergency loading is the maximum power flow during unusual (contingency) conditions, which exist only for short periods of time.

Winter normal conductor rating represents the maximum current flow that a line, including its terminal equipment, can withstand during winter conditions. It is not anticipated that any facility studied would operate at its winter normal rating in the foreseeable future.

The calculated electric and magnetic fields are summarized in Table 06-2. Typical cross section profiles of the calculated EMF levels at normal maximum, emergency line, and winter normal loading conditions are illustrated in Figures 06-2 through 06-4.

**TABLE 06-2  
EMF CALCULATIONS**

<b>Condition</b>		<b>Circuit 1/ Circuit 2 Load (A)</b>	<b>Electric Field (kV/m)</b>	<b>Magnetic Field (mG)</b>
(1)	Normal Maximum Loading	247/668	0.17/0.94/0.24	8.23/41.34/24.14
(2)	Emergency Line Loading	281/818	0.17/0.94/0.24	10.33/50.62/29.64
(3)	Winter Normal Conductor Rating	979/1,188	0.16/1.04/0.22	12.23/83.98/42.38

\* EMF levels (left right-of-way edge/maximum/right right-of-way edge) calculated one meter above ground assuming balanced currents and nominal voltages. Electric fields reflect normal and emergency operations; lower electric fields are expected during emergency conditions when one mutually-coupled line is out of service.

**(b) Current State of EMF Knowledge:** Electric and magnetic fields occur naturally in the environment. An electric field is present between the earth and its atmosphere, and can discharge as lightning during thunderstorms. The earth also has a magnetic field, which provides an operating basis for the magnetic compass. EMF exists wherever there is a flow of electricity, including electrical appliances and power equipment.

Electric fields are produced by voltage or electric charge. A lamp cord that is plugged in produces an electric field even if the lamp is turned off. These fields commonly are measured in kilovolts per meter (kV/m). Higher voltages result in greater electric fields. Magnetic fields are created by the flow of current in a wire. As current increases, the magnetic field strength also increases. These fields are measured in units known as gauss, or milligauss (mG).

Electric fields are blocked by trees, shrubs, buildings and other objects. Magnetic fields are not easily blocked and can pass through most objects. The strength of these fields decreases rapidly with distance from the source.

EMF associated with power lines and household appliances oscillate at the power frequency – 60 Hz in the U.S. When people are exposed to these fields, small electric currents are produced in their bodies. These currents are weaker than natural electric currents in the heart and nervous system.

Possible health effects from exposure to EMF have been studied for several decades. Initial research, focused on electric fields, found no evidence of biologic changes that could lead to adverse health effects. Subsequently, a large number of epidemiologic studies examined the possible role of magnetic fields in the development of cancer and other diseases in adults and children. While some studies have suggested an association between magnetic fields and certain types of cancer, researchers have been unable to consistently replicate those results in other studies. Similarly, inconclusive or inconsistent results have been reported in laboratory studies of animals exposed to magnetic fields that are representative of common human exposures. A summary of such exposures, found in residential settings, is provided in Table 06-3.

**TABLE 06-3**  
**MAGNETIC FIELDS FROM HOUSEHOLD ELECTRICAL APPLIANCES AND DEVICES**

Appliance Type	Number of Devices	Magnetic Field (mG)		
		1.2" (0.1 feet)	12" (1.0 feet)	User Distance
A/C Adapters	3	1.4 – 863	0 – 7.5	0 – 0.8
Blood Pressure Monitors	4	4.2 – 39.6	0 – 0.3	0 – 0.2
Bluetooth Headsets	3	0	0	0
Coffee Grinders	3	60.9 – 779	0.3 – 6.5	0.8 – 40.9
Compact Fluorescent Bulbs	15	0 – 32.8	0 – 0.1	0 – 0.6
Compact Fluorescent Bulb Ballast	1	8.5 – 23.5'	0 – 0.1'	0 – 0.1'
Computers, Desktop	3	3.8 – 68.9	0 – 1.1	0.1 – 0.5
Computers, Laptop	4	0 – 5.1	0	0 – 0.1
Digital Cameras	3	0	0	0
Digital Photo Frames	5	0	0	0
Digital Video Recorders	4	0 – 29.6	0 – 0.2	0
Dimmer Switches	4	11.5 – 32.1	0 – 0.8	0 – 0.8
DVD Players	5	0 – 28.9	0 – 0.5	0
Electric Lawn Mower	1	1939	156	14.1
Electric Leaf Blowers	4	272 – 4642	171 – 155	28.3 – 61.5
Electric Toothbrushes	5	3.6 – 742	0 – 4.8	3.6 – 742
Electric Toothbrush Chargers	5	0 – 4.2	0	0
External Hard Drives	4	0.6 – 1.7	0	0
Gaming Consoles	10	0 – 215	0 – 0.5	0 – 0.6
GPS, Handheld	5	0 – 0.1	0	0
Hobby Tools	2	126 – 438	1.4 – 2.4	1.4 – 438
Hot Glue Guns	3	0 – 0.9	0	0
LCD Computer Monitors	4	0 – 4.5	0	0
LCD Televisions	4	1.1 – 3.9	0 – 2.5	0 – 0.6
Massagers/Massage Chairs	3	81.9 – 500	0.6 – 2.3	214 – 500
MP3 Players	5	0	0	0
Noise Cancellation Headphones	1	0	0	0
Paper Shredders	4	11.0 – 4841	0.5 – 102	0.5 – 33.4
Plasma Televisions	2	45.1 – 73.6	1.4 – 2.2	0 – 0.1
Power Tools – Corded	3	784 – 982	8.8 – 31.3	46.8 – 123
Power Tools – Cordless	6	9.0 – 227	0 – 2.2	0 – 13.7
Printers	5	0.1 – 6.2	0 – 0.3	0 – 0.3
Scanners	3	0.6 – 6.7	0 – 0.3	0
Security System Panels	3	0 – 0.3	0	0
Tankless Hot Water Heater	1	10.1 – 21.9'	1.2	0.2
Track Lighting	5	0.2 – 4.0	0 – 0.3	0
Vacuum Cleaners, Personal/Car	3	75.5 – 2226	0.6 – 23.3	0.1 – 23.1
Wireless Game Controllers	11	0	0	0
Wireless Routers	4	0 – 0.5	0	0-0.3

Source: Electric Power Research Institute [1]

As part of the National Energy Policy Act of 1992, the U.S. Congress enacted the Electric and Magnetic Fields Research and Public Information Dissemination (EMF RAPID) program. The National Institute of Environmental Health Sciences (NIEHS) was charged with overseeing the health research and conducting an EMF risk evaluation. In its final report to Congress, issued in 1999, NIEHS concluded that power-frequency “EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard.” Nonetheless, the report stated that “this finding is insufficient to warrant aggressive regulatory concern.” [2]

In 2001, the Standing Committee on Epidemiology of International Commission on Non-Ionizing Radiation Protection (ICNIRP) wrote in its review of the epidemiologic literature on EMF and health that “given the methodological uncertainties and in many cases inconsistencies of the existing epidemiologic literature, there is no chronic disease outcome for which an etiological [causal] relationship to EMF exposure can be regarded as established.” [3]

Also, in 2001, the International Agency for Research on Cancer (IARC) published the results of an EMF health risk evaluation conducted by an expert scientific working group, which concluded that power-frequency “magnetic fields are ‘possibly carcinogenic to humans,’ based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukemia”[4]. IARC assigns its ‘possibly carcinogenic to humans’ classification (Group 2B) if there is “limited evidence” of carcinogenicity in both humans and experimental animals, or if there is “sufficient evidence” in animals, but “inadequate evidence” in humans. Group 2B includes some 266 “agents” such as coffee, pickled vegetables, carpentry, textile manufacturing and gasoline, among others.

A comprehensive assessment of the EMF health risks was published by World Health Organization (WHO) in 2007. In its assessment, WHO wrote: “Scientific evidence suggesting that everyday, chronic, low-intensity (above 0.3-0.4  $\mu$ T) [3-4 mG] power-frequency magnetic field exposure poses a possible health risk is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia”[5]. It added, however, that “virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF [extremely low frequency] magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern.”

Regarding acute effects, WHO noted, “Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz that may have adverse consequences on health. Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. “Compliance with these guidelines provides adequate protection for acute effects” [5].

In summary, some studies have reported an association between long-term magnetic field exposure and particular types of health effects, while other studies have not. The nature of the reported association remains uncertain as no known mechanism or laboratory animal data exist to support the cause-and-effect relationship.

In view of the scientific evidence, IEEE and other organizations have established guidelines limiting EMF exposure for workers in a controlled environment and for the general public. These guidelines focus on prevention of acute neural stimulation. No limits have been established to address potential long-term EMF effects, as the guideline organizations consider the scientific evidence insufficient to form the basis for such action. For power-frequency EMF, IEEE Standard C95.6TM-2002 [6] recommends the following limits:

	General Public	Controlled Environment
	-----	-----
Electric Field Limit (kV/m)	5.0	20.0*
Magnetic Field Limit (mG)	9,040	27,100

\*10.0 kV/m within power line ROW. (kV/m = kilovolts per meter)

AEP has been following the EMF scientific developments worldwide, participating in and sponsoring EMF studies, and communicating with customers and employees on the subject. Also, AEP is a member of Electric Power Research Institute, an independent, non-profit organization sponsoring and coordinating EMF epidemiological, laboratory and exposure studies.

**(c) Line Design Considerations:** Line construction associated with the Gable Station project is proposed in locations that would not place it in close proximity to existing residential areas and, therefore, will not significantly increase EMF exposure of the public. Also, all line extensions planned in the project are vertical designs, which minimize the right-of-way requirements and EMF strengths at the ground level. Furthermore, since all of the mutually-coupled circuits normally will carry power in the same direction, a phase configuration known as “low reactance” is planned, resulting in lower EMF at the ground level. Each new line construction will be compliant with the EMF limits specified in IEEE Standard C95.6TM-2002.

**(d) AEP EMF Public Policy:** Information on electric and magnetic fields is available on AEP Ohio’s website (<https://www.aepohio.com/info/projects/emf/>). It describes the basics of electromagnetic field theory, scientific research activities and EMF exposures encountered in everyday life. Similar material will be made available for those affected by the construction activities on this project.

AEP occasionally receives requests from customers for EMF measurements on their properties. These measurements are provided free of charge to the customers.

#### References:

- [1] “Magnetic Fields from Electrical Appliances and Devices,” Electric Power Research Institute, Product ID 1021221, September 28, 2010.
- [2] “NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields,” National Institute of Environmental Health Sciences, National Institutes of Health, NIH Publication No. 99-4493, May 4, 1999 (<http://www.niehs.nih.gov/about/materials/niehs-report.pdf>).
- [3] “Review of the Epidemiologic Literature on EMF and Health,” International Commission for Non-Ionizing Radiation Protection (ICNIRP) Standing Committee on Epidemiology, Environmental Health Perspectives, Volume 109, Supplement 6, December 2001 (<http://www.icnirp.de/documents/epireview1.pdf>).
- [4] “IARC Finds Limited Evidence that Residential Magnetic Fields Increase Risk of Childhood Leukemia,” International Agency for Research on Cancer, Press Release No 136, June 27, 2001 (<http://www.iarc.fr/en/media-centre/pr/2001/pr136.html>).
- [5] “Extremely Low Frequency Field (Environmental Health Criteria 238),” World Health Organization, June 1, 2007 (<http://www.who.int/peh-emf/publications/Comple DEC 2007.pdf>).
- [6] “C95.6™ IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz,” IEEE Standards Coordinating Committee 28, October 23, 2002.

### (3) Aesthetic Impact

The aesthetic compatibility of a new substation will vary with the viewer and the setting. New electric transmission facilities are more likely to ‘blend-in’ with surroundings where existing transmission facilities exist. Where these features are not present, natural visual screens, such as significant tree cover or topographic barriers, are an effective way to minimize aesthetic impacts. Selecting rural sites with a low number of existing long-term vantage points also limits widespread aesthetic impacts.

(a) **Views of the Proposed Facility:** Public views of the Preferred Site or Alternate Site from residences and other potentially sensitive vantage points will be incrementally altered by construction of the substation. However, these visual alterations to the landscape will be reduced at the nearest residences due to distance and existing transmission line infrastructure already in close proximity within the vicinity of the facility. Figure 06-5 provides a three-dimensional rendering of the proposed facility at the Preferred Site and would be similar at the Alternate Site.

(b) **Structure Design Features:** Substation features are primarily dictated by the necessary equipment and engineering limitations. Typical cross sections of the substation equipment proposed for the Project are shown in the figures of Section 1606-15-04 of the Application.

(c) **Facility Effect on Site and Surrounding Area:** Altering the views from areas at and surrounding the proposed substation is unavoidable due to the size of the facility and the rural nature of the area. The need for the facility and the lack of a candidate site that could further minimize visual impacts outweighs the incremental aesthetic impacts associated with the Project. While aesthetic impacts are subjective and vary based on the viewer, the rural nature of the site vicinity, existing wooded areas that provide screening, and the presence of existing overhead transmission lines in the immediate vicinity should limit the overall change.

(d) **Visual Impact Minimization:** Due to the rural nature of the site vicinity and the size of the facility, the ability to minimize visual impact through engineering design or set-back construction is limited. Visual impact minimization at the Preferred Site was achieved through the selection of the site, as other candidate sites appeared to have greater visual impacts. Visual impacts will be minimized through AEP's design of the facility. Tubular steel will be used to construct the substation. Tubular steel is considered less visually intrusive than traditional lattice steel. Figure 06-6 provides photographs showing a comparison of typical tubular versus lattice construction. These photographs represent the types of tubular steel materials to be used for the proposed substation and are not intended to be exact views of the facility.

#### (4) Estimate of Radio and Television Interference

Radio interference can be experienced in the AM broadcast band (535-1605 kHz), caused by transmission line "corona," i.e., dielectric discharge due to air ionization (100 kHz-10MHz), or a gap-type discharge (1-1000 MHz). The majority of popular radio broadcasting today occurs in the FM band (88-108 MHz), which is beyond the normal corona frequency range but can be affected by gap discharges. Gap-type discharge, such as that emitted by loose or defective transmission hardware, typically is localized and can be readily detected and corrected, or additional mitigation measures can be applied to eliminate the interference source.

The radio interference level of the line during heavy rain is greater than in fair weather. However, the quality of radio reception under typical heavy rain conditions is affected more by atmospheric conditions than by operation of transmission equipment.



Today's digital television signals react differently to interference than the pre-2009 analog signals. Common problems with analog television included ghosting of images, noise from weak signals, and other problems which degraded the quality of the image and sound, although the programming was still watchable. With digital TV, reception of the signal must be very nearly complete. Otherwise, audio and video are not usable. Television signals, which are transmitted at frequencies above 50 MHz, can be affected by gap discharges if received from air broadcasts (via "rabbit ears"). These problems have largely been addressed with the use of cable television.

## **(F) CULTURAL IMPACTS OF THE PROPOSED PROJECT**

### **(1) Archaeological Resources and Correspondence with Agency**

Data for known cultural resources were obtained from the OHPO Online Mapping System. No previously recorded archaeological sites, NRHP structures or districts, or OHI structures were identified within 1,000 feet of the Preferred or Alternate Sites. A Phase I cultural resources survey was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover.

### **(2) Construction Impacts on Cultural Resources**

Based on OHPO Online Mapping System, no previously recorded archaeological sites, NRHP structures or districts, or OHI structures were identified within 1,000 feet of the Preferred or Alternate Sites. A Phase I cultural resources survey on the Preferred Site was conducted by Weller & Associates on behalf of AEP, and submitted to OPSB Staff under separate cover. No significant cultural resources were identified by Weller & Associates and no further investigation was recommended. No construction impacts to cultural resources are anticipated.

### **(3) Operation and Maintenance Impacts on Cultural Resources**

Substation maintenance operations will be generally limited to infrequent inspections. Therefore, no impacts on cultural resources are anticipated during operation and maintenance.

### **(4) Mitigation Procedures**

Based on no significant cultural resources identified on the Preferred Site or Alternate Site, no migration is proposed at this time.

## **(G) NOISE**

### **(1) Construction**

**(a) *Dynamiting or blasting activities:*** None anticipated.

(b) **Operation of earth moving or excavating equipment:** During the construction phase of the substation installation, a temporary increase in noise will result from the equipment used to excavate, install equipment and, where necessary, clear the area of woody brush. Standard construction techniques will be used. Typical noise levels of construction equipment are provided in Table 06-4. As a result, the noise impact on nearby sensitive areas is anticipated to be minimal. The total duration of construction of the proposed Gable Station Project is estimated at approximately eight months.

TABLE 06-4 TYPICAL NOISE LEVELS OF CONSTRUCTION EQUIPMENT				
Equipment	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1979	Average Noise Level (dBA) 50 ft., CA/T Project study 1994	Typical Noise Level (dBA) 50 ft., U. S. Dept. of Trans. study 1995	Lmax Noise (dBA) 50 ft., CA/T Project Spec. 721.560
Air Compressor		85	81	80
Backhoe	84	83	80	80
Chain Saw				85
Compactor	82		82	80
Compressor	90	85		80
Concrete Truck		81		85
Concrete Mixer			85	85
Concrete Pump			82	82
Concrete Vibrator			76	80
Crane, Derrick	86	87	88	85
Crane, Mobile		87	83	85
Dozer	88	84	85	85
Drill Rig		88		85
Dump Truck		84		84
Excavator				85
Generator	84	78	81	82
Gradall		86		85
Grader	83		85	85
Impact Wrench			85	85
Loader	87	86	85	80
Pump	80		85	77
Roller			74	80
Scraper	89		89	85
Truck	89	85	88	84
Vacuum Excavator				85

Source: Schexnayder, Cliff. 2008. Effective Noise Control during Nighttime Construction  
[http://www.ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder\\_paper.htm](http://www.ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm)

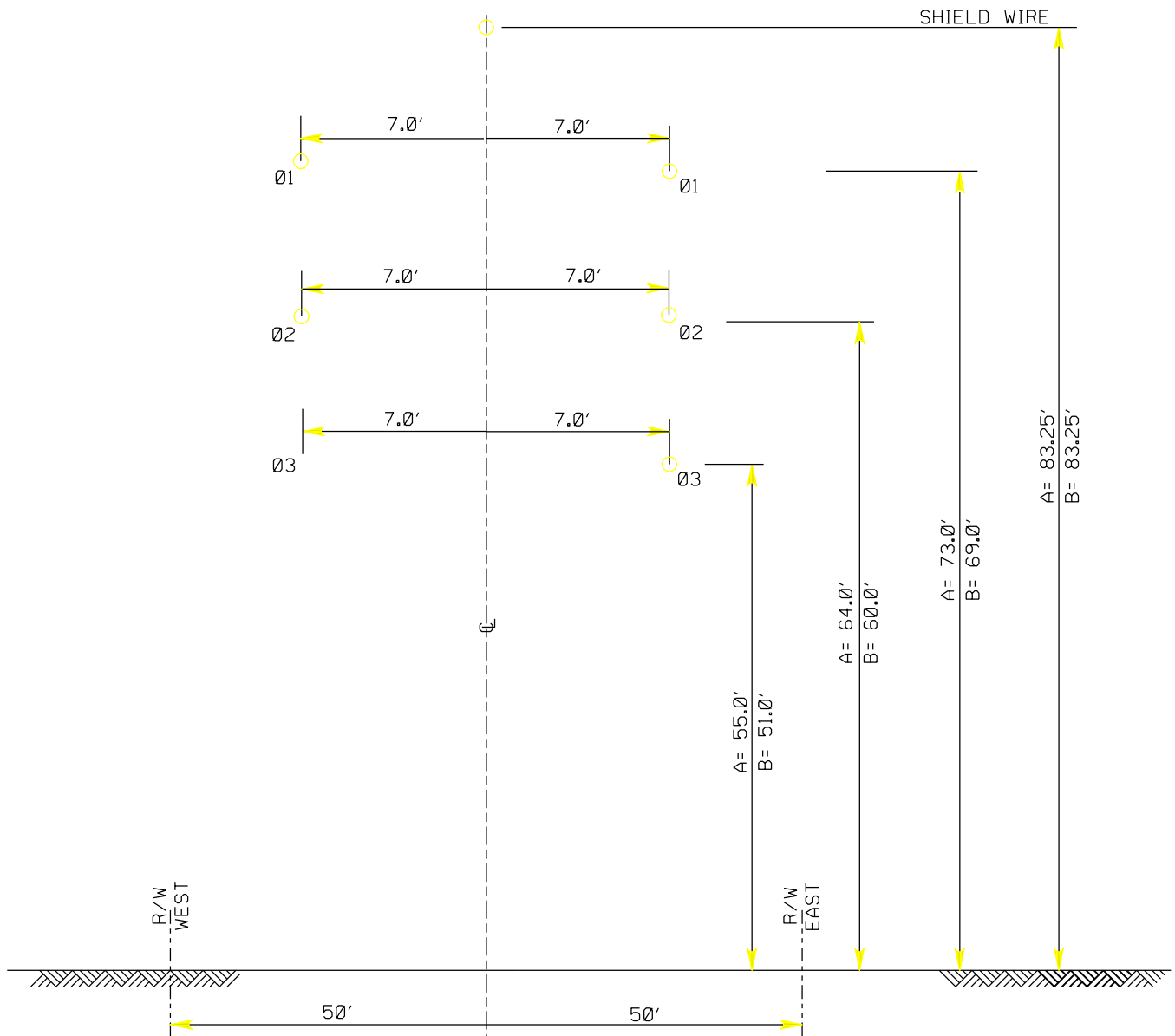
(c) **Driving of piles:** None anticipated.

(d) **Erection of structures:** Structures will be erected by vehicle-mounted cranes.

(e) **Truck traffic:** Beyond construction equipment access, concrete trucks, and pole and hardware equipment delivery, no other additional truck traffic is anticipated for the Project.

(f) **Installation of equipment:** The equipment will be installed using standard practices and equipment.

1233.6 ACSS/TW TYPE 13 YUKON CONDUCTORS  
7\*8 ALUMOWELD SHIELDWIRE



DIMENSION "A" - DOUBLE CIRCUIT VERT. CONFIGURATION (STEEL POLE)  
(UNDER EMERGENCY & NORMAL MAX. LINE LOADING)

DIMENSION "B" - DOUBLE CIRCUIT VERT. CONFIGURATION (STEEL POLE)  
(UNDER WINTER NORMAL CONDUCTOR RATING)



STRUCTURE TYPE "B"

NOT TO SCALE

Figure 06-1

**(2) Operation and Maintenance**

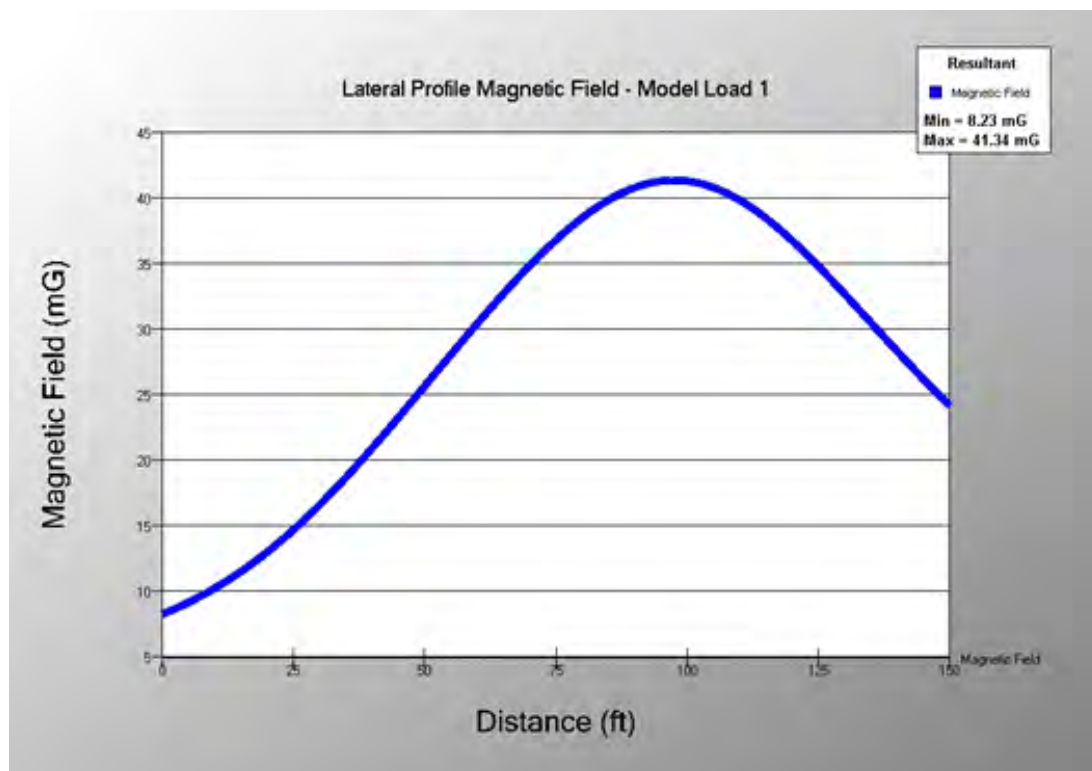
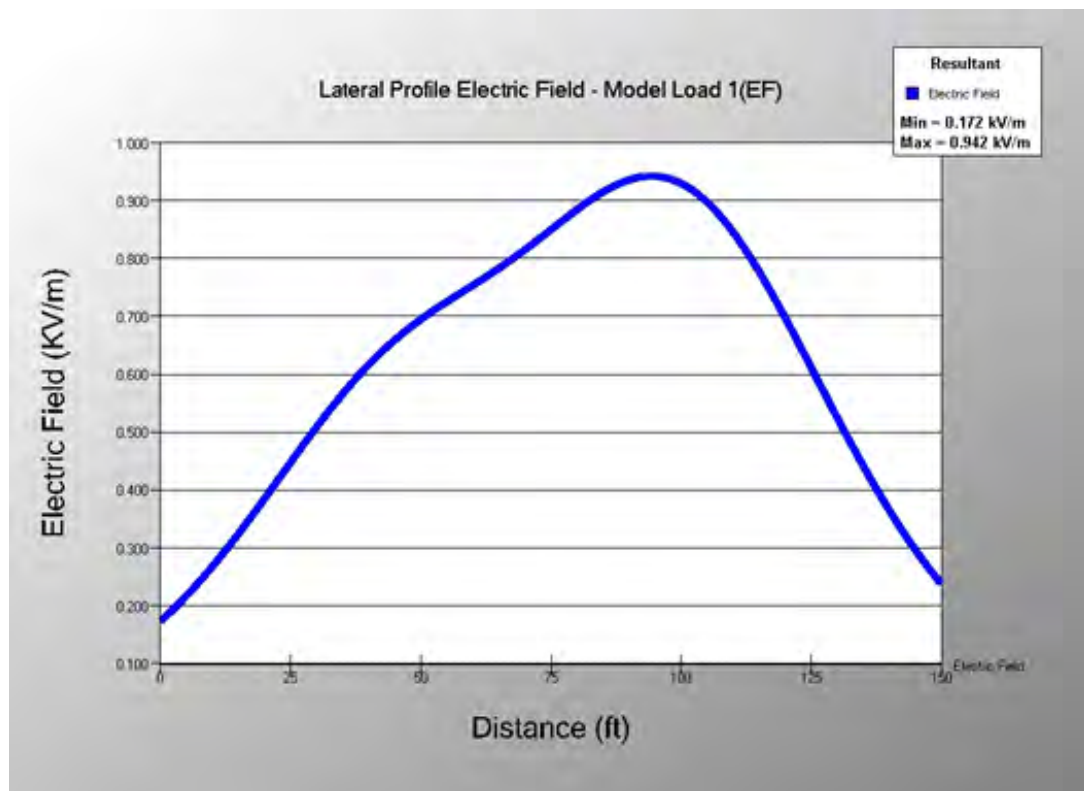
The vast majority of noise generated from substations is due to operation of voltage transformers. No new transformers are proposed for Gable Station. The facility will create new circuits from existing electric transmission lines and operate as a 138 kV switching substation. Operation of the new substation equipment is unlikely to produce audible noise differences in the immediate vicinity of the facility. Given the ambient noise associated with local roads and distance to property boundaries, it is not anticipated that noise-sensitive areas will be significantly affected by the maintenance, or operation of the substation for either the Preferred or Alternate Site.

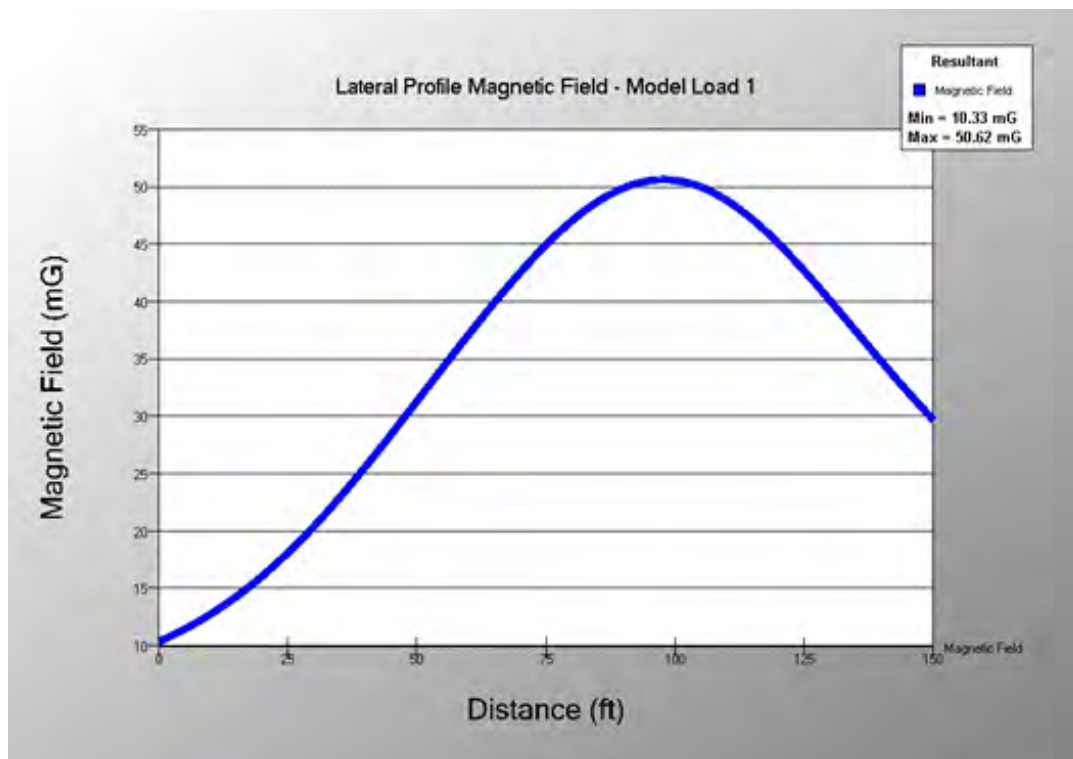
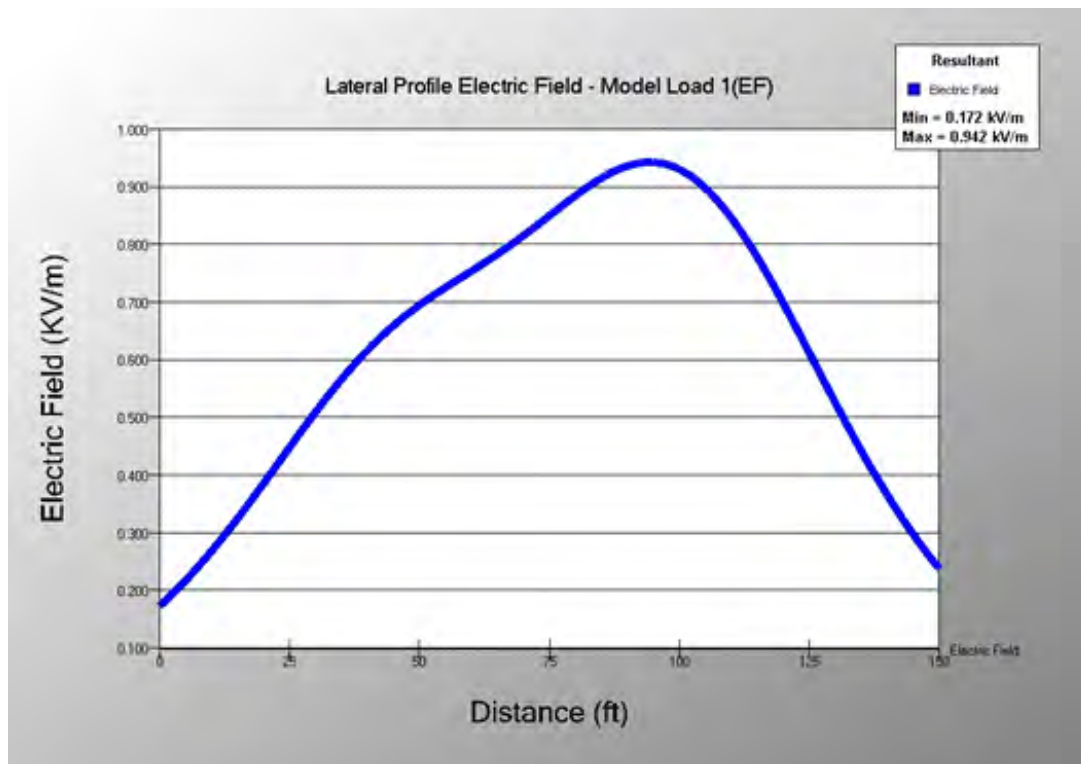
**(3) Mitigation Procedures**

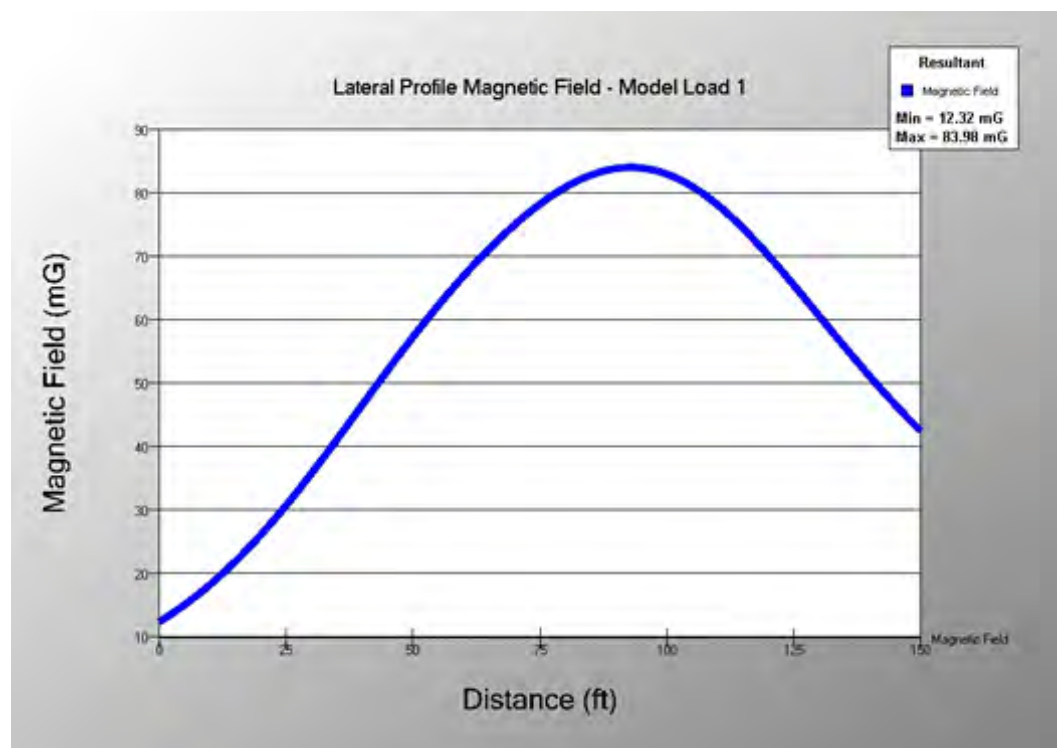
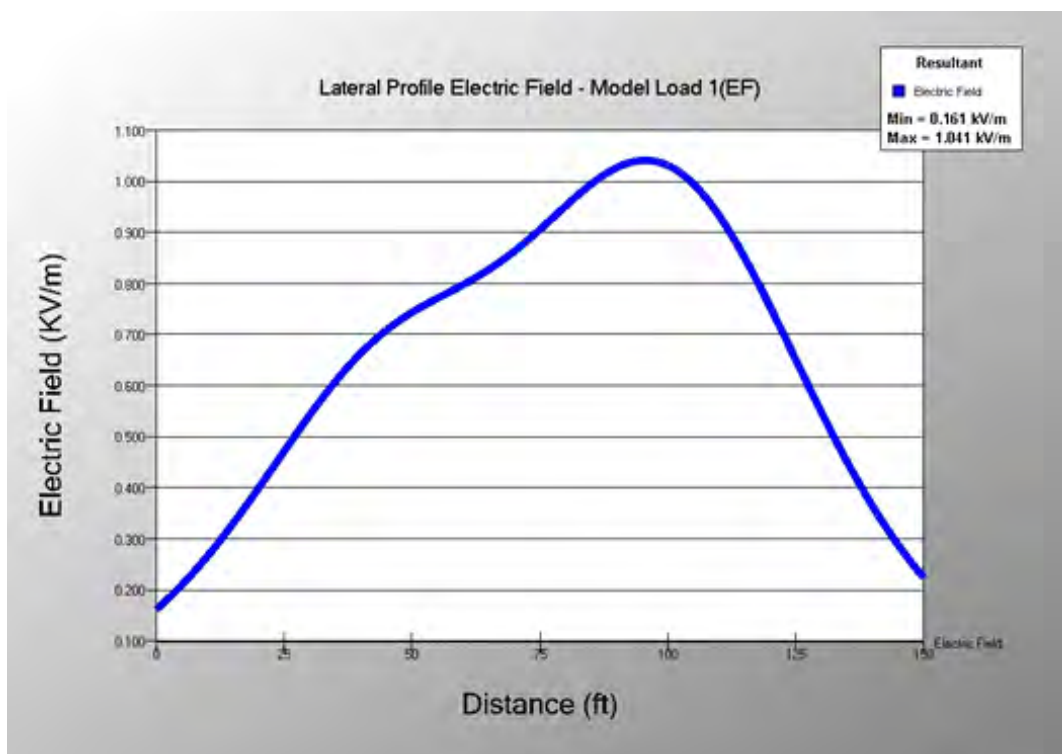
Construction noise mitigation procedures will include using properly maintained construction equipment with mufflers, construction during daylight hours, and implementing noise related procedures according to OSHA requirements. Due to the lack of proposed transformers for Gable Station, no further noise mitigation procedures are proposed.

**(H) OTHER SIGNIFICANT ISSUES**

There are no other significant socioeconomic or land use impact issues anticipated beyond those addressed elsewhere in this application.









STRUCTURE TABLE			
ITEM #	STL DWG#	DESCRIPTION	MARK
7209	2SDU078U SH.B - F	138KV STL BOX BAY STRUCT. INITIAL BAY	BX138-4
7211	2SDU078U SH.G - K	138KV STL BOX BAY STR ADDER BAY	BX138-4E

CONDUCTOR SCHEDULE

328	477 KCM STRANDED BARE ALUM. CABLE
3333	2000 KCM STRANDED BARE ALUM. CABLE AAC

GENERAL NOTES

- 1.ELECTRICAL JOINTS: THE INSTALLER SHALL USE ELECTRICAL JOINT COMPOUND (ITEM #611H CID #0084721110. A CORROSION INHIBITOR) FOR THE FOLLOWING APPLICATIONS:  
a) BETWEEN ALL CONNECTOR CONTACT SURFACES.  
b) TO LUBRICATE UNLUBRICATED BOLTS MADE OF BRONZE, STAINLESS STEEL OR ALUMINUM USED WITH ELECTRICAL CONNS.  
c) TO IMPROVE CONNECTIONS AND PREVENT CORROSION OF GROUND BUS CONNECTIONS.
- DURONZE OR EVERDUR BOLTS SHALL BE USED FOR ALL COPPER-TO-COPPER CONNECTIONS USING BOLTS 0.375 INCH IN DIAMETER OR GREATER. BRONZE P.N. NUTS OR LOCK WASHERS SHALL BE USED ON ALL COPPER BUS BAR CONNECTIONS AND CONNECTIONS SUBJECTED TO VIBRATIONS.
- ALUMINUM-TO-COPPER CONNECTIONS SHALL BE BUFFERED USING AN ALUMINUM-TO-COPPER BIMETAL TRANSITION PAD (CID #0050555500) AND STAINLESS STEEL BOLT ASSEMBLY (ITEM #732)
- GALVANIZED STEEL BOLTS MAY BE USED FOR FASTENING GROUND BUSES AND ASSOCIATED CONNECTIONS TO SUPPORT STEEL.
- ALL BOLTED CONNECTIONS SHALL BE MADE WITH BOLT TYPE, SIZE, AND LENGTH SPECIFIED ON THE CONSTRUCTION DRAWING. A MINIMUM OF TWO AND A MAXIMUM FOUR THREADS SHALL PROTRUDE BEYOND THE NUT AFTER THE BOLT HAS BEEN TIGHTENED. BOLT HEADS SHALL BE ORIENTED UPWARD OR TO THE OUTSIDE OF EQUIPMENT FRAMES. ALL BOLTS SHALL BE TIGHTENED TO THE TORQUE VALUES SPECIFIED IN THE TABLE BELOW.

TABLE OF RECOMMENDED TIGHTENING TORQUES			
BOLT DIAMETER IN INCHES	STAINLESS STEEL BOLTS WITH BRONZE NUTS		DURONZE OR EVERDUR BOLTS
	LUBRICATED	UNLUBRICATED	
3/8"	NOT USED	NOT USED	20 FT. LBS.
1/2"	30 FT. LBS.	35 FT. LBS.	40 FT. LBS.
5/8"	40 FT. LBS.	50 FT. LBS.	55 FT. LBS.
3/4"	60 FT. LBS.	80 FT. LBS.	NOT USED

2. THE INSTALLER SHALL DRILL 0.25 INCH DIAMETER WEEP HOLES IN ALL WELDED, OR COMPRESSION CONNECTORS AND AT LOWEST POINT OF TUBING BUS TO PREVENT THE COLLECTION OF MOISTURE. AFTER DRILLING, ALL BURRS SHALL BE REMOVED AND THE CONNECTION SHALL BE POLISHED SMOOTH.
3. ALL ELECTRICAL EQUIPMENT SHALL BE CONSTRUCTED, INSTALLED AND MAINTAINED SO AS TO SAFEGUARD PERSONNEL. THE MINIMUM VALUES ALLOWED TO THE GUARDING OF LIVE PARTS (BOTTOM OF BUSHING) SHALL NOT BE LESS THAN 8FT 6 INCHES.


REFERENCE DRAWINGS

ONE LINE DIAGRAM	E-1200
LAYOUT PLAN	E-1201
138KV ELECTRICAL ASSEMBLY	E-2201 - E-2203
138KV ELECTRICAL DETAILS	E-2221 - E-2224
STEEL DETAILS:	
INITIAL BAY	2SDU078U SH. B - F
ADDER BAY	2SDU078U SH. G - K

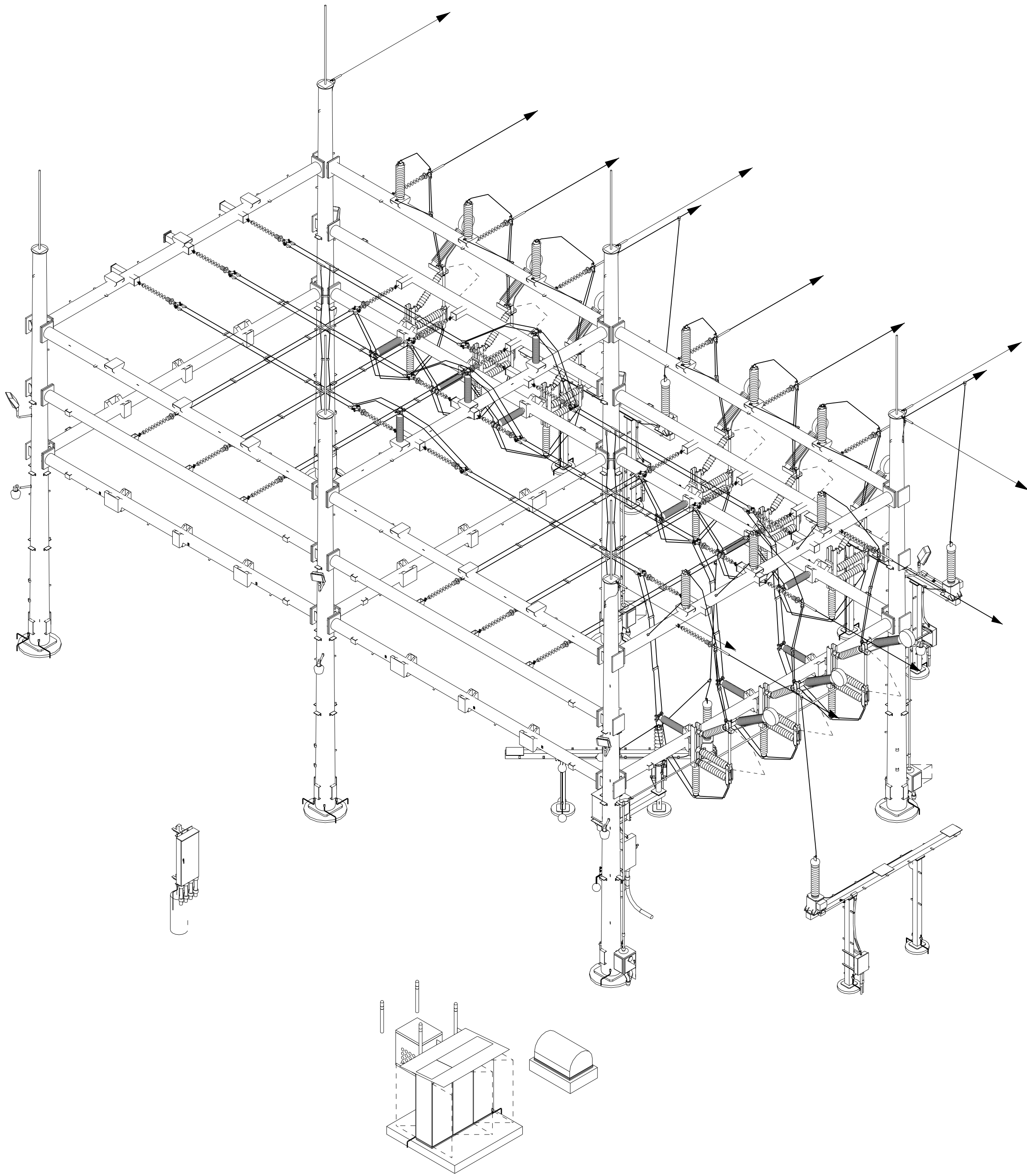
BUS AMPACITY

BUS DESIGNED FOR 3000 AMPS

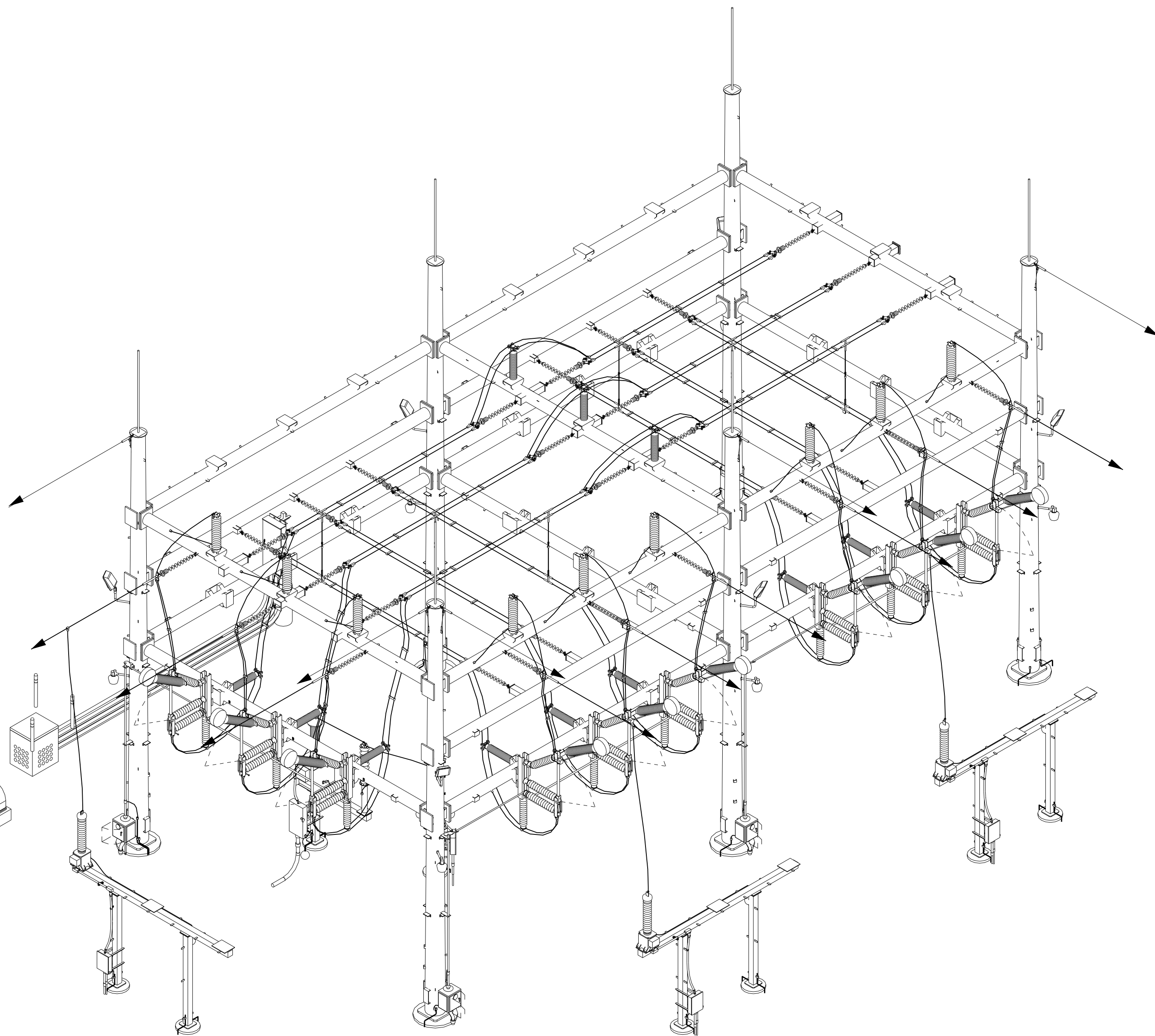
LEGEND

NUMBERS IN  REFER TO COLUMN LINE DESIGNATION

NUMBERS IN  REFER TO TRANSCO REPORT B.M

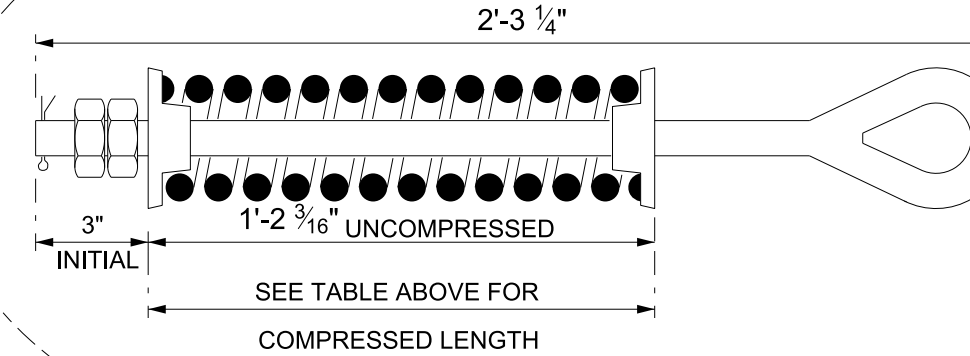


ISOMETRIC VIEW



ISOMETRIC BACK VIEW

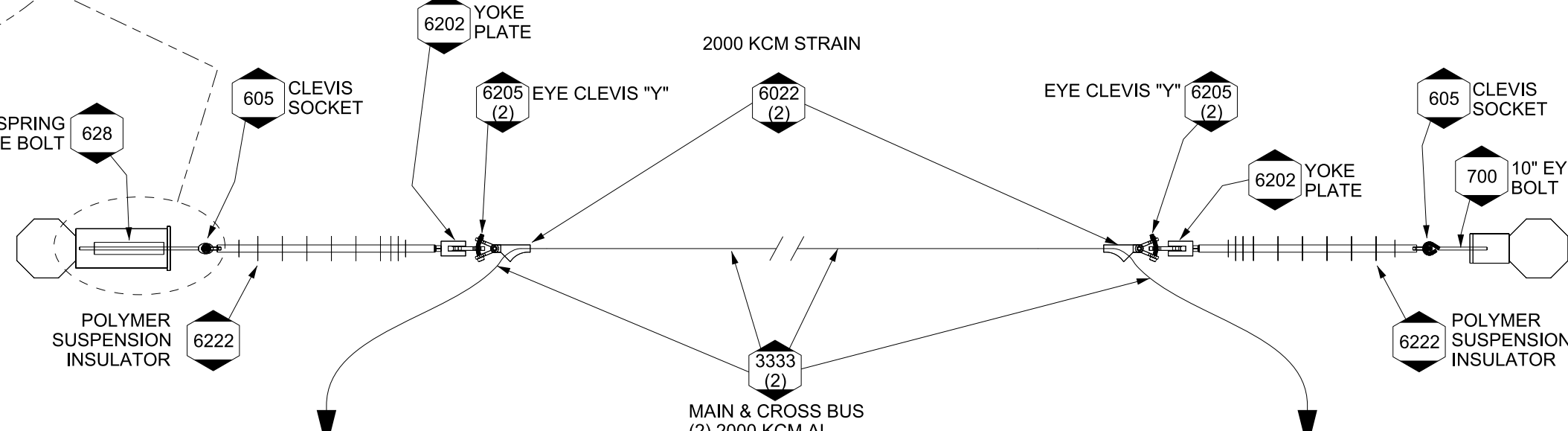
TABLE #1			
TEMP. (Deg. F)	SPRING COMPRESSION	COMPRESSED LENGTH (in)	TENSION (lbs)
20	1 1/8"	12 5/16"	1862
40	1 1/8"	12 3/8"	1800
60	1 1/8"	12 1/2"	1738
80	1 1/8"	12 1/8"	1614
100	1 1/8"	12 1/4"	1552



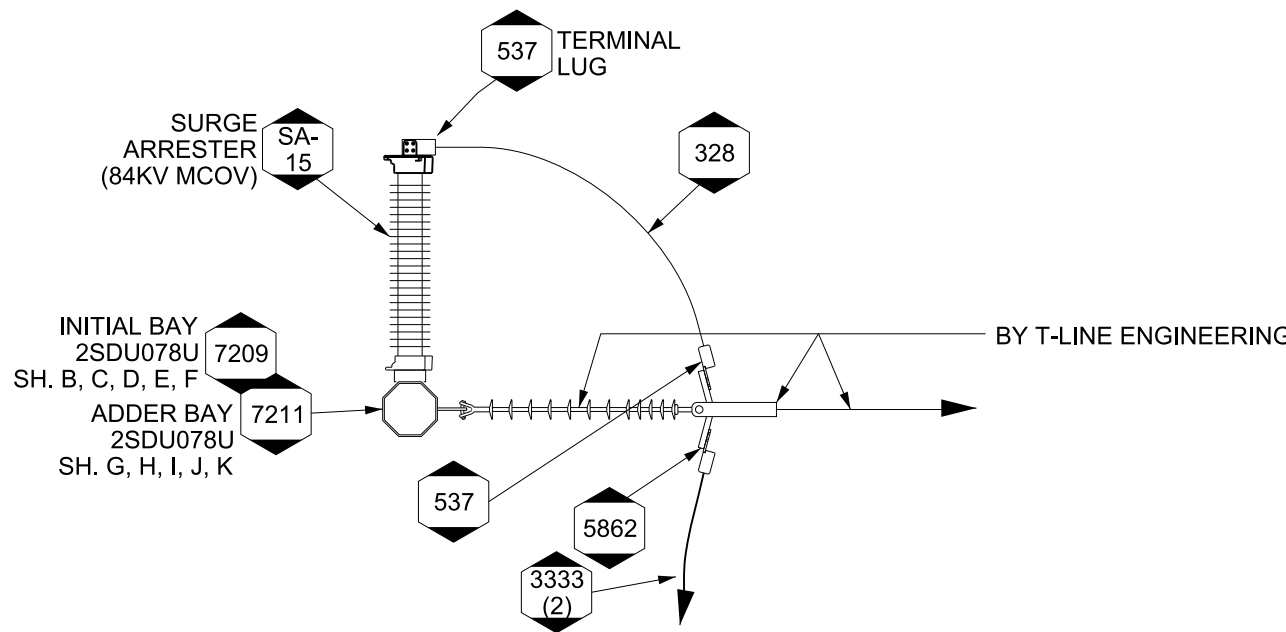
DETAIL SB  
NOT TO SCALE

STRAIN BUS ASSEMBLY  
INSTALLATION INSTRUCTIONS:

- DISASSEMBLE THE SPRING BOLT AND INSERT THE THREADED END OF THE EYEBOLT THROUGH THE 3/4" DIAMETER HOLE IN THE SPRING BOLT MOUNTING BRACKET. ASSEMBLE THE SPRING BOLT INSIDE THE MOUNTING BRACKET AS SHOWN IN DETAIL SB. BE SURE ALL PIECES ARE INCLUDED AND ARE ASSEMBLED CORRECTLY.
- INSTALL THE 10" EYE BOLT AT THE OPPOSITE END OF THE STRAIN ASSEMBLY. ALLOW AT LEAST 3" OF THREAD FOR LATER ADJUSTMENT (TIGHTENING) OF THE CABLE.
- ATTACH INSULATORS, CABLE, AND ALL LINE HARDWARE.
- USING A COME-ALONG TO PRETENSION THE CABLE, ADJUST THE LOCATION OF THE DEADEND CLAMP AT ONE END UNTIL A 6" TO 12" MID-SPAN SAG IS ACHIEVED. BE SURE THAT THE WASHERS AT EACH END OF THE SPRING BOLT ASSEMBLY ARE CENTERED AND SEATED SQUARELY AS TENSION IS APPLIED TO THE CABLE.
- USE THE EYE BOLT (AT THE OPPOSITE END OF THE STRAIN BUS ASSEMBLY FROM THE SPRING BOLT) TO CAREFULLY ADJUST THE COMPRESSED LENGTH OF THE SPRING IN ACCORDANCE WITH THE ABOVE TABLE, TAKING INTO CONSIDERATION THE AMBIENT TEMPERATURE DURING INSTALLATION.
- THE ADDITION OF SUCCESSIVE STRAIN BUS ASSEMBLIES WILL CAUSE PREVIOUSLY INSTALLED ASSEMBLIES TO BE UNDERTENSIONED DUE TO THE DEFLECTION OF THE STRUCTURE UNDER LOAD. THEREFORE, AFTER ALL STRAIN BUS ASSEMBLIES HAVE BEEN INSTALLED, THE COMPRESSED LENGTH OF ALL SPRINGS SHALL BE RECHECKED AND ADJUSTMENTS SHALL BE MADE, AS NECESSARY.



STRAIN BUS DETAIL  
NOT TO SCALE



LINE TERMINATION DETAIL  
NOT TO SCALE



NO	DATE	REVISION DESCRIPTION	APPR	DR	ENG	CK	ISSUE#
----	------	----------------------	------	----	-----	----	--------

OLD DWG #:	STD DWG #: 2EAU018U SH.C REV.2		
THIS DRAWING IS THE PROPERTY OF AMERICAN ELECTRIC POWER AND IS LOANED UPON CONDITION THAT IT IS NOT TO BE COPIED OR REPRODUCED IN WHOLE OR IN PART, OR USED FOR FURNISHING INFORMATION TO ANY PERSON WITHOUT THE WRITTEN CONSENT OF AMERICAN ELECTRIC POWER, OR FOR ANY PURPOSE DETRIMENTAL TO THEIR INTEREST, AND IS TO BE RETURNED UPON REQUEST.			
OHIO TRANSMISSION COMPANY			
STUEBENVILLE OHIO			
138KV/550KV BIL BOX BAY (INITIAL & ADDER BAY)			
ELECTRICAL ASSEMBLY			
ISOMETRIC VIEWS			
SCALE: 1/8" = 1'-0"	DR: LSP/EI	ENG: CML/PEI	CH: REY/PEI
WOB: 41909262	APPD: RLM/PEI	DATE: 02/20/14	
1 RIVERSIDE PLAZA COLUMBUS, OH 43215			
R 0			





Example Lattice Steel Substation



Example Tubular Steel Substation



Example Lattice Steel Tower



Example Tubular Steel Pole

Note: Tubular steel photos represent typical construction materials and are not intended to portray the exact views of the proposed facility.



*Gable Station  
Project*

FIGURE 06-6  
TUBULAR VERSUS  
LATTICE CONSTRUCTION

JOB NO. 14951468

**URS**

## **APPENDIX 06-1**

### **AGRICULTURAL DISTRICT LAND COORDINATION**



Jefferson County  
OFFICE OF THE AUDITOR  
P.O. Box  
Steubenville, Ohio 43952  
Telephone - 740-283-8518  
Fax Number - 740-283-4031

DATE: 9-5-2014

TO: Aaron Geukle

FAX: 1-877-660-7727

FROM: E.J. Conn

TOTAL PAGES INCLUDING COVER PAGE: 5

COMMENT:

09/05/2014

## Agricultural District Application Numbers

1

Parcel Num	Dist. Num	Appl Num	Owner Name 1	Location Addr
50-01154-002	152	295	ROZENEK JOHN D & ROBIN K	TR 151
50-01212-003				CR 21
50-00763-000				8194 SR 151
50-00762-000				CR 21
50-01154-001				TR 151
Dist Appl Num Total : 5				
50-01432-000	186	349	MCCAIN KEVIN P	TR 156
50-01384-000				TR 156
50-00613-000				TR 156
50-01431-000				2114 TR 156
50-01443-000				TR 156
Dist Appl Num Total : 5				
50-00263-000	249	407	ELLIS WILLIAM J ETAL	180 ELLIS DR
50-00262-000				TR 159
Dist Appl Num Total : 2				
50-00712-000	324	529	IRVIN DAVID A & DEANNA	2936 CR 15
50-00967-000			IRVIN DAVID & DEANNA	TR 117
50-00716-000			IRVIN DAVID A & DEANNA	TR 154
50-00712-002				CR 15
50-00713-000				CR 15
Dist Appl Num Total : 5				
50-00129-000	339	507	ROACH AMANDA KAY	CR 19
50-00130-000				CR 19
Dist Appl Num Total : 2				
50-01490-001	356	490	PESTA MARK A & TERI L	8557 SR 151
Dist Appl Num Total : 1				
50-00924-001	359	587	KINYO SCOTT	TR 117
Dist Appl Num Total : 1				
50-01238-000	373	567	VALUSKA THOMAS M & KELLY	7698 SR 151
Dist Appl Num Total : 1				
50-00825-000	476	650	L S C RECREATIONAL LAND	SR 7
Dist Appl Num Total : 1				
50-00756-000	486	660	ROBERTS EUGENIA P	SR 151

09/05/2014

## Agricultural District Application Numbers

2

Parcel Num	Dist. Num	Appl Num	Owner Name 1	Location Addr
50-00758-000	486	660	ROBERTS EUGENIA P	SR 151
50-00757-000				SR 151
50-00755-000				4874 SR 151
Dist Appl Num Total : 4				
50-00800-000	488	662	SILVESTRI FRED & ELDA MAE	SR 151
Dist Appl Num Total : 1				
50-00239-000	489	663	STRAUS NATALIE R	CR 18
Dist Appl Num Total : 1				
50-01181-000	490	664	SILVESTRI ANGELO & FRED	SR 151
50-00332-000			SILVESTRI ANGELO &	SR 151
50-00583-000			SILVESTRI ANGELO & EILEEN	SR 151
50-00584-000				SR 151
50-00331-000			SILVESTRI ANGELO &	SR 151
Dist Appl Num Total : 5				
50-01429-009	500	674	YOUNKIN FAY A &	6204 SR 151
50-01429-000				SR 151
50-01429-008				SR 151
Dist Appl Num Total : 3				
50-01411-000	521	696	MOLNAR RONALD JOSEPH &	7759 SR 151
Dist Appl Num Total : 1				
50-00382-000	541	716	HIGGINS SHELLY S TRUSTEE	SR 151
50-00377-000				SR 151
50-00380-000				SR 151
50-00381-000				SR 151
Dist Appl Num Total : 4				
50-01268-000	544	719	AULICINO JOHN A JR &	CR 18
Dist Appl Num Total : 1				
50-01511-000	551	727	BATENBURG BERNARDUS C &	1107 TR 152
50-01512-000				TR 152
50-01111-001				1257 TR 152
50-01121-000				1191 TR 152
Dist Appl Num Total : 4				
50-01531-000	552	728	WETHERELL DUAYNE & MONICA	CR 19

09/05/2014

## Agricultural District Application Numbers

3

Parcel Num	Dist. Num	Appl Num	Owner Name 1	Location Addr
Dist Appl Num Total : 1				
50-01212-000	572	749	LATYNSKI MARK T &	689 CR 21
Dist Appl Num Total : 1				
50-00370-000	580	756	JONES ROBERT E	CR 17
Dist Appl Num Total : 1				
50-00728-000	700	882	ALLEN WALTER J & FRANKIE	TR 154
Dist Appl Num Total : 1				
50-01439-000	708	890	BENTON JEFFERY D &	TR 177
50-00703-000			BENTON JEFFREY D	3825 SR 151
50-00055-000				SR 151
Dist Appl Num Total : 3				
50-01166-001	736	920	ZONKER THOMAS E SR &	2834 CR 15
Dist Appl Num Total : 1				
50-01176-000	757	942	GREENE LARRY & BRAD	1066 CR 21
Dist Appl Num Total : 1				
50-00508-000	767	952	LAPOSKI GARY A	4089 CR 15
Dist Appl Num Total : 1				
50-01516-000	769	954	OTTO WILLIAM &	CR 15
50-01515-001				CR 15
50-00109-000			OTTO WILLIAM L	CR 15
Dist Appl Num Total : 3				
50-00724-000	797	322	PUCH LAND LLC	1240 CR 17
Dist Appl Num Total : 1				
50-01164-000	806	991	DEVORE DAVID L & TROY J	6441 SR 151
Dist Appl Num Total : 1				
50-01446-000	812	997	LETUSICK MELVIN &	CR 15
50-00516-000				732 CR 17
50-00516-002			LETUSICK MELVIN	CR 17
Dist Appl Num Total : 3				
50-00666-000	857	1042	ALICE ACRES LLC	CR 17
50-00725-000				TR 154

09/05/2014

## Agricultural District Application Numbers

4

Parcel Num	Dist. Num	Appl Num	Owner Name 1	Location Addr
50-00726-000	857	1042	ALICE ACRES LLC	CR 17
Dist Appl Num Total : 3				
50-00727-000	858	1043	LIMESTONE HOLLOW LLC	TR 509
Dist Appl Num Total : 1				
50-00563-000	862	1047	MAGUIRE RICHARD E III &	7985 SR 151
Dist Appl Num Total : 1				
50-00912-000	866	1051	VERHOVEC DONNA J	1205 TR 156
Dist Appl Num Total : 1				
50-01317-001	980	1182	SCHOPPE FREDERICK & SUSAN	CR 19
Dist Appl Num Total : 1				
50-01154-000	996	1198	CIAFARDONE CINDY L &	159 TR 151
Dist Appl Num Total : 1				
Grand Total : 73				

**APPENDIX 06-2**

**PUBLIC OFFICIALS CONTACTED**



APPENDIX 6-2

GABIE STATION PROJECT  
PUBLIC OFFICIALS CONTACTED AND OFFICIALS TO BE SERVED  
A COPY OF CERTIFIED APPLICATION

**Jefferson County Board of Commissioners**

Mr. David C. Maple, Jr., President  
Mr. Thomas G. Gentile  
Dr. Thomas E. Graham  
301 Market Street, First Floor  
Steubenville, Ohio 43952

**Jefferson County Engineer**

Mr. James F. Branagan  
598 State Route 43  
Steubenville, Ohio 43952

**Jefferson County Regional Planning Department**

Mr. Domenick Mucci, Jr., Director  
500 Market Street, Suite 614  
Steubenville, Ohio 43952

**WEILS TOWNSHIP BOARD OF TRUSTEES**

MR JOHN T. GOOSMAN, TRUSTEE  
MR BRIAN A. HARVEY, SR, TRUSTEE  
MR JOSEPH W. ELLS, TRUSTEE  
MR JOSEPH S. MATTHEWS, FISCAL OFFICER  
409 PROSPECT STREET  
BRILLANT, OHIO 43913

**MAYOR RICHARD BOND**

VILLAGE OF SMITHFIELD  
1347 MAIN STREET  
SMITHFIELD, OHIO 43948

## **APPENDIX 06-3**

### **PUBLIC INVOLVEMENT INFORMATION**



American Electric Power  
700 Morrison Road  
Gahanna, OH 43230

September 24, 2014

Name Here  
Address  
City, OH xxxxx

Plat Number: xxxxxxxxxxxxxxxxxxxxx

Re: Gable Substation Project  
Ohio Power Siting Board Case Number: 14-1280-EL-BSB

Dear \_\_\_\_\_:

AEP Ohio and its affiliate, AEP Ohio Transmission Company, cordially invite you to attend a public informational open house. The public informational open house will take place **September 23, 2014, from 6:00 to 8:00 p.m. at the Wells Township Community Center, 107 Steuben Street, Brilliant, Ohio 43913.**

The company plans to construct the new estimated 1.6-acre Gable Substation about 10 miles southwest of Steubenville, Ohio. Gable Substation will allow AEP Ohio to increase the reliability of the electric transmission grid. The new substation will reduce the likelihood of outages and speed restoration by dividing the existing transmission lines into smaller sections. AEP can also better direct the flow of electric power with the installation of the Gable Substation.

Enclosed within this letter is a map that depicts two possible sites for this new transmission substation.

The Ohio Power Siting Board (OPSB) is responsible for reviewing information related to this project — including input from the public — and determining whether the proposed project should be approved. AEP Ohio anticipates filing its application for the transmission substation with the OPSB in October 2014. If the application is approved, construction could begin in spring of 2015 and targeted completion in the winter of 2015.

Additional information about this project can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/). Interested parties may also request information or comment on the project by dialing AEP Ohio's Transmission Project Information Line at 1-877-215-9261 or send an email inquiry to [beschmied@aep.com](mailto:beschmied@aep.com).

On behalf of AEP Ohio, I look forward to seeing you at the public informational open house.

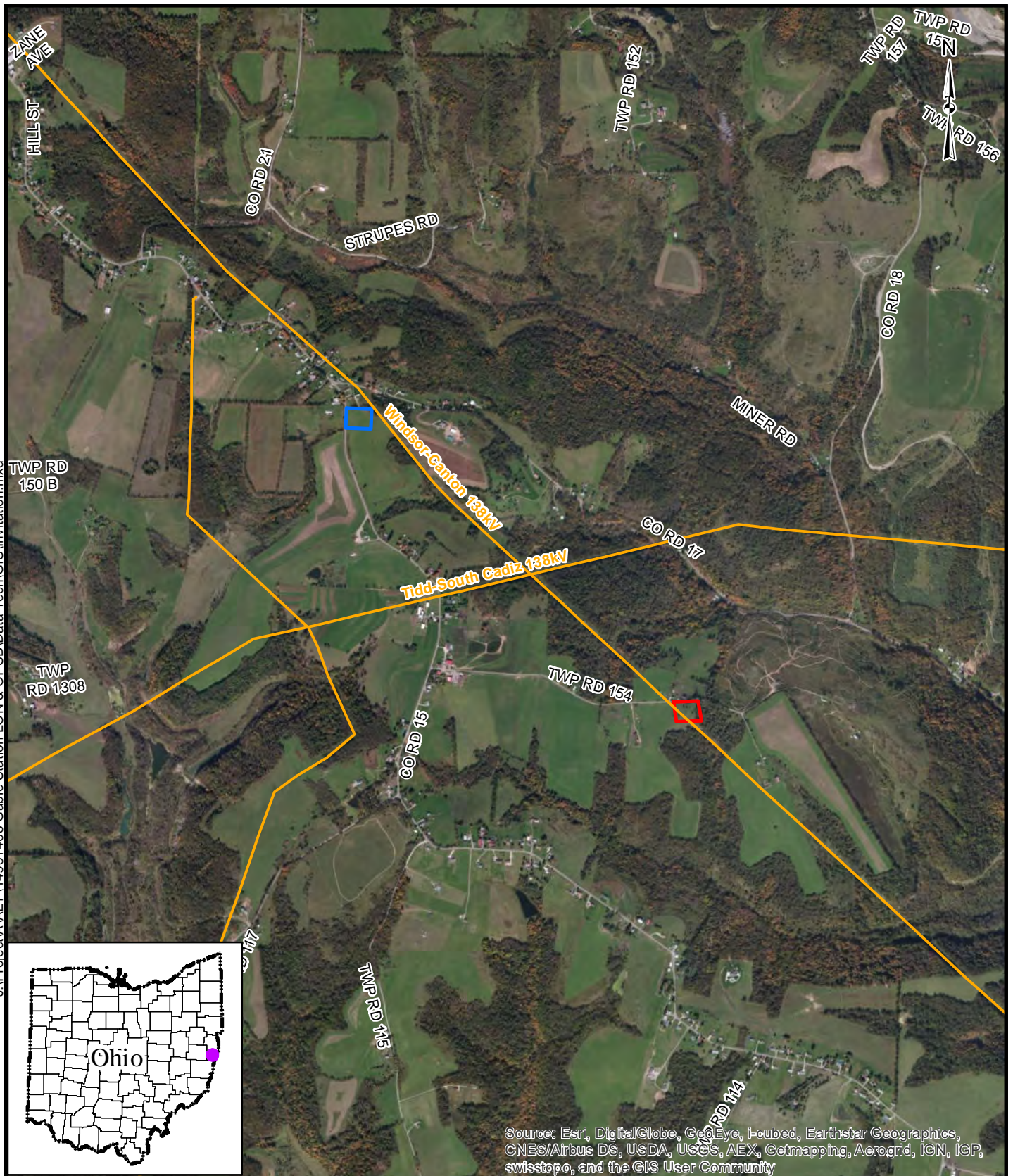
Sincerely,

A handwritten signature in blue ink, appearing to read "Brett E. Schmied".

Brett E. Schmied  
AEP Transmission Project Outreach Specialist

Enclosure (stated)

J:\Project\VAEP\14951468 Gable Station LON & OPSB\Data-Tech\GIS\Invitation.mxd



LEGEND:

- Existing Transmission Line
- Blue Site
- Red Site

0 2,000 4,000  
Scale in Feet

**AEP OHIO**  
**TRANSMISSION**  
**COMPANY**

Gable Station  
Project

FIGURE 1  
PROJECT OVERVIEW

JOB NO. 14951468

**URS**



**MEDIA CONTACT:**

**AEP Ohio**

1-866-641-1151 or 614-883-7999

aepohiomediarelations@aep.com

**FOR IMMEDIATE RELEASE**

**AEP OHIO ANNOUNCES PLANS FOR NEW JEFFERSON COUNTY SUBSTATION**

GAHANNA, Ohio, Sept. 9, 2014 – AEP Ohio, a unit of American Electric Power (NYSE: AEP), and AEP Ohio Transmission Company are taking steps to improve electric service in Jefferson County. The plan includes construction of a new 138-kilovolt (kV) transmission substation in Wells Township.

To learn more about the project, the public is invited to attend a project open house from 6 to 8 p.m. on Sept. 23 at the Wells Township Community Center, 107 Steuben Street, Brilliant, Ohio, 43913. Visitors may come and go at any time during the workshop. Jefferson County and Wells Township residents can offer input, ask questions and learn more about the new transmission substation.

The company plans to construct the new estimated 1.6-acre Gable Substation about 10 miles southwest of Steubenville, Ohio. Gable Substation will allow AEP Ohio to increase the reliability of the electric transmission grid. The new substation will reduce the likelihood of outages and speed restoration by dividing the existing transmission lines into smaller sections. AEP can also better direct the flow of electric power with the installation of the Gable Substation.

“This investment in Jefferson County ensures a reliable delivery of electricity to our customers today, and into the future,” said Selwyn Dias, AEP Ohio vice president, distribution operations. “We are pleased to make this type of investment that is essential for homes, businesses and attracting new investments into the communities we serve.”

The company plans to invest approximately \$2 million in the Gable Substation. Construction is targeted to begin in the spring 2015 and be complete by the end of 2015.

Additional information about the project, including maps, is available online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/). The public also can ask questions, make comments or express concerns about the project by leaving a detailed message and their contact information

on the AEP Ohio Transmission Project Information Line at 877-215-9261. A project representative will return the call.

- - -

AEP Ohio provides electricity to nearly 1.5 million customers of major AEP Subsidiary Ohio Power Company in Ohio. AEP Ohio is based in Gahanna, Ohio, and is a unit of American Electric Power. News and information about AEP Ohio can be found at [AEPOhio.com](http://AEPOhio.com).

American Electric Power is one of the largest electric utilities in the United States, delivering electricity to more than 5 million customers in 11 states. AEP ranks among the nation's largest generators of electricity, owning nearly 38,000 megawatts of generating capacity in the U.S. AEP also owns the nation's largest electricity transmission system, a 40,000-mile network that includes more 765 kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined. AEP's transmission system directly or indirectly serves about 10 percent of the electricity demand in the Eastern Interconnection, the interconnected transmission system that covers 38 eastern and central U.S. states and eastern Canada, and approximately 11 percent of the electricity demand in ERCOT, the transmission system that covers much of Texas. AEP's utility units operate as AEP Ohio, AEP Texas, Appalachian Power (in Virginia and West Virginia), AEP Appalachian Power (in Tennessee), Indiana Michigan Power, Kentucky Power, Public Service Company of Oklahoma, and Southwestern Electric Power Company (in Arkansas, Louisiana and east and north Texas). AEP's headquarters are in Columbus, Ohio. News releases and other information about AEP can be found at [AEP.com](http://AEP.com).



# # #

# NOTICE OF PUBLIC INFORMATION MEETING FOR PROPOSED MAJOR UTILITY FACILITY

## AEP Ohio Schedules Open House to Discuss New Jefferson County Electric Substation

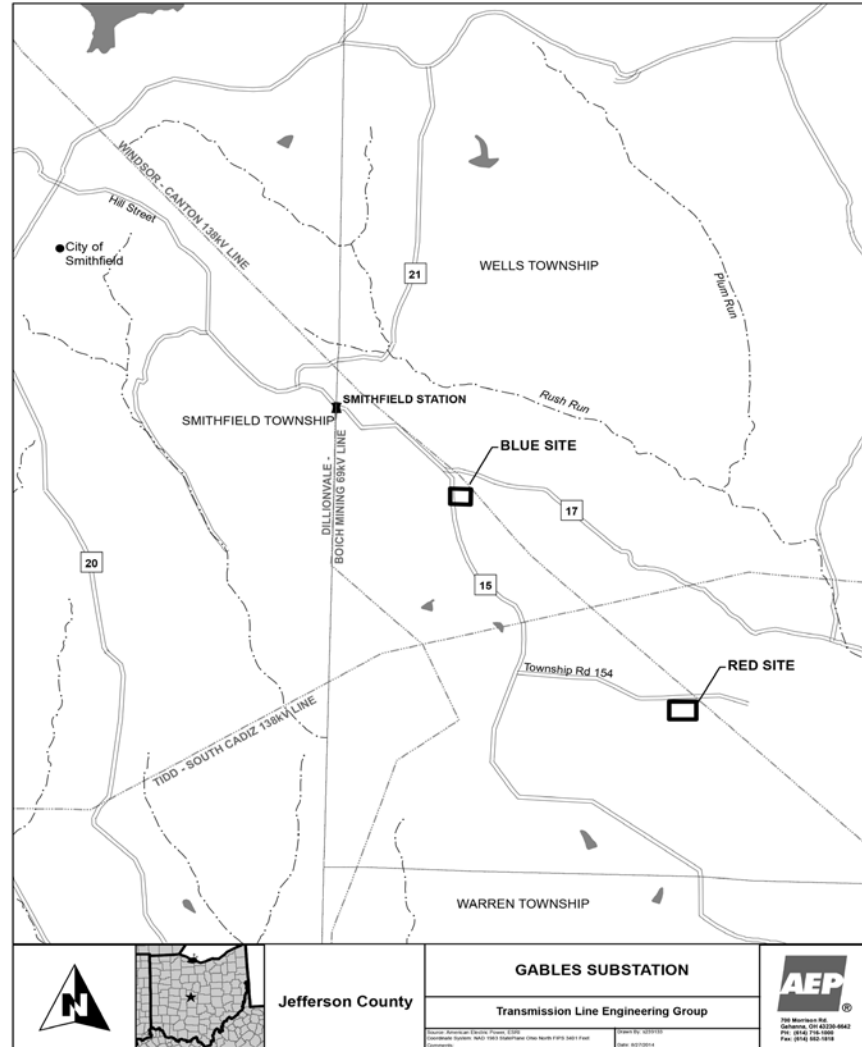
AEP Ohio, a unit of American Electric Power (AEP), and the AEP Ohio Transmission Company invite residents of Jefferson County including the residents of Wells Township to attend an informational open house regarding plans to construct a new high-voltage 138-kilovolt (kV) electric transmission substation in Jefferson County.

The public open house to discuss the proposed Gable Substation will take place from **6 to 8 p.m. Sept. 23, 2014, at Wells Township Community Center, 107 Steuben Street, Brilliant, Ohio, 43913.**

The company plans to construct the new estimated 1.6-acre Gable Substation about 10 miles southwest of Steubenville, Ohio. Gable Substation will allow AEP Ohio to increase the reliability of the electric transmission grid. The new substation will reduce the likelihood of outages and speed restoration by dividing the existing transmission lines into smaller sections. AEP can also better direct the flow of electric power with the installation of the Gable Substation.

AEP projects Gable Substation, an approximate \$2 million investment, will contribute approximately \$67,000 in property taxes to the community.

AEP Ohio Transmission Company expects to file the application for a Certificate of Environmental Compatibility and Public Need for the Gable Substation with the state of Ohio Power



Siting Board in October. This application has been assigned Case Number 14-1280-EL-BSB. This number should be included in all communications with respect to this project.

The Ohio Power Siting Board is responsible for reviewing information related to the project – including input from the public – and determining whether the proposed project should be approved. AEP is required to propose two

substation sites to the siting board. The siting board will make the final decision regarding which site is selected. The accompanying concept map depicts the proposed sites the company will likely submit to the siting board as the Blue Site and Red Site. It should be noted that due to reduced scale and limited detail, this map should be used only as a general guide.

If the application is approved, construction of the substation could begin in spring 2015 and be in-service by the end of 2015.

Additional information about this project can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/). The public also can ask questions, make comments or express concerns about the project by leaving a message on the AEP Ohio Transmission Project Information Line at 877-215-9261 or sending an email inquiry to [beschmied@aep.com](mailto:beschmied@aep.com).



AEP Ohio Transmission Company  
700 Morrison Road  
Gahanna, Ohio 43230  
Attention: Todd Sides, Project Manager

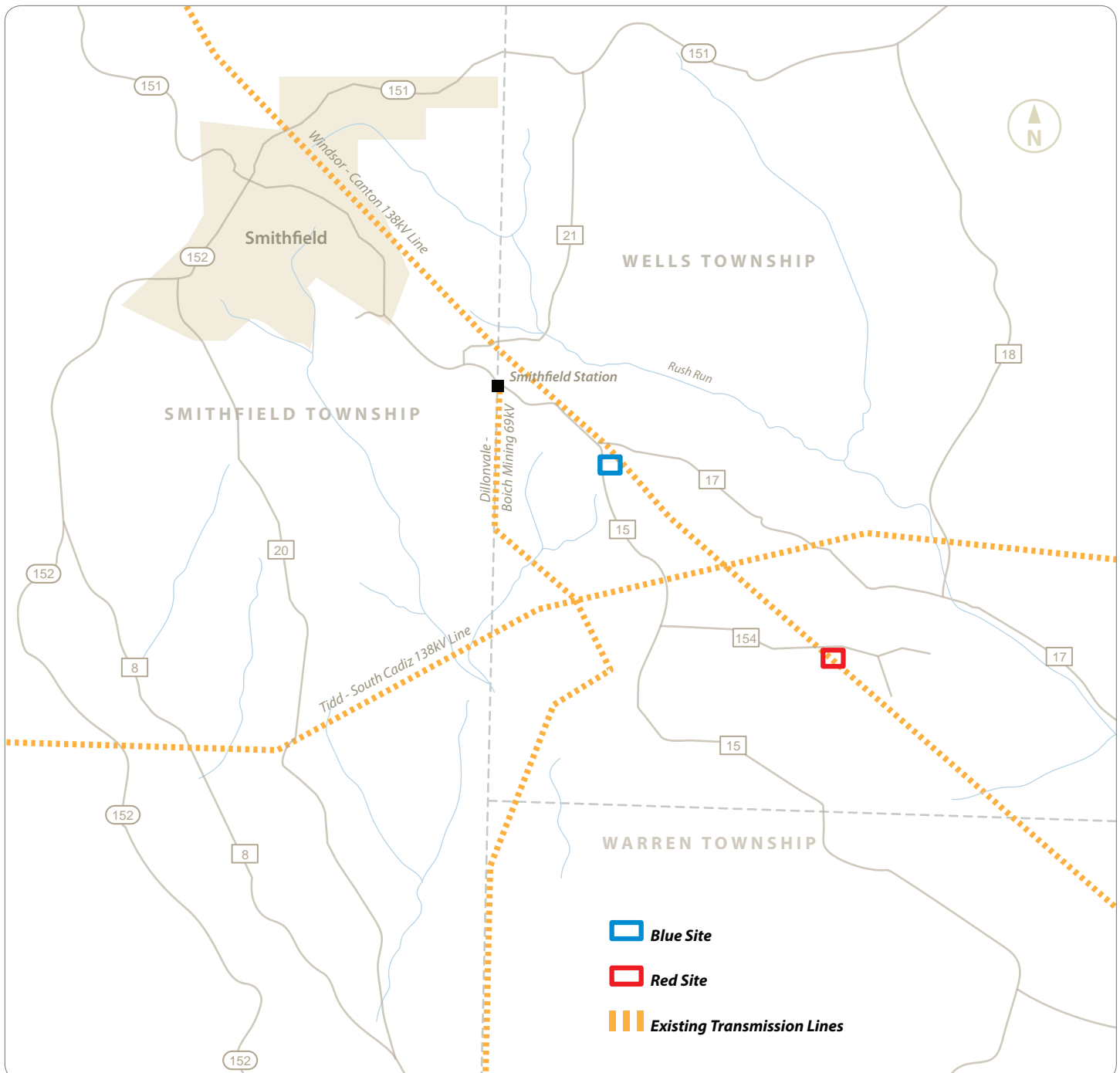
# Gable Substation Project



**OHIO**

A unit of American Electric Power

There is a need to increase the reliability of the electric transmission grid in eastern Ohio. AEP Ohio Transmission Company, an affiliate of AEP Ohio, proposes to build a new electric substation and relocate electric transmission lines in eastern Ohio. The company anticipates filing its application to construct this new substation, also known as the Gable Substation Project, with the Ohio Power Siting Board (OPSB) in October 2014.







## What

The company proposes to construct the new approximate \$2 million Gable Substation about 10 miles southwest of Steubenville, Ohio. The new substation is expected to contribute approximately \$67,000 in property taxes annually to the community.



## Why

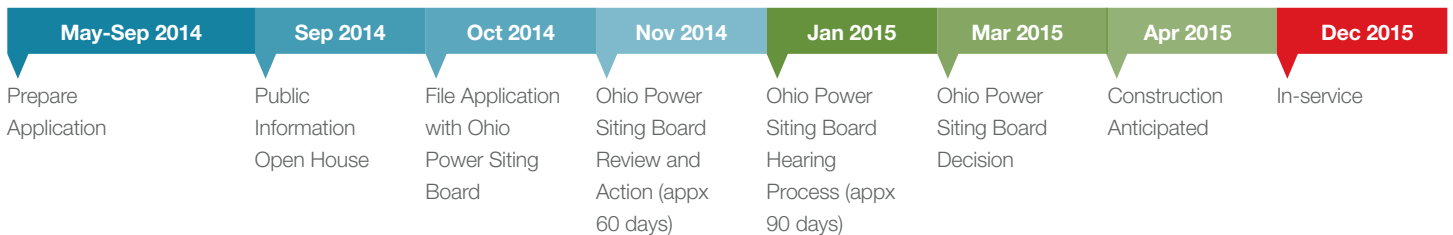
This project will allow AEP Ohio to increase the reliability of the electric transmission grid and address anticipated system overloads. The new substation will reduce the likelihood of outages and speed restoration by dividing the existing transmission lines into smaller sections. AEP can also better direct the flow of electric power with the installation of the Gable Substation.



## Where

The company plans to build Gable Substation on a three-acre property owned by AEP Ohio in Wells Township near the intersection of County Road 17 and County Road 15 in Jefferson County southwest of Steubenville, Ohio. Approximately 1.6 acres will be used for the substation and the access road.

## Timeline



\*Timeline subject to change

## Contact Us

AEP Transmission Siting  
c/o Brett Schmied  
700 Morrison Road, 1st Floor  
Gahanna, OH 43230

Email: [beschmied@aep.com](mailto:beschmied@aep.com)  
Telephone: (614) 883-6929  
Toll-Free: (877) 215-9261

[AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/)



1 Riverside Plaza  
Columbus, Ohio 43215-2373  
AEP.com



## About Electric and Magnetic Fields **EMF**



## About Electric and Magnetic Fields (EMF)

Electric and magnetic fields (EMF) are invisible lines of force that occur in nature and wherever electricity flows, such as through electric lines, electric appliances and motors. Electric fields are produced by the presence of voltage or an electrical charge. They are measured in volts per meter, such that the higher the voltage, the greater the electric field. Magnetic fields result from current or the flow of electricity in a wire. Field strength increases as the current increases. Magnetic fields are measured in units called gauss and are typically reported in thousandths of a gauss, or milligauss (mG).

**A lamp that is plugged in produces an electric field even while it is turned off. However, it will produce a magnetic field only when it is turned on.**

Electric and magnetic fields are present in and around the earth. The magnetic field on the earth (the force that causes a compass to always point north) averages about 500 mG. Thunderstorms also produce EMF.

Alternating current (AC) magnetic fields are associated with power lines and appliances and may cause electrical charges to move in objects that conduct electricity.

Static or direct current (DC) magnetic fields, such as the magnetic field of the earth, do not cause electrical charges to flow in

stationary objects.

Objects—including trees, shrubs and buildings—can block electric fields. Magnetic fields, however, are not easily blocked and can pass through most objects.

The strength of both fields declines rapidly as the distance from their source increases.

## The Health Effects of EMF

Questions about health effects from EMF exposure first arose in the 1960s and 1970s with the use of higher transmission voltages in the U.S.

Scientists have researched whether exposure to low frequency electric and magnetic fields from power lines and electric appliances poses a risk to human health. Initial research focused on electric fields because higher voltages produce higher electric fields. Overall, studies of electric fields found no evidence of biological changes that could lead to health effects.

EMF research began to focus on magnetic fields when an epidemiological study (Wertheimer and Leeper, 1979) suggested that magnetic fields from power lines in Denver might be linked to childhood cancers. A subsequent study (Savitz, 1988) found statistical results generally consistent with the Denver study.

Since then, many epidemiological studies have focused on the possible role of magnetic fields in cancer and other diseases. To date, while some statistical associations have been reported, no actual health effects have

been demonstrated.

The issue is extremely complex; consequently, definitive answers have not been simple or easy to obtain, despite the fact that the topic has been researched for decades.

## Types of EMF Research

Laboratory or basic science studies look at effects of EMF on cells and tissues of humans and animals. Epidemiological studies use statistics to determine whether an association exists between a disease and an external factor such as EMF exposure.

Exposure assessment studies look at sources and amounts of EMF exposure.

## AEP and EMF

AEP has sponsored and continues to sponsor research through its membership in the Electric Power Research Institute (EPRI), the research organization for the electric utility industry.

AEP itself does not actively conduct research on the health effects of EMF. And, while the company will conduct measurements upon request, interpretation of measured levels is not possible, as no level of exposure has been determined to be unsafe.

AEP takes any health and safety issue very seriously. Therefore, it routinely monitors scientific and technical developments and public policy related to EMF as part of its ongoing effort to provide a safe environment for employees and the public.

## For Further Information

To link to third-party web sites where you can read the latest information on studies of the potential health effects of EMF exposure, please visit one of the following AEP-affiliated web sites:

***[AEPOhio.com/go/EMF](http://AEPOhio.com/go/EMF)***

***[Appalachianpower.com/go/EMF](http://Appalachianpower.com/go/EMF)***

***[AEPTexas.com/go/EMF](http://AEPTexas.com/go/EMF)***

***[Kentuckypower.com/go/EMF](http://Kentuckypower.com/go/EMF)***

***[Indianamichiganpower.com/go/EMF](http://Indianamichiganpower.com/go/EMF)***

***[PSOklahoma.com/go/EMF](http://PSOklahoma.com/go/EMF)***

***[SWEPCO.com/go/EMF](http://SWEPCO.com/go/EMF)***

Please Sign In

AEP Ohio Gable Substation Project  
Public Information Open House September 23, 2014



	NAME	ADDRESS	TELEPHONE	EMAIL
1	John Goosman	107 Lawrence St. Br. 11. m.b	598-3362	Wells Twp. Trustee
2	W. M. NEW C.H.O.	2167 County Hi. 15 Rayland.	740-733-8529.	
3	Tom Puck	380 Antigua Rd. Carroll/Kear	330-501-7456	
4	Greg Hunter	374 County Hwy 17 Rayland OH	740/733-7849	
5	Margaret Otto	2167 City Hwy 15 Rayland	740-733-8529	
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**OHIO**

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### Comment Card

Gable Substation Project

PUCO Case No: 14-1280-EL-BSS

Name (please print): Tom Puch Limestone Hollow LLC  
Address: 390 Rusty Way Rd Carmel, IN  
Telephone: 330 501 7456

Question or comment about the Gable Substation Project:

Property Values Next to Red Location

The need for additional Right-A-Way

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [beschmied@aep.com](mailto:beschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).



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### Comment Card

Gable Substation Project

PUCO Case No: 14-1280-EL-BSS

Name (please print): Greg Hunter  
Address: 374 Co. Hwy 17 Rowland OH 43943  
Telephone: 740/733-7849

Question or comment about the Gable Substation Project:

Very Informative

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [beschmied@aep.com](mailto:beschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).

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**Comment Card****Gable Substation Project****PUCO Case No: 14-1280-EL-BSB**

Name (please print): William L. OTTO  
Address: 2167 CH HUNTS RD, RAYLAND, OH 43943  
Telephone: 740-733-8529

Question or comment about the Gable Substation Project:

I would like A COPY OF DRAWING ON SITE.#1 ENVIRONMENTAL - AN WATER FLOW ONTO OURPASTURE#2. Lighting#4 NOISE#3. HealthPLEASE PLACE SITE ON "RED"

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [breschmied@aep.com](mailto:breschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).

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**Comment Card****Gable Substation Project****PUCO Case No: 14-1280-EL-BSB**

Name (please print): Margaret Otto  
Address: 2167 CH HUNTS RD, RAYLAND, OH 43943  
Telephone: 740-733-8529

Question or comment about the Gable Substation Project:

I'm largely concerned with "where"  
Station will be located. I'm  
hoping it will be located at RED  
location and not across the street  
from my farm. Thank you

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [breschmied@aep.com](mailto:breschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).

**OHIO**

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**Comment Card****Gable Substation Project****PUCO Case No: 14-1280-EL-BSB**

Name (please print): JACKSON R. OTTO  
Address: 2167 CH HUNTS RD, RAYLAND OH 43943  
Telephone: 740-317-5429

Question or comment about the Gable Substation Project:

PLEASE USE "RED" LOCATION FOR  
SUB STATION.

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [breschmied@aep.com](mailto:breschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).



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### Comment Card

**Gable Substation Project**

**PUCO Case No: 14-1280-EL-BSB**

Name (please print): Richard A. Thornton Jr.  
Address: 2148 Co Rd 15 Rayland, Oh.  
Telephone: 740-733-7209

Question or comment about the Gable Substation Project:

Please place on Red site, this  
is less populated.

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [beschmied@aep.com](mailto:beschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).

**Brett E Schmied**

---

**From:** randykinyo@gmail.com  
**Sent:** Tuesday, October 21, 2014 6:28 AM  
**To:** Brett E Schmied  
**Subject:** Comment: Gable Substation

This is an EXTERNAL email. STOP. THINK before you CLICK links or OPEN attachments.

\*\*\*\*\*

Names: Randy Kinyo

Email: [randykinyo@gmail.com](mailto:randykinyo@gmail.com)

Address: 2029 county road 15

City: Rayland

State: Ohio

Zip: 43943

Comments: Living in the area we would prefer this project to be installed out of site. Please use the Red site.

Thanks,

Randy

Contact-Form: SUBMIT





**OHIO**

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PITTSBURGH

PA 150

20 OCT '14

PM 1 L

### Comment Card

**Gable Substation Project**

**PUCO Case No: 14-1280-EL-BSB**

Name (please print): Kevin Corona  
Address: 2668 county rd 15  
Telephone: 740-733-7464

Question or comment about the Gable Substation Project:

put it on "red," Hunter lane.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [beschmied@aep.com](mailto:beschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).



**OHIO**

A unit of American Electric Power

### Comment Card

**Gable Substation Project**

**PUCO Case No: 14-1280-EL-BSB**

Name (please print): Rhonda Corona  
Address: 740 Hill St., Rayland, OH 43943  
Telephone: 740-733-8012

Question or comment about the Gable Substation Project:

As a life long resident of this neighbor-  
hood, I prefer this substation be  
built away from Co. Rd. 15. It would be  
less intrusive to residents if built on  
Hunter Road side.

Call toll free 1-877-215-9261 if you have a question or a comment about this project or send an email inquiry to Brett Schmied at [bschmied@aep.com](mailto:bschmied@aep.com). Additional information can be found online at [AEPTransmission.com/Ohio/Gable/](http://AEPTransmission.com/Ohio/Gable/).

## **4906-15-07 Ecological Impact Analysis**

## **4906-15-07 ECOLOGICAL IMPACT ANALYSIS**

This section of the Application provides a summary of the studies that have been made of the ecological impact of the proposed Gable Station Project. Information is provided for the Preferred and Alternate Sites, and is based on published data within 1,000 feet and field evaluation studies conducted within 100 feet of the sites.

### **(A) SUMMARY OF ECOLOGICAL IMPACT STUDIES**

As part of the preparation of this Application, an ecological survey was conducted for the proposed Preferred and Alternate Sites. The field survey was supplemented by published ecological information within 1,000 feet of the substation through the review of aerial photography, United States Geological Survey (USGS) maps, United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, and U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey maps. Additional information regarding endemic vegetation and wildlife was obtained from the Ohio Department of Natural Resources, Division of Natural Areas and Preserves (ODNR-DNAP) Biodiversity Database. Information obtained from ODNR-DNAP showed that no known records of species of special concern were found within 1,000 feet of the Preferred and Alternate Sites. Special status species identified in the general project vicinity through correspondence and published information from ODNR and the USFWS are discussed in section 4906-15-07(B)(3)(e) below.

A field reconnaissance was conducted by URS ecologists at the request of AEP on July 11, 2014 to document the endemic vegetation and wildlife and to quantify the occurrence and quality of wetlands and streams. Both the Preferred Site and Alternate Site are agricultural fields most recently used as hay fields, with some wooded areas present. The field reconnaissance of the Preferred Site covered an approximately three-acre property owned by AEP. No wetlands, streams, ponds, or special status species habitats were identified within 100 feet of the Preferred Site substation fence line or access road. At the time of the field reconnaissance, survey permission had not been granted for the Alternate Site, although it was clearly visible from adjacent roads. No wetlands, streams, ponds, or special status species habitats were identified within 100 feet of the Alternate Site substation fence line or access road. Further assessment would be necessary if the Alternate Site is certificated.

### **(B) ECOLOGICAL FEATURES**

A map at a scale of 1:24,000 illustrating areas within 1,000 feet of the proposed Preferred and Alternate Sites is presented as Figure 04-1. Features within 1,000 feet of the proposed sites were derived from published data and, where possible, verified and supplemented by the field survey.

## (1) Route Alignments

Gable Station will be energized by interconnecting to the existing Windsor-Canton 138 kV transmission line, located nearly adjacent to the east and northeast of the Preferred Site, and the Tidd-South Cadiz 138 kV transmission line, located approximately 0.5 mile to the south of the Preferred Site. These interconnections will form Gable-Carrollton, Gable-Tidd, and Gable-South Cadiz 138 kV circuits, and will be submitted under separate cover to the OPSB as a Letter of Notification.

## (2) Substations

The proposed locations for the Preferred and Alternate Sites can be seen on Figure 04-1.

(a) **Preferred Site:** The Preferred Site of the Gable Station is located on an approximately three-acre property situated adjacent to the east of County Road 15, approximately 400 feet south of County Road 17. AEP owns this predominantly agricultural property. Access to the substation is proposed from County Road 15 using a new permanent access drive.

(b) **Alternate Site:** The Alternate Site is located on the southern side of Township Road 154, approximately 0.7-mile east of County Road 15 and approximately 1.1 miles southeast of the Preferred Site. Proposed access to the substation will be from Township Road 154 to the north via a permanent access drive.

## (3) All Areas Currently Not Developed For Agricultural, Residential, Commercial, Industrial, Institutional, or Cultural Purposes, Including:

(a) **Streams and Drainage Channels:** Streams and drainage channels mapped within 1,000 feet of the Preferred and Alternate Sites and interconnections are shown on Figure 04-1. One unnamed tributary to Dry Fork is mapped approximately 700 feet southwest of the Preferred Site substation fence line. No streams were delineated within 100 feet of the Preferred Site. No streams were identified within 1,000 feet of the Alternate Site.

(b) **Lakes, Ponds, and Reservoirs:** One farm pond is visible on aerial photography approximately 600 feet west of the Preferred Site. No other lakes, ponds, or reservoirs were mapped within 1,000 feet of the Preferred or Alternate Sites on USGS topographic maps.

(c) **Marshes, Swamps, and Other Wetlands:** Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytic) typically adapted for life in saturated (hydric) soil conditions.

To identify whether or not wetlands exist on the Preferred and Alternate Sites and associated interconnections, a desktop study of available resources was reviewed prior to the field wetland delineation of the Project area. USFWS NWI maps and NRCS soil survey and hydric soil lists

for Jefferson County, Ohio were reviewed for areas within 1,000 feet of the Preferred and Alternate Sites and associated interconnections. NWI areas are shown on Figure 04-1. No NWI areas were mapped within 1,000 feet of the Preferred Site. One NWI area was mapped approximately 600 feet southeast of the Alternate Site. During the field reconnaissance, no wetlands were identified within 100 feet of the Preferred and Alternate Sites.

**(d) Woody and Herbaceous Vegetation Land:** The Preferred and Alternate Sites are predominantly located in hay fields. Vegetation is limited to herbaceous grasses, with the exception of less than 0.1 acre of deciduous tree cover along the northeast corner of the Preferred Site, and 0.7 acre of deciduous trees along the northern and eastern edges of the Alternate Site.

**(e) Locations of Threatened and Endangered Species:** Based on a desktop review of USFWS published documentation, records on ODNR's Biodiversity Database, and correspondence from ODNR, a total of three threatened, endangered, recovery, or candidate species of concern are listed within the project range in Jefferson County. These species include Indiana bat (*Myotis sodalis*), a federally endangered species; eastern hellbender (*Cryptobranchus alleganiensis*), a federal species of concern and state endangered species; and black bear (*Ursus americanus*), a state endangered species.

The ODNR replied in July 8, 2014 to an e-mailed request for records of protected species within an extended area around the project area. The ODNR Biodiversity Database did not identify any protected species records within the extended area of approximately 0.25 mile of the Preferred and Alternate Sites.

A second consultation letter was sent to ODNR on July 10, 2014. This letter included more detailed information about the project site than the original Biodiversity Database request. ODNR replied on August 15, 2014 with comments pertaining to the following listed species:

The project is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. ODNR stated that if suitable habitat occurs on the project area and trees must be cut, it is recommended that cutting occur between October 1 and March 31. No suitable Indiana bat habitat was observed on site during field surveys conducted by URS at the Preferred or Alternate Sites.

The project is within the range of the black bear (*Ursus americanus*), a state endangered species. ODNR stated that the project is not likely to impact this species due to the mobility of this species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis*), a federal species of concern and state endangered species. ODNR stated that if no in-water work is proposed in a perennial stream, this project is not likely to impact this species. AEP proposes no in-water work associated with construction of the project.

Copies of the ODNR response letters are included in Appendix 07-1.

A similar correspondence letter regarding the project was provided to USFWS on July 10, 2014. USFWS provided comments regarding the project in a letter dated August 4, 2014. USFWS stated that no adverse impacts to federally endangered, threatened, proposed, or candidate species were anticipated due to AEP's implementation of seasonal tree cutting between October 1 and March 31. A copy of the correspondence from USFWS is included in Appendix 07-1.

#### **(4) Soil Associations in the Corridor:**

The Morristown-Lowell-Westmoreland soil association is mapped at the Preferred and Alternate Sites (U.S. Department of Agriculture [USDA], 1990). Figure 04-1 shows the soil associations in the study area. No soil conditions were found that would potentially limit construction of the proposed project.

### **(C) IMPACTS OF ALTERNATIVE SITES ON WATER BODIES**

#### **(1) Construction Impact**

No streams, ponds, wetlands, or other water crossings are anticipated during construction of Gable Station at the Preferred Site or Alternate Site. No impacts from construction of the proposed facility are anticipated.

#### **(2) Operation and Maintenance Impact**

No operation or maintenance impacts to water bodies are anticipated.

#### **(3) Mitigation Procedures**

A Storm Water Pollution Prevention Plan (SWP3) and Best Management Practices (BMPs) will be implemented during construction to control erosion. Areas where soil has been disturbed will be seeded and mulched to prevent soil erosion and sedimentation.

### **(D) WETLANDS IMPACT**

#### **(1) Construction Impact**

No wetlands were identified within the footprint of the proposed substation, or are crossed by any of the proposed access roads or interconnections. No impacts to wetlands are anticipated.

#### **(2) Operation and Maintenance Impact**

Wetland areas should not be significantly affected by the operation or maintenance of the substation and associated interconnections at either the Preferred or Alternate Site.



**(3) Mitigation Procedures**

No wetland impacts are expected. Therefore, no mitigation procedures are proposed.

**(E) VEGETATION IMPACT****(1) Construction Impact**

Most of both the Preferred and Alternate Sites are currently hay fields, with the exception of less than 0.1 acre of deciduous trees near the northeast corner of the Preferred Site, and 0.7 acre of deciduous trees along the northern and eastern edges of the Alternate site. Tree clearing is expected to be limited to very few trees at the Preferred Site. Herbaceous vegetation clearing is expected to be limited to approximately 2.5 acres within and immediately adjacent to the substation fence line.

**(2) Operation and Maintenance Impact**

During operation of the substation at either the Preferred or Alternate Site, the impacts on vegetated land should be minor.

**(3) Mitigation Procedures**

Experience shows that seeding in non-wetland and non-agricultural areas is effective to control erosion on areas disturbed by construction activities. Seeding is typically included as part of the construction stormwater BMPs in order to rapidly restore site surface soils and prevent erosion and possible sedimentation. These measures should preserve the aesthetic qualities adjacent to the site and help prevent erosion and sedimentation.

**(F) COMMERCIAL, RECREATIONAL, AND THREATENED/ENDANGERED SPECIES IMPACTS**

The Project is located in a rural setting with occasional residences scattered through an agriculturally dominated landscape. The proposed Preferred and Alternate Sites are currently agricultural fields. The sites do have potential habitat for some wildlife species. Lists of commercial and recreational species were obtained from the ODNR-Division of Wildlife (DOW) annual hunting and trapping regulations.<sup>1</sup> Lists of protected species were based on their reported range within Jefferson County, the ODNR Biodiversity Database, and correspondence with USFWS and ODNR. Details on the expected impacts of construction, operation and maintenance, and mitigation procedures can be found following the commercial, recreational, and threatened and endangered species descriptions.

---

<sup>1</sup> ODNR–DOW Ohio Hunting and Trapping Regulations 2014

**(1) Construction**

Commercially important species consist of those hunted or trapped for fur or other commercial byproducts. Recreational terrestrial species consist of those hunted as game. Habitat for most commercial and recreational species was identified on the AEP properties during the field reconnaissance. Due to the agricultural nature of the Preferred and Alternate Sites, only foraging habitat was observed.

The USFWS and ODNR were contacted regarding the potential for occurrence of threatened and endangered species in the Project vicinity. Three species of concern, the Indiana bat, black bear, and eastern hellbender are listed within Jefferson County. The ODNR Biodiversity Database did not identify any species of concern within 1,000 feet of the Preferred or Alternate Sites. None of these species was observed at the time of the field reconnaissance.

Construction of the substation at both the Preferred and Alternate Sites would result in conversion of portions of agricultural fields to the proposed facility. The lack of suitable habitat for animal species at the current sites suggests the impact of construction will be minimal, as similar foraging habitat is available on adjacent properties.

**(2) Operation and Maintenance Impact**

During operation and maintenance of the substation at either the Preferred or Alternate Site, impacts on wildlife are anticipated to be minor.

**(3) Mitigation Procedures**

The Preferred and Alternate Sites have been examined in the field and reviewed on aerial photographs by experienced biologists. No significant problem areas that would require the use of special mitigation measures for wildlife have been identified. If, however, such conditions are recognized at a later date, the condition will be mitigated appropriately on an individual basis.

**(G) SLOPES AND ERODIBLE SOILS****(1) Construction Impact**

Based on the Jefferson County soil survey and field reconnaissance, soils covering most of the county including the Preferred and Alternate Sites are considered highly erodible. Slopes in the areas of the Preferred and Alternate Sites may exceed 12 percent slightly. Based on the civil survey, typical slopes on the overall property range from 10 to 15 percent. A grading plan for the Preferred Site is provided as Figure 04-2. A SWP3 will be implemented during construction to control erosion. BMPs will be implemented as needed to prevent erosion and to preclude sedimentation as the result of construction.

**(2) Operation and Maintenance Impact**

Once the substation is in place, no impacts or erosion hazards are expected.

**(3) Mitigation Procedures**

No special mitigation procedures are anticipated beyond those required as part of the stormwater permit and SWP3. BMPs consisting mainly of silt fences will be used when construction takes place adjacent to storm water or sewer inlets.

**(H) Other Issues**

No other issues are anticipated.

## **APPENDIX 07-1**

### **ODNR AND USFWS CORRESPONDENCE**



# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

## Ohio Division of Wildlife

Scott Zody, Chief  
2045 Morse Rd., Bldg. G  
Columbus, OH 43229-6693  
Phone: (614) 265-6300

July 8, 2014

Aaron Geckle  
URS  
525 Vine Street, Suite 1800  
Cincinnati, OH 45202

Dear Mr. Geckle

After reviewing the Natural Heritage Database, I find the Division of Wildlife has no records of rare or endangered species in the Gable Station project area, including a one mile radius, in Wells Township, Jefferson County, Ohio. We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests or other protected natural areas within a one mile radius of the project area.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. This letter only represents a review of rare species and natural features data within the Ohio Natural Heritage Database. It does not fulfill coordination under the National Environmental Policy Act (NEPA) or the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S. C. 661 et seq.) and does not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Please contact me at 614-265-6452 if I can be of further assistance.

Sincerely,

A handwritten signature in blue ink that reads "Greg Schneider". The signature is written in a cursive style.

Greg Schneider, Administrator  
Ohio Natural Heritage Database Program



# Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

JAMES ZEHRINGER, DIRECTOR

**Office of Real Estate**  
*Paul R. Baldrige, Chief*  
2045 Morse Road – Bldg. E-2  
Columbus, OH 43229  
*Phone: (614) 265-6649*  
*Fax: (614) 267-4764*

August 15, 2014

Aaron Geckle  
URS Corporation  
525 Vine Street, Suite 1800  
Cincinnati, Ohio 45202

**Re:** 14-562; Gable Station Project

**Project:** AEP is proposing to construct a new electric substation and approximately one mile of electric transmission interconnections.

**Location:** The project is located in Wells Township, Jefferson County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

**Natural Heritage Database:** A review of the Natural Heritage Database produces the following comments.

We are unaware of any animal assemblages, scenic rivers, state wildlife areas, state nature preserves, state or national parks, state or national forests or national wildlife refuges within the project area. The review was performed on the project area you specified in your request as well as an additional one mile radius. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

**Fish and Wildlife:** The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.



The project is within the range of the Indiana bat (*Myotis sodalis*), a state and federally endangered species. The following species of trees have relatively high value as potential Indiana bat roost trees: Shagbark hickory (*Carya ovata*), Shellbark hickory (*Carya laciniosa*), Bitternut hickory (*Carya cordiformis*), Black ash (*Fraxinus nigra*), Green ash (*Fraxinus pennsylvanica*), White ash (*Fraxinus americana*), Shingle oak (*Quercus imbricaria*), Northern red oak (*Quercus rubra*), Slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), Eastern cottonwood (*Populus deltoides*), Silver maple (*Acer saccharinum*), Sassafras (*Sassafras albidum*), Post oak (*Quercus stellata*), and White oak (*Quercus alba*). Indiana bat habitat consists of suitable trees that include dead and dying trees with exfoliating bark, crevices, or cavities in upland areas or riparian corridors and living trees with exfoliating bark, cavities, or hollow areas formed from broken branches or tops. If suitable trees occur within the project area, the Division of Wildlife recommends that these trees be conserved. If suitable habitat occurs on the project area and trees must be cut, the Division of Wildlife recommends cutting occur between October 1 and March 31. If suitable trees must be cut during the summer months, the Division of Wildlife recommends a net survey be conducted between June 1 and August 15, prior to cutting. Net surveys should incorporate either nine net nights per square 0.5 kilometer of project area, or four net nights per kilometer for linear projects. If no tree removal is proposed, the project is not likely to impact this species.

The project is within the range of the black bear (*Ursus americanus*), a state endangered species. Due to the mobility of this species, this project is not likely to impact this species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. This long-lived, entirely aquatic salamander inhabits perennial streams with large flat rocks. In-water work in hellbender streams can reduce availability of large cover rocks and can destroy hellbender nests and/or kill adults and juveniles. The contribution of additional sediment to hellbender streams can smother large cover rocks and gravel/cobble substrate (used by juveniles), making them unsuitable for refuge and nesting. Projects that contribute to altered flow regimes (e.g., by increasing areas of impervious surfaces or modifying the floodplain) can also adversely affect hellbender habitat. Due to the location, and that there is no in-water work proposed in a perennial stream, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

ODNR appreciates the opportunity to provide these comments. Please contact John Kessler at (614) 265-6621 if you have questions about these comments or need additional information.

John Kessler  
ODNR Office of Real Estate  
2045 Morse Road, Building E-2  
Columbus, Ohio 43229-6693  
John.Kessler@dnr.state.oh.us

**Geckle, Aaron**

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**From:** susan\_zimmermann@fws.gov on behalf of Ohio, FW3 <ohio@fws.gov>  
**Sent:** Monday, August 04, 2014 3:28 PM  
**To:** Geckle, Aaron  
**Subject:** Gable Station Project, Jefferson Co.

Tails #03E15000-2014-TA-1502

Dear Mr. Geckle,

We have received your recent correspondence regarding potential impacts to federally listed species in the vicinity of the above referenced project. There are no federal wilderness areas, wildlife refuges or designated critical habitat within the vicinity of the project area.

LISTED, PROPOSED, AND CANDIDATE SPECIES COMMENTS: Due to the project type, size, location, and the proposed implementation of seasonal tree cutting (only clearing between October 1 and March 31) to avoid impacts to Indiana bats, we do not anticipate adverse effects to any other federally endangered, threatened, proposed or candidate species. Should the project design change, or during the term of this action, additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, consultation with the Service should be initiated to assess any potential impacts.

If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), no tree clearing on any portion of the parcel should occur until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend that the federal action agency submit a determination of effects to this office, relative to the Indiana bat, for our review and concurrence.

If you have additional questions or require further assistance with your project proposal, please contact me at the following number (614) 416-8993, x12. In addition, you can find more information on natural resources in Ohio, and a county list of federally threatened and endangered species in Ohio, by visiting our homepage at:  
<http://www.fws.gov/midwest/ohio>.

Sincerely,



**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**11/6/2014 10:16:27 AM**

**in**

**Case No(s). 14-1280-EL-BSB**

Summary: Application for a Certificate of Environmental Compatibility and Public Need-Gable Station Project electronically filed by Mr. Steven T Nourse on behalf of AEP Ohio Transmission Company