ECC CEX 71
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TrAILCo Response to OCA Interrogatory Set I, No. 17
Sponsor: Lawrence Hozempa
Response Date: July 3, 2007

IN RE: APPLICATION OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY
PaPUC Docket No. A-110172 et al.

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OFFICE OF CONSUMER ADVOCATE Set I, No. 17:

OCA-I-17. Please refer to Statement No. 2, page 6 at lines 8-11.

a. Please list the alternatives to the Prexy Facilities that were considered.

b. Please provide a cost breakdown for the Prexy Facilities.

c. Please provide a cost breakdown for each of the alternatives to the Prexy Facilities that were considered.

d. Please provide load flow saved cases compatible with Siemens PTI PSS/E Version 30 that reflect the base cases including each of the alternatives to the Prexy Facilities that were considered.

e. Please provide a copy of any other studies, analyses, etc. that were used to evaluate the alternatives to the Prexy Facilities that were considered.

f. Please provide a copy of all the reliability planning criteria used in the evaluation of the need for the Prexy Facilities and in the evaluation of the alternatives to the Prexy Facilities that were considered.

RESPONSE:

a. The study examined at two alternatives to serve the load center around the original Prexy Substation site. The present distribution load, within a 10 mile radius of the original Prexy Substation location, will exceed 500 MVA in 2009. The alternates studied were to serve the load from within the load center or from outside the load center. The first alternative involved tapping the Wylie Ridge – Harrison 500 kV line and installing a 500/138 kV substation in western Washington County. The second alternative involved building the center portion of the original Harrison – Yukon 500 kV line (502 Junction – Prexy) and installing a 500/138 kV substation in Northern Washington County (Prexy).

b. A breakdown of the cost of the Prexy Facilities follows.

i. 138kV portion of Prexy Substation - $35.98 million (includes 138kV capacitor)

ii. Prexy to Houston-Manifold 138kV line - $11.21 million
iii. Prexy to Union Junction-Peters 138kV line - $12.25 million
iv. Prexy to Washington-Charleroi 138kV line - $9.91 million
v. 500kV portion of Prexy Substation - $24.10 million (includes 500/138kV transformer)
vi. 502 Junction-Prexy 500kV line (36 miles) - $107.15 million
vii. Install 500kV breakers at 502 Junction Substation - $12.92 million
viii. Total cost of Prexy Facilities - $213.52 million

c. A cost estimate was not completed on the second alternative since it was electrically unacceptable.

d. See case files on Attachment OCA-I-17-A which is confidential and will be provided in accordance with the terms and conditions of any protective order issued in this proceeding.

e. See other studies, analyses, etc. are on Attachment OCA-I-17-A which is confidential and will be provided in accordance with the terms and conditions of any protective order issued in this proceeding.

f. Allegheny Power's planning criteria used in the evaluation of the need for the Prexy Facilities is based on Allegheny Power's 2005 FERC Form 715 Part 4 which is included on Attachment OCA-I-17-A. Attachment OCA-I-17-A is confidential and will be provided in accordance with the terms and conditions of any protective order issued in this proceeding.

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PRINTER'S NO. 1663

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE RESOLUTION

No. 297 Session of 2007

INTRODUCED BY DeWEESE, SOLOBAY, MUNDY, EACHUS, BELFANTI, BRENNAN, CALTAGIRONE, CASORIO, FABRIZIO, GIBBONS, HARHAI, KORTZ, LEVDANSKY, LONGIETTI, MAHONEY, OLIVER, SAYLOR, SHAPIRO, SHIMKUS, SIPTROTH, DALEY, WANSACZ, J. WHITE, YUDICHAK, KIRKLAND, YEWCIC, SCAVELLO, READSHAW, WOJNAROSKI, GALLOWAY, GEORGE, FREEMAN, DALLY, JOSEPHS, YOUNGBLOOD, PASHINSKI AND HORNAMAN, MAY 24, 2007

REFERRED TO COMMITTEE ON CONSUMER AFFAIRS, MAY 24, 2007

A RESOLUTION

Opposing the designation of national interest electric transmission corridors and memorializing the Congress of the United States to repeal or modify certain provisions of the Energy Policy Act of 2005.

WHEREAS, The Energy Policy Act of 2005 (EPact) was passed by the Congress on July 29, 2005, and signed into law on August 8, 2005; and

WHEREAS, The EPact was promoted as a comprehensive approach to growing energy needs and designed to guarantee development of domestic fuel production and energy supply, thereby ending United States dependence on foreign oil; and

WHEREAS, Provisions of the omnibus legislation touch on nearly every segment of energy production and use, including nuclear power, electricity, natural gas, fossil fuels, renewable energy and competitive generation; and

WHEREAS, A provision of Title XII of the EPact, Electricity,

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however, preempts what have long been fundamental powers of state and local governments; and

WHEREAS, Section 1221, for example, transfers the authority to approve the siting of certain transmission lines from state governments and their political subdivisions to agencies of the Federal Government; and

WHEREAS, Section 1221(a) of EPact directs the United States Secretary of Energy to, in consultation with states, conduct periodic nationwide studies of electric transmission congestion; and

WHEREAS, The Secretary of Energy released its initial National Electric Transmission Congestion study in August 2006; and

WHEREAS, Based upon the findings of any congestion study, the Secretary of Energy may designate "any geographical area experiencing electric energy transmission capacity constraints or congestion that adversely affects customers" as a "national interest electric transmission corridor" or national corridor; and

WHEREAS, Section 1221(b) further conveys to the Federal Energy Regulatory Commission (FERC) the authority to issue permits for construction or modification of electric transmission facilities situated or proposed to be situated in any Department of Energy designated national interest electric transmission corridor; and

WHEREAS, The FERC would be able to override the authority of the Pennsylvania Public Utility Commission to issue a certificate of public convenience to approve and locate a transmission line in a Department of Energy designated national interest electric transmission corridor if:

(1) the Pennsylvania Public Utility Commission had no authority to approve a specified transmission line proposal or would fail to consider interstate benefits of the proposed transmission line;

(2) the applicant would not qualify for a certificate of public convenience issued by the Pennsylvania Public Utility Commission because it does not serve end-use customers in the Commonwealth of Pennsylvania;

(3) the Pennsylvania Public Utility Commission would fail to act on an application for approval to locate and construct the new transmission line within one year of the filing of an application or one year after designation as a national interest electric transmission corridor, whichever is later; or

(4) the Pennsylvania Public Utility Commission would condition its approval in such a manner that the proposed construction or modification would not significantly reduce transmission congestion or would not be economically feasible;

and

WHEREAS, The Pennsylvania Public Utility Commission and its predecessor, the Public Service Commission, have had jurisdictional and regulatory authority over public utilities and public utility service, including the review and approval of applications for the location and construction of transmission lines in the Commonwealth of Pennsylvania since 1913, or for 94 years; and

WHEREAS, The designation of national interest electric transmission corridors in the Commonwealth of Pennsylvania, coupled with FERC "backstop" authority to issue permits to site

a transmission line and thereby override the recommendations of the Pennsylvania Public Utility Commission, would give electric utilities access to Federal eminent domain authority; and

WHEREAS, If FERC would institute its "backstop" authority, the holder of a FERC-issued permit would be empowered to exercise the right of eminent domain to condemn and acquire private property to locate and construct the transmission line; and

WHEREAS, On March 6, 2006, Allegheny Power and the PJM Interconnection, the Regional Transmission Organization that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia, including the Commonwealth of Pennsylvania, filed for early designation as a national interest electric transmission corridor a 240-mile, 500 kV transmission line which would extend from southwestern Pennsylvania, traverse West Virginia and terminate in northern Virginia; and

WHEREAS, On October 10, 2006, the PJM Interconnection submitted another request to the Department of Energy for early designation of three additional national interest electric transmission corridors that will encompass nearly all of the Mid-Atlantic region; and

WHEREAS, The early request filed with the United States Department of Energy by Allegheny Power and the PJM Interconnection, if granted, will include significant acreage of land in the Commonwealth of Pennsylvania; and

WHEREAS, On April 26, 2007, the United States Department of Energy released drafts of two national interest electric transmission corridor designations, including the Mid-Atlantic Area National Corridor; and

WHEREAS, The Mid-Atlantic Area National Corridor designation includes counties in Ohio, West Virginia, Pennsylvania, New York, Maryland, Virginia and includes all of New Jersey, Delaware and the District of Columbia; and

WHEREAS, Fifty of the Commonwealth of Pennsylvania's 67 counties, or 75% of the land within the Commonwealth's geographic borders, are included in the Mid-Atlantic Area National Corridor designation; and

WHEREAS, In its release announcing the draft national interest electric transmission corridor designations, the Department of Energy revealed that it would convene three public meetings during a 60-day comment period; and

WHEREAS, In its April 26, 2007, announcement, the Department of Energy revealed that public meetings would be held in New York, Virginia and California during the 60-day comment period; and

WHEREAS, Some local governments, citizens and preservation groups that would be directly impacted by the designation of national interest electric transmission corridors in the Commonwealth of Pennsylvania and some other affected states contacted the Department of Energy to express their disappointment and concern that no public meetings were planned for Pennsylvania and other affected states during the 60-day comment period; and

WHEREAS, On May 8, 2007, the Department of Energy announced that it would hold four additional meetings during the 60-day public comment period in some states, including the Commonwealth of Pennsylvania, that would be impacted by the national interest electric transmission corridor designations; and

WHEREAS, The Pennsylvania public meeting will be convened in

the month of June in Pittsburgh, Pennsylvania; and

WHEREAS, The 60-day comment period for the Mid-Atlantic Area National Corridor designations is scheduled to end on July 6, 2007; and

WHEREAS, It is alleged that the transmission lines proposed to be located and constructed in the Mid-Atlantic Area National Corridor would be used to relieve energy congestion and constraints and improve electric reliability in population centers of the East Coast; and

WHEREAS, Designation of national interest electric transmission corridors in the Commonwealth of Pennsylvania could diminish or eliminate the role of the Pennsylvania Public Utility Commission, the administrative agency of the Commonwealth that has regulatory authority over the approval of applications for the location and construction of transmission lines; and

WHEREAS, Designation of national interest electric transmission corridors would also adversely limit or completely eliminate the roles of the Office of Consumer Advocate and the Office of Small Business Advocate; and

WHEREAS, The Office of Consumer Advocate and the Office of Small Business Advocate are administrative agencies of the Commonwealth of Pennsylvania that were expressly established by Pennsylvania statute to represent the interests of consumers and small businesses, respectively, in proceedings before the Pennsylvania Public Utility Commission, including certain matters related to the location and construction of transmission lines; and

WHEREAS, Designation of national interest electric transmission corridors and FERC's accompanying "backstop"

authority could diminish or even eliminate the roles of other administrative agencies of the Commonwealth of Pennsylvania that were established for the express purpose of protecting Pennsylvania's economic, natural, historical, cultural and recreational resources, including the Departments of Environmental Protection, Conservation and Natural Resources, Agriculture and Transportation as well as the Game Commission and the Historical and Museum Commission; and

WHEREAS, Designation of national interest electric transmission corridors in the Commonwealth of Pennsylvania would undermine and in some cases eliminate the Commonwealth's ability to determine, manage and control land use policies, including land use policies on its agricultural lands, forest reserves, recreational areas, game lands and other natural and environmentally sensitive areas; therefore be it

RESOLVED, That the House of Representatives of the Commonwealth of Pennsylvania recognize fully the energy and environmental challenges facing the Commonwealth of Pennsylvania in general and the United States in particular; and be it further

RESOLVED, That the House of Representatives believe that demand for energy continues to be a concern nationwide, especially in major population centers, and that an effective national energy policy must include increased emphasis on conservation, renewable energy, energy-efficient alternatives, demand-side management, innovations and new technologies while simultaneously providing incentives to increase domestic production and supply; and be it further

RESOLVED, That the House of Representatives recognize that an effective energy policy must be addressed nationally but should

reflect traditional state and local authority over environmental and energy matters; and be it further

RESOLVED, That the House of Representatives oppose the provisions of EPact which preempt the authority of the Commonwealth of Pennsylvania and its political subdivisions to determine land use policies and which usurp the traditional and fundamental authority of the Pennsylvania Public Utility Commission to review and approve applications for the location and construction of transmission lines in the Commonwealth of Pennsylvania; and be it further

RESOLVED, That the House of Representatives urge the members of the Pennsylvania Congressional Delegation to support legislation to repeal section 1221 of EPact and thereby preserve the fundamental rights of the Commonwealth of Pennsylvania and its people to determine the future of land use policies; and be it further

RESOLVED, That copies of this resolution be transmitted to the presiding officers of each house of Congress and to each member of Congress from Pennsylvania.

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RESOLUTIONS ADOPTED AT THE CCAP 2007 ANNUAL CONFERENCE

The following resolutions were adopted by the delegates in attendance at the CCAP Annual Conference in York at the business meeting on August 7, 2007. In italics after each resolution is a description of its content and intent. The resolutions are available electronically on the Government Relations section of the Association's web site, www.pacounties.org, and are incorporated as amendments to the Association's cumulative policy statement, the *Pennsylvania County Platform*, also available at the web site.

RESOLUTION NO. 1 *(Submitted by the Assessment and Taxation Committee, as amended by the Resolutions Committee and with recommendations by the Assessors Association of Pennsylvania Assessment Reform Committee)* -- The Association supports uniformity and equity in property reassessment, and to that end supports enactment of a new assessment law containing the following elements:

a. Consolidation of existing assessment laws into a single statute;

b. Maintenance of the base year assessment methodology, with tools to maintain uniformity and equity of assessments between full-scale reassessments. Such tools may include use of the common level ratio, statistical revaluation, and allowing counties to use current market values to calculate and implement adjustments to values in areas of the county that have appreciated at a faster or slower rate than the remainder of the county, or classes of property that have appreciated at a faster or slower rate than the other classes, without such adjustments being considered spot reassessment;

c. Provide for an appropriate state agency to oversee the assessment function, including development of attainable standards of fair and equitable assessments, administration of funding programs for county assessment, and auditing sales transactions and other factors used in determining formulas and ratios;

d. Adequate testing and evaluation of assessments utilizing standards no less stringent than those established by the International Association of Assessment Officials;

e. Improved building permit reporting systems providing consistent municipal permit issuance thresholds and mandatory reporting to the county;

f. Effective representation of counties in the development and administration of state functions relating to property assessment;

g. Statewide uniform assessment ratio based on the base year of, and implemented concurrent with, the county's reassessment;

h. Maintain minimum training, certification, and recertification standards for county-appointed assessors, with state funding for training costs and with encouragement to counties to authorize training above minimum standards;

i. Authority to use statistical revaluation, with appropriate standards, as a methodology for performing reassessments;

j. Standards for appeals that are appropriate and equitable for each class of property, and include the ability to use stratified common level ratios pertinent to each class of property;

k. A grant of the greater of twenty-five percent of the state share of realty transfer tax collections generated in the county or $15 per parcel to any county achieving or maintaining the required measure of equity in its assessment program;

Independent verification of the formula and sampling standards used to determine the coefficient of dispersion and the common level ratio;

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m. The establishment of a state grant fund or revolving loan fund to assist counties in performing reassessments;
n. In the case of assessment errors or unreported property improvements that have resulted in underassessment of a property, to allow the taxing jurisdictions to recover underpaid taxes from the time of the error or improvement, to a maximum of five tax years;
o. Provide limitations on challenges to assessors' professional certifications that are based solely on dissatisfaction with an individual's assessment, and provide for county indemnification of legal costs for successful defense of such challenges; and
p. Provide and encourage training for members of boards of appeals and for auxiliary boards on fundamental assessment law and the conduct of quasi-judicial hearings.

This is a comprehensive rewrite of the Association's assessment resolution. Its changes include:

- *A new subsection b written to affirm support of base year assessment, with means to maintain equity between reassessments (incorporating all of former subsection o). It also recognizes that appreciation and depreciation vary over time by property class as well as by neighborhood.*
- *Subsection c (formerly b) is amended to call for designation of a state agency, comparable to agencies in several other states, with ability to enforce standards and to audit figures supplied for use in formula calculations.*
- *Subsection d (formerly e) is rewritten to provide that the IAAO standard is the minimum for assessments.*
- *Former subsection d calling for standards for assessor certification was addressed in amendments to the Assessors Certification Law (Act 28 of 1992).*
- *Subsection h (formerly i) is clarified to provide that the uniform standard is implemented only at the time of the county's next reassessment.*
- *Subsection i (formerly h) is rewritten to provide for state funding participation rather than responsibility so that no impression is made that the state controls the training program, and to encourage counties to allow assessors to attend training courses beyond the minimum standards.*
- *Subsection j (formerly i) is rewritten to call for clear statutory authority to do statistical revaluations. Former language relating to maintenance of values between assessments is placed in new subsection b.*
- *Subsection k (formerly j) calls for a more equitable appeals process, including the ability to recognize that different classes of properties can appreciate at different rates and so should be valued with a different but supportable common level ratio.*
- *Former subsection k, providing for a voluntary standard for reassessment based on equity (coefficient of dispersion) rather than timeline, is deleted as a matter to be considered instead in the context of mandatory reassessment.*
- *Subsection m, relating to independent formula verification is rewritten to add sampling and coefficient of dispersion.*
- *Subsection n provides for state grants in addition to loans.*
- *New subsection q seeks training for boards of appeals.*

RESOLUTION NO. 2 *(Submitted by the CCAP Resolutions Committee and the Assessors Association of Pennsylvania Assessment Reform Committee)* -- The Association supports mandatory reassessment for real property, but only if all conditions are met:

a. Mandatory reassessment is triggered only when a county's coefficient of dispersion exceeds a pre-set standard for two successive years;
b. Tools are provided to enable counties to maintain uniformity and equity of assessments between full-scale reassessments. Such tools may include use of

the common level ratio, statistical revaluation, and allowing counties to use current market values to calculate and implement adjustments to values in areas of the county that have appreciated at a faster or slower rate than the remainder of the county, without such adjustments being considered spot reassessment;

c. The Commonwealth establishes a state grant fund or revolving loan fund to assist counties in performing reassessments; and

d. Annual incentive payments for counties that achieve and maintain standards of assessment equity.

The resolution supports mandatory reassessment, but only if a specific list of conditions are met. The list of conditions addresses the key issues that typically inhibit county decisions on reassessment.

RESOLUTION NO. 3 *(Submitted by the Resolutions Committee)* -- The Association supports the assignment of standardized valuations for underground oil and natural gas storage facilities so that they may be assessed for real property tax purposes pursuant to the applicable assessment law, or provision of a fee or other means to generate revenue from such facilities in an amount equivalent to the tax revenue that would be available for counties, municipalities, and schools in which such facilities are located.

Land owners generate fees on underground storage of oil and natural gas based on volume, but this land value is not currently assessable. The prior resolution called for assessment of these facilities, but the new version adds consideration of other means to generate revenue based on value.

RESOLUTION NO. 4 *(Submitted by the County Governance Committee)* -- The Association recognizes that salary information for public officials and employees is a public record but opposes legislation to require publication of individual salary information on the internet, out of concern that the information would be too freely accessible and too prone to use for illegal or improper purposes.

The resolution opposes attempts to require publication of official and employee salary information on the internet. Although the information is public record and available for inspection at the courthouse, publication on the internet results in an ease of access that can expose private individuals to harassment, embarrassment, fraud, or other criminal victimization. Internet information can quickly become outdated, and for some counties can be a burdensome administrative duty. The statute could also set the precedent for the Commonwealth to require publication of other records on the internet.

RESOLUTION NO. 5 *(Submitted by the County Governance Committee)* -- The Association supports state legislation to permanently extend the window offered under Act 174 of 2006 for counties to adopt 1/50 or 1/40 pension benefit levels.

CCAP successfully achieved the prior resolution, reopening the 1/50 and 1/40 pension benefit option, by enactment of Act 174 of 2006. That act reopened the window through June 30, 2007. The resolution proposes to make the provision permanent.

RESOLUTION NO. 6 *(Submitted by the Energy, Environment and Land Use Committee)* -- The Association supports programs to promote use of alternatives to fossil-based transportation fuels, including incentives for counties and mass transit agencies to deploy hybrid vehicles and vehicles operated by alternative fuels.

The resolution is updated to clearly reflect support for incentives for alternative fuels in mass transit vehicles as well as county vehicle fleets.

RESOLUTION NO. 7 *(Submitted by the Energy, Environment and Land Use Committee as amended by the Resolutions Committee)* -- The Association supports development of alternative energy sources in Pennsylvania to generate electricity, including wind, solar, hydropower, clean coal and alternative coal, hydrogen, biomass, natural gases including methane, and nuclear technologies. The Association also supports state technical and financial assistance to help counties install generating facilities to offset electricity requirements for county buildings, as well as laws and regulations that assure customer generators receive fair market value for the electricity generated.

Although the Association adopted a position in 2006 on alternative transportation fuels, the Platform was silent about alternative sources of energy for electricity. The resolution is a statement of support for alternative energy sources for electricity in general, as well as for state assistance to help counties install appropriate alternative sources to generate their own electricity and reduce energy costs.

RESOLUTION NO. 8 *(Submitted by the Energy, Environment and Land Use Committee)* -- The Association supports permanent reauthorization of the Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101 of 1988) state tip fee.

The Association supports legislation to grant counties authority to fund county solid waste and recycling programs through a fee on trash collected within the county.

This update to the prior resolution better reflects efforts by CCAP to correct a Commonwealth Court decision which ruled county administrative fees illegal. Because counties are not seeking authority for a tip fee, but instead a fee on every ton of trash that is collected within the county in order to fund supplemental recycling programs, the Association's position is made more clear by dividing the prior single resolution into its two constituent parts.

RESOLUTION NO. 9 *(Submitted by the Energy, Environment and Land Use Committee)* -- The Association supports study and planning for future energy needs, but it opposes federal laws that pre-empt state and local control over land use policies for the siting of electric transmission lines. Siting decisions for electric transmission lines should be compatible with local land use policies, including protections for preserved farmland and open space, and other natural and environmentally significant areas.

The federal Energy Policy Act of 2005 authorized studies to designate National Interest Electric Transmission Corridors. A National Corridor designation means that if the state denies siting authority, Federal Energy Regulatory Commission could conduct a review and determine whether to issue a permit and authorize construction. The federal permit authorizes the use of eminent domain, if the generator can't negotiate an agreement with a landowner and, although eminent domain cannot be exercised over federal or state-owned land, it can still supersede local land use plans and decision-making processes.

RESOLUTION NO. 10 *(Submitted by the Agriculture Committee and Energy, Environment and Land Use Committee)* -- The Association supports legislation that would provide incentives for private entities to invest in best management practices for agricultural operations and storm water management in order to reduce nutrient loads in Pennsylvania's waterways and enhance water quality.

A proposal has been introduced in the House and Senate that would give farmers and other private entities a tax credit for investing in best management practices that reduce nutrient levels in Pennsylvania waterways. Improved agriculture practices are recognized as the most inexpensive method to reduce nutrient loads. Storm water is another important component of water quality, for which counties and municipalities are responsible. The resolution supports incentives for private entities to invest in improving water quality, and this would reduce costs for the local taxpayer.

RESOLUTION NO. 11 *(Submitted by the Human Services Committee)* -- The Association supports the ability of local governments to enact and enforce ordinances stricter than what is required through any statewide ban on smoking in public places.

The Association opposes any legislative effort mandating county responsibility and financial burden for enforcement and prosecution of any state smoking law.

Many counties are considering the adoption of county-wide smoking bans, and several have been enacted and implemented, with the courts then overturning local decisions based on the absence of statewide or local statutory authority. This set of resolutions supports local ability to enact more stringent ordinances based on local conditions (implicitly rejecting state preemption), and opposes a proposal to require counties to be the enforcement entity for state restrictions.

RESOLUTION NO. 12 *(Submitted by the Human Services Committee)* -- The Association supports aggressive intervention with the Department of Public Welfare and its Office of Developmental Programs to satisfactorily resolve issues that surround the roles and responsibilities of county MH/MR Programs and those of the state.

In order to maintain Pennsylvania's Medicaid waivers for mental retardation services, the Department of Public Welfare made a number of assurances to the Centers for Medicare and Medicaid Services. This has caused significant changes to the mental retardation system, and DPW's Office of Developmental Programs (formerly the Office of Mental Retardation) has not moved quickly to implement the changes by providing policy bulletins that counties must use to manage the programs. Now, ODP plans to discontinue the allocation of waiver dollars to counties and directly pay providers from the state treasury, beginning in 2009. This reduces the authority of the county in managing the purchase of services and also will result in a significant loss of interest earned by counties; during Fiscal Year 2005-2006, counties earned more than $6.8 million which was then spent on services. Over the last two years, ODP has been very slow to issue its allocation letters to county programs. These letters tell programs how much money from the legislative appropriation the counties can spend on their mental retardation programs. The last fiscal year had ended long before ODP released the letters. This has resulted in uncertainty and delays in year end reporting and completion of audits.

RESOLUTION NO. 13 *(Submitted by the Human Services Committee)* -- The Association supports coordination between counties and the Department of Public Welfare in the administration and services to individuals with autism who are also diagnosed with mental retardation and/or behavioral health issues.

The resolution recognizes the increasing interest in policy for autism services, allowing the counties to act as stakeholders in the decisions being made regarding service delivery.

RESOLUTION NO. 14 *(Submitted by the Human Services Committee)* --

Juvenile Detention

1. The Association supports a long-term funding solution for juvenile detention services consisting of an increase in the Act 148 reimbursement rate from 50% State / 50% Counties, to a 90% State /10 Counties, with a commensurate increase in Act 148 funding.

2. The Association supports the Department of Public Welfare, Office of Children, Youth and Families in finding a stable, state-level funding source for the development and ongoing administration of a comprehensive training program which meets the training requirements defined by the 3800 regulations including the current training needs of juvenile detention and shelter care facilities.

3. The Association, in recognition of the growing number of juveniles with behavioral health needs being placed in juvenile detention:

a. Supports the aggressive development of additional community based behavioral health services for adjudicated delinquents within the state;
b. Supports adequately training detention center staff to manage the needs of these youth by providing stable, state-level funding for the development and ongoing administration of a comprehensive training program for secure juvenile detention centers that would provide training on behavior management, crisis intervention skills, cognitive functioning and psychopathology;
c. Supports providing behavioral health services to juveniles while in detention to maintain their safety, effectively meet their needs and help prevent the exacerbation of problems; and
d. Supports the examination of systemic issues around access to services, ability to obtain services and models for responding to the behavioral health needs of detained juveniles.

4. The Association supports quality year-round education for youth in juvenile detention and shelter care facilities.

The resolution creates a new section in the Human Services article of the Platform, recognizing the increasing challenges and unique needs counties face in the provision of juvenile detention services, and representing an effort to identify and provide guidance around the specialized needs of juvenile detention.

RESOLUTION NO. 15 *(Submitted by the Courts and Corrections Committee)* -- The Association supports legislation requiring the Department of Corrections to cover any medical costs and medically related transportation costs for any inmate temporarily in county custody who has been sentenced to a state correctional facility but not yet transferred.

The Department of Corrections has recently refused to reimburse counties for any costs incurred in cases of state-sentenced inmates requiring medical treatment prior to their transfer to a state facility. The resolution gives the DOC full responsibility for these inmates.

RESOLUTION NO. 16 *(Submitted by the Courts and Corrections Committee)* -- The Association believes Act 57 of 2005 requires the Commonwealth to reimburse counties for 65% of the salaries of full time district attorneys, regardless of the funding source. While the Association will consider support of legislation to provide a dedicated funding source, in the interim, and at any time dedicated funds are insufficient, the Association insists that annual appropriations be made from the Commonwealth General Fund and that reimbursements be made expeditiously.

Governor Rendell proposed his 2007-2008 budget without any funding for Act 57 and resisted legislative attempts to add funding back in, instead insisting that payments would be contingent on passage of a dedicated funding source. New legislation (Act 30 of 2007) relies on increases in fines and fees which will take some time to generate sufficient revenues. The resolution permits the Association to support a dedicated fund, but insists on general fund appropriations in the interim.

RESOLUTION NO. 17 *(Submitted by Armstrong County)* -- The Association supports imposition by Congress of a moratorium on all new trade agreements, to investigate and review all current free trade agreements and policies of the United States, to investigate and review participation of the United States in international trade organizations, and to ensure that the agreements, policies, and participation are in the best interests of the citizens of Pennsylvania and the United States.

The resolution asks for a Congressional moratorium on free trade agreements pending review of current agreements and their effect on Pennsylvania and the United States. It does not oppose such agreements per se.

RESOLUTION NO. 18 *(Submitted by the Agriculture Committee)* -- The Association supports state funding for Cooperative Extension services at historic levels, including annual cost of living increases.

Governor Rendell's proposed budgets have cut the cooperative extension line item for the last several years. Since many counties partner with the state and the University to fund local cooperative extension offices, this resolution encourages the state to keep up its share of funding for these services.

RESOLUTION NO. 19 *(Submitted by the Community and Economic Development Committee)* -- The Association urges the Department of Community and Economic Development to consult with the Association, as well as with the affected county governing bodies and tourism agencies, prior to consolidation of promotional agencies, urges the Department to provide voluntary incentives for consolidation rather than forced mergers, and supports, with appropriate safeguards for individual county tourism promotion programs, priority distribution of a portion of Commonwealth tourism promotion grants based on regional approaches and consistency with Commonwealth tourism promotion efforts.

The Administration is considering changes to the Tourism Promotion Grant program that will allocate part of the funding on a priority basis to regional tourism promotion activities, including especially those that are consistent with and complementary to the state's tourism promotion efforts.

RESOLUTION NO. 20 *(Submitted by the County Governance Committee)* -- The Association supports federal, state, and local efforts to enhance emergency and disaster response and recovery capabilities for all hazards, including specialized planning and response for bioterrorism, chemical terrorism, weapons of mass destruction, pandemics, and nuclear events.

The resolution amends the current all-hazards plank to add pandemic planning.

RESOLUTION NO. 21 *(Submitted by the County Governance Committee)* -- The Association supports legislation to require all responders to be trained in and use the National Incident Management System.

The resolution is a technical amendment updating the resolution to current standards.

RESOLUTION NO. 22 *(Submitted by the County Governance Committee)* -- The Association supports legislation providing for universal intrastate mutual aid, including:

a. Commonwealth maintenance of contact and capability information;
b. County activation and incident management;
c. Provisions for appropriate assignment and indemnification of liability, workers' compensation, and property and casualty coverage;
d. Clear chain of command; and
e. Accommodation of existing mutual aid agreements.

The Pennsylvania Emergency Management Agency is developing legislation to provide for universal intrastate mutual aid, although allowing municipalities to individually opt out. The resolution reinforces the county role in managing mutual aid and incident management.

RESOLUTION NO. 23 *(Submitted by Armstrong County)* -- The Association supports Congress, the Commonwealth, NACo, each Pennsylvania county, and counties nationwide joining the Sudden Cardiac Arrest Association and other heart-related agencies in adopting a resolution designating the first week in October as "Sudden Cardiac Arrest Awareness Week", increasing awareness of CPR, Automated External Defibrillators, and Implantable Cardioverter Defibrillators, and their availability or need among emergency and other medical treatments.

CCAP has at least two members whose survival is credited to the availability and prompt use of AEDs. CCAP has AEDs available at each of its offices, regularly affirms with hotels and other meeting facilities the availability of AED equipment, and has trained more than 75% of its staff on CPR and AED usage. The resolution calls on a coalition of groups to support greater public awareness and greater deployment of these devices.

TrAILCo Statement No. 7
Witness: John R. Bodenschatz

Pgh TK A-110172 ##
4/13/08

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

IN RE: APPLICATION OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY FOR (I) A CERTIFICATE OF PUBLIC CONVENIENCE TO OFFER, RENDER, FURNISH AND/OR SUPPLY TRANSMISSION SERVICE IN THE COMMONWEALTH OF PENNSYLVANIA; (II) AUTHORIZATION AND CERTIFICATION TO LOCATE, CONSTRUCT, OPERATE AND MAINTAIN CERTAIN HIGH VOLTAGE ELECTRIC TRANSMISSION LINES AND RELATED ELECTRIC SUBSTATION FACILITIES; (III) AUTHORITY TO EXERCISE THE POWER OF EMINENT DOMAIN FOR THE CONSTRUCTION AND INSTALLATION OF AERIAL ELECTRIC TRANSMISSION FACILITIES ALONG THE PROPOSED TRANSMISSION LINE ROUTES IN PENNSYLVANIA; (IV) APPROVAL OF AN EXEMPTION FROM MUNICIPAL ZONING REGULATION WITH RESPECT TO THE CONSTRUCTION OF BUILDINGS; AND (V) APPROVAL OF CERTAIN RELATED AFFILIATED INTEREST ARRANGEMENTS	:	Docket Nos. A-110172 A-110172F0002 A-110172F0003 A-110172F0004 G-00071229

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DIRECT TESTIMONY OF JOHN R. BODENSCHATZ, P.E.

Re: The Design, Engineering, Construction, Operation and Maintenance of TrAIL; Exemption from Local Zoning

April 13, 2007

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John R. Bodenschatz. My business address is 800 Cabin Hill Drive, Greensburg, Pennsylvania 15601-1689.

DUTIES AND RESPONSIBILITIES

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Allegheny Energy Service Corporation, and my title is Senior Engineer, Extra High Voltage ("EHV") Projects. My time is devoted to engineering and design tasks for the Allegheny Energy, Inc. ("Allegheny") companies, including Trans-Allegheny Interstate Line Company ("TrAILCo").

EXPERIENCE AND EDUCATION

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE AND EDUCATIONAL BACKGROUND.

A. I am a graduate of Pennsylvania State University, where I earned a Bachelor of Science degree from the College of Civil and Environmental Engineering. I am a registered professional engineer in the states of Maryland, Ohio, Virginia, Pennsylvania, and West Virginia and hold a Council Record with the National Council of Examiners for Engineering and Surveying. I have been employed by Allegheny Energy for over thirteen years. For assigned transmission line and substation projects, I have been responsible for siting, permitting and engineering survey coordination, civil design, engineering, scheduling and project management, and design and material standards coordination. My current

responsibilities include the tasks just listed, with a concentrated focus on EHV transmission line and substation projects.

PURPOSE OF TESTIMONY

Q. ON WHOSE BEHALF ARE YOU PROVIDING THIS TESTIMONY?

A. I am providing this testimony on behalf of TrAILCo.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe TrAILCo's plans for designing, engineering, and constructing TrAIL. I will also explain the plans for operating and maintaining the line, including the removal and control of vegetation and trees along the line's right-of-way.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony addresses, in order, the following topics:

- a general description of the TrAIL project;
- the planned configuration for TrAIL;
- a description of the detailed design specifications for the line and the line's safety features;
- a general description of the planned construction activities;
- the plan for clearing and preparing the TrAIL right-of-way;
- the plans for controlling vegetation in and along TrAIL's right-of-way after construction is complete and the line is in service;
- TrAILCo's technical capacity to meet the public need for which TRAIL will be constructed and operated; and,

- *TrAILCo's request for a waiver from the Commission from* certain applicable local municipal zoning regulations for the new substation facilities necessary for the project.

Q. IS YOUR TESTIMONY INTENDED TO ADDRESS ANY OF THE FILING REQUIREMENTS OF 52 PA. CODE § 57.1 and §§ 57.1 – 57.77 GOVERNING THE SITING AND CONSTRUCTION OF HIGH VOLTAGE ("HV") TRANSMISSION LINES?

A. Yes. As noted in the Application, information in this direct testimony is responsive to the requirements of 52 Pa. Code § 57.72(c)(6) (safety considerations to be incorporated into the design, construction and maintenance of the proposed HV line), (c)(13)(ii) (an engineering and design-based description of the proposed line), and (c)(13)(iii) (a simple drawing of a cross section of the proposed right-of-way of the HV line showing the placement of supporting structures at typical locations, with structure sizes, right-of-way widths, and the lateral distances between the conductors and the edge of the right-of-way indicated).

Q. WILL THE USE OF VARIOUS TERMS IN YOUR TESTIMONY BE CONSISTENT WITH THE DEFINITIONS ASSIGNED TO THOSE TERMS IN THE TABLE OF NOMENCLATURE ATTACHED TO TRAILCO WITNESS FLITMAN'S TESTIMONY AS EXHIBIT DEF-1?

A. Yes. In addition, I will also define and use a number of other terms in this testimony.

EXHIBITS

Q. PLEASE IDENTIFY AND DESCRIBE THE EXHIBITS TO YOUR TESTIMONY AND SUMMARIZE THE CONTENTS OF THOSE EXHIBITS.

I am sponsoring four exhibits with my direct testimony:

- TrAILCo Exhibit No. JRB-1 - a ten-page document that details the project design criteria for TrAIL;

- TrAILCo Exhibit No. JRB-2 – consisting of twelve pages, each of which is a graphical engineering design sketch of one of the types of transmission structures that will be utilized for TrAIL;

- TrAILCo Exhibit No. JRB-3 – a three-page document of graphical engineering sketches for TrAIL, one page showing a right-of-way configuration for a typical lattice steel horizontal structure line with no adjacent transmission lines, the second page showing a right-of-way configuration for those instances when the TrAIL right-of-way may be adjacent to an existing 138 kilovolt ("kV") line, and the third page showing the right-of-way configuration for 138 kV line routes that are part of the TrAIL project; and

- TrAILCo Exhibit No. JRB-4 - consisting of four pages of graphical engineering sketches that show transmission structure and circuit identification designs.

GENERAL DESCRIPTION OF TRAIL

Q. WILL YOUR ENGINEERING AND CONSTRUCTION TESTIMONY ADDRESS THE TRAIL PROJECT AS IT IS DESCRIBED IN THE APPLICATION AND THE TESTIMONIES OF OTHER TRAILCO WITNESSES?

A. Yes, it will.

Q. WHAT PORTION OF TRAIL WILL BE LOCATED WITHIN PENNSYLVANIA?

A. As indicated in the Line Route Evaluation ("LRE") attached to the testimony of TrAILCo witness Halpern as TrAILCo Exhibit No. JH-1, approximately 38 miles of TrAIL's 500 kV line segments will be constructed within Pennsylvania, consisting of approximately 36.5 miles from the Prexy Substation to the 502 Junction Substation and approximately 1.2 miles extending south from the 502 Junction Substation to the Pennsylvania-West Virginia state line. The five segments of new Prexy 138 kV lines will total approximately 25.4 circuit miles, consisting of a double-circuit 138 kV line over an approximately 4.8 mile route (9.6 miles of circuit) extending south from the Prexy Substation to Allegheny Power's VANWA Junction-Charleroi line, a double-circuit 138 kV line over an approximately 5.5 mile route (11.0 miles of circuit) extending generally northeast from the Prexy Substation to Allegheny Power's Crossgates-Peters line, and a third single-circuit 138 kV line extending generally west from the Prexy Substation for approximately 4.8 miles to Allegheny Power's Manifold-Houston line.

DESIGN CONFIGURATION FOR THE PROPOSED LINE

Q. PLEASE DESCRIBE THE GENERAL DESIGN CONFIGURATION PLANNED FOR TRAIL.

A. For the 500 kV segments, TrAIL will be an alternating current ("AC") single circuit 500 kV transmission line, consisting of three electrical phases (a "three-phase"

system) elevated above the ground by self-supporting lattice steel tower structures. Each phase will consist of three conductors (each of which is called a "subconductor") spaced 18 inches apart and arranged in a triangular bundle, with the apex point down. Additionally, the three conductor phases will be attached to the towers in a horizontal phase configuration. The Prexy 138 kV Lines will be AC double circuit three-phase 138 kV transmission lines, elevated above the ground by self-supporting single pole tubular steel structures, with the three conductor phases attached to each side of the supporting structure in a vertical phase configuration. Each 138 kV structure is designed to carry two three-phase circuits.

Q. ARE ANY OTHER TYPES OF TOWER STRUCTURES ANTICIPATED OR PLANNED FOR THE TRAIL PROJECT?

A. While it is anticipated that lattice steel towers will be the principal structure for the 500 kV line, it is possible that other structure types may be required due to possible design constraints that are not defined at this time, but will be addressed in the detailed engineering phase of the project.

Q. WHAT WIDTH OF RIGHT-OF-WAY IS PLANNED FOR TRAIL?

A. All rights-of-way for 500 kV TrAIL segments in Pennsylvania will be 200 feet unless an isolated circumstance requires a wider or narrower width, with the path of the line situated in the center of this width unless unique design conditions dictate otherwise. The 138 kV lines will be situated within 100 foot-wide rights-of-way. Where the 500 kV and 138 kV lines are parallel to each other, a 290 foot-wide right-of-way will be required and the lines will have a 140 foot centerline to centerline separation, as shown on Figure 2 of my TrAILCo Exhibit No. JRB-3. All proposed

TrAIL right-of-way configurations that are presently anticipated in Pennsylvania are shown in TrAILCo Exhibit No. JRB-3.

Q. WHAT SIZE AND TYPE OF SUBCONDUCTOR IS PLANNED FOR TRAIL?

A. After an extensive study of available conductors and based on a number of performance parameters that included audible noise, electrical loading capabilities, conductor sag, and structural loading among others, TrAILCo is specifying the use of a subconductor named "Finch – High Strength" with a cross-sectional area of 1,113 thousand Kcmils for the 500 kV line segments. This subconductor consists of aluminum strands supported by steel strands, referred to by the acronym "ACSS," and is rated for operation up to a temperature of 250 degrees Celsius. The diameter of the Finch semiconductor is 1.29 inches, and its weight is 1.43 lbs. per foot, which equates to 4.29 lbs. per foot of three-wire conductor. The rated breaking strength of each high strength Finch subconductor is 33,200 pounds. The planned three Finch subconductor phase bundle meets TrAILCo's electrical performance objectives for TrAIL and will integrate well with Dominion Virginia Power's planned design for the Loudoun Segment. For the Prexy 138 kV Lines, TrAILCO is specifying the use of an aluminum conductor that is steel reinforced. This type of conductor is referred to in the electric industry by the acronym "ACSR" and is rated to operate at temperatures of up to 100 degrees Celsius. The ACSR conductor for the 138 kV lines is 954.0 thousand circular mils ("Kcmil") and referred to by the code name "Rail." The Rail conductor specified for the 138 kV lines is a standard conductor specified in Allegheny Power standards for use on the construction of new 138 kV lines. I will l explain in detail later in my testimony how Allegheny Power standards

will be incorporated into the TrAIL project. Rail has a diameter of 1.17 inches, weighs 1.08 pounds per foot, and has a rated breaking strength of 25,900 pounds. The 138 kV lines will only have one Rail conductor per structure phase position.

Q. WILL TRAIL INCLUDE ANY ADDITIONAL OVERHEAD WIRES AND, IF SO, WHAT WILL BE THE PURPOSE OF THOSE WIRES?

A. Two shield wires, also referred to as overhead ground wires, will be installed above the 500 kV conductors planned for TrAIL. Shield wires provide lightning protection for transmission circuits by intercepting direct lightning strikes that would otherwise terminate on the conductors. Any such lightning strikes will, instead, travel along the shield wire in each direction to the adjacent grounded support towers and then dissipate into the ground through the towers, thus protecting the circuit's operation from the effects of lightning. For the Prexy 138 kV Lines, the standard shield wire will be a 12.5 M aluminum-clad steel wire which has properties that are nearly the same as 7#9 aluminum-clad wire. The 12.5 M aluminum-clad wire is 0.34 inches in diameter, weighs 0.21 pounds per foot, and has a minimum breaking strength of 12,500 pounds. The 12.5 M aluminum-clad wire is also an Allegheny Power standard shield wire for constructing new 138 kV lines.

Q. WILL THE LINE INCORPORATE ANY OF ALLEGHENY POWER'S EXISTING ENGINEERING AND DESIGN STANDARDS?

A. Yes. Collectively, Allegheny Power's three operating companies – Mon Power, Potomac Edison, and West Penn Power Company – operate and maintain approximately 700 miles of 500 kV lines throughout its service territory. Moreover, Allegheny Power operates and maintains over 4,000 miles of high voltage

transmission lines operating at 138 kV and above. TrAILCo will adopt all applicable construction standards, material and service specifications, and maintenance practices that Allegheny Power already has in place to construct, operate, and maintain its transmission system.

DETAILED SPECIFICATIONS

Q. PLEASE DESCRIBE THE "HORIZONTIAL CONFIGURATION" FOR THE THREE CONDUCTOR PHASES AND WHY THIS CONFIGURATION WAS SELECTED FOR THE TRAIL 500 KV SEGMENTS.

A. A horizontal configuration indicates that the three separate conductor phases are attached to the tower structures in a horizontal plane such that each phase is equidistant from the ground. The horizontal phase configuration is consistent with the type of tower structure planned for TrAIL and is also consistent with much of the existing transmission facilities on Allegheny Power's system. This configuration was selected for TrAIL because Allegheny Power currently operates slightly less than 700 miles of transmission circuits in this type of configuration, and it has proven to be extremely reliable over more than 40 years of operations. Moreover, this configuration will also provide a structure with similar maintenance and restoration characteristics to those that already exist on Allegheny Power's 500 kV system. Allegheny Power's maintenance crews are trained for and experienced with conductor phases in the horizontal configuration, including the conduct of maintenance while the line is energized. Some of these same crews will also provide these services to TrAILCo.

Q. PLEASE DESCRIBE WHAT IS MEANT BY A "VERTICAL CONFIGURATION" FOR THE THREE CONDUCTOR PHASES FOR THE PREXY 138 KV LINES AND WHY THIS CONFIGURATION WAS SELECTED FOR THESE SEGMENTS OF TRAIL.

A. A vertical configuration indicates that the three separate conductor phases are attached to the supporting structure in a near vertical plane such that each phase is an equidistant vertically above the other. This type of configuration allows a double circuit or two parallel lines to be placed on a narrower right-of-way when both circuits are attached to a single structure. For example, a double circuit line configured in horizontal arrangement on separate structures would require a 170 foot wide right-of-way, whereas right-of-way can be reduced to 100 feet when in a vertical configuration and both circuits are attached to one structure as is proposed for the TrAIL 138 kV lines coming out of the Prexy Substation.

Q. PLEASE DESCRIBE THE SPECIFIC DESIGN OF THE TOWER STRUCTURES PLANNED FOR THE 500 KV SEGMENTS OF TRAIL.

A. As I have already indicated, TrAILCo plans to utilize self-supporting lattice steel towers as the support structures for the transmission line conductors. TrAILCo anticipates using various tower heights ranging anywhere from less than 70 feet to over 200 feet in height above ground level. The towers will be made up of either suspension towers or dead-end towers depending on the strength requirements at each specific structure location. A suspension tower is designed to equally balance the horizontal component of the conductor tension on each side of the suspension tower, similar to a clothes prop holding up a clothesline.

A dead-end tower, on the other hand, is designed to terminate the full horizontal tension of the conductors at the conductor attachment point on the structure, similar to a clothes line tied off to a house or pole. Moreover, the dead-end tower is designed to support this horizontal design tension imbalance on the structure indefinitely. The suspension towers will be capable of supporting line deflection angles up to 30 degrees and dead-end towers will be capable of supporting line deflection angles up to 90 degrees. The towers for TrAIL will be designed to accommodate span lengths – the distance from one tower to the next – in excess of 2,000 feet to allow for the flexibility that will be required by the different terrain conditions, elevations, and river or other crossing lengths that will be faced during the course of TrAIL's actual construction. The average height of all 500 kV towers over the entire length of TrAIL is anticipated to be approximately 125 feet. TrAILCo Exhibit No. JRB-2 to my testimony is a twelve-page document consisting of graphical engineering sketches for each of the five 500 kV tower types planned for use on TrAIL, along with five 500 kV tubular pole structures that will be used if design constraints are encountered during the detailed engineering phase of TrAIL.

Q. PLEASE DESCRIBE THE SPECIFIC DESIGN OF THE TUBULAR STEEL STRUCTURES PLANNED FOR THE PREXY 138 KV LINE SEGMENTS OF TRAIL.

A. TrAILCO will utilize self-supporting tubular steel mono-poles for the Prexy 138 kV Line segments, which is a structure that is used throughout Allegheny Power's operating system to support 138 kV facilities. The structures will be

fabricated using CorTen® weathering steel having properties that meet ASTM Specification A588. Allegheny Power has a very good performance history using tubular steel structures fabricated with weathering steel, and the structures blend in well with the surrounding environment. The structures will form a uniform protective rust coating that turns dark brown after a few weeks of exposure to the elements. Allegheny Power has received positive feed back after the installation of this type of structure in its mainly rural service territories. Unlike lattice steel towers, which are fabricated to support a specified range of loads, tubular steel structures are usually designed for site-specific loads. Two types of 138 kV structure configurations will be used for the 138 kV lines that are part of TrAIL. The first is a suspension structure, which is mainly used to support the lines along route segments where there is no line angle. A suspension structure can also be designed, however, to support loads from line angles in excess of 30 degrees. The second tubular steel structure will be a dead-end or strain structure. This type of structure is normally used at locations where the line will change directions in excess of 30 degrees or to hold down the line conductors when there is a potential uplift load. Based on preliminary engineering and past designs, the average height of the 138 kV tubular structures is estimated to be around 110 feet above ground, and the maximum width of the structure is estimated to be approximately 26 feet across at the middle conductor attachment arm. The typical range of sizes for all proposed structures can be found in TrAILCo Exhibit No. JRB-2 attached to my testimony.

Q. HOW MANY TOWER STRUCTURES WILL TRAIL REQUIRE?

A. TrAILCo presently estimates that approximately 900 individual structures will be required for the 500 kV segments of TrAIL, and of the 900 structures, around 160 are estimated to be located within Pennsylvania. Based on past designs and the proposed route for TrAIL, the preliminary estimate is that approximately 15 percent of all TrAIL towers will be of the dead-end design described above for those instances when the project's right-of-way changes direction from a substantially straight stretch of travel. A more exact proportion of dead-end versus suspension towers for the entire length of TrAIL will not be known, however, until the detailed design and construction phases for the project. For the Prexy 138 kV Lines, TrAILCo presently estimates approximately 100 individual structures will be required, all located within Washington County, Pennsylvania.

Q. PLEASE DESCRIBE THE STRUCTURAL MATERIALS AND DIMENSIONS FOR THE LATTICE STEEL TOWERS.

A. The lattice steel towers will be fabricated from mainly 36 and 50 ksi galvanized steel. Based on preliminary engineering, a typical structure will be approximately 40 to 45 feet in width at the base and nearly 85 feet in width at the cross-arm.

Q. WHAT OTHER DESIGN PARAMETERS WILL THE TOWERS ACCOMMODATE?

A. All tower structures for TrAIL will meet or exceed all of the design parameters for such facilities, as defined in latest edition of the National Electric Safety Code

("NESC"). Section 010 of the NESC, for example, states that "[t]he purpose of these rules is the practical safeguarding of persons during the installation, operation, or maintenance of electric supply and communication lines and associated equipment. These rules contain the basic provisions that are considered necessary for the safety of employees and the public under the specified conditions." All TrAIL towers will be designed to meet the ice and wind loads for heavy loading districts under the NESC. The towers will also be designed to carry the maximum conductor loads anticipated at each structure location for the design conductors and line configuration. The towers will also be designed to provide sufficient clearances between the three conductor phases to allow for the performance of service and maintenance with the conductors energized ("live" line work). Finally, all towers will provide sufficient height to allow adequate conductor to ground clearance for the safe and reliable operation of TrAIL. The detailed design requirements for TrAIL are presented in my TrAILCo Exhibit No. JRB-1.

Q. PLEASE DESCRIBE THE PLANNED FOUNDATIONS FOR THE TOWER STRUCTURES.

A. The 500 kV tower structures will be anchored in place either by concrete foundations or grillage foundations. The most common type will be the concrete caisson foundation. Other types of concrete foundations will be a pad-and-pier foundation and a micro pile and cap foundation. The grillage foundations are essentially a reinforced steel mat that is buried below ground to support or restrain the loads transferred through the tower leg to the foundation. Overall site

and soil conditions will dictate the appropriate foundation required at each footing location. The 138 kV steel pole structures will utilize a single concrete foundation for support. The most common type of foundation used for this type of construction across Allegheny Power's service territories is the concrete caisson foundation. A pad-and-pier foundation or rock socket foundation may also be employed for this type of structure if the geotechnical conditions warrant their use. Like the 500 kV structures, overall site and soil conditions will dictate the appropriate foundation required at each footing location on the 138 kV lines.

Q. PLEASE DESCRIBE THE VOLTAGE, AMPACITY, TEMPERATURE AND OTHER ELECTRICAL PARAMETERS AT WHICH THE 500 KV CONDUCTORS WILL OPERATE AND HOW THESE PARAMETERS WILL CONFORM TO THE NESC.

A. First, the voltage of the 500 kV line segments is rated at a nominal voltage of 500 kV and will be denoted on all engineering drawings and system maps as a 500 kV line. This is the root mean square phase-to-phase operating voltage of the line. Based on the nominal 500 kV voltage, a maximum over voltage of 110 percent of the nominal voltage is used for NESC clearance calculations. Therefore, 550 kV phase-to-phase voltage or the equivalent phase-to-ground or crest operating voltage is used to determine the minimum electrical clearances required. The ampacity of the line is the current-carrying capacity of an electric conductor under stated thermal conditions and is measured in amperes (amps). Based on the line rating methodology adopted for TrAIL, the line conductors will be graded to operate safely operate at a maximum temperature of 250 degrees

Celsius (482 degrees Fahrenheit). The resulting 250 degrees Celsius will be the maximum thermal operating limit of the conductors and all design clearances to ground will be based on the conductor design temperature of 250 degrees Celsius. The 250 degree Celsius design temperature is the design condition which produces the maximum sag in the Finch-HS ACSS conductor. Therefore, as per Section 232.A of the NESC, this condition will be used for vertical clearance calculations of the conductors above ground, roadways, railroads, and water surfaces. In summary, (i) the design voltage is used to calculate the amount of clearance required per the NESC, (ii) the rated amperage or electrical loading of the line is the design variable that is used to calculate the thermal operating temperature of the conductor, and (iii) the operating temperature is the design variable that is used to calculate the maximum sag of the line at high operating temperatures. Finally, all three of these design criteria are used collectively to insure that the required NESC clearances are not violated.

Q. PLEASE DESCRIBE THE VOLTAGE, AMPACITY, TEMPERATURE AND OTHER ELECTRICAL PARAMETERS AT WHICH THE 138 KV CONDUCTORS WILL OPERATE AND HOW THESE PARAMETERS WILL CONFORM TO THE NESC.

A. First, the voltage of the 138 kV line segments is rated at a nominal voltage of 138 kV and will be denoted on all engineering drawings and system maps as 138 kV lines. As previously stated, this again is the root mean square phase-to-phase operating voltage of the lines. Based on the nominal 138 kV voltage, a maximum over voltage of 105 percent of the nominal voltage is used for NESC clearance

calculations. Therefore, 144.9 kV phase-to-phase voltage or the equivalent phase-to-ground or crest operating voltage is used to determine the minimum electrical clearances required. Based on the line rating methodology adopted for TrAIL, the 138 kV line conductors will be graded to safely operate at a maximum temperature of 100 degrees Celsius (212 degrees Fahrenheit). The resulting 100 degrees Celsius will be the maximum thermal operating limit of the conductors and all design clearances to ground will be based on the conductor design temperature of 100 degrees Celsius. As with the 500 kV lines mentioned previously, the 100 degree Celsius design temperature is the design condition which produces the maximum sag in the Rail ACSR conductor. Pursuant to Section 232.A of the NESC, therefore, this condition will be used for vertical clearance calculations of the conductors above ground, roadways, railroads, and water surfaces. Since the Rail conductor is a standard conductor for new 138 kV lines in Allegheny Power's operating territories, the ampacity of the 138 kV lines will be based on standard operating load tables that will ensure that the thermal limits of the line are not exceeded during routine operation.

Q. PLEASE DESCRIBE THE MINIMUM LINE TENSION AND SAG PARAMATERS FOR THE CONDUCTORS PLANNED FOR THE PROJECT.

A. The line tensions are also governed by the NESC. The NESC allows the conductor to be loaded up to 60 percent of the conductor's ultimate strength rating at the NESC defined loading case, which is the heavy loading case for the TrAIL project area. However, the conductor tensions for TrAIL will be kept well below the NESC permitted conductor loading. TrAIL maximum design loading

will be around the 40 percent of maximum design range. The conductor design tensions for TrAIL will be limited to the lower ranges of maximum design strengths for these materials to control the Aeolian vibration effects on the conductors. This, in turn, will allow TrAILCo to keep the required strength of the dead-end tower structures within a reasonable range. Aeolian vibration is a high frequency low amplitude vibration caused by wind on the conductors. The mechanical energy resulting from the vibration is dissipated by the use of mechanical damping devices or lowering the tension in the conductors as much is practical, or a combination of both. If left unchecked, this phenomenon causes premature conductor and hardware failures on a line that is not properly designed. As stated in my responses to the two previous questions, this line will be designed to operate with conductor temperatures of up to 250 degrees and 100 degrees Celsius for the 500 kV and 138 kV lines, respectively. The tension of the line is inversely related to temperature. As the operating temperature of the line increases, the tension of the line decreases. Therefore, at maximum operating temperatures, the lines will be at their lowest operating tensions. Similarly, the tension is also inversely related to conductor sag. As the tension decreases, the sag increases. Consequently, the right-of-way for the line will be graded and individual tower structures will be placed along the right-of-way such that TrAIL will meet NESC design clearances when at their minimum tensions or maximum sags.

Q. PLEASE DESCRIBE THE MINIMUM CONDUCTOR-TO-GROUND CLEARANCES UNDER MAXIMUM OPERATING CONDITIONS THAT TRAIL'S DESIGN WILL MEET.

A. The conductor to ground clearances for TrAIL, both the 500 kV and the 138 kV segments, will exceed the clearance requirements outlined in Section 23 of the NESC. Minimum clearance requirements will vary based upon the type of terrain or obstacle TrAIL crosses. For example, the minimum NESC conductor to ground clearance for roads, spaces subject to pedestrian traffic, and other land areas is 25.9 feet for 500 kV lines and 20.9 feet for 138 kV lines. The required clearance over water areas not suitable for boating is 24.4 feet for 500 kV lines and 19.1 feet for 138 kV lines. A complete listing of minimum clearances for TrAIL is presented in Tables 1a and -b of TrAILCo Exhibit No. JRB-1 to my testimony.

Q. PLEASE DESCRIBE THE INSULATORS AND OTHER ATTACHING HARDWARE THAT WILL BE SELECTED FOR TRAIL.

A. For reliability purposes, porcelain or toughened glass insulators will be used for TrAIL's 500 kV lines. This type of insulator will also be used on the 138 kV lines' dead-end structures. The 138 kV suspension structures will utilize a polymer or synthetic insulator pursuant to Alleghney Power's specifications for these lines. All conductor attachment hardware will be standard galvanized steel hardware. All clamps will be aluminum alloy connectors capable of supporting conductors in operation up to 250 degrees Celsius. All 138 kV conductor clamps

will be aluminum alloy connectors capable of supporting conductors in operation up to 100 degrees Celsius.

Q. PLEASE DESCRIBE, IN MORE DETAIL, THE TYPE AND SIZE OF CONDUCTOR PLANNED FOR THE SHIELD WIRES.

A. One of the two shield wires on the 500 kV circuits may be a 7#6 aluminum clad conductor. Aluminum-clad wire is a steel wire with a bonded outer layer of aluminum which acts as a protective coating and electrical conductor. The 7#6 aluminum-clad conductor is 0.49 inches in diameter and has a unit weight of 0.42 pounds per foot. The rated breaking strength of the 7#6 aluminum-clad conductor is 22,730 pounds. The other shield wire, or possibly both, will be an optical ground wire referred to by the acronym "OPGW." The OPGW conductor serves a dual purpose. First, as with the 7#6 aluminum clad shield wire, the OPGW protects the phase conductors from direct lightning strikes. This is done with the outer strands of the OPGW, which are aluminum-clad wire strands similar to those used for the 7#6 aluminum-clad shield wire. Secondly, the OPGW conductor also contains fiber optics in the core of the conductor protected by a hollow steel or aluminum core. The fiber optics will be used for communication and control functions and are not harmed by lightening strikes. The specific physical parameters of the OPGW conductor are not known as this time, but the OPGW will have design characteristics similar to the 7#6 aluminum-clad shield wire. For the 138 kV circuits, two 12.5 M aluminum-clad shield wires are used if OPGW is not required. The 12.5 M aluminum-clad steel wire has properties that are nearly the same as 7#9 aluminum-clad wire. The 12.5 M aluminum-clad wire is 0.34 inches in

diameter, weighs 0.21 pounds per foot, and has a minimum breaking strength of 12,500 pounds. The 12.5 M aluminum-clad wire is also an Allegheny Power standard shield wire for new construction of 138 kV lines. As with the 500 kV portion of TrAIL, one, or both of the 138 kV shield wires may be OPGW. If OPGW is used, it will have mechanical design characteristics similar to the 12.5 M aluminum-clad shield wire.

Q. WHAT SAFETY FEATURES HAVE BEEN INCORPORATED INTO THE DESIGN AND CONSTRUCTION OF THE LINES?

A. The main safety features of TrAIL, once in operation, will be based on adhering to the design parameters set forth in the latest edition of the NESC throughout the design and engineering phases. Many of the requirements for structural loading, structural strength, and electrical clearances are presented in Exhibit JRB-1 of my testimony. Anticipating the construction phase of TrAIL, the senior management of both TrAILCo and Kenny Construction Company of Chicago, Illinois, the engineering, procurement, construction, and management contractor for TrAIL ("Kenny"), have made it clear that the safety of all workers and the public shall be given the highest priority at all times throughout the project. Both TrAILCo, through Allegheny Power, and Kenny, which will be overseeing the construction of TrAIL, have excellent safety programs already in place for their respective organizations. Furthermore, TrAILCo and Kenny have formed a specific inter-company safety team that is merging the best practices from each to form a safety manual specific to TrAIL. All design personnel and contractors have been or will be drug tested and safety trained before performing work on TrAIL. A field

safety audit will be a regular occurrence during all phases of construction and all violations and/or suspect conditions will be logged in a database for trending purposes and remedied immediately.

Q. PLEASE DECRIBE THE RELATIONSHIP OF THE PROPOSED RIGHT-OF-WAY WIDTHS YOU DESCRIBED EARLIER IN YOUR TESTIMONY TO THE DESIGN AND NESC REQUIREMENTS FOR TRAIL.

A. The width of a right-of-way easement for transmission lines such as TrAIL is determined by engineering design and NESC requirements. Easement widths are based on the type of structure, expected span lengths, operating voltage of the line, the amount of expected conductor sag, and clearance criteria specified in Rule 234 of the NESC. Based on these design criteria, the right-of-way width for the 500 kV segments in Pennsylvania in most, if not all areas, will be 200 feet, as I stated previously in my testimony. There may be a few isolated spans that may require either more or less right-of-way width. For any isolated cases, the width will be increased or decreased for the specific design requirements of that location. To facilitate the acquisition of right-of-way and to provide consistency in line design, a standard easement width of 200 feet has been established. For the 138 kV line segments, standard easement width will be 140 feet and, as I also stated earlier, a 290 foot easement will be required in those instances where 500 kV and 138 kV facilities will be constructed within a single right-of-way.

Q. HOW DID TRAILCO DETERMINE THE 290, 200, AND 100 FOOT WIDTHS FOR RIGHTS-OF-WAY?

A. Although the 200 foot easement width TrAILCO is planning is not specifically addressed by the NESC, the requirement for horizontal clearance to buildings and other structures is the primary design parameter in the determination of easement widths for transmission lines. Since construction in areas immediately adjacent to the right-of-way is uncontrolled, right-of-way limits must be established to insure adequate clearances when conductors are displaced by wind loads as specified in the NESC. Separation between multiple lines is also determined by NESC requirements for clearances to adjacent structures and between wires carried on different supports. The additional clearance required for increased voltage and its application to conductors displaced by wind loading will generally result in increased width requirements for lines of higher voltage and/or longer spans with their subsequently greater sag and wind displacement. The minimum horizontal clearances for TrAIL are listed in Table 2 of TrAILCO Exhibit No. JRB-1. Graphical engineering sketches depicting the expected right-of-way configurations for TrAIL in Pennsylvania are included in TrAILCo Exhibit No. JRB-3 attached to my testimony.

Q. PLEASE DESCRIBE THE ANTICIPATED SLOPE OF THE RIGHTS-OF-WAY FOR THE PENNSYLVANIA SEGMENTS.

A. Obviously, the slope at any point along the right-of-way will vary greatly depending on the terrain. For the Pennsylvania line segments, much of the right-of-way will be located in the mountainous and hilly terrain that is typical of

southwestern Pennsylvania, which means that in some cases the slope of the right-of-way will exceed twenty degrees. At this time, a detailed topographic aerial survey of the line route is in progress, and once the survey is available, TrAILCo will be able to accurately calculate the amount of right-of-way that exceeds 20 degrees of slope. In anticipation of the rugged terrain that TrAIL will be crossing, the structures will be flown in by helicopter and grillage foundations will be an available design alternate in lieu of concrete caisson foundations where dictated by slope or other conditions. These construction techniques will allow the contractor to minimize the size and quality of access roads required to each structure location due to the much smaller and lighter weight equipment that is required at the structure location when these techniques are employed. This, in turn, minimizes the disturbance required to construct the line especially in steep slope locations. When the right-of-way areas exceed a 45-degree slope, the clearing contractor is instructed to drop the trees and leave them in place where they fall. This practice does not require any clearing equipment other than a chainsaw operator and a chainsaw, which reduces the disturbance to the right-of-way when clearing trees on steep slopes. Where necessary, all access roads will be selected to minimize disturbance as much as practical. Finally, an approved soil erosion control plan will be put in place to address all land disturbance activities throughout the course of construction.

CONSTRUCTION ACTIVTIES

Q. WOULD YOU PLEASE DESCRIBE, IN GENERAL TERMS, THE CONSTRUCTION PROCESS FOR TRAIL.

A. TrAIL will be constructed according to a well-defined procedure that utilizes standard construction practices to perform all work safely and in compliance with OSHA Rules and Regulations, while keeping environmental impact to a minimum. Project activities will include the installation and maintenance of soil erosion and sedimentation control measures, access road construction, right-of-way clearing, foundation, structure and wire installations, and the rehabilitation of all areas disturbed during construction.

Q. WILL A CONSTRUCTION PROJECT CONTRACTOR AND/OR MANAGER BE UTILIZED?

A. Yes. TrAILCo has awarded a contract for engineering, right-of-way services, procurement, and construction, which is known in the construction industry as an engineering, procurement, management, and construction ("EPC") contract. The EPC contract will be through one overall project manager who will oversee and coordinate the numerous sub-contractors and service providers that are required to complete a project of this size. As noted above, TrAILCo has selected Kenny as the EPC contractor for TrAIL.

Q. HOW WILL TRAILCO OVERSEE AND MONITOR THE CONSTRUCTION COSTS AND PROGRESS OF THE TRAIL PROJECT?

A. In addition to Kenny providing project management through the use of a widely used construction project management software application known as Primavera

P3e. TrAILCo will require additional and regular reporting that will address, among other things, percentage-of-completion by activity, man-hours utilized, and construction expenditures on scheduled and actual bases.

Q. WHAT IS THE ESTIMATED COST TO SITE AND CONSTRUCT TRAIL?

A. The current high level total estimated cost to site and construct TrAIL is $820 million. The high level budgetary breakdown of these estimated costs is $794 million for siting, engineering and construction, and $26 million for administrative and legal expenses. The total estimated cost of the portion of TrAIL within Pennsylvania is $208 million, with $204.3 million estimated for siting, engineering, and construction and $3.7 million for administrative and legal costs.

Q. OVER WHAT TIME PERIOD WILL THE TRAIL PROJECT BE CONSTRUCTED?

A. TrAILCo estimates that the entire project can be constructed over a four-year period, with TrAIL then going into service during the year 2011, which is a particularly aggressive schedule for siting, constructing, and placing into service a major high voltage transmission line of this length much of which must be constructed over challenging terrain and other conditions.

Q. TURNING TO CONSTRUCTION PLANNING, WILL TRAIL BE CONSTRUCTED IN DISTINCT SECTIONS OR COMPONENTS AND, IF SO, IN WHAT ORDER WILL THEY BE BUILT?

A. Yes. TrAILCo currently envisions three distinct construction phases for the project, all of which will be built concurrently. The three phases are broadly

categorized according to their respective planned in-service-date ("ISD"). Phase I will consist of all the segments of TrAIL with a planned 2009 ISD. Phases II and III will consist of all TrAIL segments with ISDs of 2010 and 2011, respectively. With the very tight construction time frames and the additional complications of multiple regulatory jurisdictions, however, the actual scheduling of construction activities may well need to be adaptable and dynamic. For example, in order to have the entire project in service no later than the year 2011, initial construction activities may be prioritized towards those sections where regulatory approvals have been granted and right-of-way has been acquired.

Q. CAN YOU PROVIDE SOME ADDITIONAL DETAILS REGARDING THE PROJECT SEGMENTS WITHIN EACH PHASE?

A. Yes, I can. Phase I will consist of the following project segments, all of which are currently planned for an ISD of 2009 and some of which are described in more detail later in my testimony:

- Prexy Substation - grade site and install 138kV breakers
- Prexy 138 kV Lines (five separate 138 kV circuit segments over three routes)
  - Manifold-Houston 138 kV Line
  - Houston–Peters 138 kV Line
  - Prexy–Washington–Charleroi 138 kV Tap

Phase II will include all the segments of the project with an ISD of 2010, including:

- Prexy Substation - installation of one 500/138 kV transformer, two 500 kV breakers, and associated line terminals

- 502 Junction Switchyard - grade site, install eight 500 kV breakers for Loudon and two 500 kV breakers for Prexy

- Reconfigure the existing 502 Junction 500 kV lines (Kammer, Harrison and Ft. Martin)

- Prexy Segment (Prexy Substation to 502 Junction 500 kV Line) - install 37 miles of new 500 kV line

Finally, Phase III will be comprised of all the segments of the project with an ISD of 2011, including.

- 502 Junction – Mt. Storm 500 kV Line (PA) - install one mile of new 500 kV line in Pennsylvania

- 502 Junction – Mt. Storm 500 kV Line (WV) - install 67 miles of new 500 kV line in West Virginia

- Mt. Storm – Meadow Brook 500 kV Line (WV) - install 50 miles of new 500 kV line in West Virginia

- Mt. Storm – Meadow Brook 500 kV Line (VA) - install 10 miles of new 500 kV line in Virginia

- Meadow Brook Substation - install two 500 kV terminals

- Meadow Brook – TrAIL End Point 500 kV Line (VA) - install 16 miles of new 500 kV line in Virginia

Q. WHAT ARE THE SCHEDULED CONSTRUCTION PERIODS FOR THE THREE PHASES YOU JUST DESCRIBED?

A. The scheduled construction periods, by phase, are:

- Phase I – February 2008 through October 2009;

- Phase II – February 2008 through September 2010; and,

- Phase III – February 2008 through June 2011.

Q. WHAT STEPS ARE PLANNED FOR MINIMIZING THE EFFECTS OF CONSTRUCTION ON AREAS WITHIN AND OUTSIDE OF THE RIGHT-OF-WAY, INCLUDING SUCH THINGS AS TRAFFIC AND OTHER LOCAL COMMUNITY ISSUES?

A. All work will commence and be conducted in accordance with all state and local permits, property releases, and approved special conditions. TrAILCo will, at all times, minimize to the greatest extent possible the impacts of construction activities on local communities.

RIGHT-OF-WAY CLEARING AND PREPARATION

Q. WHAT METHOD OR METHODS WILL BE USED TO CLEAR AND OTHERWISE PREPARE THE RIGHT-OF-WAY FOR CONSTRUCTION?

A. The construction specifications adopted for TrAIL are designed to keep environmental impact to a minimum. In addition to the implementation of Best Management Practices ("BMPs"), TrAILCo's efforts during the right-of-way preparation phase of construction will include the following:

1. A copy of the Soil Erosion and Sedimentation Control Plan along with the appropriate permit forms will be submitted to the Pennsylvania Department of Environmental Protection for approval.

2. Soil Erosion and Sedimentation Control measures will be installed prior to any earth disturbance.

3. Access roads will be installed in accordance with Allegheny Power's Specification MS 2500-1.

4. All disturbed soil will be temporarily seeded in accordance with the erosion and sediment control ("E&S") Plan and Allegheny Power Material and Service Specifications.

5. The initial clearing will be performed in accordance with Allegheny Power's Initial Clearing Specification MS 2400-3.

When required, TrAILCo's standard specifications will be modified and/or amended to comply with all terms of the governing permits required to construct TrAIL.

Q. WHAT DISTURBANCE OR DISPLACEMENT OF SOIL, TREES, CROPS OR OTHER LIVING THINGS IS EXPECTED ALONG THE RIGHT-OF-WAY AND HOW WILL TRAILCO DISPOSE OF SUCH MATERIALS?

A. In accordance with Allegheny Power Material and Service Specification MS 2400-03 – Initial Clearing of Transmission Lines, woody vegetation will be removed from the full width of right-of-way and brush and logs will be piled separately along the edges of the cleared right-of-way unless the right-of-way release to construction specifies otherwise.

Soil materials removed from foundation excavations will be spread uniformly on the right-of-way and blended in with the existing topography per Allegheny Power Material and Service Specification MS 2600-02 – Placement of Concrete Foundations. All disturbed areas will be rehabilitated in accordance with Allegheny Power Material and Service Specification MS 2400-4 – Rehabilitation of Right-of-Way.

Q. WHAT STEPS WILL BE TAKEN TO UPGRADE, SEED, OR OTHERWISE RESTORE DISTURBED RIGHT-OF-WAY ONCE CONSTRUCTION IS COMPLETE?

A. Following construction activities in an area, the right-of-way will be rehabilitated during the various phases of construction in accordance with the Soil Erosion and Sedimentation Control Plan and Allegheny Power Material and Service Specifications MS 2300-3 and MS 2300-4. Soil Erosion and Sedimentation control measures will not be permanently removed until seed germination is sufficient to comply with erosion and sediment control plan requirements.

Q. PLEASE DESCRIBE THE STEPS THAT WILL BE TAKEN TO CONTROL EROSION AND THE SILTATION OF STREAMS WHERE THE GROUND IS DISTURBED DURING CONSTRUCTION ACTIVITIES ALONG THE RIGHT-OF-WAY.

A. This will be accomplished using the soil erosion and sedimentation control procedures outlined in Allegheny Power's Material and Service Specifications, MS 2400-3, Initial Clearing of Transmission Lines, and MS 2500-1, Construction Roads, Water Bars, and Diversion Channels. In addition, right-of-way clearing equipment will not be permitted to operate near stream banks, which will provide a buffer zone of undisturbed soil that will protect streams from silt. In addition, TrAILCo will establish construction procedures to address all applicable permit requirements as necessary.

TRAIL RIGHT-OF-WAY MAINTENANCE

Q. PLEASE DESCRIBE THE PROCEDURES THAT WILL BE EMPLOYED TO MAINTAIN TRAIL'S RIGHT-OF-WAY FREE OF VEGETATION AND TREES FOLLOWING THE COMPLETION OF CONSTRUCTION AND THE COMMENCEMENT OF OPERATIONS.

A. Allegheny Power currently utilizes three vegetation management contractors to accomplish its vegetation management goals, At any given time, several hundred men and women may be trimming and removing trees, clearing brush, and applying herbicides in an ongoing effort across the cities and suburbs and through the farmlands, forests and parklands within Allegheny Power's service territory and transmission zone, including along Allegheny Power's EHV transmission system. The methods and tools that are utilized may be as commonplace as the chain saw, brush hog, and aerial lift, or as specialized as trimming and herbicide spraying using helicopters. These same tools and methods will be utilized for TrAIL.

Q. UNDER WHAT GENERAL PARAMETERS WILL TRAILCO MAINTAIN THE TRAIL PROJECT RIGHT-OF-WAY?

A. Tall-growth vegetation within the line right-of-way will be removed before it causes a service interruption or interferes with line inspections or repairs. This task – typically referred to as "brush control" - may be accomplished by the use of herbicides, mechanical mowing, or hand cutting. Tree limbs that threaten to intrude into the right-of-way from trees growing outside the right-of-way will be trimmed before they pose a threat or cause damage to the line conductor or other

facilities. This "tree trimming" will be accomplished by a wide variety of mechanical trimmers, manual trimming, or the aerial saw, as conditions require. Entire trees, both within and outside of the right-of-way, will be removed when they exhibit weakness or structural damage and thereby pose a high degree of risk to the line's uninterrupted service. This tree removal process will apply to any dead or live tree hazard and/or danger tree, and will be accomplished using any tool at TrAILCo's disposal that can safely and quickly remediate the hazard. TrAILCo's overarching goal is to prevent all vegetation-caused service interruptions at the lowest possible cost by removing potentially threatening vegetation at the most advantageous time.

Q. WILL TRAILCO'S VEGETATION CONTROL PROCEDURES OBSERVE SPECIFIC LEGAL OR REGULATORY STANDARDS?

A. Yes. The vegetation management procedures described above are designed to ensure that TrAILCo complies with all required federal, state, and local vegetation management standards. For example, the North American Electric Reliability Corporation ("NERC") Reliability Standard FAC-003-1 contains, among others, the following requirements:

- Standard R1 requires TrAILCo to prepare and keep current a formal transmission vegetation management program ("TVMP"). Allegheny Power's TVMP, which has been adopted for TrAILCo purposes, includes objectives, practices, approved procedures, and work specifications.

- Standard R1.1 requires TrAILCo to establish and adhere to specific schedules for vegetation inspections by both aerial and ground means. These schedules can be sufficiently flexible to adjust for changing conditions and are based on the anticipated growth rates of vegetation and any other

environmental or operational factors that could impact the relationship of vegetation to the specific line.

- Standard R1.2 requires TrAILCo to identify clearances between vegetation and any overhead ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Based upon these measurements, TrAILCo will establish clearances that must be achieved at the time of vegetation management work and establish and maintain a set of clearances needed to prevent flashover between vegetation and overhead ungrounded supply conductors.

- Standard R.2 requires TrAILCo to create and implement an annual plan for vegetation management work to ensure the reliability of each line and overall transmission system. This plan describes the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan must be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan must be documented as they occur. The plan must take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Consequently, TrAILCo will have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

Q. PLEASE DESCRIBE THE EXPECTED RIGHT-OF-WAY MAINTENANCE CYCLE FOR TRAIL.

A. Given a transmission line's potential to affect a large number of customers, Allegheny Power accords transmission line maintenance the highest maintenance priority, and TrAILCo will give this same level of priority to its transmission lines. Consequently, each mile of the TrAIL, along with Allegheny Power's

existing transmission circuits, will be inspected by an aerial over-flight not less frequently than once a year. These aerial inspections are conducted by a helicopters moving at a relatively lower ground speed, which enables the experienced Allegheny Power engineering staff who accompany the flight crews to carefully inspect these important transmission facilities. These inspections not only monitor for conductor, splicing, insulator, and other hardware conditions, but inspectors on board the aircraft also look for and note vegetation-growth related concerns. In addition, these inspections are also used to note the existence of potential danger trees outside of the right-of-way. All potential equipment or vegetation issues noted during the inspections are forwarded to the appropriate Allegheny Power transmission maintenance departments for the development of work plans to respond to these conditions.

Q. WHAT ORGANIZATION WITHIN TRAILCO WILL MANAGE VEGETATION CONTROL FOR THE TRAIL PROJECT?

A. The Transmission Forestry Group for Allegheny Power and TrAILCo will establish a vegetation management plan for TrAIL. Vegetation management plans are dynamic, individual documents that reflect program objectives and vegetation conditions for a specific line. TrAILCo's vegetation management plan will identify land use and vegetation conditions, predict future vegetation management needs, and document variances and restrictions. The Transmission Forestry Group will develop a long-term plan for TrAIL that will reflect a proposed vegetation management schedule summarizing predicted vegetation management needs for this specific line. The long-term plan will be periodically

reviewed and updated to incorporate changes required by local conditions and regulatory requirements as they arise. Annual work plans are developed and arise from an evaluation of the line's schedule of vegetation management activities during the current year, the line's long range or long-term plan, and the results of most recent inspections. A transmission forester responsible for vegetation management oversight will be assigned to each line. Although vegetation management cycles are used to predict general average time intervals between maintenance activities, these cycles are to be used only as a guideline for reviewing and planning needed vegetation management. Local conditions will determine actual schedules.

Q. IF CHEMICAL SPRAYS OR OTHER CHEMICAL MEANS ARE PLANNED FOR VEGETATION CONTROL, PLEASE DESCRIBE THE PROCEDURES THAT WILL BE FOLLOWED TO PROTECT HUMANS, ANIMALS, AND VEGETATION FROM INJURY OUTSIDE OF THE RIGHT-OF-WAY.

A. In addition to tree trimming and tree removal, vegetation management activities will include brush control by either herbicide applications or manual cutting or mowing. TrAILCo supports environmental sensitivity in all aspects of its vegetation management program and will employ only sound management practices. For example, TrAILCo will use herbicides specifically designed to control unwanted plants, in a selective fashion, only in suitable portions of its rights-of-way. Selective herbicide use will not destroy wildlife cover and food supply. Herbicides that will be used on TrAIL have been scientifically designed to work on enzymes found in plants only – not people or animals. TrAILCo will

use herbicides that will control targeted plants, since not all plants are affected by every herbicide. For example, plants with woody stems, such as trees and brush, can be targeted for control by choosing herbicides that have been manufactured for that purpose. Herbicides planned for use on TrAIL promote the growth of grasses and low-growing shrubs, the preferred habitat and food source of deer, songbirds, rabbits and other animals.

Q. WILL THE SELECTED AND LIMITED USE OF HERBICIDES TO CONTROL VEGETATION ON THE TRAIL RIGHT-OF-WAY POSE A DANGER TO LIVESTOCK OR WILDLIFE?

A. No. The ingestion of herbicide-treated foliage by livestock and wildlife should not be a problem. First, it is impossible for the animals to consume treated foliage in amounts sufficient to obtain a harmful amount of any such herbicides used. In addition, a high percentage of any herbicide on forage passes through the animal's body within a short time. Herbicides, which are approved by and registered with the Environmental Protection Agency, are important tools for range and pasture weed and brush control across the country on private and public land (including US Forest Service and Bureau of Land Management). Further ensuring the safety of their use, TrAILCo will utilize trained professionals for herbicide applications and will provide ongoing training to ensure that all products and vegetation management methods are used correctly. Finally, herbicide treatment is required only occasionally and in extremely diluted forms and with modern application technologies. Research, combined

with many years of use, have demonstrated that the herbicide products that TrAILCo expects to use are safe and effective.

TRAILCO'S TECHNICAL CAPACITY TO CONSTRUCT AND OPERATE THE TRAIL PROJECT TO SATISFACTORILY MEET THE PUBLIC NEED

Q. WOULD YOU ADDRESS TRAILCO'S TECHNICAL CAPABILITIES TO CONSTRUCT AND OPERATE THE TRAIL PROJECT IN A MANNER THAT SATISFACTORILY MEETS THE PUBLIC NEED FOR WHICH THE PROJECT IS INTENDED?

A. Allegheny Power, through the affiliate West Penn Power Company, has provided retail electric service to the public in Pennsylvania for many years. As I indicated above in my testimony, Allegheny Power's three operating companies collectively operate and maintain approximately 700 miles of existing 500 kV lines throughout its service territory and over 4,000 miles of high voltage transmission lines operating at 138 kV and above, as well. Through and with the resources of Allegheny Power, TrAILCo will follow the existing engineering, construction, and post-commercial service operations practices that Allegheny Power already has in place to construct, operate, and maintain its transmission system. Consequently, the new facilities under the TrAIL project will be incorporated into Allegheny Power's existing operations in a seamless fashion and at the same high level of performance the companies have continued to demonstrate.

EXEMPTION FROM LOCAL ZONING REGULATION

Q. WHY IS TRAILCO SEEKING AN EXEMPTION FOR CERTAIN LOCAL ZONING REGULATIONS IN PENNSYLVANIA?

A. As I have been advised by counsel, an exemption is available in Pennsylvania from municipal zoning regulations for "any existing or proposed building, or extension thereof" of a public utility (*i.e.*, the limited extent to which municipal zoning regulation by law applies to the placement of public utility facilities), upon a finding and determination by the Commission "that the present or proposed situation of the building in question is reasonably necessary for the convenience and welfare of the public". By this application, TrAILCo plans to design, construct, own, and operate the Prexy Substation in Washington County, and the 502 Junction Substation in Greene County, Pennsylvania. Each of these substation sites will have both a control building to house substation electric controls, metering and communications, and a maintenance building that will be used for performing maintenance on the electric equipment. The proposed buildings at the substations will be located within two Pennsylvania municipalities, North Strabane Township, Washington County and Dunkard Township, Greene County, each of which has enacted regulations pertaining to zoning. Since these buildings are clearly necessary and proper for the electric operation of the TrAIL project, they clearly satisfy the standards upon which the Commission may grant exemptions from local zoning regulations – *i.e.*, they are "reasonably necessary for the convenience and welfare of the public."

Accordingly, TrAILCo requests that the Commission grant the necessary exemptions in this proceeding.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does. However, I reserve the right to file such additional testimony or exhibits as may be necessary or appropriate.

PROJECT DESIGN CRITERA
TrAIL 500 KV AND 138 KV LINES

Project Description

The TrAIL project is an overhead 500,000 volt line that will run from Washington County, PA and continue to Loudon, County, VA. A new substation called Prexy Substation will be constructed at the western terminus in Washington County, PA. The line will then proceed in a southern direction to a new switching substation in Green County, PA which will be called 502 Junction Substation. From this point the line will proceed into West Virginia and will continue in a south-southeast direction through West Virginia to an existing substation called Mount Storm; Mount Storm is owned and operated by Dominion Resources. From this point the line continues in an easterly direction out of West Virginia and into Virginia to Allegheny Power's Meadowbrook Substation. From this point will continue in an eastern direction to the Appalachian Trail which is the ownership transition point on the line. From this point Dominion Resources will assume ownership as the line route continues to the eastern terminus at Dominion's Loudon Substation.

In addition to the 500 kV portion of the project, there are three 138 kV line routes that will emanate from Prexy Substation in Washington County, PA and tie into existing 138 kV lines. All three line routes will consists of two electrical circuits per route. The structures proposed for these lines will be weathering tubular steel structures and each structure is capable of carrying two circuits per structure. All three 138 kV line routes will be entirely within Washington County, PA.

Right-of-Way Requirements

The 500 kV line portion of TrAIL will require a 200 foot-wide right-of-way in Pennsylvania. It is anticipated that unless other constraints dictate a change in width, either narrower or wider, the line right-of-way will be 200 feet in width. The 138 kV lines that are part of the TrAIL project will require a 100 foot-wide right-of-way per line route. Where the 500 kV line parallels a 138 kV line route, a 290 foot-wide right-of-way will be required. The Sketches of the proposed right-of-way configurations are contained in Exhibit JRB-3.

Clearances Above Ground, Roadway, Rail, or Water Surfaces

All requirements set forth in the National Electric Safety Code C2-2007 (NESC) for vertical clearances of conductors above ground, roadway, rail, or water surfaces will be met or exceeded. The required clearances will be based on a maximum operating voltage of 550 kV or 10 percent above the nominal rating of the line with the conductor at its maximum sag for the 500 kV line. The required clearances will be based on a maximum operating voltage of 145 kV or 5 percent above the nominal rating of the line with the conductor at its maximum sag for the 138 kV lines. In addition, TrAILCo will apply an applicable construction tolerance and field checks of the conductor sag to insure that all NESC

clearances are met. The minimum NESC vertical clearances for TrAIL are listed in Tables 1a and 1b.

In addition to the clearance requirements above, the clearances of the 500 kV line will be increased when necessary to meet the 5 mA criteria set forth in Rules 232 C.1.c and 232 D.3.c. The 5 mA criteria will be based on the largest state legal truck when the line is crossing a road, or the largest applicable piece of farm equipment anticipated under the line when crossing agricultural areas. As per the NESC, the conductor elevation above ground for the 5 mA criteria will be based on the resulting conductor sag when the operating temperature of the line is at 120 degrees Fahrenheit (50 degrees Celsius).

Table 1a – 500 kV Vertical Clearance Requirements When Below 5000 ft. in Elevation

	Nature of the Surface Underneath the Line	Clearance Required by NESC 232.D (ft.)
a.	Track of rails of railroads (except electrified railroads using overhead trolley conductors).	33.9
b.	Streets, alleys, roads, driveways, and parking lots.	25.9
c.	Spaces and ways subject to pedestrians or restricted traffic only	25.9
d.	Other land, such as cultivated, grazing, forest, or orchard, that is traversed by vehicles.	25.9
e.	Water areas not suitable for sail boating or where sail boating is prohibited.	24.4
f.	Water areas suitable for sail boating including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with unobstructed surface area.	
f. (1)	Less than 20 acres.	27.9
f. (2)	Over 20 acres to 200 acres.	35.9
f. (3)	Over 200 acres to 2000 acres.	41.9
f. (4)	Over 2000 acres.	47.9
g.	In public or private land and water areas posted for rigging or launching sailboats, the reference height shall be 5 ft. greater than in f above, for the type of water areas serviced by the launching site.	
g. (1)	Less than 20 acres.	32.9
g. (2)	Over 20 acres to 200 acres.	40.9
g. (3)	Over 200 acres to 2000 acres.	46.9
g. (4)	Over 2000 acres.	52.9

Table 1b – 138 kV Vertical Clearance Requirements When Below 3300 ft. in Elevation

	Nature of Surface Underneath Lines	Clearance Required by 232.B (ft.)
1.	Track of rails of railroads (except electrified railroads using overhead trolley conductors).	28.6
2.	Roads, streets, and other areas subject to truck traffic.	20.6
3.	Driveways, parking lots, and alleys.	20.6
4.	Other land traversed by vehicles, such as cultivated, grazing, forest, or orchards, etc.	20.6
5.	Spaces and ways subject to pedestrians or restricted traffic only.	16.6
6.	Water areas not suitable for sail boating or where sail boating is prohibited.	19.1
7.	Water areas suitable for sail boating including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with unobstructed surface area.	
7a.	Less than 20 acres.	22.6
7b.	Over 20 acres to 200 acres.	30.6
7c.	Over 200 acres to 2000 acres.	36.6
7d.	Over 2000 acres.	42.6
8.	In public or private land and water areas posted for rigging or launching sailboats, the reference height shall be 5 ft. greater than in f above, for the type of water areas serviced by the launching site.	
8a.	Less than 20 acres.	27.6
8b.	Over 20 acres to 200 acres.	35.6
8c.	Over 200 acres to 2000 acres.	41.6
8d.	Over 2000 acres.	47.6

Clearances from Buildings, Bridges, and Other Installations

In addition to the vertical clearance specified in NESC Rule 232, the lines will be designed to meet the clearance requirements in NESC Rule 234 for the clearance of conductors from buildings, bridges, and other installations. These clearances are listed in Tables 2a and 2b below. Per rule 232A, these clearances shall be met when the conductor is at its maximum sag for vertical clearances and with the conductor displaced by a 6.0 pound per square foot wind (48.4 miles per hour) with the conductor temperature at 60 degrees Fahrenheit. As with the vertical clearance above ground, TrAILCo will apply an applicable construction tolerance and field checks of the conductor sag to insure that all NESC clearances are met.

Table 2a – 500 kV Clearances from Buildings, Bridges, and Other Installations When Below 5000 ft. in Elevation

Clearances of:		Clearance Required by 234.B, C, D, E *or* H (ft.)
a.	Buildings	
	Horizontal	12.9
	Vertical	20.9
b.	*Signs, chimneys, radio and television antennas, tanks, and* other installations not classified as bridges or buildings	
	Horizontal	12.9
	Vertical	20.9
c.	Superstructure of bridges	
	Horizontal	12.9
	Vertical	20.9
d.	Supporting structures of another line	
	Horizontal	14.9
	Vertical	17.9
e.	Dimension A of Figure 234-3 for swimming pools	
	Horizontal	
	Vertical	29.9
f.	Dimension B of Figure 234-3 for swimming pools	
	Horizontal	23.9
	Vertical	25.9

Table 2b – 138 kV Clearances from Buildings, Bridges, Rail Cars, Swimming Pools, and Other Installations When Below 5000 ft. in Elevation

	Clearance of	Clearance Required by 234.B, C, D, or E (ft.)
Rule 234 B - Other Structures		
	Clearance of Wires, Conductors, and Cables From Other Supporting Structures	
1.	Horizontal	7.2
2.	Vertical	7.7
Rule 234 C - Buildings		
1.	Buildings	
a.	Horizontal	
(1)	To walls, projections, and guarded windows	9.7
Table 2b Continued		
Rule 234 C – Buildings Continued		

(2)	To unguarded windows[8]	9.7
(3)	To Blconies and areas readily accessible to pedestrians[3]	9.7
b.	Vertical[14]	
(1)	Over or under roofs or projections not readily accessible to pedestrians[3]	14.7
(2)	Over or under balconies and roofs readily accessible to pedestrians[3]	15.7
(3)	Over roofs accessible to vehicles but not subject to truck traffic[6]	15.7
(4)	Over roofs accessible to truck traffic[6]	20.7
2.	Signs, chimneys, billboards, radio and television antennas, tanks, and other istallations not classified as buildings or bridges	
a.	Horizontal[4]	
(1)	To portions that are readily accessible to pedestrians[3]	9.7
(2)	To portions that are not readily accessible to pedestrians[3]	9.7
b.	Vertical	
(1)	Over or under catwalks and other surfaces upon which personnel walk	15.7
(2)	Over or under other portions of such installations[4]	10.2
	Rule 234 D - Bridges	
1.	Clearance Over Bridges[1]	
a.	Attached[3]	7.7
b.	Not attached	14.7
2.	Clearance beside, under, or within bridge structure[6]	
a.	Readily accessible portions of any bridge including wing, walls, and bridge attachements[1]	
(1)	Attached[3]	7.7
(2)	Not attached	9.7
b.	Ordinarily inaccessible portions of bridges (other than brick, concrete, or masonry) and from abutments[2]	
(1)	Attached[3,5]	7.7
(2)	Not attached[4,5]	8.7
	Rule 234 E - Swimming Pools	
A.	Clearance in any direction from the water level, edge of pool, base of diving platform, or anchored raft	27.2
B.	Clearance in any direction to the diving platform or tower	19.2
V.	Vertical clearance over adjacent land	
Table 2b Continued		
	Rule 234 - Other Structures (With 6 lb/ft2 Wind at Final Sag at 60° F)	
1.	Clearance of Wires, Conductors, and Cables From Other Supporting Structures	

a.	Horizontal when displaced by wind	6.7
	Rule 234 C - Buildings (With 6 lb/ft2 Wind at Final Sag at 60° F)	
1.	Buildings	
a.	Horizontal when displaced by wind	
(1)	To walls, projections, and guarded windows	6.7
(2)	To unguarded windows[8]	6.7
(3)	To Blconies and areas readily accessible to pedestrians[3]	6.7
2.	Signs, chimneys, billboards, radio and television antennas, tanks, and other istallations not classified as buildings or bridges	
a.	Horizontal[4] when displaced by wind	
(1)	To portions that are readily accessible to pedestrians[3]	6.7
(2)	To portions that are not readily accessible to pedestrians[3]	6.7
	Rule 234 D - Bridges (With Wind)	
2.	Clearance beside, under, or within bridge structure[6]	
a.	Readily accessible portions of any bridge including wing, walls, and bridge attachements[1]	
(1)	Attached[3]	6.7
(2)	Not attached	6.7
b.	Ordinarily inaccessible portions of bridges (other than brick, concrete, or masonry) and from abutments[2]	
(1)	Attached[3,5]	6.7
(2)	Not attached[4,5]	6.7

Proposed Structure Types

The proposed 500 kV structures will be galvanized self-supporting lattice steel structures with the conductors arranged in a horizontal configuration. This structure type is well suited to the terrain types expected along the proposed line route and has a proven reliability and performance record based on previous installations within Allegheny Power's service territory. Presently, Allegheny Power has just under 700 miles of this type of structure installed, and TrAIL will be using Allegheny Power standards when applicable. In addition to lattice structures, there may be the need for other 500 kV structure configurations when constraints do not permit the use of lattice towers. If or when the need arises, TrAILCo plans to use tubular steel structures to support the line conductors.

For the 138 kV lines, a weathering tubular steel structure capable of carrying two 138 kV circuits per structure is the proposed structure type. Table 3 below contains a summary of the structures that will or can be used on TrAIL. In addition, Exhibit JRB-2 shows a graphical representation of each structure type with typical heights and width ranges for each structure listed.

Table 3 – Structure Types

Structure Description	Construction Type	Material Type	Permissible Line Angle	Exhibit JRB-2 Figure No.
500 kV Horizontal Tangent Suspension Tower	Lattice	Galvanized Steel	0° to 2°	1
500 kV Horizontal 10 Degree Suspension Tower	Lattice	Galvanized Steel	2° to 10°	2
500 kV Horizontal 30 Degree Suspension Tower	Lattice	Galvanized Steel	10° to 30°	3
500 kV Horizontal 50 Degree Dead-end Tower	Lattice	Galvanized Steel	0° to 50°	4
500 kV Horizontal 90 Degree Dead-end Tower	Lattice	Galvanized Steel	50° to 90°	5
500 kV Delta Tangent Suspension	Tubular Steel	Galvanized, Weathering, or Painted	0° to 2°	6
500 kV Delta 10 Degree Suspension Pole	Tubular Steel	Galvanized, Weathering, or Painted	2° to 10°	7
500 kV Delta 30 Degree Suspension Pole	Tubular Steel	Galvanized, Weathering, or Painted	10° to 30°	8
500 kV Vertical 50 Degree Dead-end Pole	Tubular Steel	Galvanized, Weathering, or Painted	0° to 50°	9
500 kV Vertical 90 Degree Dead-end Pole	Tubular Steel	Galvanized, Weathering, or Painted	50° to 90°	10
138 kV Double Circuit Suspension Tubular Steel Pole	Tubular Steel	Galvanized, Weathering, or Painted	0° to 30°	11
138 kV Double Circuit Dead-end Tubular Steel Pole	Tubular Steel	Galvanized, Weathering, or Painted	0° to 90°	12

Structural Design Loads

At a minimum, all structures for TrAIL will be designed to support the loads produced from the load cases defined in Section 25 of the NESC along with the appropriate load factors defined in this section. Furthermore, the structure strength will be reduced by the reduction factors as outlined in Section 26 of the NESC for Grade B construction.

TrAIL falls entirely within the Heavy Loading District defined by the NESC and the loads for TrAIL will be based off of this loading district. However, for the extreme ice with

concurrent wind loading case defined by Rule 250D, TrAIL will cover multiple loading areas. To simplify this loading and to insure a higher level of reliability, TrAIL will use the greatest loading for wind and the greatest loading for ice for all areas within the TrAIL project area. This equates to 0.75 inches of radial ice with a concurrent 40 mile per hour wind.

The load cases, load factors, and strength factors for TrAIL are summarized in Tables 4, 5, and 6 below. These tables are a minimum requirement listing and may be added to or modified for special loading conditions anticipated along the proposed line route.

Table 4 - Load Cases

Load Case	Description	Ambient Temp. (° F)	Wind Pressure (psf)	Radial Ice[1] (in.)
1	NESC Heavy – Rule 250B	0	4.00	0.50
2	NESC Extream Wind – Rule 250C	60	20.74	0.00
3	NESC Ice w/Wind –Rule 250D	15	4.10	0.75
4a.	500 kV Heavy Vertical	30	0.00	1.50
4b.	138 kV Heavy Vertical	30	0.00	1.25
5	Insulator Strength Check	0	4.00	0.50
6	Deflection Load	60	0.00	0.00
7	Longitudinal Unbalance	0	0.00	0.50
8	Stringing Unbalance	60	0.00	0.00
9	Full NESC Dead-end	0	4.00	0.50
10	Stringing Dead-end	0	0.00	0.00

[1] The unit weight of ice is defined as 57.0 pounds per cubic foot.

Table 5 - Load Factors

Load Case	Description	Vertical Load Factor	Transverse Load Factor	Wire Tension Factor
1	NESC Heavy – Rule 250B	1.50	2.50	1.65
2	NESC Extream Wind – Rule 250C	1.00	1.00	1.00
3	NESC Ice w/Wind –Rule 250D	1.00	1.00	1.00
4a	500 kV Heavy Vertical	1.00	1.00	1.00
4b	138 kV Heavy Vertical	1.00	1.00	1.00
5	Insulator Strength Check	1.00	1.00	1.00
6	Deflection Load	1.00	1.00	1.00
7	Longitudinal Unbalance	1.00	1.00	1.00
8	Stringing Unbalance	1.10	1.10	1.10
9	Full NESC Dead-end	1.50	2.50	1.65
10	Stringing Dead-end	1.25	1.25	1.25

Table 6 – Strength Factors

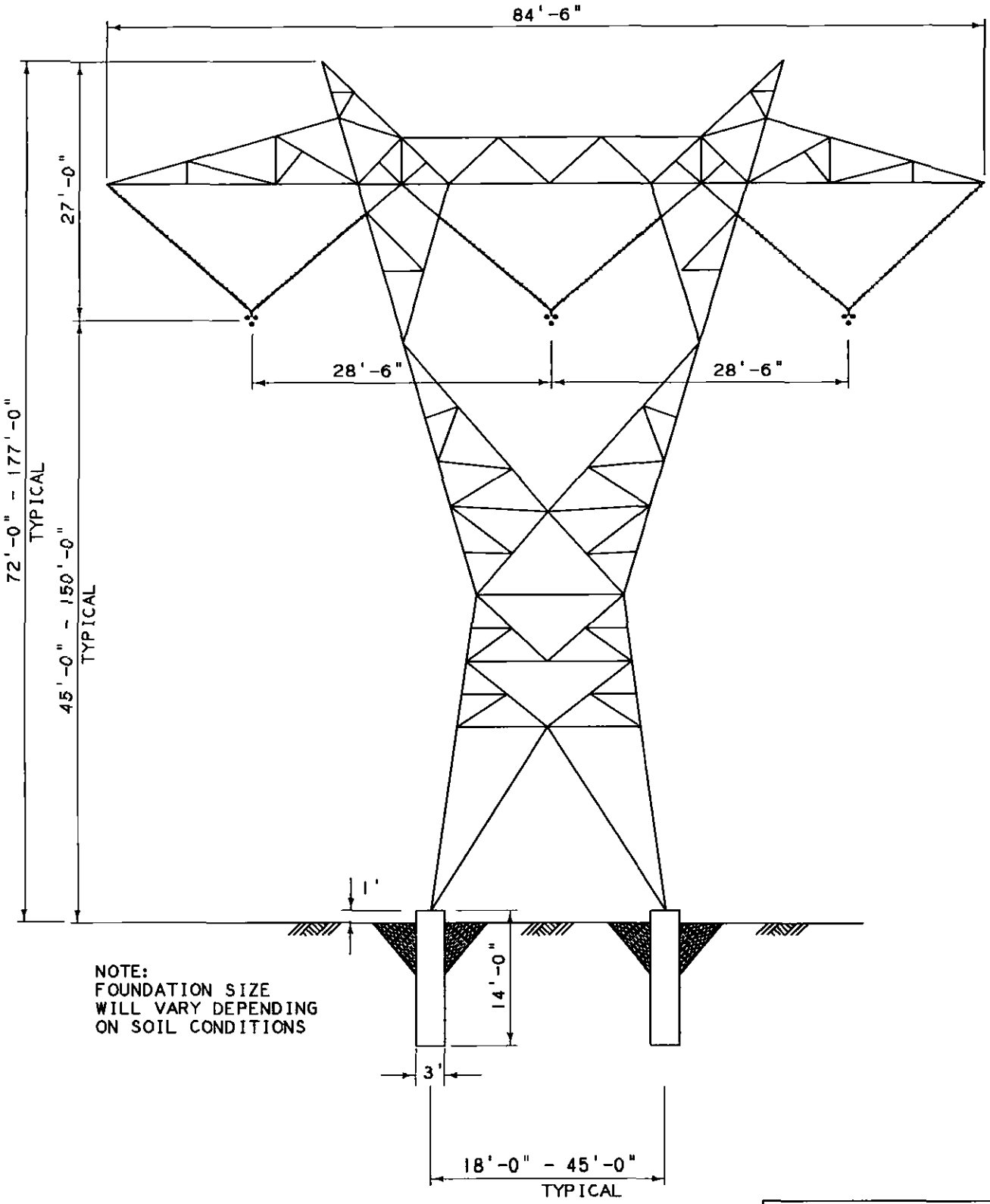
Load Case	Description	Metal Structures, Crossarms, & Braces	Wood Structures, Crossarms, & Braces	Support Hardware Factor	Guy Wire	Guy Anchor & Foundations	Insulators[1]
1	NESC Heavy – Rule 250B	1.00	0.65	1.00	0.90	1.00	0.00
2	NESC Extream Wind – Rule 250C	1.00	0.75	1.00	0.90	1.00	1.00
3	NESC Ice w/Wind –Rule 250D	1.00	0.75	1.00	0.90	1.00	1.00
4a	500 kV Heavy Vertical	1.00	1.00	1.00	1.00	1.00	1.00
4b	138 kV Heavy Vertical	1.00	1.00	1.00	1.00	1.00	1.00
5	Insulator Strength Check[1]	0.00	0.00	0.00	0.00	0.00	0.50
6	Deflection Load	1.00	1.00	1.00	1.00	1.00	1.00
7	Longitudinal Unbalance	1.00	1.00	1.00	1.00	1.00	1.00
8	Stringing Unbalance	1.00	1.00	1.00	1.00	1.00	1.00
9	Full NESC Dead-end	1.00	1.00	1.00	1.00	1.00	1.00
10	Stringing Dead-end	1.00	0.65	1.00	0.90	1.00	0.00

[1] Only strain and suspension insulators are proposed for this project. If post insulators are used, the strength factor shall be reduced to 0.40 for the vertical cantilever load.

Structure Identification and Safety Signs

All structures will be identified as required by Section 21 of the NESC. TrAIL structures will be marked in accordance with Allegheny Power Transmission & Distribution ("T&D") Standard 20008. This standard can be referenced in Exhibit JRB-4. In addition, four danger signs stating to keep off of the structure will also be placed on each lattice steel structure which is also in accordance with the previously mentioned Allegheny Power T&D standard.

FIGURE 1 - TYPICAL 500KV TANGENT (0° - 2°) LATTICE SUSPENSION STRUCTURE



NOTE:
FOUNDATION SIZE
WILL VARY DEPENDING
ON SOIL CONDITIONS

EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 2 - TYPICAL 500KV 10° LATTICE SUSPENSION STRUCTURE

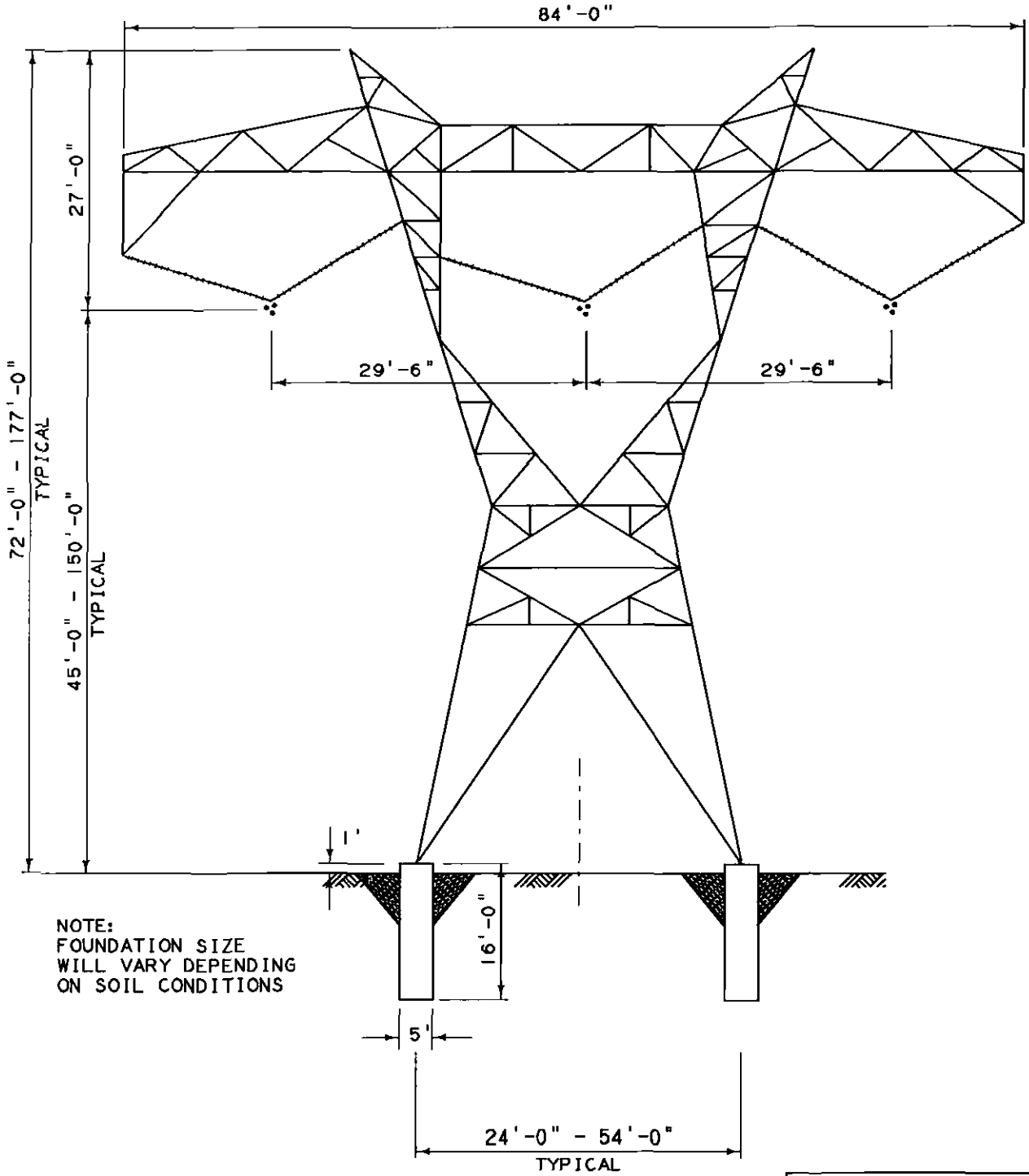


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA. DGN

FIGURE 3 - TYPICAL 500KV 30° LATTICE SUSPENSION STRUCTURE

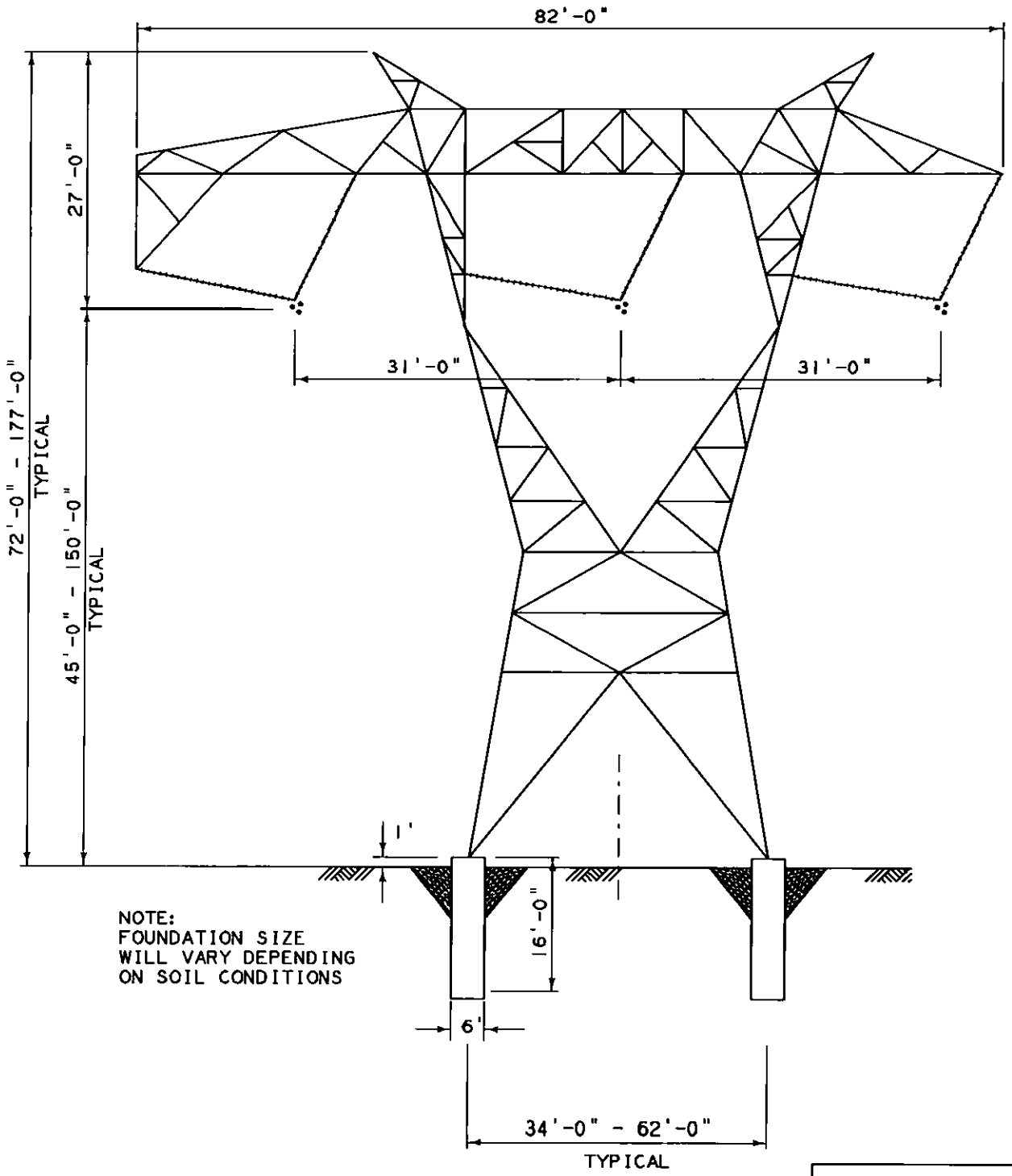


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 4 - TYPICAL 500KV 50° LATTICE DEAD END STRUCTURE

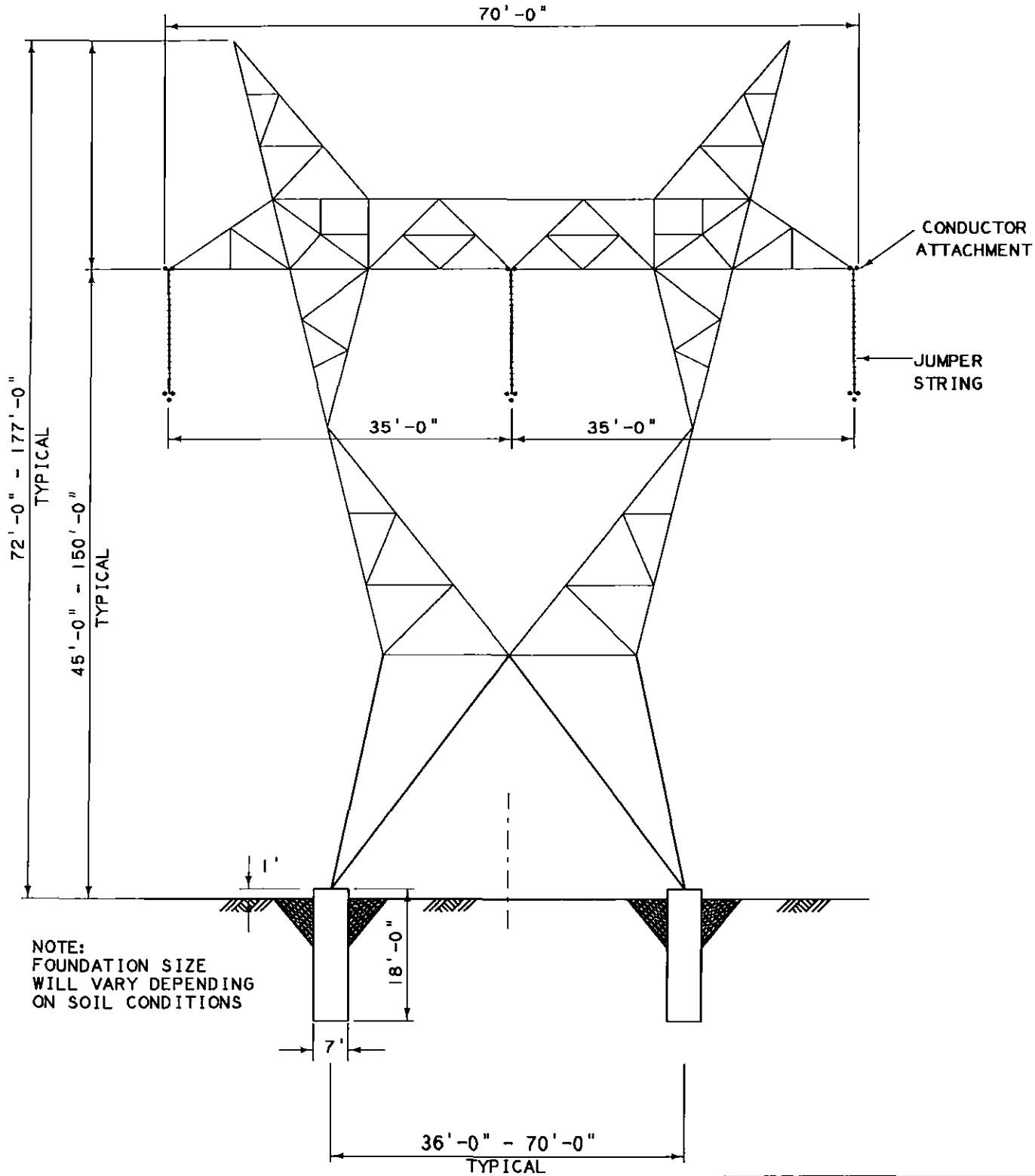


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 5 - TYPICAL 500KV 90° LATTICE DEAD END STRUCTURE

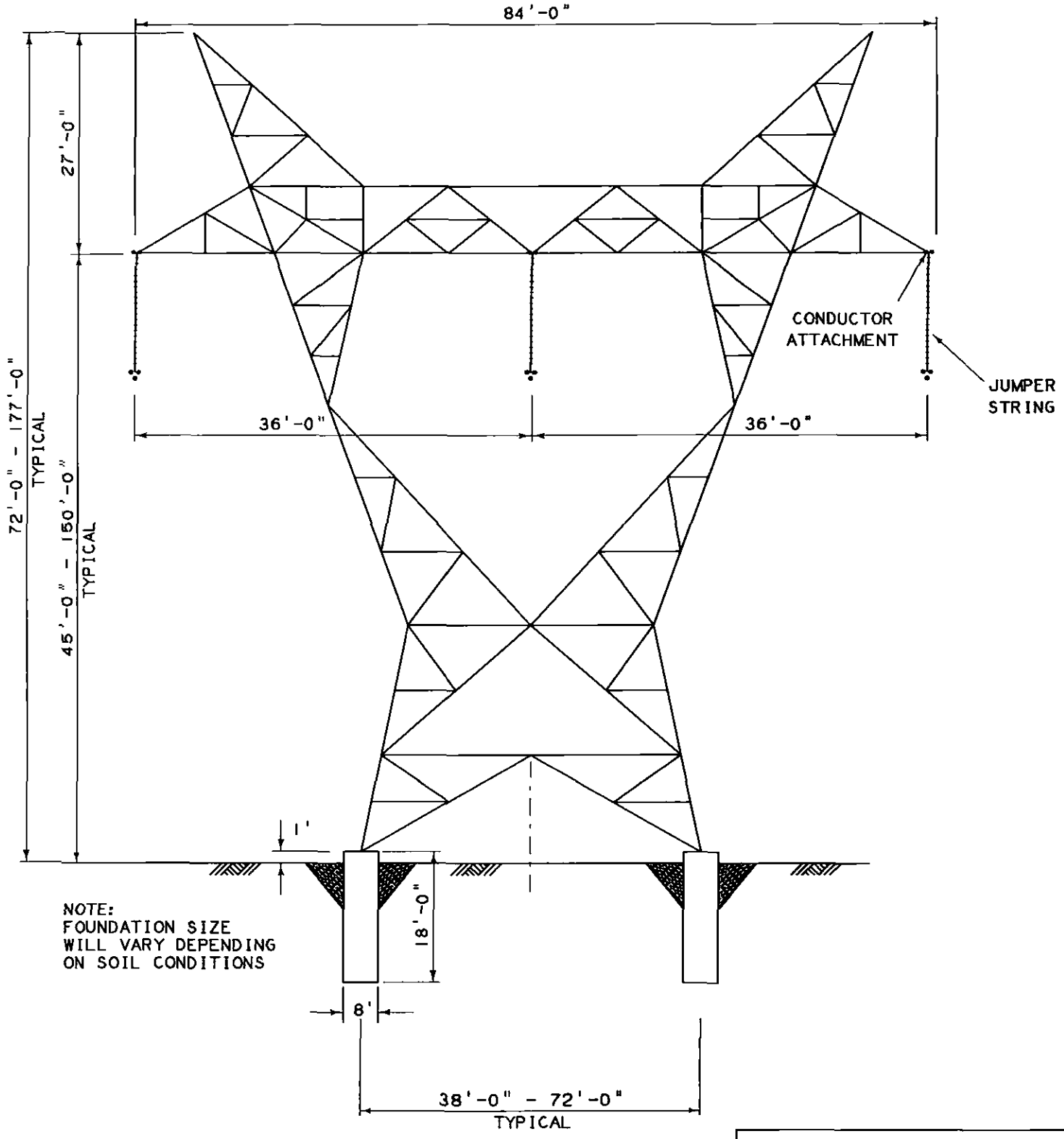


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 6 - TYPICAL 500KV TANGENT (0° - 2°) STEEL DELTA STRUCTURE

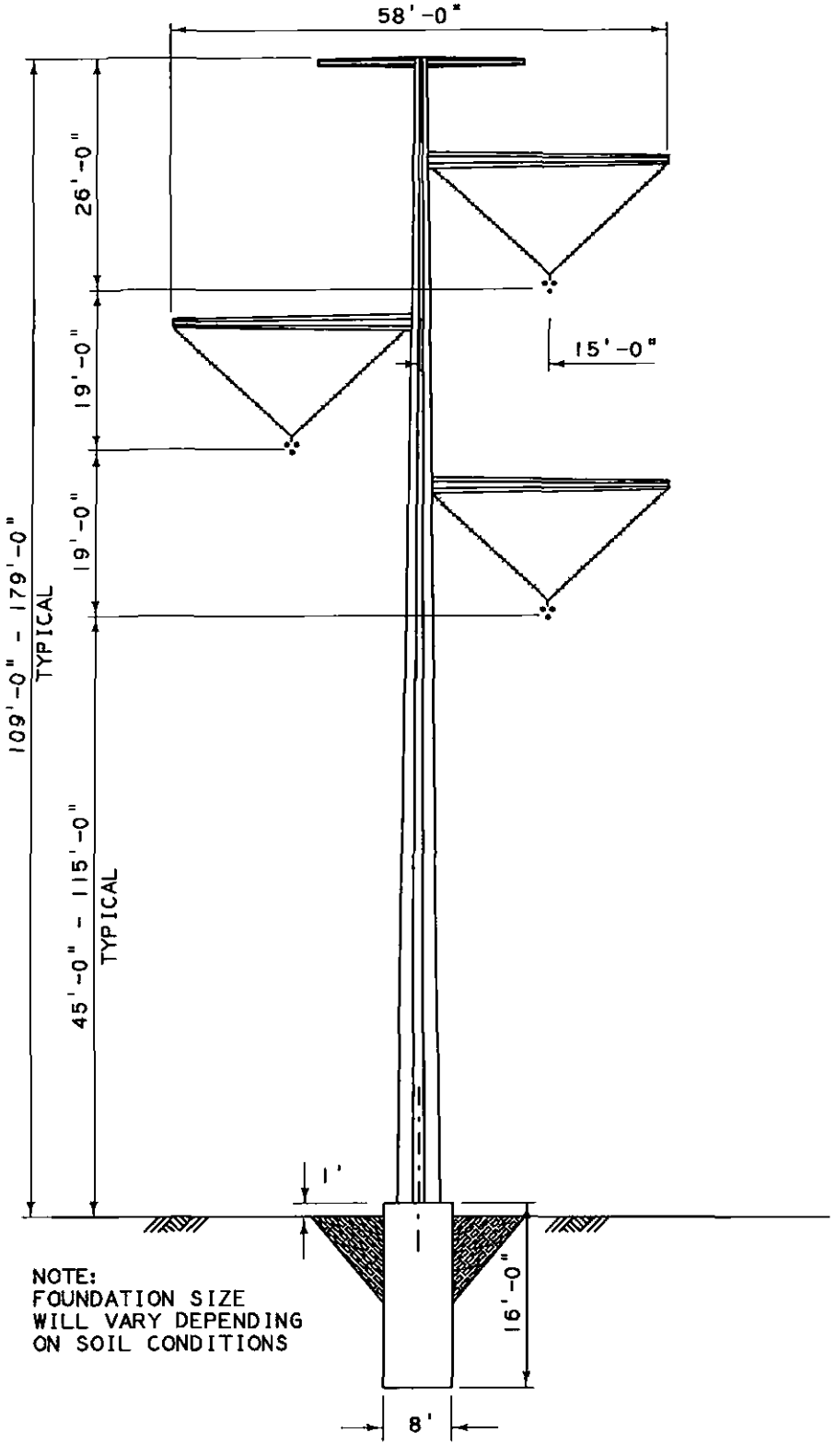


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA. DGN

FIGURE 7 - TYPICAL 500KV 10° STEEL DELTA STRUCTURE

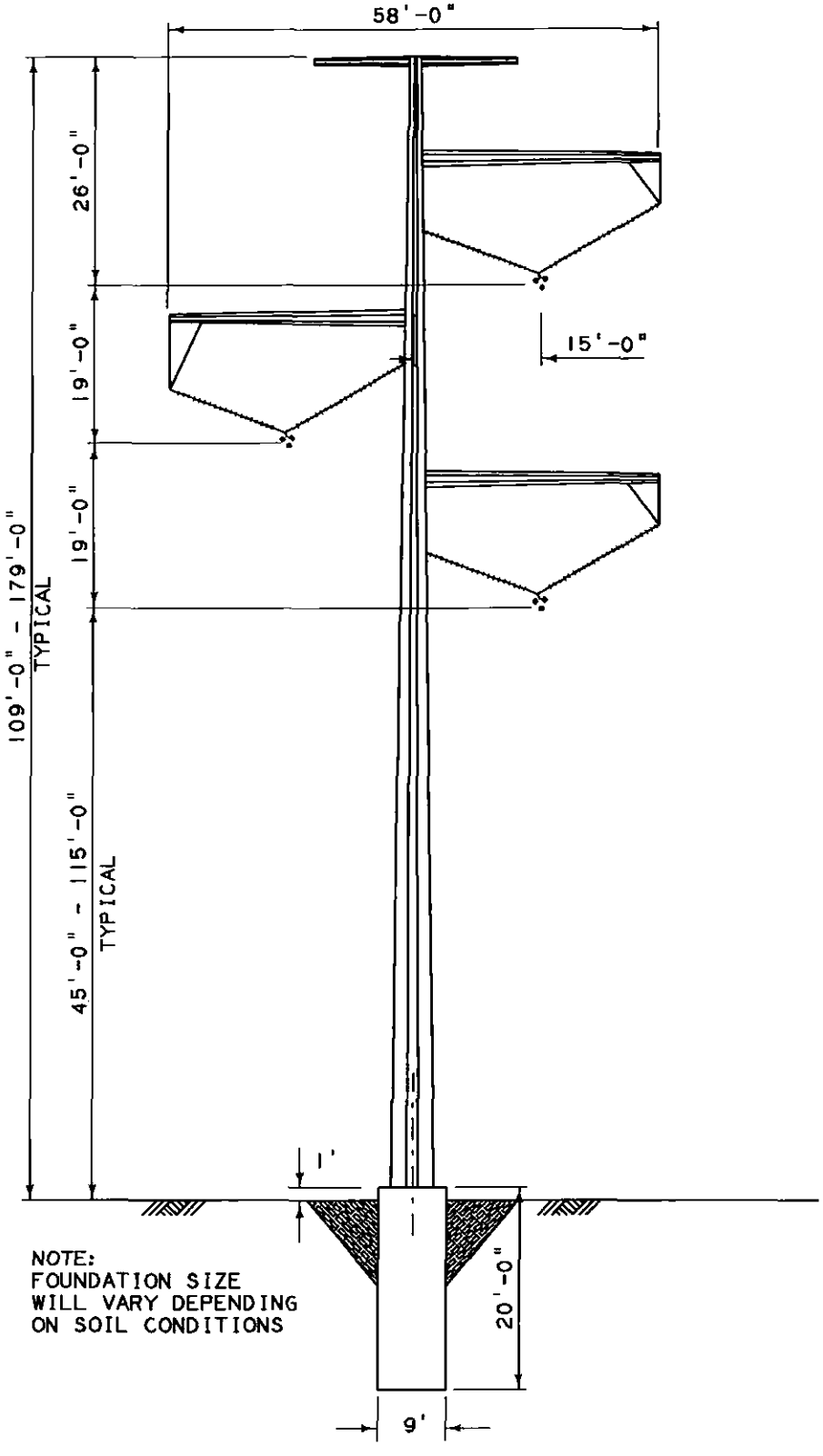


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 8 - TYPICAL 500KV 30° STEEL DELTA STRUCTURE

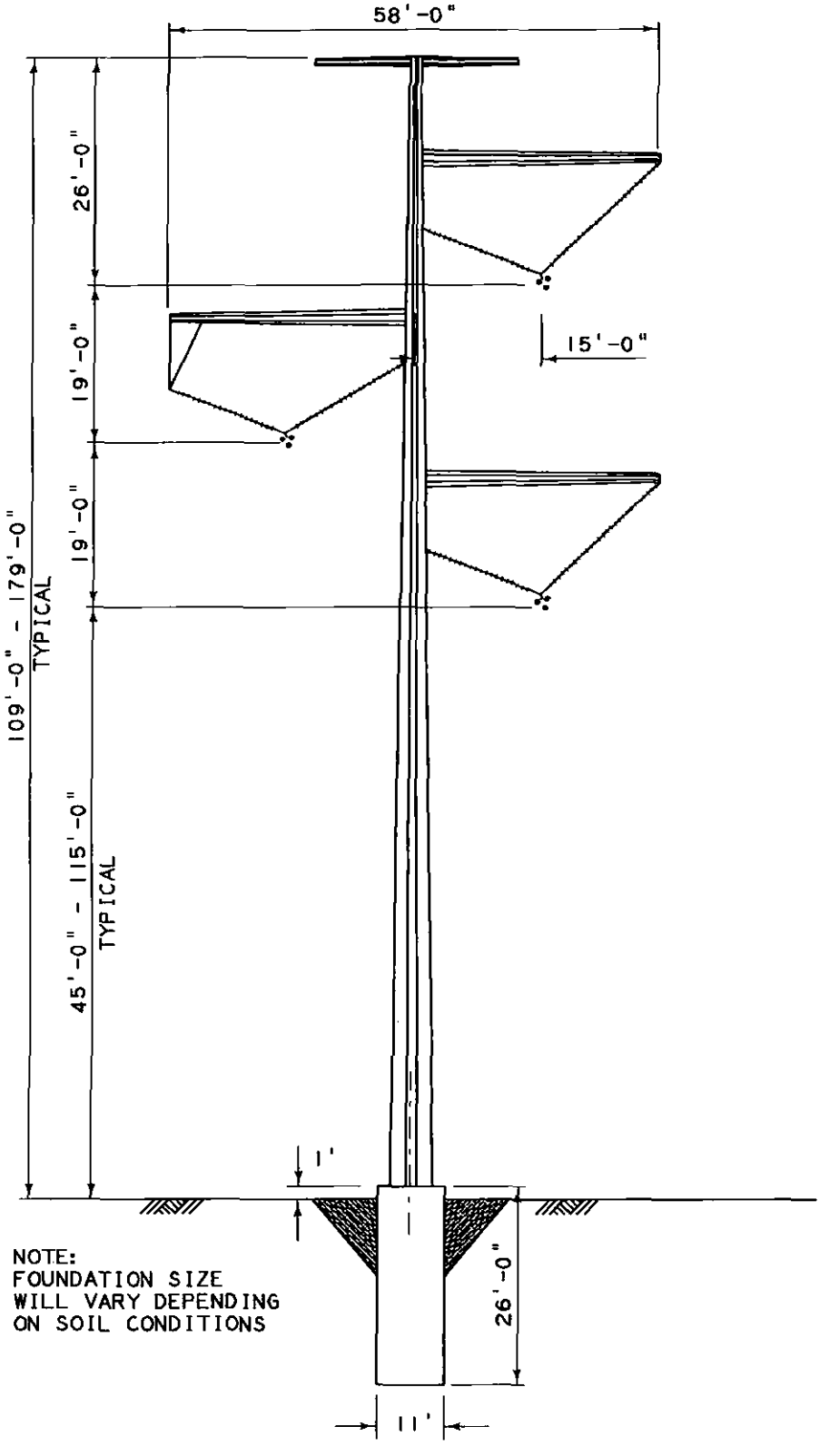
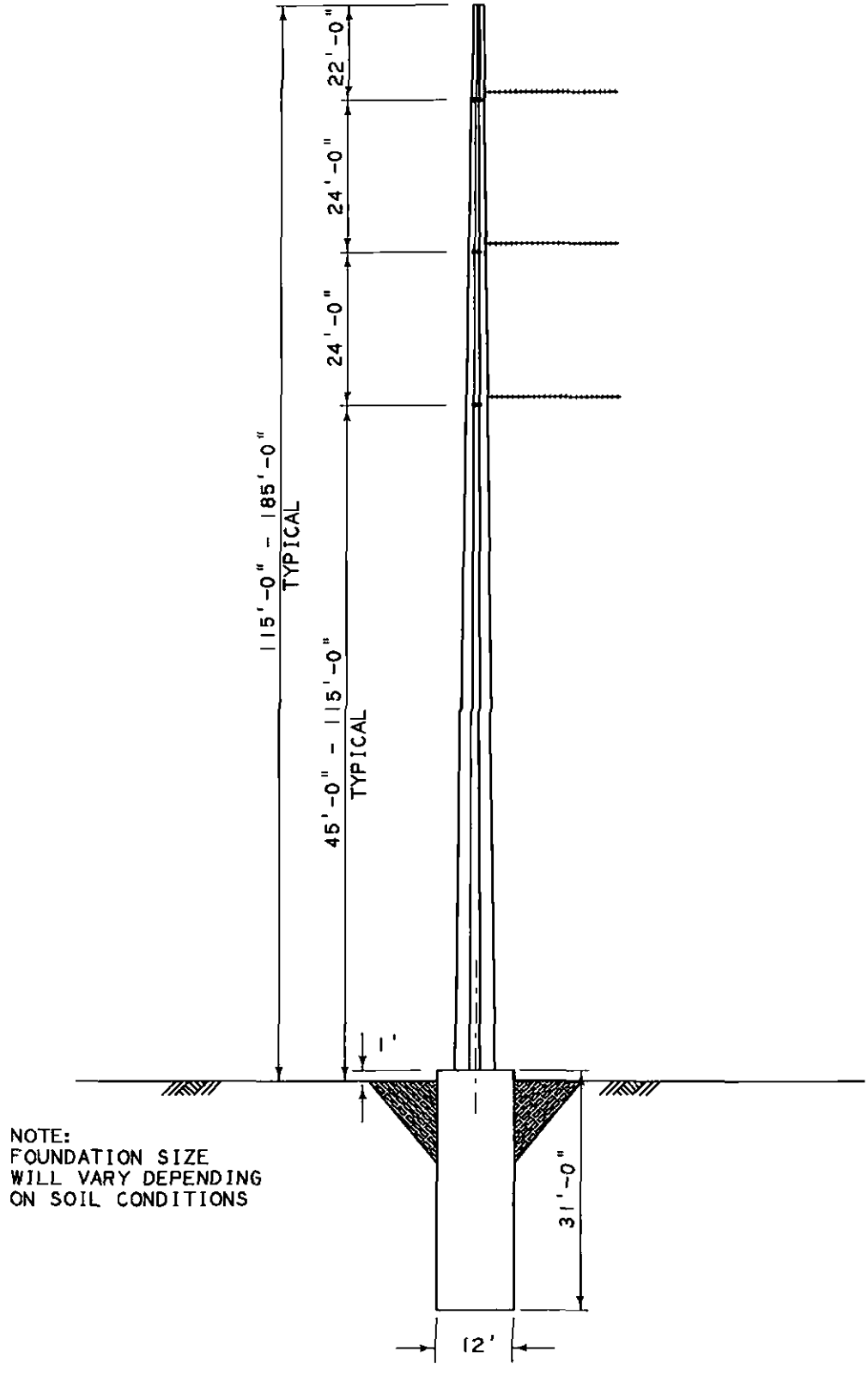


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 9 - TYPICAL 500KV 50° VERTICAL STEEL DEAD END STRUCTURE

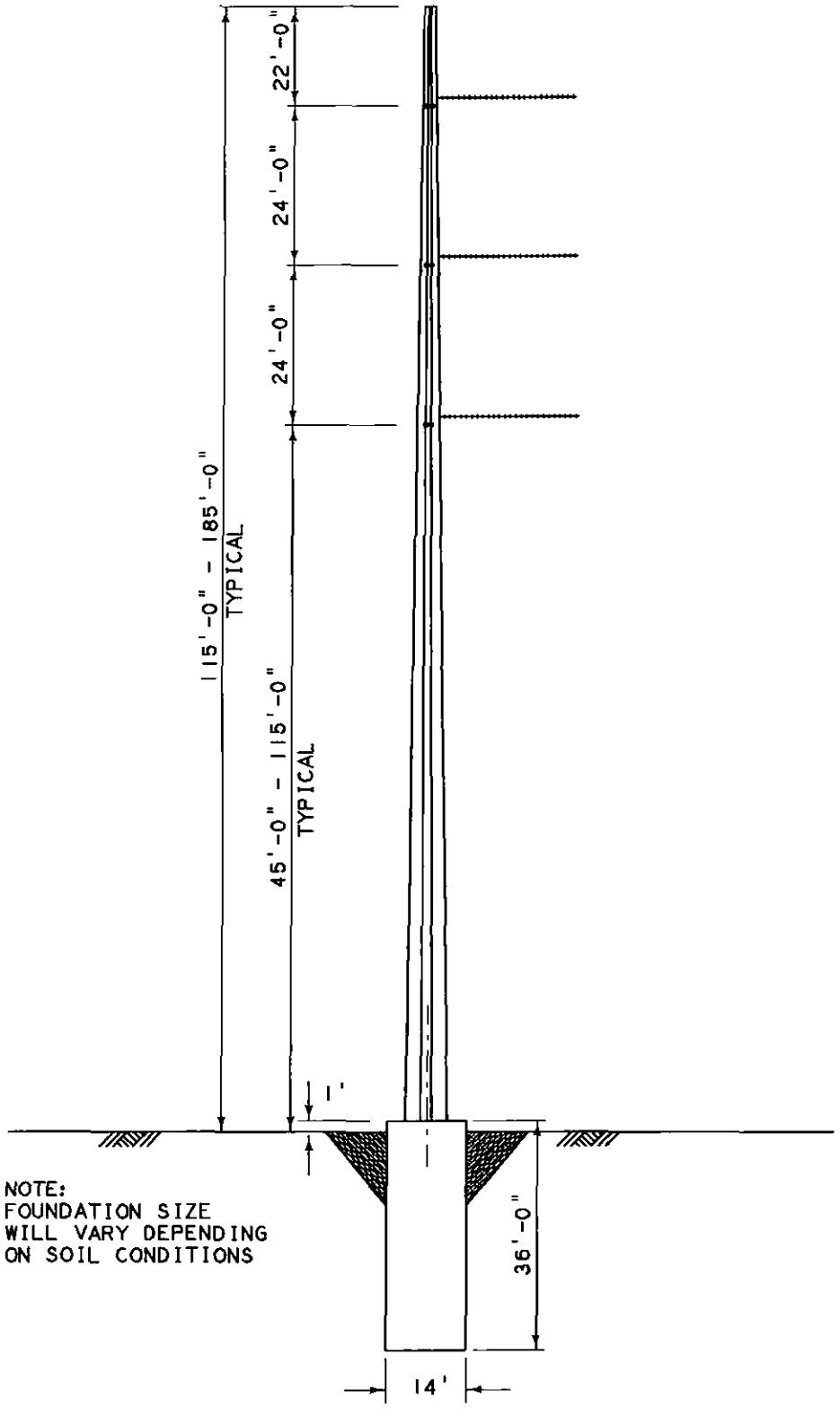


NOTE:
FOUNDATION SIZE
WILL VARY DEPENDING
ON SOIL CONDITIONS

EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA. DGN

FIGURE 10 - TYPICAL 500KV 90° VERTICAL STEEL DEAD END STRUCTURE



NOTE:
FOUNDATION SIZE
WILL VARY DEPENDING
ON SOIL CONDITIONS

EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA. DGN

FIGURE 11 - TYPICAL 138KV DOUBLE CIRCUIT TUBULAR STEEL POLE SUSPENSION STRUCTURE (0° - 30°)

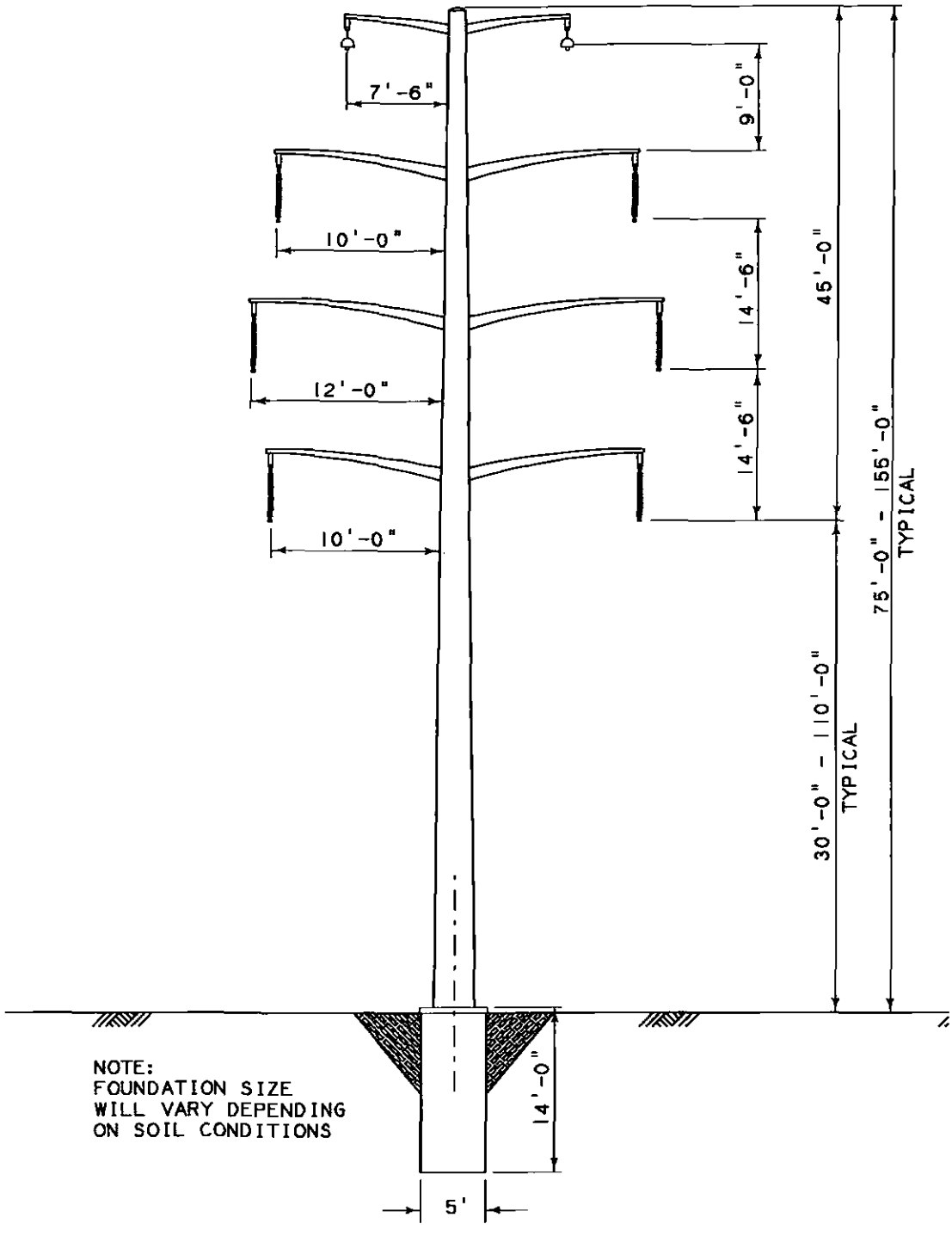


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA.DGN

FIGURE 12 - TYPICAL 138KV DOUBLE CIRCUIT TUBULAR STEEL DEAD END STRUCTURE (0° - 90°)

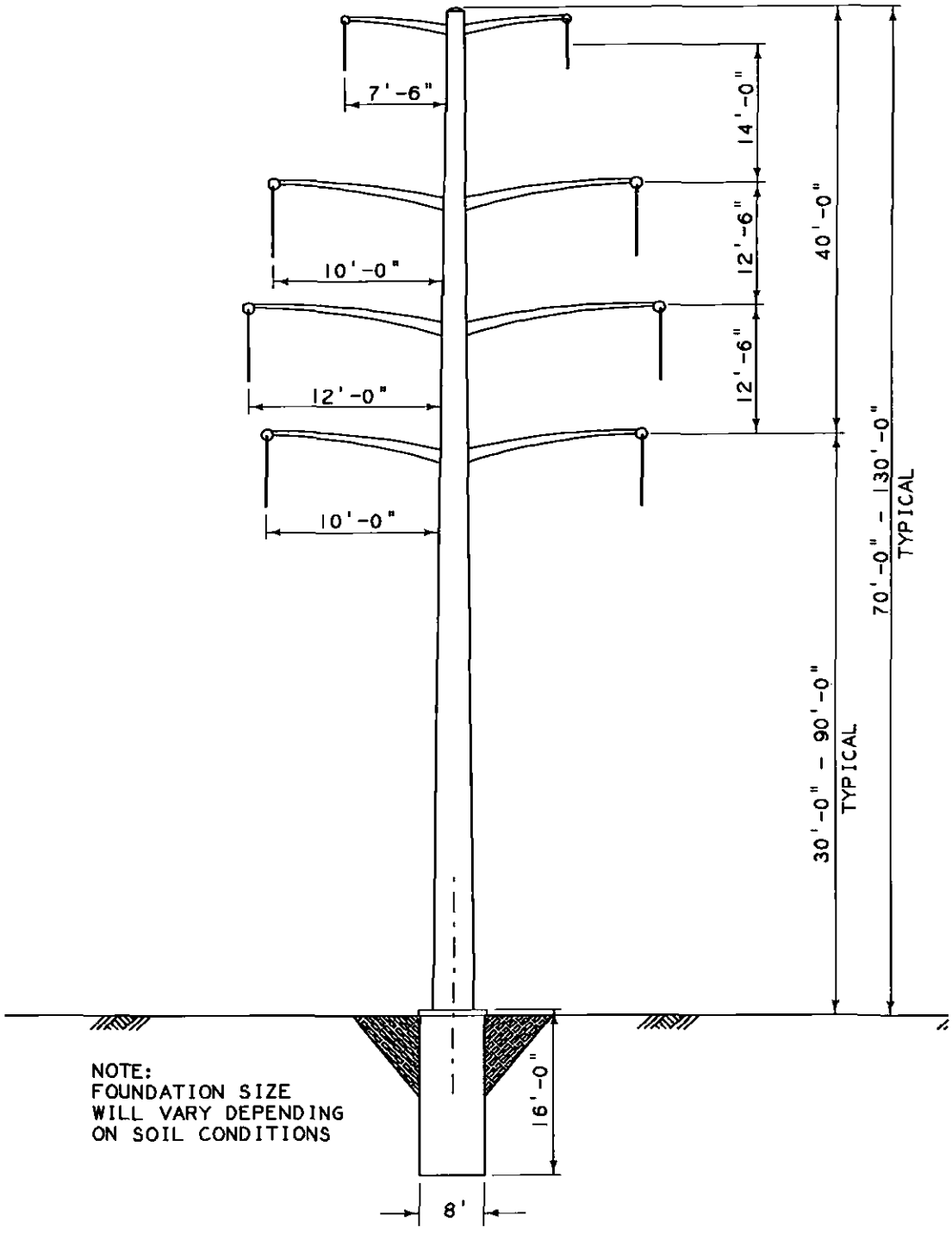


EXHIBIT JRB-2
TYPICAL STRUCTURES
SCALE: NTS

00107498AA. DGN

FIGURE 1 - TYPICAL 500KV LATTICE STEEL HORIZONTAL STRUCTURE LINE -
200 FOOT ROW, NO ADJACENT LINES

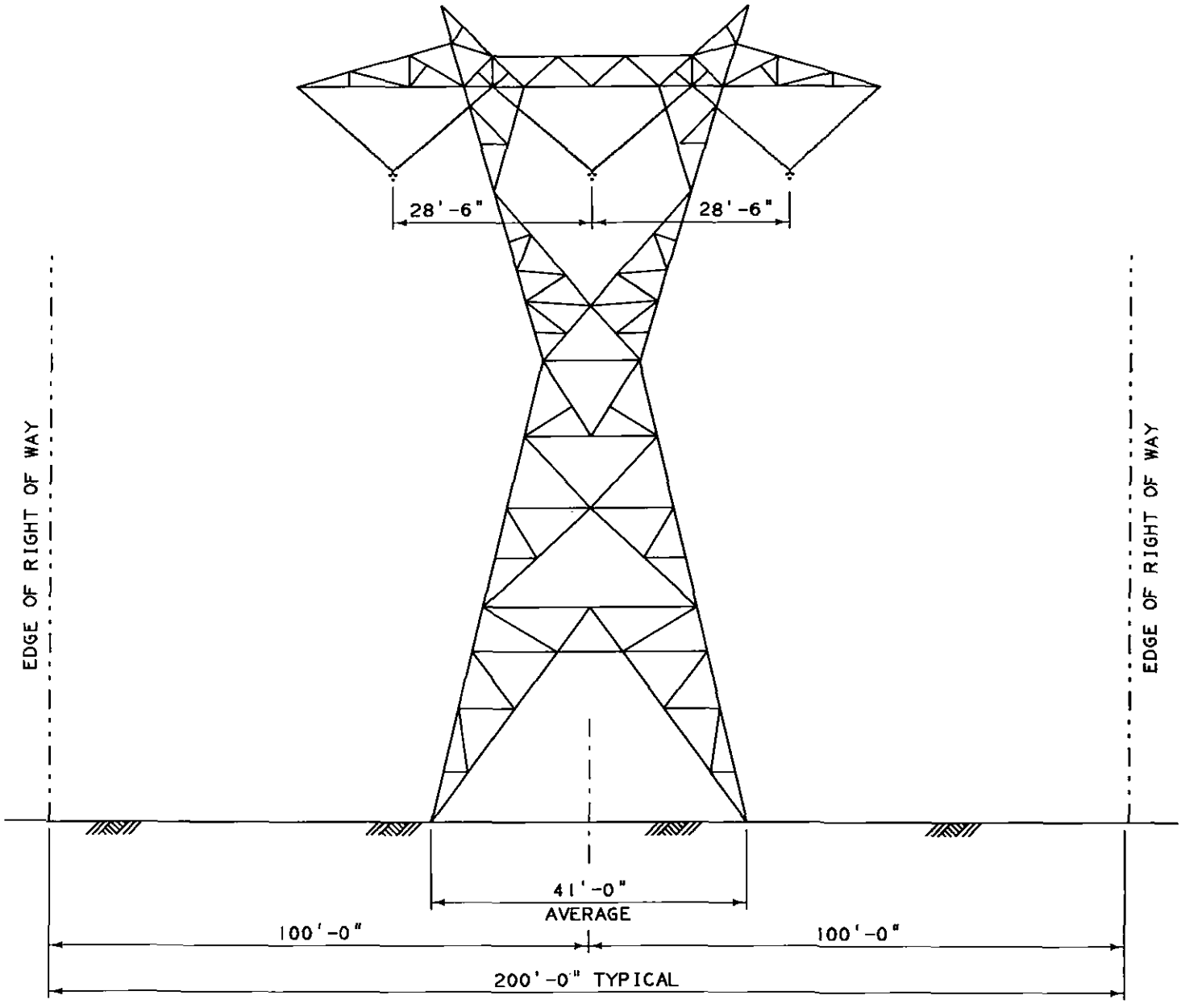


EXHIBIT JRB-3
TYPICAL RIGHT OF WAY
SCALE: NTS

00107498AA.DGN

FIGURE 2 - TYPICAL 500KV LATTICE STEEL HORIZONTAL LINE ADJACENT TO
138KV DOUBLE CIRCUIT TUBULAR STEEL VERTICAL LINE - 290 FOOT ROW

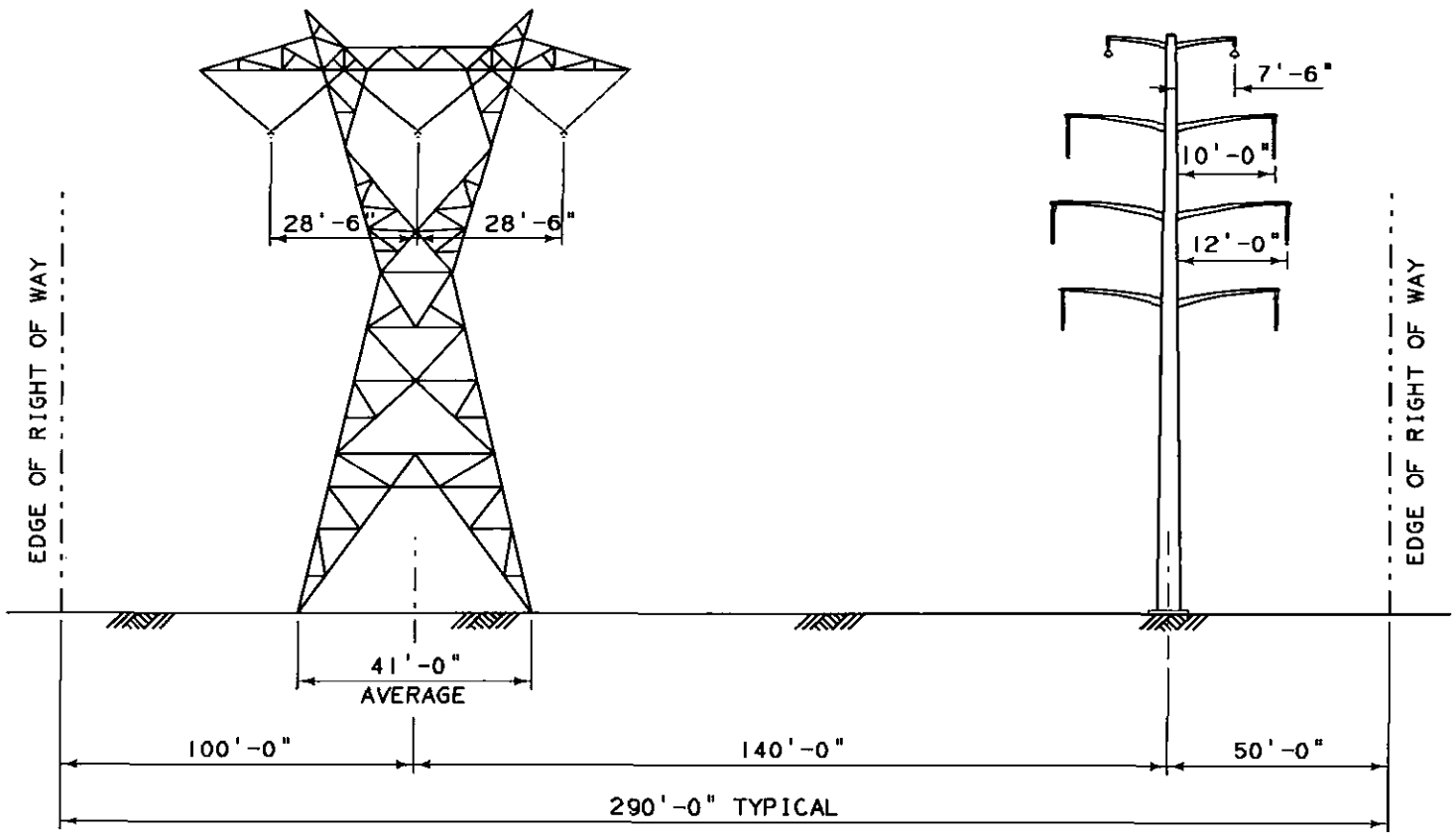


EXHIBIT JRB-3
TYPICAL RIGHT OF WAY
SCALE: NTS

00107498AA.DGN

FIGURE 3 - TYPICAL 138KV DOUBLE CIRCUIT TUBULAR STEEL VERTICAL LINE - 100 FOOT ROW

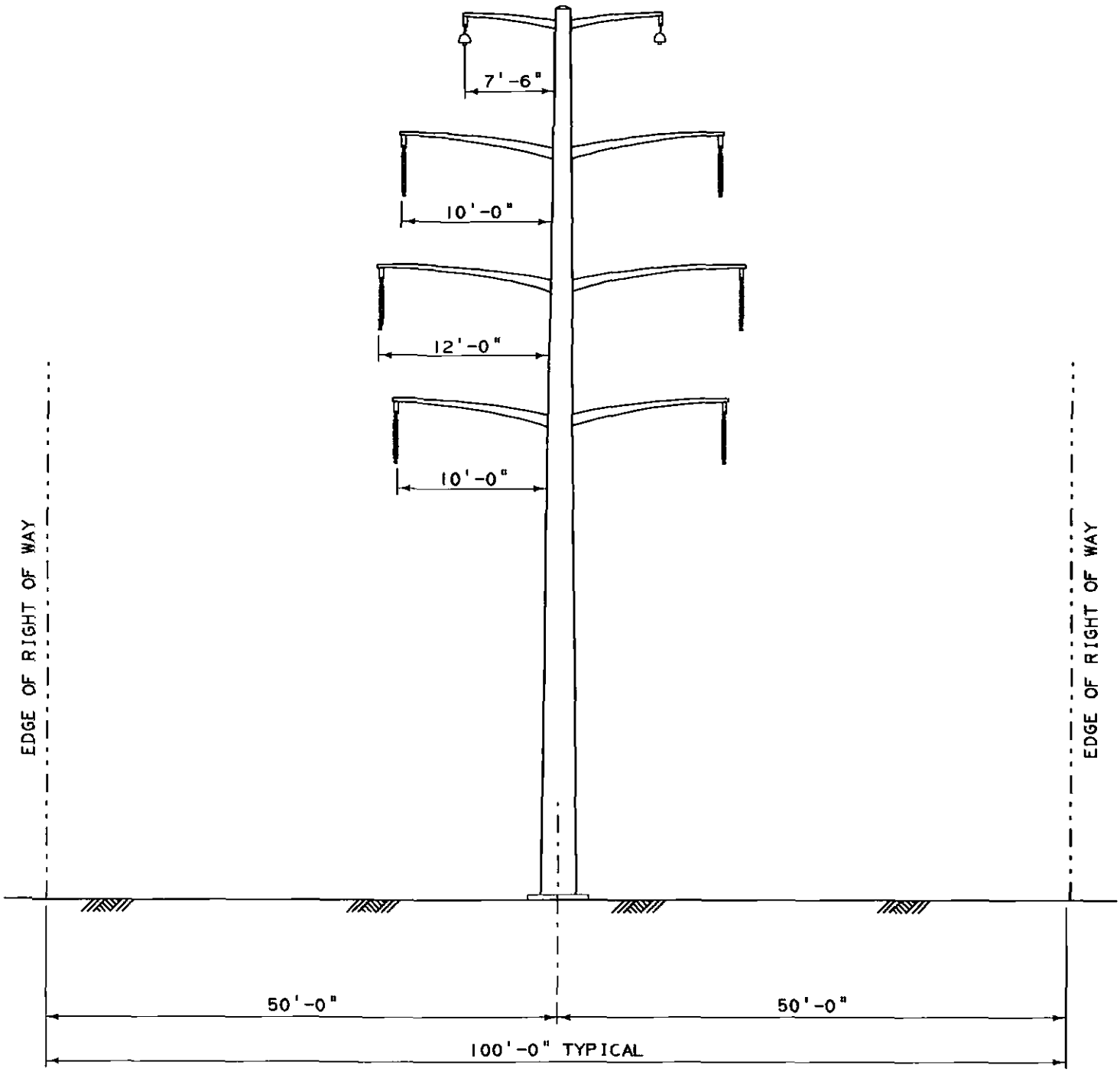
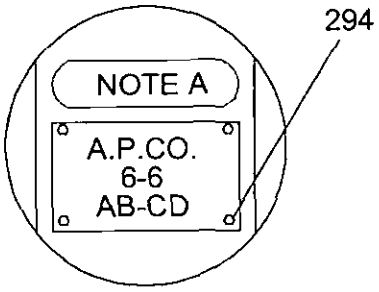


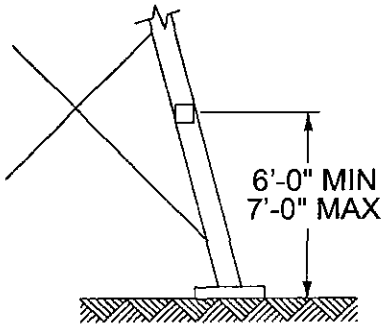
EXHIBIT JRB-3
TYPICAL RIGHT OF WAY
SCALE: NTS

00107498AA.DGN

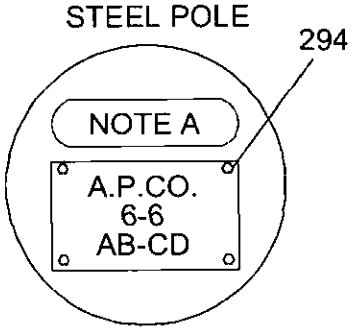
TOWER



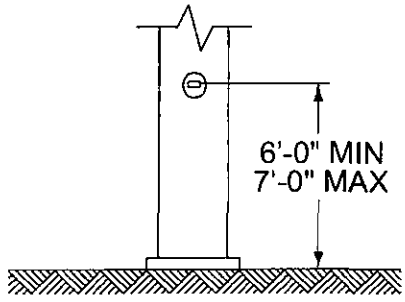
ON DOUBLE CCT STRUCTURES A TAG WILL BE PLACED ON THE RIGHT AND LEFT LEGS



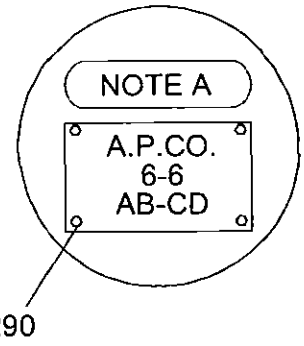
STEEL POLE

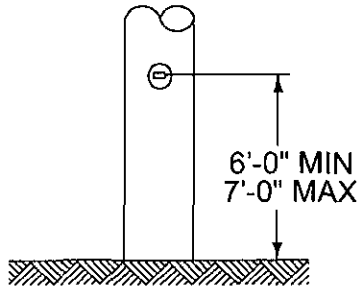


ON D. C. STRUCTURE TWO TAGS WILL BE USED. ATTACH TO RIGHT AND LEFT OF CENTER

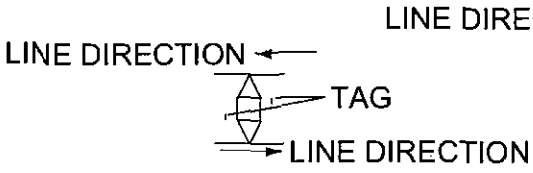


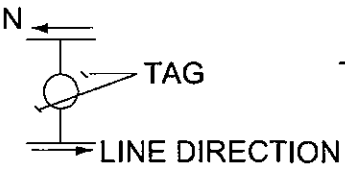
WOOD POLE

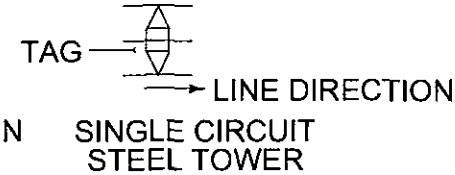




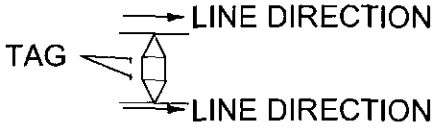
THE TAGS SHOULD BE ATTACHED TO THE STRUCTURES AS FOLLOWS:
WOOD - ATTACH WITH 4D AL NAIL (ITEM 290, S.N. 203663, 0.15LB/100)
METAL - ATTACH WITH SCREW, DRIVE, U-METALLIC (ITEM 294, S.N. 200624)
USE DRILL #29 (ITEM 295, S.N. 281540)



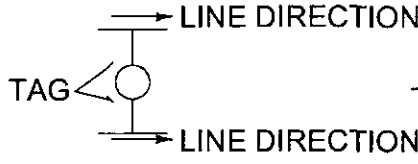




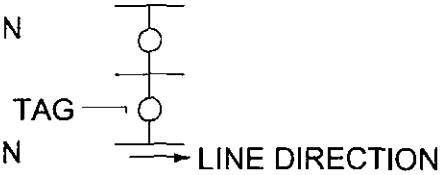
SINGLE CIRCUIT STEEL TOWER



DOUBLE CIRCUIT STEEL TOWER



DOUBLE CIRCUIT STEEL POLE



SINGLE CIRCUIT WOOD H-FRAME

REASON FOR REVISION: ADDED AND/OR REVISED NOTES/DESCRIPTIONS

Allegheny Power

TRANSMISSION STRUCTURE AND CIRCUIT IDENTIFICATION

20008-1

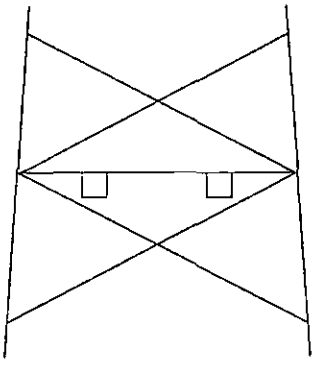
TRANS

DATE ISSUED: 08-30-2002

M P W

TRANSMISSION AND DISTRIBUTION CONSTRUCTION STANDARDS

AERIAL NUMBERING SIGNS



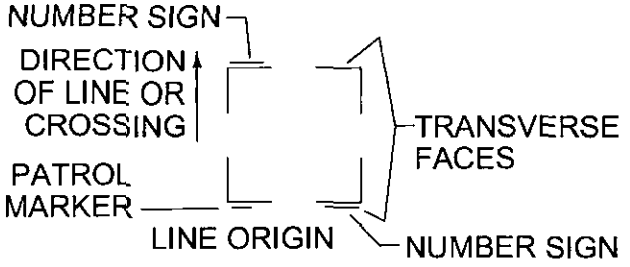
Attach aerial number signs on transverse faces of structure below conductor attachment. See erection drawing for member location.

Attach signs with:

3 - 1/2" x 1-1/4" Bolt (Stock No. 200438), Item 292
3 - Palnut, 1/2" (Stock No. 204468), Item 234

Members may be field punched as needed.

AERIAL PATROL MARKER

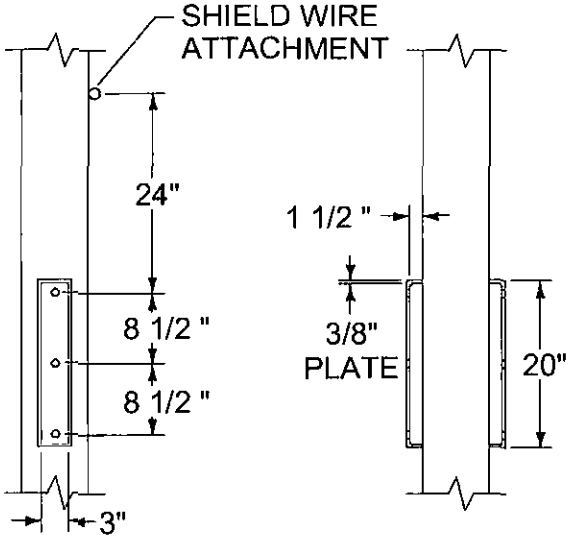


Attach aerial patrol markers as near to top of structure as possible using:

2 - 1/2" x 1-1/4" Bolt (Stock No. 200438)
2 - Palnut, 1/2" (Stock No. 204468)

Members may be field punched as needed.

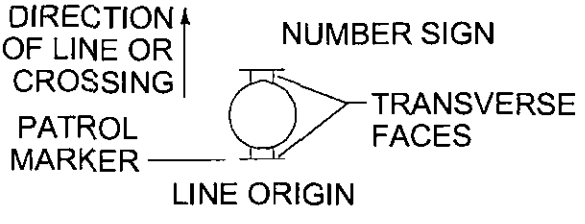
AERIAL NUMBERING SIGNS



Attach with:

3 - 1/2" x 1-1/4" Bolt (Stock No. 200438)
3 - Palnut, 1/2" (Stock No. 204468)

AERIAL PATROL MARKER



Attach each marker to specified structure with:

2 - 1/2" x 1-1/4" Bolt (Stock No. 200438)
2 - Palnut, 1/2" (Stock No. 204468)

Mounting straps are attached to pole by manufacturer.

REASON FOR REVISION: CLARIFIED STOCK No 200428 DESCRIPTION

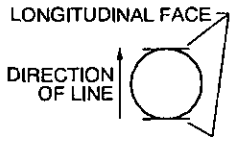
20008-2	**TRANSMISSION STEEL TOWERS AND POLES AERIAL NUMBERING SIGNS AERIAL PATROL MARKER "X"**	Allegheny Power
TRANS		M P W — DATE ISSUED: 11-10-2006

TRANSMISSION AND DISTRIBUTION CONSTRUCTION STANDARDS

SINGLE OR MULTIPLE POLE STRUCTURES

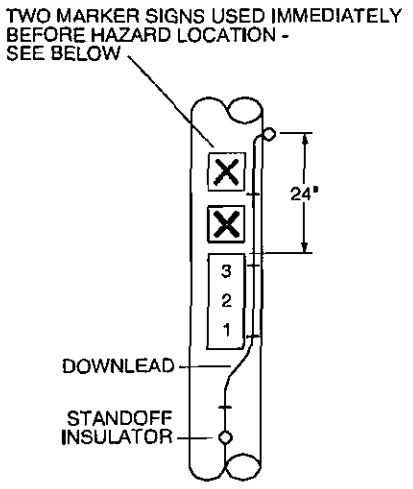
SHIELD WIRE ATTACHMENT

VERTICAL NUMBER SIGNS
(Stock No. 104805 and No. 104801)



1. Two signs shall be placed on *each* structure, one on *each longitudinal face of the pole as specified below.*
2. On poles where a downlead is used, the downlead shall not touch the sign.
3. Two pole structure shall have vertical signs on the right pole; *three pole structures on the center pole; and four* pole structures on the right center pole.
4. Each sign is to be attached using:

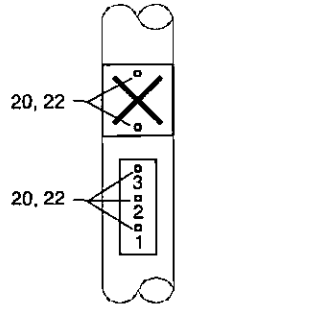
   3 – 5/16" x 2-1/2" lag screws (Stock No. 200903) Item 20
   3 – 3/8" washers (Stock No. 208005) Item 22

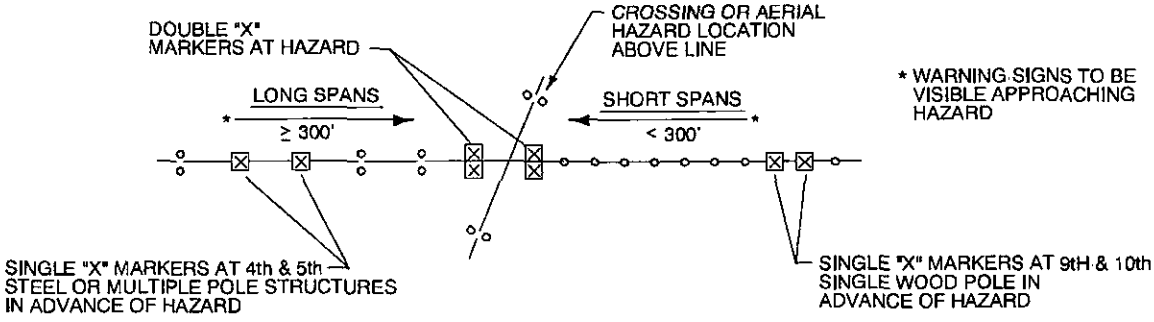


AERIAL PATROL MARKER
(Stock No. 104807)

1. One sign per specified *structure* in advance of, and two signs per specified structure immediately before, each aerial hazard. See Engineering Manual Section 32, S.I. 5.0 for detailed information. (See layout below)
2. All warning signs to be visible approaching hazard.
3. Single pole structure – Attach above number, if used, or in number location.
4. Multiple pole structure – Attach to left outside pole, as looking towards approaching hazard.
5. Attachment:

   2 – 5/16" x 2-1/2" lag screw (Stock N0. 200903) Item 20
   2 – 3/8" washers (Stock No. 208005) Item 22

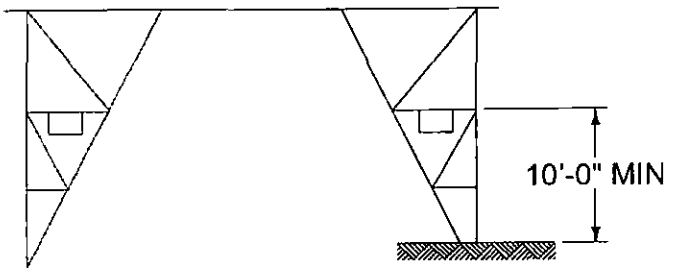


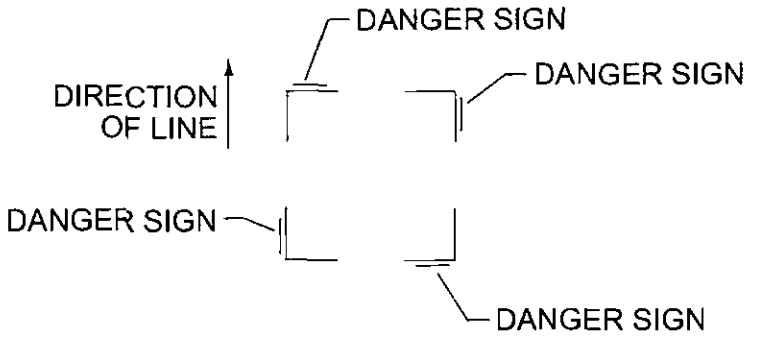


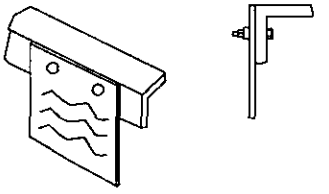
REASON FOR REVISION: REVISED SINGLE OR MULTIPLE POLE STRUCTURE NOTES

Allegheny Power	**TRANSMISSION WOOD STRUCTURES AERIAL NUMBERING SIGNS AERIAL PATROL MARKER "X"**	**20008-3**
DATE ISSUED: 11-10-2006 M P W		**TRANS**

TRANSMISSION AND DISTRIBUTION CONSTRUCTION STANDARDS







SIGN ATTACHMENT

Field drill, or punch two 7/16" holes for each sign.

NOTE: Can be installed on left face, if installation is better because of direction of steel angles.

BILL OF MATERIAL

ITEM	NUMBER REQUIRED	STOCK NUMBER	DESCRIPTION	NOTE	STANDARD *CU-MU* REFERENCE
296	8	200415	Bolt, Machine, 3/8" x 1-1/2" w/hex nut, 1-1/8" tread		
233	8	204236	Palnut, 3/8"		
22	8	208005	Washer, 3/8", galv.		
300	4	273819	Sign, "DANGER – KEEP OFF: HAZARDOUS VOLTAGE ABOVE"		

REASON FOR REVISION: REVISE ATTACHMENT MATERIAL

20008-4	**TRANSMISSION TOWER DANGER SIGNS**	Allegheny Power
TRANS	M P W	DATE ISSUED: 05-31-2001

TrAILCo Rebuttal Statement No. 7-R
Witness: John R. Bodenschatz, P.E.
4/3/08 Pgh PK A-110172

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

IN RE: APPLICATION OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY FOR (I) A CERTIFICATE OF PUBLIC CONVENIENCE TO OFFER, RENDER, FURNISH AND/OR SUPPLY TRANSMISSION SERVICE IN THE COMMONWEALTH OF PENNSYLVANIA; (II) AUTHORIZATION AND CERTIFICATION TO LOCATE, CONSTRUCT, OPERATE AND MAINTAIN CERTAIN HIGH VOLTAGE ELECTRIC TRANSMISSION LINES AND RELATED ELECTRIC SUBSTATION FACILITIES; (III) AUTHORITY TO EXERCISE THE POWER OF EMINENT DOMAIN FOR THE CONSTRUCTION AND INSTALLATION OF AERIAL ELECTRIC TRANSMISSION FACILITIES ALONG THE PROPOSED TRANSMISSION LINE ROUTES IN PENNSYLVANIA; (IV) APPROVAL OF AN EXEMPTION FROM MUNICIPAL ZONING REGULATION WITH RESPECT TO THE CONSTRUCTION OF BUILDINGS; AND (V) APPROVAL OF CERTAIN RELATED AFFILIATED INTEREST ARRANGEMENTS	:	Docket No. A-110172 A-110172F0002 A-110172F0003 A-110172F0004 G-000721229

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REBUTTAL TESTIMONY OF JOHN R. BODENSCHATZ, P.E.

Re: Potential Gas Facility Mitigation Measures

December 10, 2007

REBUTTAL TESTIMONY OF JOHN R. BODENSCHATZ, P.E.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John R. Bodenschatz. My business address is 800 Cabin Hill Drive, Greensburg, Pennsylvania 15601-1689.

Q. HAVE YOU PREVIOUSLY SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING ON BEHALF OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY ("TrAILCo")?

A. Yes.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REBUTTAL TESTIMONY.

A. My rebuttal testimony addresses (i) the recommendations contained in the direct testimonies of Columbia Gas of Pennsylvania, Inc. and Columbia Gas Transportation Corporation (individually and collectively, "Columbia") witnesses Richard W. Burke and Michael D. Spencer; (ii) the misconceptions about the average tower heights for the 500 kV portion of TrAIL; (iii) how TrAILCo and Allegheny Power intend to handle the possible impacts of subsidence associated with prior underground mining activities along portions of the proposed TrAIL route; and (iv) some public input testimony regarding the safety issues of gas pipelines and high voltage electric power lines like TrAIL operating in close proximity to each other.

Q. WILL THE USE OF VARIOUS TERMS IN YOUR REBUTTAL TESTIMONY BE CONSISTENT WITH THE DEFINITIONS ASSIGNED TO THOSE TERMS IN THE TABLE OF NOMENCLATURE ATTACHED TO TRAILCO WITNESS FLITMAN'S DIRECT TESTIMONY AS TRAILCO EXHIBIT DEF-1?

A. Yes. In addition, I may define other terms in my rebuttal testimony.

RESPONSE TO COLUMBIA GAS WITNESSES

Q. PLEASE SUMMARIZE THE COLUMBIA WITNESSES' RECOMMENDATIONS.

A. Both Columbia witnesses describe their concerns with potential impacts of TrAIL on Columbia's gas distribution or transmission facilities either by way of "direct physical *conflict*" or the potential for "interference" with Columbia's facilities from potential corrosion associated with electric currents. Columbia witness Burke recommends that the Commission require TrAILCo to submit detailed engineering studies that will enable Columbia to determine the extent to which the TrAIL route adversely affects Columbia's facilities, along with a specific plan to mitigate any such effects. Columbia witness Spencer recommends that any specific authority issued by the Commission that approves the TrAIL project or TrAILCo's ability to exercise eminent domain should be specifically conditioned upon TrAILCo's agreement to adhere to an acceptable plan to mitigate or eliminate all identified issues created by the proximity of TrAIL project facilities in proximity to Columbia's gas transmission pipelines.

Q. PLEASE SUMMARIZE ALLEGHENY POWER'S PRACTICE WHEN A NEW ELECTRIC TRANSMISSION FACILITY IS PROPOSED TO BE CONSTRUCTED IN CLOSE PROXIMITY TO AN EXISTING NATURAL GAS PIPELINE AND INDICATE WHETHER TRAILCO WILL ADOPT THIS PRACTICE.

A. Allegheny Power's past and current practice is to investigate and determine the need for any alternating current ("AC") or direct current ("DC") mitigation measures, which I will refer to generally as an AC/DC Mitigation Plan, for any existing natural gas pipeline facilities that may come into close proximity with a planned Allegheny Power transmission line. It has been Allegheny Power's practice to address any need for an AC/DC Mitigation Plan as soon as the location of any existing natural gas facilities is identified in close proximity to a planned electric facility during the detailed design process for that new electric transmission line. TrAILCo has adopted and will continue this same practice with respect to TrAIL.

Q. HAS TRAILCO PREPARED ANY AC/DC MITIGATION PLAN FOR THE TRAIL PROJECT AT THIS TIME?

A. No. TrAILCo has not identified any specific needs for AC or DC mitigation measures at this time because the final routing and design for the TrAIL Project is in an early stage and has not yet been completed. For example, the detailed ground survey of the entire proposed TrAIL route is still in progress. Among the primary purposes of this detailed survey will be the identification of marked

existing natural gas and any other utility facilities that may run parallel to or be crossed by the final TrAIL route. Once any such facilities are identified, TrAILCo will work with their owners to determine whether TrAIL will affect those facilities and, if so, how to best mitigate any such effects. Where jointly determined to be necessary, the final result of this dialogue would be an agreed AC/DC Mitigation Plan that would be developed during TrAILCo's detailed engineering and design process for TrAIL. Again, this is precisely the approach that has been followed by Allegheny Power and implemented successfully for similar electric projects. To my knowledge, Allegheny Power has never failed to reach a mutually agreeable approach with an existing gas pipeline owner for mitigating the effects of a new electric transmission line on that existing pipeline.

Q. WHAT ARE TYPICAL AC OR DC MITIGATION MEASURES?

A. Typical AC or DC mitigation measures include facilities that are retrofitted onto existing natural gas pipelines or above-ground facilities. For in-ground gas facilities, these measures can include cathodic isolation to protect natural gas pipelines from ground fault currents or sacrificial magnesium or zinc anode systems with a bentonite backfill to protect against corrosion of the existing gas pipeline. For above-ground facilities, equipment such as zinc ribbon spiral systems to protect pipeline employees and other third parties from the effects of induced electrostatic charge on above-ground pipeline facilities have been installed on existing natural gas or other utility facilities during past transmission line projects initiated by Allegheny Power.

Q. HOW WOULD TRAILCO IDENTIFY AND DETERMINE ANY AC OR DC MITIGATION MEASURES THAT MAY BE REQUIRED FOR THE TRAIL PROJECT?

A. For the purposes of this answer, I will assume that an existing Columbia gas pipeline would be identified as running in parallel with a segment of the final TrAIL route. In such an instance, TrAILCo would work expeditiously with Columbia to jointly determine whether the operation of TrAIL will necessitate any mitigation measures on the Columbia facilities. As has been the past practice, either Columbia or its independent consultant would prepare an electrical effects study, develop a recommended AC/DC Mitigation Plan if the electrical effects study warrants it, and provide cost estimates for installing any necessary mitigation measures on the existing gas facilities. The objective of this study process would be to establish an agreement between TrAILCo and Columbia regarding the need for any mitigation measures and the estimated cost to install them.

Q. UNDER THE HYPOTHETICAL SITUATION YOU JUST DESCRIBED, WHO WOULD PAY FOR THE COSTS OF THE STUDIES AND THE RESULTING INSTALLATION OF ANY MITIGATION MEASURES?

A. Consistent with current Allegheny Power practices, TrAILCo and Columbia would reach an agreement on the costs for the studies and any mitigation measures. Assuming such an agreement, TrAILCo would reimburse Columbia for its actual reasonable costs for developing, or having an outside consultant prepare, the

studies that determine the need for any mitigation measures. TrAILCo would also reimburse Columbia for the actual reasonable costs for installing any necessary mitigation measures.

Q. WHAT WOULD BE THE PROTOCOL IF THE FINAL LOCATION OF TRAIL REQUIRES THE RELOCATION OF ANY EXISTING NATURAL GAS PIPELINE OR OTHER UTILITY FACILITIES?

A. If the final TrAIL route parallels or crosses over existing natural gas pipelines or other utility facilities, from our experience it is extremely unlikely that the relocation of existing utility facilities would be required. For example, TrAILCo would make every effort during the final engineering and design process to avoid the relocation of an existing natural gas pipeline or other utility facility. It would be far less disruptive to the existing utility facility and far more cost-effective for TrAILCo to adjust the final placement of a tower structure during the design phase so as to avoid requiring the relocation of an existing utility facility. In the unlikely event of relocation, however, TrAILCo would negotiate a mutually acceptable agreement with the owner of the existing facility regarding the proper protocol for relocating the existing facility, including developing procedures and designs for the relocation and a related cost estimate. Subject to such an agreement, TrAILCo would reimburse the existing facility owner for the reasonable actual costs for relocating the facilities.

Q. SHOULD THE RECOMMENDATIONS OF COLUMBIA'S WITNESSES BE ADOPTED BY THE COMMISSION IN THIS PROCEEDING?

A. No. There are three primary reasons why the Commission should not adopt these recommendations. First, the recommendations are unnecessary and, to the extent Columbia requests that TrAILCo be required to adhere to a specific mitigation plan that is acceptable to both Columbia and the Commission, such recommendations could needlessly interfere with and deprive TrAILCo and the existing utility facility owners the flexibility necessary to effectively address the differing circumstances that will likely be presented in the field. Second, the process TrAILCo intends to follow if existing natural gas or other utility facilities are identified in close proximity to TrAIL during the ground survey and the detailed design and engineering for the project, is precisely the same one that Columbia witness Spencer describes as his requested action at page 11 of his direct testimony, and is, in fact, the process that has been followed in similar situations with other utilities, including Columbia. Third, to my knowledge, Allegheny Power has never failed to reach a mutually agreeable approach with an existing gas pipeline owner to mitigate the effects of a new electric transmission line on an existing pipeline. TrAILCo has no reason to believe it will be unable to do so in connection with the final TrAIL route. It is therefore unnecessary for the Commission to condition any final authority to site the TrAIL project as requested by Columbia.

AVERAGE TOWER HEIGHT ISSUES

Q. OCA WITNESS LANZALOTTA STATES AT PAGE 21 OF HIS DIRECT TESTIMONY THAT THE PREXY 500 KV LINE WOULD BE 160 FEET HIGH, WHILE 138 KV LINES ON THE ALLEGHENY POWER SYSTEM ARE TYPICALLY LESS THAN 60 FEET. ECC WITNESS LOEHR SIMILARLY OBSRVES THAT THE 500 KV TOWERS STRUCTURES FOR TRAIL WILL BE 160 FEET TALL. DO YOU AGREE WITH THEIR STATEMENTS OR CONCLUSIONS?

A. No, I do not agree. First, Mr. Lanzalotta overstates the typical height of the tower structures planned for the 500 kV segments of TrAIL, as well as ECC witness Loehr, who similarly states that the 500 kV structures would be 160 feet tall. In fact, this value is 35 feet taller than the average 500 kV lattice tower structure proposed for TrAIL. I previously testified at page 11 of my direct testimony, TrAILCo Statement No. 7, that the average height of all 500 kV tower structures over the entire length of TrAIL is anticipated to be approximately 125 feet. It is still our expectation that the average height of all 500 kV tower structures for TrAIL will be approximately 125 feet. Figures 1 through 5 of TrAILCo Exhibit JRB-2 to my direct testimony graphically depict typical 500 kV lattice towers with a typical height range of 72 to 177 feet above ground. Next, OCA witness Lanzalotta incorrectly assumes that the tower structure for a 138 kV line - described as typically 60 feet in height - would apply to his proposal to follow the paths of existing 138 kV rights-of-way and add new conductors to existing towers where possible. In fact, double circuit 138 kV tower structures would be much

taller. As Figures 11 and 12 of TrAILCo Exhibit JRB-2 indicate, the tubular steel towers planned for the double circuit segments of TrAIL's 138 kV lines will be in the range of 110 feet tall. To support their contentions that 138 kV lines would be less intrusive, both witnesses have incorrectly overstated the typical tower structure height planned for the 500 kV segments of TrAIL, and Mr. Lanzalotta understates the 138 kV tower structure heights that would apply to his proposal.

SUBSIDENCE ISSUES

Q. A NUMBER OF WITNESSES AT THE PUBLIC INPUT HEARINGS TESTIFIED ABOUT PREVIOUS MINING ACTIVITIES IN SOUTHWESTERN PENNSYLVANIA AND THEIR POSSIBLE IMPACT ON TRAIL. IF ENCOUNTERD ALONG THE PREFERRED LINE ROUTE, WILL EXISTING DEEP MINES IN SOUTHWESTERN PENNSYLVANIA POSE A RISK TO THE STABILITY OF THE PROPOSED TRANSMISSION STRUCTURES?

A. No. A proper design and maintenance plan will virtually eliminate any risk associated with deep mine activities that may be encountered along the preferred TrAIL route. Allegheny Power's Transmission Maintenance Group has effectively dealt with mining activities under its rights-of-way throughout its service territory in Pennsylvania, as well as along transmission line rights-of-way in West Virginia and Maryland. Specifically, Allegheny Power has successfully managed the affects of subsidence from long wall mining activities underneath existing 500 kV lines in Pennsylvania, and expects to do the same with respect to

TrAIL. While some minor damage may occur due to subsidence, repairs are made before it would threaten the stability of the structure or the operation of the line. Allegheny Power's experience and demonstrated success in planning for and identifying issues with regard to subsidence will be equally applied to TrAIL.

Q. PLEASE ELABORATE ON THE ACTIONS TRAILCO WILL TAKE TO MINIMIZE THE EXPOSURE OF TOWER STRUCTURES TO SUBSIDENCE-RELATED INSTABILITY.

A. Any existing or proposed deep mines along the preferred TrAIL route can be addressed with a number of design and engineering tools. First, a complete geotechnical analysis of the entire preferred line route is in progress and existing mined areas will be identified. Any deep mines identified will be further assessed according to a number of factors, including the overall depth of the mine and the ground cover over it, the size of the void represented by the mined area, the type of mining that was carried out, and the extent of underground support that has been left by the operator. Even where the line route passes over a deep mined area, it may not pose a problem if the amount and type of existing cover over the mined area is stable, the underground void area is not extensive, or if an adequate amount of support has been left in place. A proactive approach that will be available to TrAILCo, if necessary, would be to purchase and install sufficient coal support under the location of a tower structure. In those instances where this approach is feasible and can be carried out, it provides the benefit of removing any potential risk associated with ongoing or future mining activities.

Q. ARE THERE SPECIFIC ENGINEERING AND DESIGN APPROACHES THAT CAN MITIGATE THE RISK OF SUBSIDENCE-RELATED INSTABILITY?

A. Yes. When an area that has been mined is identified as a potential subsidence area, several engineering and design options are available to TrAILCo to address and minimize this concern. Of course, the easiest solution is considered first, which is to strive to avoid the placement of tower structures over an area of concern. Where it cannot be avoided, a typical design response could be the use of a "spread," or wider, footing for the tower structure in order to distribute the structure load over a larger area. This serves to reduce the pressure applied by the foundation on the underlying soil and subsidence-exposed area. Foundation structures known as "Micropile" foundations may also be used to transfer the structure loads through the mined void area, thereby eliminating the possibility of foundation settlement if subsidence does occur at ground level. Another approach could be "grout," or fill in, the void area under the structure foundation, which then provides a foundational support to the overburden above the void area. This practice in most cases eliminates the possibility of subsidence and can allow the use of standard foundations.

SAFETY ISSUES BETWEEN GAS PIPELINES AND TRAIL

Q. WOULD YOU ADDRESS CONCERNS THAT WERE RAISED AT THE PUBLIC INPUT HEARINGS, AND DURING SITE VISITS REGARDING THE POSSIBLE AFFECTS OF TRAIL ON NATURAL GAS PIPELINES THAT MAY ALREADY EXIST ALONG THE TRAIL RIGHT-OF-WAY?

A. Yes. At least one property owner – George Goroncy – described his concerns by referring to an existing Equitable Gas pipeline on his property. He claimed that this pipeline would be corroded by TRAIL-related voltages or currents. He also expressed concerns about whether any leaks from his residential gas metering equipment could be ignited by a "static spark or charge" from TrAIL. Mr. Goroncy further claimed that the existing gas pipeline on his property is approximately 300 feet from the proposed TrAIL right-of-way.

As the Columbia Gas witnesses indicate in their direct testimonies, current mitigation procedures for steel gas lines that will be adjacent to or crossed by a new electric transmission line are readily available and are completely effective as a deterrent to any corrosive effects on those steel lines. As I have stated previously, TrAILCo will cooperate with the owner of any existing gas or other utility facility that may be crossed by TrAIL or situated in close proximity to it to determine if any mitigation is necessary and, if so, to reimburse the facility owner its reasonable costs for installing mitigation measures.

Mr. Goroncy's concerns about the effects of a possible static charge are addressed in my direct testimony, TrAILCo Exhibit JRB-1, page 2, where I indicate that TrAIL will conform to the National Electric Safety Code's 5 mA criteria in Rules 232 C.1.c and 232 D.3.c. These rules reflect the maximum allowable induced current for TrAIL's right-of-way. Induced current at the 300 foot distance that was described for the residential gas metering facilities would be extremely low, if not undetectable. Consequently, static charge is not likely to be an issue for Mr. Goroncy's residential gas facilities. Moreover, I presume those gas facilities have been properly grounded in accordance with the applicable safety codes, which provide further protection from any static discharge that might occur from any other source.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does. However, I reserve the right to file such additional testimony or exhibits as may be necessary or appropriate.

TrAILCo Rejoinder Statement No. 20-RJ
Witness: Mark S. Allen

4/3/08
Pbg JTK

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

IN RE: APPLICATION OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY FOR (I) A CERTIFICATE OF PUBLIC CONVENIENCE TO OFFER, RENDER, FURNISH AND/OR SUPPLY TRANSMISSION SERVICE IN THE COMMONWEALTH OF PENNSYLVANIA; (II) AUTHORIZATION AND CERTIFICATION TO LOCATE, CONSTRUCT, OPERATE AND MAINTAIN CERTAIN HIGH VOLTAGE ELECTRIC TRANSMISSION LINES AND RELATED ELECTRIC SUBSTATION FACILITIES; (III) AUTHORITY TO EXERCISE THE POWER OF EMINENT DOMAIN FOR THE CONSTRUCTION AND INSTALLATION OF AERIAL ELECTRIC TRANSMISSION FACILITIES ALONG THE PROPOSED TRANSMISSION LINE ROUTES IN PENNSYLVANIA; (IV) APPROVAL OF AN EXEMPTION FROM MUNICIPAL ZONING REGULATION WITH RESPECT TO THE CONSTRUCTION OF BUILDINGS; AND (V) APPROVAL OF CERTAIN RELATED AFFILIATED INTEREST ARRANGEMENTS	:	Docket Nos. A-110172 A-110172F0002 A-110172F0003 A-110172F0004 G-000721229

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REJOINDER TESTIMONY OF MARK S. ALLEN

Re: Line Clearance and Sag Issues

March 19, 2008

REJOINDER TESTIMONY OF MARK S. ALLEN

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Mark S. Allen and my business address is 120 Tredegar Street Richmond, VA 23219.

DUTIES AND RESPONSIBILITIES

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am Manager of the Transmission Line Engineering Group for Virginia Electric and Power Company ("Dominion Virginia Power" or "Dominion").

Q. WHAT ARE YOUR RESPONSIBILITIES AS MANAGER OF TRANSMISSION LINE ENGINEERING?

A. I am responsible for the coordination of all high voltage transmission designs (overhead and underground) on the Dominion Virginia Power system. This includes all new designs as well as upgrades and relocations. I manage the engineering activities for each project to ensure completion of construction specifications by the established target date. I am responsible for assuring that all such designs/specifications meet the established criteria for safety, reliability, and cost effectiveness.

EDUCATION AND PROFESSIONAL EXPERIENCE

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science Degree in Civil Engineering (*magna cum laude*) from West Virginia University of Technology in 1981. I am a Registered Professional Engineer in the states of Arizona, Connecticut, Kentucky, Michigan, Ohio, Pennsylvania, Virginia, Utah and West Virginia. I have 26 years of experience with the Company in both Transmission and Distribution. I started my career with Dominion as a Project Engineer in Transmission Engineering in 1981. In 1985, I moved to Distribution Planning as a Planning Engineer in the Eastern Division and then returned to Transmission Engineering in 1989. I have experience in both overhead and underground transmission design.

PURPOSE OF REJOINDER TESTIMONY

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REJOINDER TESTIMONY.

A. The purpose of my rejoinder testimony on behalf of Trans-Allegheny Interstate Line Company ("TrAILCo") is to respond to ground clearance or line sag issues regarding the 500 kV Mt. Storm-Doubs transmission line raised on page 11 of the surrebuttal testimony of George C. Loehr filed as Energy Conservation Council of Pennsylvania Surrebuttal Statement No. 1.

Q. CAN YOU GENERALLY DESCRIBE GROUND CLEARANCE OR LINE SAG CONDITIONS IN CONNECTION WITH ELECTRIC TRANSMISSION LINES AND HOW LINE SAG IMPACTS THOSE FACILITIES?

A. The National Electrical Safety Code ("NESC) establishes minimum requirements for ground clearance, meaning the distance between the conductor (wire) and the ground, that must be maintained at all times. Ground clearance for a line is determined by how much the conductor sags between towers. As the temperature of the conductor rises, the metal expands and the sag increases, reducing the ground clearance. The wire temperature is a function of the ambient weather conditions and the amount of current flowing in the conductor.

Q. DO YOU AGREE WITH MR. LOEHR'S ASSERTION THAT GROUND CLEARANCE ISSUES ON THE MT. STORM-DOUBS LINE COULD BE CORRECTED MERELY BY RETENSIONING THE CONDUCTORS?

A. No. I would first point out that the rejoinder testimony of TrAILCo witness Hozempa shows that resolving ground clearance issues on this line would not, as claimed by Mr. Loehr, resolve the reliability issues on this line that have been identified in the planning studies. This is because the applicable maximum operating temperature of 90° for this line would only permit a maximum transfer capability of 2910 MVA. Moreover, Mr. Loehr incorrectly assumes that ground clearance violations can be corrected simply by "tightening up" or "retensioning" the

conductors, which indicates that he is not familiar with this line. The Mt. Storm-Doubs line was constructed in 1964 using towers of corten steel. Unfortunately, this material has proven to experience inherent corrosion problems that have left the towers incapable of supporting the additional load that would result from retensioning. Increasing the tension of the conductors on this 44 year old line would increase the mechanical load on the deadend structures, which hold the full tension of the conductors, and would require that they be replaced. There are 14 such structures on this line that would have to be replaced. Replacement of these towers and retensioning of the conductors would require a minimum of 30 weeks of outage time. Based on our experience with the heavy loading on this line, including the difficulty we experienced in scheduling even a two-day outage of this line in 2006, it is not reasonable to expect that Dominion would be able to schedule such lengthy and multiple outages on this major 500 kV line, which is nearly fully loaded year-round. Increasing the height of the conductors by retensioning is not a feasible means of addressing ground clearance on this line.

Q. HAS DOMINION INVESTIGATED THE FEASIBILITY OF INCREASING THE GROUND CLEARANCE OF THIS LINE BY OTHER MEANS?

Yes. Dominion has evaluated what it would take to achieve this maximum capacity of 2910 MVA by increasing ground clearance through a combination of grading the ground surface and raising the existing structures without increasing the mechanical

load on the structures. Dominion first conducted an aerial survey of the line by using a helicopter equipped with Light Detection and Ranging ("LiDAR") to obtain accurate conductor sag characteristics and accurate ground terrain data. The data from this aerial survey was loaded into PLSCADD, the industry standard transmission design software, and 90 locations were identified with clearance violations. In 40 of these spans, the clearance violation was simply a high spot or knoll under just one phase, or conductor, often on the uphill side of the right of way. We determined that grading or shaving of these high spots could be done to achieve the required clearance. In order to do this work, grading rights must be obtained from the property owners and a grading plan must be developed to minimize the effect on natural topography and to assure positive drainage. This plan, including erosion and sedimentation control measures, must be submitted to the West Virginia Department of Environmental Protection and the Virginia Department of Conservation and Recreation for approval. In the other 50 locations, more extensive violations occurred that extended across the right of way or for long longitudinal runs along the span. In order to correct these violations, 49 structures must be raised and 1 lift structure must be installed. Such a project would take 70 weeks to complete and would require this line to be out of service for 17 weeks. Such an extended outage of this critical, heavily loaded line is no more feasible than the longer outage that would be required for retensioning. The only alternative to such an outage would be to build at least one additional 500 kV transmission line in the

same West-East corridor, as is proposed in this proceeding, in order to allow the required outages of the Mt. Storm–Doubs line that would be required to address the ground clearance issues.

Q. WOULD THE INSTALLATION OF A NEW CONDUCTOR ON THE MT. STORM-DOUBS LINE BE A FEASIBLE ALTERNATIVE TO THE CONSTRUCTION OF THE 502 JUNCTION—LOUDOUN LINE?

A. No. The Mt. Storm-Doubs line is 44 years old and suffers from corrosion problems associated with the corten steel as discussed above. While considerable maintenance work has been done over years just to keep the line functional, it would be an imprudent engineering decision to install new conductor on these deteriorated towers. The entire line would have to be rebuilt in order to install new conductors, which would require a much longer outage of the line than either of the ground clearance approaches discussed above.

Q. DOES THIS CONCLUDE YOUR REJOINDER TESTIMONY?

A. Yes. However, I reserve the right to file additional testimony as may be necessary or appropriate.