

ORIGINAL

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PHILADELPHIA ELECTRIC COMPANY

LEGAL DEPARTMENT

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA 19101

(215) 841-4000

TELECOPIER/FAX (215) 568-3389
DIRECT DIAL NUMBER:

RECEIVED

DEC 18 1989

SECRETARYS OFFICE
Public Utility Commission

James W. Durham
Senior Vice President
and General Counsel

Eugene J. Bradley
Vice President and
Associate General Counsel

Paul Auerbach
Donald Blanken
Rudolph A. Chillemi
T. H. Maher Cornell
Edward J. Cullen, Jr.
Katherine K. Dodd
E. C. Kirk Hall
Assistant General Counsel

December 13, 1989

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility Commission
P. O. Box 3265
Harrisburg, PA 17120

DUPLICATE RECORD
ORIGINAL DEPOSITED
IN COMMONWEALTH COURT

Re: Woodbourne-Heaton 230 KV Transmission Line

Dear Mr. Rich:

In response to a question from the Commission's staff regarding the estimated costs of constructing the proposed Woodbourne-Heaton 230 KV transmission line, I can advise you that the total estimated construction costs are \$20,100,000. The breakdown of these costs are:

Right-of-Way Acquisition.....	\$ 1,600,000
Transmission Line Construction.....	12,600,000
Substation Work.....	<u>5,900,000</u>
TOTAL.....	\$20,100,000

The cost of acquiring the right-of-way from ConRail for the 12 miles of the Woodbourne-Heaton line is \$1,200,000, and the cost of private property acquisition is \$400,000.

I trust this information will answer the inquiry.

Very truly yours,

Donald Blanken

Donald Blanken

DB:bmt

cc: Tod Prowell

DOCKETED
DEC 26 1989

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C. Kirk Hall
Assistant General Counsel

November 21, 1989

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NOV 21 1989

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility Commission
P. O. Box 3265
Harrisburg, PA 17120

SECRETARY'S OFFICE

Re: Letter of Notification
Woodbourne-Heaton 230 KV Transmission Line

Dear Mr. Rich:

7,053 ISS

In accordance with the Commission's regulations at 52 PA. Code, Section 57.72(d)(1)(IV),(V), Philadelphia Electric Company (hereinafter "PECO"), submits the enclosed Letter of Notification regarding the proposed reconductoring of the Woodbourne-Heaton 230 KV Transmission Line. There is enclosed an original and six copies of the Letter of Notification, together with an Affidavit of Service showing the identity of those served with a copy of the Letter of Notification.

In addition, PECO will make available to the public, during ordinary business hours, a copy of the Letter of Notification, together with exhibits, at its offices in Philadelphia and Bucks Counties located at:

Main Office
2301 Market Street
Philadelphia, PA

Warminster Service Building
400 Park Avenue
Warminster, PA

Very truly yours,

Donald Blanken

Donald Blanken

DB:bmt
Enclosures (7)

DOCKETED

NOV 28 1989

[Handwritten signature]

BEFORE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

ORIGINAL

Letter of Notification of :
PHILADELPHIA ELECTRIC COMPANY :
under 52 PA. Code §57.72(d) :
with respect to a proposed :
reconductoring and rebuilding :
of an existing 138 kV line to :
operate as a Woodbourne-Heaton :
230 kV line in Montgomery and :
Bucks Counties, Pennsylvania :

Docket No.

P-

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SECRETARY'S OFFICE

Public Utility Commission

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

This Letter of Notification is submitted pursuant to 52 PA. Code §57.72(d)(1) by Philadelphia Electric Company (hereinafter referred to as "PECO" or "Applicant") with respect to a proposed rebuilding and reconductoring of an abandoned railroad 138 kV transmission line. Consolidated Rail Corporation (Conrail) owns and operates a rail line known as the "Trenton Cut-off Branch freight line." The aforementioned 138 kV transmission line was constructed along this rail line. PECO has entered into an agreement to purchase from Conrail an easement along the rail line, together with the structures supporting the abandoned 138 kV transmission line and electrification system for the purpose of building the proposed 12.8 mile long Woodbourne-Heaton 230 kV line. The proposed rebuilding and reconductoring will be done entirely within the existing railroad right-of-way. In addition, PECO has purchased a two acre parcel of land situate

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NOV 28 1989

between the railroad and Woodbourne Substation to enlarge the substation so that it will abut the railroad and provide access from the substation to the railroad.

Accordingly, PECO believes that the procedure for a Letter of Notification is appropriate and the aforesaid rebuilding and reconductoring of the 138 kV transmission line and railroad electrification system will not substantially alter the existing right-of-way within the meaning of 52 PA. Code §57.71(d)(1)(IV) and (V). PECO is therefore submitting this Letter of Notification and in support thereof, sets forth the following:

1. The name and address of Applicant are:

PHILADELPHIA ELECTRIC COMPANY
2301 Market Street
Philadelphia, PA 19101

2. The name and address of Applicant's attorney and the person authorized to receive notices and communications with respect to the application is:

DONALD BLANKEN, ESQUIRE
Assistant General Counsel
2301 Market Street
Philadelphia, PA 19101

3. PECO proposes to construct all of the 230 kV



transmission line within the existing right of way of the 138 kV transmission line and the railroad. In order to facilitate entry into Woodbourne Substation and avoid conflict with the runway approach at Buehl Field airport, Applicant has purchased a parcel of land adjacent to the substation and railroad. This small parcel of two (2) acres will contain a 0.06 mile section of the proposed line. The proposed line will be constructed within an existing transmission line right-of-way and meet the common corridor approach for transmission line siting thereby coming within the policy considerations permitting utilization of the letter of notification procedure in 52 PA. Code Sec. 57.72(d). The Commission has permitted filing Letters of Notification in similar cases under similar factual circumstances as are in this case. See Petitions of Philadelphia Electric Company at Docket Nos. P-810309, P-870228 and P-880293. The proposed route is shown on a Key Map Drawing C-241332-A, sheets 1 and 2, attached hereto, made a part hereof and marked Exhibit "A", a general description of which is as follows:

(a) Route Description

The proposed Woodbourne-Heaton 230 kV line will

follow the existing Consolidated Rail Corporation's (Conrail) Trenton Cut-Off Branch freight line for the entire 12.8 mile length and will utilize the existing catenary structures for support. The proposed line will exit Heaton Substation from the northeast corner and enter adjacent railroad property. Heaton Substation is located off Fitzwatertown Road west of Old York Road. Upon entering the railroad property, the line will cross the tracks and join the railroad catenary system which is located on the north side of the tracks. From this point, the line will head due east on the railroad right-of-way which parallels the Pennsylvania Turnpike for approximately 3.85 miles. At the point the turnpike turns southeast and crosses over the railroad, the line and railroad will continue another 1.5 miles eastward and cross Street Road in Feasterville. In the vicinity of Street Road the railroad curves to an east-north-east direction for the remaining 7.45 miles. Approximately 3.42 miles from Street Road the line crosses the Neshaminy Creek on catenary structures supported by an existing stone arched railroad bridge. After crossing the creek the line will continue the remaining 4.03 miles to Woodbourne Substation.

Woodbourne Substation property abuts the north property line of Conrail's Trenton Cut-Off Branch. Just west of the substation and abutting the railroad property on the south side is Buehl Field Airport. Existing railroad structures cannot be used in this area due to the required height limitation near the airport runway.

PECO has purchased a two (2) acre vacant, irregular shaped property which separates the substation property from the railroad. This property will be used to divert the line from the railroad into the substation prior to reaching the approach to runway 24 at Buehl Field. This will greatly reduce or eliminate conflict with the runway.

Exhibit "A", the Key Map for the proposed 230 kV line, shows the route of the line with respect to existing roads. The total length of the line is 12.8 miles.

(b) Line Location and Structure Description

Work on the proposed line will take place in Upper Moreland (2.5 miles) and Lower Moreland (0.9 mile) Townships in Montgomery County and Upper Southampton (1.9 miles), Lower Southampton (1.6 miles), Northampton (1.6 miles), and Middletown Townships (4.0 miles), as well as the Borough of Langhorne (0.3 mile), all in Bucks County, Pennsylvania.

Structures to be utilized for the proposed line were part of the railroad catenary system which supported a two phase, 138 kV transmission line. These catenary structures are placed approximately 250 to 300 feet apart. The proposed line will utilize approximately 176 of the 236 existing railroad structures. Approximately ten structures require replacement due to damage resulting from train derailments and another 50 railroad structures must be replaced because they cannot support the new line's mechanical loads. Also, it is estimated that a total of eight new structures will be necessary to connect the transmission line to the substations at both ends. Therefore, approximately 244 structures, including both existing and new, will be used to support the proposed transmission line.

The proposed 230 kV transmission line will be supported by railroad structures which are approximately 50 years old. Prior to installation of the new insulators and conductors the existing railroad conductors, insulators crossarms, 6.6 kV feeder line, catenary support arm, and all unnecessary guy wires will be removed from each

structure. Once all unnecessary hardware is removed from the wide-flange column, reinforcement and extensions (5 to 10 feet) will be added where necessary.

A new ground wire will be added to the top of the wide-flange column and 3 post insulators will be bolted to the structure to support the phase conductors in a delta configuration. The typical configuration of the existing railroad structures vs. the future configuration of the PECO structure are shown in sketch SK-407890, attached hereto, made a part hereof, and marked Exhibit "B".

Replacements for the inadequate railroad structures and any new structures will be single circuit tubular weathering steel poles. These poles will be supported by cylindrical concrete foundations. Two types of new tubular poles will be used in the construction of this line. For tangents and light angles the line will be supported by single circuit weathering steel poles with conductors supported from porcelain post insulators in a delta configuration. Sketch SK-407891, attached hereto, made a part hereof, and marked Exhibit "C", depicts the proposed tangent and light angle poles with approximate dimensions of major members shown. For heavy angles

and dead ends, the line will be supported by single circuit weathering steel poles with conductors supported from steel cross arms. Sketch SK-407892, attached hereto, made a part hereof, and marked Exhibit "D", depicts the proposed heavy angle and dead end poles with approximate dimensions of major members shown.

Conductor for this transmission line will be one 1590 kcmil 54/19 ACSR (1.545 in. dia.) wire per phase. The shield wire will consist of one 7#5 alumoweld (0.546 in. dia.) wire.

4. A general statement of the need for the line in meeting identified present and future demands for service, how the proposed line will meet that need and the engineering justification for the proposed rebuilding and reconductoring of the existing line are as follows:

(a) Need for the Line

The area served by our existing substations at Warrington, Buckingham, Woodbourne, Byberry, and Heaton is one of the fastest growing load areas on the PECO system. In the three year period from the summer of 1985 to the summer of 1988, load on the 34.5 kV system in this area grew by more than 32 percent. This compares with a

system-wide growth in peak demand of slightly more than 13 percent. This very high load growth has resulted in both the expansion of existing distribution facilities, and the scheduling of new distribution substations. The Heaton-Woodbourne 230 kV line will provide a source of supply for new distribution substation, as well as much needed support for expansion of existing facilities.

(b) Engineering justification for the proposed HV line

One new distribution substation of particular concern is Linton. This 230-34.5 kV substation, which will be in service for the 1990 summer peak, will be installed on the existing 230 kV line between Buckingham and Woodbourne. It will have the firm capacity to supply approximately 120 MVA of load. Unlike Woodbourne, Linton will have no 34.5 kV network support. Linton will depend entirely on the transmission systems for its supply. In the event of an outage of the 230 kV line between Buckingham and Linton, without the Woodbourne-Heaton 230 kV line, the supply for both Woodbourne and Linton 230 kV substations will have to come from the 138 kV system at

Byberry. This outage could cause emergency overloads on the 138 kV system and severe voltage drops throughout the area.

Although the Crescentville-Fox Chase 138 kV (130-24) is being upgraded to provide an emergency rating, approximately 75 MVA higher than is now in effect, this is only a stop-gap measure. Unless the Woodbourne-Heaton 230 kV line is installed, load growth at Linton and Woodbourne will soon cause emergency overloads on either the Crescentville-Fox Chase 138 kV line or the Fox Chase-Blue Grass 138 kV line for the loss of the Buckingham-Linton 230 kV line.

An additional problem caused by trying to supply Linton and Woodbourne from the 138 kV system is voltage drops. Previous load-flow studies indicate that the outage of the Buckingham-Linton 230 kV line could result in a voltage drop of 8 percent on the 230 kV bus at Linton and as much as 10 percent on the 34.5 kV bus at Linton. Installation of the Heaton-Woodbourne 230 kV line would restrict these voltage drops to the 1 to 1.5 percent range.

5. The safety considerations which will be incorporated into the design, construction, and maintenance of the proposed line are as follows:

(a) Design

Design criteria will meet or exceed National Electric Safety Code (NESC) requirements. The maximum conductor and ground wire loading condition for this line will be 1/2" of radial ice and an 8 pound per square foot transverse wind load at 0°F. The minimum ground clearance at the maximum conductor temperature of 284°F will be greater than the 24 foot NESC clearance requirement for a 230 kV line. The average ruling span between structures will be 300 feet.

Typically, for a level 300 foot span with the loading conditions given, the following tabulation illustrates minimum conductor to ground and conductor to rail clearances:

<u>Cond.Temp.</u> <u>(°F)</u>	<u>Radial Sce.</u> <u>(Inches)</u>	<u>Wind</u> <u>(PSF)</u>	<u>Tension</u> <u>(Lbs.)</u>	<u>Sag</u> <u>(Ft.)</u>	<u>Outsd.Phase</u> <u>(Over Gd.)</u> <u>Minimum Gd.</u> <u>Clr. (Ft.)</u>	<u>Insd.Phase</u> <u>(Over Tk..)</u> <u>Min.Rail</u> <u>Clr. (Ft.)</u>
0	1/2	8	10,350	4.1	32.7	40.7
60	0	0	4,610	5.0	31.8	39.8
284 (Max.)	0	0	2,640	8.8	28 (Min.)	36 (Min.)
					24 (NESC)	32 (NESC)

(b) Construction and Maintenance

Construction and maintenance will also be accomplished in accordance with the National Electric Safety Code (NESC). The following excerpt from the code describes its coverage:

"This standard covers basic provisions for safeguarding of persons from hazards arising from the installation, operation or maintenance of:
(1) conductors and equipment in electric supply station; and (2) overhead and underground electric supply and communications lines. It also includes work rules for the construction, maintenance and operation of electric supply and communication lines and equipment."

In all cases, the minimum standards set forth by the NESC will be met or exceeded by the design, construction, maintenance and operation of the proposed transmission line.

6. The proposed 230 kV line is approximately 12.8 miles long. Line construction is scheduled to start in the spring of 1990 and is expected to be in service the spring of 1991.

7. Evidence that the size, character, design and configuration of the proposed modifications to the existing railroad electrification system will not substantially alter the existing right-of-way is as follows:

(a) The proposed 230 kV line will be constructed on Conrail's Trenton Cut-off Freight line, an established railroad corridor. PECO will occupy a sixty (60') foot wide right-of-way for the proposed line.

(b) There are two independent railroad tracks, an abandoned railroad catenary system and a wood pole line supporting signal and communication cables on the railroad right-of-way creating an existing corridor to be utilized as a common corridor for the proposed 230 kV line.

(c) The existing railroad right-of-way presently has located on it catenary structures with twenty-eight (28') foot catenary support cross arms, two (2) 6.6 kV signal power cables and one two (2) phase 138 kV transmission line supported by a cross arm mounted near the top and a ground wire mounted on the top of the structure. The catenary trolley wires were removed from the structures approximately three (3) years ago.

(d) PECO plans to remove all railroad facilities from the structures prior to installing its 230 kV transmission line facilities as previously described. Exhibit "B" shows the existing and future structure arrangement.

(e) The existing right-of-way will not be substantially altered because the proposed HV line will be on existing structures in the same configuration and at the same height. In fact, the structures will, after the proposed construction, have fewer attachments and therefore project a cleaner, less obtrusive appearance.

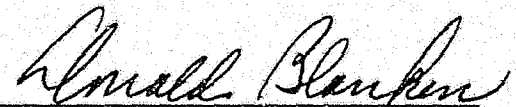
(f) Between Woodbourne and Heaton Substations the proposed line traverses industrial, residential and wooded areas. The existing railroad catenary structures are approximately 50 years old and most of the industrial and residential properties adjacent to the railroad were developed with the structures in place and to some extent accepted their existence. PECO's mitigation plan for this line is to retain the catenary structures at their present height and make changes only when absolutely necessary. All necessary new structures will be made of weathering steel which will turn a deep brown and will closely match the existing railroad facilities.

8. This Letter of Notification is being filed on the date set forth below. The Pennsylvania Public Utility Commission will review and, by Order, approve or disapprove this Letter of Notification. If the Commission approves this Letter of

Notification, the proposed rebuilding and reconductoring shall be located and constructed without the application process set forth in subchapter G of Title 52 of the Pennsylvania Code (relating to Commission review of siting and construction of electric transmission lines). If the Commission does not approve this Letter of Notification, its order shall direct the Applicant to comply with the application process set forth in subchapter G of Title 52 of the Pennsylvania Code.

Respectfully submitted,

BY:



DONALD BLANKEN, ESQUIRE
Counsel for
PHILADELPHIA ELECTRIC COMPANY

CERTIFICATE OF SERVICE

I hereby certify that I have this 21st day of November, 1989, served a copy of the Letter of Notification in the above matter by First Class Mail, postage prepaid, and properly addressed as follows:

Kathleen R. Chiolan, Manager
Lower Southampton Township
1500 Desire Avenue
Feasterville, PA 19047

Dennis O'Brien, Chairman
Board of Supervisors
Lower Southampton Township
1500 Desire Avenue
Feasterville, PA 19047

Joseph M. Seborowski, Chairman
Planning Commission
Lower Southampton Township
1500 Desire Avenue
Feasterville, PA 19047

Robert M. Pellagrino
Township Manager
Upper Southampton Township
939 Street Road
Southampton, PA 18966

David Shafter, Chairman
Board of Supervisors
Upper Southampton Township
939 Street Road
Southampton, PA 18966

Jerry S. Goldman, Chairman
Planning Commission
Upper Southampton Township
939 Street Road
Southampton, PA 18966

John S. Burke
Township Manager
Middletown Township
2140 Trenton Road
Levittown, PA 19056

Thomas R. Kearns, Chairman
Board of Supervisors
Middletown Township
2140 Trenton Road
Levittown, PA 19056

Clark Weitzel, Chairman
Planning Commission
Middletown Township
2140 Trenton Road
Levittown, PA 19056

Brian L. Mook, Manager
Upper Moreland Township
117 Park Avenue
Willow Grove, PA 19090

William Seiverlich, President
Board of Commissioners
Upper Moreland Township
117 Park Avenue
Willow Grove, PA 19090

David A. Dodies
Assistant Township Manager
Advisory Planning Agency
Upper Moreland Township
117 Park Avenue
Willow Grove, PA 19090

Alison D. White
Township Manager
Lower Moreland Township
640 Red Lion Road
Huntingdon Valley, PA 19066

Kurt G. Mayer, President
Board of Commissioners
Lower Moreland Township
640 Red Lion Road
Huntingdon Valley, PA 19066

Charles Esayian, Chairman
Planning Commission
Lower Moreland Township
640 Red Lion Road
Huntingdon Valley, PA 19066

Andrew L. Warren
Chairman of Commissioners
County of Bucks
Main and Court Streets
Doylestown, PA 18901

Robert E. Moore
Executive Director
Planning Commission
County of Bucks
Almshouse Road
Neshaminy Manor Center
Doylestown, PA 18901

Paul B. Bartle, Chairman
Commissioners
County of Montgomery
County Court House
Airy & Swede Streets
Norristown, PA 19404

Arthur F. Loeben, Commissioner
Montgomery County Planning Commission
Montgomery Plaza
Suite 207
Airy & Swede Streets
Norristown, PA 19404

Honorable Roy Murphy
Mayor
Borough of Langhorne
114 East Maple Avenue
Langhorne, PA 19047

Kathy Horwalt
Council President
Borough of Langhorne
114 East Maple Avenue
Langhorne, PA 19047

Denise Traub, Secretary
Borough of Langhorne
114 East Maple Avenue
Langhorne, PA 19047

Elsie Knight, Chairperson
Planning Commission
Borough of Langhorne
151 West Maple Avenue
Langhorne, PA 19047

C. W. Wogan
Consolidated Rail Corporation
Room 200
15 North 32nd Street
Philadelphia, PA 19104

Arthur A. Davis, Secretary
Pennsylvania Department of Environmental Resources
Attention: Bureau of Environmental Planning
P. O. Box 2357
101 S. Second Street
Harrisburg, PA 17120

Howard Yerusalim, P.E.
Secretary
Department of Transportation
Commonwealth of Pennsylvania
room 1200
Transportation and Safety Building
Harrisburg, PA 17120

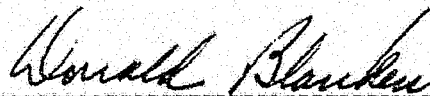
Vivian Piasecki
Chairperson
Pennsylvania Historical and Museum Commission
P. O. Box 1026
Harrisburg, PA 17120

John Hocker, Director
Bureau of Real Estate and Insurance
Department of Property and Supplies
Commonwealth of Pennsylvania
Room 503
North Office Building
Harrisburg, PA 17105

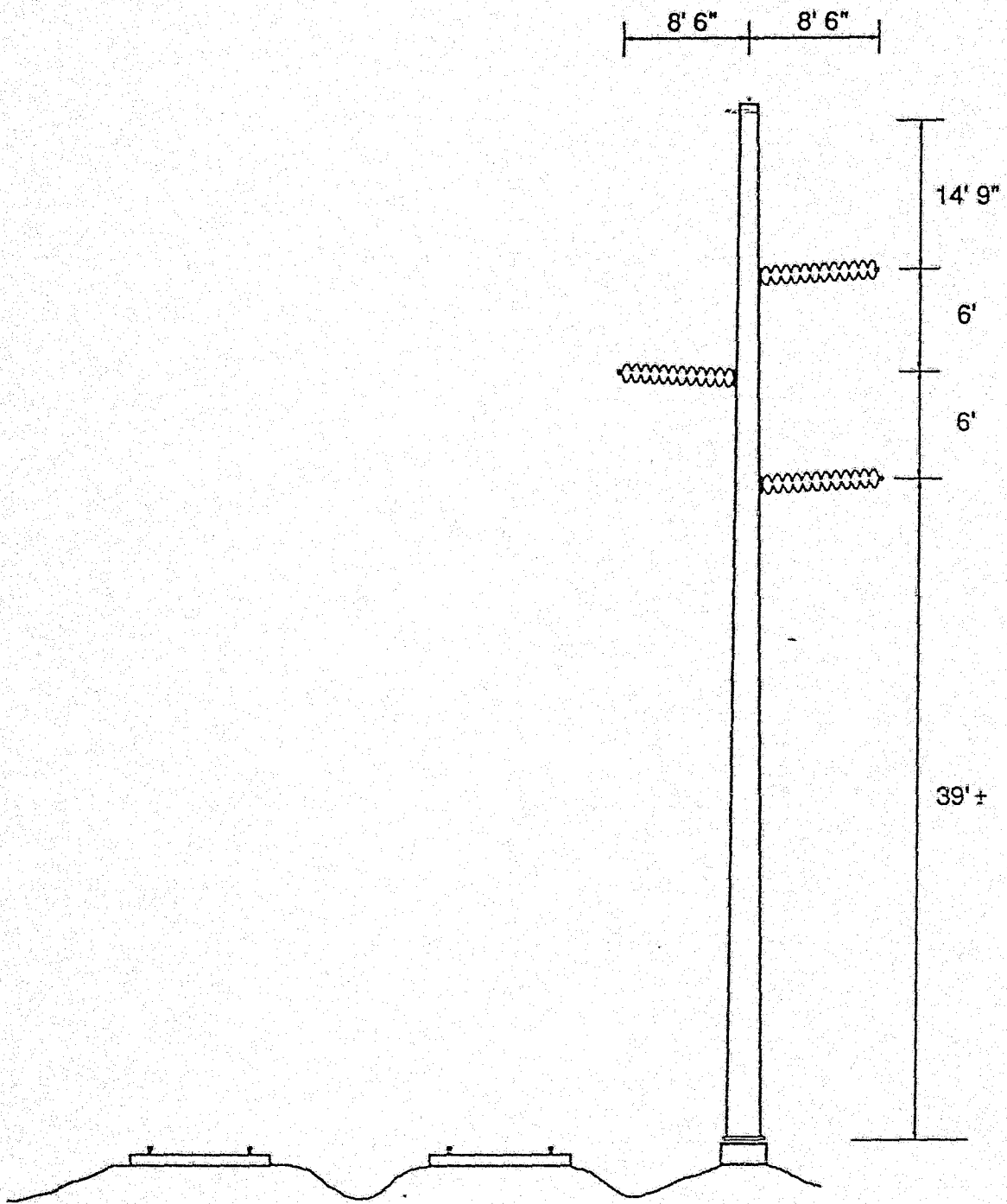
D. Bruce Townsend
Township Manager
Northampton Township
55 Township Road
Richboro, PA 18954

Steven H. Benner, Chairman
Board of Supervisors
Northampton Township
55 Township Road
Richboro, PA 18954

Walter C. Evans
Township Planner
Northampton Township
55 Township Road
Richboro, PA 18954



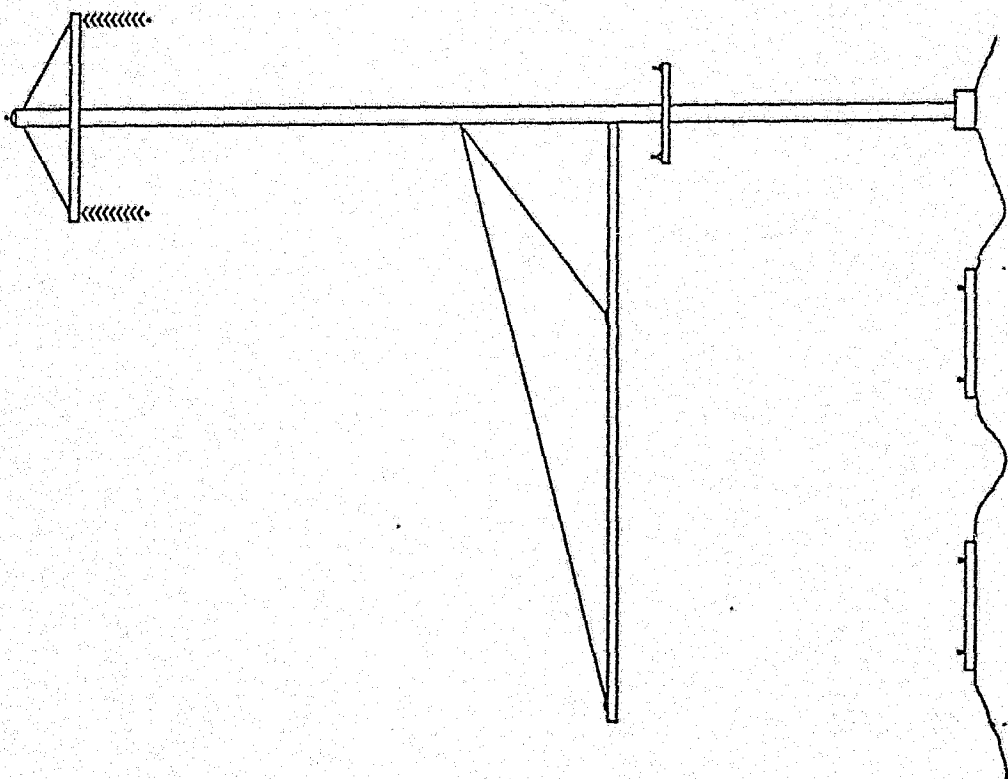
DONALD BLANKEN, ESQUIRE
Counsel for
PHILADELPHIA ELECTRIC COMPANY



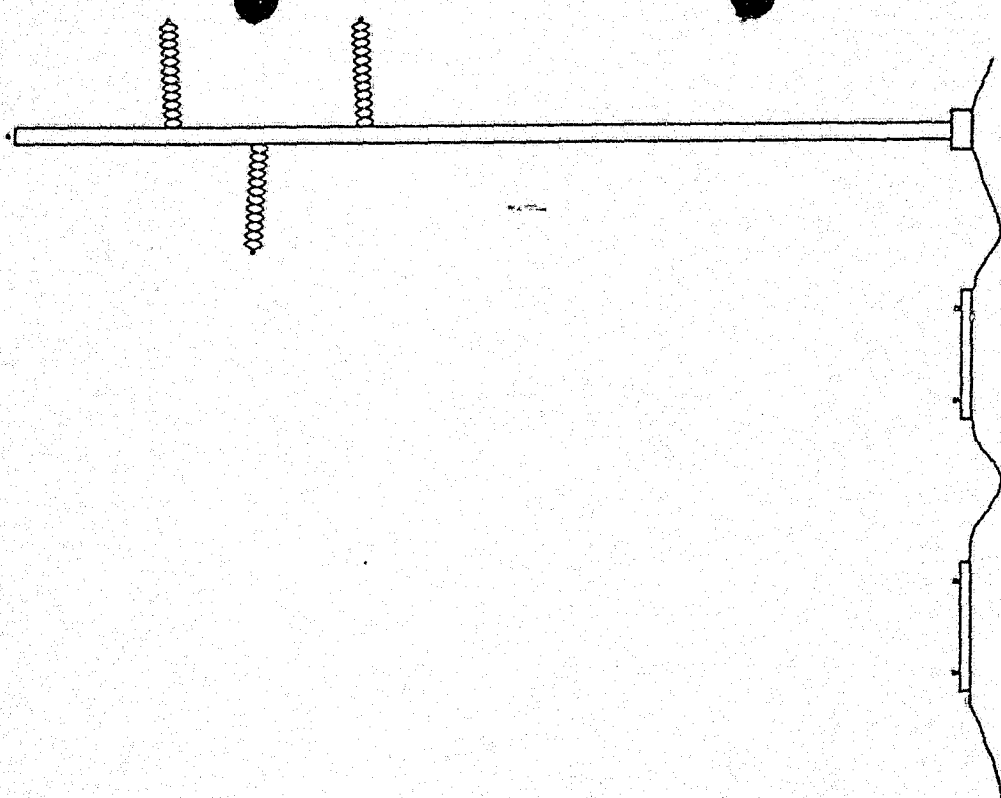
NEW TANGENT AND LIGHT
ANGLE STRUCTURE

SKETCH 407891

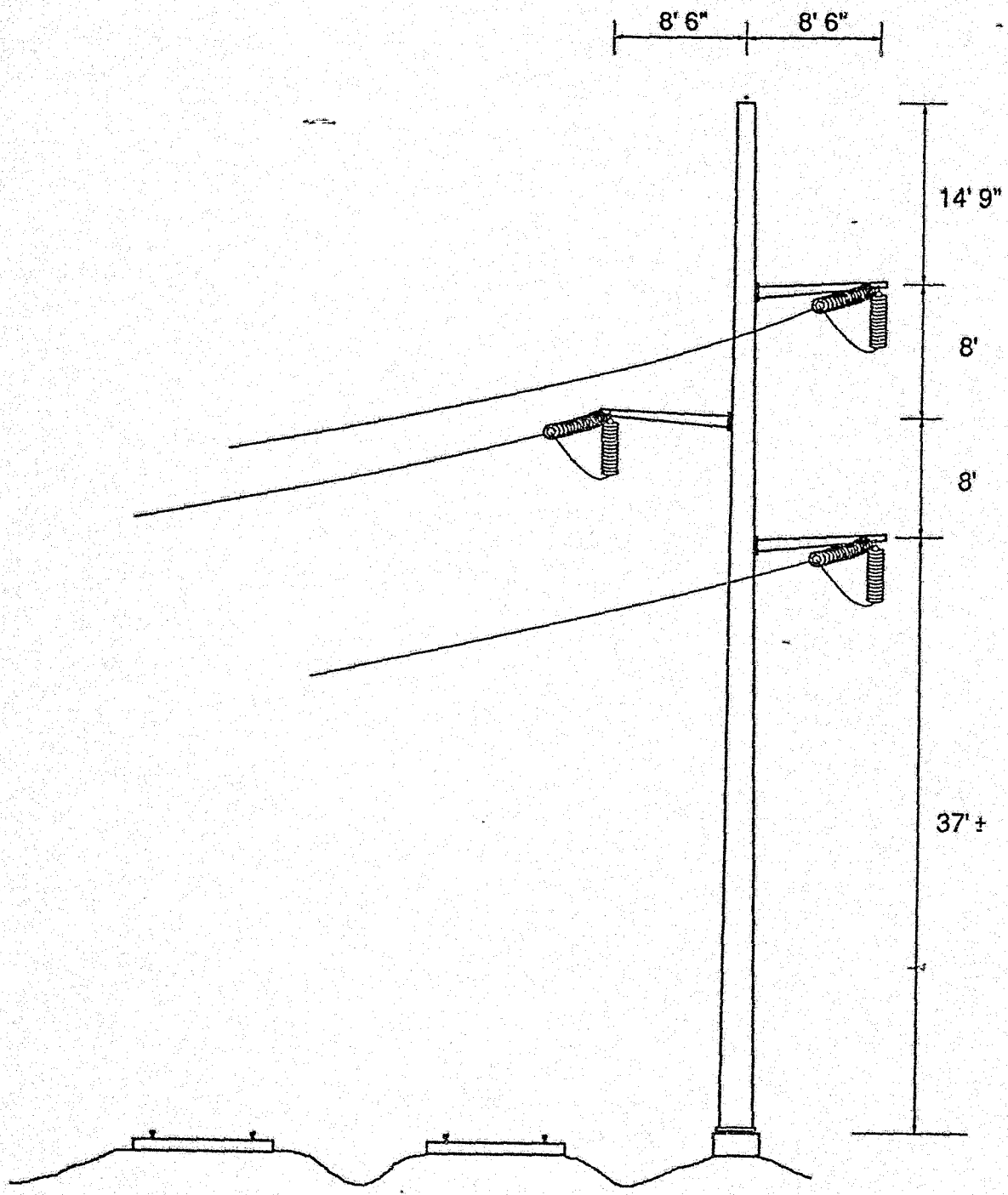
EXHIBIT "C"



EXISTING RAILROAD
STRUCTURE



PECo MODIFIED
RAILROAD STRUCTURE



NEW HEAVY ANGLE AND
DEAD END STRUCTURE

SKETCH 407892

EXHIBIT "D"

**OVERSIZE
DOCUMENT(S)**

KEY MAP /

HEATON - WOOD BOURNE

Exhibit A