

June 26, 1981

C-80011839

James W. Patterson, Esquire
Harper, George, Buchanan & Driver
1200 Western Savings Bank Building
Philadelphia, PA 19107

Villanova University
v.
National Railroad Passenger Corporation
(Amtrak), Consolidated Rail Corporation
(Conrail), Southeastern Pennsylvania
Transportation Authority (SEPTA),
Pennsylvania Department of Transportation
(PENNDOT), County of Delaware
and Radnor Township

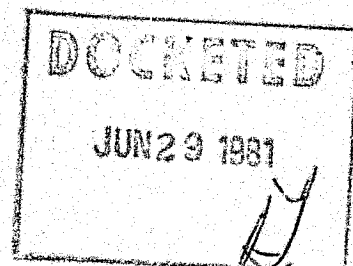
Dear Sir:

This is to advise you that an order has been adopted by the Commission in public meeting on June 19, 1981, in the above entitled proceeding.

A copy of this order has been enclosed for your records.

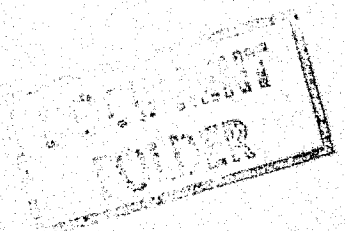
Very truly yours,

William P. Thierfelder
Secretary



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Encls.
Cert. Mail
Receipt Req.

Refer to similar letter list dated May 6, 1981.



PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17120

Public Meeting held June 19, 1981

Commissioners Present:

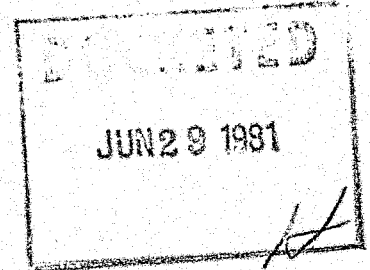
Susan M. Shanaman, Chairman
Michael Johnson
James H. Cawley

Villanova University

C-80011839

v.

National Railroad Passenger Corporation
(Amtrak), Consolidated Rail Corporation
(Conrail), Southeastern Pennsylvania
Transportation Authority (SEPTA),
Pennsylvania Department of Transportation
(PennDOT), County of Delaware and Radnor
Township.



O R D E R

BY THE COMMISSION:

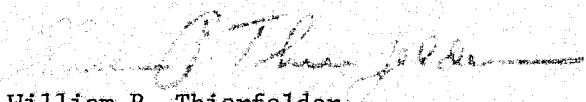
We adopt as our action the Initial Decision of Administrative Law Judge Fountain dated April 28, 1981; THEREFORE,

IT IS ORDERED:

1. That Pennsylvania Department of Transportation, within six months from the date of service of this Order, at its initial cost and expense, furnish all material and do all work necessary to prepare and submit to all parties of record and to this Commission, a detailed study about (1) the possibility of attaching a pedestrian walkway to the existing structure, the effects such arrangement will have on the structure and the estimated cost of this work, (2) the possibility of an entirely new highway structure capable of carrying present day vehicular and pedestrian traffic, the cost of such a structure, the availability of federal funds for this work and the approximate time it would take to design and construct such a structure, (3) the possibility of constructing a separate pedestrian bridge, its suggested location, and the estimated cost of such a structure and (4) any other feasible alternative.
2. That National Railroad Passenger Corporation (Amtrak), within six months from the date of service of this Order, at its initial cost and expense, furnish all material and do all work necessary to prepare and submit to all parties of record and to this Commission, a detailed study to (1) identify the problems associated with the inadequate drainage and lighting facilities in the pedestrian underpass and (2) recommendations to permanently eliminate these two problems and the estimated cost of their improvements.
3. That National Railroad Passenger Corporation (Amtrak), immediately, at its initial cost and expense, furnish all material and do all work necessary to (1) make temporary improvements and/or repairs so that the pedestrian underpass does not become flooded during periods of rain and (2) make any other repairs or improvements to the underpass so that it is safe and passable at all times.

4. That upon receipt of the reports ordered prepared by Pennsylvania Department of Transportation and National Railroad Passenger Corporation (Amtrak), this complaint be set for hearing to take testimony on the reports and any other relevant matters concerning this proceeding.

BY THE COMMISSION,


William P. Thierfelder
Secretary

(SEAL)

ORDER ADOPTED: June 19, 1981

ORDER ENTERED: JUN 26 1981

JUL 1 3 04 PM '81

SECRET SERVICE
PUBLIC SECURITY
COMMISSION

Commonwealth of Pennsylvania
Department of Transportation
REC'D
JUN 2 1981
OFFICE OF THE COMMISSIONER

This 30th day of June, 1981,

the undersigned hereby acknowledges receipt of

EXECUTED ORDER AND THREE COPIES OF ORDERS

rendered by the Commission in Docket No. C-80011839

Under date of June 19, 1981 and accepts service

in behalf of PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

Herbert G. Zahn
Herbert G. Zahn
Assistant Counsel

COPIES
MAILED

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
Harrisburg, Pennsylvania 17120
Office of Chief Counsel



January 13, 1982

IN REPLY REFER TO

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

Re: Complaint Docket C-80011839
Delaware County

JAN 18 2 56 PM '82
SECRETARY OF STATE
PUBLIC UTILITY
COMMISSION

Dear Mr. Rich:

Enclosed for filing with the Commission are the original and two (2) copies of Petition of the Pennsylvania Department of Transportation for Extension of Time in the above-captioned matter.

I hereby certify that a copy of said Petition has been sent to all parties of record.

Very truly yours,

Herbert G. Zahn
Assistant Counsel
(717) 787-5931

220/HGZ:rmm
Enclosures

cc: K. W. Walker, P.E. (Attn.: R. Kohli)
District #6-0
Parties of Record - Page 2

ORIGINAL

Before the

PENNSYLVANIA PUBLIC UTILITY COMMISSION

JAN 18 2 54 PM '82

SECRETARY'S OFFICE
PUBLIC UTILITY
COMMISSION

IN RE:	:	
Villanova University	:	
v.	:	
National Railroad Passenger Corporation (Amtrak), Consolidated Rail Corporation (Conrail), Southeastern Pennsylvania Transportation Authority (SEPTA), Pennsylvania Department of Transportation (PennDOT) County of Delaware and Radnor Township	:	COMPLAINT DOCKET NO. C-80011839

PETITION OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION FOR EXTENSION OF TIME

TO THE HONORABLE, THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

Petition of the Pennsylvania Department of Transportation for Extension of Time to prepare the detailed study to March 31, 1982 and modification of the Order of June 19, 1981 in the above-captioned matter, respectfully represents:

1. That the name and address of your Petitioner is the Department of Transportation of the Commonwealth of Pennsylvania, Harrisburg, Pennsylvania 17120.

SECRETARY'S OFFICE
PUBLIC UTILITY
COMMISSION

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JAN 19 1982
B

2. That the name and address of counsel for Petitioner is Herbert G. Zahn, Assistant Counsel, and Ward T. Williams, Chief Counsel, Office of Chief Counsel, Department of Transportation, Harrisburg, Pennsylvania 17120.

3. Paragraph 1 of the Order of June 19, 1981 directed as follows:

"1. That Pennsylvania Department of Transportation, within six months from the date of service of this Order, at its initial cost and expense, furnish all material and do all work necessary to prepare and submit to all parties of record and to this Commission, a detailed study about (1) the possibility of attaching a pedestrian walkway to the existing structure, the effects such arrangement will have on the structure and the estimated cost of this work, (2) the possibility of an entirely new highway structure capable of carrying present day vehicular and pedestrian traffic, the cost of such a structure, the availability of federal funds for this work and the approximate time it would take to design and construct such a structure, (3) the possibility of constructing a separate pedestrian bridge, its suggested location, and the estimated cost of such a structure and (4) any other feasible alternative."

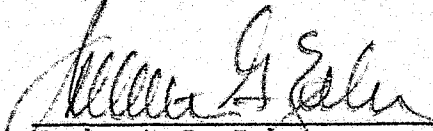
4. For reasons of economy, your Petitioner has determined that the preparation of said detailed study be done in-house by its Engineering District 6-0 personnel. However, because of reduced forces and a heavy workload, your Petitioner has been unable to

complete the said studies within the required six month time from date of service of the Order, or on or before December 29, 1981.

5. Your Petitioner's in-house personnel has completed part of the required study and expects to be able to complete the full study and submit it to the parties of record on or before March 31, 1982.

WHEREFORE, the Pennsylvania Department of Transportation respectfully requests your Honorable Commission to extend the time within which your Petitioner must complete the preparation of the required study directed by your Honorable Commission in its Order of June 19, 1981 to March 31, 1982.

Respectfully submitted,



Herbert G. Zahn
Assistant Counsel

Amtrak



ORIGINAL
January 13, 1982

RECEIVED

JAN 18 1982

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

SECRETARY'S OFFICE
Public Utility Commission

Subject: Villanova University v. National Railroad Passenger Corporation (Amtrak), Consolidated Rail Corporation (Conrail), Southeastern Pennsylvania Transportation Authority (SEPTA), Pennsylvania Department of Transportation (PENNDOT), County of Delaware and Radnor Township Docket No. C-80011839

Dear Mr. Rich:

By order adopted June 19, 1981 and served upon Amtrak June 30, 1981, the Commission imposed upon Amtrak the task of preparing a study identifying the source of the drainage and lighting problems associated with the pedestrian tunnel at the Villanova station and recommending steps to eliminate such problems as may exist.

This study has been underway for some time, but is not yet complete. Unusually heavy rains of recent date have brought to light further problems with the tunnel which will have to be incorporated into Amtrak's study and report.

Accordingly, Amtrak hereby requests an additional period of time until March 15 for submission of its report in this matter.

Very truly yours,

W. Scott Armentrout
Associate General Counsel

cc: Parties of Record

DOCKETED
JAN 18 1982

CONRAIL

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JAN 25 1982

SECRETARY'S OFFICE
Public Utility Commission

January 21, 1982

Honorable Jerry Rich
Secretary
Public Utility Commission
Box 3265
Harrisburg, Pa. 17120

Re: C-80011839, Delaware County

Dear Sir:

Reference is made to the petition of the Pennsylvania Department of Transportation for Extension of Time in the captioned matter.

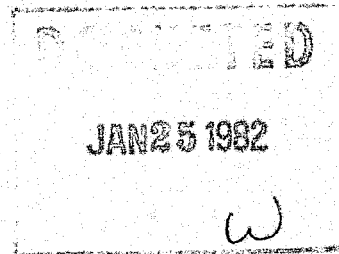
Please be advised that Consolidated Rail Corporation has no objection to the granting of the petition.

Very truly yours,

Joel E. Mazor
Joel E. Mazor
General Attorney

JEM:CV

CC: Herbert G. Zahn, Esq.



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
HARRISBURG 17120
January 29, 1982



IN REPLY REFER TO

Delaware County
L. R. 225 (Traffic Route 320)
Radnor Township
PUC. C. 80011839

Mr. Jerry Rich, Secretary
Public Utility Commission
Harrisburg, Pennsylvania

Dear Mr. Rich:

As directed by Paragraph 1 of the Commission's order of June 19, 1981, in Complaint Docket No. 80011839, we are attaching three (3) copies of a detailed study which was ordered to be performed by the Department of Transportation.

A copy of this study is being forwarded to the parties of record listed below as directed by the subject order:

Joel E. Mazor, Esquire, Consolidated Rail Corporation, 1138 Six Penn Center Plaza, Philadelphia, Pennsylvania 19104
James W. Patterson, Esquire, Harper, George, Bychanan & Driver, Attorney for Villanova University, 1200 Western Savings Bank Building, Broad and Chestnut Streets, Philadelphia, Pennsylvania 19107
Eugene V. Evans, Esquire, Solicitor for Radnor Township, 131 West Market Street, West Chester, Pennsylvania 19380
Francis P. Connors, Esquire, Solicitor for Delaware County, 107 West Third Street, Media, Pennsylvania 19063
W. Scott Armentrout, Esquire, National Railroad Passenger Corporation, 400 North Capitol Street, N.W., Washington, D. C. 20001
Edward H. Huss, Staff Counsel, Southeastern Pennsylvania Transportation Authority, 2028 PSFS Building, 12 South 12th Street, Philadelphia, Pennsylvania 19107
Honorable Martin R. Fountain, Administrative Law Judge, Pennsylvania Public Utility Commission, 1302 Philadelphia State Office Building, 1400 West Spring Garden Street, Philadelphia, Pennsylvania 19130

Very truly yours,

KW Walker

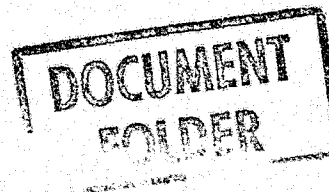
For: Alfred F. Lyng, P. E.
Chief Highway Engineer

attachment

RECEIVED

FEB 2 1982

SECRETARY'S OFFICE
Public Utility Commission



Response to the PUC C-80011839 Entered June 26, 1981

SECRETARY'S OFFICE
Public Utility Commission

In an order entered on June 26, 1981, the PUC, in Docket #C-80011839, has charged the Penna. Department of Transportation to study the feasibility of constructing a pedestrian crossing over the tracks of Amtrak at or near the crossing of the Spring Mill Road Bridge, IR 225 Sta. 784+21. The study is to include the following considerations:

1. Attachment of a pedestrian bridge to the existing highway bridge.
2. Replacing the present highway bridge with a modern structure.
3. Constructing a pedestrian bridge at another location and cost for such a bridge.
4. Other feasible alternatives.

DOCUMENT
FOLDER

The existing highway bridge on Spring Mill Road was built in 1875. In 1945 new floor beams along with a filled grid deck was placed on the bridge; some of the tie rods were replaced; the bottom chord was encased in concrete (which now leaves the tension chord uninspectable); the ends of the arch was cut off at the first bay of the truss; new concrete end posts were installed; work was performed at the bearing areas.

The first item for consideration is the condition of the existing bridge. Toward this end we found another bridge of almost identical construction over Amtrak's tracks in the town of Gap in Lancaster County. The bridge is located on TR 741 near the intersection with TR 41. A periodic inspection of the bridge has been ordered by the PUC in Docket # C-78080300.

On September 30, 1981 the District Bridge Unit participated in the inspection of this bridge along with the Department's District 8 Bridge Unit, the Township and Amtrak. Numerous cracks had already been isolated on this bridge and we are trying to draw a correlation between the two bridges. The bridge in Gap is posted for 3 tons while the bridge on Spring Mill Road is not posted. From the age of the bridges and from the

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FEB 1 1982

visual inspection of a piece of steel taken from the Gap bridge we made the assumption that the steel in both bridges is either wrought iron or non-weldable mild steel.

On October 13, 1981 arrangements were made with Amtrak to inspect the Spring Mill Road Bridge. We could only get clearance over one track at the far end of the bridge enabling the inspection team to examine the bottom chord and the underside of the deck close up in one area only.

A limited inspection was able to be performed at other parts of the bridge. This revealed the following.

- a. A large crack was found in the web of a vertical truss member. The crack is old, but we cannot determine the reason for a crack in this area.
- b. The top chord at the near right end of the bridge contains a crack. This apparently was a brittle fracture resulting from an accident in this area of the bridge.
- c. The bridge has been struck and damaged on several occasions at the near right end post. Numerous repairs utilizing welded splice plates along with other attempted welds have been made at this location. Virtually all the welds to the original steel have cracked. This further supports the assumption that the existing structure is made from non-weldable metal.
- d. The truss consists of vertical beam posts with steel diagonal counter rods. An arch is carried between the top and bottom chords with the verticles notched to receive and bear on the arch. In 1945 along with the repairs the arch was cut and discontinued at the first interior vertical from the bearing. We can see no reason for the removal of the arch and how this affects the operation of the truss.

The type of design and construction for this bridge appears to be standard for the

railroad in this era. We are unsure how the combination arch-truss was supposed to work and what effect cutting the end of the arch had.

The Department feels that first and foremost the bridge should have an indepth inspection to determine its load carrying capabilities. Because of the heavy involvement with railroad traffic, the presence of the catenary wires and the design which is peculiar to railroad bridges, the bridge should be inspected by the railroad engineers. The Department will be willing to provide the services of our laboratory for any materials testing it may be able to do, and provide traffic control.

1. In view of the foregoing information and the fact that the existing roadway is only 18.5 feet wide and cannot be widened we can't find any justification for attaching a pedestrian walkway to the existing bridge.
2. While the structural condition of the bridge is questioned, the geometry of the structure alone is grossly inadequate. This section of IR 225 carries over 12,000 vehicles each day, this alone is justification for a new bridge. We recommend the construction of a new highway bridge at same location with provisions for pedestrians.
3. This PUC complaint was initiated because of a need to safely get pedestrians across the railroad tracks. The time involved with programming, financing, designing and constructing a new highway bridge will take years while there is an immediate need for the safe passage of pedestrians. We therefore recommend the construction of separate pedestrian bridge.

Serious consideration must be given to the location of such a structure.

The pedestrian bridge cannot be located adjacent to the existing highway bridge because this would interfere with any future construction of a highway bridge at this location.

If the pedestrian bridge is laterally shifted east away from the existing highway bridge it will interfere with the parking lots on each end of the bridge. The Federal Government requires a maximum approach grade of 8% for the handicapped. This grade is

less than that of the approach highway roadway. So a straight approach ramp, circular approaches or switch back approaches would interfere with the existing parking facilities.

We realize that the existing bridge is used by people other than those associated with Villanova University. However, it is probably safe to assume that a large majority of these crossings are not destination oriented but rather joggers or cyclists who could travel in other directions.

The necessity for crossing the tracks with the exception of the users of the rail facility was generated by the University's development of the complex at and around St. Mary's Hall.

Apparently there were no provisions made by the University in the expansion of their facilities to provide for the safe movement of their staff, faculty, and students.

It is our opinion that all consideration and evaluation for a pedestrian bridge should be separated from the vehicular crossing because of needs and time frames.

Our recommendation is to build a separate pedestrian bridge at the walkway which passes between Mendall Hall Buildings.

Estimates

- (1) Construction of a new highway bridge.

The structure over Amtrak is on a Federal Aid Route and would qualify for Federal funds on a 75% - 25% basis for a normal replacement or 80% - 20% basis for critical bridge funding. There are not sufficient federal monies to fund projects that are presently programmed.

Before any design could be begun on new highway structure the project would have to receive capital budget approval and be moved up on the 12 Year Program. It is presently scheduled for years 9 thru 12. It would then have to be approved by the Program Management Committee.

The next step would be to hire a consultant utilizing the selection procedure which would take about 6 months. The design would take at least 12 months with the final right-of-way acquisition would probably require an additional 6 months.

- Design time approximately 24 months
- Construction will take about 18 months
- Design cost approximately \$80,000
- Administration & inspection costs \$65,000
- Construction of bridge only - \$500,000
- Roadway approaches and right of way must be added to the above costs.

(2) Construction of a separate pedestrian bridge ..

The estimated cost of constructing a separate pedestrian bridge at the location suggested earlier is as follows:

Design	\$ 45,000
Construction	\$300,000

In Summary

It is not feasible nor prudent to try to attach a pedestrian bridge to the existing highway bridge. A separate pedestrian bridge should be built at another location. The existing highway structure should be immediately evaluated and the planning process for a new structure should be begun as soon as funds become available.

CONFIDENTIAL

Amtrak



MAR 23 1982

RHC/bab

RECEIVED

MAR 24 1982

SECRETARY'S OFFICE
Public Utility Commission

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

Subject: Villanova University, PA PUC C-80011839
Drainage and Lighting Study

Dear Mr. Rich:

Reference is made to the Commission's order entered June 26, 1981 and our letter dated January 13, 1982 regarding the detailed study for the drainage and lighting problems within the passenger tunnel at the Villanova Train Station. We have completed the report which is submitted herewith to the Commission for their consideration.

Briefly, the report discusses the source of the water, improvements or attempts to resolve the problem, and recommendations for future action. The lighting within the tunnel, in our opinion, is satisfactory and as such is not discussed in great detail in the report.

We hereby certify that a copy of the enclosed report was sent by First Class, postage paid, U.S. Mail, to all parties of record in this matter.

Very truly yours,

A. B. Smythe
Assistant Chief Engineer
Design and Construction

cc: Parties of Record

**DOCUMENT
FOLDER**

12.02



January 13, 1982

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

Subject: Villanova University v. National Railroad Passenger Corporation (Amtrak), Consolidated Rail Corporation (Conrail), Southeastern Pennsylvania Transportation Authority (SEPTA), Pennsylvania Department of Transportation (PENNDOT), County of Delaware and Radnor Township Docket No. C-80011839

Dear Mr. Rich:

By order adopted June 19, 1981 and served upon Amtrak June 30, 1981, the Commission imposed upon Amtrak the task of preparing a study identifying the source of the drainage and lighting problems associated with the pedestrian tunnel at the Villanova station and recommending steps to eliminate such problems as may exist.

This study has been underway for some time, but is not yet complete. Unusually heavy rains of recent date have brought to light further problems with the tunnel which will have to be incorporated into Amtrak's study and report.

Accordingly, Amtrak hereby requests an additional period of time until March 15 for submission of its report in this matter.

Very truly yours,

A handwritten signature in dark ink, appearing to read "W. Scott Armentrout", written in a cursive style.

W. Scott Armentrout
Associate General Counsel

cc: Parties of Record

bcc: A. B. Smythe |
R. H. Cooper |

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P. O. BOX 3265, HARRISBURG, Pa. 17120

June 26, 1981

RECEIVED

IN REPLY PLEASE
REFER TO OUR FILE

JUN 30 1981

C-80011839

W. Scott Armentrout, Assistant
General Counsel
National Railroad Passenger
Corporation
400 North Capitol Street, N. W.
Washington D. C. 2001

W. S. Armentrout
Associate General Counsel

cc: Dick Cooper
Sandy Smythe

Villanova University

v.

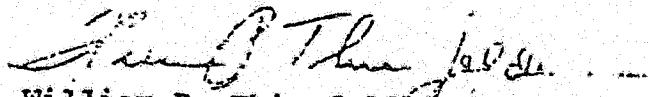
National Railroad Passenger Corporation
(Amtrak), Consolidated Rail Corporation
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Transportation Authority (SEPTA),
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and Radnor Township

Dear Sir:

This is to advise you that an order has been adopted
by the Commission in public meeting on June 19, 1981, in
the above entitled proceeding.

A copy of this order has been enclosed for your
records.

Very truly yours,


William P. Thierfelder
Secretary

ts
Encls.
Cert. Mail
Receipt Req.

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17120

Public Meeting held June 19, 1981

Commissioners Present:

Susan M. Shanaman, Chairman
Michael Johnson
James H. Cawley

Villanova University

C-80011839

v.

National Railroad Passenger Corporation
(Amtrak), Consolidated Rail Corporation
(Conrail), Southeastern Pennsylvania
Transportation Authority (SEPTA),
Pennsylvania Department of Transportation
(PennDOT), County of Delaware and Radnor
Township.

O R D E R

BY THE COMMISSION:

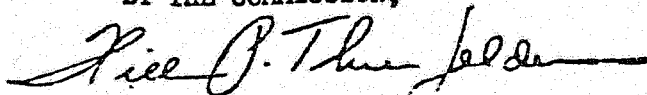
We adopt as our action the Initial Decision of Administrative Law Judge Fountain dated April 28, 1981; THEREFORE,

IT IS ORDERED:

1. That Pennsylvania Department of Transportation, within six months from the date of service of this Order, at its initial cost and expense, furnish all material and do all work necessary to prepare and submit to all parties of record and to this Commission, a detailed study about (1) the possibility of attaching a pedestrian walkway to the existing structure, the effects such arrangement will have on the structure and the estimated cost of this work, (2) the possibility of an entirely new highway structure capable of carrying present day vehicular and pedestrian traffic, the cost of such a structure, the availability of federal funds for this work and the approximate time it would take to design and construct such a structure, (3) the possibility of constructing a separate pedestrian bridge, its suggested location, and the estimated cost of such a structure and (4) any other feasible alternative.
2. That National Railroad Passenger Corporation (Amtrak), within six months from the date of service of this Order, at its initial cost and expense, furnish all material and do all work necessary to prepare and submit to all parties of record and to this Commission, a detailed study to (1) identify the problems associated with the inadequate drainage and lighting facilities in the pedestrian underpass and (2) recommendations to permanently eliminate these two problems and the estimated cost of their improvements.
3. That National Railroad Passenger Corporation (Amtrak), immediately, at its initial cost and expense, furnish all material and do all work necessary to (1) make temporary improvements and/or repairs so that the pedestrian underpass does not become flooded during periods of rain and (2) make any other repairs or improvements to the underpass so that it is safe and passable at all times.

4. That upon receipt of the reports ordered prepared by Pennsylvania Department of Transportation and National Railroad Passenger Corporation (Amtrak), this complaint be set for hearing to take testimony on the reports and any other relevant matters concerning this proceeding.

BY THE COMMISSION,



William P. Thierfelder
Secretary

(SEAL)

ORDER ADOPTED: June 19, 1981

ORDER ENTERED: JUN 26 1981

DRAINAGE AND LIGHTING STUDY

PASSENGER TUNNEL
VILLANOVA TRAIN STATION
VILLANOVA, PENNSYLVANIA

Prepared by:

National Railroad Passenger Corp.
Philadelphia, Pennsylvania
March 1982

DRAINAGE STUDY
VILLANOVA STATION PASSENGER TUNNEL
VILLANOVA, PA

Introduction

Pursuant to the PUC order entered June 26, 1981, regarding the complaint filed by Villanova University to the flooding problem in the passenger tunnel at Villanova Station and to the safety of the University students crossing the railroad at this location, the commission has ordered Amtrak to prepare and submit a detailed study of drainage and lighting within the tunnel.

This portion of the report deals with the tunnel drainage problem. In it we describe the drainage system as it originally functioned, our analysis of the reasons for the periodic flooding that has occurred since Amtrak acquired the property in 1976, work undertaken to date by both Amtrak and Villanova University to correct the problem and our recommendations for further drainage improvements.

Flooding has occurred at a number of the station tunnels along the Harrisburg line in the last six years. In all cases, Amtrak has been handicapped in dealing with it due to lack of information on how each drainage system functioned. Plans showing underground drains (with the exception of those for cross culverts) are nonexistent.

Through field surveys and data obtained while correcting instances of flooding, we now understand, for the most part, how the Villanova Station drainage system functions so that we can now address the problem. Unfortunately, there is not one cause but a number of contributing factors which we will describe.

Existing Drainage Conditions and Causes of Flooding

Exhibit A, taken from U. S. Geological Survey mapping, shows the drainage area contributing to the station tunnel problems - for the most part water shed from the University properties on each side of the railroad. The station tunnel is at the worst possible location - near the bottom of the "bowl" of the drainage basin and at the source of the stream where gravity outlet of tunnel drainage is not easily achieved.

In general, the drainage design that was developed provided for efficient handling of runoff by track ditches, pipes and inlets emptying into the existing stream. In the station area, the subsurface (tunnel) and surface drainage systems were separated. The tunnel flooding is the result of certain breakdowns in both systems - due to deferred maintenance and aging of the system - which have resulted in leakage of surface runoff into the tunnel system and impaired the free flow of tunnel drainage.

Exhibit B-1 shows the system of inlets, pipes and ditches within the station area. Arrows indicate direction of flow.

The passenger tunnel (Photo #1*) is of brick arch construction. Two rows of weep holes are provided, one row near the floor and one at the spring line, 4'-6" above the floor. They consist of unmortored spaces left between adjacent bricks. Weep holes allow ground water to percolate through the tunnel walls to prevent hydrostatic pressure build-up. Water penetrating the walls drops to open gutters on each side of the tunnel walkway. These drain to new 6" x 2'-6" grate inlets at the north end of the tunnel (Photo #2). The inlets are connected to a covered junction box in the floor of the tunnel on centerline by new 6" pipes. From here a 12" vitrified clay pipe carries the flow north then east parallel to the tracks to a stream near Ithan Avenue, about 2,000 feet from the station. Since flow is by gravity and the tunnel deep, the long run of pipe was needed to meet the grade of the stream. The pipe is about 15 feet deep in the first half of its run (to manhole #2), then the depth diminishes to just a few feet at Ithan Avenue.

In addition to seepage through the tunnel walls during storms, the 12" outlet pipe also handles constant spring flow. A channel is constructed under the tunnel floor centerline carrying this flow to the junction box, thence to the 12" pipe. The 12" tunnel outfall pipe was, therefore, intended to handle subsurface flow only, while a separate system was to handle surface flow.

Flooding problem began because of three factors:

1. Development of adjacent properties within the drainage basin
2. Deterioration of surface drainage system which dumped some of its load onto the tunnel system
3. Deterioration of the 12" vitrified clay tunnel outfall pipe.

Surface runoff west of the station sheet flows from properties on both sides of the right-of-way to the track ditches. Development of the properties has increased the volume of rainfall runoff, which has put additional load on the drainage system. This is because of reduced time of concentration due to piping and increased runoff rate due to the paved surfaces. The track ditches flow east to pipes through the station platforms. The through-platform pipes pass over the tunnel and outlet to streams or ditches. If blockages within the pipe back water up or if water is not entering the pipes due to clogging of the inlet ends of the pipe or the ditch itself, water will flow down the trackbed and surcharge the tunnel.

*Refer to photo index, Exhibit B-3.

Blockages in these pipes have occurred and continue to re-occur. The eastbound platform pipe (two 18" V.C. pipes) outlets to the ditch frequently clog due to intrusion of ballast and silt (Photo #11). During heavy rains, we have observed water seeping in through the mortared tunnel joints as well as the weep holes which in all likelihood indicates intrusion of surface water. The outlet of the westbound platform pipe (12" C.M. pipe) has yet to be found, meaning that in all likelihood it may be clogged or sealed. The inlet ends of the platform pipes are provided with reinforcing bar screens to keep debris out. If not periodically cleaned, these accumulations of debris will restrict flow. As the ditches fill up, water is directed more and more into the track bed. In addition to this, on the westbound side, the bank has collapsed in several places due to runoff from the University tennis court area completely silting up 400 feet of the ditch west of the westbound platform.

Another source of water in the tunnel was, at one time, surface flow from the parking areas on the south side of the railroad. Flow from both the Amtrak and University parking lots would periodically cascade down the tunnel steps at the south end. Water from the 0.3 acre Amtrak parking lot was bypassing its two inlets because of clogging with leaves and debris, overflowing the shallow brick gutter and flowing down the steps. Of more serious consequence, the 1.0 acre University lot next to Mendel Hall was designed so that its entire runoff was directed to the sidewalk leading to the station platform and tunnel (Photos # 3, 4 & 5). Two inlets were installed recessed on each side of the sidewalk. Unfortunately, the sidewalk was not adequately crowned and the abrupt recessing of the inlets allowed much of the flow to bypass the inlets. Additionally, the 18" outlet from these inlets flows to the east end of the eastbound where it joins the two platform pipes in silting up (Photo #11).

The 2,000 foot long vitrified clay tunnel outfall pipe, is apparently collapsing due to age, loading and penetration by tree roots through its joints. Blockages have occurred at various locations between the tunnel and a point 50 feet east of manhole #2 - the length where it is most deeply buried. Tree roots have been removed near large trees.

Improvements Since Amtrak's Acquisition (Exhibit B-2)

Amtrak has responded each time to flooding of the tunnel by pumping the water out and hiring private contractors to clean the 12" outlet pipe by water jetting. Jetting has reopened the pipes sufficiently to at least handle the spring flow but probably not much more.

In the course of one cleanout from the tunnel end, the tunnel inlets were rebuilt and the covers replaced with commercial open grates. Originally the only inlet was a single 6" diameter pipe with steel cover pierced by small holes. This was replaced by two new 6" x 2'-6" inlets and new 6" pipe connections were installed. The tunnel floor was repaved and 2" x 6" gutters were formed on each side of the walkway. The wall joints were pointed.

Manholes #1 and #2 have also been improved and more substantially covered. A 2" pump was installed in manhole #1 out-letting to the stream to lower the water level should water backup in this manhole.

Late in 1981, both Amtrak and the University took steps to stop intrusion of surface water on the south side. In September, Amtrak B&B forces cleaned the brick gutters surrounding its parking lot, rebuilt the two inlets to provide greater capacity, and built a 1'-3" high splash wall around the eastern end of the lot to contain any overflow (Photo #6 & #7). Track gangs cleaned out the outlet ends of pipes under the eastbound platform and cleaned the ditch. Later the University constructed a grate inlet across the sidewalk between the existing inlets to intercept sidewalk flow. They also formed an asphalt lip across the upper end of the sidewalk to cut off flow down the sidewalk.

All of the above has reduced the problem but has not cured it. A complete cure could be achieved by reconstructing the outfall pipe for its entire 2,000 foot length to handle the present discharge. This would be quite expensive - on the order of \$250,000.00. The most cost effective solution is to correct the deficiencies that are emptying surface runoff into the tunnel system and attempt to locate precisely the points of blockage in the 12" outfall, then eliminate them by clearing the line or replacing pipe sections.

Proposed Future Action

Amtrak's plans for further action include the following:

1. Keep the 12" tunnel gravity drain line functioning by continuous monitoring and maintenance. Since 99% of the foot traffic through the tunnel is University students going to and from classes and University maintenance people are "on the ground" at all times, it would seem appropriate and expedient that University employees handle periodic inspections and debris removal of the tunnel and parking lot inlets.

The University should alert Amtrak immediately at the first sign of flooding due to stoppage within the pipes. Amtrak should then respond immediately to reopen the lines.

2. Dye tests to determine location of outlet of 12" pipe under westbound platform and clean the pipe.

3. Clean out and reshape track ditch west of westbound platform leading to this pipe. There are a number of accumulations of spoils and eroded material from the banks that deflect ditch flow into the track areas. In the most recent flooding, infiltration through the tunnel walls occurred mainly at the westbound end of the tunnel. Also, clean out accumulations of debris in ditch west of eastbound platform (photo #9).
4. Construct an L-shaped headwall for the three pipes outletting at the east end of the eastbound platform. This will keep ballast out of the pipes. Clean out ditch to the east.
5. Make a field survey to obtain elevations of pipe inverts. This will permit us to: (1) evaluate the capacity of the existing pipes and (2) determine feasibility of outletting tunnel outfall pipe to the stream at some intermediate location to reduce the length of run.
6. Remove trees suspected of causing root damage to outfall pipe (photo #10).
7. Evaluate need for further corrective action which could include:
 - (a) Locating exact point of blockages in tunnel pipe and excavate and replace pipe.
 - (b) Constructing new pump manhole as near to tunnel as possible and installing larger pump.

Estimated cost for the first stage work - items 1 through 6 - is \$15,000.00.

There is additional work required of Villanova University. In item 3 above, we mentioned eroded material accumulations in the ditch west of the westbound platform (photo #8). The ditch is filled for a length of 400 feet west from the Spring Mill Road bridge with material that has eroded out of the cut side slope. Erosion seems to be concentrated at two specific locations where pipe storm drain systems in the Villanova tennis court area apparently outlet to the railroad.

It appears that these pipes (the pipes are not visible, the erosion being so deep) are too short, outletting above the slope and causing the slope to erode. The solution would be the extension of the pipes down to the ditch line.

Villanova University should verify the existence of these pipe outlets, uncover the outlet ends of the pipe, and extend the pipes to the ditch line.

LIGHTING

LIGHTING

VILLANOVA STATION PASSENGER TUNNEL
VILLANOVA, PA

The lighting within the tunnel was renewed in early 1980 at a cost of about \$3,000.00. The new lighting, Photo #1, is comprised of flourescent type fixtures mounted on the ceiling in the center of the tunnel.

It is our opinion, the lighting is satisfactory and provided there is no vandalism, it does not need replacement with a different type of system.

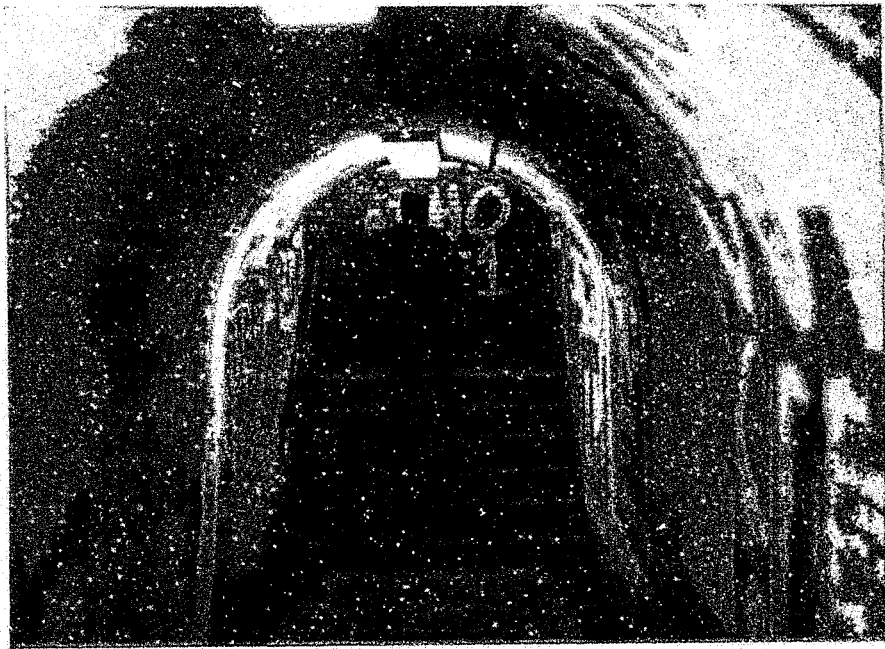


PHOTO #1

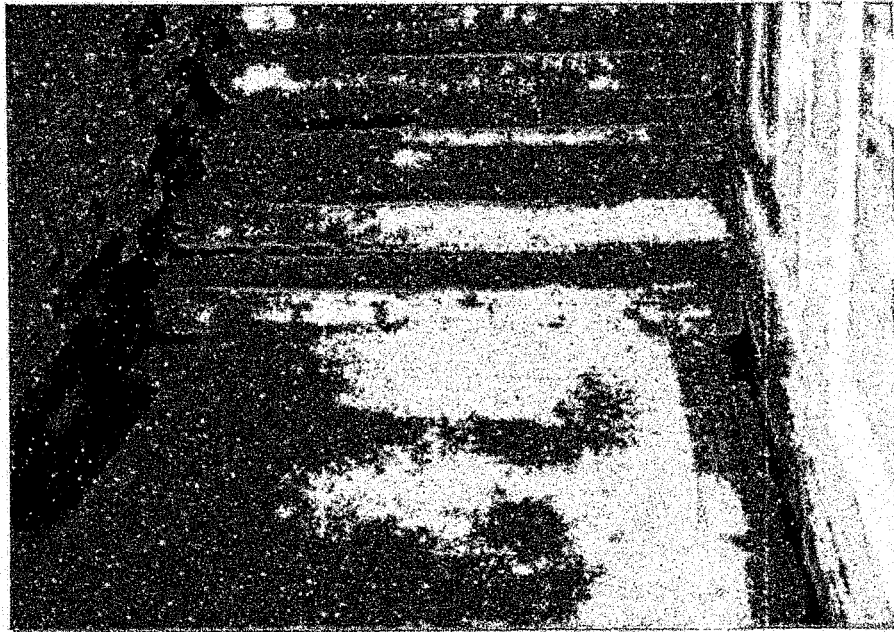


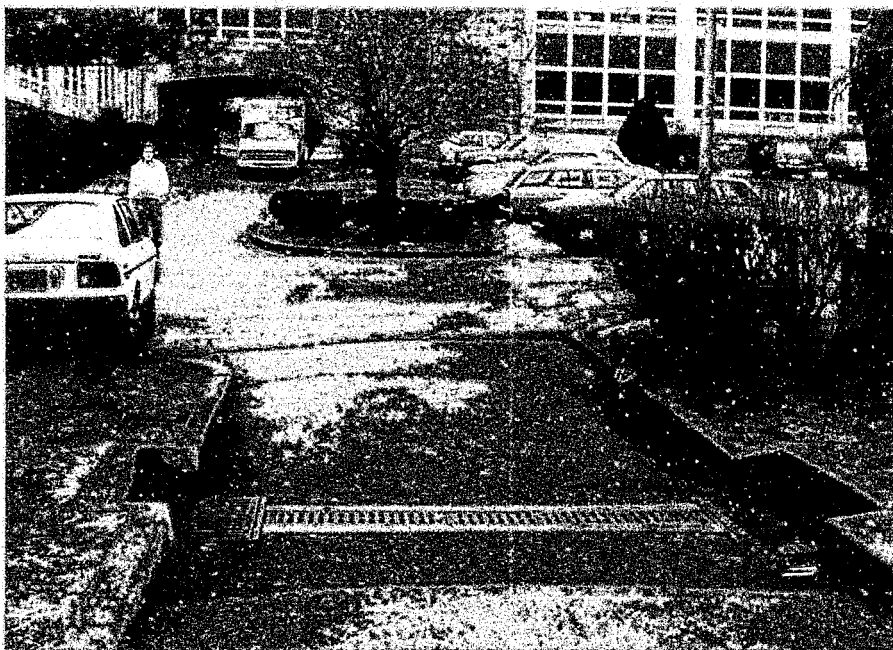
PHOTO #2

PEDESTRIAN TUNNEL & DRAINS

PHOTO #3
SIDEWALK TO EAST-
BOUND STATION
PLATFORM BEFORE
UNIVERSITY WORK



PHOTO #4 & 5
AFTER UNIVERSITY
WORK



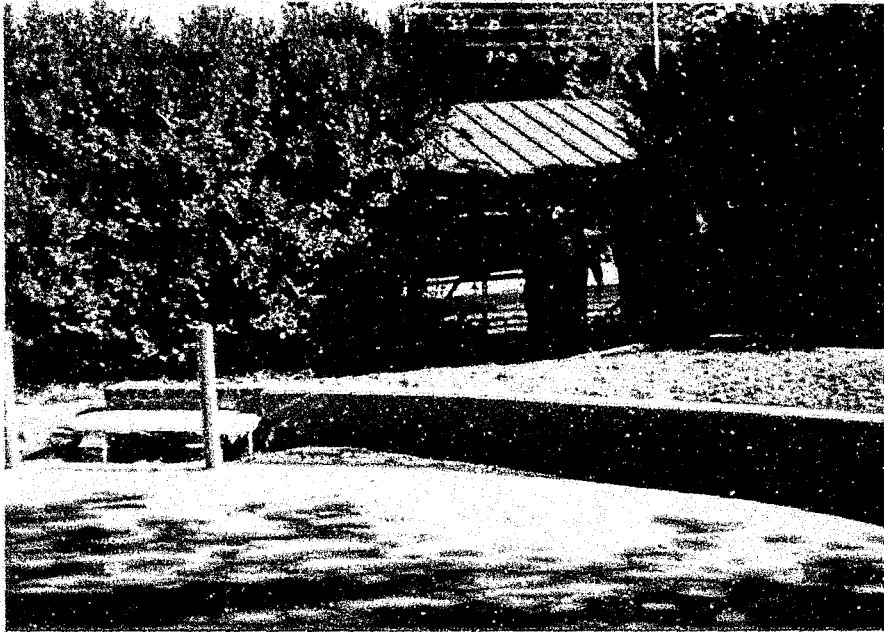


PHOTO #6

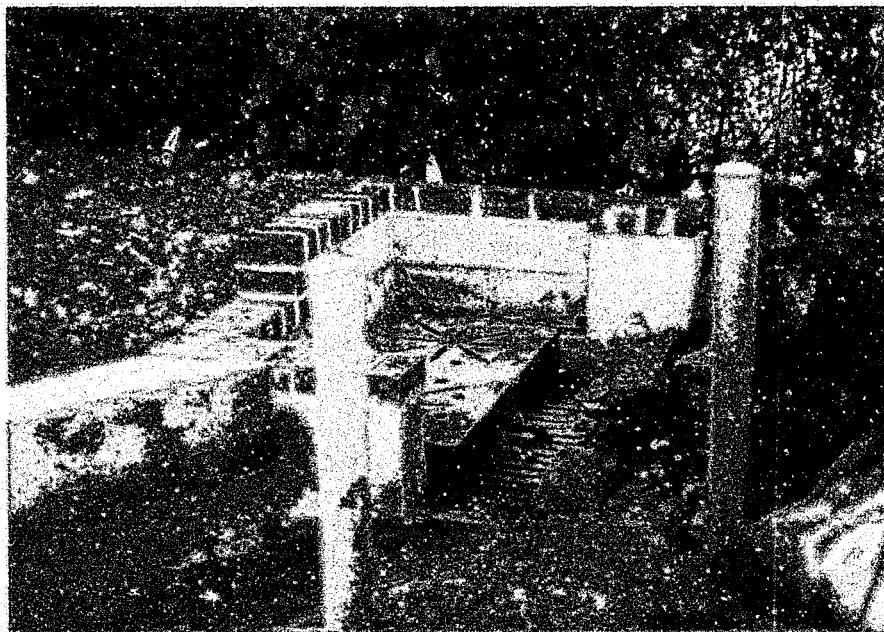


PHOTO #7

STATION PARKING SHOWING REBUILT
INLETS AND NEW SPLASH WALL

PHOTO #8
TRACK DITCH WEST
OF WESTBOUND PLATFORM
(LOOKING EAST)

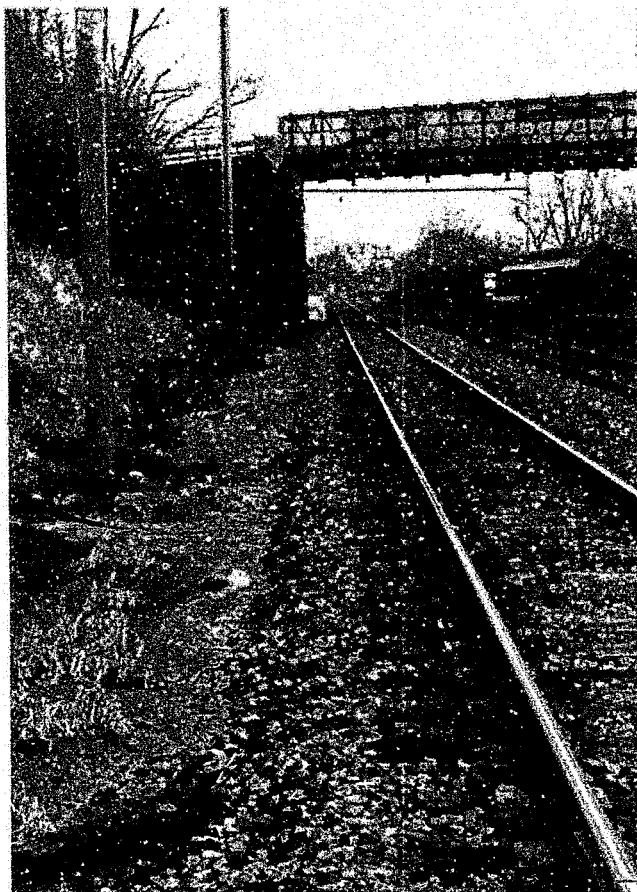


PHOTO #9
TRACK DITCH WEST
OF EASTBOUND PLATFORM
(LOOKING EAST)



PHOTO #10
TREE EAST OF
MANHOLE #1

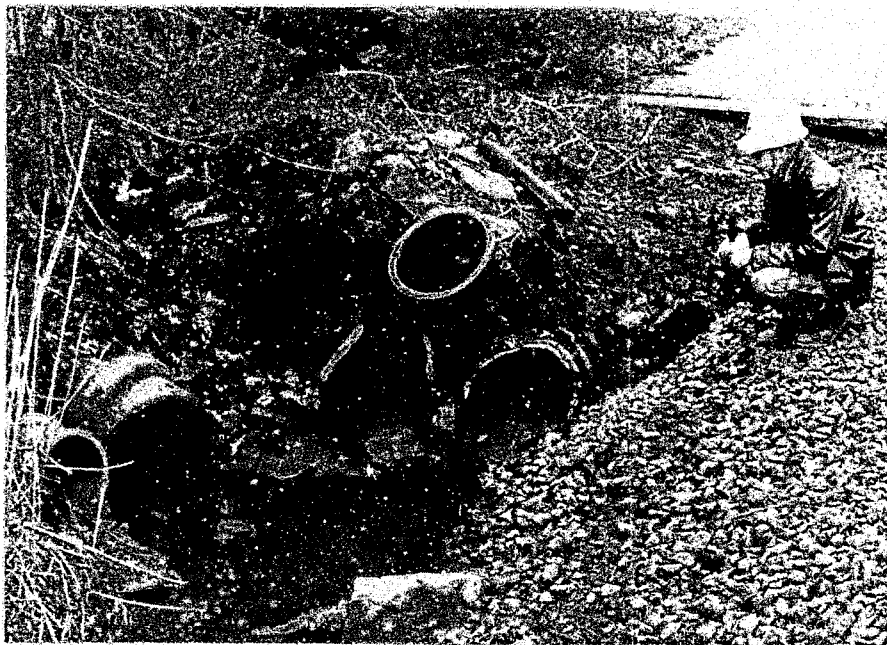


PHOTO #11
PIPES OUTLETING EAST OF
EASTBOUND PLATFORM

PHOTO #12

INLET END OF 12" C.M.
PIPE THROUGH WESTBOUND
PLATFORM

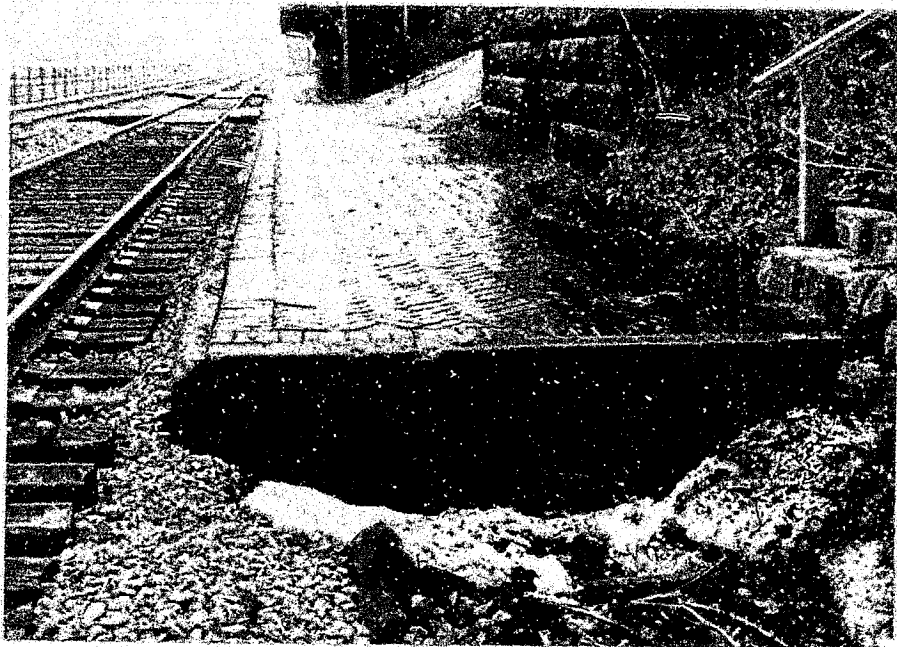


PHOTO #13
INLET END OF TWO 18" V.C. PIPES
THROUGH EASTBOUND PLATFORM

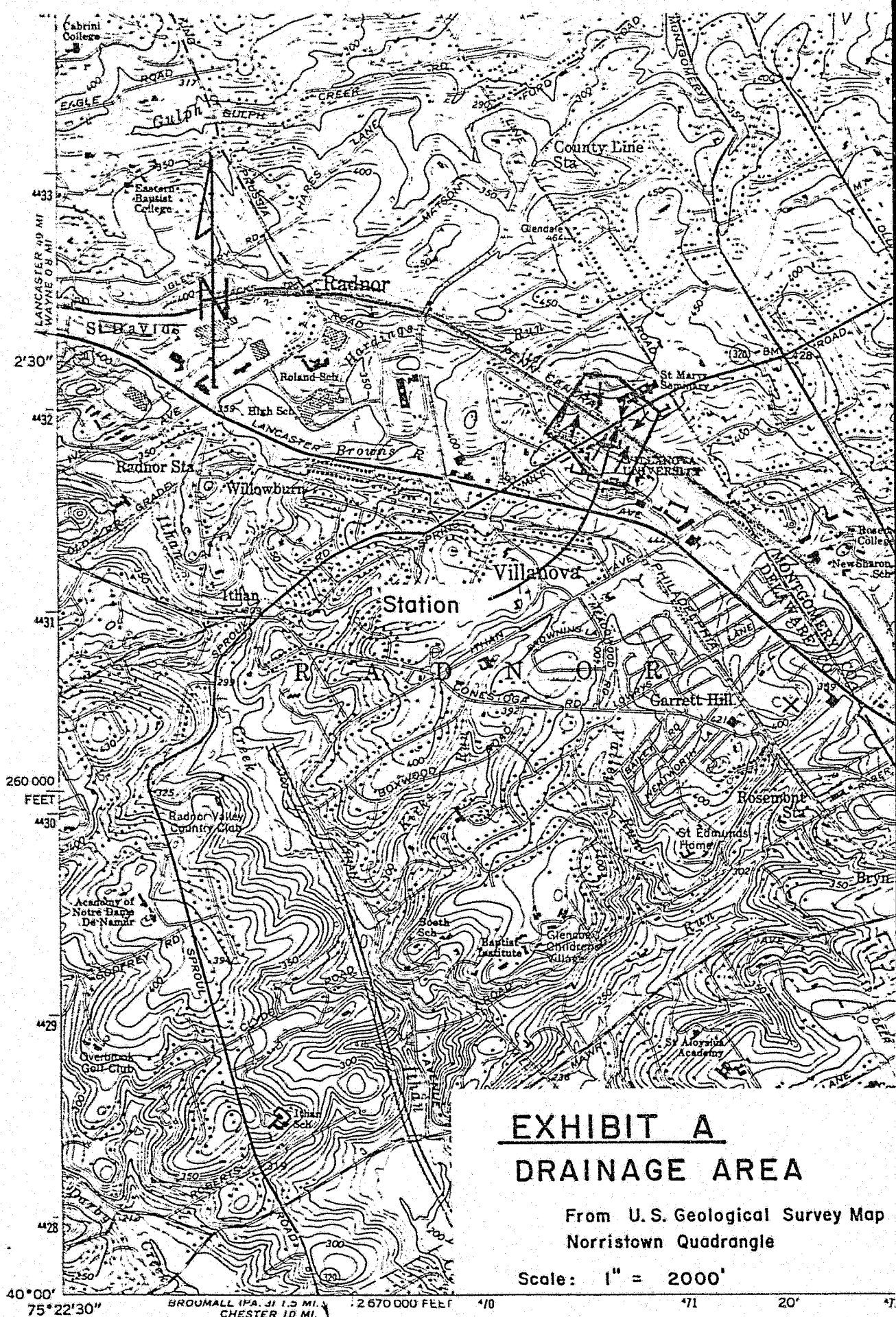


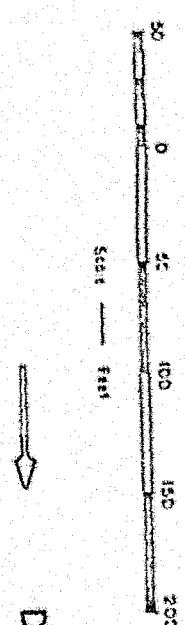
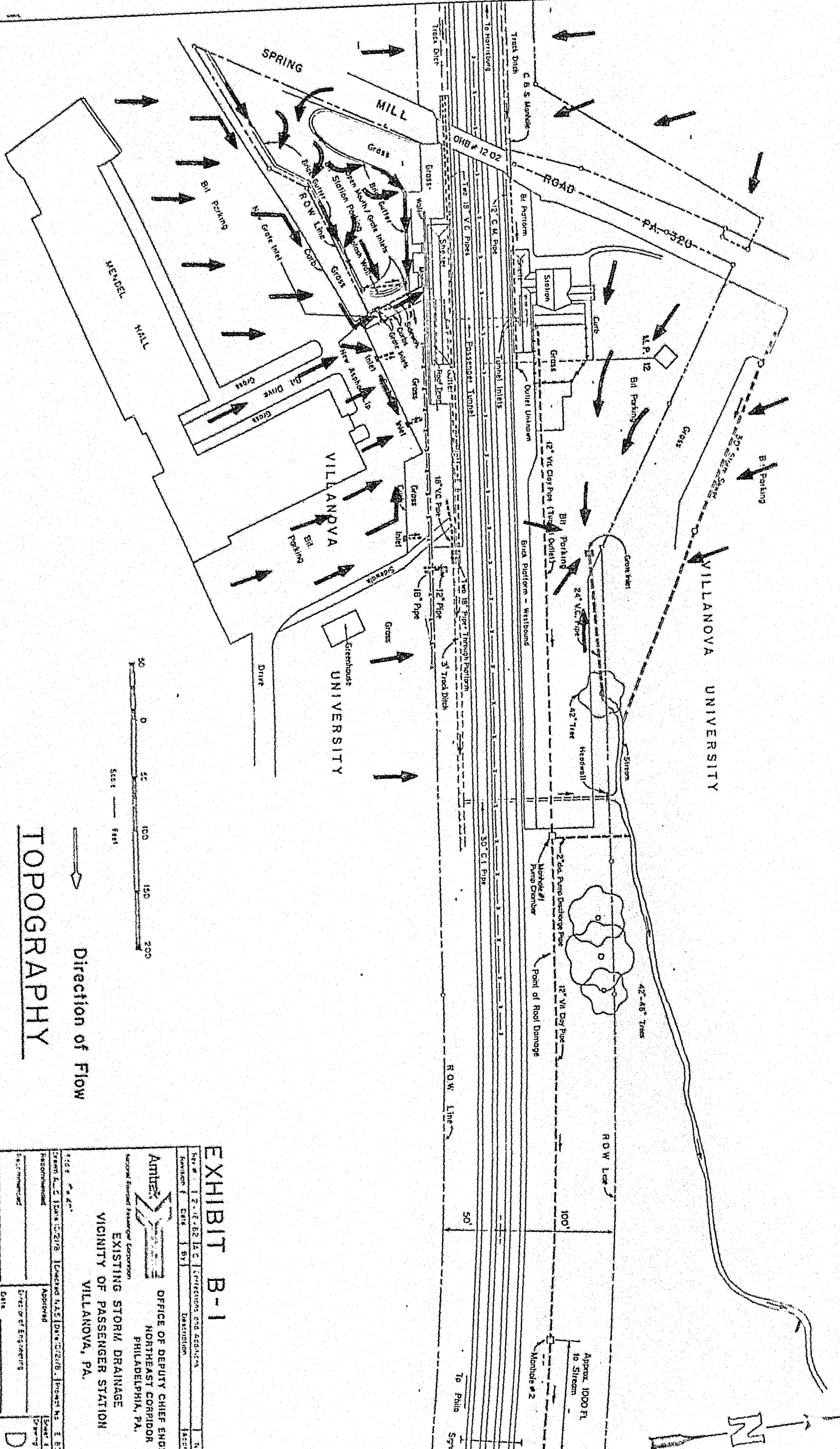
EXHIBIT A DRAINAGE AREA

From U. S. Geological Survey Map
Norristown Quadrangle

Scale: 1" = 2000'

40°00' 75°22'30" BROOMALL (PA. 31) 1.5 MI. 2 670 000 FEET 470 71 20' 47

Mapped, edited, and published by the Geological Survey



Direction of Flow

TOPOGRAPHY

EXHIBIT B-1

Rev #	Date	By	Description	Scale
1	12-12-82	J.A.C.	Preparations and Additions	N.A.S.

Amtek
 National Electrical Exchange Corporation
 OFFICE OF DEPUTY CHIEF ENGINEER
 NORTHEAST CORRIDOR
 PHILADELPHIA, PA.
 EXISTING STORM DRAINAGE
 VICINITY OF PASSENGER STATION
 VILLANOVA, PA.

Project No.	10-00000000	Drawn By	J.A.C.
Client	SEPTA	Checked By	J.A.C.
Project Name	EXISTING STORM DRAINAGE VICINITY OF PASSENGER STATION VILLANOVA, PA.	Approved	J.A.C.
Scale	AS SHOWN	Date	12-12-82
Sheet No.	1	Drawn No.	D-1

CORRECT BANK EROSION.

CLEAN PIPE, LOCATE OUTLET.

Tunnel Inlets Rebuilt & Enlarged.

REMOVE TREES.

CONSTRUCT HEADWALL.

LOCATE DAMAGED PIPE SECTIONS, REPLACE.

Splash Wall Built. Inlets Rebuilt.

Asphalt Lip Curb Installed.

Inlet across Sidewalk Installed.

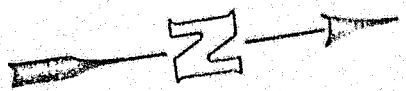
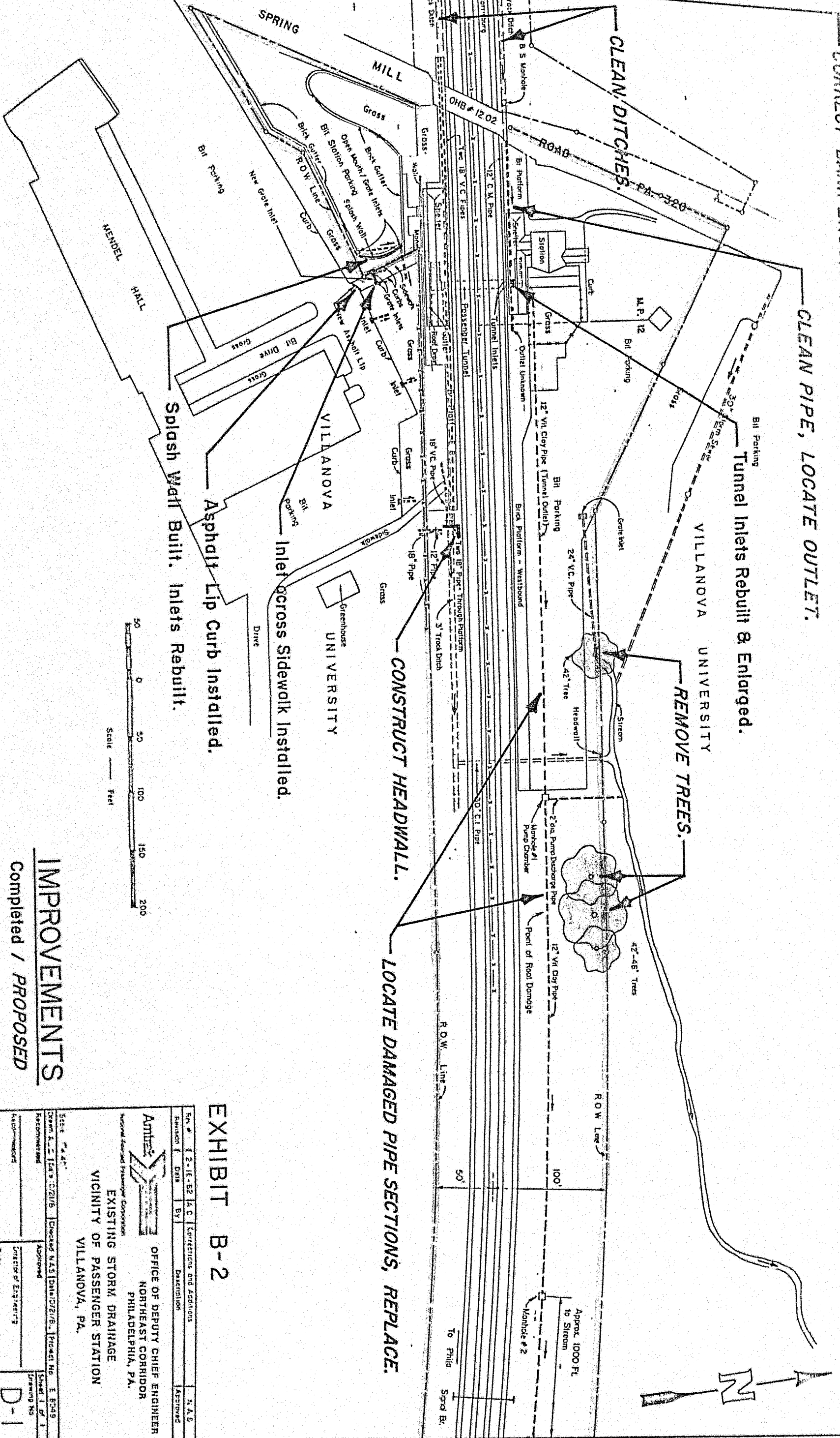
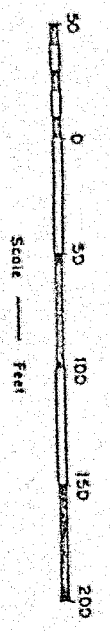


EXHIBIT B-2

Rev #	Date	By	Description	Accepted
1	12-16-82	K.C.	Corrections and Additions	K.A.S.

Antirex
 National Flood Protection Corporation
 OFFICE OF DEPUTY CHIEF ENGINEER
 NORTHEAST CORRIDOR
 PHILADELPHIA, PA.
 EXISTING STORM DRAINAGE
 VICINITY OF PASSENGER STATION
 VILLANOVA, PA.

Scale: 1" = 40'
 Sheet No. 1 of 1
 Drawing No. D-1
 Director of Engineering
 Date

IMPROVEMENTS
 Completed / PROPOSED

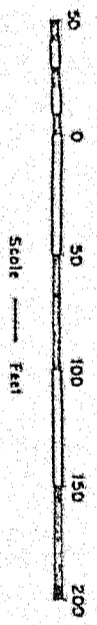
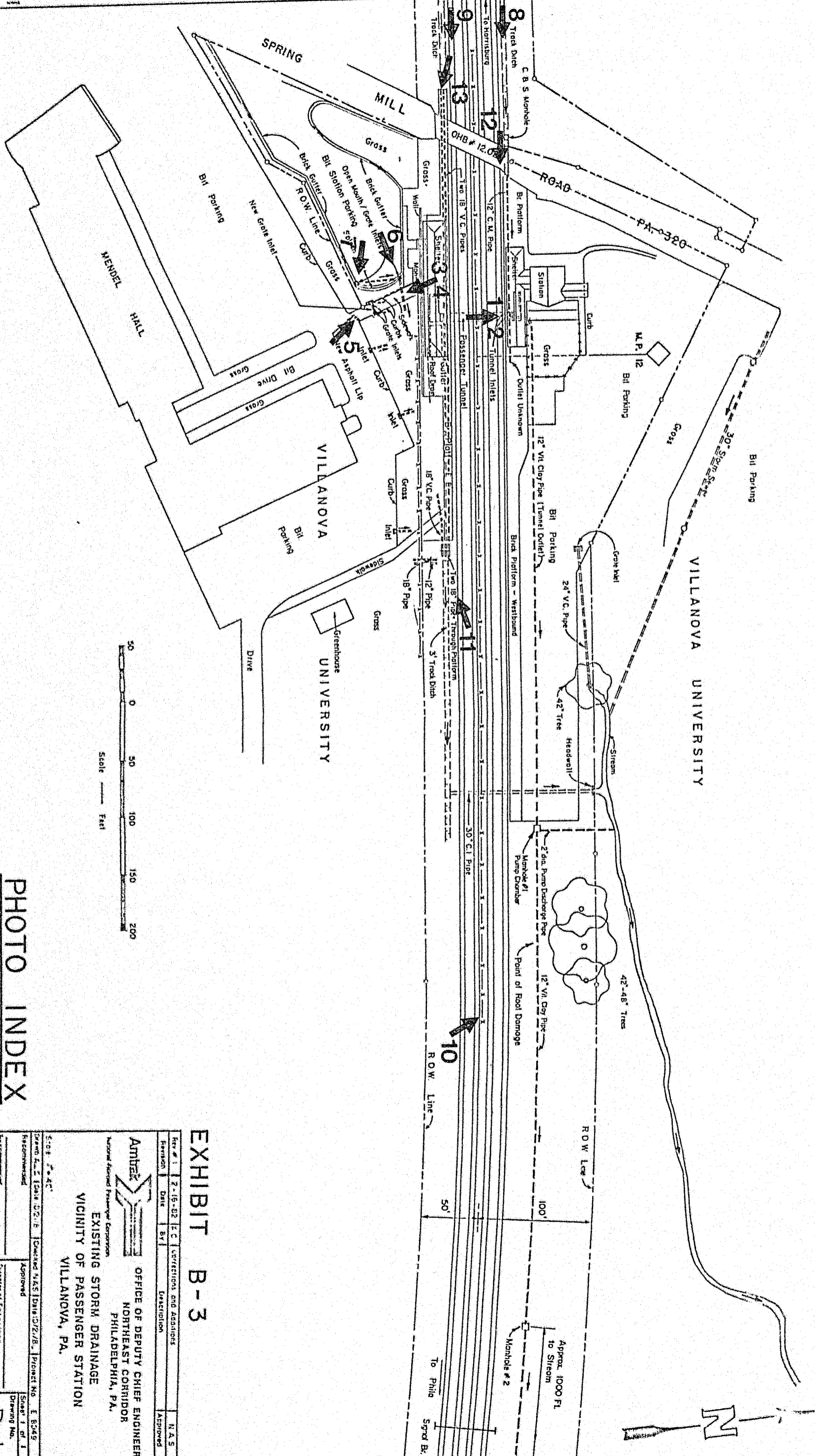


PHOTO INDEX

EXHIBIT B-3

Rev # 1	2-16-82	R.C.	Corrections and Additions	R.A.S.
Revision	Date	By	Description	Approved

Amtek
 National Federal Passenger Corporation
 OFFICE OF DEPUTY CHIEF ENGINEER
 NORTHEAST CORRIDOR
 PHILADELPHIA, PA.
 EXISTING STORM DRAINAGE
 VICINITY OF PASSENGER STATION
 VILLANOVA, PA.

Scale: 1" = 40'	Drawn: E.L. [unclear]	Checked: S.K.S. [unclear]	Date: 12/2/82	Project No: E-8048
Recommended:	Approved:	Director of Engineering:	Date:	Sheet 1 of 1
Discussed:	Director of Engineering:	Date:		Drawing No. D-1

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P.O. BOX 3265, HARRISBURG, PA 17120
APRIL 22, 1982

MONITOR: COMMISSIONER JOHNSON

In re: C-80011839

(See attached list)

Villanova University
vs.

National Railroad Passenger Corporation (Amtrak), Consolidated Rail Corporation,
Southeastern Pennsylvania Transportation Authority (SEPTA), Pennsylvania
Department of Transportation, County of Delaware and Radnor Township.

N O T I C E

This letter is to inform you that a further hearing on the above captioned case will be held Wednesday, June 2, 1982 at 10:00 a.m., in Room 1306, Philadelphia State Office Building, Broad and Spring Garden Streets, Philadelphia, Pennsylvania.

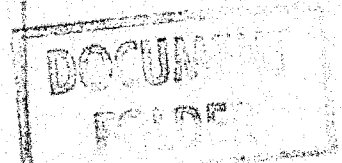
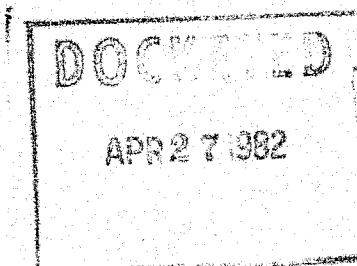
We are enclosing herewith, a list of questions, prepared by our Bureau of Transportation, indicating information to be developed at the hearing, along with other relevant testimony.

Each party is requested to submit testimony upon the report of Pennsylvania Department of Transportation and of National Railroad Passenger Corporation, submitted in compliance with the Commission's Orders of June 19, 1981, on the subject crossing on State Highway Route 320 (Springmill Road), Radnor Township, Delaware County.

If any party intends to offer prepared written testimony, such testimony must be served upon each participant of record no less than seven (7) days prior to this hearing.

The hearing will take place notwithstanding any Motions to Dismiss or similar pleadings that may have been filed by any of the parties. If not ruled upon by the time of hearing, any such pleadings are to be considered held for consideration along with the matter on the merits. If you have filed such a Motion you should be prepared, in addition to presenting argument on the Motion, to present any substantive facts relevant to you or your client's position indicated in the questions and procedures.

You are advised that if you fail to appear at the hearing, the hearing will proceed without you. In that event, it is possible that you or your client will have issues determined against you and that you might be assigned positive duties or be required to pay money and will have waived any objection thereto.



Administrative Law Judge Martin R. Fountain will be the presiding officer in this case. Judge Fountain's telephone number is (215) 238-3735. His address is Room 1302, Philadelphia State Office Building, Broad and Spring Garden Streets, Philadelphia, Pennsylvania 19130.

If you intend to file exhibits, please be advised that three copies of all hearing exhibits to be presented into evidence must be submitted to the Reporter and an additional copy should be furnished to the presiding officer and each party of record.

William Shane, Chief
Administrative Law Judge

Enclosure

cc: Judge Fountain
Law Bureau
Bureau of Rail Transportation
Mr. Bramson
Ms. Lawrence
Ms. Crouse
File Room

C-80011839 - Parties of Record:

James W. Patterson, Esquire
Harper, George, Buchanan & Driver
1200 Western Savings Bank Building
Philadelphia, Pennsylvania 19107
(for Villanova University)

Ward T. Williams, Chief Counsel
Pennsylvania Department of Transportation
521 Transportation & Safety Building
Harrisburg, Pennsylvania 17120

Edward H. Huss, Staff Counsel
Southeastern Pennsylvania Transportation Authority
2028 PSFS Building
12 South 12th Street
Philadelphia, Pennsylvania 19107

W. Scott Armentrout, Assistant
General Counsel
National Railroad Passenger Corporation
400 North Capitol Street, N.W.
Washington, D.C. 20001

Francis P. Connors, Solicitor
County of Delaware
Courthouse
Front Street and Media Avenue
Media, Pennsylvania 19063

Eugene H. Evans, Solicitor
Township of Radnor
131 West Market Street
West Chester, Pennsylvania 19380

Joel E. Mazor, Commerce Counsel
Consolidated Rail Corporation
1138 Six Penn Center Plaza
Philadelphia, Pennsylvania 19104

Richard S. Herskovitz, Assistant Counsel
Pa. P.U.C., Law Bureau
P. O. Box 3265
Harrisburg, Pennsylvania 17120

Charles Guerney, Esquire
301 Iven Avenue
Wayne, Pennsylvania 19087
(for Township of Radnor)

Party in interest:

Ruth Tallmadge
Suburban Publications
134 North Wayne Avenue
Wayne, Pennsylvania 19087

1. Pennsylvania Department of Transportation (PennDOT) shall submit testimony describing in detail its report prepared in compliance with the Commission's order of April 28, 1981.
2. Pennsylvania Department of Transportation shall submit testimony describing its recommendation as a result of its report and what portion of the work and cost thereof that it will agree to bear.
3. National Railroad Passenger Corporation (Amtrak) shall submit testimony describing in detail its report prepared in compliance with the Commission's order of April 28, 1981.
4. Amtrak shall submit testimony describing its recommendation as the result of its report and what portion of the work and cost thereof that it will agree to bear.
5. Villanova University shall submit testimony commenting on PennDOT's report and as a result thereof what improvement would the University recommend and what portion of the work and cost of the improvement would it agree to bear.
6. Villanova University shall submit testimony commenting on Amtrak's report and whether in its opinion Amtrak's recommendation is adequate and satisfactory; and whether, in its opinion, the existing lighting in the pedestrian tunnel is adequately and satisfactory; and what portion of the work and cost of Amtrak's proposal would it agree to bear.
7. Southeastern Pennsylvania Transportation Authority, County of Delaware and Radnor Township each shall submit testimony commenting on PennDOT's report and Amtrak's report and if an improvement is ordered by the Commission what portion of the cost thereof it would agree to bear.
8. Query as to whether any parties, respondent or any party, desires to submit any additional relevant testimony.

APPEARANCE SHEET

DOCKET NO. C-80011839

CASE NAME Villanova University vs. National Railroad Passenger Corp. (Amtrak), etc.

HEARING LOCATION Philadelphia, PA.

HEARING DATE June 2, 1982

ALJ Martin R. Fountain

HEARING REPORT

CHECK THOSE BLOCKS WHICH APPLY:

Hearing concluded YES

Record Closed YES

Briefs to be filed NO

Further hearing NO

Estimated add'l days _____

BENCH DECISION NO

REMARKS: _____

RECEIVED

JUN 04 1982

Office of the A. L. J.
Public Utility Commission

Names and addresses of parties or counsel of record
Please Print Clearly
Incomplete Information May Result in Delay of Process

NAME	ADDRESS	APPEARING FOR
Harper & Driver By: Harry R. McDowell	1200 Western Savings Bank Bldg City: Phila State: PA Zip: 19107	Villanova University
HERBERT G. ZAHN	522 TRANSP & SAFETY BLDG City: HSBG State: PA Zip: 17120	PENNDOT
JOEL E. MAJOR	1148 G. Wood Center City: PHILADELPHIA State: PA Zip: 19104	NATIONAL RAILROAD PASSENGER CORP.
Eugene H. Fennell	135 W. Market St City: West Chester State: PE Zip: 19383	Railroad Trust

Check this box if additional parties or counsel of record appear on back.



RAY E. SWEIGART
Reporter



JUN 15 1982
RHC/mo

RECEIVED
SECRETARY'S OFFICE
PUBLIC UTILITY
COMMISSION

JUN 15 6 01 AM '82

prc

~~Mr. Ray Sweigart
R.D. 1
Vic-San Est.
Ephrata, Pa. 17522~~

Subject: Overhead Bridge No. 12.02 Spring Mill Road,
Villanova, Pa., Pennsylvania Public Utility
Commission C-80011839

Dear Mr. Sweigart:

As required by the Pennsylvania Public Utility Commission, for the record in the above matter enclosed are three (3) copies of Exhibit #2, Drainage and Lighting Study, Villanova Station Pedestrian Tunnel.

Very truly yours,

A. E. Shaw, Jr.
A. E. Shaw, Jr., E.E.
Director Engineering

Late-filed exhibits

DOCUMENT
FOLDER