

PENNSYLVANIA PUBLIC UTILITY COMMISSION
Uniform Cover and Calendar Sheet

1. <u>REPORT DATE:</u> December 1, 1982	:	2. <u>BUREAU AGENDA NO.</u> DEC-82-ALJ-378
3. <u>BUREAU:</u> ALJ	:	
4. <u>SECTION(S):</u>	:	5. <u>PUBLIC MEETING DATE:</u> December 17, 1982
6. <u>APPROVED BY:</u> Chief ALJ William R. Shane Director: 7-1191 Supervisor:	:	
7. <u>MONITOR:</u> Comm. Johnson	:	
8. <u>PERSON IN CHARGE:</u> ALJ Fountain 8-325-2105	:	
9. <u>DOCKET NO:</u> C-80011839	:	

10. (a) CAPTION (abbreviate if more than 4 lines)
(b) Short summary of history & facts, documents & briefs
(c) Recommendation

- (a) 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.
- (b) By complaint filed January 31, 1980, Villanova University alleged that the facilities for pedestrian movement under, above and across the lines of the railroad were inadequate and dangerous and posed a serious threat to the safety of the public. Hearings were held October 7, 1980 and December 4, 1980. By Interim Order issued April 28, 1981, the parties were directed to prepare detailed studies and establish costs to resolve the alleged condition. Further hearing held June 2, 1982.
- (c) On October 13, 1982 Judge Fountain ordered certain parties to perform work and bear costs to alleviate the hazardous conditions.

Exceptions filed by: Pennsylvania Department of Transportation, November 15, 1982.

THIS CASE IS TO BE ASSIGNED TO THE BUREAU OF RAIL TRANSPORTATION TO MONITOR THIS PROCEEDING DURING THE CONSTRUCTION PHASE AND TO SUMMARIZE FINAL CONSTRUCTION COSTS.

11. MOTION BY: Commissioner Chm. Shanaman	:	Commissioner Johnson - No Commissioner Cawley - Yes
SECONDED: Commissioner Taliaferro	:	Commissioner Jones - Yes

CONTENT OF MOTION: That the Commission adopt the Exceptions of PennDOT; and that the Office of Special Assistants draft an Opinion and Order consistent with the motion.

February 7, 1983

C-80011839

Larry R. McDowell, Esquire
1200 Western Savings Bank Building
Philadelphia, Pennsylvania 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 the Commission at Public Meeting held December 17, 1982 adopted an Opinion and Order in connection with the above entitled proceeding.

An Executed Order is enclosed for your records.

Very truly yours,

Jerry Rich, Secretary

JZ
Encls.
Certified Mail
Receipt Requested

Office of Special Assistants
Office of Administrative Law Judge
Bureau of Rail Transportation
Law Bureau

Copy of Order To: See attached list to letter dated October 29, 1982.

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17120

Public Meeting held December 17, 1982

Commissioners Present:

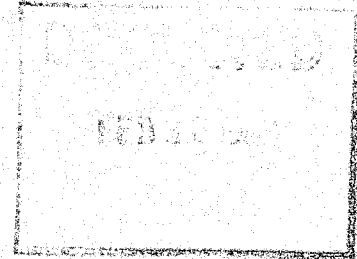
Susan M. Shanaman, Chairman
Michael Johnson, dissenting
James H. Cawley
Linda C. Taliaferro
Clifford L. Jones

Villanova University

C-80011839

v.

National Railroad Passenger
Corporation (AMTRAK), Consolidated
Rail Corporation (Conrail), South-
eastern Pennsylvania Transportation
Authority (SEPTA), Pennsylvania
Department of Transportation (PennDOT),
County of Delaware and Radnor Township.



OPINION AND ORDER

BY THE COMMISSION:

This matter comes before us on Exceptions filed by the Pennsylvania Department of Transportation (PennDOT) to the Initial Decision of Administrative Law Judge (ALJ) Martin R. Fountain dated October 13, 1982. PennDOT takes exception only to the rejection by the ALJ of its recommendation that the ALJ provide for inspection of a bridge associated with this proceeding.

As the ALJ observes, at page 9 of the Initial Decision, this complaint relates centrally to pedestrians crossing the tracks at Villanova University. One route the pedestrians take is over the bridge in question, which carries Spring Mill Road over the tracks. The pedestrians appear to present no danger to the bridge but the bridge is approximately 100 years old and might present a danger to the pedestrians. The bridge is used jointly by pedestrians and by motor vehicles.

We agree with PennDOT that an in-depth inspection of the bridge, to determine its load-carrying capabilities, is necessary and that the railroad is best able to make such an inspection at this time. We also note that PennDOT is willing to provide laboratory services and traffic control.

The ALJ stated that an inspection of the bridge would be desirable but stopped short of ordering such an inspection. Initial

Decision, p. 9. We disagree with the ALJ on this point but adopt his Initial Decision in all other respects; THEREFORE,

IT IS ORDERED:

1. That the National Railroad Passenger Corporation, at its initial cost and expense, prepare, and submit to the Commission with copies to interested parties, a bridge inspection report sufficient for an evaluation of whether the bridge carrying Spring Mill Road should be posted for a load limit.

2. That the Pennsylvania Department of Transportation, in cooperation with the National Railroad Passenger Corporation, at its sole cost and expense, immediately furnish all material and do all work necessary to intercept the surface water from the southern highway approach to the structure finding its way into the tunnel, by some suitable means, such as, the installation of inlets and pipes along the highway, and discharge the water at a suitable location away from the tunnel, preferably to the east of the tunnel.

3. That the National Railroad Passenger Corporation, if it has not already done so, at its sole cost and expense, furnish all material and do all work necessary to remove the trees suspected of causing root damage to the 12" drainage pipe and locate and replace sections of the pipe which may have failed with age and may not be functioning properly.

4. That upon completion of the work ordered to be performed in Paragraph No. 1, the Pennsylvania Department of Transportation and the National Railroad Passenger Corporation report to this Commission the status of flooding in the tunnel during periods of heavy rain in the area.

5. That if subsequent to the completion of work ordered to be performed in Paragraph 1, the flooding in the tunnel still persists, National Railroad Passenger Corporation, at its sole cost and expense, take suitable steps to correct the problem, such as, the installation of a bigger sump pump in Manhole No. 1, or outlet the 12" pipe at some intermediate point, etc.

6. That the Pennsylvania Department of Transportation, on or about July 1st of every year, inform this Commission concerning the status of progress it may have made towards the replacement of the structure involved in this proceeding.

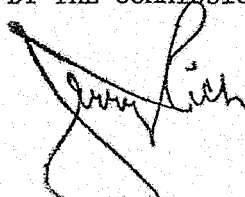
7. That the National Railroad Passenger Corporation, at its sole cost and expense, continue to maintain the tunnel in a safe and satisfactory condition.

8. That the National Railroad passenger Corporation bear all of the costs incurred by it in furnishing material and performing work in accordance with the previous orders of the Commission issued in this proceeding.

9. That the Pennsylvania Department of Transportation bear all of the costs incurred by it in furnishing material and performing work in accordance with the previous orders of the Commission issued in this proceeding.

10. That the record in the above-captioned proceeding docketed at C-80011839 is to remain open.

BY THE COMMISSION,

A handwritten signature in black ink, appearing to read "Jerry Rich", written over a large, stylized, looped scribble.

Jerry Rich
Secretary

(SEAL)

ORDER ADOPTED: December 17, 1982

ORDER ENTERED: **FEB 7 1983**

RECEIVED

FEB 17 1983

SECRETARY'S OFFICE
Public Utility Commission

This 15th day of February, 1983,
the undersigned hereby acknowledges receipt of

FOUR COPIES OF ORDER

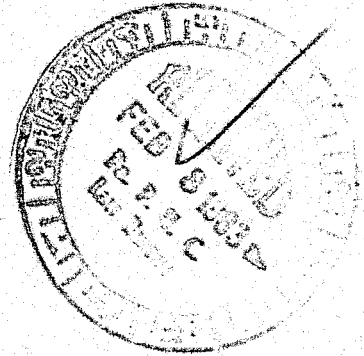
rendered by the Commission in Docket No. C-80011839

Under date of December 17, 1983 and accepts service
in behalf of PENNSYLVANIA DEPARTMENT OF TRANSPORTATION



Herbert G. Zahn
Assistant Counsel





This 8th day of FEB. 1983
the undersigned hereby acknowledges receipt of

COPY OF ORDER

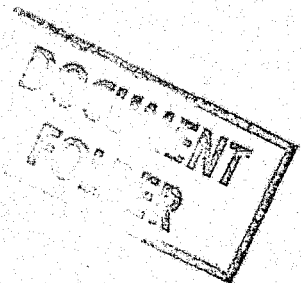
rendered by the Commission in Docket No. C-80011839

Under date of December 17, 1982 and accepts service

in behalf of Richard S. Henskowitz, Assistant Counsel

Fa. P.U.C. - Law Bureau

R.S. Henskowitz



RUBIN, QUINN & MOSS

ATTORNEYS AT LAW
1800 PENN MUTUAL TOWER
510 WALNUT STREET
PHILADELPHIA, PA. 19106
(215) 925-8300

RECEIVED

APR 4 1983

SECRETARY'S OFFICE
Public Utility Commission

ALEXANDER N. RUBIN
OSTROFF & LAWLER

ALEXANDER N. RUBIN, JR.	WILLIAM P. QUINN
JERROLD V. MOSS	MALCOLM L. LAZIN*
JAMES W. PATTERSON	STEPHEN H. GREEN
DENIS JAMES LAWLER	RICHARD M. IMPERATORE
ROBERT P. STYLE	NICHOLAS J. SCAFIDI
ROBERT SZWAJKOS	DON P. FOSTER
ERIC M. HOCKY	MARY ELLEN O'LAUGHLIN
EDWARD L. CIEMNIECKI**	ROBERT LAPOWSKY**
ROBIN L. SCHLAIFER**	MATTHEW D'ANNUNZIO

*ALSO ADMITTED TO D. C. BAR
**ALSO ADMITTED TO N. J. BAR

March 31, 1983

W. Scott Armentrout
Associate General Counsel
National Railroad Passenger Corporation
400 North Capitol Street, N.W.
Washington, DC 20001

Re: Villanova University v. National Railroad Passenger Corporation, et al.; Pennsylvania Public Utility Commission Docket No. C-80011839

Dear Mr. Armentrout:

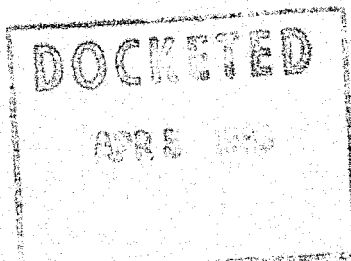
As you may recall, the above-captioned proceeding resulted in an Order entered by the Public Utility Commission on February 7 of this year requiring, among other things, that the National Railroad Passenger Corporation complete certain work necessary to improve the condition of the passenger tunnel at the Villanova Station and to maintain it in passable condition. The Commission's Order also provided that the record in the proceeding was to remain open.

I have enclosed herewith copies of three letters from Dr. Richard A. Neville, Vice President for Student Life of Villanova University, the first addressed to your maintenance department, and the later letters addressed to the chief engineer of the Southeastern Pennsylvania Transportation Authority. As you can see, the problem which precipitated the University's complaint to the P.U.C. persists.

Before we seek to re-involve the Public Utility Commission to fashion a better solution to this persistent problem (and perhaps in lieu of any Commission involvement), may I ask that you attempt to obtain some appropriate action from your engineering and/or maintenance department and advise me, within a reasonable period of time, whether and when remedial action will be taken. In all candor, a cure to the problem is long overdue and I would hope that you can use your good offices to generate an end to the difficulty.

Very truly yours,

James W. Patterson
JAMES W. PATTERSON



JWP:tal
Enclosures

cc: ~~Dr.~~ Richard A. Neville, Vice President for Student Life
Jerry Rich, Secretary-PUC
Honorable Martin R. Fountain, Administrative Law Judge

villanova
university

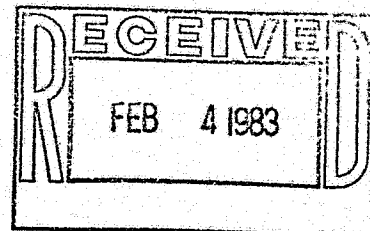
VILLANOVA, PENNSYLVANIA 19085

Villanova

Office of the Vice President
for Student Life

Direct Dial Number: (215) 645-4550

February 3, 1983



Maintenance Department
AMTRAK
National Railroad Passenger Corporation
1617 J.F. Kennedy Blvd.
Philadelphia, Penna. 19103

Re: Debris in tunnel running under
AMTRAK tracks located on Villanova's campus.

Gentlemen:

It has come to my attention that the tunnel leading under the AMTRAK tracks which run through Villanova's campus is becoming filled with debris -- soggy piles of leaves, old newspapers, etc. I am concerned that with the approach of the Spring season and rainy weather the drains will be clogged with this matter and water will again be knee deep down there causing unhealthy and hazardous conditions for our students.

I would appreciate your arranging to have the tunnel cleaned out, as soon as possible, thereby alleviating this situation.

Thank you.

Sincerely,

Richard Neville

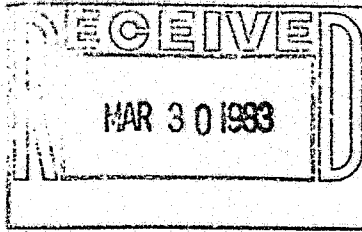
Dr. Richard A. Neville
Vice President for Student Life

RAN/rkn

cc: James W. Patterson, Esq.
A.B. Smythe, Asst. Chief Engineer.
AMTRAK
Mr. Tom Trucks

villanova
university

VILLANOVA, PENNSYLVANIA 19085



Office of the Vice President
for Student Life

Direct Dial Number: (215) 645-4550

March 25, 1983

Mr. C.L. Stanford
Chief Engineer Southeastern Penna.
Transportation Authority
200 West Wymoning Avenue
Philadelphia, Penna. 19140

Re: Pedestrian Tunnel - Villanova Station

Dear Mr. Stanford:

I am writing to acquaint you again with the issue of the flooding of the tunnel under your station at Villanova.

Because of the heavy rains on Monday morning, March 21, 1983, I went to the tunnel at 9:15 A.M. to inspect it for potential flooding. At that time it was passable but starting to flood due to stopped-up drains.

The source of the water was from the brick walls -- about seven feet up the wall from the ground. The water was gushing out sufficiently to take a shower. It was only a matter of time until the tunnel flooded because the drains could not take the volume of water.

I tried to investigate the source of "this spring" coming from the wall (that side facing one as descent is made on the stairway on the North side of the tracks). There was a substantial flow of water coming from the rainspouts on the station on the North side. My guess is that the rainspouts are clogged and consequently now, non-functional.

In addition, the drain on the station platform just East of the stairs was also not functioning. I think this was the source of some of the water coming from the "wall shower".

Mr. C.J. Stanford
Chief Engineer Southeastern Penna.
Transportation Authority

- 2 -

March 25, 1983

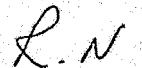
When I went back to the tunnel in the late morning, a maintenance crew was pumping out the tunnel and a Radnor Police Officer was present to prevent anyone from crossing the tracks.

I appreciate the maintenance men coming to correct the problem but the problem is predictable. What is needed is regular inspection and cleaning of those drains. I have yet to see evidence that this is being done despite the P.U.C.'s directive to that effect.

The Radnor Officer was helpful in disallowing the crossing of the tracks. However, the students had to cross the Route 320 bridge which is in itself a serious hazzard since there are no sidewalks.

Please, promptly arrange to have the tunnel inspected and drains cleaned on a regular basis to forestall potential dangers to your passengers and our students.

Sincerely,



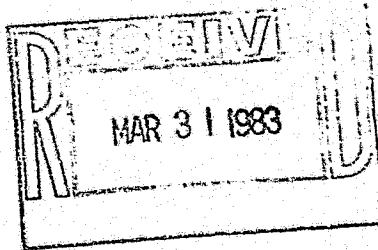
Dr. Richard A. Neville
Vice President for Student Life

RAN/rkn

cc: James W. Patterson, Esq.
Mr. Tom Trucks, Dir. of Maintenance

villanova
university

VILLANOVA, PENNSYLVANIA 19085



Office of the Vice President
for Student Life

Direct Dial Number: (215) 645-4550

March 28, 1983

Mr. C.L. Stanford
Chief Engineer Southeastern Penna.
Transportation Authority
200 West Wyoming Avenue
Philadelphia, Penna. 19140

Re: Pedestrian Tunnel - Villanova University

Dear Mr. Stanford:

It has come to my attention that your maintenance department had to once again pump out the tunnel under the tracks at Villanova Station on Monday morning, March 28, 1983. I said in my previous letter (dated March 25, 1983) that this situation needs to be corrected permanently as directed by the P.U.C. Commission.

Sincerely,

Dr. Richard A. Neville
Vice President for Student Life

RAN/rkn

cc: James W. Patterson, Esq.
Mr. Tom Trucks, Dir. of Maintenance

July 11, 1985

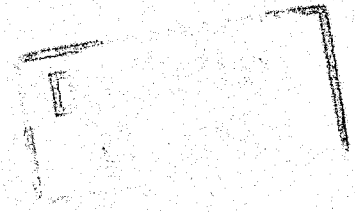
C-80011839

SUBJECT: Outstanding Cases

TO: John Alford
Director of Operations

FROM: Cheryl Walker Davis, Director
Office of Special Assistants

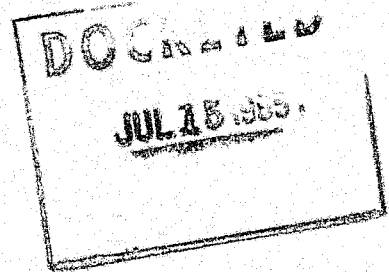
CWD



After a careful check of the list of assignments shown by the computer system to be outstanding or otherwise uncompleted, I have concluded the following:

Active Cases

- P-830452
- P-830453
- M-FACG8004
- M-78050055
- C-812449
- C-78100568



Z-8205643 was closed by Secretarial letter of 11/2/83
 M-FACG8301 assignment was mooted by the simultaneous
 GCR-5 determinations
 P-00000101 and I-00000272 were mooted by 1307(f)
 C-823150 will be entered within next few days
 C-823363 requires no further action by this Office due
 to Court decision
 R-80021082 is moot

~~Closed Cases~~ (i.e. OSA has completed its assignment) →

Entered Order Dates

- | | |
|------------|----------|
| R-811453 | 11/21/84 |
| R-832469 | 6/4/84 |
| C-833671 | 7/11/85 |
| R-811651 | 5/6/82 |
| R-811510 | 2/27/85 |
| R-80031114 | 8/25/81 |
| I-830375 | 5/9/84 |
| I-79110324 | 11/3/83 |
| I-77110287 | 2/17/83 |

Closed Cases (Cont.)

C-833453

C-833448

C-823154

C-822955

C-812467

" 417

" 405

" 404

" 402

" 401

" 400

" 399

" 398

" 397

" 394

~~" 393~~

" 384

C-80011839

C-78080459

6/8/83

12/20/83

7/15/83

12/1/83

12/29/82



2/7/83

6/26/84

If you have any inquiries or concerns regarding this information, please do not hesitate to contact me.

CWD:dd



BUREAU OF RAIL TRANSPORTATION
JUL 17 1985
RAIL TRANSPORTATION

July 15, 1985

Mr. R. A. Peteritas, Director
Bureau of Rail Transportation
P. O. Box 3265
Harrisburg, Pa. 17120

Re: OH 12.02 Spring Mill Road
Villanova, Pa.
PaPUC C-80011839

RECEIVED
JUL 22 1985
SECRETARY'S OFFICE
Public Utility Commission

Dear Mr. Peteritas:

This is to advise you that Amtrak, in accordance with the Commission's order in Docket C-80011839, has inspected the bridge carrying Spring Mill Rd. over Amtrak at Villanova, Pa.

Amtrak has now completed the analysis of the structure. The analysis reveals that certain diagonal members of the wrought iron truss govern the capacity of the bridge. According to the analysis, the Operating Rating of the bridge is zero (0).

Since the analysis indicates a very serious problem and the bridge is heavily used by trucks which cannot easily get across the railroad without going very far out of their way, we asked PennDOT to verify the allowable stresses we used in the analysis, through laboratory testing. The allowable stresses used were 10,000 psi for Inventory Rating and 14,600 psi for Operating Rating, per latest AASHTO guidelines. The results of the testing are expected no later than July 31, 1985.

Amtrak's inspection report will be formally submitted to the Commission after we receive the results of the tests. The report will recommend the bridge be posted for a load limit respectful of the testing, analysis and engineering judgement.

Very truly yours,

J. N. Michel
J. N. Michel, P. E.
Senior Director
Engineering Design

RHC/jt

RECEIVED
JUL 25 1985

URGENT
FOLDER

ORIGINAL

Amtrak

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

FILE: PA12.02-0256

OCT 28 1985

RE: OH 12.02 - Spring Mill Road, Villanova, PA
PA P.U.C. C-80011839

RECEIVED

OCT 2 1985

SECRETARY'S OFFICE
Public Utility Commission

Dear Mr. Rich:

In accordance with the Public Utility Commission order in Docket C-80011839, Amtrak submits, herewith, three (3) copies of a detailed inspection report of our findings of the condition of the Spring Mill Road bridge over the railroad in Villanova, PA.

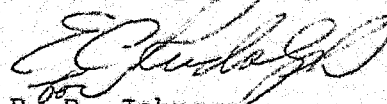
Briefly, the bridge, which was erected sometime around 1914, is in fair condition. The concrete filled grid deck is deteriorating along with other members of the bridge. The roadway approaches the bridge on both sides at about an 8.5% grade. The structure is narrow, allowing two (2) cars to just pass each other. There are no sidewalks. The bridge is located in close proximity to Villanova University and because it is narrow and does not have sidewalks, it presents a hazardous condition to students crossing the railroad on the bridge.

Amtrak has analyzed the structure and, based on the results of testing the truss material for strength and engineering judgment, we recommend the bridge be posted for a 15 Ton load limit until it is replaced with a new structure.

We understand the effect the posting will have on local and through traffic. If PennDOT or other parties wish to make further recommendations, Amtrak is willing to meet and discuss them at their convenience.

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

Very truly yours,



R. D. Johnson
Assistant Chief Engineer
Design and Construction
Project Manager NECIP

DOCUMENT
FOLDER

Attachment: Detailed Bridge Inspection Report

cc: Parties of Record per attached list

PARTIES OF RECORD

Dan Donovan, Esquire
Consolidated Rail Corporation
1138 Six Penn Center Plaza
Philadelphia, PA 19104

James W. Patterson, Esquire
Harper, George, Buchanan & Driver
Attorney for Villanova University
1200 Western Savings Bank Building
Broad and Chestnut Streets
Philadelphia, PA 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 3rd Street
Media, Pennsylvania 19063

Edward H. Huss, Staff Counsel
Southeastern Pennsylvania Transportation Authority
130 South 9th 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, PA 19130

Mr. Herbert G. Zaha
Assistant Counsel
Office of Chief Counsel
Penn DOT
T&S Building
Harrisburg, PA 17120

DETAILED INSPECTION REPORT
FOR THE BRIDGE CARRYING
SPRING MILL ROAD
OVER THE TRACKS OF THE
NATIONAL RAILROAD PASSENGER CORPORATION
IN
RADNOR TOWNSHIP
DELAWARE COUNTY, PENNSYLVANIA

PA. PUBLIC UTILITY COMMISSION
DOCKET C-80011839

PREPARED BY THE OFFICE OF
THE CHIEF ENGINEER
AMTRAK
PHILADELPHIA, PA.

JUNE, 1985

DETAILED INSPECTION REPORT
FOR THE BRIDGE CARRYING
SPRING MILL ROAD
PA PUBLIC UTILITY COMMISSION
DOCKET C-80011839

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- IV. Detailed Close Up Inspection
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 - C. Floor Beams
 - D. Trusses
- V. Rating
- VI. Conclusion and Recommendations

SUMMARY

The bridge carrying Spring Mill Road over Amtrak in Radnor Township, Delaware County, Pennsylvania, is a single span, thru truss bridge erected sometime before 1914. The bridge deck was reconstructed by the Pennsylvania Railroad in 1945.

Spring Mill Road, Traffic Route 320 is a major highway, carrying a large volume of traffic. Because other bridges over or under the railroad have height or weight restrictions which Spring Mill Road does not have, it is heavily used by trucks.

The bridge appears to be in fair condition. The stone masonry abutments are in good condition while the concrete filled steel grid deck and steel floor beam exhibit rusting and some corrosion. The cast iron and wrought iron truss appears in fair condition except for certain vertical posts which have cracks extending from the outside flange, part way through the web; these members, it should be noted, are compression members.

The structure was analyzed according to AASHTO's Manual for Maintenance Inspection of Bridges, 1983. Using the suggested allowable stresses for Wrought Iron resulted in a rating of zero (0) for certain diagonal members of the truss. Since the truss obviously was functioning under continual heavy loadings, a sample piece of wrought iron diagonal was tested to determine its actual allowable stress. The testing revealed significantly higher yield stresses which in turn, allowed us to use higher allowable stresses in the analysis than suggested by AASHTO. The results now show that the bridge has an Inventory rating of H-12.5 and an Operating rating of H-31.9.

Based on our analysis, bridge characteristics and usage, and engineering judgment, we recommend the bridge be posted for a 15 Ton load limit. Further, we recommend the bridge be maintained for the posted limit until such time as the bridge is replaced with a new structure, which we also recommend.

INTRODUCTION

The bridge which is the subject of this detailed, close-up inspection carries Spring Mill Road, Traffic Route 320, over four (4) tracks of the National Railroad Passenger Corporation, Amtrak, at the Villanova train station, Villanova, Pa. The bridge location is shown on the Location Map, page 3 of this report.

Spring Mill Road is a main north-south traffic route which intersects with the Schuylkill Expressway, Route 30 (Lancaster Pike), Route 3 (West Chester Pike), Route 1 (Township Line Road), the Baltimore Pike, I-95, and other roads. As a result, it has a very high traffic volume which includes an appreciable percentage of trucks. The bridge is not currently posted for a restricted weight limit.

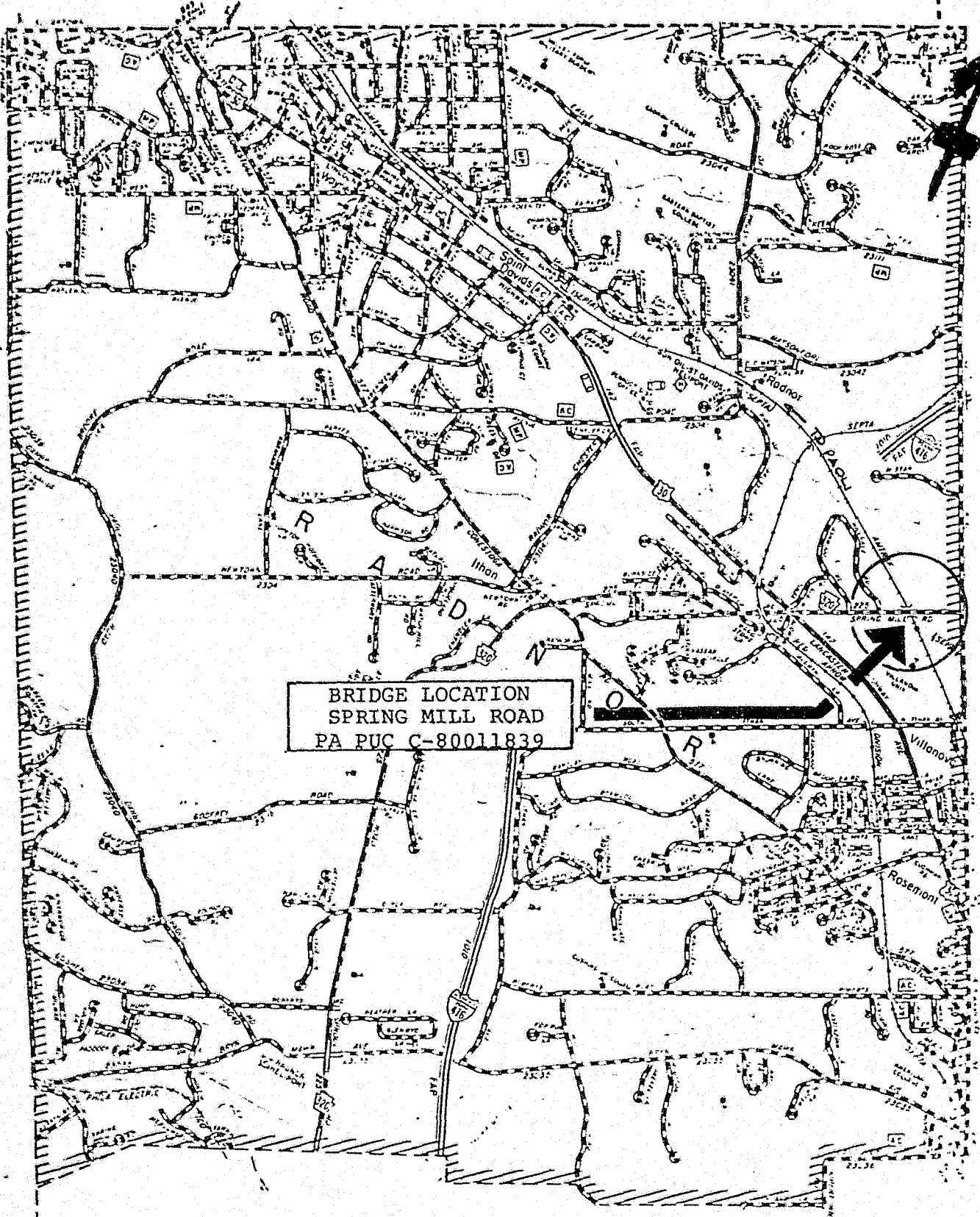
The Public Utility Commission's interest in the Spring Mill Road bridge stems from the complaint by Villanova University alleging inadequate and dangerous conditions for pedestrian movement under, above, and across the railroad. The Commission conducted several hearings addressing the complaint and issued orders for parties to the complaint to act to alleviate the flooding of the pedestrian tunnel and to determine the feasibility of adding a sidewalk to the Spring Mill Road bridge. Pursuant to an Initial Decision by Administrative Law Judge Fountain, dated October 13, 1982, PennDOT took exceptions to Judge Fountain not ordering Amtrak to inspect the bridge. Subsequently, the full Commission reviewed the Initial Decision and on February 7, 1983, adopted it in all respects except for lack of an inspection. The Commission ordered Amtrak to perform the inspection and submit a report sufficient for an evaluation of whether the bridge carrying Spring Mill Road should be posted for a load limit.

The following report discusses Amtrak's findings of the detailed inspection and presents recommendations for the present and future use of the bridge.

C H E S T E R C O U N T Y

M O N T G O M E R Y C O U N T Y

N E W T O W N S H I P



BRIDGE LOCATION
 SPRING MILL ROAD
 PA PUC C-80011839

M A R P L E H A V E R F O R D T O W N S H I P

RADNOR
 FIRST CLASS TOWNSHIP
 POP 28,845

DESCRIPTION

The bridge carrying Spring Mill Road, Traffic Route 320, over Amtrak at Villanova, Pa., is a single span thru truss bridge erected sometime before 1914. The bridge which is on a 63° 46' skew to the railroad, measures 72' 9" long with 20'-10" between centerline of trusses; the clear roadway between curbs is 18'-6".

In 1944, the Philadelphia Terminal Division of the Eastern Region of the Pennsylvania Railroad prepared plans to reconstruct the deck of the existing bridge. Exhibit A-1 in the Appendix is a copy of the plan, reference number 13953, dated December 7, 1944. The plan called for new steel floor beams and a concrete filled grid deck. The bottom chord of the truss was encased in concrete at the same time.

Picture 1, page 6, shows the east truss looking up from the passenger platform. The arch ring which is seen in the picture, no longer acts as part of the truss.

Spring Mill Road approaches the bridge on an 8.4% grade from the north and an 8.4% grade from the south. Both approaches narrow in width as they approach the bridge.

There are no sidewalks on the bridge nor are there sidewalks along either side of the roadway approaches to the bridge.

Amtrak inspected the bridge jointly with PennDOT in the fall of 1982 and again, by itself, on Tuesday, May 7, 1985. The latest inspection was performed from the platform of a rail-highway, high-reach truck that enabled Amtrak to access the underside and outside faces of the bridge. The structure was checked to verify that the reconstruction performed in 1945 was performed according to the plan in the file. The floor beams, deck, trusses and other elements were checked for deterioration and signs of distress. The findings were recorded photographically to be included in this inspection report.

DETAILED CLOSE UP INSPECTION

ABUTMENTS

The stone masonry abutments supporting the single span thru truss bridge appear to be in good condition. Amtrak has no plans which show the abutments but it is apparent they are gravity type abutments.

Picture 1, page 6, shows the upper portion of the south abutment and the east corner of the north abutment.

The inspection of the abutments revealed no signs of any distress or deterioration to cause concern for the safety of the structure.



1. East Truss



2. West truss, north end, disconnected arch ring
and spalled concrete.

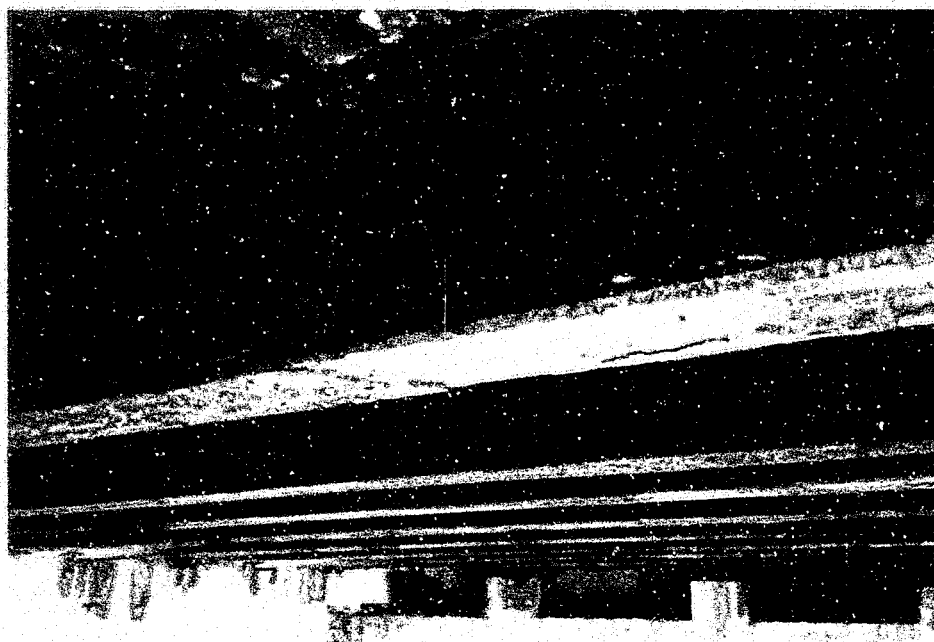
BRIDGE DECK

In 1945, the Pennsylvania Railroad reconstructed the deck of the Spring Mill Road bridge. The existing deck was replaced with a concrete filled 3" I-Beam Loc armored slab. Exhibit A-1, the plan for the reconstruction of the deck, shows the 3" concrete filled grating on the top flange of the floor beams.

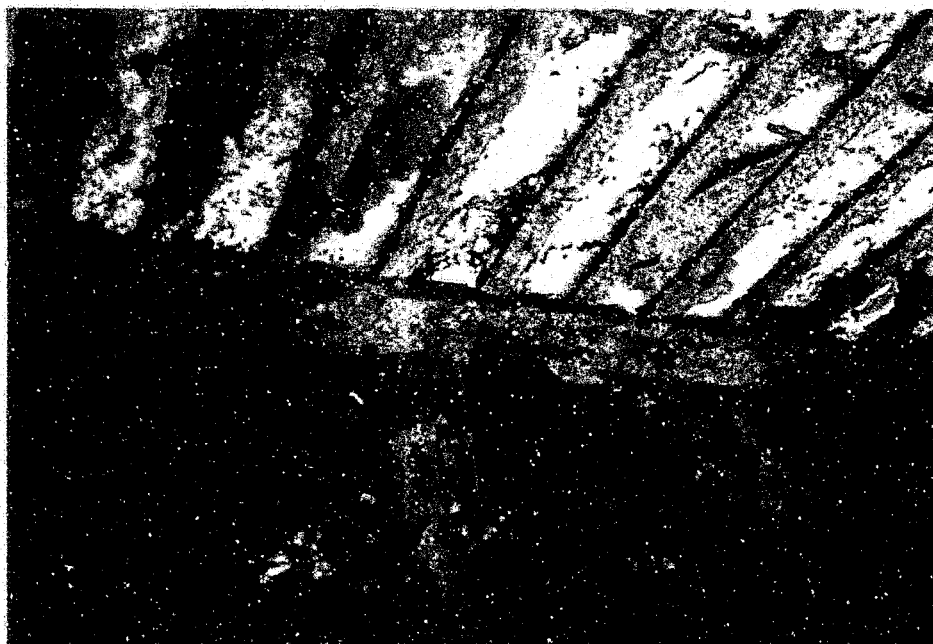
Picture 4, page 8, of the underside of the deck, shows the rust that appears on the underside of the bearing bars of the grating. The concrete between the bearing bars can be seen where the thin metal strips used to close the bottom of the grating have rusted away.

The concrete appears generally in fair to good condition except at a few isolated areas where the concrete has deteriorated and fallen out from between the bars. The result, of course, is the appearance of a hole thru the deck.

On the surface, PennDOT has resurfaced the roadway and covered the concrete filled grating. There is no way, except to remove some of the blacktop, to inspect the original surface of the deck.



3. Floor Beams



4. Underside of concrete filled steel grid floor and top flange of supporting floor beams.

FLOOR BEAMS

The steel floor beams installed with the new deck in 1945 are a mixture of 15" deep I beams that weight 70#/lf and 14WF beams that weigh 53#/lf. These beams were placed on the top of the bottom chord of each truss before the chord was encased. Pictures 3 and 4, page 8, show the floor beams with the concrete filled grid deck. The top flange of the floor beams exhibit a moderate amount of corrosion due to water and de-icing chemicals which find their way through the deck. The bottom flanges and webs are rusted but there is no appreciable loss of section to these elements. The ends of the floor beams where they bear on the truss can be seen in some of the other pictures in this report. In Picture 6, page 10, you can see how the top flange was cut for the diagonals and counters of the truss. Picture 8, page 12, shows a closer view of the end of a floor beam which was shortened to fit the bridge; all the floor beams used for the reconstruction came from other structures and were gathered to be used on this bridge. Pictures 5 and 6, page 10, show the encasement of the bottom chord of the truss with the bottom flange of the floor beams also encased where they bear on the truss.



5. Northwest side of bridge.



6. Vertical post and arch ring.

TRUSSES

Amtrak has no record of when the original bridge was constructed over the railroad. The earliest plan of record in Amtrak's files is dated December 23, 1914 and is a plan showing the proposed raising of the bridge: Exhibit A-2 in the Appendix is a copy of the plan.

The trusses, which the plans show to be wrought iron, appear generally to be in fair condition but upon closer inspection, there are notable points of concern. The foremost concern is four (4) vertical posts that have cracks extending from the outer flange to partway through the web; the cracks are completely through the outer flanges. Pictures 7, 8, 9, & 10 show three of the four cracked posts. Amtrak is at a loss to accurately explain the nature of the cracks since theoretically, the vertical posts act in compression. These cracks were noted and photographed when the bridge was inspected in 1982. A comparison of the photographs taken recently to those taken in 1982 shows there has been some progression of at least one of the cracks.

The top chord of the truss appears to be in good condition. The bottom chord is encased in concrete and could not be inspected. The encasement was installed in 1945 when the deck was reconstructed. Prior to the work being done, the chords were thoroughly inspected and any needed repairs were made.

The round diagonals and counters are in good condition. They do not exhibit any appreciable section loss where loss might be expected.

The arch ring on each truss, originally designed to take the dead load, no longer acts as part of the truss. Picture 6, page 10, shows pieces of the arch in place; pieces of the arch, at other locations on the truss, are missing.

Amtrak's records reveal that the trusses have been hit and damaged by vehicles on a few occasions. Amtrak has made repairs including replacing damaged end posts and other vertical posts on the bridge.



7. Westside, crack in 5th vertical from south end.



8. Closer view of crack in 5th vertical.



9. West side - cracked vertical - 10th from south end.



10. East side cracked vertical - 3rd from south end.

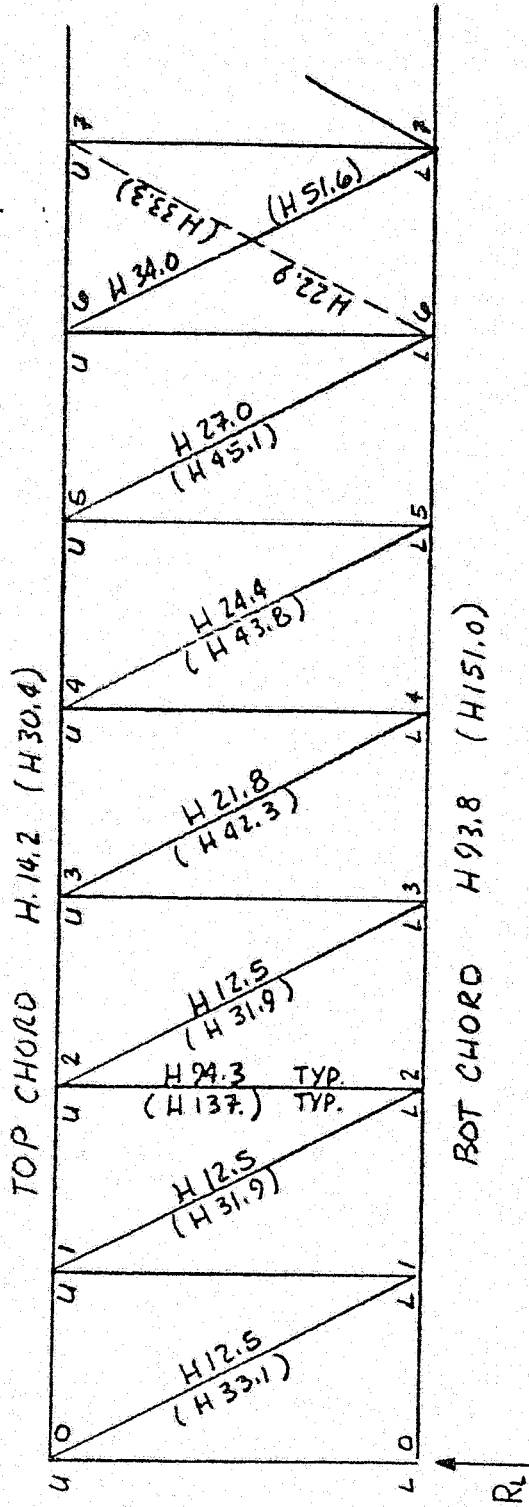
RATING

The bridge structure was rated according to AASHTO's Manual for Maintenance Inspection of Bridges, 1983. For Wrought Iron, Section 5.4.3., the Manual recommends an Allowable Stress of 10 KSI for the Inventory Rating and 14.6 KSI for the Operating Rating. Using the recommend allowables in the truss analysis resulted in an Inventory Rating of zero (0). The weakest members were the diagonal members in the first few panels. The Operating Rating was also zero (0).

According to the analysis, the bridge should not be functioning under the heavy loadings to which it is continually subjected to daily.

A sample piece of the Wrought Iron truss was then tested to determine its actual yield stress. The testing was performed in cooperation with PennDOT's Material Testing Lab and revealed a yield stress of 55.4 KSI, and an elastic limit of 33.5 KSI. Referring to the AREA Manual (15-7.3.4.3.2) and other literature, the average yield stress for Wrought Iron was considered to be 25 KSI. Based on these results, the ratings were recalculated using an allowable stress of 22 KSI for the Inventory Rating and 32 KSI for the Operating Rating. The resulting rating of the trusses, which affect the bridge rating, are shown in the truss diagram on Page 15, of this report.

Overhead Bridge 12.12 - Spring Mill Road - Villanova, Pa.



H-20 - INVENTORY RATING
(H-30) - OPERATING RATING

CONCLUSIONS AND RECOMMENDATIONS

The bridge carrying Spring Mill Road over the four (4) electrified tracks of Amtrak in Radnor Township, Delaware County, Pennsylvania, is in fair condition.

Spring Mill Road is a main north-south traffic route which intersects numerous main east-west highways and carries a large volume of traffic. There are other north-south traffic routes but most of those routes, when they cross over or under the railroad, impose restrictions to large vehicles because of a posted load limit or a limited vertical clearance.

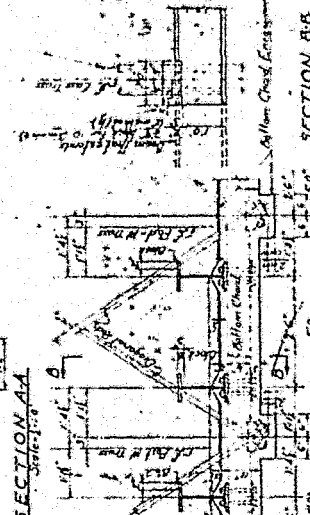
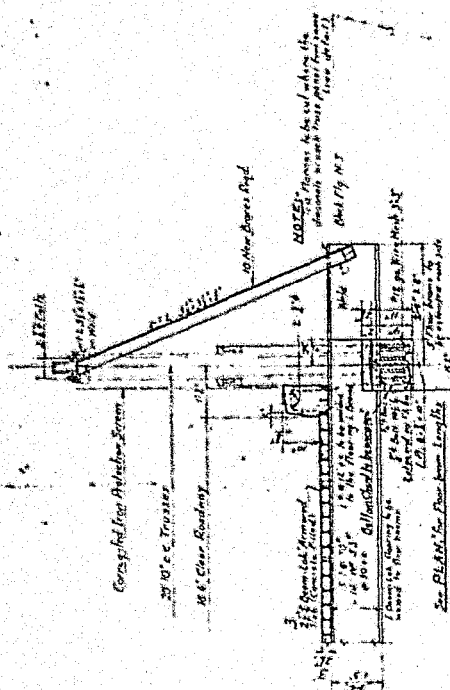
Spring Mill Road bridge is a single span, thru truss bridge which was erected sometime before 1914. The deck was reconstructed in 1945 by the Pennsylvania Railroad. Although the plans do not indicate the live load for which the deck was reconstructed, we assume that, like many other structures, the PRR designed the repairs for an H-15 load. The reconstruction comprised of a 3" I-Beam Lok concrete filled grid deck on 14" WF and 15" I-beam floor beams. The lower chord of the trusses is encased in concrete.

The inspection revealed rust and corrosion occurring on the underside of the grid deck and on the floor beams. The concrete, in a few locations in the grid deck, has deteriorated and fallen out of the deck, resulting in holes thru the deck that require repairs. The trusses which are made of cast iron and wrought iron, do not exhibit deterioration but have other problems. Certain vertical posts, which are theoretically compression members, are cracked through the outside flange and part way into the web. These cracks were noted on a previous inspection and when compared to the recent inspection, appear to have slightly increased in size. The top chord of the truss appears okay while the bottom chord, encased in concrete, is assumed to be okay. Amtrak has made repairs to certain truss members in the past, damaged when they were hit by cars or trucks.

According to the rating analysis which was performed based on the actual stresses determined by testing, the bridge rates at H-12.5 for Inventory and H-30.4 for Operating. Our recommendation for posting the Spring Mill Road bridge is not based solely on the results of the rating. PennDOT has been studying the matter of bridge ratings and posting with the idea that unduly low postings pose a great deal of hardship and inconvenience on the traveling public. But if a bridge must be posted for a low load limit, then do so. The posting we recommend for this bridge is 15 Tons. This recommendation considers such factors as characteristics of the bridge, traffic

volume, and engineering judgment. Considering the age of the bridge and its physical limitations, i.e. narrow approaches and no sidewalks, we also recommend the bridge be replaced with a new structure, designed to current PennDOT and AASHTO standards and having at least one (1) sidewalk, which should be on the east side of the structure.

APPENDIX

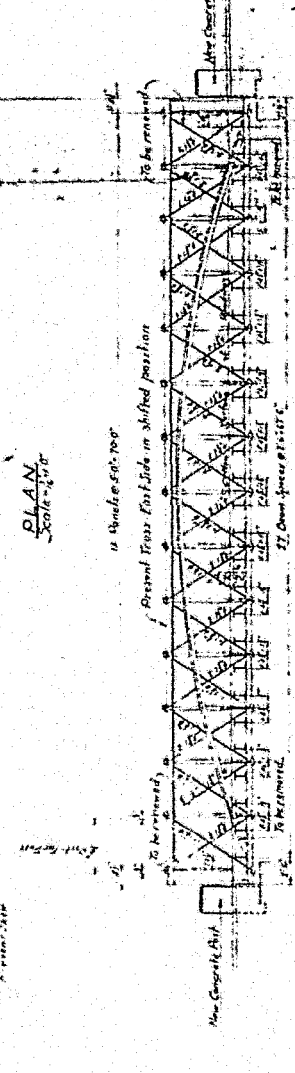
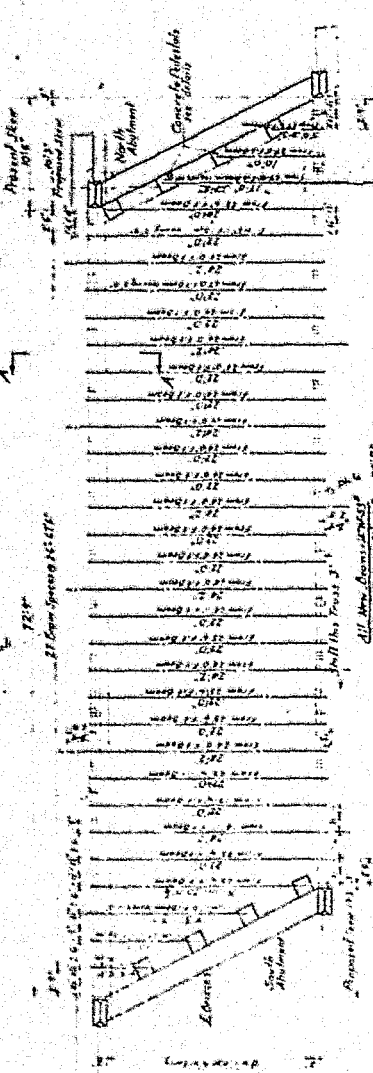


PART ELEVATION OF E. TRUSS
Scale 1/4" = 1'-0"

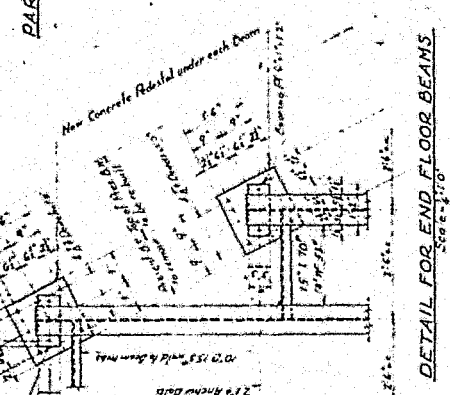
NOTES:
 All concrete to be in accordance with PBR
 Specs. C. E. 77 (1938), Class 3, and shall be
 cast from 4000 lbs. per cu. yd. at 28 days
 of curing to be in accordance with Specifications
 of A. R. E. H. Specifications
 with A. R. E. H. Specifications
 New Floor to be 12" Thick, 12' x 12' Panel
 388 (Concrete Filled) or equivalent
 11 Beams 15' x 21" x 23"
 15 Beams 15' x 21" x 23"
 11 Beams 15' x 21" x 23"
 11 Beams 15' x 21" x 23"

REVISED	Sheet 1	RECONSTRUCTION OF BRIDGE
Dec 16, 1942		
THE PENNSYLVANIA RAILROAD Philadelphia Region Philadelphia Terminal Div. Eastern Avenue, Phila. - H-2 O. H. BRIDGE No. 12.01 AT VILLANOVA, PA. Office of Engineering Design & Study Approved: [Signature] Date: 12/16/42		

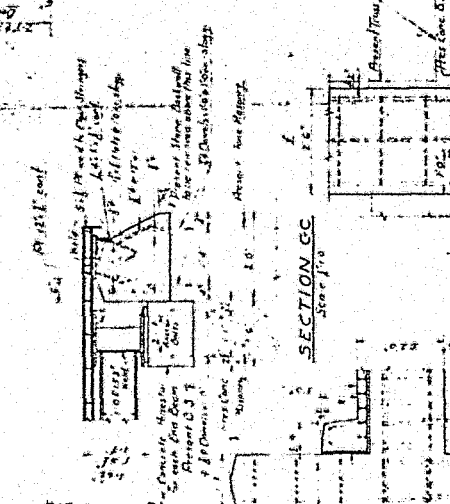
AMTRAK EXHIBIT A-1



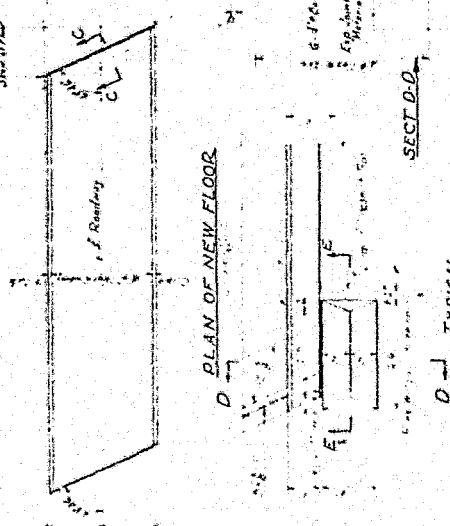
ELEVATION
Scale 1/4" = 1'-0"



DETAIL FOR END FLOOR BEAMS
Scale 1/4" = 1'-0"



SECTION CC
Scale 1/4" = 1'-0"

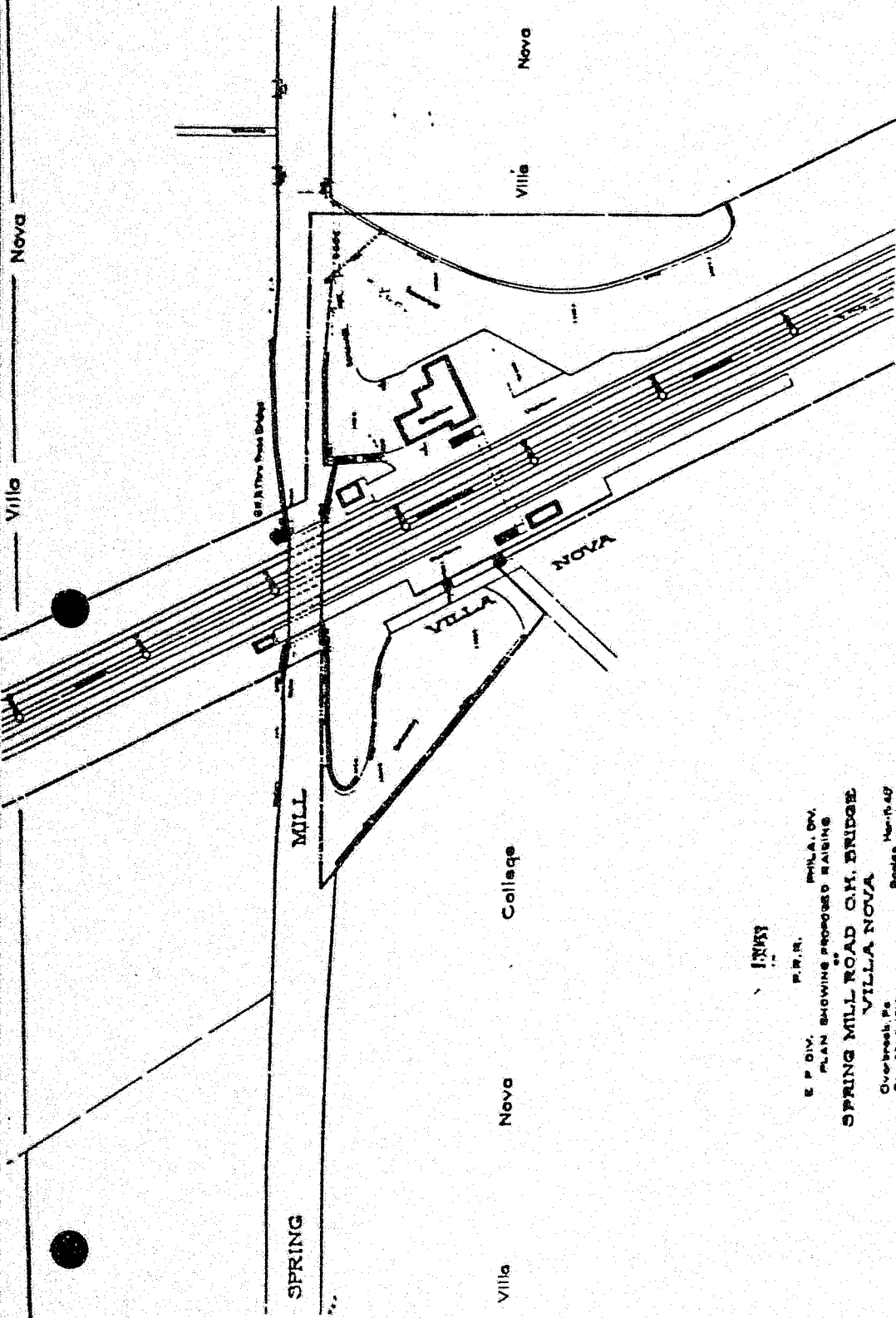


PLAN OF NEW FLOOR
Scale 1/4" = 1'-0"

SECTION D-D
Scale 1/4" = 1'-0"

D-D TYPICAL DETAIL BACK OF PRES TRUSS
Scale 1/4" = 1'-0"

FLOOR ORIGINAL



E. P. DIV. PHILA., PA.
 PLAN SHOWING PROPOSED RAISING
 SPRING MILL ROAD O.H. BRIDGE
 VILLA NOVA
 Overbrook, Pa.
 Dec. 23rd, 1914.

J. P. Dwyer, Resident Engineer

