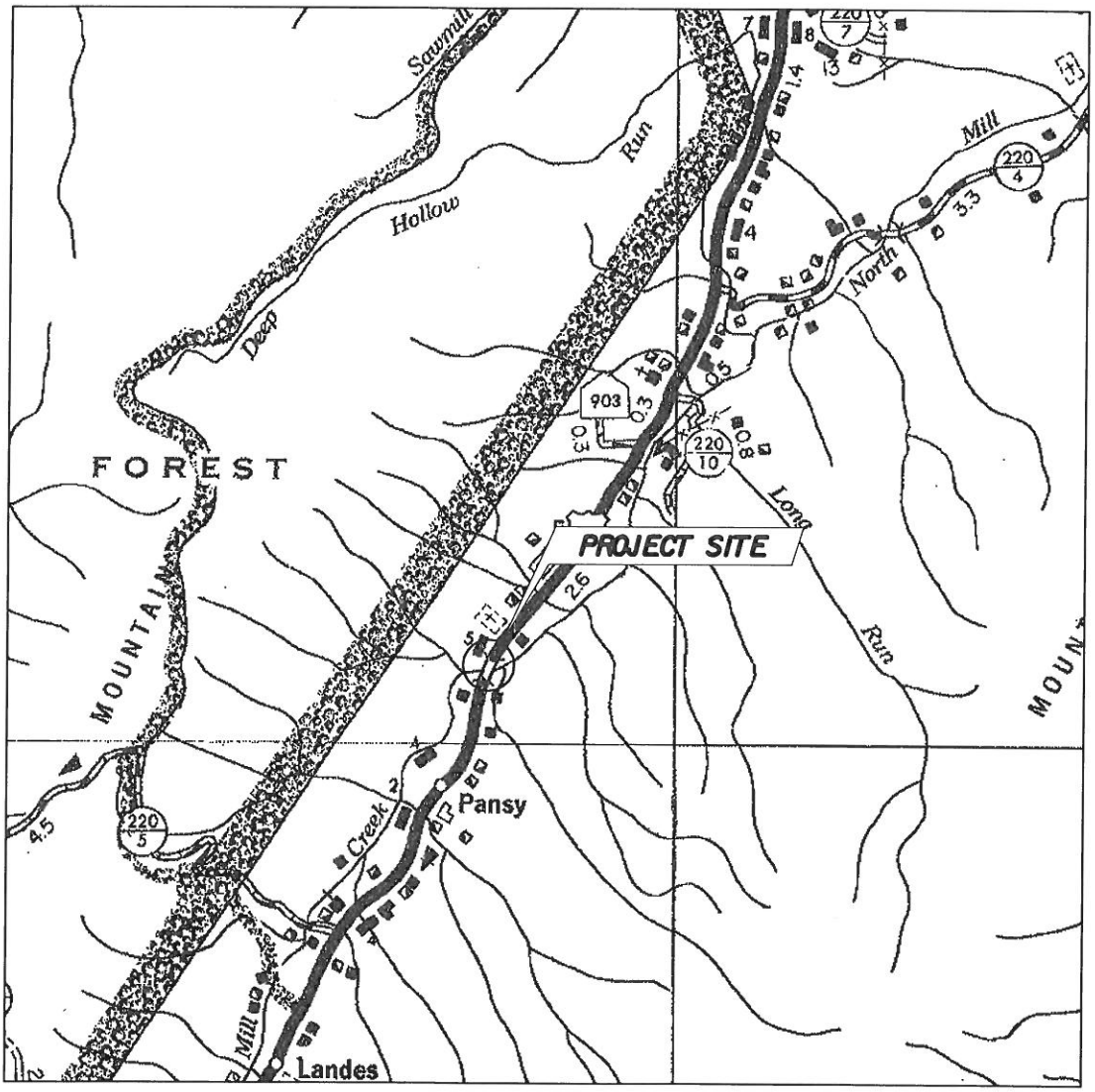
BRIDGE REPLACEMENT STUDY

PANSY BRIDGE

STATE PROJECT NO. S212-220-4.38

FEDERAL PROJECT NO. BR-0220(158)E

GRANT COUNTY



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

ENGINEERING DIVISION

SEPTEMBER 2008

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LOCATION MAP

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DIVISION OF HIGHWAYS

ENGINEERING DIVISION

PROJECT SUMMARY

The Initial Design Section (DDC) conducted a study to evaluate and determine the most suitable and economical location for the replacement of the existing Pansy Bridge in Grant County. The bridge is on a section of roadway that carries United States Route 220 over North Mill Creek, and is located approximately 1.36 miles south of County Route 220/10. United States Route 220 is functionally classified as a Rural Major Collector with a speed limit of 55 mph. Traffic consists of all types of vehicles, including trucks, school buses and mail carriers. Current traffic data obtained on this route indicates the 2008 Average Daily Traffic (ADT) to be 1,880 Vehicles per Day (VPD) with a 20-year (2028) projected design ADT of 2,800 VPD.

The study was conducted utilizing information obtained from an initial field visit, bridge inspection report, a detailed survey, and information gathered from various other sources. Major factors taken into consideration were cost comparison of the alternative alignments, safety to all users of the facility, right-of-way acquisitions, constructability issues, and environmental impacts.

Because this is a project utilizing bridge replacement funding, the focus and evaluation of this project centered solely on the most suitable and feasible location to accommodate its replacement.

From the information collected and evaluated, it is recommended that the Pansy Bridge be replaced at its existing location with a 150-foot single span structure. It is also recommended that integral stub abutments founded on piling be utilized, set behind the existing abutments.

Alternative No. 3 maintains the most suitable roadway alignment within the limits of this project for vehicles operating along this portion of WV 220. All alternatives presented in this study have a comparable construction cost. The Initial Design Section recommended Alternative No. 3 because it has the least total cost and the least impact on the adjacent properties.

Based on the evaluations of all the alternatives studied, it is the recommendation of the West Virginia Department to Highways to accept Alternative No. 3 as the preferred alignment. The following table provides a comparison of alternatives.

	Alternative No. 1	Alternative No. 2	Alternative No. 3
Recommended	No	No	Yes
Construction Cost	$3,096,000	$3,164,000	$2,959,000
Prel. Engr. Cost	$330,000	$300,000	$330,000
RW / Utilities Cost	$110,000	$240,000	$150,000
Total Cost	$3,536,000	$3,704,000	$3,439,000
Location	In-Place	In-Place	In-Place
Detour Bridge	No	Yes	No
Acquisition	ROW and TCE	ROW and TCE	ROW and TCE

TCE (Temporary Construction Easement) and ROW (Right-of-Way)

EXISTING CONDITIONS[1]

The existing bridge was built in 1957 by Clower and Michael, Romney, WV, and has a sufficiency rating of 18.2. The structure consists of three (3) simple span concrete T-beams (SCTB). The overall length of the bridge is 130 feet 6 inches, spans #1 & #3 have a length of 36 feet 6 inches and span # 2 has a length of 48 feet 6 inches. A 2 feet 6 inch sidewalk and adjacent parapet wall are located on both sides of the bridge. The overall (out to out) deck width, including the sidewalk area, is approximately 31 feet 0 inches. The clear deck width (curb to curb) measures 26 feet 0 inches.

The structure is supported by reinforced concrete abutments with wingwalls. The abutments are situated at a 35 degree right forward skew. Two full height reinforced concrete solid stem piers support the superstructure. The deck consists of cast-in-place reinforced concrete that has been overlaid with hot-mix asphalt and is superelevated on the upstream side. Both approaches consist of two 11-foot asphalt lanes with 4-foot gravel shoulders. The bridge has a posted weight limit of 36 tons.

Existing Roadway Geometry

The existing structure is located on US 220, 1.36 miles south from the intersection of CR 220/10 with US 220. The existing horizontal alignment consists of a long left hand 3-degree

[1] See Figure 1

curve superelevated to the right. Based on field observations, the horizontal alignment and sight distance at the existing bridge are adequate with no apparent concerns with the vertical alignment.

North Mill Creek Hydraulic Analysis

The FEMA Flood Insurance Rate Map[2], No. 540038 0175 B for Grant County, dated November 15, 1989, indicates that the area surrounding the site is in Zone A. North Mill Creek has a drainage area of 41.31 square miles below the confluence of Deep Hollow Run.

A temporary causeway will be necessary to demolish the existing bridge and to erect the replacement bridge. It is not anticipated that a causeway will create any backwater; however, it will have to be modeled during final plan development to determine if backwater conditions exist.

Existing Properties and Utilities

The Pansy Bridge is situated in a rural area of Grant County. Two homes are located along the western approach and one home is located along the eastern approach of US 220, north of the bridge. There is a gravel driveway 140 feet north of the existing bridge that leads to three houses west of US 220. One house and a barn are located along the eastern approach of US 220, south of the existing bridge, along with unnamed tributary that has intermittent flow. This stream flows into North Mill Creek about 35 feet downstream from the existing bridge. Working hour restrictions should be considered due to the close proximity of residential structures.

There are no encroachments on the structure. A telephone and electric lines are located along both approaches of the bridge.

DESIGN CRITERIA AND GUIDELINES

United States Route 220 is currently classified as Rural Major Collector with 2008 average daily traffic count of 1,880 vehicles. During our site visit, a few side hill excavations and fills were observed in the general area of the project site, and it is our determination that this project falls within rolling terrain criteria.

[2] See Appendix C

Design Criteria Description	Design Criteria As per DD-601
Terrain Type	Rolling
Roadway Classification	Rural Major Collector
Design Speed	40 mph (Exhibit 6-1)
Maximum Grade	10% (Exhibit 6-4)
Minimum Roadway Width	22 feet (Exhibit 6-5)
Minimum Shoulder Width	5 feet (Exhibit 6-5)
Minimum Stopping Sight Distance	305 feet (Exhibit 6-2)
Minimum Radii for Design Speed	444 feet (Exhibit 3-27) DD-603
Minimum Clear Roadway Width for Bridges	30 feet (Exhibit 6-6)

Two 7-inch high curbs currently exist on each side of the bridge. No pedestrian traffic was observed or indicated during our initial site visit; therefore, we do not anticipate the need to accommodate pedestrian or bicycle traffic due to the absence of bicycle traffic generators, such as employment centers, colleges, parks, etc.[3]

GEOTECHNICAL OVERVIEW

The geotechnical department did not conduct a site visit. The geotechnical department performed limited research of readily available information concerning the proposed Pansy Bridge replacement. We examined the recommended Alternative No. 3 and all alternatives, as presented in the Draft Study Report. Our research included review of the WVDEP website, WVGES interactive mapping, our geotechnical, and landslide databases for geotechnical hazards and geological conditions.

The WVDEP Interactive-Mapping website did not indicate any mining or oil and gas problem areas or conditions that would be of a geotechnical concern. No current mining permits appear to exist at or near the bridge site. Based on our review of the WVGES geologic map for Grant County, no deep mines are believed to exist in the area of the bridge. From the West Virginia Geological Survey map, dated 1968 it is determine the underlying geology is of the Mahantango Formation, with in the Devonian System. It is comprised of primarily thickly laminated marine shale, siltstones and very fine sandstone.

[3] See AASHTO (guide for the development of bicycle facilities)

Our search of the geotechnical and landslide databases for existing geotechnical and landslide information did not list any information for this site, at this time.

From our research, it concluded that the area poses no specific geotechnical concerns for any of the proposed alternatives.

ENVIRONMENTAL OVERVIEW

Our preferred alternative is # 3. Archaeology will need to test the SW area of project/New ROW. Need photos to better determine how much testing will be necessary?

We do not anticipate that there will be any problems with Natural Resources. No mussel surveys or Fish and Wildlife consultation will be necessary.

DESIGN ALTERNATIVES

Four alternatives were evaluated for this project. The first alternative proposes placing a new bridge at its current location constructing it a lane-at-a-time by shifting the bridge centerline to the east. The second alternative proposes placing a new bridge at its current location and utilizing a temporary roadway and bridge upstream of the existing bridge to maintain traffic during construction. The third alternative proposes placing a new bridge at its current location, constructing it a lane-at-a-time by shifting the bridge centerline to the west. The fourth alternative is a No-Build Alternative. Another alternative was studied to replace the existing bridge at its current location and utilizing a temporary roadway and bridge downstream, but it was eliminated due to its greater impact on the unnamed tributary upstream from the existing bridge and on property east of the bridge.

Based on a preliminary hydraulic review, the waterway opening appears to be adequate. Each of the alternatives presented provides at least a waterway opening equal to the existing opening.

It is proposed that the bridge will have two (2) 11-foot lanes with 4-foot paved shoulders[4].

[4] See figure 2

Design Criteria Description	Design Criteria	Design Exception
Design Speed	55 mph	No
Roadway width	22 feet	Yes
Shoulder Width	4-foot shoulders	Yes
Bridge Clear Width curb to curb	30 feet	Yes

a) Alternative No.1

Alternative No.1 [5] consists of replacing the Pansy Bridge at its current location, utilizing one-lane-at-a-time, and using the other lane to maintain traffic. Maintenance of traffic Case D5A or D5B should be utilized for the lane closure. This alternative replaces the southbound lane first, then the northbound lane. The proposed bridge centerline will be shifted approximately 6 feet to the east with some approach work required to make this shift. Our recommendation is to place the proposed bridge on a short tangent section and then tie back into the existing curve. About 350 feet of the unnamed tributary east of the southern approach would be required to be relocated. This alternative utilizes a 55 mph design speed while maintaining the same roadway geometry. This alternative proposes a single span bridge of approximately 150 feet 0 inches in length with a 30-foot clear width curb to curb. Approximately 400 feet of new approach work would be necessary south of the proposed bridge and 450 feet of new approach work to the north of the proposed bridge.

New stub abutments can be constructed behind the existing abutments which can be left in place to serve as slope protection. The new stub abutment will be founded on piling. Right-of-way involvement would be minimal. It may include permanent right-of-way for the extra bridge width and temporary construction easements for construction equipment. Utility relocations are anticipated to be minimal, possibly telephone and power lines.

Estimated cost for Alternative No.1 is as follows:

150' Bridge	$1,317,200
Roadway	$ 701,800
E&C (19%)	$ 364,700
Total Construction	$2,283,700

[5] See Figures 2 and 3.

Future Value [6]	$3,096,000
Preliminary Engineering	$ 330,000
ROW/ Utilities	$ 110,000
Total	$3,536,000

b) Alternative No.2

Alternative No.2 [7] consists of replacing the Pansy Bridge at its current location while maintaining traffic, utilizing a temporary roadway and bridge upstream of its current location. This alternative would utilize a 55 mph design speed. The new bridge will be on a tangent section of roadway. This alternative proposes a single span bridge of approximately 150 feet 0 inches in length with a 30-foot clear width curb to curb. Approximately 100 feet of new approach work would be necessary south of the proposed bridge and 100 feet of new approach work to the north. The temporary alignment would have a design speed of 20 mph or greater, with a relatively flat grade requiring approximately 600 feet of temporary roadway construction with a 125-foot temporary bridge.

Three private driveways located about 180 feet north of the existing bridge must remain open at all times.

It is anticipated that causeways will be required to allow for construction access.

Right-of-way involvement would be minimal. It may include permanent right-of-way along US 220 and temporary construction easements for construction staging. Utility relocations are anticipated to be minimal, possibly telephone and power lines.

Estimated cost for Alternative No. 2 is as follows:

150-Foot Bridge	$1,084,600
Roadway	$ 413,300
Detour	$ 463,000
E&C (19%)	$ 372,600
Total Construction	$2,333,500
Future Value [6]	$3,164,000
Preliminary Engineering	$ 300,000
ROW/ Utilities	$ 240,000

[6] Note: Future value of construction cost using compound interest { FV=PV(1+i)^n} has been calculated from the estimate date of October, 2008 to construction period midpoint of fall 2013, using inflation rate of 5%.

[7] See Figures 2 and 4

Total	$3,704,000

c) Alternative No. 3

Alternative No. 3[8], similar to Alternative No. 1, consists of replacing the Pansy Bridge at its current location utilizing one-lane-at-a-time construction, while using the other lane to maintain traffic. Maintenance of traffic Case D5A or D5B should be utilized for the lane closure. This alternative would replace US 220 westbound lane first, then replace the eastbound lane. The proposed bridge centerline will be shifted approximately 6 feet to the west, some approach work will be necessary to adjust this shift. Our recommendation is to place the proposed bridge on a short tangent section then tie back into the existing curve. Two private driveways just north of the existing bridge require modification. This alternative would utilize a 55 mph design speed while maintaining the same roadway geometry. This alternative proposes a single span bridge of approximately 150 feet 0 inches with a 30-foot clear width curb to curb. Approximately 200 feet of new approach work would be necessary south of the proposed bridge and 300 feet of new approach work to the north.

New stub abutments can be constructed behind the existing abutments which can be left in-place to serve as slope protection. The new stub abutment will be founded on piling. Right-of-way involvement would be minimal. It may include permanent right-of-way for the extra bridge width and temporary construction easements for construction staging. Utility relocations are anticipated to be minimal, possibly telephone and power lines.

Estimated cost for Alternative No. 3 is as follows:

150-Foot Bridge	$1,217,200
Roadway	$ 616,900
E&C (19%)	$ 348,500
Total Construction	$2,182,600
Future Value [6]	$2,959,000
Preliminary Engineering	$ 330,000
ROW/ Utilities	$ 150,000
Total	$3,439,000

[8] See Figures 2 and 5.

d) No-Build Alternative

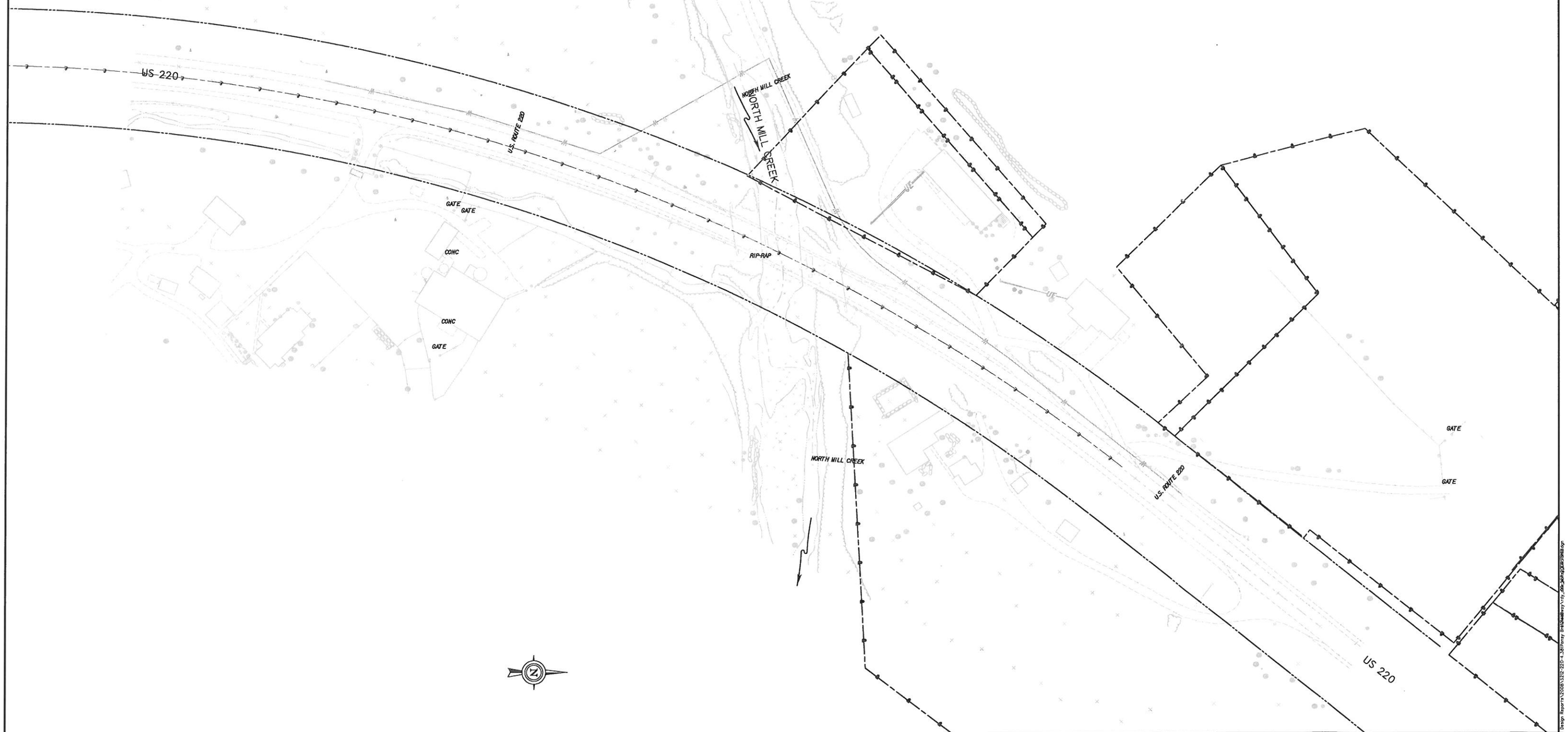
Due to the deteriorating condition of the existing structure, the No-Build Alternative would eventually result in the permanent closure of the bridge to traffic. A 34.3 mile detour route does exist via US 200, CR 1/3, CR 1 and CR 9. Due to the length of the detour, a No-Build is not a prudent alternative.

CONCLUSION / RECOMMENDATION

Even though Alternative No. 3 does not have the least construction cost, it does provide the most suitable alignment and has the least impact on the surrounding community. It is the West Virginia Department of Highways recommendation to construct Alternative No. 3 which proposes the construction of a new Pansy Bridge at its current location, while utilizing lane-at-a-time construction at a total cost of $3,439,000.00

APPENDIX "A"

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.				200			



SCALE : 0 50 ft.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

EXISTING CONDITIONS

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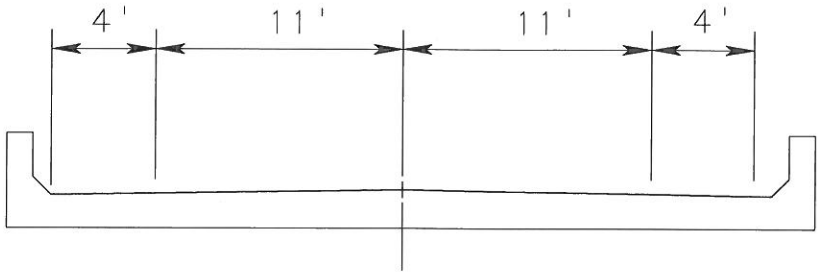
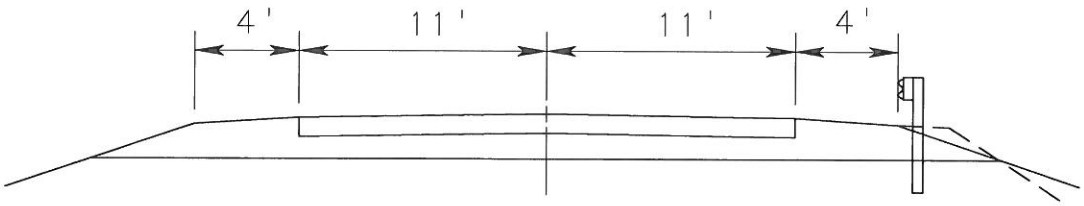


PROPOSED BRIDGE

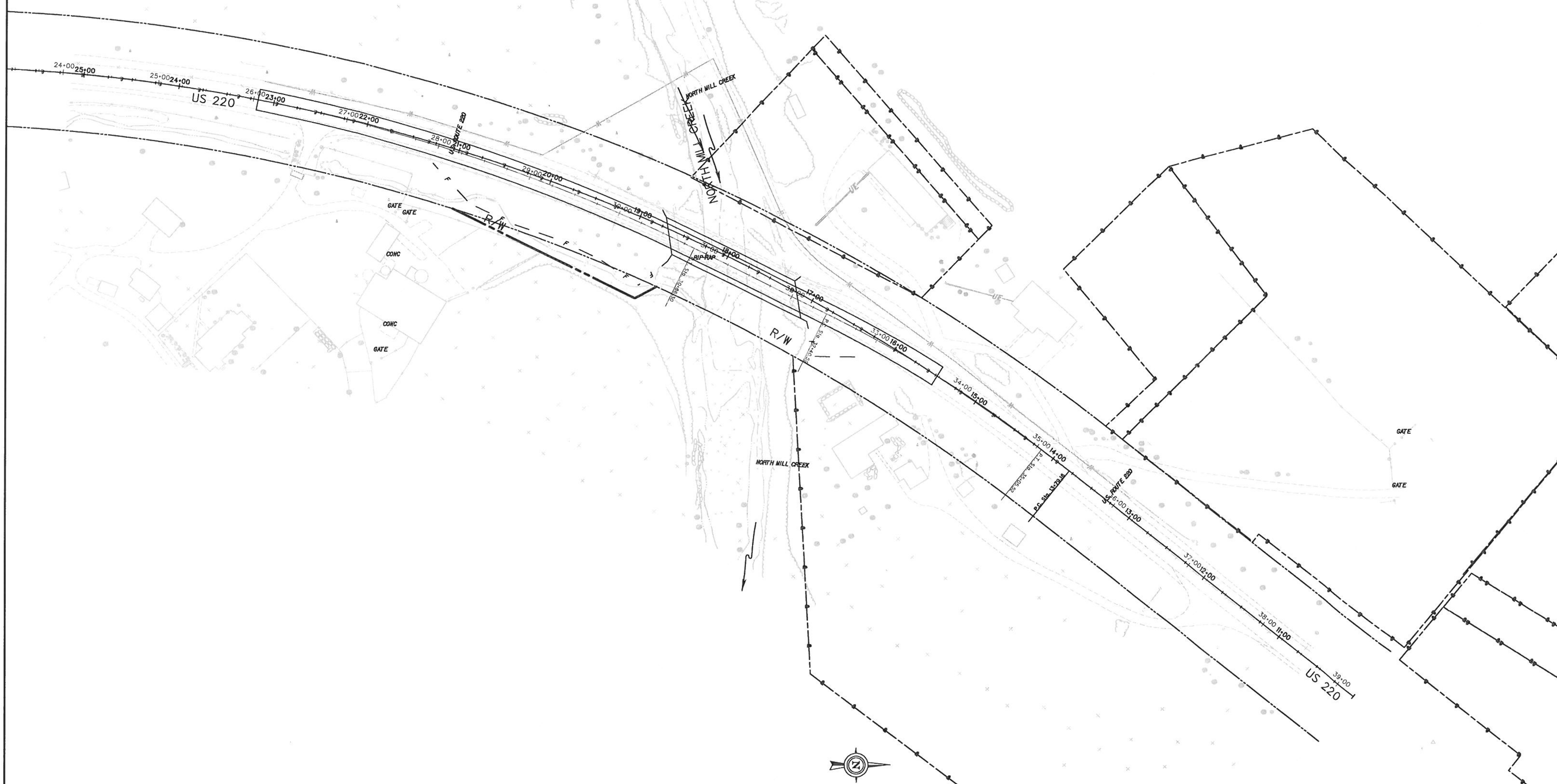


ROADWAY TYPICAL SECTION

FIGURE 2

ROADWAY FUNCTION CLASSIFICATION RURAL MAJOR COLLECTOR DESIGN EXCEPTION NEEDED YES	A.D.T. (2008) 1,880	BRIDGE REPLACEMENT STUDY PANSY BRIDGE STATE PROJECT NO. S212-220-4.38 FEDERAL PROJECT NO. BR-0220(158)D GRANT COUNTY
SUFFICIENCY RATE. 18.2 INVENTORY NO. 12A068	(2028) 2,800	THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS ENGINEERING DIVISION

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.				200			



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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ALTERNATIVE # 1

J04C23C03-PLAN

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Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.				200			

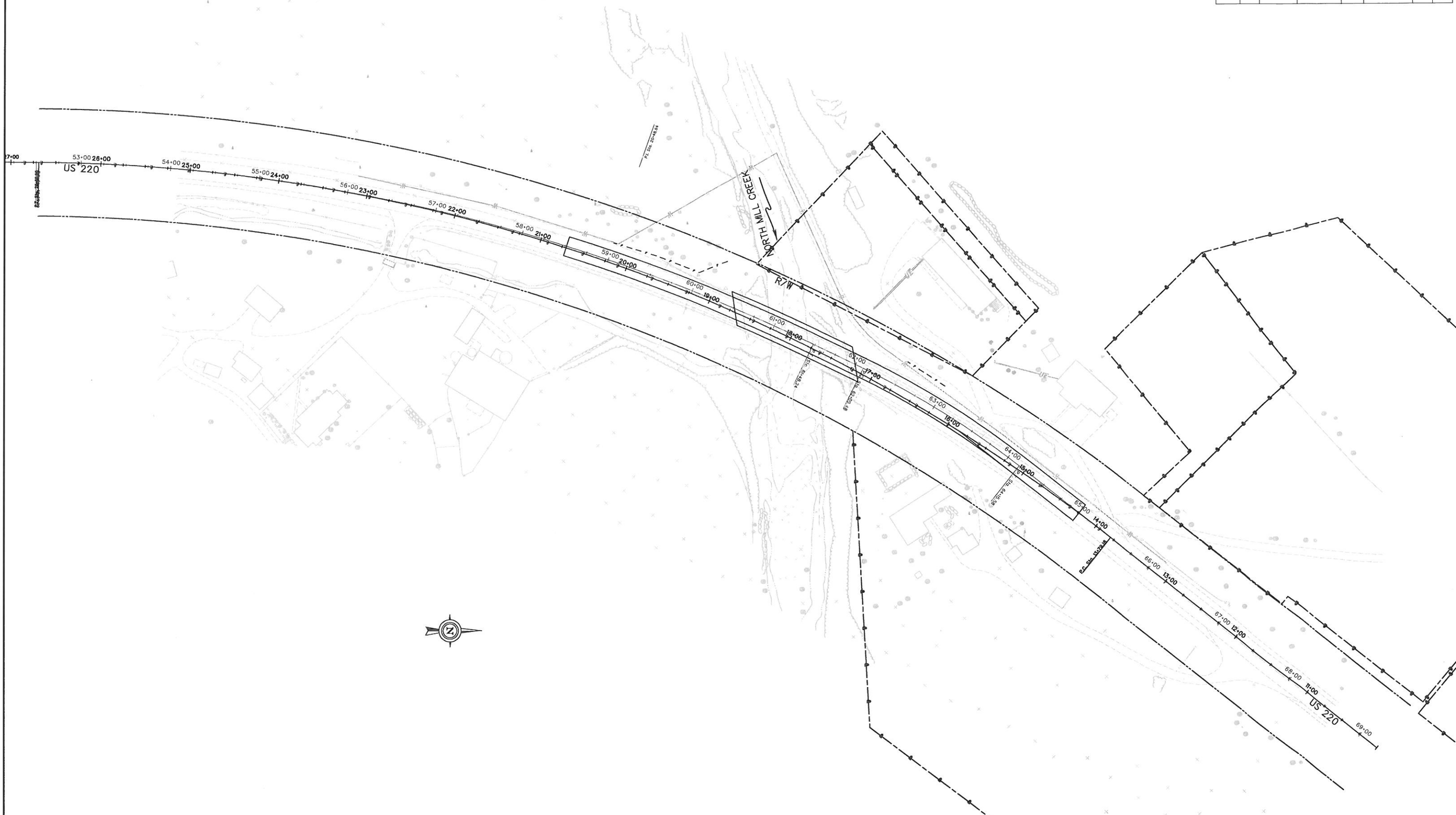
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ALTERNATIVE • 2

J04C23C03-PLAN e

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.				200			



SCALE : 0 50 ft.

REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ALTERNATIVE # 3

J04C23C03-PLAN

APPENDIX "B"

Bridge Cost Estimate
Pansy Bridge
Alt 1, Staged Construction

	Estimated Cost	
ROADWAY	Actual	Rounded
Clearing and Grubbing	$ 30,000.00	$ 30,000.00
Earthwork	$ 75,175.00	$ 75,200.00
HMA Wearing & Base	$ 48,391.20	$ 48,400.00
Aggregate (Base & Sh)	$ 35,259.26	$ 35,300.00
Subgrade	$ 18,333.33	$ 18,300.00
Drainage	$ 12,500.00	$ 12,500.00
M.O.T.	$ 159,300.00	$ 159,300.00
Erosion Control	$ 40,000.00	$ 40,000.00
Approach Slab	$ 28,400.00	$ 28,400.00
All Other Items	$ 163,013.82	$ 163,000.00
Mobilization	$ 91,378.63	$ 91,400.00
Total Roadway Construction	$ 701,751.24	$ 701,800.00
BRIDGE		
Dismantling Structure	$ 100,000.00	$ 100,000.00
Structure Excavation	$ 18,630.00	$ 18,600.00
Select Material for B.F.	$ 7,530.45	$ 7,500.00
Slope Protection	$ 44,760.00	$ 44,800.00
Class B Conc	$ 32,517.09	$ 32,500.00
Class K Conc	$ 20,731.51	$ 20,700.00
Class H Conc	$ 158,278.60	$ 158,300.00
Reinforced Steel Bars	$ 10,761.66	$ 10,800.00
Epoxy Reinforced Steel Bars	$ 47,087.04	$ 47,100.00
Steel Superstructure	$ 457,600.00	$ 457,600.00
Piles	$ 38,401.20	$ 38,400.00
All Other Items	$ 280,889.27	$ 280,900.00
Total Bridge Construction	$ 1,217,186.82	$ 1,217,200.00

	Estimated Cost	
	Actual	Rounded
Bridge	$ 1,217,200.00	$ 1,217,200.00
Roadway	$ 701,751.24	$ 701,800.00
E&C (19%)	$ 364,600.74	$ 364,700.00
	$ 2,283,551.98	$ 2,283,700.00
Future V alue	$3,095,570.28	$3,096,000.00
Pre Engineering	$ 330,000.00	$ 330,000.00
R/W utilities	$ 110,000.00	$ 110,000.00
Total	$3,535,570.28	$3,536,000.00

Bridge Cost Estimate
Pansy Bridge
Alt 2

	Estimated Cost	
ROADWAY	Actual	Rounded
Clearing and Grubbing	$ 30,000.00	$ 30,000.00
Earthwork	$ 68,500.00	$ 68,500.00
HMA Wearing & Base	$ 16,130.40	$ 16,100.00
Aggregate (Base & Sh)	$ 11,753.09	$ 11,800.00
Subgrade	$ 6,111.11	$ 6,100.00
Drainage	$ 12,500.00	$ 12,500.00
M.O.T.	$ 56,300.00	$ 56,300.00
Erosion Control	$ 25,000.00	$ 25,000.00
Approach Slab	$ 28,400.00	$ 28,400.00
All Other Items	$ 116,190.86	$ 116,200.00
Mobilization	$ 93,369.63	$ 93,400.00
Total Roadway Construction	$ 464,255.09	$ 464,300.00
BRIDGE		
Dismantling Structure	$ 75,000.00	$ 75,000.00
Structure Excavation	$ 18,630.00	$ 18,600.00
Select Material for B.F.	$ 7,530.45	$ 7,500.00
Slope Protection	$ 37,300.00	$ 37,300.00
Class B Conc	$ 32,517.09	$ 32,500.00
Class K Conc	$ 20,731.51	$ 20,700.00
Class H Conc	$ 158,278.60	$ 158,300.00
Reinforced Steel Bars	$ 10,761.66	$ 10,800.00
Epoxy Reinforced Steel Bars	$ 47,087.04	$ 47,100.00
Steel Superstructure	$ 457,600.00	$ 457,600.00
Piles	$ 38,401.20	$ 38,400.00
All Other Items	$ 180,767.51	$ 180,800.00
Total Bridge Construction	$ 1,084,605.06	$ 1,084,600.00

	Estimated Cost	
	Actual	Rounded
Bridge	$ 1,084,600.00	$ 1,084,600.00
Roadway	$ 413,255.09	$ 413,300.00
Detour	$ 462,907.20	$ 463,000.00
E&C (19%)	$ 372,544.83	$ 372,600.00
	$ 2,333,307.12	$ 2,333,500.00
Future V alue	$3,163,018.07	$3,164,000.00
Pre Engineering	$ 300,000.00	$ 300,000.00
R/W utilities	$ 240,000.00	$ 240,000.00
Total	$3,703,018.07	$3,704,000.00

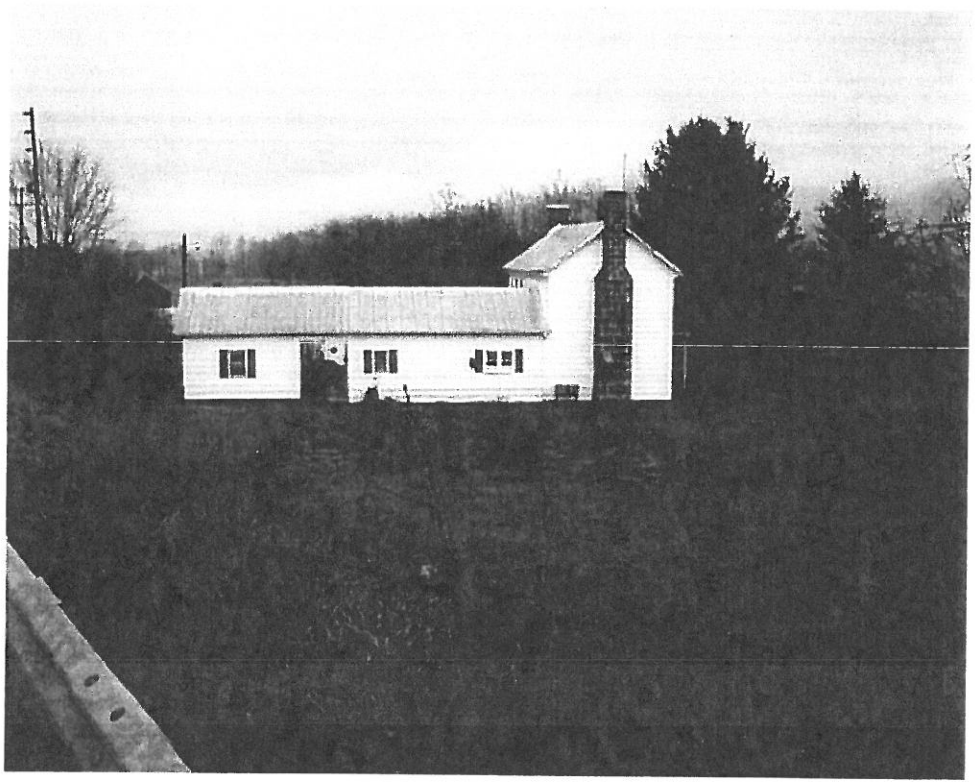
Bridge Cost Estimate
Pansy Bridge
Alt 3, Staged Construction

	Estimated Cost	
ROADWAY	Actual	Rounded
Clearing and Grubbing	$ 30,000.00	$ 30,000.00
Earthwork	$ 31,500.00	$ 31,500.00
HMA Wearing & Base	$ 36,293.40	$ 36,300.00
Aggregate (Base & Sh)	$ 26,444.44	$ 26,400.00
Subgrade	$ 13,750.00	$ 13,800.00
Drainage	$ 12,500.00	$ 12,500.00
M.O.T.	$ 159,300.00	$ 159,300.00
Erosion Control	$ 40,000.00	$ 40,000.00
Approach Slab	$ 28,400.00	$ 28,400.00
All Other Items	$ 151,373.18	$ 151,400.00
Mobilization	$ 87,338.05	$ 87,300.00
Total Roadway Construction	$ 616,899.07	$ 616,900.00
BRIDGE		
Dismantling Structure	$ 100,000.00	$ 100,000.00
Structure Excavation	$ 18,630.00	$ 18,600.00
Select Material for B.F.	$ 7,530.45	$ 7,500.00
Slope Protection	$ 44,760.00	$ 44,800.00
Class B Conc	$ 32,517.09	$ 32,500.00
Class K Conc	$ 20,731.51	$ 20,700.00
Class H Conc	$ 158,278.60	$ 158,300.00
Reinforced Steel Bars	$ 10,761.66	$ 10,800.00
Epoxy Reinforced Steel Bars	$ 47,087.04	$ 47,100.00
Steel Superstructure	$ 457,600.00	$ 457,600.00
Piles	$ 38,401.20	$ 38,400.00
All Other Items	$ 280,889.27	$ 280,900.00
Total Bridge Construction	$ 1,217,186.82	$ 1,217,200.00

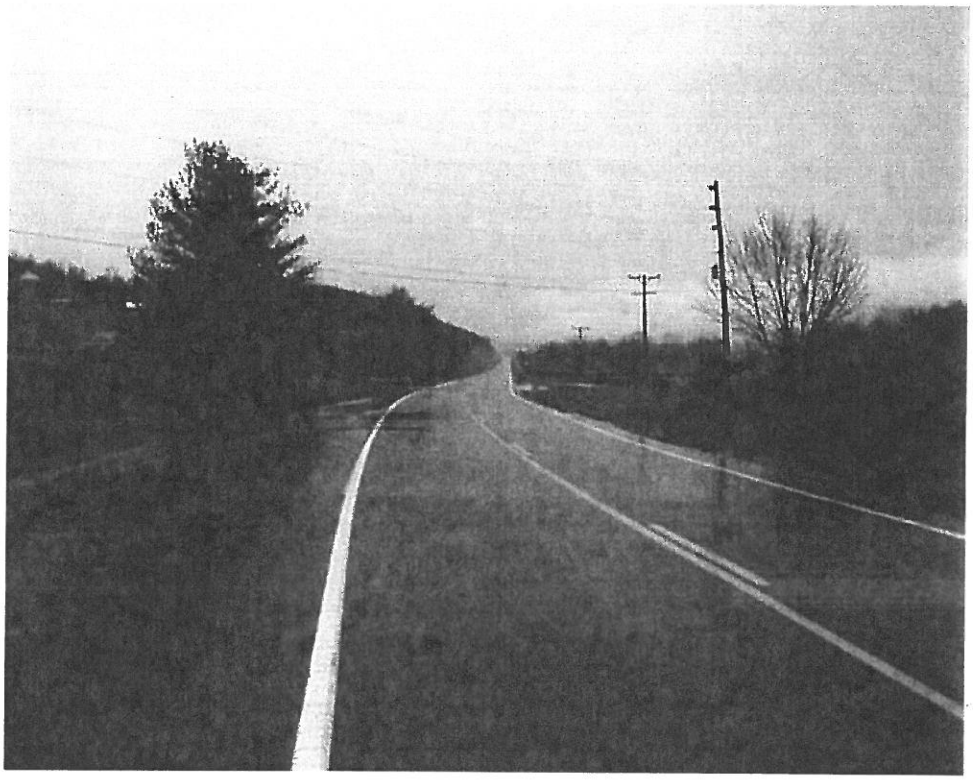
	Estimated Cost	
	Actual	Rounded
Bridge	$ 1,217,200.00	$ 1,217,200.00
Roadway	$ 616,899.07	$ 616,900.00
E&C (19%)	$ 348,478.82	$ 348,500.00
	$ 2,182,577.90	$ 2,182,600.00
Future V alue	$2,958,690.38	$2,959,000.00
Pre Engineering	$ 330,000.00	$ 330,000.00
R/W utilities	$ 150,000.00	$ 150,000.00
Total	$3,438,690.38	$3,439,000.00

APPENDIX "C"

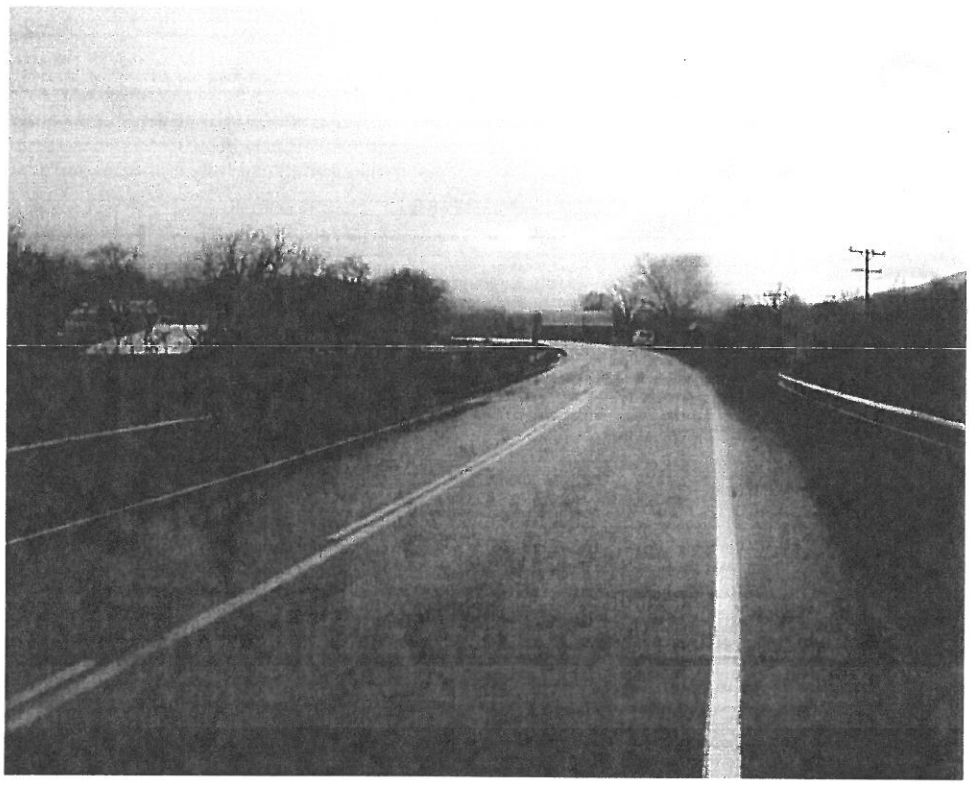
Un-named Stream



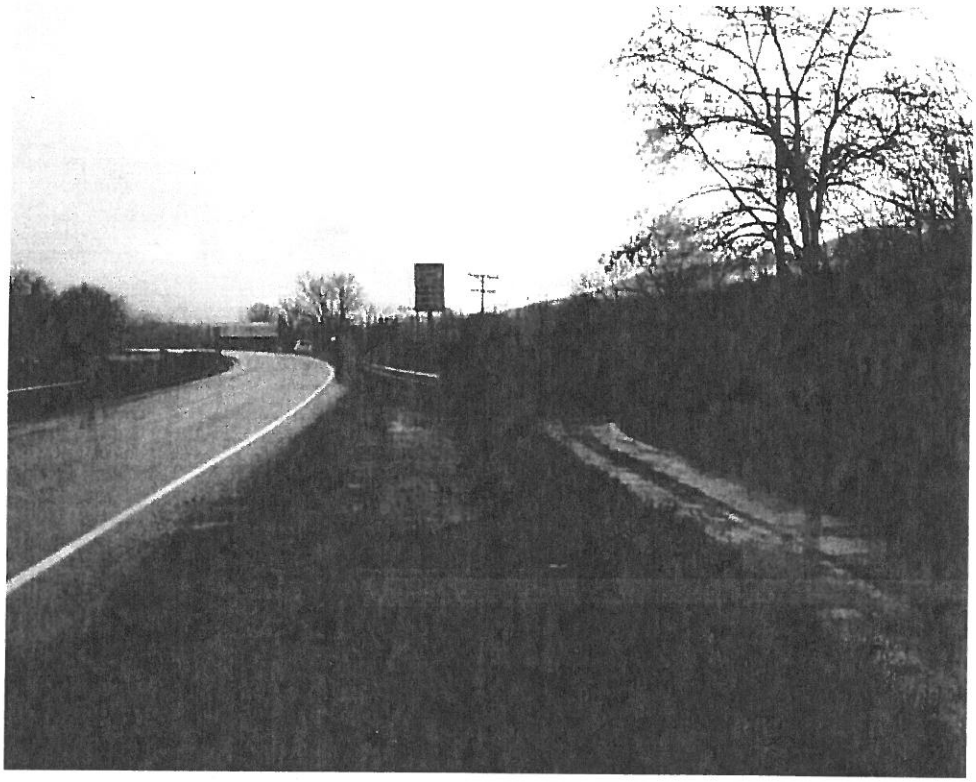
Affected property in Alternative No. 1



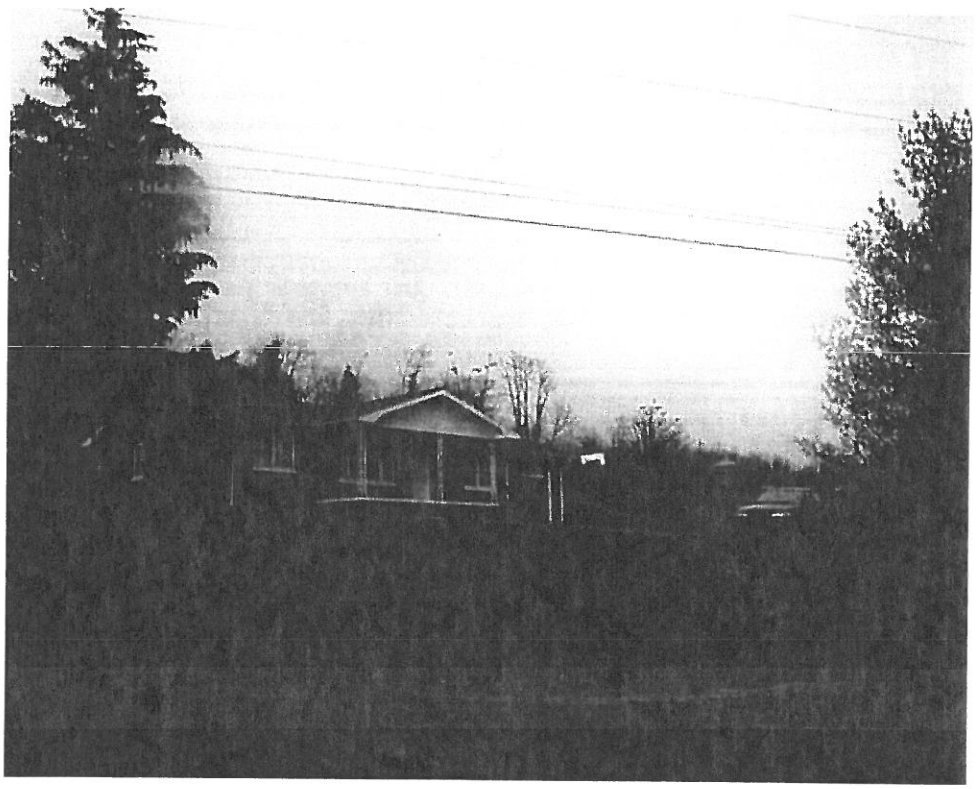
Northern Approach



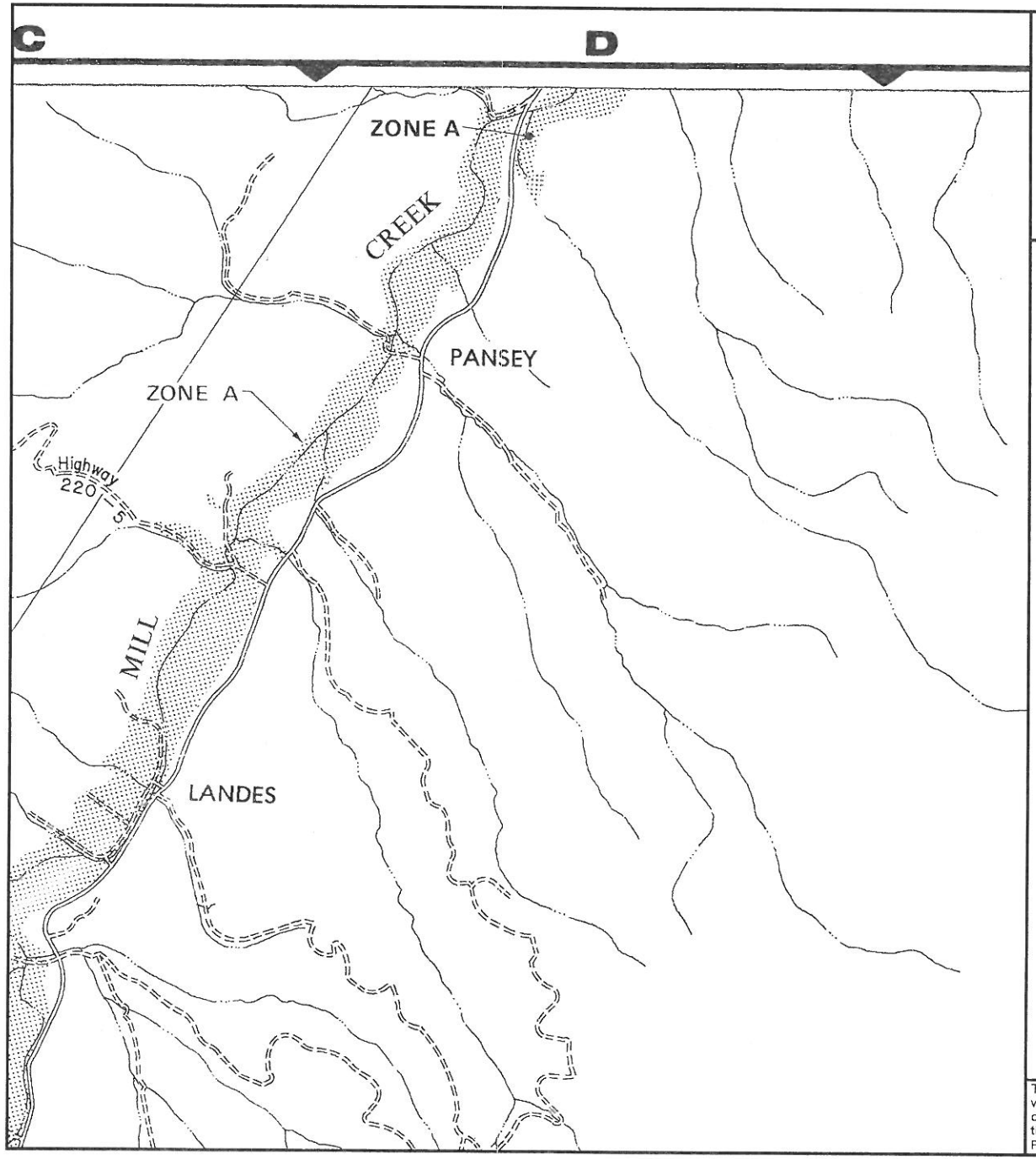
Southern Approach



Private Driveway leads to Multiple Properties



Private Driveway to be adjusted in Alternative # 3



APPROXIMATE SCALE

2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

GRANT COUNTY, WEST VIRGINIA
UNINCORPORATED AREAS

PANEL 175 OF 175
(SEE MAP INDEX FOR PANELS NOT PRINTED)

PANEL LOCATION

COMMUNITY-PANEL NUMBER
540038 0175 B

MAP REVISED:
NOVEMBER 15, 1989

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX "D"

Comments:

A field review was held on site on October 16, 2008. Unfortunately, no one other the Initial Design section showed up. The plans were sent again for comments on November 14, 2008. The following send their comments:

1. Mr. Khan from Traffic Division sent his comment regarding the Maintenance of Traffic estimate being high, and he concurred with the selected alternative.
2. Mr. Klavuhn (D8 Bridge Engineer) questioned few items quantities.
   Quantities being corrected and estimate being revised.