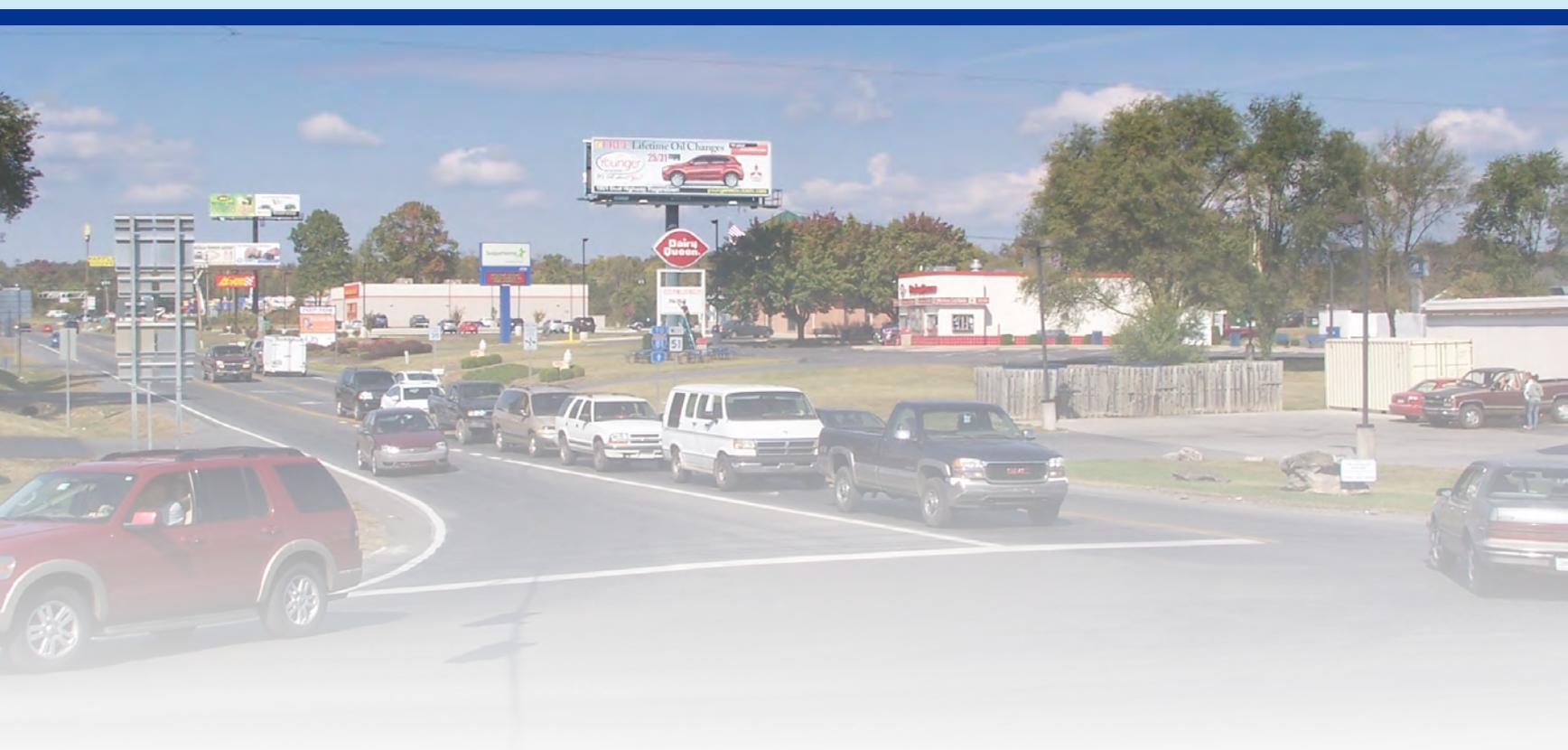




West Virginia Department of Transportation
Division of Highways

INWOOD BYPASS BERKELEY COUNTY

Environmental Assessment



Prepared for:

**U.S. Department of Transportation
Federal Highway Administration
West Virginia Department of Transportation
Division of Highways**

October 24, 2014

State Project X302-51-5.18 00
Federal Project No. STP-0051 (033)D

INWOOD BYPASS STUDY
Berkeley County, West Virginia

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to 42 USC 4332(2)(C)
U.S. Department of Transportation, Federal Highway Administration and
West Virginia Department of Transportation, Division of Highways

10/27/2014
DATE OF APPROVAL

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FOR WEST VIRGINIA DIVISION OF HIGHWAYS

10/31/2014
DATE OF APPROVAL

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This proposed project consists of a new bypass to address congestion and improve traffic operations along WV 51 from Berkeley County Road 30 just west of I-81 to Sulphur Springs Road in Inwood, West Virginia.

JAN 08 2015

Comments on this Environmental Assessment are due by _____ and should be sent to:

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INWOOD BYPASS STUDY: BERKELEY COUNTY

ENVIRONMENTAL ASSESSMENT

October 24, 2014

**ENVIRONMENTAL ASSESSMENT
INWOOD BYPASS STUDY
BERKELEY COUNTY, WEST VIRGINIA**

**STATE PROJECT X302-51-5.18 00
FEDERAL PROJECT STP-0051(033)D**

**PREPARED FOR:
US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

OCTOBER 2014

EXECUTIVE SUMMARY

The West Virginia Department of Transportation (WVDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing improvements to address congestion and improve traffic operations along WV 51 from Berkeley County Road 30 just west of I-81 to Sulphur Springs Road in Inwood, West Virginia. This project includes analysis of traffic, the surrounding environment, and potential alternates.

This Environmental Assessment (EA) document has been prepared in compliance with the National Environmental Policy Act (NEPA) and related laws and regulations.

Purpose and Need

The purpose of the project is to address congestion, improve traffic operations along WV 51 and US 11 in the Town of Inwood, and facilitate economic development. The segments of WV 51 and US 11 included in the study area experience significant delays caused by long queue lengths at intersections and, consequently, low travel speeds through town. Inwood experiences significant congestion and delays along WV 51 and US 11. Each of the six area intersections evaluated in this study will operate at a Level of Service (LOS) F for one or more peak hour periods in 2040.

Alternates

Four alternates, including the No-Build condition, have been considered in this EA. The No-Build condition includes the existing roadways and will have no improvements beyond routine roadway maintenance. This alternate assumes that only the currently programmed, committed and funded roadway projects in the study area will be completed, with the exception of the build alternate for the Inwood Bypass Study.

Alternate 1 consists of improvements to three existing roadway segments. Beginning west of I-81 to the intersection of US 11, improvements to WV 51 include widening from three lanes to five lanes, including two lanes in each direction with one center turn lane. Along US 11, between WV 51 W and WV 51 E, the roadway will be widened from three lanes to five lanes. Along Middleway Pike from US 11 to Sulphur Springs Road, improvements to WV 51 include widening to varying lane configurations (three, four or five lanes).

Alternate 2 consists of widening existing WV 51W from west of I-81 to the intersection of US 11 to five lanes; improvements to the US 11 and WV 51W intersection; and construction of a roadway on a new alignment from WV 51W and US 11 to approximately Surveyors Drive and WV 51E. This alternate eliminates the offset signalized intersections at US 11 and WV 51 and provides a more direct flow for eastbound and westbound traffic along WV 51. The new alignment (bypass) extends WV 51 W to the east and south through the existing farm field and ties back into Middleway Pike at a signalized intersection. The bypass will contain five lanes (two in each direction with one two-way center turn lane). Improvements to Middleway Pike between Surveyors Drive and Sulphur Springs Road include the addition of one center two-way turn lane (for a total of three lanes).

Alternate 2A consists of the same general alignment as described for Alternate 2; however, the signalized intersections would be replaced with roundabouts at the following locations: WV 51W and US 11, WV 51 E where the new bypass ties back into Middleway Pike (near Surveyors Drive), WV 51 W and Pilgrim Street,

and at the northbound and southbound I-81 interchange ramps. Roundabouts will be designed as conventional roundabouts, consisting of one center circular movement lane and one entry/exit lane. The alignment was also shifted in several locations to avoid impacts to commercial properties.

Environmental Impacts

This EA evaluates the existing environmental conditions in the study area, as well as the likely impacts to the environmental resources from the alternates carried forward for detailed study. Environmental impacts of the build alternates are summarized in **Table S-1** and are provided in detail in the technical reports and memoranda for each resource. Technical reports and memoranda are available upon request.

Table S-1. Impact Matrix

Impacts	No-Build	Alternate 1	Alternate 2	Alternate 2A
Right of Way				
Full Acquisition (#/acres)	0	8 (3.3 acres)	16 (12.8 acres)	17 (8.4 acres)
<i>Farmland</i>	0	8 (3.3 acres)	3 (5.8 acres)	1 (1.5 acres)
<i>Commercial</i>	0	0	6 (5.1 acres)	4 (4.1 acres)
<i>Institutional</i>	0	0	0	0
<i>Residential</i>	0	0	5 (1.6 acres)	8 (2.3 acres)
<i>Vacant</i>	0	0	2 (0.3 acres)	4 (0.5 acres)
Partial Acquisition (#/acres)	0	46 (2.4 acres)	24 (11.2 acres)	19 (12.0 acres)
<i>Farmland</i>	0	1 (0.2 acres)	1 (8.0 acres)	2 (10.4 acres)
<i>Commercial</i>	0	31 (1.7 acres)	11 (1.5 acres)	9 (1.2 acres)
<i>Institutional</i>	0	2 (0.1 acres)	0	0
<i>Residential</i>	0	12 (0.4 acres)	12 (1.7 acres)	8 (0.4 acres)
<i>Vacant</i>	0	0	0	0
Relocation (#)	0	15	8	10
<i>Farmland</i>	0	0	0	0
<i>Commercial</i>	0	10	4	3
<i>Institutional</i>	0	0	0	0
<i>Residential</i>	0	5	4	7
<i>Vacant</i>	0	0	0	0
Environmental Justice	No impact	No adverse impact	No adverse impact	No adverse impact
Natural Resources				
Wetlands (acres)	0	0	0	0
Waters of US (linear feet)	0	0	0	0
Forested Area (acres)	0	0	0	0
RTE Species	0	0	0	0
100-Year Floodplain	0	0	0	0
Hazardous Materials Sites of Concern	None Present	None Present	None Present	None Present
Air Quality	Would continue to worsen	No long-term impact	No long-term impact	No long-term impact
Noise				
Number of Receptors at 66 dBA or Greater	20	20	20	22

Table S-1. Impact Matrix

Impacts	No-Build	Alternate 1	Alternate 2	Alternate 2A
Number of Receptors Experiencing a 15 dBA or Greater Increase	0	0	4	0
Number of Impacted Properties	0	20	24	22
Number of NSAs where Barrier Mitigation is reasonable and feasible	0	0	0	0
Number of Eligible Historic Properties within APE	N/A	1	1	1
Archaeological Resources				
Number of Known Archaeological Sites within APE	N/A	N/A	6 sites, none warrant additional investigation	6 sites, none warrant additional investigation
Section 4(f) Properties	N/A	1 (de minimis impact)	1 (de minimis impact)	1 (de minimis impact)
Cost*	\$0	\$22,504,000	\$21,410,000	\$21,450,000

* Does not include right-of-way.

The No-Build condition and Alternate 2A have been carried forward for more detailed evaluation. Alternate 1 was eliminated from further consideration due to its inability to meet the project purpose and need, and a high number of property relocations. Alternate 2 was eliminated from further consideration due to property impacts, including four commercial property acquisitions. One of the property relocations that would result from Alternate 2 is a major natural gas distribution facility. Disrupting that facility would significantly impact natural gas supply to the Inwood community. Additionally, Alternate 2 required additional traffic lanes at the signalized intersections. The Traffic Impact Study indicated that levels of service for Alternates 1 and 2 at the signalized intersections would deteriorate to a failing level of service near the end of the study period. Alternate 2A eliminates the traffic signals and provides a higher level of service throughout the study period.

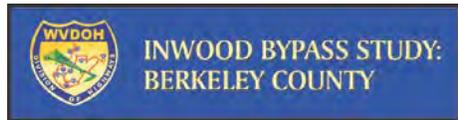


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Appendix B. Agency Coordination

I. PURPOSE AND NEED

A. Introduction

The West Virginia Department of Transportation (WVDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing improvements to address congestion and improve traffic operations along WV 51 from Berkeley County Road 30 just west of I-81 to Sulphur Springs Road in Inwood, West Virginia. This project includes analysis of traffic, the surrounding environment, and potential alternates. The proposed action is listed in the WVDOT 2012-2015 Transportation Improvement Program. This Environmental Assessment (EA) document has been prepared in compliance with the National Environmental Policy Act (NEPA) and related laws and regulations.

1. Study Area

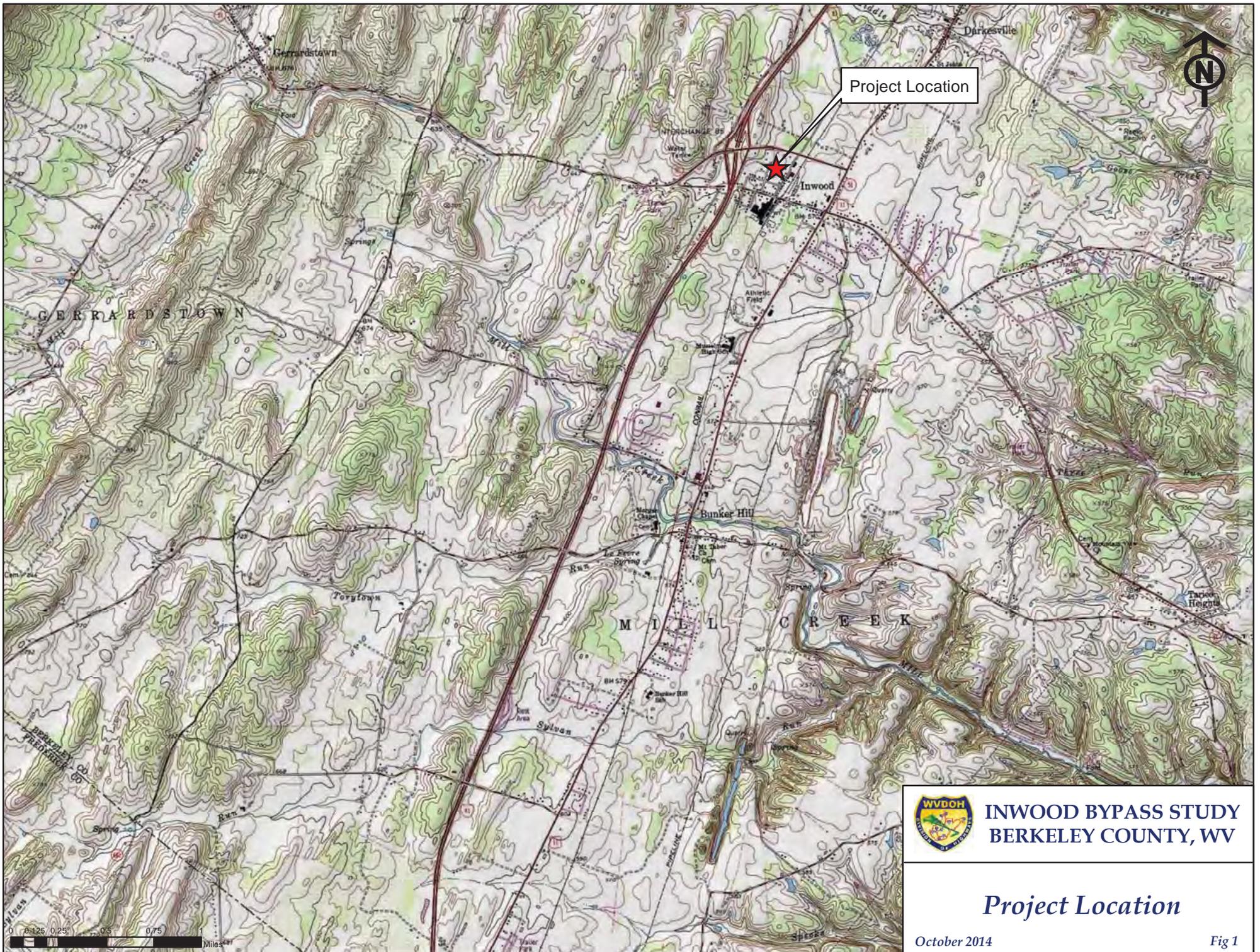
The project is located in Inwood, Berkeley County, West Virginia (see **Figure 1**). Gerrardstown Road (WV 51 West), Winchester Avenue (US 11) and Middleway Pike (WV 51 East) form a dog-leg route that is heavily traveled. The route contains two signal-controlled, offset intersections approximately 1,200 feet apart. The section of WV 51 between I-81 and Winchester Avenue is a three-lane roadway with typical lane widths of 11 feet and 6 foot-wide shoulders. The center turn lane serves as a left-turn lane for both eastbound and westbound traffic. The overlapping section of WV 51 and US 11 is also three lanes (11-foot lanes with 1-foot shoulders) with a two-way left-turn center lane. East of the southern intersection of WV 51 and US 11, WV 51 becomes a two-lane road with two 11-foot lanes and 4-foot gravel shoulders. There is a designated left-turn lane for westbound traffic and a right-turn lane for entrance to the commercial property at the southern intersection of WV 51 and US 11.

For the purpose of this study, the section of WV 51 between US 11 and I-81 will be referred to as WV 51W. The section of WV 51 east of the intersection with US 11 to Sulphur Springs Road (CR 51/7) will be referred to as WV 51E. The speed limit along WV 51 is 35 mph within Inwood and 45 mph outside of Inwood.

2. Project History

The relocation of WV 51 (a bypass) in Inwood has been studied in the past by the Planning and Research Division as far back as 1985 in response to concerns voiced by the Berkeley County Commission. An updated engineering assessment and capital cost estimate for the project were prepared in 2006.

Berkeley County and the West Virginia Department of Transportation (WVDOT), Division of Highways (DOH), in cooperation with the Federal Highway Administration (FHWA), are proposing a new bypass to address congestion and improve traffic operations along Route 51 from Berkeley County 30 just west of I-81 to Sulphur Springs Road in Inwood, West Virginia. This project includes analysis of traffic, the surrounding environment, and potential alternates in compliance with the National Environmental Policy Act (NEPA). The proposed action is listed in the WVDOT 2012-2015 State Transportation Improvement Program (STIP).



B. Project Purpose

The purpose of the project is to address congestion, improve traffic operations along WV 51 and US 11 in the Town of Inwood, and facilitate economic development.

C. Project Need

1. Congestion

Vehicles traveling in Inwood along the segments of WV 51 and US 11 included in this study experience significant delays. These delays are caused by long queue lengths at intersections and the resulting low travel speeds through town.

The existing conditions analysis shows that the northbound left turn movement from US 11 onto westbound WV 51 (Gerrardstown Road) and the southbound left turn movement from US 11 onto eastbound WV 51 (Middleway Pike) both exceed the available queue storage along US 11 between these two intersections during both the AM and PM peak hours. Other areas where the queue length significantly exceeds the available storage include the westbound shared through/left turn and separate right turn movements from WV 51 (Middleway Pike) at US 11 during the PM peak hour, the right turn movement from northbound US 11 onto eastbound WV 51 (Middleway Pike) during both the AM and PM peak hours, the left turns from WV 51 onto the ramps to both northbound and southbound I-81 during both the AM and PM peak hours, and the shared through/right turn movement from eastbound WV 51 onto the ramp to southbound I-81 during the AM peak hour. Slow vehicle speeds may be attributed to the long queue lengths causing vehicles to sit through several signal cycles before passing through a given intersection.

2. Traffic Operations

Inwood experiences significant congestion and delays along WV 51 and US 11. WV 51 provides the primary east-west route through town. However, this route does not provide a direct connection to I-81 and points father east and west, it requires making turns at two heavily congested intersections and traveling along US for approximately 1,200 feet.

Level of service (LOS) is used as to evaluate congestion by comparing the Annual Average Daily Traffic (AADT) to the daily traffic carrying capacity of a roadway segment or intersection. LOS is dependent on a number of factors including the physical characteristics of the road (number of lanes, type of terrain, frequency of access points, ability for vehicles to pass, etc.) and the characteristics of the traffic using the facility (volume, vehicle mix, free flow speed, etc.). LOS is described on a scale of A to F, where A is free-flowing traffic and F is congested traffic. LOS D, E, and F are generally considered undesirable traffic conditions that warrant consideration of capacity.

Analysis of the existing traffic operations in Inwood indicate that the eastbound and westbound movements at the WV 51 / True Apple Way / US 11 intersection and the southbound movements at the WV 51 / Sulphur Springs Road intersection currently experience the worst delays and have the poorest levels of service. The analysis also shows that each of the six area intersections evaluated will operate at a LOS F for one or more peak hour periods in 2040.

II. ALTERNATES

This section discusses the range of alternates considered for the Inwood Bypass Study, the process used to screen the alternates, the alternates eliminated from further study, and the alternates carried forward for further study. WVDOT has identified a recommended preferred alternate; however, the final selection of an alternate will not be made until the associated impacts and comments on the EA from the formal public comment period have been fully evaluated.

A. Alternates Considered

1. No-Build Condition

The No-Build condition includes the existing roadways and will have no improvements beyond routine roadway maintenance. This alternate assumes that only the currently programmed, committed and funded roadway projects in the study area will be completed, with the exception of the build alternates for the Inwood Bypass Study.

Under the No-Build condition, the current intersection traffic control types will remain unchanged, except for the intersection of WV 51 and Sulphur Springs Road. A traffic signal is planned for this intersection separately from the Inwood Bypass project, and is assumed to be in place by 2016, along with a new separate right-turn lane along southbound Sulphur Springs Road. The No-Build condition will not meet the project purpose and need, but is retained as a baseline condition against which other alternates may be compared.

2. Build Alternates

All design criteria, including shoulder width, clear zone considerations, lane transition lengths, and intersection geometry will be in accordance with WVDOT and AASHTO Standards. Proposed stormwater management systems have also been included in the design considerations. The build alternates are described in detail in the *Alternatives Design Report*.

a. Alternate 1: Improve Roadway on Existing Alignment

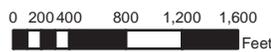
Alternate 1 consists of improvements to three existing roadway segments. Beginning west of I-81, at Arden Nollville Road to the intersection of US 11, improvements to WV 51 include widening from three lanes to five lanes, including two lanes in each direction with one center turn lane. The improvements are shown on **Figure 2**.

The WV 51 bridge over I-81 will be widened to five lanes. This expansion requires adjustments to the existing radii at the interstate ramps, minor grading at the existing ramps and pavement overlay. These improvements will not require modifications to interstate access and thus will not require an Interstate Modification Report, as per FHWA. Along US 11, between WV 51 W and WV 51 E, the roadway will be widened from three 11-foot lanes to five 12-foot lanes (two lanes in each direction with one center turn lane) and 4-foot shoulders. Through and turning lane assignments vary at each intersection. Widening will also occur along US 11 north of the northern intersection with WV 51 and south of the southern



Legend

- Alternate 1
- Alternate 2
- Alternate 2A (Preferred Alternate)
- Limits of Disturbance for Preferred Alternate
- Property Boundary



**INWOOD BYPASS STUDY
BERKELEY COUNTY, WV**

Alternates Considered

October 2014

Fig 2

intersection with WV 51 to taper the widened section of roadway and tie back into the existing roadways (two lanes).

Along Middleway Pike from US 11 to Sulphur Springs Road, improvements to WV 51 include varying lane configurations. Beginning at the US 11 intersection, the roadway contains five 12-foot lanes (two eastbound through lanes, one westbound through lane, one westbound left-only lane, and one westbound right-only lane) to Pedal Car Drive. From Pedal Car Drive to Surveyor Drive, WV 51 will be widened to four lanes (one westbound through lane, one center two-way turn lane, one eastbound through lane, and one right turn lane at Surveyor Drive). From Surveyor Drive to Sulphur Springs Road, WV 51 will be widened to three lanes (one eastbound, one westbound, and one two-way turn lane).

The total estimated cost (not including right-of-way acquisition) for Alternate 1 is approximately \$22,504,000.

An option to this alternate, Alternate 1A, includes the same improvements as Alternate 1, with the exception that new roundabouts will be constructed instead of signalized intersections at the following six locations: northbound and southbound ramps at I-81; Gerrardstown Road and Pilgrim Street; US 11 and WV 51W; US 11 and WV 51 E; and Middleway Pike and Sulphur Springs Road.

Alternate 1A is considered an option to Alternate 1. It was not taken to the same level of engineering detail as Alternate 2 or Alternate 2A because it was established early in the project development that it would not meet the project purpose and need (see **Section II.B.1** for more detail).

b. Alternate 2: Bypass with Signalized Intersections

Alternate 2 will widen existing WV 51W from Arden Nollville Road to the intersection of US 11 to five lanes; improve the US 11 and WV 51W intersection; and construct a roadway on a new alignment from WV 51W and US 11 to approximately Surveyor Drive and WV 51E. This alternate eliminates the offset intersections at US 11 and WV 51 and provides a more direct flow for eastbound and westbound traffic along WV 51 (see **Figure 2**).

The WV 51 bridge over I-81 will be widened to five 12-foot lanes. This expansion will require adjustments to the existing radii at the interstate ramps, minor filling at the existing ramps and pavement overlay. These improvements will not require modifications to interstate access and thus will not require an Interstate Modification Report, as per FHWA.

The new alignment (bypass) extends WV 51 W to the east and south through the existing farm field and ties back into WV 51E (Middleway Pike) near Surveyor Drive. A new signalized intersection will be added where the bypass ties back into Middleway Pike. The bypass will contain five 12-foot lanes (two in each direction with one two-way center turn lane) with 10-foot shoulders. An additional westbound right turn lane will be added at the intersection of WV 51 and US 11. Improvements to Middleway Pike between Surveyor Drive and Sulphur Springs Road include the addition of one center two-way turn lane (for a total of three lanes).

The total estimated cost (not including right-of-way acquisition) for Alternate 2 is approximately \$21,410,000.

a. Alternate 2A: Bypass with Roundabouts

Alternate 2A, includes similar improvements as Alternate 2, with the exception that new roundabouts will be constructed instead of signalized intersections and the alignment has been shifted to avoid several commercial properties. Five roundabouts would be constructed at the following locations: WV 51W and US 11, WV 51 E where the new bypass ties back into Middleway Pike (near Surveyor Drive), WV 51 W and Pilgrim Street, and at the northbound and southbound I-81 interchange ramps. The roundabouts will be designed as conventional roundabouts, consisting of one center circular movement lane and one entry/exit lane.

The alignment was also shifted to avoid impacts to four commercial properties. Surrounding the WV 51W / US 11 intersection, WV 51 was shifted north and US 11 was shifted slightly west. Within the farm field the new bypass location was shifted slightly east to allow adequate curvature for the roundabout and tie in to existing WV 51E. The bypass tie in location was shifted to the west near Surveyor Drive.

The total estimated cost (not including right-of-way acquisition) for Alternate 2A (including all five roundabouts) is \$21,450,000.

B. Alternates Eliminated from Detailed Study

The ability of each alternate to meet the project purpose and need was used to screen the alternates and options to determine which should be carried forward for detailed study. Additionally, preliminary impacts to right-of-way, environmental resources, and cultural resources were considered to determine whether an alternate should be carried forward and to determine preliminary cost estimates. Detailed analysis of the impacts is included in the supporting technical reports and memoranda.

1. Alternate 1: Improve Roadway on Existing Alignment

Alternate 1 will not eliminate the offset, dog-leg movement for east-to-west travel through Inwood. As a result, traffic congestion will not be significantly improved as delays will continue to occur. In the design year (2040) during the PM peak hour, drivers along this route will experience approximately 165 seconds of delay combined at the two traffic signals along US 11 under Alternate 1 (approximately 40 percent longer than the delay under Alternate 2). The cumulative effect of this delay being experienced by all vehicles traveling along this route is substantial. Furthermore, as other operational improvements are made at other locations along a driver's commute route, every incremental reduction in delay can potentially add up to a substantial travel time savings. Alternate 1 would reduce travel time over the No-Build condition.

Based on analyses included in the supporting technical reports and memoranda for this project, (and as summarized in **Chapter 3** of this EA) Alternate 1 will have greater impacts to socioeconomic resources and right-of-way within the study area.

Alternate 1 will require substantial property acquisition to accommodate the widened roadway along US 11 and WV 51. Alternate 1 will result in approximately 54 impacted properties (35 commercial, 14 residential, one agricultural, and 4 institutional). The widening and acquisition along US 11 will disrupt the commercial core of Inwood, directly through property acquisition and indirectly by modifications to

property access. Lane expansion, coupled with the offset intersections remaining in place, will continue to generate traffic delays. These delays will exacerbate access conflicts along the roadway. Alternate 1 will not facilitate future economic development.

Alternate 1 has been eliminated from detailed study because it will not meet the project purpose and need and will cause a substantial number of property impacts and relocations.

2. Alternate 2: Bypass with Signalized Intersections

Alternate 2 will meet the project purpose and need by eliminating the offset, dog-leg intersections for east-to-west traffic through town. However, under Alternate 2, the delay at the intersections along US 11 would be reduced by 60 percent (approximately one and a half minutes) compared to Alternate 1 but would be three times greater (approximately 45 seconds longer) compared to Alternate 2A. The additional lanes along WV 51 will accommodate design year traffic volumes and improve congestion in the area.

Based on analyses included in the supporting technical reports and memoranda for this project, (and as summarized in **Chapter 3** of this EA) Alternate 2 will have fewer property relocations and fewer overall number of properties impacted than Alternate 1; however the impacts to commercial properties remain significant. One of the property relocations that would result from Alternate 2 is a major natural gas distribution facility. Disrupting that facility would significantly impact natural gas supply to the Inwood community. Additionally, Alternate 2 would require the addition of traffic lanes at the signalized intersections. Alternate 2 has been eliminated from further study due to significant impact to socioeconomic resources within the Inwood community.

The results of the analysis of the Year 2040 Alternate 2 traffic operations with signalized intersections indicate that each of the key intersections evaluated for this study will operate at LOS E or better during the AM and PM peak hours. Five individual turning movements will operate at LOS F under this alternate.

C. Alternates Retained for Detailed Study

1. No-Build

The No-Build condition will not meet the project purpose and need; however, the No-Build is retained as a baseline condition against which other alternates may be compared. If no improvements are made to the transportation network by the 2040 design year, each of the key intersections within the study area will operate at LOS F with some drivers experiencing delays of over five minutes at each location. Congestion and traffic operations will continue to worsen.

2. Alternate 2A: Bypass with Roundabouts (Preferred Alternate)

Alternate 2A will meet the project purpose and need. The bypass will eliminate the offset, dog-leg intersections for east-to-west traffic through town thereby reducing turning movement conflicts. Under Alternate 2A, the delay at the intersections along US 11 will be reduced by 75 percent (approximately 45 seconds) compared to Alternate 2. The additional lanes along WV 51 will accommodate design year traffic volumes and improve congestion in the area.

Alternate 2A will meet the project need better than Alternate 1 or Alternate 2 and will provide the best operational level of service for intersections throughout the design life of the project. The results of the Year 2040 analysis show that under Alternate 2A, each intersection will operate at LOS C or better during the AM and PM peak hours. Furthermore, the individual turning movements at each roundabout will operate at LOS B or better (see *Traffic Technical Report* for more detail).

Constructing roundabouts at the key intersections within the study area will provide better traffic operations in 2040 than using traffic signals. The roundabouts provided in Alternate 2A will allow for a free-flowing circulation of traffic and ultimately shorter traffic queues for east to west travel through the Inwood area. With the roundabouts, Alternate 2A will sustain level of service at area intersections by eliminating delays associated with traffic signals.

Alternate 2A will require only minimal widening and shifts along US 11 at the modified intersection with Gerrardstown Road (WV 51W) and the proposed Inwood Bypass. Alternate 2A provides for three additional lanes on WV 51W, but improvements will be located primarily within existing right-of-way.

Alternate 2A avoids impacts to four commercial properties (self-storage, auto part store, Mountaineer Gas, and United Bank), all of which would result in relocations under Alternate 2.

Alternate 2A will facilitate future economic development by providing more efficient travel east-to-west through the Inwood area and by improving access to commercial and residential areas. This alternate is preferred because it will best meet each element of the project purpose and need compared to other alternates and will result in a fewer number of impacted properties and fewer relocations than Alternate 1 and less significant impacts to commercial properties than Alternate 2.

III. EXISTING CONDITIONS AND ENVIRONMENTAL EFFECTS

This chapter describes the conditions in the study area and impacts of the retained alternates: No-Build condition and Alternate 2A. Additional details, including preliminary impact calculations for Alternate 1 and Alternate 2 are included in **Table S-1** and provided in individual technical reports and memoranda, which are available upon request.

A. Land Use and Development

1. Land Use

Existing Conditions

The current land use in and around Inwood includes a mix of commercial, residential and agricultural uses. Inwood is a community with a deep agricultural background, initially settled around mills and farmed areas and later developing further around the Musselman Apple Plant. West of the I-81 corridor, the study area consists of light residential and commercial development interspersed between pockets of agricultural land and forest.

Inwood is composed mainly of low-density, single-family, detached housing and a variety of both strip and single-use commercial and older industrial buildings. Light retail and commercial businesses front WV 51 from the I-81 interchange to US 11. To the south of the commercial strip the setting transitions into a mix

of single residences spaced along a gridded street network. The setting transitions to a mix of residential and commercial development along US 11 and WV 51, with pockets of residences nestled between modern convenience stores, gas stations, a post office, and banks. While this setting persists along WV 51 just east of US 11, the density of development lessens further to the east and becomes increasingly agricultural in character. Land use in the study area is shown on **Figure 3**.

Environmental Effects

The No-Build condition will have no direct impacts on the existing land use in the area.

Implementation of Alternate 2A will result in the conversion of land from its present use to transportation use. Under Alternate 2A, 20.4 acres will be converted to transportation use, the majority of which (11.9 acres) are farmland, 5.3 acres are commercial, 2.7 acres are residential and the remaining area is vacant.

The farmland to be impacted by Alternate 2A, located at 7519 Winchester Avenue, has been subdivided, the smaller parcels of which are slated for residential or commercial development. Additional information about farmland and urban development is found in **Section III.B**.

2. Planned Development

Existing Conditions

Per the Berkeley County Planning Commission 2012 Activity Report, the most recent annual update on planned development, there are no planned developments in the study area. However, portions of the farmland located at 7519 Winchester Avenue has been subdivided (per the records in the Berkeley County Clerk's Office) and is anticipated to be converted to commercial and/or residential development. All areas surrounding the farm have been developed in recent years. This farm is one of the few remaining parcels available for commercial or residential development near Inwood.

Environmental Effects

The No-Build condition would not impact planned development.

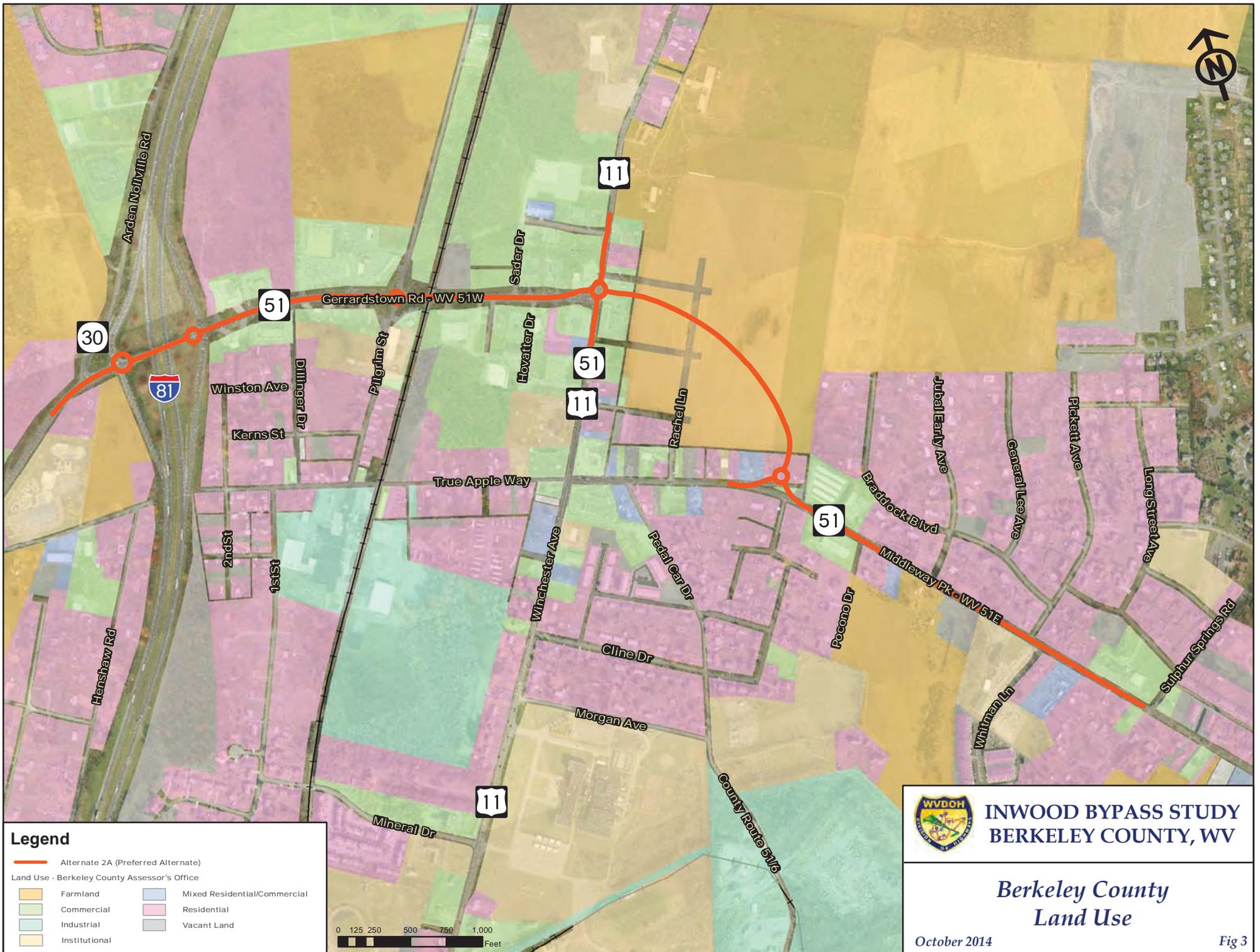
Alternate 2A will result in impacts to planned development by converting some of the lands currently proposed for development to transportation use. However, by alleviating congestion, and improving traffic operations along WV 51 and US 11, Alternate 2A will facilitate future development in the Inwood area. Alternate 2A will provide access to farmland that is already proposed for development.

3. Transportation Improvements

Existing Conditions

According to the Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO) 2012-2015 *Transportation Improvement Program (TIP)* (Revision 14), project B2010-06, which includes the addition of traffic signal and right turn lane to Sulphur Springs Road at Middleway Pike/WV 51, will be

Figure 3: Land Use



completed in 2016. This project will overlap with the Inwood Bypass along the eastern limits of the study area.

Other transportation improvements proximal to, but not overlapping the Inwood Bypass study area, include project B2013-01 (replacement of crossing signals and circuits at True Apple Way Railroad Crossing), and project B2013-08 (upgrade of crossing signal at WV 51 Railroad Crossing).

The Inwood Bypass project is also included in the WVDOH 2012-2015 STIP and is consistent with all other planned projects in the STIP.

Environmental Effects

Under the No-Build condition, traffic, and congestion conditions will continue to worsen, which will potentially diminish the progress toward regional transportation goals that are supported by planned transportation improvements.

Alternate 2A will be consistent with the Long-Range Plan and HEPMPO Transportation Improvement Program. Alternate 2A will not conflict with the improvements at the intersection of Sulphur Springs Road and Middleway Pike/WV 51.

B. Farms and Farmland

Existing Conditions

There is an active farm located east of US 11 and north of Middleway Pike (7519 Winchester Avenue). This farm has been subdivided, the smaller parcels of which are slated for residential or commercial development. Due to its location, entirely within the Inwood urbanized area and proposed for development, this farm is exempt from the requirements stipulated under the Farmland Protection Policy Act (7 CFR Section 658.5).

Environmental Effects

The No-Build condition will not result in impacts to farms and farmland.

Alternate 2A will result in 11.9 acres of impacts to the farmland (two properties will be partially impacted and one property will be a total impact). No other farmland exists in the study area.

The farmland which will be impacted is proposed for development. Thus, the property is exempt from the Farmland Protection Policy Act. Additionally, Alternate 2A will not have an impact on the rate of additional farmland conversion in the vicinity of the project. More information is included in **Section III.K**.

C. Socioeconomics

1. Demographics

For the purpose of this socioeconomic investigation, data from both the 2010 US Census and 2012 American Community Survey (ACS) 5-Year Estimates (2008-2012) were used to evaluate population, race, housing, employment, income, and population in poverty. Census Block-level data from the 2010 Census was used for the 29 Census Blocks that intersect the project construction limits for both build alternates;

study area Census Blocks are shown on **Figure 4**. Because Block-level data was not available for employment and income, Block Group-level data was used for the four Census Block Groups that intersect the project construction limits for both build alternates; study area Census Block Groups are shown on **Figure 5**.

Existing Conditions

a. Population, Housing, Employment, and Income

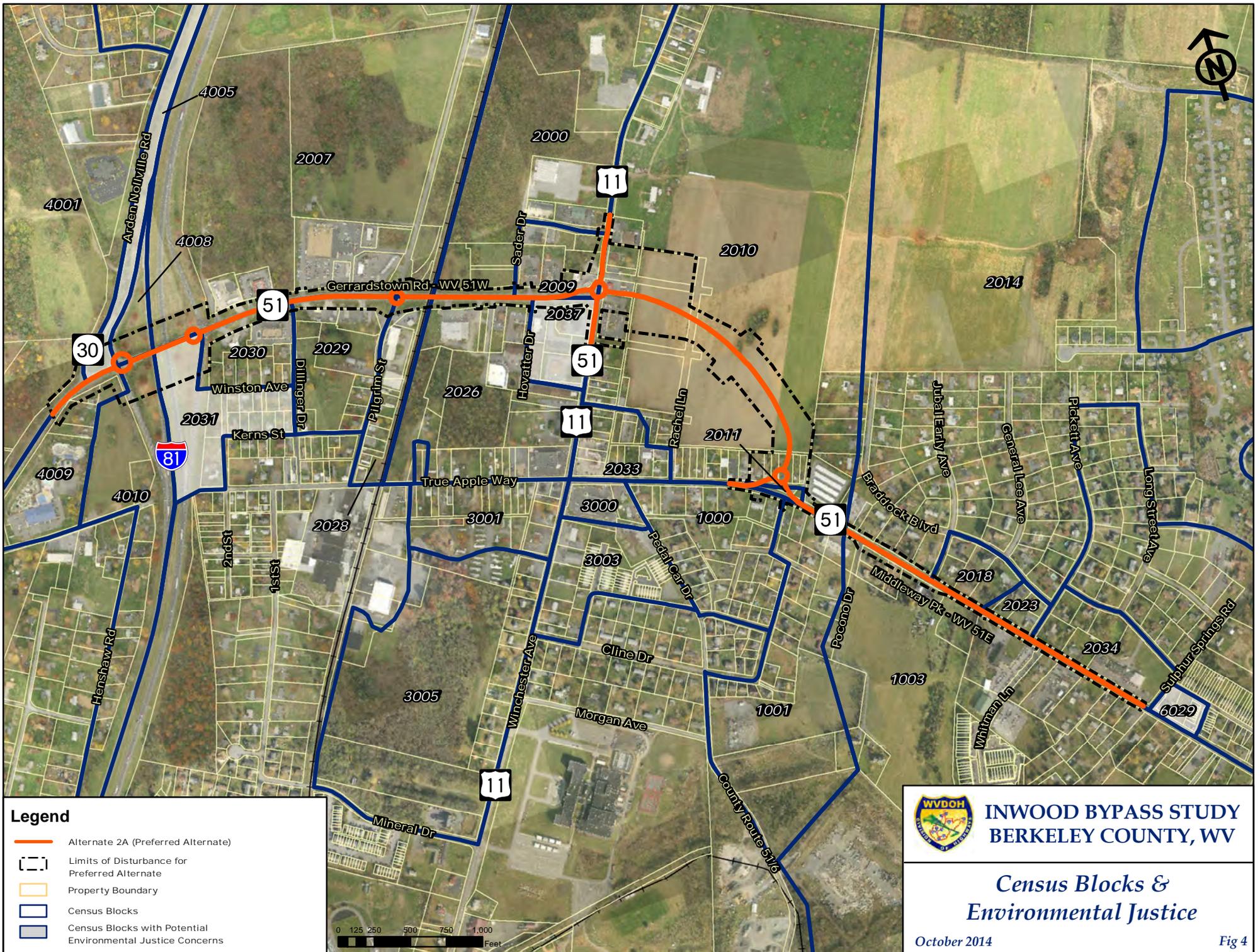
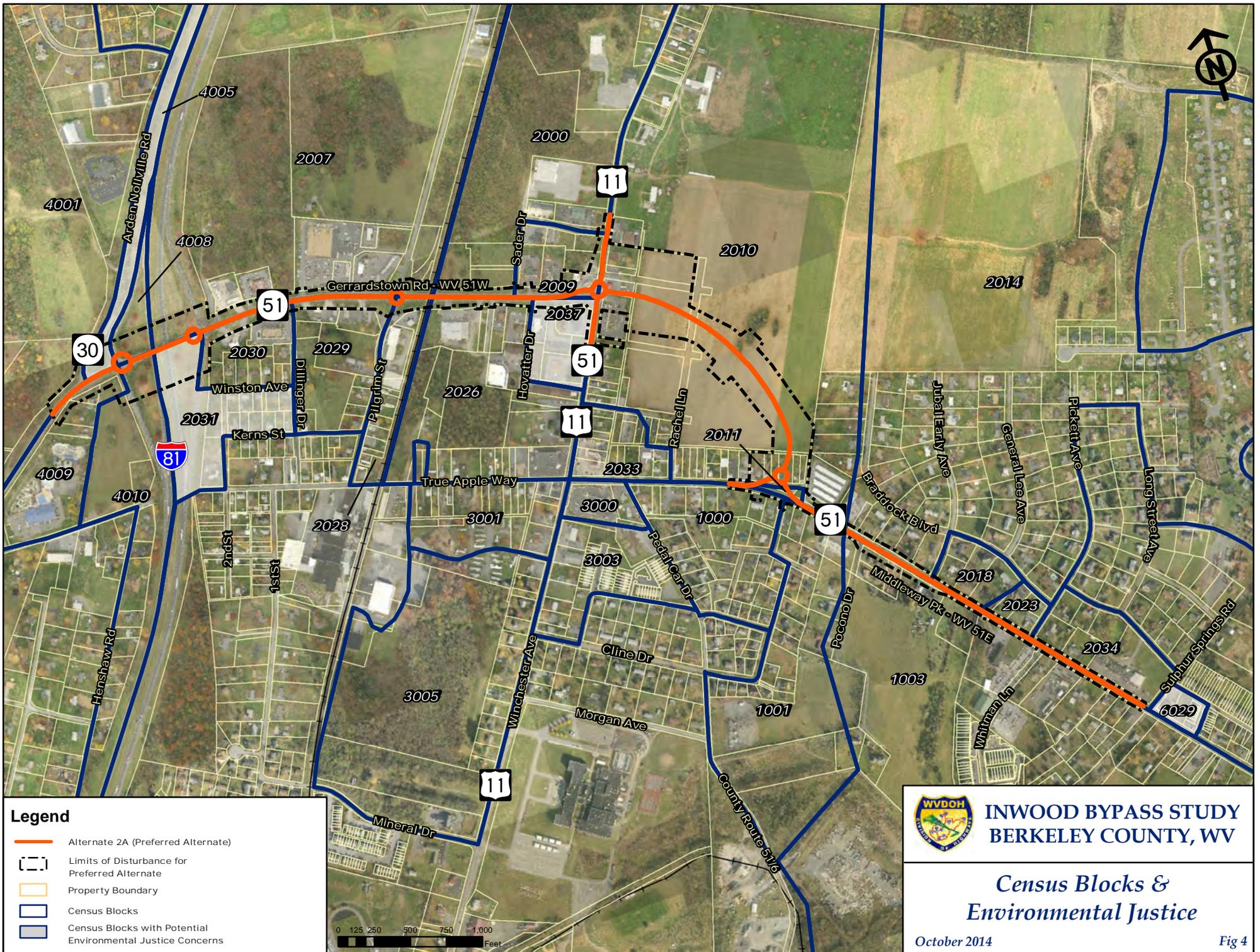
The 2010 Census indicates the population within the study area was 2,067 persons. In the same year, there were 863 housing units with approximately 2.4 persons per household. Within the study area Census Blocks, White alone is the most prevalent race (89.3 percent), followed by Black or African American alone (6.0 percent), Other Race and/or Multiple races (3.4 percent), Asian alone (1.0 percent), and American Indian and Alaska Native alone (0.4 percent).

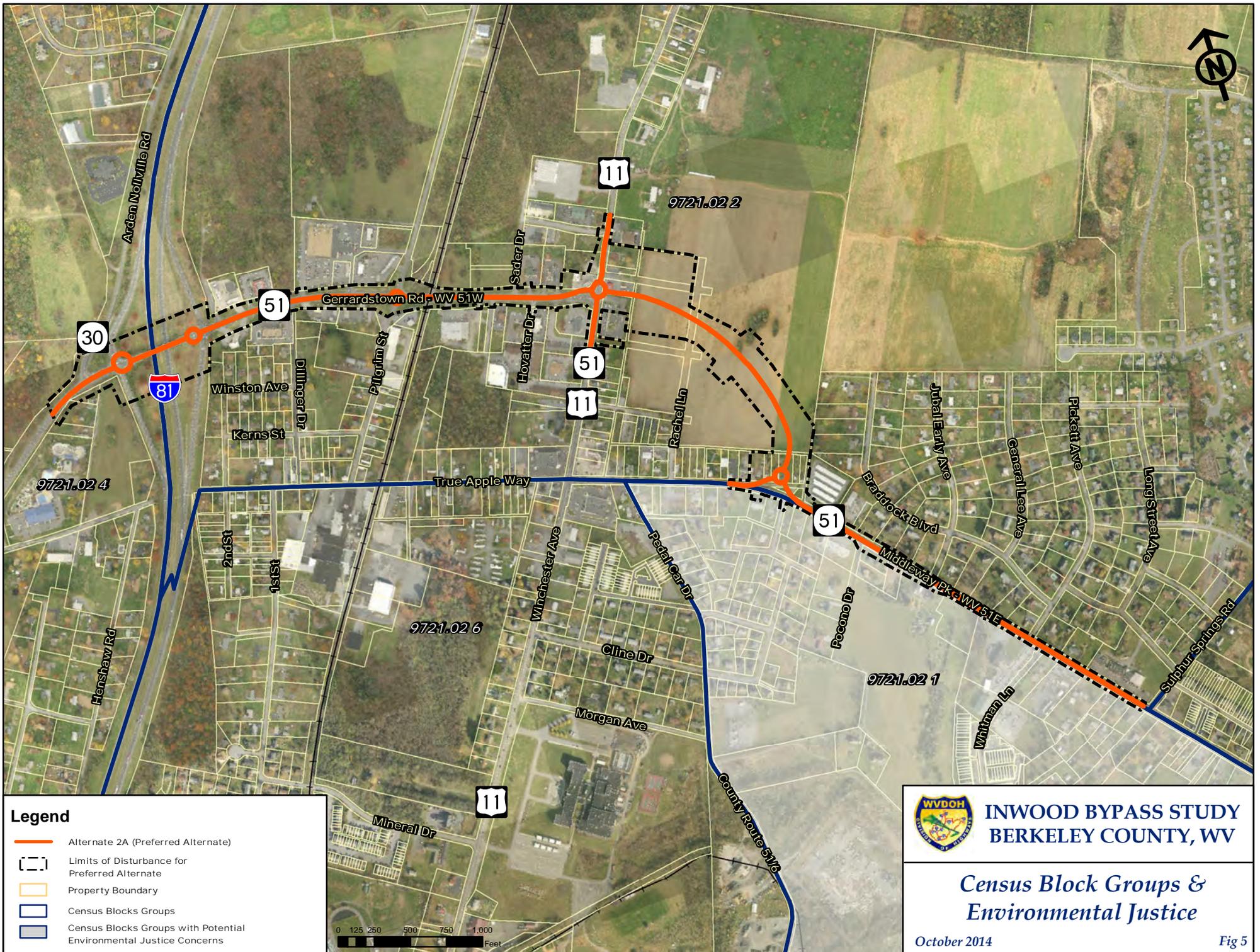
As shown in **Table 1**, the proportion of persons in the study area who identify as a minority race is 10.7 percent. This percentage is around 1.5 percentage points lower than the same population in Berkeley County (12.2 percent) and 4.6 percent higher than the same population in the State of West Virginia (6.1 percent) (see the *Socioeconomic Technical Memorandum* for more detail).

The Census Bureau allows respondents to claim Hispanic or Latino ethnicity, in addition to race. Approximately three percent (2.7 percent) of the study area population identifies as having Hispanic or Latino ethnicity, regardless of race. This percentage is slightly lower than the same population in Berkeley County (3.8 percent) and slightly higher than the same population in the State of West Virginia (1.2 percent).

Approximately 37 percent (36.9 percent) of the study area labor force is employed. The study area labor force is approximately 52 percentage points lower than that of Berkeley County (88.4 percent) and 55 percentage points lower than that of West Virginia (91.9 percent). Major employers in Berkeley County include Berkeley County Schools, Veterans Administration Center, West Virginia Air National Guard, and Macy's- Online Fulfillment Center.

The median household income in the study area ranges between \$50,263 and \$72,589. This median household income in the study area is generally greater than the statewide average (\$40,400) and comparable to/slightly greater than the county average (\$53,332). No low-rent apartments or public housing is located in Inwood. (However, Section 8 vouchers are accepted within Inwood.)





Legend

- Alternate 2A (Preferred Alternate)
- Limits of Disturbance for Preferred Alternate
- Property Boundary
- Census Blocks Groups
- Census Blocks Groups with Potential Environmental Justice Concerns

0 125 250 500 750 1,000 Feet



**INWOOD BYPASS STUDY
BERKELEY COUNTY, WV**

*Census Block Groups &
Environmental Justice*

October 2014

Fig 5

Table 1: Minority Race and Ethnicity Composition

Geographic Area	Total Population	Percent of Persons Identifying as Minority Race	Percent of Persons Identifying as Minority (Hispanic and Latino) Ethnicity
West Virginia	1,852,994	6.1%	1.2%
Berkeley County	104,169	12.2%	3.8%
Study Area Census Blocks Total	2,067	10.7%	2.7%
1000	67	11.9%	0.0%
1001	47	14.9%	0.0%
1003	495	14.5%	3.8%
2000	102	8.8%	2.0%
2007	4	0.0%	0.0%
2009	0	N/A	N/A
2010	66	0.0%	3.0%
2011	4	0.0%	0.0%
2014	609	8.2%	2.3%
2018	6	0.0%	0.0%
2023	6	0.0%	0.0%
2026	19	15.8%	0.0%
2028	12	8.3%	0.0%
2029	13	7.7%	0.0%
2030	16	18.8%	0.0%
2031	31	25.8%	0.0%
2033	47	19.1%	4.3%
2034	10	0.0%	0.0%
2037	29	17.2%	13.8%
3000	0	N/A	N/A
3001	71	4.2%	9.9%
3003	141	17.7%	0.0%
3005	52	7.7%	7.7%
4001	132	1.5%	1.5%
4005	2	50.0%	0.0%
4008	0	N/A	N/A
4009	6	0.0%	0.0%
4010	64	4.7%	0.0%
6029	16	50.0%	0.0%

Sources: 2010 Census Redistricting Data: Hispanic or Latino, and Not Hispanic or Latino By Race; and Race

Notes: Where percentages are shown as "0.0%," assume a percentage less than 0.1 percent.

Highlighted rows indicate Census Blocks that have been identified as having an EJ population. Bolded percentages indicate the basis for further evaluation.

b. Environmental Justice

Census Blocks that have minority race and/or ethnicity populations exceeding the minority race and/or ethnicity populations of the total 29 study area Census Blocks by 10 percentage points or greater are identified as areas with potential Environmental Justice populations. Block Group-level data on poverty level was used to identify populations at risk for Environmental Justice consideration on a low-income basis. These Census Blocks and Block Groups were then further evaluated to determine if any disproportionately high and adverse effects will result from the Alternate 2A.

Four Census Blocks (2031, 2037, 4005, 6029) have populations of minority race and/or ethnicity persons that exceed that of the total study area Census Blocks (10.7 percent for minority race and 2.7 percent for minority ethnicity) by 10 percentage points or greater. These Blocks are shown on **Figure 4** and highlighted in **Table 1**, with the associated bolded percentages indicating on which basis (race and/or ethnicity) the Block has Environmental Justice potential. One Block Group (9721.02 1) is identified for potential Environmental Justice concerns based on percentage of persons living below the Federal poverty level used in Census statistics. This Block Group is shown on **Figure 5** and highlighted in **Table 2**.

Table 2: Population Below Poverty Level

Geographic Area	Total Population	Percent Below Poverty Level
West Virginia	1,852,994	17.6%
Berkeley County	104,169	12.7%
Study Area Census Block Groups Total	5,927	9.1%
9721.02 1	1,516	23.9%
9721.02 2	1,227	0.7%
9721.02 4	627	0.0%*
9721.02 6	2,557	6.6%

Source: 2012 American Community Survey (ACS) 5- Year Estimates (2008-2012), Poverty Status of Individuals In The Past 12 Months By Living Arrangement

*Percentage is less than 0.1 percent.

Note: Highlighted rows indicate Census Block Groups that have been identified as having an EJ population.

The US Department of Housing and Urban Development (HUD) website provides an online tool that locates privately owned subsidized housing units designated for low-income residents. Per HUD’s Affordable Apartment Search— confirmed by telephone communication on March 13, 2014 with the Martinsburg Public Housing Authority (PHA)— there are no low-rent apartments or public housing located in CDP Inwood. However, Section 8 vouchers that provide tenant-based subsidies for rent paid by low-income households are accepted in Inwood. This may make identification of environmental justice populations more difficult because low-income families are afforded a wider range of housing options and are not necessarily living near other low-income families.

Information from the project public involvement process was used to further identify areas with potential Environmental Justice populations. A public information meeting was held at the Musselman High School in Inwood on October 21, 2013. A flyer was mailed to approximately 300 residences, businesses, and

property owners in the Inwood area to announce the meeting. The purpose of the meeting was to provide information on the scope of the study, to receive input on issues in the study area, and to provide an opportunity for the public to ask questions. Comment sheets were available at the meeting for the public to provide written input. One hundred people attended the meeting and three comment forms were received either at the meeting or during the comment period, which ended November 21, 2013. Comments collected from the public meeting did not reveal any additional communities of potential Environmental Justice concern beyond those identified via Census analysis. Additional information on Environmental Justice is provided in the *Socioeconomic Technical Memorandum* (May 2014).

Environmental Effects

a. Population, Housing, Employment, and Income

The No-Build condition will not impact population, housing or employment, or economic conditions within the study area. Under the No-Build condition, traffic, and congestion conditions will continue to worsen and mobility will continue to be hampered.

Alternate 2A will enhance access to and from residential and business developments throughout the study area and will increase travel options, reduce congestion and improve area travel times. Communities in the study area are expected to benefit from increased access to jobs and other destinations.

b. Environmental Justice

The No-Build condition will not cause any impacts to areas with potential Environmental Justice concerns. Based on information provided in the US Census data, the public involvement process, and field reviews conducted by WVDOH, in addition to the analysis of community impacts and anticipated community benefits from the project, Alternate 2A will not result in disproportionately high and adverse effects on areas with potential Environmental Justice populations. The impacts to the areas with potential Environmental Justice populations will be similar to those in areas without Environmental Justice populations.

Benefits from Alternate 2A, including reduced congestion, improved traffic operations, and facilitated economic development will be experienced by all members of the community, regardless of race, ethnicity or income level.

Permanent adverse effects to environmental justice populations may include increased noise (see **Section III.G** for more detail). However, increases in noise are anticipated to be minor and would be experienced by both areas with and without environmental justice populations. Temporary adverse effects to environmental justice populations may include increases in noise during construction, road closures and detours during construction, and increases in fugitive dust and exhaust during construction. These impacts would be minimized to the extent possible.

2. Community Facilities and Services

Existing Conditions

Community facilities and services within the vicinity of the project are summarized in **Table 3**.

Table 3: Community Facilities and Services

Facility	Address
Schools	
Inwood Primary School	7864 Winchester Avenue, Inwood, WV 25428
Musselman Middle School	105 Pride Avenue, Bunker Hill, WV 25413
Musselman High School	126 Excellence Way, Inwood, WV 25428
Mill Creek Intermediate School	8785 Winchester Avenue, Bunker Hill, WV 25413
Emergency Services	
South Berkeley Volunteer Fire Company	8009 Winchester Avenue, Inwood, WV, 25428
Places of Worship	
First Baptist Church	634 Middleway Pike, Inwood, WV 25428
South Berkeley Baptist Church	246 Mineral Drive, Inwood, WV 25428
Healthcare	
West Virginia Urgent Care- Inwood	5047 Gerrardstown Road #2a, Inwood, WV 25428
University Healthcare Inwood	5047 Gerrardstown Road, Inwood, WV 25428
Parks and Recreation	
W. Randy Smith Recreation Center	40 Excellence Way, Inwood, WV 25428
Government	
West Virginia Division of Forestry	147 Pilgrim Street, Inwood, WV 25428
US Department of Agriculture	145 Pilgrim Street, Inwood, WV 25428
US Post Office	7797 Winchester Avenue, Inwood, WV 25428

Environmental Effects

The No-Build condition will have no impact to community facilities. However, under the No-Build condition, traffic congestion will continue to worsen making it more difficult to access facilities and services and increasing the response times for emergency service vehicles.

Alternate 2A will not cause any impacts to community facilities. Alternate 2A will enhance access to community facilities and will improve response times for school-related transportation and emergency services. Emergency service access will be maintained during project construction. WVDOH will coordinate with emergency services providers to ensure the design of the proposed project allows access for these services and to identify mitigation measures for affected emergency service routes.

3. Relocations and Displacements

The No-Build condition will not require ROW acquisition and will not result in any displacements.

Alternate 2A will require right-of-way acquisition for roadway improvements. The WVDOH will comply with the federal *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended. A total acquisition refers to a property that will be purchased in its entirety based on impacts from the proposed roadway improvements. A partial acquisition refers to a property where only a portion

will be purchased due to impacts from the proposed roadway improvements. Relocations include total acquisitions where a residence or business is acquired, but may also include partial acquisitions if a building is located on a large parcel of land or if access is denied.

Coordination with the public has been ongoing. All impacted persons, regardless of ethnicity or income, will be fairly compensated for property impacts that occur as a result of implementation of the project and will be assisted in relocation, where applicable. Efforts to avoid or minimize these and other property impacts will continue through final design.

Table 4 summarizes ROW acquisition resulting from Alternate 2A. Additional details are provided in **Appendix A**.

Alternate 2A will impact 40 parcels, requiring 12.0 acres of partial acquisitions from 23 parcels and 8.4 acres of total acquisitions from 17 parcels. Alternate 2A will also cause 10 displacements (three commercial parcels and seven residential parcels).

Table 4: Alternate 2A Parcel Impacts (#/acres)

Land Use	Total Acquisitions	Partial Acquisitions	Displacements
Farmland	1 (1.5 acres)	2 (10.4 acres)	0
Commercial	4 (4.1 acres)	9 (1.2 acres)	3
Institutional	0	0	0
Residential	8 (2.3 acres)	8 (0.4 acres)	7
Vacant	4* (0.5 acres)	0 (0 acres)	0
Total	17 (8.4 acres)	19 (12.0 acres)	10

** Two of the five total acquisition parcels are rights of way that were never opened up or developed. Two are vacant lots owned by Bohrer. The other vacant parcel is a drainage easement that United Bank acquired from Butler. It is being acquired and drainage will be provided as part of this project.*

D. Natural Resources

1. Topography, Geology and Soils

Existing Conditions

The project is located in Berkeley County in the eastern panhandle of West Virginia and entirely within the Northern Appalachian Ridges and Valleys physiographic province. Topography in the study area ranges from approximately 550 to 620 feet above sea level. The study area is near the western edge of the Shenandoah Valley, in a section underlain by limestone and drained by Opequon Creek and associated tributaries. Surface water often disappears underground via sinkholes and solution channels in the limestone bedrock section of the Shenandoah Valley. The study area includes some sinkholes and limestone rock outcroppings characteristic of this Karst region (see **Section III.D.3** below for more information).

Soils in the study area are mostly fine, mixed, mesic Typic Hapludalfs, such as the Hagerstown soils. Almost all the soils are Hapludalfs, except for the Swanpond soils, which are very fine, mixed, active, mesic Vertic

Paleudalfs. According to the Natural Resources Conservation Soil Survey for Berkeley County, the area primarily contains deep, well to moderately well drained soils, with no frequency of flooding associated with these soils. Two small areas of hydric soils are mapped within the study area: Atkins, a two percent component of Clearbrook silt loam (CkB) and Dunning, a two percent component of Poorhouse silt loam (PoA). However, only a small section of mapped hydric soil falls within the proposed construction limits. Most of the soils contain some prime farmland or farmland of statewide importance, but the farmland to be impacted by the proposed bypass is exempt from protection under the Farmland Protection Policy Act (FPPA), per Section 658.5, because it is situated entirely within Inwood (see *Natural Resources Inventory Technical Memorandum* for more detail).

Environmental Effects

The No-Build condition will have no impact on topography, geology and soils.

Alternate 2A will not affect overall topography, although some cuts and/or fills will be needed in areas of proposed grading. Similarly, due to the relative flatness of the study area, only minor excavation is anticipated under Alternate 2A, with minimal impacts to the local surficial geologic deposits. Soil impacts related to construction of the project will result from grading, excavation for stormwater management facilities, and soil compaction from construction. Alternate 2A will have little to no impact on hydric soils, since the only hydric soil potentially present is a two percent component of a soil that comprises less than two percent of the potentially disturbed area. Soil impacts will be minimized through best management practices for erosion/sediment control and the implementation of sediment/soil stabilization techniques, such as the quick establishment of temporary and permanent vegetative cover.

2. Wetlands and Waters of US

Existing Conditions

The study area is within the Three Run watershed, a tributary of Opequon Creek, which flows to the Potomac River. The study area covers uplands near the watershed divide of several Opequon Creek tributaries. GIS information shows no mapped wetlands and waters of the US within the study area.

Three stormwater management features, SW-1 to SW-3, were identified in an April 23, 2014 delineation, including a stormwater wetland (SW-2) that has all three wetland parameters, but is not anticipated to be jurisdictional. Thus, no potentially jurisdictional wetlands or waters were identified outside of stormwater facilities. The study area contains a number of roadside ditches, but they are all ephemeral and without defined bed and banks. No streams were identified in the study area. Due to the absence of wetland and water features in the project area, coordination with the U.S. Army Corps of Engineers (USACE) is not required (see *Natural Resources Inventory Technical Memorandum* for more detail).

Environmental Effects

No potentially jurisdictional wetlands or other waters of the US were identified within the study area. Therefore, neither the No-Build condition nor Alternate 2A will impact wetlands or other waters of the US in the study area.

3. Water Quality

Existing Conditions

Karst topography exists throughout the Berkeley County area, including Inwood. There are known sink holes located near the US Post Office along US 11 and within the Inwood Quarry property just south of WV 51E; however, there are no known sink holes within the project area. Generally, sink holes develop from fluctuating ground water elevations or other infiltrating water.

The intersection of WV 51W (Gerrardstown Road) and US 11 is situated at a slightly lower elevation than the surrounding area. Stormwater flows southward along US 11 and eastward along WV 51W towards and into the intersection. During periods of intense rainfall, the intersection may experience flooding and ponding of water, forcing intermittent closure to all traffic through the intersection.

Environmental Effects

This project seeks to eliminate the roadway flooding by adjusting pavement surface elevations and installation of a stormwater drainage system. Two existing stormwater management facilities (SW-1 and SW-2) may be impacted by Alternate 2A. However, proposed stormwater management for the project will be designed to maintain the function of these facilities and treat new impervious area.

4. Floodplains

Existing Conditions

There are no Federal Emergency Management Agency (FEMA) 100-year floodplains within the study area. The project lies within an area of minimal flooding risk (defined as above the 500-year flood level), as determined by FEMA on July 7, 2009. However, due to local topography, flooding events occur frequently at the intersection of US 11 and WV 51W (see **Section III.D.3**).

Environmental Effects

Neither the No-Build condition nor Alternate 2A would impact floodplains within the study area.

5. Rare, Threatened and Endangered Species (RTEs)

The US Fish and Wildlife Service (USFWS) determined “that the project will not affect federally-listed endangered or threatened species,” and “no biological or further Section 7 consultation under the Endangered Species Act is required with the Fish and Wildlife Service”. WV Department of Natural Resources (DNR) Wildlife Resources Section further confirmed that they “have no known records of any RTE species or natural trout streams within the project area”. The Indiana Bat (*Myotis sodalis*) may occupy forested summer habitat throughout the state and the proposed Northern Long-eared Bat (*Myotis septentrionalis*) occurs statewide. However, the project will not require forest clearing so the Indiana Bat and the Northern Long-eared Bat will not be affected. Agency coordination is included in **Appendix B**.

E. Hazardous Materials

Existing Conditions

In December 2013 and January 2014, a Hazardous Materials Assessment (HMA) for the proposed alignment investigation area was performed. The HMA evaluated current and historical environmental

concerns (ECs) within a quarter mile radius surrounding the proposed alignment that could potentially impact the proposed alignment area.

Based on available regulatory information, distance from the proposed alignment, topography, a review of historical environmental documentation, site reconnaissance and interviews, no ECs that pose an immediate concern for the proposed alignment were identified.

Eleven properties within or adjacent to the investigation area will present de minimis conditions based on the bulk storage of petroleum in underground storage tanks (USTs) or uncontrolled storage and repair of automobiles. De minimis environmental conditions do not present an immediate threat to human health or the environment under current conditions, but based on the materials involved, could impact the project should environmental conditions, such as a subsurface petroleum release, occur. **Table 5** summarizes the hazardous materials de minimis properties.

Table 5: Hazardous Materials De Minimis Properties

Facility	Address	Environmental Concern
BP gas station	4688 Gerrardstown Rd	underground petroleum storage
Shell/ROCs gas station	4701 Gerrardstown Rd	underground petroleum storage
Liberty gas station	4859 Gerrardstown Rd	underground petroleum storage
Michael's Body Shop II	39 Rachel Ln	exterior vehicle storage adjacent to alignment
Dry Clean and Shirt Salon	25 Hovatter Dr	historic dry cleaner, solvents
C&S Truck & Trailer Repairs	2249 Henshaw Rd	historic underground petroleum storage and current improper aboveground petroleum storage
Inwood Pre-Owned Cars	57 Middleway Pike	exterior vehicle storage adjacent to alignment
Mountaineer Auto Center	164 Middleway Pike	exterior vehicle storage adjacent to alignment
Suds Car Wash	4812 Gerrardstown Rd	underground storage of unknown contents, with no indication of permanent closure
7-Eleven	7672 Winchester Ave	underground petroleum storage
Sheetz	7899 Winchester Ave	underground petroleum storage

Environmental Effects

The No-Build condition would have no impact to sites of environmental concern.

No sites of environmental concern were identified that might impact construction of Alternate 2A. Unidentified subsurface contamination could potentially impact the investigation area from the identified properties or other unidentified source. Based on the current proposed alignment the identified de minimis sites present a low risk for presenting subsurface conditions that may impact subsurface soils or personnel involved with excavation and construction activities associated with the proposed alignment.

F. Air Quality

Existing Conditions

Berkeley County is part of the Eastern Panhandle Regional Planning and Development Council serving local governments within Berkeley, Jefferson, and Morgan County, West Virginia. HEPMPO is the federal and state designated regional transportation planning body for the urbanized areas in Berkeley and Jefferson Counties in West Virginia, Washington County, Maryland, and a small portion of Franklin County, Pennsylvania.

The *Green Book Nonattainment Areas for Criteria Pollutants*, published by the U.S. Environmental Protection Agency (EPA), designates Berkeley County as a nonattainment area with respect to the 1997 National Ambient Air Quality Standards (NAAQS) for PM 2.5 (USEPA, 2013). It is in attainment for all other NAAQS criteria pollutants. The State of West Virginia has requested that the USEPA re-designate Berkeley County to an area of attainment with respect to the 1997 PM 2.5 NAAQS. The re-designation request and maintenance plan was submitted to the EPA in December 2013.

Conformity/NEPA Requirements

The Transportation Conformity Rule applies to federal funded transportation projects in areas that have violated one or more of the NAAQS in EPA designated non-attainment or maintenance areas. Federal actions occurring in areas that are in attainment with criteria pollutants are not subject to the conformity rule.

NEPA requirements are generally applicable to project level impacts such as carbon monoxide (CO) and particulate matter (PM). FHWA also provides guidance on analyzing Mobile Source Air Toxics (MSATs) in NEPA documents.

Environmental Effects

The Inwood Bypass Study is in an area designated as being in attainment of the CO standard so no Federal action is required. Additionally, the relatively small number of diverted vehicles to the new bypass will not cause a violation of the NAAQS.

The Inwood Bypass Study is included in HEPMPO Air Quality Conformity Analysis for Fine Particulates (PM 2.5) NAAQS. This project comes from the 2035 Transportation Plan and the FY 2010-13 Transportation Improvement Program that has been found to conform to the State Implementation Plan. Therefore, the project is part of an approved and conforming transportation and air quality conformity report.

PM 2.5

The Inwood Bypass study area is in a designated nonattainment area for the PM 2.5 1997 NAAQS. However, CAA and 40 CFR 93.116 requirements for PM 2.5 were met without a hot-spot analysis, since the project has been found to not be of air quality concern under 40 CFR 93.123(b)(1). Based on traffic analyses being conducted for this study, the WV 51 annual average daily traffic (AADT) is approximately 19,000 with approximately 4% diesel truck traffic. Therefore, the project does not qualify as a “project of air quality concern” because it is not “a project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 AADT and 8% or more of such AADT is diesel truck traffic” (*Transportation Conformity Guidance for Qualitative Hot-spot Analyses in*

PM2.5 and PM10 Nonattainment and Maintenance Areas, FHWA 2006). As such, no further action is required.

Mobile Source Air Toxics (MSAT)

Though not a criteria pollutant, MSATs are emitted by motor vehicles, as well as non-road engines, aircraft, and their fuels. FHWA provides guidance (*Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA*) for analyzing MSATs under the NEPA review for highway projects (FHWA, 2012). The levels addressed in the guidance were for projects with no meaningful MSAT effects, low potential MSAT effects, and high potential MSAT effects. A qualitative analysis is required for projects that meet the low potential MSAT effects criteria, and a quantitative analysis is required for projects that meet the high potential MSAT effects criteria.

Alternate 2A will meet a regional travel need by providing a bypass as a more direct route on WV 51. Therefore, the project is categorized under tier two, as a project with “low potential MSAT effects,” and requires a qualitative analysis.

For the No-Build and Alternate 2A, the amount of MSAT emitted will be proportional to the VMT. The estimated VMT for the No-Build condition is higher than Alternate 2A. Therefore, higher levels of MSAT are not expected from Alternate 2A compared to the No-Build condition (see **Table 6**). Also, regardless of the alternate chosen, emissions will likely be lower than present levels in the design year as a result of EPA’s national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. In sum, under Alternate 2A in the design year, it is expected there will be reduced MSAT emissions in the immediate area of the project relative to the No-Build condition. This is due to reduced VMT associated with more direct routing, and EPA MSAT reduction programs.

Table 6: Annual Vehicle Miles Travelled by Alternate

Existing 2013*	No-Build 2040*	Alternate 2A 2040*
11,175,210	17,195,150	14,063,630

**VMT calculated from ADT values in Inwood Bypass Traffic Analysis*

Construction

The No-Build condition may result in negative air quality impacts due to increased congestion and longer delays in traffic to move through the area resulting in increased air pollution.

Alternate 2A will result in temporary negative impacts to air quality from operation of construction equipment and generation of dust from grading and movement of cut and fill material. Slight increases in particulate levels and exhaust emissions may occur during construction. Mitigation for temporary impacts will include the implementation of dust control and other BMP measures outlined in WVDOH standard specifications.

G. Noise

Existing Conditions

A noise analysis was completed in accordance with FHWA regulations (23 CFR 772) and the WVDOH *Noise Policy* to identify and evaluate potential noise impacts resulting from the proposed project. In January 2014, ambient noise measurements were conducted at various locations throughout the Inwood Bypass study area using integrating sound level meters.

Ambient noise measurements range from 40 dB(A) to 72 dB(A), as shown in **Table 7**. Eight short-term ambient noise measurements were conducted at noise sensitive locations during sustained but non-“worst” noise hour traffic periods.

Table 7: Ambient Measurement Receptors

Location	Measurement Date and Time	Measured Noise Level dB(A)
104 Jubal Early Avenue	2014-Jan-13 1000 AM - 1020 AM	48
451 Braddock Boulevard	2014-Jan-13 1000 AM - 1020 AM	55
558 Braddock Boulevard	2014-Jan-13 1000 AM - 1020 AM	46
657 Braddock Boulevard	2014-Jan-13 1000 AM - 1020 AM	40
257 Middleway Pike	2014-Jan-13 1115 AM - 1135 AM	56
38 Gayton Lane	2014-Jan-13 1115 AM - 1135 AM	48
7807 Winchester Avenue	2014-Jan-13 1115 AM - 1135 AM	72
4758 Gerrardstown Road	2014-Jan-13 1220 PM - 1240 PM	58

At the lower end of this range (40 dB(A)), the noise level is similar to common outdoor noise levels for a quiet urban nighttime; at the higher end (72 dB(A)), the noise level is similar to the outdoor noise level of a gas lawn mower at a distance of 100 feet.

A noise sensitive area (NSA) represents a community of properties (receptors) that could be impacted by traffic noise. Several NSAs were selected throughout the Inwood Bypass study area, and ranges of noise levels during “worst noise hours” were developed, as required by FHWA. Worst hour Existing and No-Build noise levels were determined to be identical for all receptors in the study area, since worst noise hour traffic volumes exceed LOS C for all segments of WV 51 and US 11 for both conditions, and were therefore capped identically at LOS C volumes. NSAs and their corresponding existing range of predicted worst-hour exterior noise levels are provided in **Table 8**.

Table 8: Existing Worst-Hour Leq Exterior Noise Levels dB(A)

NSA	Location	Range of Worst-Hour Leq ¹ Exterior Noise Levels dB(A)
1	First- and second-row single family homes on Braddock Boulevard and Jubal Early Avenue, west of Pickett Avenue	42-66
1a	First-row single family homes on Middleway Pike (US 51 East), between Pickett Avenue and Sulphur Springs Road	66-67
2	First Baptist Church, 634 Middleway Pike	57
3	Two single family homes on Pocono Drive	57-67
4	First-row single family homes on Middleway Pike (US 51 East), west of proposed Bypass	60-68, 51 ²
5	Single- and multi-family homes on Preschool Court and Gayton Lane	46-53
6	First-row single family homes and Inwood Primary School play area on Winchester Ave	70, 50-53 ³
7	Commercial properties on Gerrardstown Road, from I-81 interchange to Winchester Ave	61 ⁴

1. Leq is the equivalent steady-state sound level, which represents the mean energy of sound intensity level for a given time period.

2. Noise levels predicted for rear yard of 257 Middleway Pike, closest to proposed Bypass.

3. Range of noise levels predicted for rear play area of Inwood Primary School.

4. Noise level predicted for pool at Hampton Inn.

Environmental Effects

The majority of the properties experiencing noise impacts as a result of the project are also predicted to experience noise levels that will meet impact criteria in the existing and No-Build conditions.

Alternate 2A will impact a total of 22 receptors, primarily at first-row, single-family residences adjacent to existing roadways or the proposed bypass alignment.

Noise Abatement

WVDOH policy states that, whenever traffic noise impacts are identified, mitigation is evaluated for feasibility and reasonableness. The analysis takes into account the overall social, economic, and environmental effects of roadway noise. Primary consideration is given to exterior areas where frequent human use occurs. In addition to noise barriers, consideration is also given to other noise abatement measures such as traffic management, alteration of roadway horizontal and vertical alignments, or acquisition of real property for buffer zones.

Under Alternate 2A, barrier mitigation was considered for five NSAs since impacts were predicted for these areas. Where applicable, noise barrier mitigation was analyzed for fixed-height barrier walls of various lengths and heights to achieve WVDOH design goals as well as meet cost-reasonableness criteria. Mitigation was deemed feasible for one NSA and was deemed not feasible for four NSAs due to access requirements prohibiting effective abatement, since maintaining access will require numerous barrier

gaps that will render mitigation ineffective. For the NSA where barrier mitigation was deemed feasible, it was not found to meet cost-reasonableness as the cost per benefited receptor will exceed \$30,000 (see **Table 9**). More detail is provided in the *Noise Technical Report*.

Table 9: Alternate 2A Barrier Mitigation Analysis

NSA	Impacted Receptors	Barrier Height (feet)	Barrier Length (feet)	Insertion Losses (IL)	Barrier Cost	Total Benefited Receptors	Cost per Benefited Receptor	Cost Effective?
1	6	10	559	5-8	\$136,585	4	\$34,146	No
1a	5	Access requirements for residences prohibits effective mitigation - not feasible						
3	1	Access requirements for residences prohibits effective mitigation - not feasible						
4	7	Access requirements for residences prohibits effective mitigation - not feasible						
6	3	Access requirements for residences prohibits effective mitigation - not feasible						

H. Cultural Resources

A detailed examination of potential cultural resources was completed for Alternate 2A. This EA discusses the historic resources present in the study area and recommendations for further analysis and coordination. More detail is provided in the *Cultural Resources Management Report* and the *Phase I Archaeological Study Technical Report*.

1. Historic Architecture

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR §800, WVDOH identified historic and cultural resources within the area of potential effects (APE) of the Inwood Bypass Study, and subsequently assessed the effects on identified historic properties.

Existing Conditions

WVDOH examined historic research materials from the WV SHPO Geographic Information System (GIS) online system and West Virginia Division of Culture and History, State Historic Preservation Office (WV SHPO) files for the study area to identify historic architectural resources listed, or eligible for listing, in the National Register of Historic Places (NRHP). Architectural field work conducted on January 8, 2014, encompassed the APE, which includes the construction limits for Alternate 2A and any areas that may have potential visual, audible, or atmospheric effects because of the undertaking.

Of the resources previously identified, most were identified as not eligible for the NRHP in 1998. The eastern end of Inwood, identified as a historic district potentially eligible for the NRHP in a 1999 report entitled the "Final Report for the Intensive Architectural/Historical Survey of the Inwood Area in Berkeley County, West Virginia," is located west of and outside the construction limits, and is therefore not considered further.

WVDOH prepared West Virginia Historic Property Inventory Forms for a total of thirty resources, located within the APE for Alternate 2A to evaluate them for the NRHP. These included re-evaluations of

resources because they were previously evaluated more than ten years ago. Of the evaluated properties, one resource, the evaluated segment of the Cumberland Valley Railroad, is eligible under Criterion A for the NRHP. The railroad played an important role in the growth and development of the village of Inwood, and the apple industry in the Berkeley County area. The evaluated segment retains a good level of integrity.

Environmental Effects

The No-Build condition will have no impact on cultural resources within the APE.

The eastern end of the Village of Inwood, identified as an historic district potentially eligible for the NRHP, is located adjacent to the construction limits of Alternate 1 and was not evaluated in detail since this Alternate has not been carried forward for detailed design. The historic district is not located within the APE for Alternate 2A.

DOT and FHWA have determined whether or not the undertaking will have an effect on historic properties and have applied the Section 106 criteria of adverse effect (36 CFR §800.5 (a)). One historic property, namely a segment of the Cumberland Valley Railroad, was identified within the APE. The railroad and Alternate 2A cross at grade along WV 51 W. In order to accommodate the additional width of the alignment, additional concrete railroad crossing surfaces will be added on either side of the current road; while the rails will be removed temporarily in order to install the concrete crossing surfaces, the same rails will be reinstalled. The railroad will continue to operate along its original alignment. The two current crossing signals will be either replaced or remodeled to lengthen the mast arms, and also moved to accommodate the wider road; however, these features are modern ones installed in 2002. The widening of WV 51 W does not significantly change the setting of the railroad in this developed commercial area. While the undertaking will have an effect on the railroad, it will have no adverse effect because it does not alter, directly or indirectly, any of the characteristics of this historic property that qualifies it for inclusion in the NRHP in a manner that will diminish its integrity. Therefore, the undertaking will have no adverse effect on historic properties.

In a letter dated July 15, 2014, the WV SHPO concurred with the project recommendations (see **Appendix B**).

2. Archaeology

Existing Conditions

WVDOH examined site files and archaeological reports on the WV SHPO GIS online system and at the West Virginia State Archives (on December 17 and 18, 2013) to identify the presence of previously recorded archaeological sites within and in proximity to the study area. While no archaeological sites had been recorded within the study area, two previously recorded archaeological sites were identified in proximity to the study area. Sites 46BY112 and 46BY113 were recorded during the Phase I Cultural Resources Survey of the New Musselman High School Site. Site 46BY112 comprised a single isolated chert primary flake recorded within the plow zone horizon of a test pit. Site 46BY113 produced a small assortment of glass fragments, tin corrugated roofing fragment, fragment of asphalt shingle, and lead glazed field tile fragment within a surface fill matrix. Both sites were impacted by the construction of the school.

The study area had been subjected to previous archaeological surveys. No new archaeological sites were recorded during the surveys and none were recommended for further investigation.

An archaeological survey for the Inwood Bypass Study was conducted in March, April, and July 2014. The primary goal was to locate and identify any existing archaeological resources within the archaeological APE that will be affected by the proposed construction. The archaeological APE consisted of the project construction limits for Alternate 2, but was later expanded to include the construction limits for Alternate 2A. The archaeological investigation recorded a small scatter of artifacts and a possible underground gas tank or well associated with the early-twentieth-century Hutzler House, designated Site 46BY234. The artifacts recovered from the site reflect domestic, architectural and industrial classes of artifacts associated with the occupation of the Hutzler House. Due to the disturbed context of the artifacts, the limited date range of the artifact assemblage, and the limited research potential, Site 46BY234 is unlikely to contribute new research into early twentieth-century farmsteads in Berkeley County. No further archaeological investigation is recommended for Site 46BY234.

A scatter of isolated artifacts, designated as Farm Field 1 through 5 (Site 46BY235 to 46BY239), were recorded exclusively within the Ap-horizon of the large farm field east of US 11. While the age and class of artifacts found are contemporaneous to the collection recovered in the Hutzler House Site, this assemblage represents secondary deposition associated with refuse disposal within the plowed field portion of the APE. These artifacts offer no potential to provide new information concerning the history of Inwood. No further archaeological investigation is warranted for Sites 46BY235 to 46BY239.

Environmental Effects

The No-Build condition will not impact any archaeological resource in the APE. Alternate 2A will have no effect on any archaeological resources that are eligible for inclusion on the NRHP. No further work archaeological investigations were recommended for the APE.

The results of the Phase I Archaeological Survey are currently under review by SHPO. In letters dated September 25 and September 29, 2014, the SHPO concurred with the project recommendations (see **Appendix B**).

I. Section 4(f) Resources

Existing Conditions

Section 4(f) of the U.S. Department of Transportation Act of 1966 (23 CFR 774; 49 USC 303(c)) permits the use of land from a publicly-owned public park, recreation area, wildlife or waterfowl refuge, or land of a historic site of national, state or local significance (as determined by federal, state and local officials having jurisdiction over such resources), only if there is no prudent and feasible alternative to the use of such land and if the action includes all possible measures to minimize harm in accordance with the FHWA Section 4(f) regulations.

As stipulated in Federal regulations (23 CFR 774.3(b), 774.5(b), 774.17), an impact may be determined to be *de minimis* if:

(i) The transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f);

(ii) The official(s) with jurisdiction over the property are informed of FHWA's intent to make the *de minimis* impact finding based on their written concurrence that the project will not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f); and

(iii) The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource.

No publicly owned parks, recreation areas or wildlife/waterfowl refuges are located in the study area. One potentially eligible historic resource, the Cumberland Valley Railroad, is eligible for the NRHP under Criterion A, and thus is a Section 4(f) property.

Environmental Effects

A Section 4(f) property is assessed for impacts under the provisions of the USDOT Act of 1966 and related regulations. As summarized in **Section III.H.1**, the evaluated segment of the Cumberland Valley Railroad is the only Section 4(f) property that will be impacted by the proposed project. The extension of the railroad crossing will require a permanent easement from the railroad property for transportation use.

The project will not adversely affect the activities, features, and attributes that qualify the railroad property for protection under Section 4(f). FHWA intends to make a preliminary determination that Alternate 2A will have a *de minimis* impact on the evaluated segment of the Cumberland Valley Railroad. The owner of the Cumberland Valley Railroad, now referred to as the Winchester and Western Railroad, has been notified of the project and coordination has been on-going. In an email dated October 22, 2014 the railroad owner concurred that the project would result in only minor effects to the property (see **Appendix B**).

The SHPO, as the officials with jurisdiction over the evaluated segment of the Cumberland Valley Railroad, concurred in a letter dated July 15, 2014 that the project will not have an adverse effect to historic properties, pursuant to Section 106 (36 CFR 800). Following publication of the EA, a public meeting will be held and the public will be provided an opportunity to comment on the potential *de minimis* determination.

J. Section 6(f) Resources

Existing Conditions

The Land and Water Conservation Fund Act (LWCF), commonly referred to as Section 6(f), requires that the conversion of lands or facilities acquired with Land and Water Conservation Act funds be coordinated with the Department of the Interior. A detailed listing on grants for the state of West Virginia was reviewed on the website maintained by the National Park Service (NPS). None of these grants were issued for sites or facilities located within the project study area.

Environmental Effects

No impacts to Section 6(f) resources will occur as a result of either the No-Build condition or Alternate 2A.

K. Indirect and Cumulative Effects

An indirect and cumulative effects (ICE) analysis was conducted according to the following regulations and guidance:

- FHWA Position Paper, *Secondary [Indirect] and Cumulative Impact Assessment in the Highway Project Development Process*, 1992.
- Council on Environmental Quality (CEQ) Handbook, *Considering Cumulative Effects under the National Environmental Policy Act*, January 1997.
- USEPA, *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*, May 1999.
- FHWA Memorandum *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact in the NEPA Process*, January 2003.

According to the CEQ regulations (40 CFR Section 1508.7 and 1508.8) indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

To assess the potential cumulative effects resulting from the Inwood Bypass project, geographic and temporal boundaries were used. The geographic ICE boundary extends roughly one mile in each direction from the study area. It is approximately bound by Washington Street and Hatchery Road to the north, Sulphur Springs Road to the east, Inwood Quarry Road to the south, and Goldmill Road to the west. The temporal boundary used is the same as the horizon year for the project (2035).

Indirect Effects

The No-Build condition would not result in any indirect effects to development. Under the No-build condition, development may occur but would not be dependent on the Inwood Bypass project. The rate of development could also increase.

Indirect effects may be expected to occur as a result of the Alternate 2A. As economic development is an element of the project's purpose and need, it is reasonably foreseeable that land proximal to the bypass may become more developed with commercial and residential properties. For example, the farmland adjacent to the bypass is already slated for development. This property would be provided greater access from the construction of the Inwood Bypass project.

Cumulative Effects

The No-Build condition would not contribute to cumulative effects within the ICE boundary.

Cumulative effects may result from the combined consequences of an action when added to other past, present and future actions. Time-lapse aerial views retrieved from Google Earth reveal little change in land use within Inwood and the ICE boundary from 1990 to the present day (2014). It is assumed that prior to 1990, Inwood progressed gradually from a primarily agricultural area to the more urbanized place that it is today. For example, the construction of I-81 through Berkeley County in the 1960s and subsequent flow of travelers along the corridor opened up primarily agricultural places like Inwood to development opportunities.

Presently, Inwood includes a mix of commercial, residential, agricultural, and formerly industrial uses. Generally, commercial properties are located adjacent to the major roadways (WV 51 and US 11), while residential properties are located along street grids in neighborhoods. The incremental change caused by the addition of the proposed bypass would have the cumulative effect of increased development.

Review of the HEPMPO *Transportation Improvement Program: Fiscal Years 2014- 2017* and *Direction 2040: Long Range Transportation Plan (2014)* reveals several planned transportation improvements within the ICE boundary. From 2014 to 2017, planned projects within the ICE boundary include the proposed Inwood bypass; the installation of a double-faced guardrail along I-81; and the installation of a traffic signal at the WV 51 E/Sulphur Springs Road. Long-range transportation improvements within the ICE boundary include the proposed Inwood Bypass; intersection improvements on US 11 from Berkeley County Line to Tabler Station Road; widening of WV 51 to four lanes, from US 11 to Tarico Heights (including the proposed bypass); and the widening of I-81 to six lanes, from the Berkeley County line to WV 45.

As gathered from Berkeley County Planning Commission Activity Reports, online Berkeley County Planning Commission searches, and an October 2014 phone conversation with the Berkeley County Council Planning Department, other currently planned projects within the ICE boundary include the commercial Hotel Squared Subdivision located on WV 51 and WV 30, just west of I-81; and the residential Cain Subdivision located west of Truman Road along the south side of Pheobe Lane.

Land Use

Given the past development and present and future development plans, the addition of the proposed bypass would contribute to the long-term goals of increasing roadway capacity, access to destinations, and travel efficiency for local residents, commuters, and distance travelers. The construction of Alternate 2A, considered both by itself and with other planned transportation improvements, would contribute to the conversion of a variety of land uses to transportation land use. These transportation improvements would also collectively lead to the conversion of undeveloped (i.e. forestland and/or farmland) to commercial/industrial and residential uses. This may lead to the use and conversion of natural areas such as wetlands, terrestrial habitat, forested areas, and other types of ecological habitat.

The physical pattern of this development is yet to be determined; however, all development types and locations would be approved by the Berkeley County Planning Commission.

Implementation of Alternate 2A would result in the direct conversion of farmland to transportation use. While the addition of a bypass through agricultural land would not be the first conversion of farmland

within the ICE boundary, in terms of present and future development, this incremental change is one element of a larger program to improve transportation in the area, which will likely lead to the loss of more farmland. However, as described in the *Socioeconomic Technical Memorandum*, Inwood in its entirety is located within the Hagerstown, MD—WV—PA Urbanized Area (a US Census designation). Per the Farmland Protection Policy Act [7 USC 4201], the definition of *farmland* excludes land within urbanized areas. The agricultural land that is located within the ICE boundary but outside of the Inwood urbanized area, may experience a cumulative conversion effect from this project; however, such conversion would be protected under the Farmland Protection Policy Act.

Cultural Resources

As detailed in the *Cultural Resources Management Report*, one property, a segment of the Cumberland Valley Railroad, has been identified as eligible for the National Register of Historic Places (NRHP). However, WVDOH and FHWA have determined that Alternate 2A would not have an adverse effect on this property. Although there are no direct or indirect effects to this property, it still has the potential to experience cumulative physical effects due to transportation, commercial, and residential development in the vicinity. However, the degree of physical cumulative impacts to this property would likely be limited, as future development would likely be situated to avoid interfering with the railroad's operations.

Karst Geology

The area surrounding the Inwood Bypass project may contain sinkholes and limestone rock outcroppings characteristic of the Karst region. The Inwood project would not directly affect any known sinkholes. Generally speaking, increases in impervious surface cause more concentrated and forceful stormwater runoff. Given the indirect effects and past, present, and anticipated future development, there may be an increase in impervious surface within the ICE boundary as development continues. While the incremental change in impervious surface caused by the proposed bypass would likely not pose a large risk of sinkhole occurrences, the impacts on Karst geology should be assessed for each future development in accordance with the regulations set forth by the West Virginia Department of Environmental Protection. The Inwood Bypass project includes stormwater management features to treat runoff from increased impervious surface. Implementation of stormwater management techniques would likely mitigate the risk of sinkhole occurrences associated with future development.

IV. COORDINATION

A. Public Involvement

A public information meeting was held at the Musselman High School in Inwood on October 21, 2013. A flyer was mailed to approximately 300 residences, businesses and property owners in the Inwood area to

announce the meeting. The purpose of the meeting was to provide information on the scope of the study, to receive input on issues in the study area, and to provide an opportunity for the public to ask questions. Comment sheets were available at the meeting for the public to provide written input. One hundred people attended the meeting and three comment forms were received either at the meeting or during the comment period (ending November 21, 2013).

The EA will be made available for public review and opportunity to comment. A public meeting will be held during the review period.

B. Agency Coordination

Coordination with Federal and local agencies occurred throughout the preparation of this EA. Agencies included US Fish and Wildlife Service, West Virginia Department of Natural Resources and West Virginia State Historic Preservation Office. Written correspondence with the agencies is included in **Appendix B**.

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West Virginia Department of Transportation
Division of Highways

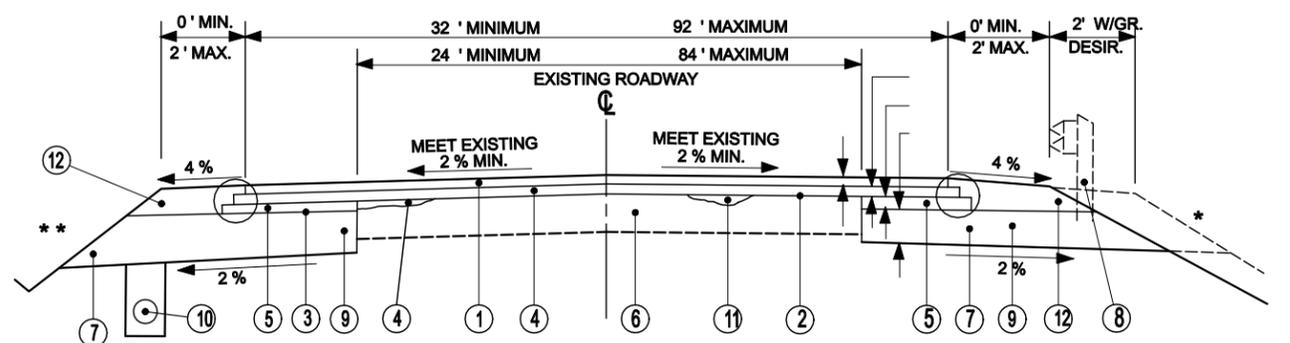
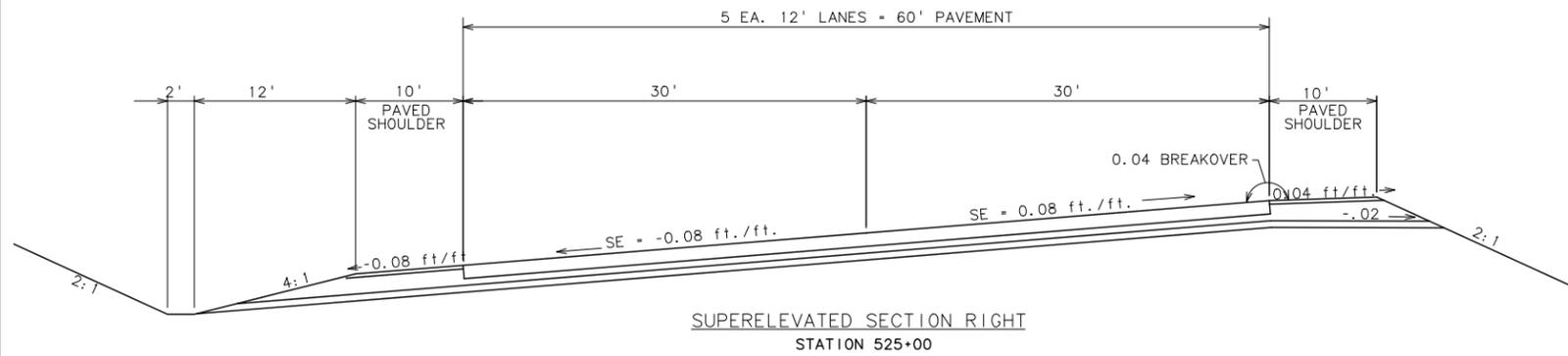
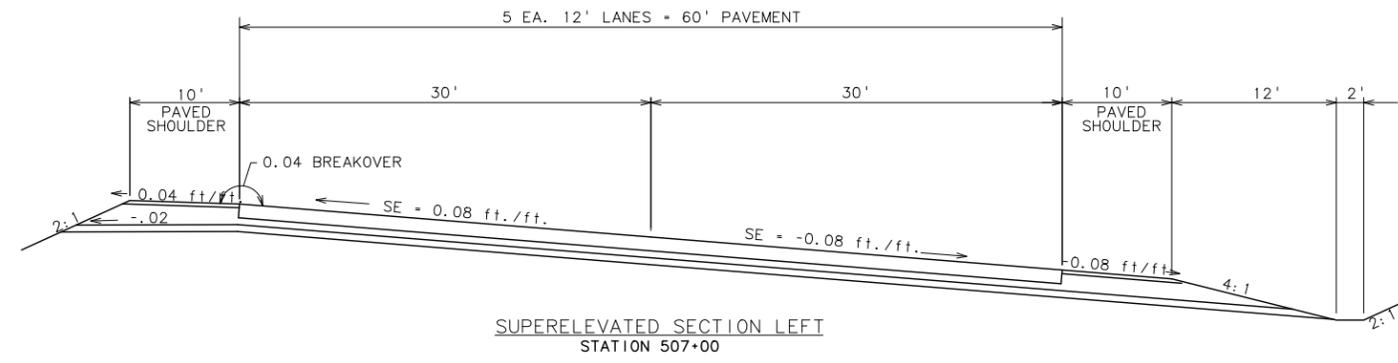
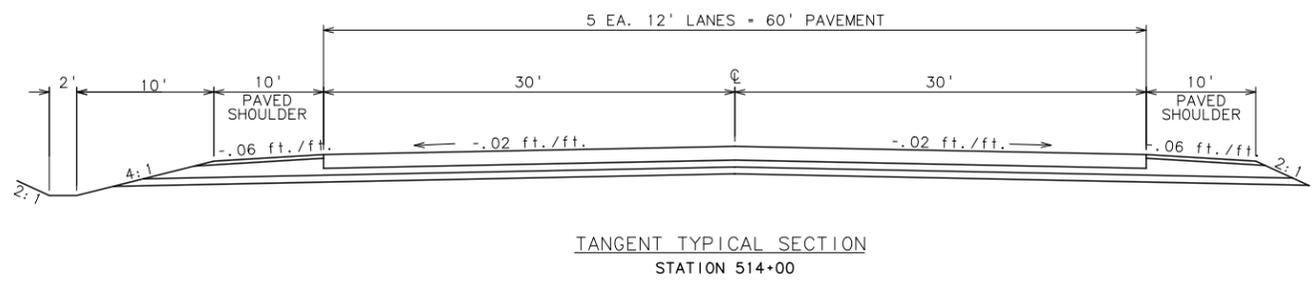
INWOOD BYPASS BERKELEY COUNTY

Appendix A
Plan Sheets

Appendix A

Plan Sheets

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051 (033)D	2014	BERKELEY		



- ① ITEM 40 -001, HOT-MIX ASPHALT, STONE OR GRAVEL, TYPE OR
- ITEM 40 -002, HOT-MIX ASPHALT, SLAG, TYPE
- ② ITEM 408002-001, BITUMINOUS MATERIAL, GAL. PER S.Y.
- ITEM 401001-002, HOT-MIX ASPHALT BASE COURSE, SLAG, TYPE
- ③ ITEM 409002-001, BITUMINOUS MATERIAL, GAL. PER S.Y.
- ④ ITEM 401003-001, HOT-MIX ASPHALT PATCHING AND LEVELING COURSE, STONE OR GRAVEL OR
- ITEM 401003-002, HOT-MIX ASPHALT PATCHING AND LEVELING COURSE, SLAG
- ⑤ ITEM 401001-001, HOT-MIX ASPHALT BASE COURSE, STONE OR GRAVEL, TYPE OR
- ⑥ EXISTING PAVEMENT
- ⑦ ITEM 307001-00, AGGREGATE BASE COURSE, CLASS
- ⑧ ITEM 607001-001, TYPE I GUARDRAIL, CLASS
- ⑨ ITEM 207001-001, UNCLASSIFIED EXCAVATION
- ⑩ ITEM 606025- , INCH UNDERDRAIN PIPE OR
- ITEM 606020-001 FABRIC UNDERDRAIN, AS SPECIFIED IN PLANS
- ⑪ POT HOLE REPAIR - SEE DETAIL
- ⑫ ITEM 308001-001, AGGREGATE BASE COURSE, STONE OR GRAVEL, CLASS OR
- ITEM 308001-002, AGGREGATE BASE COURSE, SLAG, CLASS

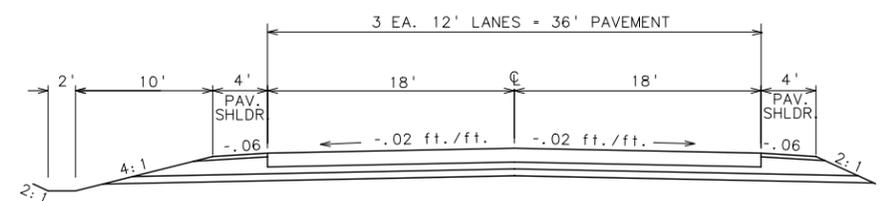
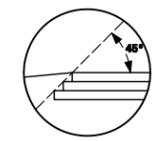
** AS NOTED OR AS PER CROSS-SECTION

Note: Amount of widening on each side may vary thru the project because of physical restrictions. Dimension right and left will vary as shown in the plans or as directed by the engineer.

* EMBANKMENT SLOPE GUIDE

HT. OF EMB.	SLOPE
0' TO 5'	6:1
5' TO 10'	4:1
> 10'	2:1

1 1/2:1 MAX. W/ ROCK FILL



SUBMISSION DATE: JULY 18, 2014

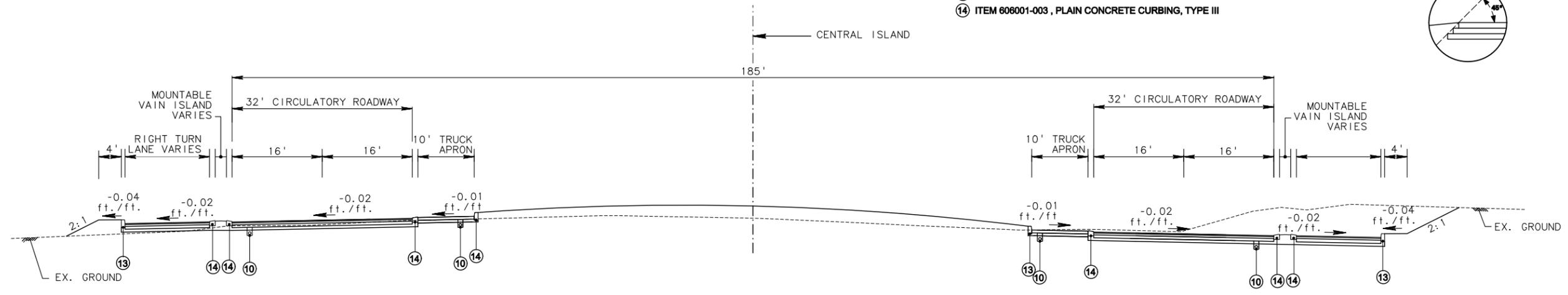
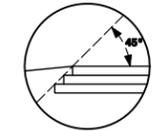
RK&K ENGINEERS
RUMMEL, KLEPPER & KAHL, LLP
 242 NORTH TORNADO WAY, SUITE 1
 KEYSER, WEST VIRGINIA 26726
 T - 304.788.3370 F - 304.788.3577
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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

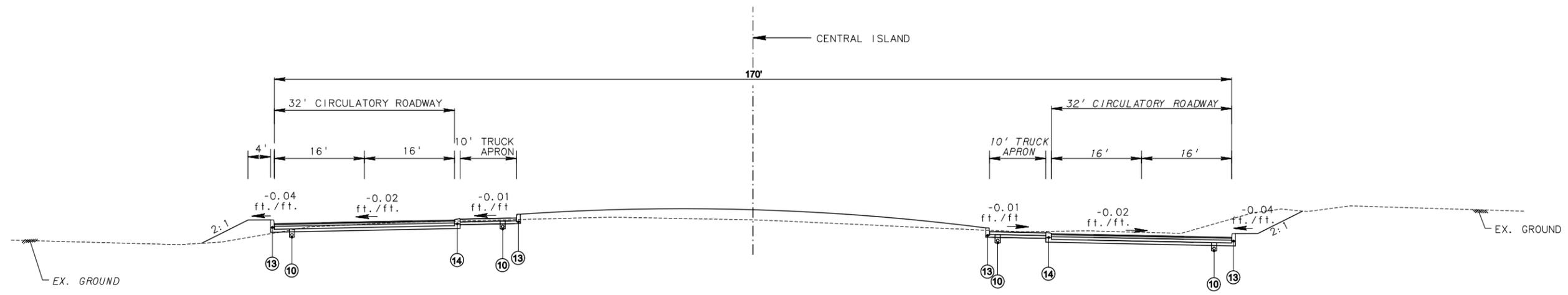
THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
TYPICAL SECTIONS
 ALTERNATE 2-A WV 51 BYPASS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051 (033)D	2014	BERKELEY		

- ① ITEM 402 -001, HOT-MIX ASPHALT , STONE OR GRAVEL, TYPE OR
- ITEM 40 -002, HOT-MIX ASPHALT , SLAG, TYPE
- ② ITEM 408002-001, BITUMINOUS MATERIAL, GAL. PER S.Y.
- ③ ITEM 409002-001, BITUMINOUS MATERIAL, GAL. PER S.Y.
- ④ ITEM 401003-001, HOT-MIX ASPHALT PATCHING AND LEVELING COURSE, STONE OR GRAVEL OR
- ITEM 401003-002, HOT-MIX ASPHALT PATCHING AND LEVELING COURSE, SLAG
- ⑤ ITEM 401001-001, HOT-MIX ASPHALT BASE COURSE, STONE OR GRAVEL, TYPE OR
- ITEM 401003-002, HOT-MIX ASPHALT BASE COURSE, SLAG
- ⑦ ITEM 307001-00 , AGGREGATE BASE COURSE, CLASS
- ⑧ ITEM 607001-001, TYPE I GUARDRAIL, CLASS
- ⑨ ITEM 207001-001, UNCLASSIFIED EXCAVATION
- ⑩ ITEM 606025- , INCH UNDERDRAIN PIPE OR
- ⑪ ITEM 606020-001 FABRIC UNDERDRAIN, AS SPECIFIED IN PLANS
- ⑫ ITEM 308001-001, AGGREGATE BASE COURSE, STONE OR GRAVEL, CLASS OR
- ITEM 308001-002, AGGREGATE BASE COURSE, SLAG, CLASS
- ⑬ ITEM 608001-001 , PLAIN CONCRETE CURBING, TYPE I
- ⑭ ITEM 608001-003 , PLAIN CONCRETE CURBING, TYPE III



US 11 AT INWOOD BYPASS
SECTION A-A



WV 51 AT INWOOD BYPASS
SECTION B-B

SUBMISSION DATE: JULY 18, 2014

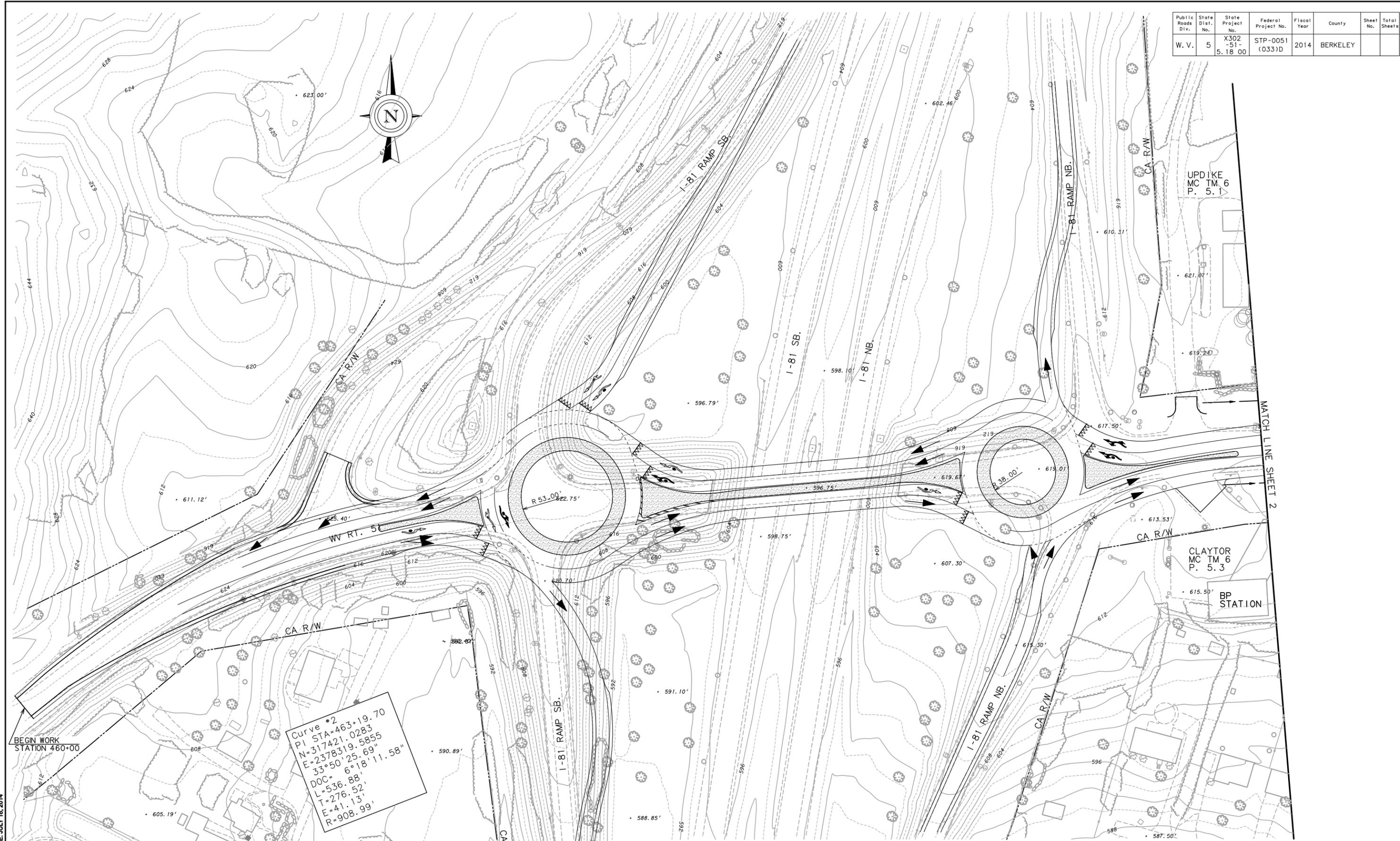
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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
TYPICAL SECTIONS
 ALTERNATE 2-A
 WV 51 BYPASS

R01_WV51.TYP - SECT 02-A11 2-A.dgn 7/15/14

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051 (033)D	2014	BERKELEY		



Curve #2
 PI STA=463+19.70
 N=317421.0283
 E=2378319.5855
 33°50'25.69"
 DOC= 6°18'11.58"
 L=536.88'
 T=276.52'
 E=41.13'
 R=908.99'

BEGIN WORK
 STATION 460+00

SCALE : 0 50 ft.

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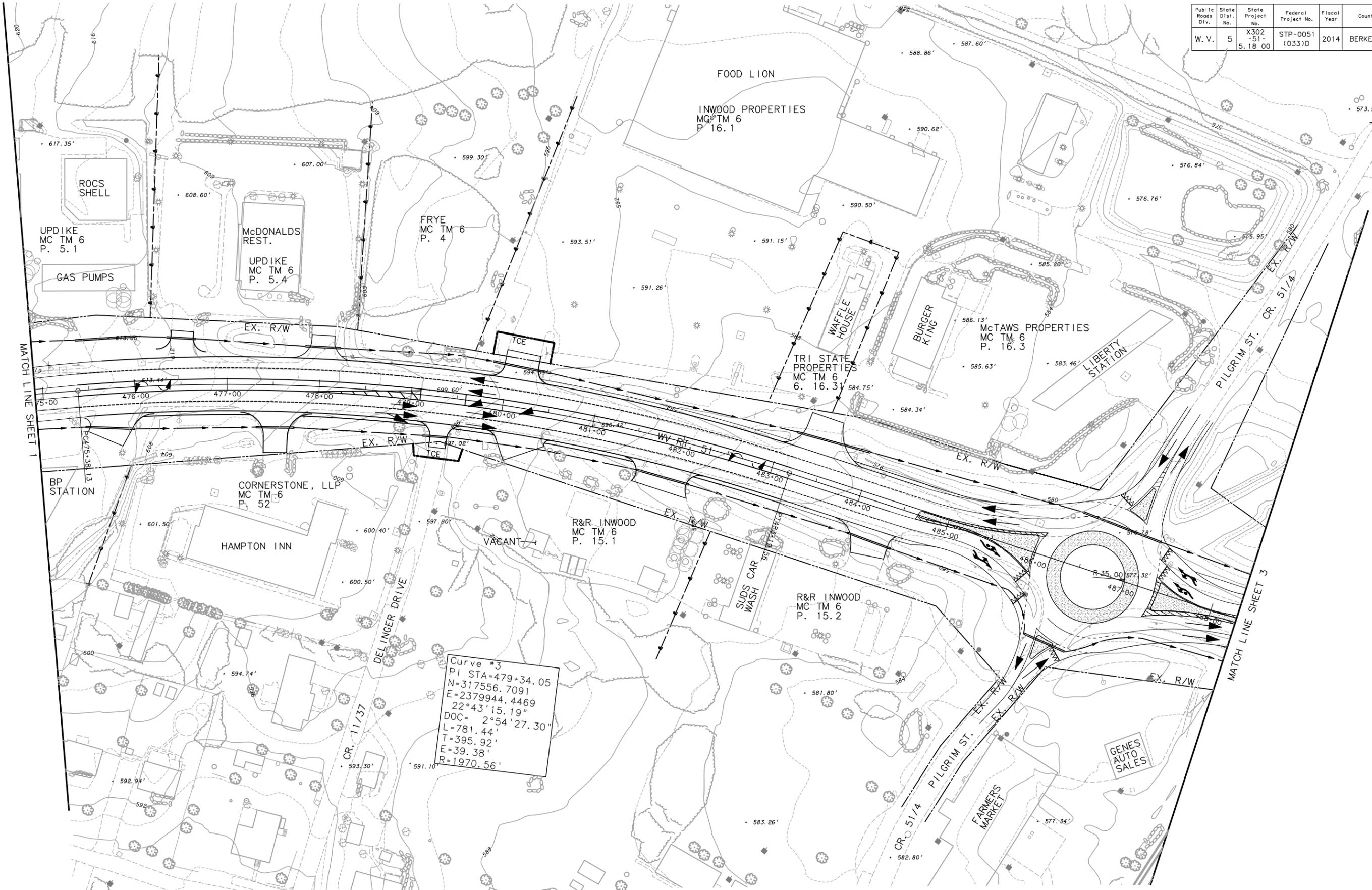
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 1 OF 9

SUBMISSION DATE: JULY 18, 2014

104073023-PI AN e

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



SUBMISSION DATE: JULY 18, 2014

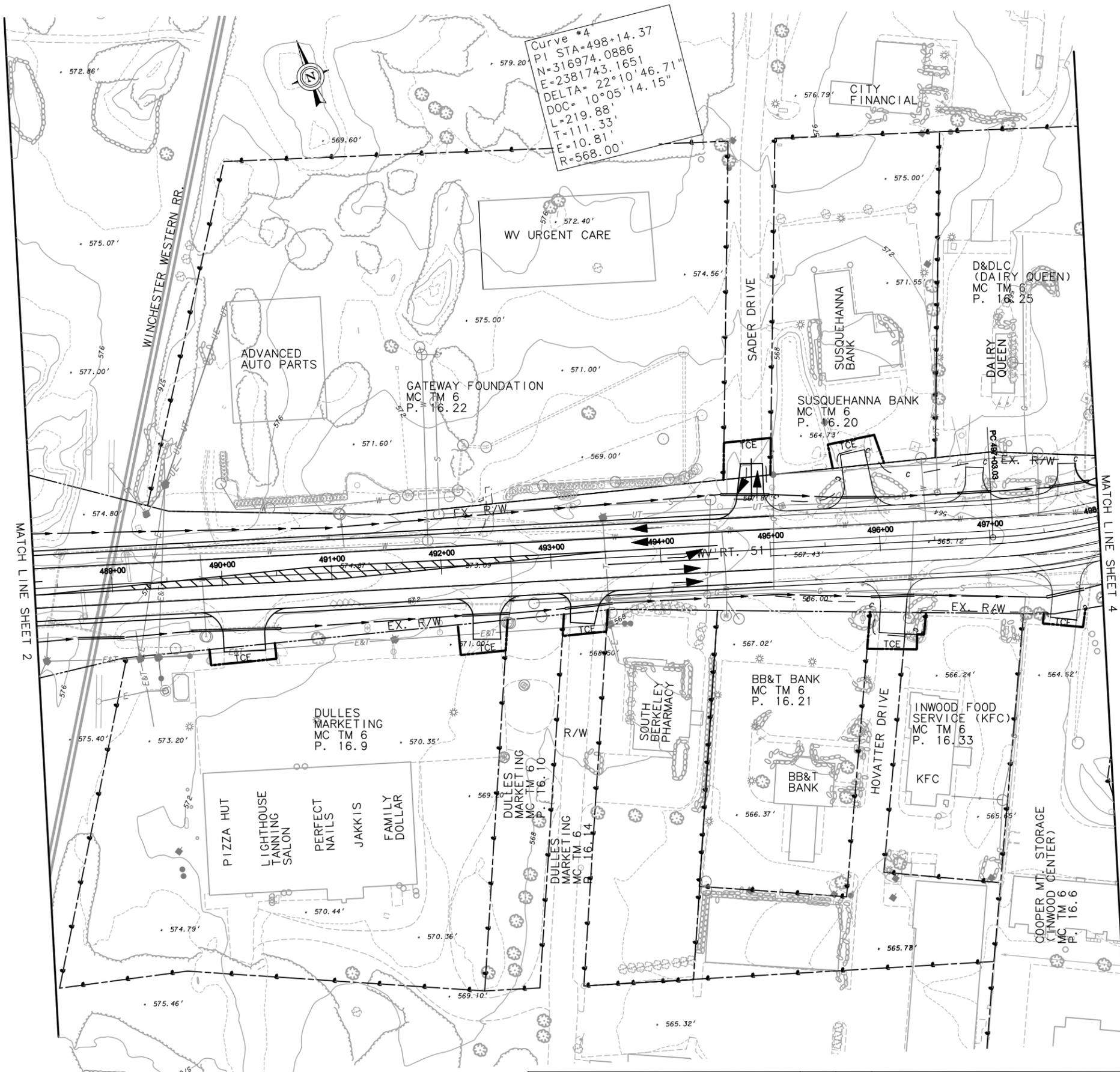
SCALE : 0 50 ft.

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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 2 OF 9

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



Curve #4
 PI STA=498+14.37
 N=316974.0886
 E=2381743.1651
 DELTA= 22°10'46.71"
 DOC= 10°05'14.15"
 L=219.88'
 T=111.33'
 E=10.81'
 R=568.00'

MATCH LINE SHEET 2

MATCH LINE SHEET 4

SUBMISSION DATE: JULY 18, 2014

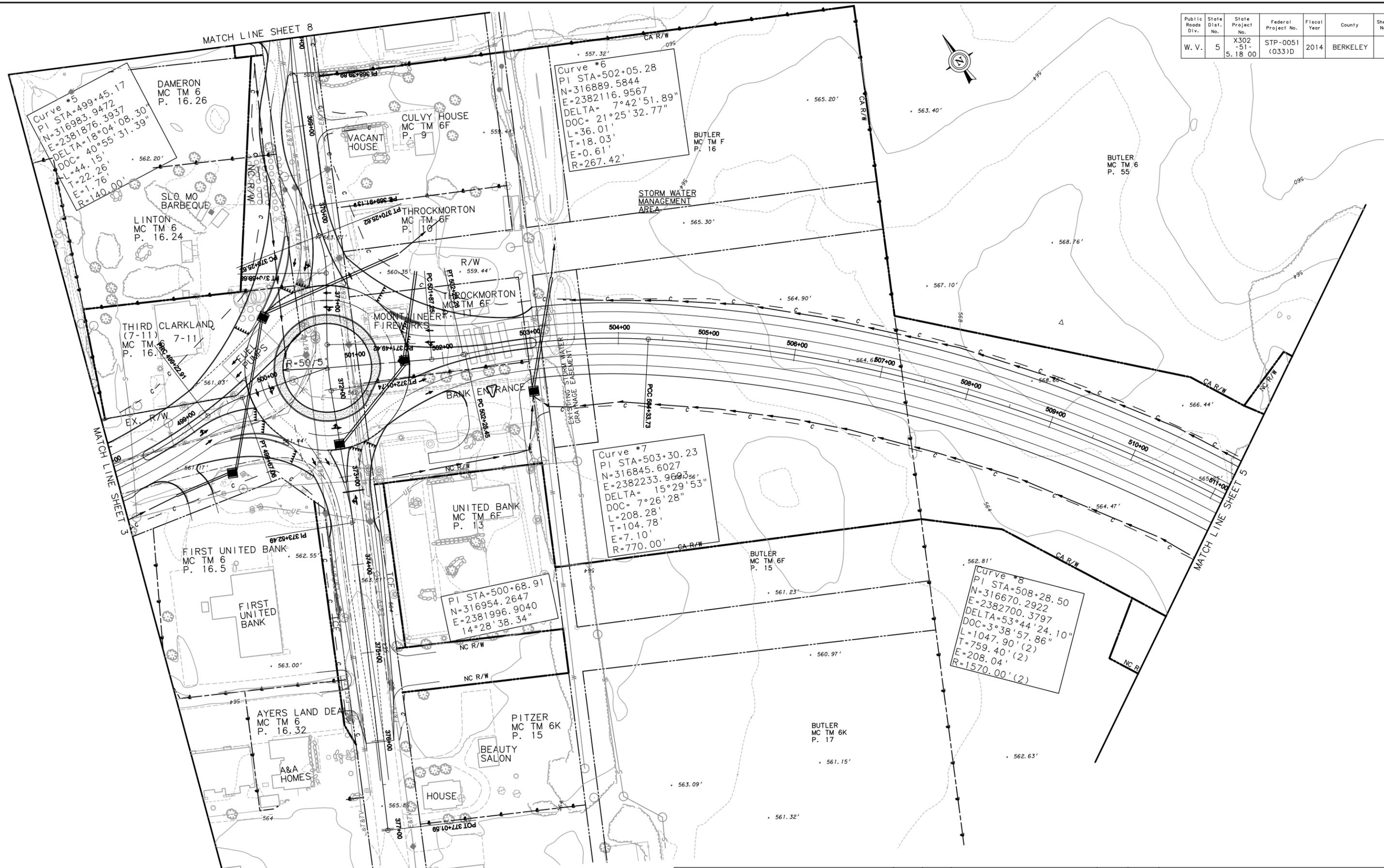
SCALE : 0 50 ft.

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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 3 OF 9

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



SUBMISSION DATE: JULY 18, 2014

SCALE : 0 50 ft.

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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 4 OF 9

10407-3003-PI AN 6

11-07-2003

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



Curve #12
 PI STA=522+92.58
 N=315173.9835
 E=2382837.1294
 DELTA= 35°01'01.20"
 DOC= 21°08'26.31"
 L=165.64'
 T=85.50'
 E=13.17'
 R=271.02'

Curve #9
 PI STA=516+32.34
 N=315793.9629
 E=2382946.0472
 DELTA=12°32'32.90"
 DOC= 4°10'55.91"
 L=299.90'
 T=150.55'
 E=8.25'
 R=1369.99'

Curve #10
 PI STA=519+13.65
 N=315511.8724
 E=2382961.4120
 DOC= 42°59'54.74"
 L=251.41'
 T=131.96'
 E=25.05'
 R=335.00'

Curve #11
 PI STA=521+26.15
 N=315339.2071
 E=2382817.1394
 DELTA= 46°46'45.88"

SUBMISSION DATE: JULY 18, 2014

SCALE : 0 50 ft.

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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 5 OF 9

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051 (033)D	2014	BERKELEY		



SUBMISSION DATE: JULY 18, 2014

SCALE : 0 50 ft.

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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 6 OF 9

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



MATCH LINE SHEET 6

TO MIDDLEWAY

END PROJECT STATION 551+4.3

SCALE : 0 50 ft.

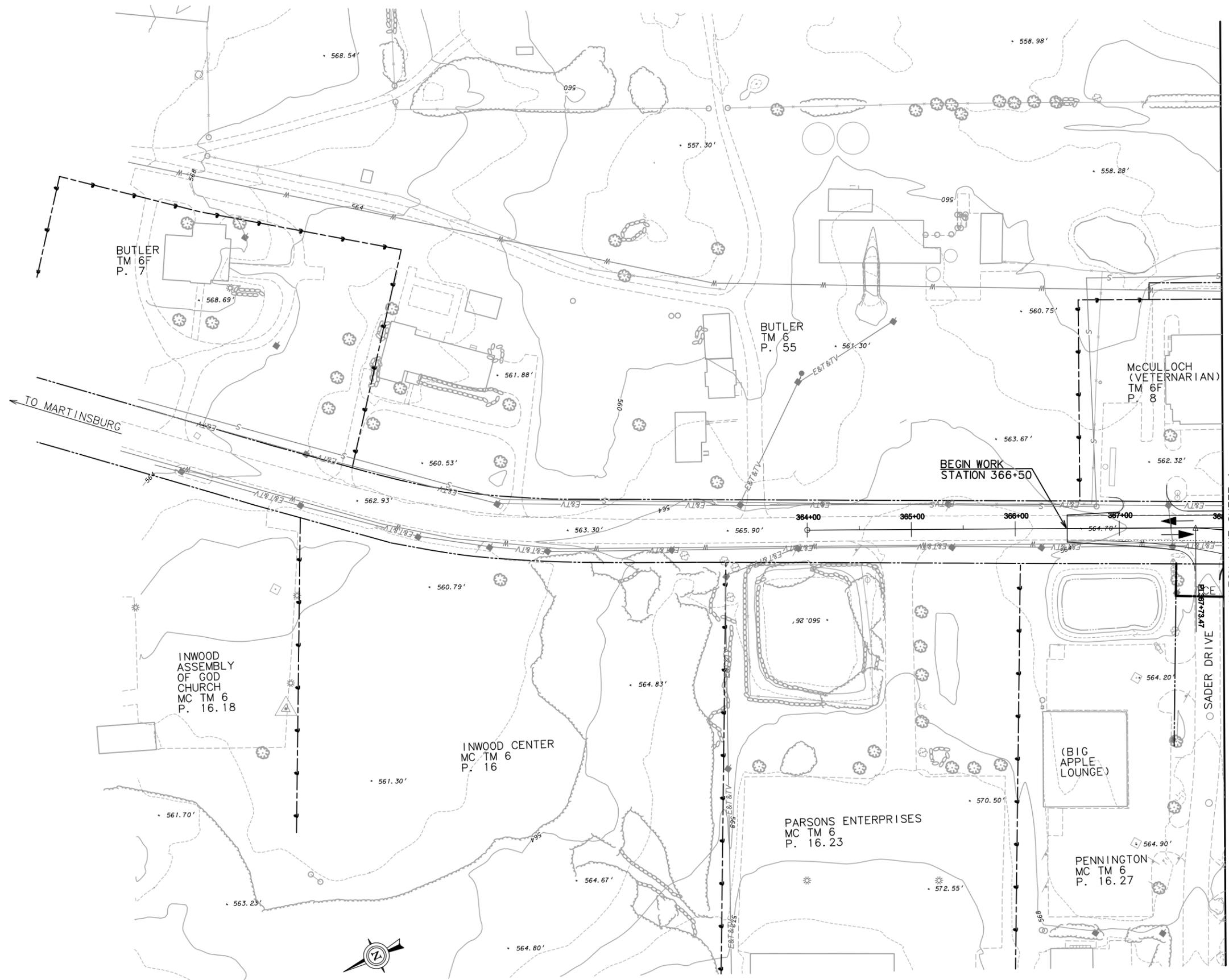
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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 7 OF 9

SUBMISSION DATE: JULY 18, 2014

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



TO MARTINSBURG

BEGIN WORK STATION 366+50

MATCH LINE SHEET 4

SADER DRIVE

SUBMISSION DATE: JULY 18, 2014



SCALE : 0 50 ft.

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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 8 OF 9

10407-3003-PI-AN.e

11-07-2013

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18.00	STP-0051 (033)D	2014	BERKELEY		



SUBMISSION DATE: JULY 18, 2014

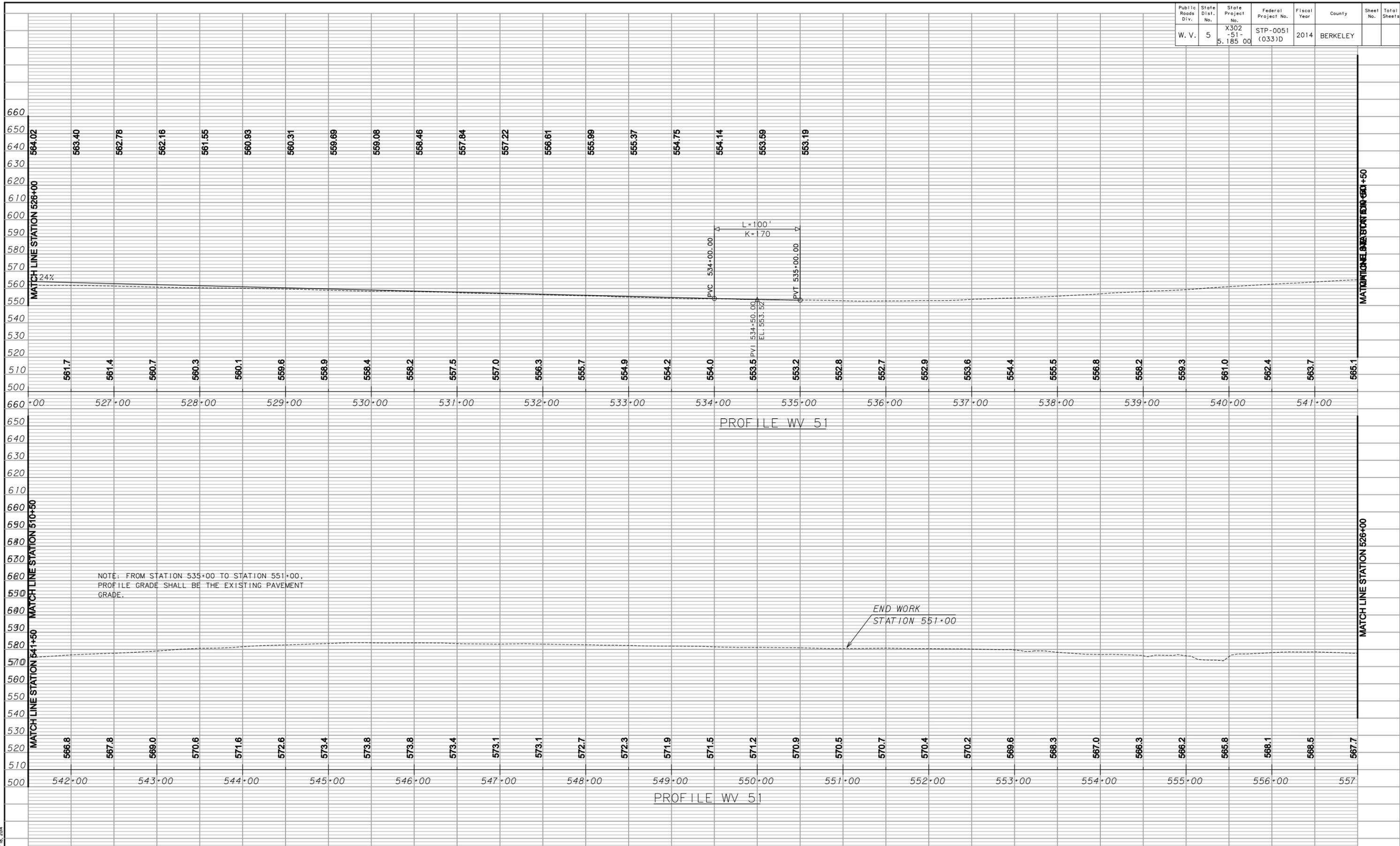
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RUMMEL, KLEPPER & KAHL, LLP
 242 NORTH TORNADO WAY, SUITE 1
 KEYSER, WEST VIRGINIA 26726
 T - 304.788.3370 F - 304.788.3577
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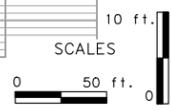
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
WV 51 BYPASS
 ALTERNATE 2-A SHEET 9 OF 9

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302 -51- 5.185 00	STP-0051 (033)D	2014	BERKELEY		



SUBMISSION DATE: JULY 16, 2014



RK&K
ENGINEERS

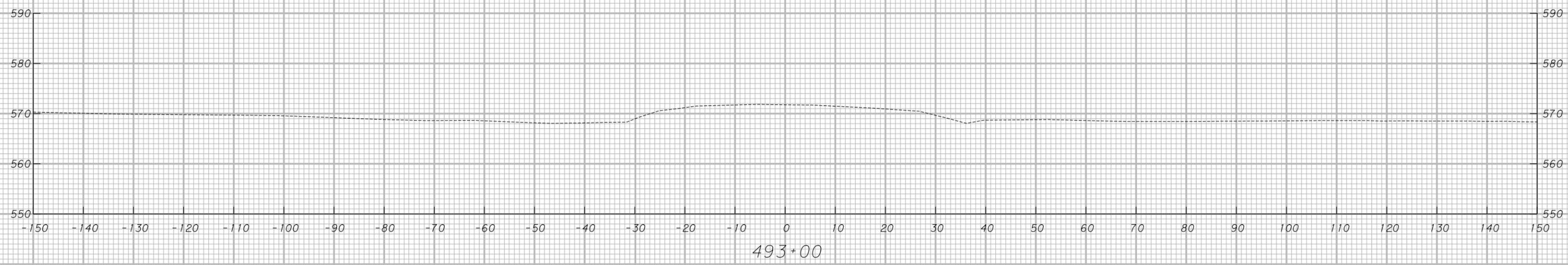
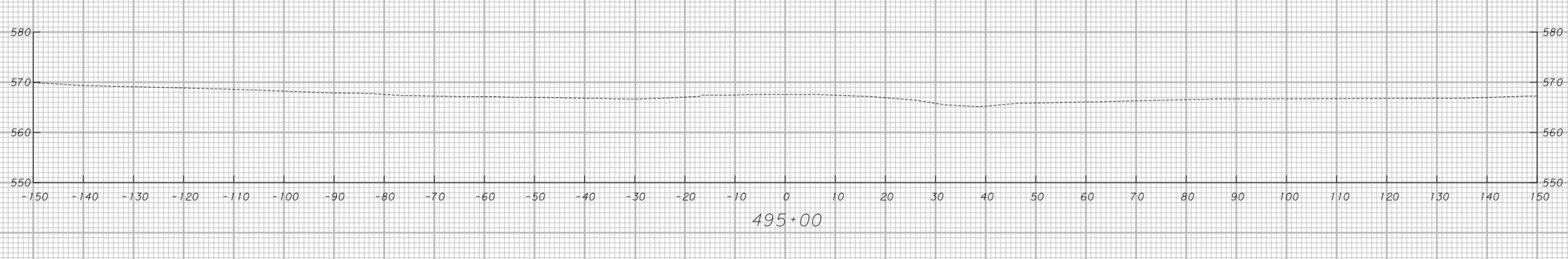
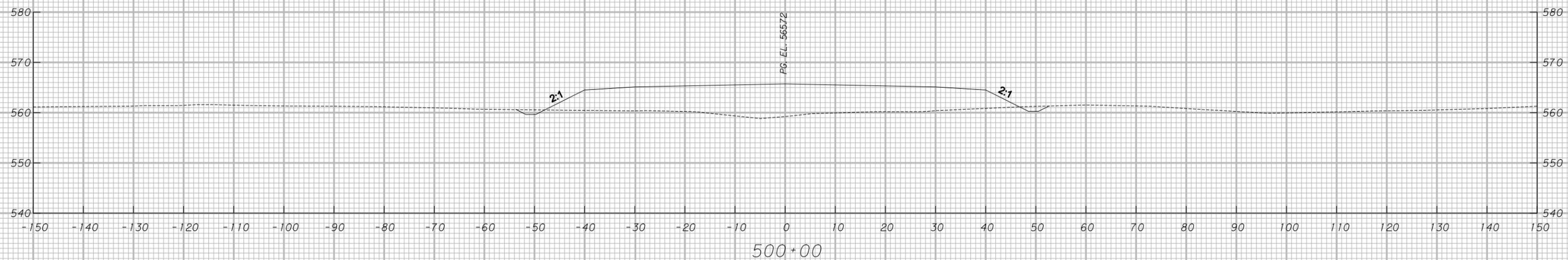
RUMMEL, KLEPPER & KAHL, LLP
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REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

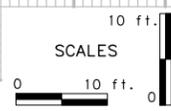
PROFILE SHEET
ALTERNATE 2-A
WV 51 BYPASS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051 (033)d	2014	BERKELEY		



ORIGINAL SURVEY	DATE	BY	FINAL SURVEY	DATE	BY
NOTE BOOK NO.	///	///	SURVEYED AREAS CHECKED	///	///
NO.	///	///	TEMPLATE AREAS CHECKED	///	///
	///	///	BOOK NO.	///	///
	///	///	NO.	///	///

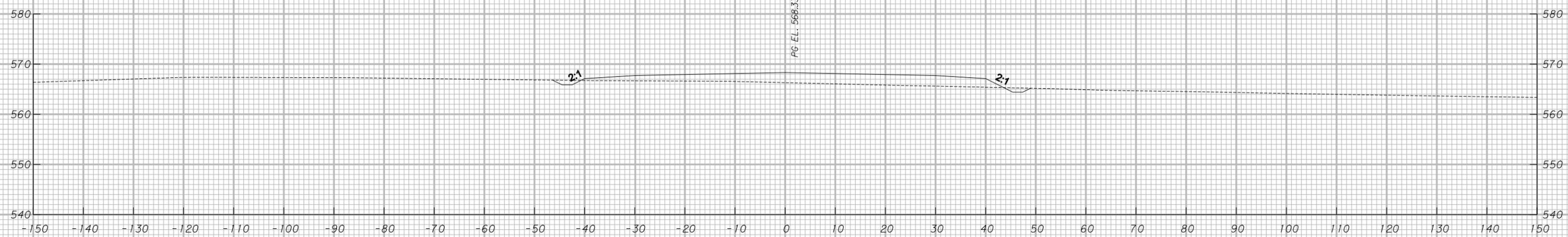
SUBMISSION DATE: JULY 18, 2014



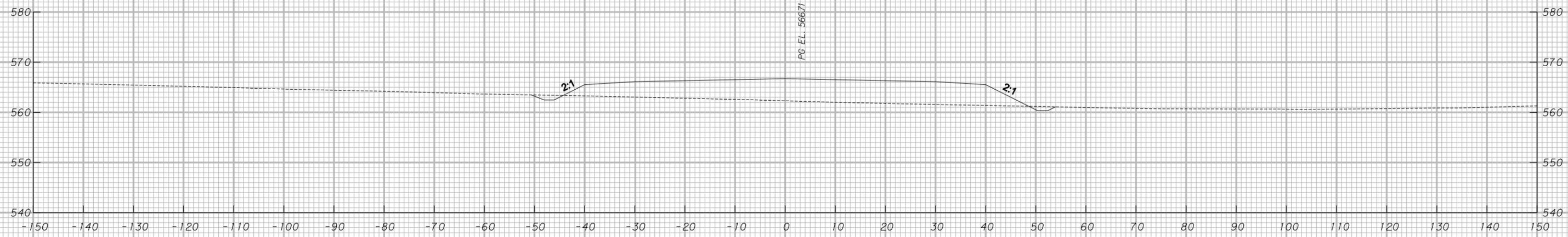
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CROSS-SECTION SHEET
ALTERNATE 2-A WV 51 BYPASS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051 (033)d	2014	BERKELEY		



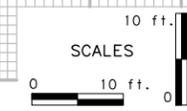
510+00



505+00

ORIGINAL SURVEY NOTE BOOK NO.	DATE	BY	FINAL SURVEY NOTE BOOK NO.	DATE	BY

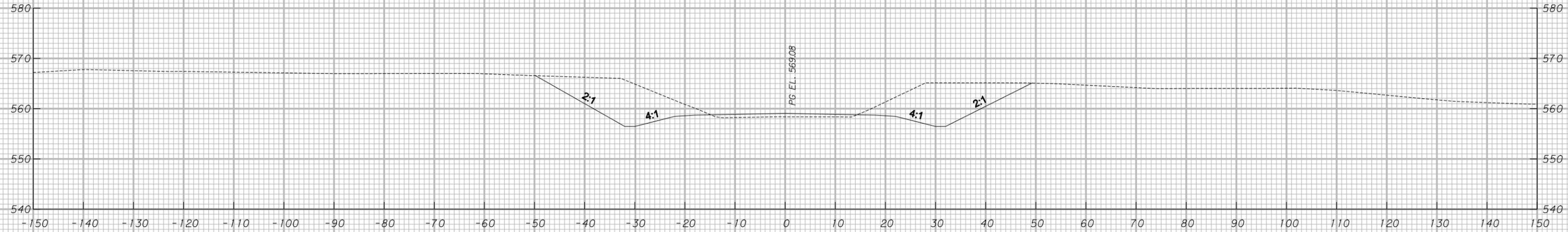
SUBMISSION DATE: JULY 18, 2014



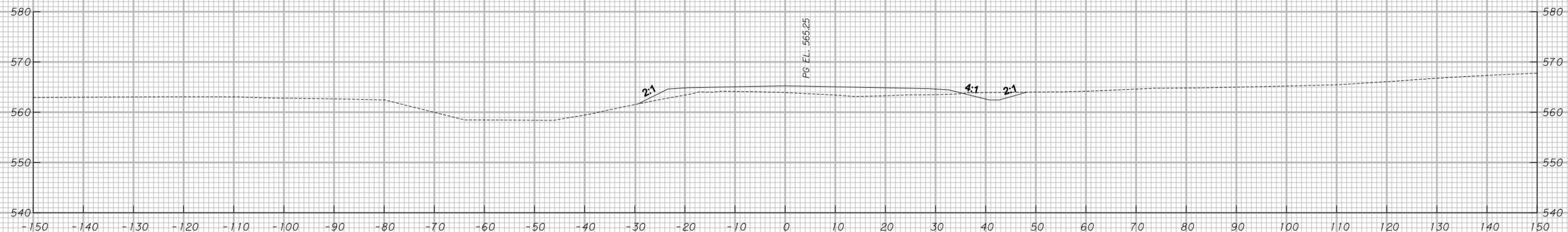
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CROSS-SECTION SHEET
ALTERNATE 2-A
WV 51 BYPASS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.18 00	STP-0051(033)d	2014	BERKELEY		



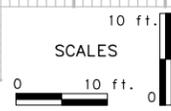
530+00



525+00

ORIGINAL SURVEY	DATE	BY	FINAL SURVEY	DATE	BY
SURVEYED AREAS SPECIFIED	///	///	SURVEYED AREAS CHECKED	///	///
NOTE BOOK NO.	///	///	NOTE BOOK NO.	///	///
TEMPLATE AREAS CHECKED	///	///	TEMPLATE AREAS CHECKED	///	///

SUBMISSION DATE: JULY 18, 2014



REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CROSS-SECTION SHEET
ALTERNATE 2-A
WV 51 BYPASS

Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.1B 00	STP-0051 (033)d	2014	BERKELEY		

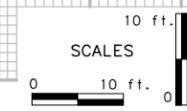


540+00

NOTE: FROM STATION 535+00 TO STATION 55+00, PROFILE GRADE SHALL BE THE EXISTING PAVEMENT GRADE.



535+00



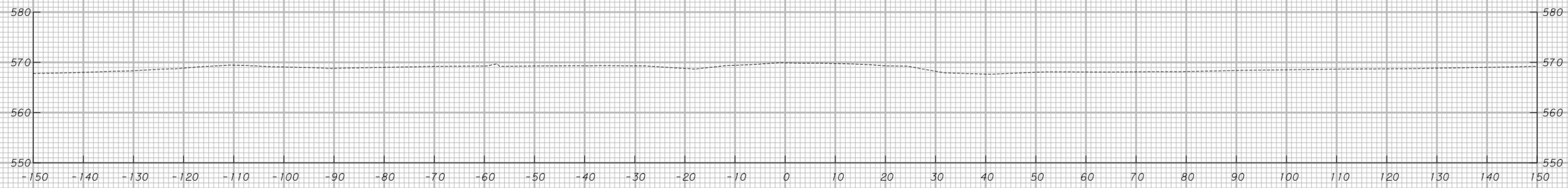
REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CROSS-SECTION SHEET
ALTERNATE 2-A
WV 51 BYPASS

ORIGINAL SURVEY	DATE	BY
FINAL SURVEY	DATE	BY
SURVEYED AREAS	DATE	BY
TEMPLATES	DATE	BY
NOTE BOOK	DATE	BY
AREAS CHECKED	DATE	BY
AREAS CHECKED	DATE	BY

SUBMISSION DATE: JULY 18, 2014

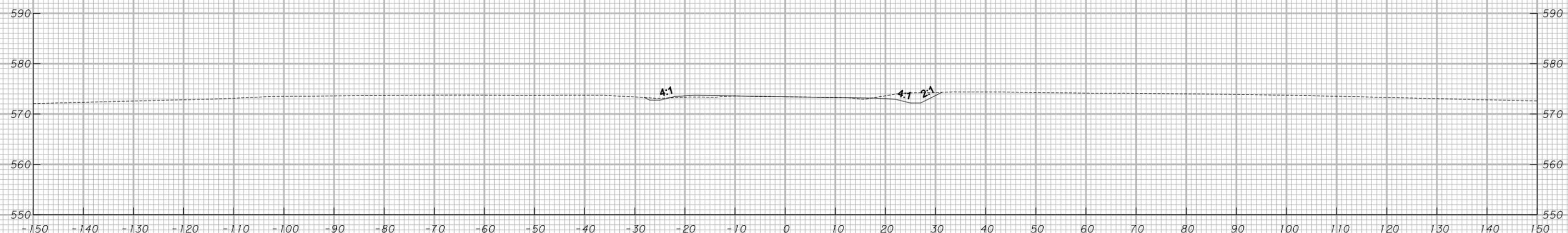
Public Roads Div.	State Dist. No.	State Project No.	Federal Project No.	Fiscal Year	County	Sheet No.	Total Sheets
W. V.	5	X302-51-5.1B 00	STP-0051(033)d	2014	BERKELEY		



552+93



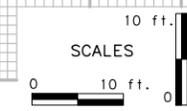
550+00



545+00

ORIGINAL SURVEY	DATE	BY
NO. /	/ /	/
BOOK /	/ /	/
AREAS /	/ /	/
CHECKED /	/ /	/
NO.	/ /	/

SUBMISSION DATE: JULY 18, 2014



REVISION NUMBER	SHEET NUMBER	REVISION	DATE	BY

THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
CROSS-SECTION SHEET
ALTERNATE 2-A
WV 51 BYPASS



West Virginia Department of Transportation
Division of Highways

INWOOD BYPASS BERKELEY COUNTY

Appendix B

Agency Coordination



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

February 24, 2014

Mr. John Schmidt, Supervisor
U.S. Fish and Wildlife Service
West Virginia Field Office
694 Beverly Pike
Elkins, West Virginia 26241

RECEIVED
FEB 27 2014
WVFO

Dear Mr. Schmidt:

State Project X302-51-5018
Federal Project STP-0051(033)D
Inwood Bypass
Berkeley County

Please be advised the West Virginia Division of Highways has initiated NEPA studies for the above referenced project. At this time it is anticipated that the level of documentation will be an Environmental Assessment. As we begin this process, we request your early input as to any concerns your agency may have regarding this project.

The Inwood Bypass Project proposes the construction of a 5-lane relocated and new segment of highway (WV Route 51) at Inwood in Berkeley County, West Virginia. This new segment of highway will eliminate an existing "off-set" intersection with US Route 11 and provide a direct connection between the portion of WV Route 51 west of US Route 11 with the portion of WV Route 51 located east of US Route 11. The environmental scope begins at CR 30 located west of the Interstate 81 interchange, includes the proposed highway corridor and ends at the new roadway tie-in to WV 51 east of Inwood. Attached is a handout from our public meeting held October 21, 2013 describing project alternatives.

Attached please find an ArcView map and topo map showing the project location. After screening [redacted] threatened or endangered species were found.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
694 Beverly Pike
Elkins, West Virginia 26241



In response to your letter above, we have made a "no effect" determination that the project will not affect federally-listed endangered or threatened species. Therefore no biological assessment or further section 7 consultation under the Endangered Species Act is required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed and proposed species becomes available, this determination may be reconsidered.

Definitive determinations of the presence of waters of the United States, including wetlands, in the project area and the need for permits, if any, are made by the U.S. Army Corps of Engineers. They may be contacted at: Pittsburgh District, Regulatory Branch, William S. Moorhead Federal Building, 1000 Liberty Avenue, Pittsburgh, Pennsylvania 15222-4188, telephone (412) 395-7152.

[Signature] 3/5/14
Reviewer's signature and date

[Signature] 3/6/14
Field Supervisor's signature and date



DIVISION OF NATURAL RESOURCES
Wildlife Resources Section
Operations Center
P.O. Box 67
Elkins, West Virginia 26241-3235
Telephone (304) 637-0245
Fax (304) 637-0250

Earl Ray Tomblin
Governor

Frank Jezioro
Director

March 19, 2014

Mr. Ben Hark
Division of Highways
Engineering Division
1900 Kanawha Boulevard, East
Building Five, Room 450
Charleston, WV 25305-0430

Dear Mr. Hark:

We have reviewed our files for information on rare, threatened and endangered (RTE) species and natural trout streams for the area of the proposed highway project:

State Project S302-51-5018
Federal Project STP-0051(033)D
Inwood Bypass
Berkeley County

We have no known records of any RTE species or natural trout streams within the project area. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review.

Thank you for your inquiry, and should you have any questions please feel free to contact me at the above number, extension 2048.

Sincerely,

A handwritten signature in blue ink, appearing to read "Barbara Sargent".

Barbara Sargent
Environmental Resources Specialist
Wildlife Diversity Unit



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505

Earl Ray Tomblin
Governor

Paul A. Mattox, Jr., P. E.
Secretary of Transportation/
Commissioner of Highways

February 24, 2014

Ms. Barbara Sargent
West Virginia Division of
Natural Resources
Post Office Box 67
Elkins, West Virginia 26241

Dear Ms. Sargent:

State Project X302-51-5018
Federal Project STP-0051(033)D
Inwood Bypass
Berkeley County

Please be advised the West Virginia Division of Highways has initiated NEPA studies for the above referenced project. At this time it is anticipated that the level of documentation will be an Environmental Assessment. As we begin this process, we request your early input as to any concerns your agency may have regarding this project.

The Division of Highways is developing the subject project at the location shown on the attached vicinity maps. The project proposes the construction of a 5-lane relocated and new segment of highway (WV Route 51) at Inwood in Berkeley County, West Virginia. This new segment of highway will eliminate an existing "off-set" intersection with US Route 11 and provide a direct connection between the portion of WV Route 51 west of US Route 11 with the portion of WV Route 51 located east of US Route 11. The environmental scope begins at CR 30 located west of the Interstate 81 interchange, includes the proposed highway corridor and ends at the new roadway tie-in to WV 51 east of Inwood. The project location is shown on the USGS Inwood quadrangle map.

The project has been run through our GIS layers, and no RTE species were found.

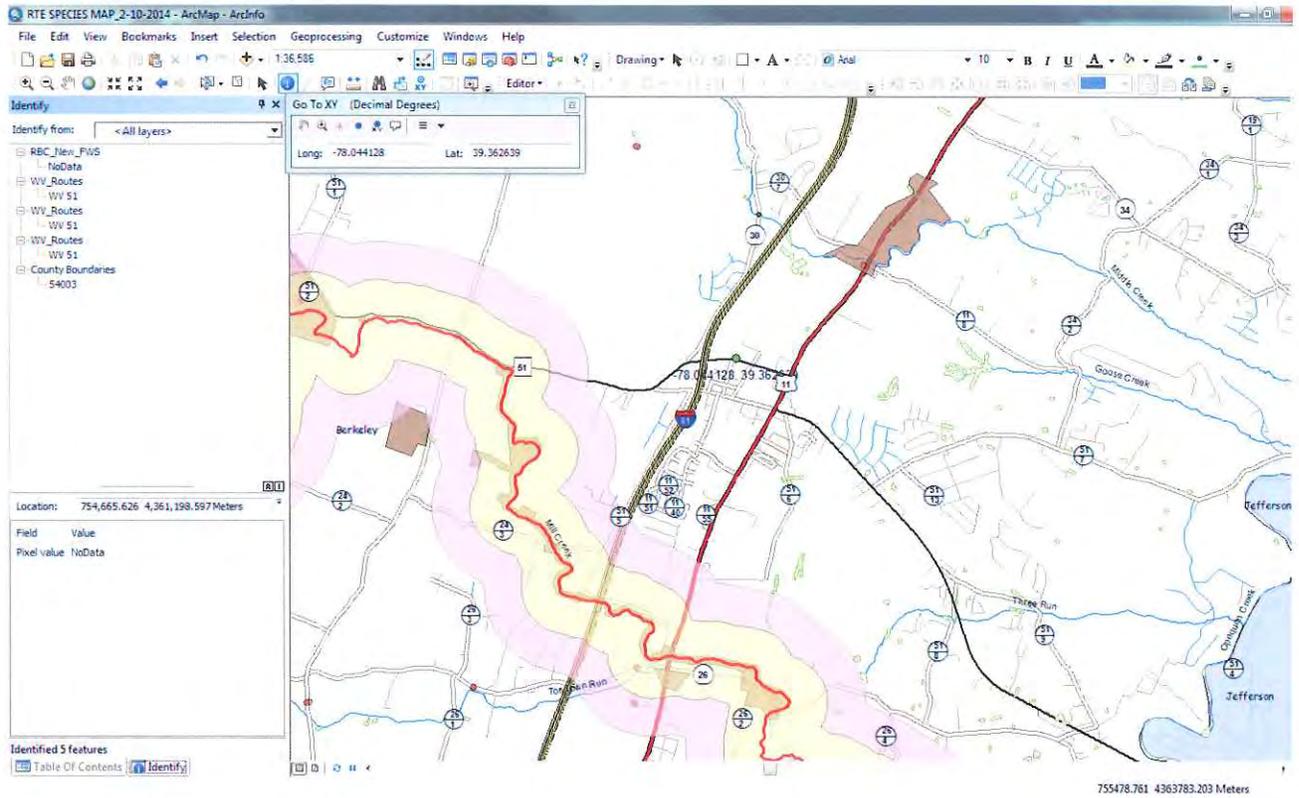
Your comments on possible effects to rare or endangered species and natural trout streams are requested so that they may be included in our environmental studies. Should you require additional information, please contact Sydney Morgan of our Environmental Section at (304) 558-9666.

Yours very truly,

A handwritten signature in blue ink that reads "Ben L. Hark".

Ben L. Hark
Section Head
Environmental Section
Engineering Division

H:k
Attachments
Bcc: DDE(STM)



Inwood Bypass

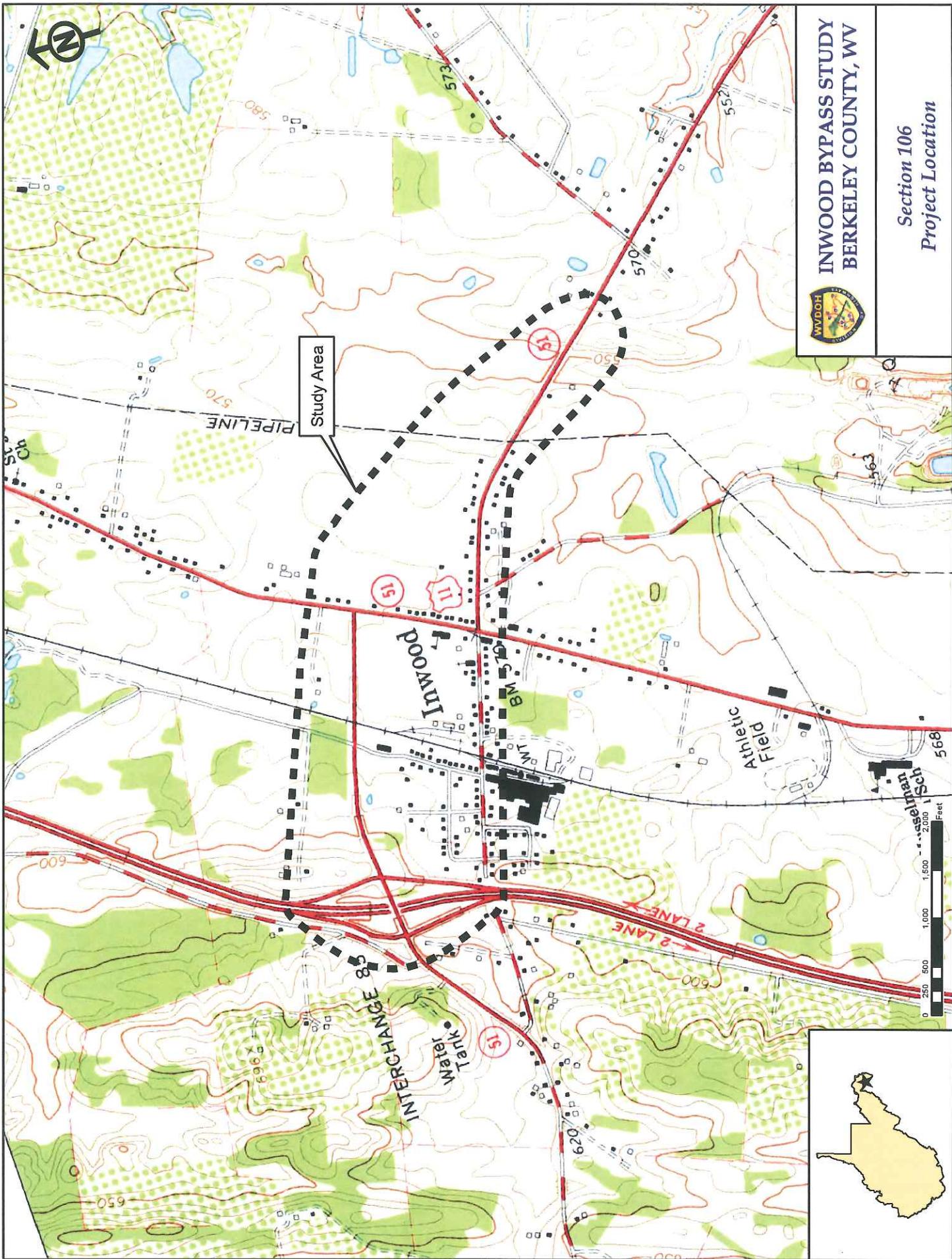
X302-51-5.18

STP-0051(033)D

Berkeley County

Inwood quad

39.362639, -78.044128

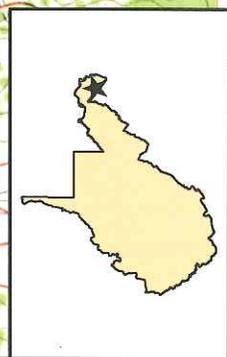


INWOOD BYPASS STUDY
BERKELEY COUNTY, WV

Section 106
Project Location



Source: Inwood, W. VA
 USGS 7.5 DRG





RECEIVED
JUL 21 2014
ENGINEERING
DIVISION

The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300

Randall Reid-Smith, Commissioner

Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562

EEO/AA Employer

July 15, 2014

Mr. Ben L. Hark
Engineering Division
Environmental Section Head
WV Division of Highways
1900 Kanawha Boulevard East
Building 5 Room 110
Charleston, WV 25305

RE: Inwood Bypass
FR# 14-724-BY

Dear Mr. Hark,

We have received two reports for review in association with the proposed Inwood Bypass project: the Phase I Archaeological Survey Technical Report and the Cultural Resources Management Report. The Phase I Archaeological Survey Technical Report comments will be submitted separately. The following are our comments regarding the Cultural Resources Management report as required by Section 106 of the National Historic Preservation Act of 1966 and its regulations, 36 CFR 800, "Protection of Historic Properties."

Architectural Resources:

The Phase I Cultural Resources Management Report identifies and evaluates the National Register eligibility of the buildings located within the Area of Potential Effect. There are several different tables summarizing the evaluations. These comments reference Table A which is found in Appendix G and is labelled "Identified and Evaluated Historic Resources Within the Area of Potential Effects for Alternate 2." Based upon confirmation with Ms. Sondra Mullins of your staff, our comments are confined to those resources found in Table A. While Alternate 2 is the preferred alternative, the consultant also provided a summary of the study for Alternate 1 because that alternative was previously under consideration and was part of the initial field work survey efforts. Because Alternate 1 is not the preferred alternate, the consultant limited work to the identification of existing historic resources through research at the WV SHPO, with no further evaluations or re-evaluations for the National Register. The Area of Potential Effect is based solely on Alternate 2.

In general, we concur with the findings of eligibility for the thirty resources listed in Table A. Except for the Cumberland Valley Railroad Segment, the inventoried resources do not meet the

Page 2

Mr. Ben Hark

14-724-BY

July 15, 2014

Criteria of Evaluation for listing in the National Register of Historic Places. However, please accept the following comments regarding several specific resources.

Lamar F. Foreman House:

The documentation in the report shows that the barn associated with this farm complex was intact in January 2014, but demolished in March 2014. It is our understanding based upon consultation with DOH staff that the current owner had the property for sale in 2014. We note that the 1998 "Survey of the Inwood Area" considered this farm complex not eligible. The barrel vaulted barns were constructed in 1951; therefore, in 1998 they were not yet fifty years old, the threshold for National Register consideration. We would have evaluated the current condition of the resource according 36 CFR 800.4(c)(1) with respect to the passage of time. The updated inventory form also shows that the workshop and residence foundations were removed prior to January 2014. The property no longer retains integrity for possible consideration of National Register eligibility.

Map# 13-18:

Four residential resources were evaluated in 1998 as CHD (Contributing – Historic District.) They are BY-0041-0143, BY-0041-0139, BY-0041-0128, and BY-0041-0126. These resources are located on Route 11 in an area that has experienced modern development. Three additional foursquare residences in the vicinity are not eligible due to their alterations. We agree with the consultant that the four buildings are good examples of their architectural type (four square residences); however, given the character of their neighborhood, it would be difficult to justify the integrity of an historic district. Based upon existing information, it would appear also that these buildings do not meet Criteria A and B. For the purposes of this project, we concur that these resources are not eligible to the National Register of Historic Places. If these buildings were to be directly impacted by construction, we would request further research to eliminate consideration of Criteria A and B. The updated inventory forms do not provide bibliographic evidence to demonstrate that sufficient research ruled out these Criteria.

Cumberland Valley Railroad:

The consultant identifies that the segment of the Cumberland Valley Railroad is eligible for listing in the National Register of Historic Places. We accept this finding. We also concur that the proposed improvements at the railroad crossing of WV 51 W will not adversely affect the historic characteristics of the resource. The improvements are summarized in VIII.B. "Effects Assessment" found on page 8-9 of the report. Additional concrete railroad crossing surfaces will be added on either side of the current road. The rails will be removed temporarily and then reinstalled. The current crossing signals which were installed in 2002 are not contributing to the resource. We note that the inventory form documents several contributing elements to the railroad such as the possible rail building and spur alignments. These will not be impacted. Should the project change, please contact our office for additional review.

Page 3
Mr. Ben Hark
14-724-BY
July 15, 2014

Authorship:

Finally we note that there is no documentation regarding authorship of this report. The inventory forms provide the name of the form preparer and the name of the firm, RK & K, LLP which is located in Baltimore, MD. We request that this omission be amended with clarification and submission of the relevant resumes and vitae associated with this report to confirm that it meets National Park Service professional qualifications.

In conclusion, please contact our office if the Area of Potential Effect is amended. Thank you for your cooperation. If you have any questions, please contact our office.

Sincerely,



Susan M. Pierce
Deputy State Historic Preservation Officer



The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300

Randall Reid-Smith, Commissioner

Phone 304.558.0220 • www.wvculture.org
Fax 304.558.2779 • TDD 304.558.3562

EEO/AA Employer

September 25, 2014

Mr. Ben Hark
Environmental Section Head
WVDOH
1900 Kanawha Blvd., East
Building 5, Room A-848
Charleston, WV 25305

RE: Inwood Bypass
State Project: X302-51-5.18; Federal Project: STP-0051(033)D
FR#: 14-724-BY-1

Dear Mr. Hark:

We have reviewed the Phase I archaeological survey report that was submitted for the above referenced project to determine potential effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:

According to the report, systematic pedestrian reconnaissance and shovel probe excavation was conducted within the currently proposed limits of disturbance for Alternative 2. Field investigations resulted in the identification of one archaeological site, 46BY234, and five isolated finds, 46BY235 – 46BY239. Site 46BY234 consists of a low density scatter of historic period artifacts identified in the yard of the circa 1920 Hutzler House. The assemblage, which consists of a general assortment of bottle glass, a wire nail and other debris, is associated with the early- to late- twentieth century occupation of the house. As well, it is our understanding the artifacts were recovered from disturbed contexts, possible associated with a buried gas tank or well. Given the low number of artifacts, a lack in patterning and the disturbed context, we concur that 46BY234 is not eligible for inclusion in the National Register of Historic Places. The isolate finds are each comprised of a single historic period artifact and represent general refuse dispersal through an agricultural field. We concur that 46BY235 – 46BY239 are not eligible for inclusion in the National Register of Historic Places. We also concur that no further work is necessary for site 36BY234 and isolated finds 46BY235 – 46BY239.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/LLD



SM
SM
14

The Culture Center
1900 Kanawha Blvd., E.
Charleston, WV 25305-0300

Randall Reid-Smith, Commissioner

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EEO/AA Employer

OCT 01 2014

Mr. Ben Hark
Environmental Section Head
WVDOH
1900 Kanawha Blvd., East
Building 5, Room A-848
Charleston, WV 25305

RE: Inwood Bypass
State Project: X302-51-5.18; Federal Project: STP-0051(033)D
FR#: 14-724-BY-1

Dear Mr. Hark:

We have reviewed the addendum to the Phase I archaeological survey report that was submitted for the above referenced project to determine potential effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:

According to the report, subsequent to completion of the initial survey, the proposed project was amended to include the construction of roundabouts rather than traditional signalized intersections. The proposed amendment, which has been designated Alternative 2A, increased the Limits of Disturbance (LOD) to areas beyond those that were previously surveyed. Systematic pedestrian reconnaissance and shovel probe excavation were conducted within the amendment area, resulting in the recovery of three additional artifacts associated with site 46BY234 and the twentieth-century occupation of the Hutzler House. The artifacts, a piece of milk glass and two wire nails, were recovered from plowzone contexts. While the additional artifacts resulted in a revision to the site boundary, they do not add anything significant to the site or our understanding of the area's history. As a result, we remain in concurrence with the previous determination that 46BY234 is not eligible for inclusion in the National Register of Historic Places and that there are no historic archaeological properties within the proposed project's LOD as currently defined.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,

Susan M. Pierce
Deputy State Historic Preservation Officer

SMP/LLD

From: "Walter Kellam" <WKellam@unimin.com>
To: "Robert Amtower" <ramtower@rkk.com>
Sent: Wednesday, October 22, 2014 8:46:50 AM
Subject: Re: Fwd: Winchester and Western Railroad -

The Winchester & Western Railroad agrees that the proposed highway improvement project on WV 51 in Inwood will have only a minor impact to the railroad.

Thank You
Walter Kellam

Dear Mr Kellam,

As you are aware, the West Virginia Department of Transportation (WVDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing a new bypass to address congestion and improve traffic operations along WV 51 from Berkeley County Road 30 just west of I-81 to Sulphur Springs Road in Inwood, West Virginia.

The Inwood Bypass project would acquire land from the Winchester and Western Railroad (historically the Cumberland Valley Railroad). The railroad and the Preferred Alternate for the Inwood Bypass Project cross at grade along WV 51 W. In order to accommodate the additional width of the alignment, additional concrete railroad crossing surfaces would be added on either side of the current road; while the rails would be removed temporarily in order to install the concrete crossing surfaces, the same rails would be reinstalled. The railroad would continue to operate along its original alignment. Approximately 2,600 square feet (0.06 acres) of easement from the railroad would be permanently acquired as part of WV 51 W. An additional 1,200 square feet (0.03 acres) of the railroad would be temporarily impacted during construction and require a temporary easement. The impacts the facility are minor and do not affect any of the qualities that make the property eligible for listing on the National Register of Historic Places.

The railroad property is eligible for listing on the National Register of Historic Places, as previously agreed upon by the WV State Historic Preservation Office (SHPO). Accordingly, WVDOT and FHWA are required to review impacts to the railroad in accordance with Section 106 of the National Historic Preservation Act (36 CFR 800) and Section 4(f) of the US Department of Transportation Act (23 CFR 774). On July 15, 2014 the WVSHPO agreed that the project will have no adverse effect to the historic characteristics of the railroad property.

As the owner of the railroad, we would like your agreement that the Inwood Bypass project would only have minor impacts to the historic characteristics of the railroad. Please reply to this email to confirm your concurrence with this determination.

If you have any questions, I may be reached at 304.788.3370.

Thanks,

Bob Amtower

ROBERT A. AMTOWER, PE, PS
Project Engineer